

## XC4000XLA/XV Family FPGAs

**Note:** XC4000XLA devices are improved versions of XC4000XL devices. The XC4000XV devices have the same features as XLA devices, incorporate additional interconnect resources and extend gate capacity to 500,000 system gates. The XC4000XV devices require a separate 2.5V power supply for internal logic but maintain 5V I/O compatibility via a separate 3.3V I/O power supply. A general description of the XC4000XLA/XV device architecture is included in the XC4000E and XC4000X Series (Description only) file, v1.4 (11/97) on the Xilinx WEBLINX at: <http://www.xilinx.com>.

- System-featured Field-Programmable Gate Arrays
  - Select-RAM™ memory: on-chip ultra-fast RAM with
    - Synchronous write option
    - Dual-port RAM option
  - Flexible function generators and abundant flip-flops
  - Dedicated high-speed carry logic
  - Internal 3-state bus capability
  - 8 global low-skew clock or signal distribution networks
- Flexible array architecture
- Low power segmented routing architecture
- Systems-oriented features
  - IEEE 1149.1-compatible boundary scan
  - Individually programmable output slew rate
  - Programmable input pull-up or pull-down resistors
  - Unlimited reprogrammability
- Readback capability
  - Program verification and internal node observability

## XC4000XLA/XV Electrical Features

- XLA devices require 3.0 - 3.6 Volts (VCC)
- XV devices require 2.3- 2.7 Volts (VCCINT) and 3.0-3.6V (VCCIO)
- 5.0 V TTL compatible I/O
- 3.3 V LVTTTL, LVCMOS compliant I/O
- 5.0 V and 3.0 V PCI compliant I/O
- 12-mA or 24-mA current sink capability
- Safe under all power-up sequences
- XLA devices consume 40% less power than do XL devices
- XV devices consume 65% less power than do XL devices
- Optional input clamping to VCC (XLA) or VCCIO (XV)

## Additional XC4000XLA/XV Family Features

- **Footprint Compatible with XC4000XL FPGAs** Lower cost with improved performance and lower power.
- **Advanced Technology** — 5 layer metal, 0.25μ CMOS process (XV) or 0.35μ CMOS process (XLA)
- **Highest Performance** — System performance beyond 100 MHz
- **High Capacity** — Up to 500,000 system gates and 270,000 synchronous SRAM bits
- **Low Power** — 3.3V/2.5V technology plus segmented routing architecture
- **Safe and Easy to Use** — Interfaces to any combination of 3.3 V and 5.0 V TTL compatible devices.

**Table 1: XC4000XLA Series Field Programmable Gate Arrays**

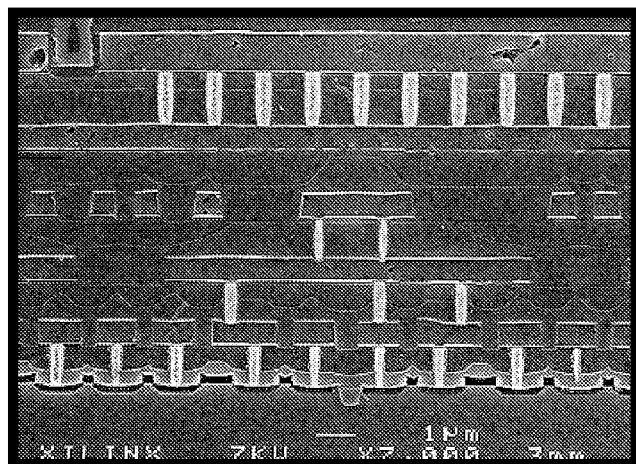
| Device    | Logic Cells | Max Logic Gates (No RAM) | Max. RAM Bits (No Logic) | Typical Gate Range (Logic and RAM)* | CLB Matrix | Total CLBs | Number of Flip-Flops | Max. User I/O | Required Configuration Bits |
|-----------|-------------|--------------------------|--------------------------|-------------------------------------|------------|------------|----------------------|---------------|-----------------------------|
| XC4013XLA | 1,368       | 13,000                   | 18,432                   | 10,000 - 30,000                     | 24 x 24    | 576        | 1,536                | 192           | 393,632                     |
| XC4020XLA | 1,862       | 20,000                   | 25,088                   | 13,000 - 40,000                     | 28 x 28    | 784        | 2,016                | 224           | 521,880                     |
| XC4028XLA | 2,432       | 28,000                   | 32,768                   | 18,000 - 50,000                     | 32 x 32    | 1,024      | 2,560                | 256           | 668,184                     |
| XC4036XLA | 3,078       | 36,000                   | 41,472                   | 22,000 - 65,000                     | 36 x 36    | 1,296      | 3,168                | 288           | 832,528                     |
| XC4044XLA | 3,800       | 44,000                   | 51,200                   | 27,000 - 80,000                     | 40 x 40    | 1,600      | 3,840                | 320           | 1,014,928                   |
| XC4052XLA | 4,598       | 52,000                   | 61,952                   | 33,000 - 100,000                    | 44 x 44    | 1,936      | 4,576                | 352           | 1,215,368                   |
| XC4062XLA | 5,472       | 62,000                   | 73,728                   | 40,000 - 130,000                    | 48 x 48    | 2,304      | 5,376                | 384           | 1,433,864                   |
| XC4085XLA | 7,448       | 85,000                   | 100,352                  | 55,000 - 180,000                    | 56 x 56    | 3,136      | 7,168                | 448           | 1,924,992                   |
| XC40110XV | 9,728       | 110,000                  | 131,072                  | 75,000 - 235,000                    | 64 x 64    | 4,096      | 9,216                | 448           | 2,686,136                   |
| XC40150XV | 12,312      | 150,000                  | 165,888                  | 100,000 - 300,000                   | 72 x 72    | 5,184      | 11,520               | 448           | 3,373,448                   |
| XC40200XV | 16,758      | 200,000                  | 225,792                  | 130,000 - 400,000                   | 84 x 84    | 7,056      | 15,456               | 448           | 4,551,056                   |
| XC40250XV | 20,102      | 250,000                  | 270,848                  | 180,000 - 500,000                   | 92 x 92    | 8,464      | 18,400               | 448           | 5,433,888                   |

\* Maximum values of gate range assume 20-30% of CLBs used as RAM

## Xilinx SRAM XC4000 Series FPGAs

XC4000 Series high-performance, high-capacity Field Programmable Gate Arrays (FPGAs) provide the benefits of custom CMOS VLSI, while avoiding the initial cost, long development cycle, and inherent risk of a conventional masked gate array.

The result of fifteen years of FPGA design experience and feedback from thousands of customers, these FPGAs combine architectural versatility, increased speed, abundant routing resources, and new, sophisticated software to achieve fully automated implementation of complex, high-density, high-performance designs.



**Figure 1: Cross Section of Xilinx 0.25 micron, 5 layer metal XC4000XV FPGA.** Visible features are five layers of metallization, tungsten plug vias and trench isolation. The small gaps above the lowest layer are 0.25 micron polysilicon MOSFET gates. The excellent planarity of each metal layer is due to the use of "chemical-mechanical polishing" or CMP. In effect, each layer is ground flat before a new layer is added.

## XC4000XLA/XV FPGAs

XC4000XLA/XV FPGAs use 5 layer metal silicon technology to improve performance while reducing device cost and power. In addition, IOB enhancements provide full PCI compliance and the JTAG functionality is expanded.

## XC4000XV FPGAs

XC4000XV FPGAs incorporate all the features of the XLA devices but require a separate 2.5V power supply for internal logic. I/O pads are still driven from a 3.3V power supply. The 2.5V logic supply is named VCCINT and the 3.3 V I/O supply is named VCCIO.

The XV devices also incorporate additional routing resources in the form of 8 octal-length segmented routing channels vertically and horizontally per row and column.

## Differences Between the XC4000XLA/XV and XC4000XL FPGAs

The XC4000XLA/XV families of FPGAs are logically identical to XC4000EX and XC4000XL FPGAs, however I/O, configuration logic, JTAG functionality, and performance have been enhanced. In addition, they deliver:

- **Improved Performance**  
XLA/XV devices benefit from advance processing technology and a reduction in interconnect capacitance which improves performance over XL devices by more than 30%.
- **Lower Power**  
XLA/XV devices have reduced power requirements compared to equivalent XL devices.
- **Shorter routing delays**  
The smaller die of XLA/XV devices directly reduces clock delays and the delay of high-fanout signals. The reduction in clock delay allows improved pin-to-pin I/O specifications.
- **Lower Cost**  
XLA/XV device cost is directly related to the die size and has been reduced significantly from that of equivalent XL devices.
- **Express mode configuration**  
Express mode configuration is available on the XLA and XV devices.

## IOB Enhancements

- **12/24 mA Output Drive**  
The XLA/XV family of FPGAs allow individual IOBs to be configured as high drive outputs. Each output can be configured to have 24 mA drive strength as opposed to the standard default strength of 12 mA.
- **VCC Clamping Diode**  
XLA and XV FPGAs have an optional clamping diode connected from each output to VCC (VCCIO for XV). When enabled they clamp ringing transients back to the 3.3V supply rail. This clamping action is required in 3.3V PCI applications. VCC clamping is a global option affecting all I/O pins. If enabled, TTL I/O compatibility is maintained, but full 5.0 Volt I/O tolerance is sacrificed.
- **Enhanced ESD protection**  
An improved ESD structure allows XV devices to safely pass the stringent 5V PCI (4.2.1.3) ringing test. This test applies an 11V pulse to each IOB for 11 ns via a 55 ohm resistor.

## • Full 3.3V and 5.0V PCI compliance

The addition of 12/24 mA drive, optional 3.3V clamping and improved ESD provides full compliance with either 3.3V or 5.0V PCI specifications.

## Three-State Register

XC4000XLA/XV devices incorporate an optional register controlling the three-state enable in the IOBs. The use of the three-state control register can significantly improve output enable and disable time.

## FastCLK Clock Buffers

The XLA/XV devices incorporate FastCLK clock buffers. Two FastCLK buffers are available on each of the right and left edges of the die. Each FastCLK buffer can provide a fast clock signal (typically < 1.5 ns clock delay) to all the IOBs within the IOB octant containing the buffer. The FastCLK buffers can be instantiated by use of the BUFFCLK symbols. (In addition to FastCLK buffers, the Global Early BUFGE clock buffers #1, #2, #5, and #6 can also provide fast clock signals (typically < 1.5 ns clock delay) to IOBs on the top and bottom of the die.

## XLA, XV Power Requirements

XC4000XLA devices require 40% less power per CLB than equivalent XL devices. XC4000XV devices require 42% less power per CLB than equivalent XLA devices and 65% less power than XL devices. The representative K-Factor for the following families can be found in Table 2. The K-Factor predicts device current for typical user designs and is based on filling the FPGA with active 16-Bit counters and measuring the device current at 1 MHz. This technique is described in XBRF14 "A Simple Method of Estimating Power in XC4000XL/EX/E FPGAs". To predict device power (P) using the K-Factor use the following formula:

$P = V * K * N * F$ ; where:

P = Device Power

V = Power supply voltage

K = the Device K-Factor

N = number of active registers

F = Frequency in MHz

**Table 2: K-Factor and Relative Power.**

| FPGA Family | K-Factor | Power Relative To XL | Power Relative To XLA |
|-------------|----------|----------------------|-----------------------|
| XC4000XL    | 28       | 1.00                 | 1.65                  |
| XC4000XLA   | 17       | 0.60                 | 1.00                  |
| XC4000XV    | 13       | 0.35                 | 0.58                  |

## XLA, XV Logic Performance

XC4000XLA/XV devices feature 30% faster device speed than XL devices, and consistent performance is achieved across all family members. Table 3 illustrates the performance of the XLA devices. For details regarding the implementation of these benchmarks refer to XBRF15 "Speed Metrics for High Performance FPGAs".

**Table 3: XLA/XV Estimated Benchmark Performance**

| Register - Register Benchmarks    | Size          | Maximum Frequency |
|-----------------------------------|---------------|-------------------|
| Adder                             | 8-Bit         | 172 MHz           |
|                                   | 16-Bit        | 144 MHz           |
|                                   | 32-Bit        | 108 MHz           |
| 2 Cascaded Adders                 | 16-Bit        | 94 MHz            |
| 4 Cascaded Adders                 | 16-Bit        | 57 MHz            |
| Cascaded 4LUTs                    | 1 Level       | 314 MHz           |
|                                   | 2 Level       | 193 MHz           |
|                                   | 4 Level       | 108 MHz           |
|                                   | 6 Level       | 75 MHz            |
| Interconnect (Manhattan Distance) | 1 CLBs        | 325 MHz           |
|                                   | 4 CLBs        | 260 MHz           |
|                                   | 16 CLBs       | 185 MHz           |
|                                   | 64 CLBs       | 108 MHz           |
|                                   | 128 CLBs      | 81 MHz            |
| Dual Port RAM (Pipelined)         | 8-Bits by 16  | 172 MHz           |
|                                   | 8-Bits by 256 | 172 MHz           |

## Using Fast I/O CLKS

There are several issues associated with implementing fast I/O clocks by using multiple FastCLK and BUFGE clock buffers for I/O transfers and a BUFGLS clock buffer for internal logic.

**Reduced Clock to Out Period** - When transferring data from a BUFGLS clocked register to an IOB output register which is clocked with a fast I/O clock, the total amount of time available for the transfer is reduced.

**Using Fast Capture Latch in IOB input** - It is necessary to transfer data captured with the fast I/O clock edge to a delayed BUFGLS clock without error. The use of the Fast Capture Latch in the IOBs provides this functionality.

**Driving multiple clock inputs** - Since each FastCLK input can only reach one octant of IOBs it will usually be necessary to drive multiple FastCLK and BUFGE input pads with a copy of the system clock. Xilinx recommends that systems which use multiple FastCLK and BUFGE input buffers use a "Zero Delay" clock buffer such as the Cypress CY2308 to drive up to 8 input pins. These devices contain a Phase locked loop to eliminate clock delay, and specify less than 250ps output jitter.

**PCB layout** - The recommended layout is to place the PLL underneath the FPGA on the reverse side of the PCB. All 8 clock lines should be of equal length. This arrangement will allow all the clock line to be less than 2 cm in length which will generally eliminate the need for clock termination.

**Advancing the FPGAs clock** - An additional advantage to using a PLL-equipped clock buffer is that it can advance the FPGA clocks relative to the system clock by incorporating additional board delay in the feedback path. Approximately 6 inches of trace length are necessary to delay the signal by 1 ns.

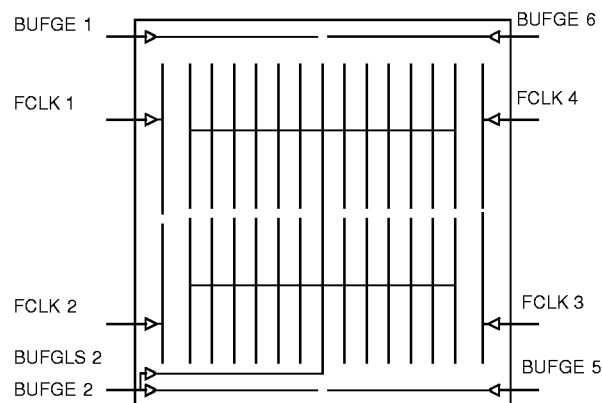
Advancing the FPGA's clock directly reduces input hold requirements and improves clock to out delay. FPGA clocks should not be advanced more than the guaranteed minimum Output Hold Time (minus any associated clock jitter) or the outputs may change state before the system clock edge. For XLA and XV FPGAs the Output Hold Time is specified as a minimum Clock to Output Delay in the tables on pages 183, 182, 197, and 198. The maximum recommended clock advance equals this value minus any clock jitter.

**Instantiating I/O elements** - Depending on the design environment, it may be necessary to instantiate the fast I/O elements. They are found in the libraries as:

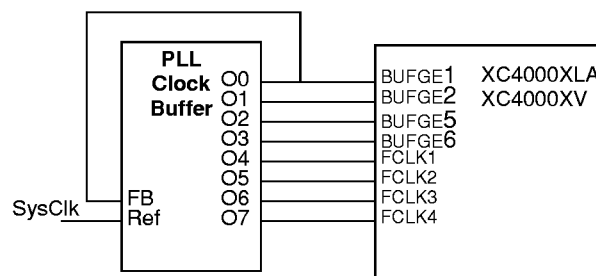
- **BUFGE (I,O)** - The Global Early Buffer
- **BUFGLS (I,O)** - The Global Low Skew Buffer
- **BUFFCLK (I,O)** - The FastCLK Buffer
- **ILFFX (D, GF, CE, C, Q)** - The Fast Capture Latch Macro

**Locating I/O elements** - It is necessary to connect these elements to a particular I/O pad in order to select which buffer or fast capture latch will be used.

**Restricted Clock Loading** - Because the input hold requirement is a function of internal clock delay, it may be necessary to restrict the routing of BUFGE to IOBs along the top and bottom of the die to obtain sub-ns clock delays.



**Figure 2: Location of FastCLK, BUFGE and BUFGLS Clock Buffers in XC4000XLA/XV FPGAs**



**Figure 3: Diagram of XC4000XLA/XV FPGA Connected to PLL Clock Buffer Driving 4 BUFGE and 4 FastCLK Clock Buffers.**

## JTAG Enhancements

XC4000XLA/XV devices have improved JTAG functionality and performance in the following areas:

- **IDCODE** - The IDCODE register in JTAG is now supported. All future Xilinx FPGAs will support the IDCODE register. By using the IDCODE, the device connected to the JTAG port can be determined. The use of the IDCODE enables selective configuration dependent upon the FPGA found. The IDCODE register has the following binary format:

```
vvvv:ffff:ffff:aaaa:aaaa:cccc:cccc:ccc1
```

Where:

c = the company code;

a = the array dimension in CLBs;

f = the Family code;

v = the die version number

Family Codes = 01 for XLA;

= 02 for SpartanXL;

= 03 for Virtex;

= 07 for XV.

Xilinx company code = 49 (hex)

**Table 4: IDCODEs assigned to XC4000XLA/XV FPGAs**

| FPGA      | IDCODE     |
|-----------|------------|
| XC4013XLA | 0x00218093 |
| XC4020XLA | 0x0021c093 |
| XC4028XLA | 0x00220093 |
| XC4036XLA | 0x00224093 |
| XC4044XLA | 0x00228093 |
| XC4052XLA | 0x0022c093 |
| XC4062XLA | 0x00230093 |
| XC4085XLA | 0x00238093 |
| XC40110XV | 0x00e40093 |
| XC40150XV | 0x00e48093 |
| XC40200XV | 0x00e54093 |
| XC40250XV | 0x00e5c093 |

- **Configuration State** - The configuration state is available to JTAG controllers.
- **Configure Disable** - The JTAG port can be prevented from reconfiguring the FPGA
- **TCK Startup** - TCK can now be used to clock the start-up block in addition to other user clocks.
- **CCLK holdoff** - Changed the requirement for Boundary Scan Configure or EXTEST to be issued prior to the release of INIT pin and CCLK cycling.
- **Reissue configure** - The Boundary Scan Configure can be reissued to recover from an unfinished attempt to configure the device.

- **Bypass FF** - Bypass FF and IOB is modified to provide DRCLOCK only during BYPASS for the bypass flip-flop and during EXTEST or SAMPLE/PRELOAD for the IOB register.

## Differences between the XC4000XV and XC4000XLA FPGAs

The high density of the XC4000XV family FPGAs is achieved by using advanced 0.25 micron silicon technology. A 2.5 Volt power supply (VCCINT) is necessary to provide the reduced supply voltage required by 0.25 micron internal logic, however to maintain TTL compatibility a 3.3V power supply (VCCIO) is required by the I/O.

To accommodate the higher gate capacity of XV devices, additional interconnect has been added. These differences are detailed below.

- **VCCINT (2.5 Volt) Power Supply Pins**  
The XV family of FPGAs requires a 2.5V power supply for internal logic, which is named VCCINT. The pins assigned to the VCCINT supply are named in the pinout guide for the XC4000XV FPGAs and in Table 5 on page 166.
- **VCCIO (3.3 Volt) Power Supply Pins**  
Both the XV and XLA FPGAs use a 3.3V power supply to power the I/O pins. The I/O supply is named VCCIO in the XV family.
- **Octal-Length Interconnect Channels**  
The XC40110XV, XC40150XV, XC40200XV, and XC40250XV have enhanced routing. Eight routing channels of octal length have been added to each CLB in both vertical and horizontal dimensions.

## XC4000XLA Socket Compatibility with XL FPGAs

The XC4000XLA devices are generally available in the same packages as equivalent XL devices, however the range of packages available for the XC4085XLA has been extended to include smaller packages such as the HQ240.

## XC4000XV Socket Compatibility with XL/XLA FPGAs

XC4000XV devices are available in five package options, pin-grid PG599 and ball-grid BG560, BG432, and BG352 and quad-flatpack HQ240. With the exception of the VCCINT power pins, XC4000XV FPGAs are compatible with XL and XLA devices in these packages if the following guidelines are followed:

- Lay out the PCB for the XV pinout.
- When an XL or XLA device is installed disconnect the VCCINT (2.5 V) supply. For the PG599, VCCINT should be connected to 3.3V. For BG560, BG432 and BG352 and HQ240 packages, the VCCINT voltage source should be left unconnected. The unused I/O pins in the

XL/XLA devices connected to VCCINT will be pulled up to 3.3V. Care must be taken to insure that these pins are not driven when the XL/XLA device is operative.

- When an XC4000XV is installed, the VCCINT pins must be connected to a 2.5V power supply.

The differences between the XL and XV packages are detailed below:

**PG559** - XLA and XL devices in the PG559 package have 56 VCC pins. The XC4000XV devices allocate 16 of these I/O pins to VCCINT (2.5V).

**BG560** - XLA and XL devices in the BG560 package have 448 I/O pins. The XC4000XV devices allocate 16 of these I/O pins to VCCINT (2.5V).

**BG432** - XLA and XL devices in the BG432 package have 352 I/O pins. The XC4000XV devices allocate 16 of these I/O pins to VCCINT (2.5V).

**BG352** - XLA and XL devices in the BG352 package have 289 I/O pins. The XC4000XV devices allocate 15 of these I/O pins to VCCINT (2.5V).

**HQ240** - XLA and XL devices in the HQ240 package have 193 I/O pins. The XC4000XV devices allocate 15 of these I/O pins to VCCINT (2.5V).

**Table 5: VCCINT (2.5 V) Pins in XV Packages**

| HQ240 | BG352 | BG432 | BG560 | PG559 |
|-------|-------|-------|-------|-------|
| P198  | D10   | A10   | E12   | H12   |
| P185  | D5    | AB2   | AD2   | H18   |
| P164  | K4    | AB30  | AD32  | H26   |
| P154  | N3    | AG28  | AK31  | H32   |
| P137  | W2    | AH15  | AM17  | M8    |
| P116  | AE3   | AH5   | AK5   | M36   |
| P104  | AC10  | AJ10  | AK11  | V8    |
| P93   | AC13  | AK22  | AN25  | V36   |
| P77   | AE19  | B23   | C24   | AF8   |
| P55   | AB24  | B4    | D6    | AF36  |
| P43   | V24   | C16   | C17   | AM8   |
| P27   | N24   | E28   | E30   | AM36  |
| P16   | J24   | K29   | K32   | AT12  |
| P4    | D24   | K3    | J1    | AT18  |
| P225  | A20   | R2    | T3    | AT26  |
| -     | -     | R29   | U32   | AT32  |

## XC4000XLA/XV I/O Signalling Standards

XLA and XV devices are compatible with TTL, LVTTTL, PCI 3V, PCI 5V and LVCMOS signalling. The various standards are illustrated in Table 6 and the signaling environment is illustrated in Figure 4.

### VCC Clamping

XLA/XV devices are fully 5V TTL I/O compatible if VCC clamping is not enabled. The I/O pins can withstand input voltages up to 7V. With VCC clamping enabled, the XLA/XV devices will begin to clamp input voltages to one diode voltage drop above VCC. In both cases negative voltage is clamped to one diode voltage drop below ground.

XLA/XV devices maintain LVTTTL I/O compatibility when VCC clamping is enabled, however full 5.0V TTL I/O compatibility is sacrificed.

### Overshoot and Undershoot

Ringing wave forms are allowed on XLA/XV inputs as long as undershoot is limited to -2.0V and overshoot is limited to +7.0V and current is limited to 100 mA for less than 10 ns. If VCC clamping is enabled then overshoot will begin to be clamped at VCC/VCCIO plus one diode voltage drop and undershoot will be clamped to ground minus one diode voltage drop. In either case the current must be limited to 100 mA per pin for less than 10 ns.

Table 6: I/O Standards supported by XC4000XLA and XV FPGAs

| Signaling Standard | VCC Clamping | Output Drive | V <sub>IH</sub> MAX | V <sub>IH</sub> MIN | V <sub>IL</sub> MAX | V <sub>OH</sub> MIN | V <sub>OL</sub> MAX |
|--------------------|--------------|--------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| TTL                | Not allowed  | 12/24 mA     | 5.5                 | 2.0                 | 0.8                 | 2.4                 | 0.4                 |
| LVTTTL             | OK           | 12/24 mA     | 3.6                 | 2.0                 | 0.8                 | 2.4                 | 0.4                 |
| PCI5V              | Not allowed  | 24 mA        | 5.5                 | 2.0                 | 0.8                 | 2.4                 | 0.4                 |
| PCI3V              | Required     | 12 mA        | 3.6                 | 50% of VCC/VCCIO    | 30% of VCC/VCCIO    | 90% of VCC/VCCIO    | 10% of VCC/VCCIO    |
| LVCMOS 3V          | OK           | 12/24 mA     | 3.6                 | 50% of VCC/VCCIO    | 30% of VCC/VCCIO    | 90% of VCC/VCCIO    | 10% of VCC/VCCIO    |

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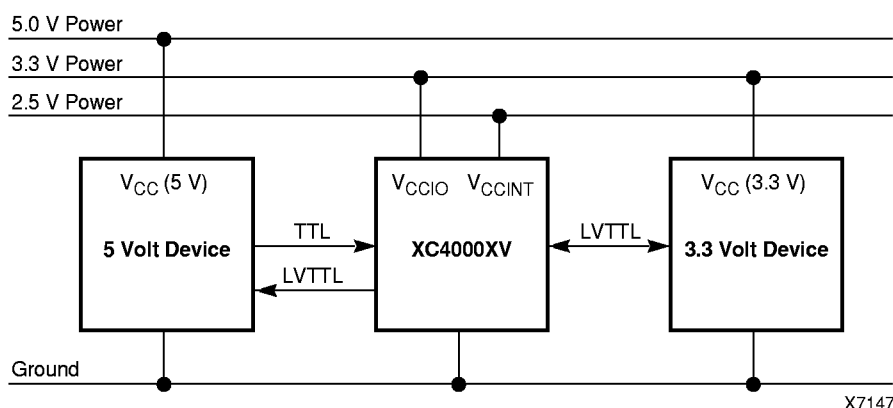


Figure 4: **The Signalling Environment for XLA/XV FPGAS.** For XLA devices the VCCIO and VCCINT supplies are replaced by a single 3.3 Volt VCC supply, however, all indicated I/O signalling is still supported.

## Express Configuration Mode

Express configuration mode is similar to Slave Serial configuration mode, except that data is processed one byte per CCLK cycle instead of one bit per CCLK cycle. An external source is used to drive CCLK, while byte-wide data is

loaded directly into the configuration data shift registers (Figure 5). A CCLK frequency of 10 MHz is equivalent to a 80 MHz serial rate, because eight bits of configuration data are loaded per CCLK cycle. Express mode does not sup-

port CRC error checking, but does support constant-field error checking. A length count is not used in Express mode.

Express mode must be specified as an option to the BitGen program, which generates the bitstream. The Express mode bitstream is not compatible with the other configuration modes. Express mode is selected by a <010> on the mode pins (M2, M1, M0).

The first byte of parallel configuration data must be available at the D inputs of the FPGA a short setup time before the second rising CCLK edge. Subsequent data bytes are clocked in on each consecutive rising CCLK edge (Figure 6).

### Pseudo Daisy Chain

As illustrated in Figures 5 and 6, multiple devices with different configurations can be configured in a pseudo daisy chain provided that all of the devices are in Express mode. A single combined byte-wide data stream is used to configure the chain of Express mode devices. CCLK pins are tied together and D0-D7 pins are tied together as a data buss for all devices along the chain. A status signal is passed from DOUT of each device to the CS1 input of the device which follows it in the chain. Frame data is accepted only when CS1 is High and the device's configuration memory is not already full. The lead device in the chain has its CS1 input tied High (or floating, since there is an internal pullup). The status pin DOUT is initially High for all devices in the chain until the data stream header of seven bytes is loaded. This allows header data to be loaded into all devices in the chain simultaneously. After the header is loaded in all devices, their DOUT pins are pulled Low disabling configuration of all devices in the chain except the first device. As each device in the chain is filled, its DOUT goes High driving High the CS1 input of the next device, thereby enabling configuration of the next device in the pseudo daisy chain.

The requirement that all DONE pins in a daisy chain be wired together applies only to Express mode, and only if all devices in the chain are to become active simultaneously. All 4000XLA/XV devices in Express mode are synchronized to the DONE pin. User I/O for each device becomes active after the DONE pin for that device goes High (The exact timing is determined by BitGen options.)

Since the DONE pin is open-drain and does not drive a High value, tying the DONE pins of all devices together pre-

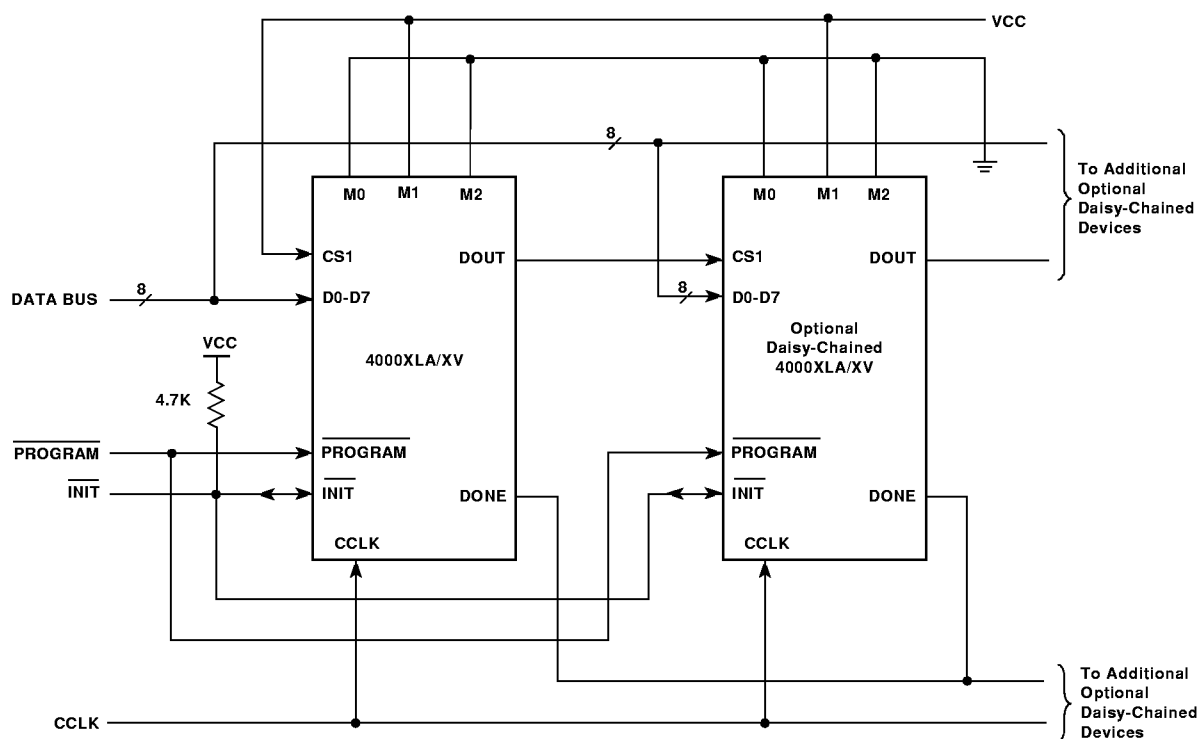
vents all devices in the chain from going High until the last device in the chain has completed its configuration cycle. If the DONE pin of a device is left unconnected, the device becomes active as soon as that device has been configured.

**Table 7: Pin Functions During Configuration (4000XLA/XV Express mode only)**

| CONFIGURATION MODE<br><M2:M1:M0> | USER<br>OPERATION |
|----------------------------------|-------------------|
| EXPRESS MODE<br><0:1:0>          | PIN FUNCTION      |
| M2(LOW) (I)                      | M2                |
| M1(HIGH) (I)                     | M1                |
| M0(LOW) (I)                      | M0                |
| HDC (HIGH)                       | I/O               |
| LDC (LOW)                        | I/O               |
| INIT                             | I/O               |
| DONE                             | DONE              |
| PROGRAM (I)                      | PROGRAM           |
| CCLK (I)                         | CCLK (I)          |
| DATA 7 (I)                       | I/O               |
| DATA 6 (I)                       | I/O               |
| DATA 5 (I)                       | I/O               |
| DATA 4 (I)                       | I/O               |
| DATA 3 (I)                       | I/O               |
| DATA 2 (I)                       | I/O               |
| DATA 1 (I)                       | I/O               |
| DATA 0 (I)                       | I/O               |
| DOUT                             | SGCK4-I/O         |
| TDI                              | TDI-I/O           |
| TCK                              | TCK-I/O           |
| TMS                              | TMS-I/O           |
| TDO                              | TDO-(O)           |
| CS1                              | I/O               |

- Notes
1. A shaded table cell represents the internal pull-up used before and during configuration.
  2. (I) represents an input; (O) represents an output.
  3. INIT is an open-drain output during configuration.

Because only XC4000XLA/XV, SpartanXL, and XC5200 devices support Express mode, only these devices can be used to form an Express mode pseudo daisy chain.

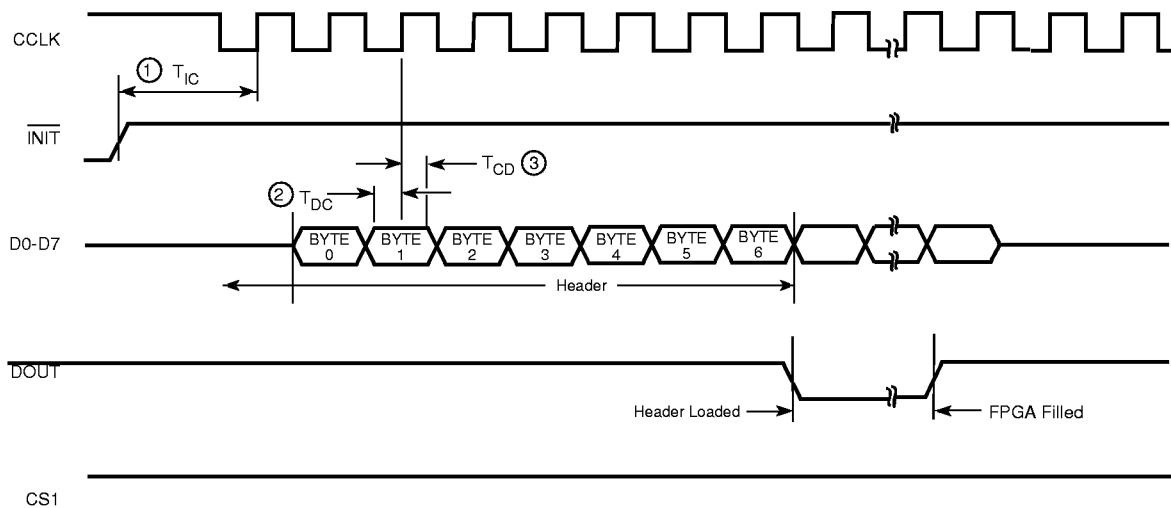


99010800

Figure 5: Express Mode Circuit Diagram

Table 8: Express Mode Programming Switching Characteristic

|             | Description            | Symbol    | Min | Max | Units   |
|-------------|------------------------|-----------|-----|-----|---------|
| CCLK        | INIT (High) setup time | $T_{IC}$  | 5   |     | $\mu$ s |
|             | D0 - D7 setup time     | $T_{DC}$  | 20  |     | ns      |
|             | D0 - D7 hold time      | $T_{CD}$  | 0   |     | ns      |
|             | CCLK High time         | $T_{CCH}$ | 45  |     | ns      |
|             | CCLK Low time          | $T_{CCL}$ | 45  |     | ns      |
|             | CCLK Frequency         | $F_{CC}$  |     | 10  | MHz     |
| Preliminary |                        |           |     |     |         |



99010700

Note: CS1 *must* remain High throughout loading of the configuration data stream. In the pseudo daisy chain of Figure 5, the 7 byte data stream header is loaded into all devices simultaneously. Each device's data frames are then loaded in turn when its CS1 pin is driven High by the DOUT of the preceding device in the chain.

Figure 6: Express Mode Programming Switching Waveforms

Data Stream Format

The data stream ("bitstream") format is identical for all serial configuration modes, but different for the 4000XLA/XV Express mode. In Express mode, the device becomes active when DONE goes High, therefore no length count is required. Additionally, CRC error checking is not supported in Express mode. The data stream format is shown in Table 9. Express mode data is shown with D0 at the left and D7 at the right.

The configuration data stream begins with two bytes of eight ones each, a preamble code of one byte, followed by three bytes of eight ones each, and finally an end-of-header field check byte. This header of seven bytes is followed by the actual configuration data in frames. The length and number of frames depends on the device type. Each frame begins with a start field and ends with an end-of-frame field check byte. In all cases, additional start-up bytes of data are required to provide six, or more, clocks for the start-up sequence at the end of configuration. Long daisy chains require additional startup bytes to shift the last data through the chain. All startup bytes are don't-cares; these bytes are not included in bitstreams created by the Xilinx software.

A selection of CRC or non-CRC error checking is allowed by the bitstream generation software. The 4000XLA Express mode only supports non-CRC error checking. The non-CRC error checking tests for a designated end-of-frame field check byte for each frame. non-CRC error checking tests for a designated end-of-frame field check byte for each frame.

Table 9: 4000XLA/XV Express Mode Data Stream Format

| Data Type                      | Express Mode (D0-D7) (4000XLA only) |
|--------------------------------|-------------------------------------|
| Fill Byte                      | FFFFh                               |
| Preamble Code                  | 11110010b                           |
| Fill Byte                      | FFFFFFh                             |
| End-of-Header Field Check Byte | 11010010b                           |
| Start Field                    | 11111110b                           |
| Data Frame                     | DATA(n-1:0)                         |
| End-of-Frame Field Check Byte  | 11010010b                           |
| Extend Write Cycle             | FFD2FFFFFFh                         |
| Start-Up Bytes                 | FFFFFFFFFFFFh                       |

LEGEND:

|          |                      |
|----------|----------------------|
| Unshaded | Once per data stream |
| Light    | Once per data frame  |

Detection of an error results in the suspension of data loading and the pulling down of the  $\overline{\text{INIT}}$  pin. The user must detect  $\overline{\text{INIT}}$  and initialize a new configuration by pulsing the PROGRAM pin Low or cycling VCC.

## Serial PROM Recommendation

Table 10 shows the physical characteristics of each FPGA family member and the recommended Xilinx Serial PROM recommended for use as configuration storage.

**Table 10: Physical Characteristics and Recommended Serial PROM**

| Device    | Max.<br>User I/O | CLB<br>Matrix | Total<br>CLBs | Logic<br>Cells | Number<br>of<br>Flip-Flops | Max. RAM<br>Bits<br>(No Logic) | Required<br>Configur-<br>ation Bits | Serial PROM      |
|-----------|------------------|---------------|---------------|----------------|----------------------------|--------------------------------|-------------------------------------|------------------|
| XC4013XLA | 192              | 24 x 24       | 576           | 1,368          | 1,536                      | 18,432                         | 393,632                             | XC17512L         |
| XC4020XLA | 224              | 28 x 28       | 784           | 1,862          | 2,016                      | 25,088                         | 521,880                             | XC17512L         |
| XC4028XLA | 256              | 32 x 32       | 1,024         | 2,432          | 2,560                      | 32,768                         | 668,184                             | XC1701L          |
| XC4036XLA | 288              | 36 x 36       | 1,296         | 3,078          | 3,168                      | 41,472                         | 832,528                             | XC1701L          |
| XC4044XLA | 320              | 40 x 40       | 1,600         | 3,800          | 3,840                      | 51,200                         | 1,014,928                           | XC1701L          |
| XC4052XLA | 352              | 44 x 44       | 1,936         | 4,598          | 4,576                      | 61,952                         | 1,215,368                           | XC1702L          |
| XC4062XLA | 384              | 48 x 48       | 2,304         | 5,472          | 5,376                      | 73,728                         | 1,433,864                           | XC1702L          |
| XC4085XLA | 448              | 56 x 56       | 3,136         | 7,448          | 7,168                      | 100,352                        | 1,924,992                           | XC1702L          |
| XC40110XV | 448              | 64 x 64       | 4,096         | 9,728          | 9,216                      | 131,072                        | 2,686,136                           | XC1704L          |
| XC40150XV | 448              | 72 x 72       | 5,184         | 12,312         | 11,520                     | 165,888                        | 3,373,448                           | XC1704L          |
| XC40200XV | 448              | 84 x 84       | 7,056         | 16,758         | 15,456                     | 225,792                        | 4,551,056                           | XC1704L+XC17512L |
| XC40250XV | 448              | 92 x 92       | 8,464         | 20,102         | 18,400                     | 270,848                        | 5,433,888                           | XC1704L+XC1702L  |

## User I/O Per Package

Table 11 shows the number of user I/Os available in each package for XC4000XLA/XV-Series devices. Call your local sales office for the latest availability information.

**Table 11: User I/O Pins Available by Device and Package**

| Device    | Max I/O | Maximum I/O Accessible per Package |       |       |       |       |       |       |       |       |       |       |       |
|-----------|---------|------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|           |         | HQ160                              | PQ160 | HQ208 | PQ208 | HQ240 | PQ240 | BG256 | HQ304 | BG352 | BG432 | PG559 | BG560 |
| XC4013XLA | 192     |                                    | 129   |       | 160   |       | 192   | 192   |       |       |       |       |       |
| XC4020XLA | 224     |                                    | 129   |       | 160   |       | 193   | 205   |       |       |       |       |       |
| XC4028XLA | 256     | 129                                |       | 160   |       | 193   |       | 205   | 256   | 256   |       |       |       |
| XC4036XLA | 288     | 129                                |       | 160   |       | 193   |       |       | 256   | 288   | 288   |       |       |
| XC4044XLA | 320     | 129                                |       | 160   |       | 193   |       |       | 256   | 289   | 320   |       |       |
| XC4052XLA | 352     | 129                                |       | 160   |       | 193   |       |       | 256   | 289   | 352   |       | 352   |
| XC4062XLA | 384     | 129                                |       | 160   |       | 193   |       |       | 256   | 289   | 352   |       | 384   |
| XC4085XLA | 448     | 129                                |       | 160   |       | 193   |       |       | 256   | 289   | 352   |       | 448   |
| XC40110XV | 448     |                                    |       |       |       | 178   |       |       |       | 274   | 336   |       | 432   |
| XC40150XV | 448     |                                    |       |       |       | 178   |       |       |       | 274   | 336   | 448   | 432   |
| XC40200XV | 448     |                                    |       |       |       |       |       |       |       |       | 336   |       | 432   |
| XC40250XV | 448     |                                    |       |       |       |       |       |       |       |       | 336   | 448   | 432   |

## Product Availability

### XC4000XLA Product Availability

Table 12 shows the planned packages and speed grades for XC4000XLA-Series devices. Call your local sales office for the latest availability information, or see the Xilinx WEBLINX at <http://www.xilinx.com> for the latest revision of the specifications.

**Table 12: Component Availability Chart for XC4000XLA FPGAs**

|           | PINS | TYPE | CODE | 84             | 100            | 100            | 144            | 144                | 160               | 160            | 176            | 176                | 208               | 208            | 240               | 240            | 256           | 299           | 304               | 352           | 411           | 432           | 475           | 559           | 560           |
|-----------|------|------|------|----------------|----------------|----------------|----------------|--------------------|-------------------|----------------|----------------|--------------------|-------------------|----------------|-------------------|----------------|---------------|---------------|-------------------|---------------|---------------|---------------|---------------|---------------|---------------|
|           |      |      |      | Plast.<br>PLCC | Plast.<br>PQFP | Plast.<br>VQFP | Plast.<br>TQFP | High-Perf.<br>TQFP | High-Perf.<br>QFP | Plast.<br>PQFP | Plast.<br>TQFP | High-Perf.<br>TQFP | High-Perf.<br>QFP | Plast.<br>PQFP | High-Perf.<br>QFP | Plast.<br>PQFP | Plast.<br>BGA | Ceram.<br>PGA | High-Perf.<br>QFP | Plast.<br>BGA | Ceram.<br>PGA | Plast.<br>BGA | Ceram.<br>PGA | Ceram.<br>PGA | Plast.<br>BGA |
|           |      |      |      | PC84           | PQ100          | VQ100          | TQ144          | HT144              | HQ160             | PQ160          | TQ176          | HT176              | HQ208             | PQ208          | HQ240             | PQ240          | BG256         | PG299         | HQ304             | BG352         | PG411         | BG432         | PG475         | PG559         | BG560         |
| XC4013XLA | -09  |      |      |                |                |                |                |                    |                   | C              |                |                    |                   | C              |                   | C              | C             |               |                   |               |               |               |               |               |               |
|           | -08  |      |      |                |                |                |                |                    |                   | C              |                |                    |                   | C              |                   | C              | C             |               |                   |               |               |               |               |               |               |
|           | -07  |      |      |                |                |                |                |                    |                   | C              |                |                    |                   | C              |                   | C              | C             |               |                   |               |               |               |               |               |               |
| XC4020XLA | -09  |      |      |                |                |                |                |                    |                   | C              |                |                    |                   | C              |                   | C              | C             |               |                   |               |               |               |               |               |               |
|           | -08  |      |      |                |                |                |                |                    |                   | C              |                |                    |                   | C              |                   | C              | C             |               |                   |               |               |               |               |               |               |
|           | -07  |      |      |                |                |                |                |                    |                   | C              |                |                    |                   | C              |                   | C              | C             |               |                   |               |               |               |               |               |               |
| XC4028XLA | -09  |      |      |                |                |                |                |                    | C                 |                |                |                    | C                 |                | C                 |                | C             |               |                   | C             |               |               |               |               |               |
|           | -08  |      |      |                |                |                |                |                    | C                 |                |                |                    | C                 |                | C                 |                | C             |               |                   | C             |               |               |               |               |               |
|           | -07  |      |      |                |                |                |                |                    | C                 |                |                |                    | C                 |                | C                 |                | C             |               |                   | C             |               |               |               |               |               |
| XC4036XLA | -09  |      |      |                |                |                |                |                    | C                 |                |                |                    | C                 |                | C                 |                |               |               |                   | C             |               | C             |               |               |               |
|           | -08  |      |      |                |                |                |                |                    | C                 |                |                |                    | C                 |                | C                 |                |               |               |                   | C             |               | C             |               |               |               |
|           | -07  |      |      |                |                |                |                |                    | C                 |                |                |                    | C                 |                | C                 |                |               |               |                   | C             |               | C             |               |               |               |
| XC4044XLA | -09  |      |      |                |                |                |                |                    | C                 |                |                |                    | C                 |                | C                 |                |               |               | C                 | C             |               | C             |               |               |               |
|           | -08  |      |      |                |                |                |                |                    | C                 |                |                |                    | C                 |                | C                 |                |               |               | C                 | C             |               | C             |               |               |               |
|           | -07  |      |      |                |                |                |                |                    | C                 |                |                |                    | C                 |                | C                 |                |               |               | C                 | C             |               | C             |               |               |               |
| XC4052XLA | -09  |      |      |                |                |                |                |                    | C                 |                |                |                    | C                 |                | C                 |                |               |               | C                 | C             |               | C             |               |               | C             |
|           | -08  |      |      |                |                |                |                |                    | C                 |                |                |                    | C                 |                | C                 |                |               |               | C                 | C             |               | C             |               |               | C             |
|           | -07  |      |      |                |                |                |                |                    | C                 |                |                |                    | C                 |                | C                 |                |               |               | C                 | C             |               | C             |               |               | C             |
| XC4062XLA | -09  |      |      |                |                |                |                |                    | C                 |                |                |                    | C                 |                | C                 |                |               |               | C                 | C             |               | C             |               |               | C             |
|           | -08  |      |      |                |                |                |                |                    | C                 |                |                |                    | C                 |                | C                 |                |               |               | C                 | C             |               | C             |               |               | C             |
|           | -07  |      |      |                |                |                |                |                    | C                 |                |                |                    | C                 |                | C                 |                |               |               | C                 | C             |               | C             |               |               | C             |
| XC4085XLA | -09  |      |      |                |                |                |                |                    | C                 |                |                |                    | C                 |                | C                 |                |               |               | C                 | C             |               | C             |               |               | C             |
|           | -08  |      |      |                |                |                |                |                    | C                 |                |                |                    | C                 |                | C                 |                |               |               | C                 | C             |               | C             |               |               | C             |
|           | -07  |      |      |                |                |                |                |                    | C                 |                |                |                    | C                 |                | C                 |                |               |               | C                 | C             |               | C             |               |               | C             |

1/25/99

C = Commercial  $T_J = 0^\circ$  to  $+85^\circ\text{C}$

I = Industrial  $T_J = -40^\circ\text{C}$  to  $+100^\circ\text{C}$

## XC4000XV Product Availability

Figure 13 shows the planned packages and speed grades for XC4000XV-Series devices. Call your local sales office for the latest availability information, or see the Xilinx WEBLINX at <http://www.xilinx.com> for the latest revision of the specifications.

**Table 13: Component Availability Chart for XC4000XV FPGAs**

|           | PINS | TYPE | CODE | 84             | 100            | 100            | 144            | 144                | 160               | 160            | 176            | 176                | 208               | 208            | 240               | 240            | 256           | 299           | 304               | 352           | 411           | 432           | 475           | 559           | 560           |
|-----------|------|------|------|----------------|----------------|----------------|----------------|--------------------|-------------------|----------------|----------------|--------------------|-------------------|----------------|-------------------|----------------|---------------|---------------|-------------------|---------------|---------------|---------------|---------------|---------------|---------------|
|           |      |      |      | Plast.<br>PLCC | Plast.<br>PQFP | Plast.<br>VQFP | Plast.<br>TQFP | High-Perf.<br>TQFP | High-Perf.<br>QFP | Plast.<br>PQFP | Plast.<br>TQFP | High-Perf.<br>TQFP | High-Perf.<br>QFP | Plast.<br>PQFP | High-Perf.<br>QFP | Plast.<br>PQFP | Plast.<br>BGA | Ceram.<br>PGA | High-Perf.<br>QFP | Plast.<br>BGA | Ceram.<br>PGA | Plast.<br>BGA | Ceram.<br>PGA | Ceram.<br>PGA | Plast.<br>BGA |
|           |      |      |      | PC84           | PQ100          | VQ100          | TQ144          | HT144              | HQ160             | PQ160          | TQ176          | HT176              | HQ208             | PQ208          | HQ240             | PQ240          | BG256         | PG299         | HQ304             | BG352         | PG411         | BG432         | PG475         | PG559         | BG560         |
| XC40110XV | -09  |      |      |                |                |                |                |                    |                   |                |                |                    |                   |                | C I               |                |               |               |                   | C I           |               |               |               |               | C I           |
|           | -08  |      |      |                |                |                |                |                    |                   |                |                |                    |                   |                | C I               |                |               |               |                   | C I           |               |               |               |               | C I           |
|           | -07  |      |      |                |                |                |                |                    |                   |                |                |                    |                   |                | C                 |                |               |               |                   | C             |               |               |               |               | C             |
| XC40150XV | -09  |      |      |                |                |                |                |                    |                   |                |                |                    |                   |                | C I               |                |               |               |                   | C I           |               |               | C I           |               | C I           |
|           | -08  |      |      |                |                |                |                |                    |                   |                |                |                    |                   |                | C I               |                |               |               |                   | C I           |               |               | C I           |               | C I           |
|           | -07  |      |      |                |                |                |                |                    |                   |                |                |                    |                   |                | C                 |                |               |               |                   | C             |               |               | C             |               | C             |
| XC40200XV | -09  |      |      |                |                |                |                |                    |                   |                |                |                    |                   |                |                   |                |               |               |                   |               |               | C I           |               |               | C I           |
|           | -08  |      |      |                |                |                |                |                    |                   |                |                |                    |                   |                |                   |                |               |               |                   |               | C I           |               |               |               | C I           |
|           | -07  |      |      |                |                |                |                |                    |                   |                |                |                    |                   |                |                   |                |               |               |                   |               | C             |               |               |               | C             |
| XC40250XV | -09  |      |      |                |                |                |                |                    |                   |                |                |                    |                   |                |                   |                |               |               |                   |               |               | C I           |               | C I           | C I           |
|           | -08  |      |      |                |                |                |                |                    |                   |                |                |                    |                   |                |                   |                |               |               |                   |               |               | C I           |               | C I           | C I           |
|           | -07  |      |      |                |                |                |                |                    |                   |                |                |                    |                   |                |                   |                |               |               |                   |               |               | C             |               | C             | C             |

11/2498

C = Commercial  $T_J = 0^\circ$  to  $+85^\circ\text{C}$

I = Industrial  $T_J = -40^\circ\text{C}$  to  $+100^\circ\text{C}$

## XC4000XLA D.C. and Switching Performance Characteristics

### Definition of Terms

In the following tables, some specifications may be designated as Advance or Preliminary. These terms are defined as follows:

**Advance:** Initial estimates based on simulation and/or extrapolation from other speed grades, devices, or families. Values are subject to change. Use as estimates, not for production.

**Preliminary:** Based on preliminary characterization. Further changes are not expected.

**Unmarked:** Specifications not identified as either Advance or Preliminary are to be considered final.

Occasionally, values are of mixed classification. These are highlighted in bold face and the tables involved include a note explaining the nature of the bold face entries. All specifications are subject to change without notice.

### Additional Specifications

Except for pin-to-pin input and output parameters, the AC parameter delay specifications included in this document are derived from measuring internal test patterns. All specifications are representative of worst-case supply voltage and junction temperature conditions. The parameters included are common to popular designs and typical applications.

### Absolute Maximum Ratings

| Symbol    | Description                                              |                  | Values      | Units |
|-----------|----------------------------------------------------------|------------------|-------------|-------|
| $V_{CC}$  | Supply voltage relative to GND                           |                  | -0.5 to 4.0 | V     |
| $V_{IN}$  | Input voltage relative to GND (Note 1)                   |                  | -0.5 to 5.5 | V     |
| $V_{TS}$  | Voltage applied to 3-state output (Note 1)               |                  | -0.5 to 5.5 | V     |
| $V_{CCt}$ | Longest Supply Voltage Rise Time from 1 V to 3V          |                  | 50          | ms    |
| $T_{STG}$ | Storage temperature (ambient)                            |                  | -65 to +150 | °C    |
| $T_{SOL}$ | Maximum soldering temperature (10 s @ 1/16 in. = 1.5 mm) |                  | +260        | °C    |
| $T_J$     | Junction temperature                                     | Ceramic packages | +150        | °C    |
|           |                                                          | Plastic packages | +125        | °C    |

- Notes: 1. Maximum DC overshoot or undershoot above  $V_{CC}$  or below GND must be limited to either 0.5 V or 10 mA, whichever is easier to achieve. During transitions, the device pins may undershoot to -2.0 V or overshoot to +7.0 V, provided this over- or undershoot lasts less than 10 ns and with the forcing current being limited to 200 mA.
2. Stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those listed under Operating Conditions is not implied. Exposure to Absolute Maximum Ratings conditions for extended periods of time may affect device reliability.

### Recommended Operating Conditions

| Symbol   | Description                                                                       |            | Min             | Max             | Units |
|----------|-----------------------------------------------------------------------------------|------------|-----------------|-----------------|-------|
| $V_{CC}$ | Supply voltage relative to GND, $T_J = 0^\circ\text{C}$ to $+85^\circ\text{C}$    | Commercial | 3.0             | 3.6             | V     |
|          | Supply voltage relative to GND, $T_J = -40^\circ\text{C}$ to $+100^\circ\text{C}$ | Industrial | 3.0             | 3.6             | V     |
| $V_{IH}$ | High-level input voltage                                                          |            | 50% of $V_{CC}$ | 5.5             | V     |
| $V_{IL}$ | Low-level input voltage                                                           |            | 0               | 30% of $V_{CC}$ | V     |
| $T_{IN}$ | Input signal transition time                                                      |            |                 | 250             | ns    |

Note: At junction temperatures above those listed as Operating Conditions, all delay parameters increase by 0.35% per °C. Input and output measurement threshold is ~50% of  $V_{CC}$ .

## DC Characteristics Over Recommended Operating Conditions

| Symbol    | Description                                                                  |                                | Min          | Max          | Units   |
|-----------|------------------------------------------------------------------------------|--------------------------------|--------------|--------------|---------|
| $V_{OH}$  | High-level output voltage @ $I_{OH} = -4.0$ mA, $V_{CC}$ min (LVTTL)         |                                | 2.4          |              | V       |
|           | High-level output voltage @ $I_{OH} = -500$ $\mu$ A, (LVCMOS)                |                                | 90% $V_{CC}$ |              | V       |
| $V_{OL}$  | Low-level output voltage @ $I_{OL} = 24.0$ mA, $V_{CC}$ min (LVTTL) (Note 1) |                                |              | 0.4          | V       |
|           | Low-level output voltage @ $I_{OL} = 1500$ $\mu$ A, (LVCMOS)                 |                                |              | 10% $V_{CC}$ | V       |
| $V_{DR}$  | Data Retention Supply Voltage (below which configuration data may be lost)   |                                | 2.5          |              | V       |
| $I_{CCO}$ | Quiescent FPGA supply current (Note 2)                                       |                                |              | 10           | mA      |
| $I_L$     | Input or output leakage current                                              |                                | -10          | +10          | $\mu$ A |
| $C_{IN}$  | Input capacitance (sample tested)                                            | BGA, SBGA, PQ, HQ, MQ packages |              | 10           | pF      |
|           |                                                                              | PGA packages                   |              | 16           | pF      |
| $I_{RPU}$ | Pad pull-up (when selected) @ $V_{in} = 0$ V (sample tested)                 |                                | 0.02         | 0.25         | mA      |
| $I_{RPD}$ | Pad pull-down (when selected) @ $V_{in} = 3.6$ V (sample tested)             |                                | 0.02         | 0.15         | mA      |
| $I_{RLL}$ | Horizontal Longline pull-up (when selected) @ logic Low                      |                                | 0.3          | 2.0          | mA      |

Notes: 1. With up to 64 pins simultaneously sinking 24 mA

2. With no output current loads, no active input or Longline pull-up resistors, all I/O pins Tri-stated and floating

## XC4000XLA Clock Buffer Switching Characteristic Guidelines

Testing of the switching parameters is modeled after testing methods specified by MIL-M-38510/605. All devices are 100% functionally tested. Internal timing parameters are derived from measuring internal test patterns. Listed below are representative values where one global clock input drives one vertical clock line in each accessible column, and where all accessible IOB and CLB flip-flops are clocked by the global clock net.

When fewer vertical clock lines are connected, the clock distribution is faster; when multiple clock lines per column are driven from the same global clock, the delay is longer. For more specific, more precise, and worst-case guaranteed data, reflecting the actual routing structure, use the values provided by the static timing analyzer (TRCE in the Xilinx Development System) and back-annotated to the simulation netlist. These path delays, provided as a guideline, have been extracted from the static timing analyzer report. All timing parameters assume worst-case operating conditions (supply voltage and junction temperature. Values apply to all XC4000XLA devices and expressed in nanoseconds unless otherwise noted.

### XC4000XLA Global Low Skew Clock Input to Clock K

| Speed Grade                                                                      |                  |           | All         | -09 | -08 | -07 | Units |
|----------------------------------------------------------------------------------|------------------|-----------|-------------|-----|-----|-----|-------|
| Description                                                                      | Symbol           | Device    | Min         | Max | Max | Max |       |
| Delay from pad through Global Low Skew (GLS) clock buffer to any clock input, K. | T <sub>GLS</sub> | XC4013XLA |             | 2.4 | 2.1 | 1.9 | ns    |
|                                                                                  |                  | XC4020XLA |             | 2.6 | 2.3 | 2.1 | ns    |
|                                                                                  |                  | XC4028XLA |             | 2.9 | 2.6 | 2.3 | ns    |
|                                                                                  |                  | XC4036XLA |             | 3.2 | 2.8 | 2.5 | ns    |
|                                                                                  |                  | XC4044XLA |             | 3.6 | 3.1 | 2.8 | ns    |
|                                                                                  |                  | XC4052XLA |             | 3.9 | 3.4 | 3.1 | ns    |
|                                                                                  |                  | XC4062XLA |             | 4.2 | 3.7 | 3.3 | ns    |
|                                                                                  |                  | XC4085XLA |             | 5.0 | 4.4 | 3.9 | ns    |
|                                                                                  |                  |           | Preliminary |     |     |     |       |

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### XC4000XLA FastCLK Input to IOB Clock Input

| Speed Grade                                                                     |                   |           | All                | -09 | -08 | -07 | Units |
|---------------------------------------------------------------------------------|-------------------|-----------|--------------------|-----|-----|-----|-------|
| Description                                                                     | Symbol            | Device    | Min                | Max | Max | Max |       |
| Delay from pad through FastCLK buffer to any IOB clock input.                   | T <sub>FCLK</sub> | XC4013XLA |                    | 1.5 | 1.3 | 1.1 | ns    |
|                                                                                 |                   | XC4020XLA |                    | 1.5 | 1.3 | 1.2 | ns    |
|                                                                                 |                   | XC4028XLA |                    | 1.6 | 1.4 | 1.3 | ns    |
|                                                                                 |                   | XC4036XLA |                    | 1.7 | 1.5 | 1.4 | ns    |
|                                                                                 |                   | XC4044XLA |                    | 1.8 | 1.6 | 1.4 | ns    |
|                                                                                 |                   | XC4052XLA |                    | 1.9 | 1.7 | 1.5 | ns    |
|                                                                                 |                   | XC4062XLA |                    | 2.0 | 1.8 | 1.6 | ns    |
|                                                                                 |                   | XC4085XLA |                    | 2.3 | 2.0 | 1.8 | ns    |
| Note: Values in <b>bold face</b> are preliminary, all other values are advance. |                   |           | <b>Preliminary</b> |     |     |     |       |

Note: Values in **bold face** are preliminary, all other values are advance.

## XC4000XLA Clock Buffer Switching Characteristic Guidelines (Cont)

## XC4000XLA Global Early Clock Input to IOB Clock Input; BUFGE #s 1, 2, 5, and 6.

| Speed Grade                                                                                             |                 |           | All         | -09 | -08 | -07 | Units |
|---------------------------------------------------------------------------------------------------------|-----------------|-----------|-------------|-----|-----|-----|-------|
| Description                                                                                             | Symbol          | Device    | Min         | Max | Max | Max |       |
| Delay from pad through Global Early (GE) clock buffer to any IOB clock input for BUFGE #1, 2, 5, and 6. | T <sub>GE</sub> | XC4013XLA |             | 1.7 | 1.5 | 1.3 | ns    |
|                                                                                                         |                 | XC4020XLA |             | 1.9 | 1.7 | 1.5 | ns    |
|                                                                                                         |                 | XC4028XLA |             | 2.1 | 1.9 | 1.7 | ns    |
|                                                                                                         |                 | XC4036XLA |             | 2.4 | 2.2 | 1.9 | ns    |
|                                                                                                         |                 | XC4044XLA |             | 2.7 | 2.4 | 2.2 | ns    |
|                                                                                                         |                 | XC4052XLA |             | 3.0 | 2.7 | 2.4 | ns    |
|                                                                                                         |                 | XC4062XLA |             | 3.3 | 3.0 | 2.7 | ns    |
|                                                                                                         |                 | XC4085XLA |             | 3.7 | 3.3 | 3.0 | ns    |
|                                                                                                         |                 |           | Preliminary |     |     |     |       |

## XC4000XLA Global Early Clock Input to IOB Clock Input; BUFGE #s 3, 4, 7, and 8.

| Speed Grade                                                                                            |                 |           | All         | -09 | -08 | -07 | Units |
|--------------------------------------------------------------------------------------------------------|-----------------|-----------|-------------|-----|-----|-----|-------|
| Description                                                                                            | Symbol          | Device    | Min         | Max | Max | Max |       |
| Delay from pad through Global Early (GE) clock buffer to any IOB clock input for BUFGE 3, 4, 7, and 8. | T <sub>GE</sub> | XC4013XLA |             | 2.4 | 2.1 | 1.9 | ns    |
|                                                                                                        |                 | XC4020XLA |             | 2.6 | 2.3 | 2.1 | ns    |
|                                                                                                        |                 | XC4028XLA |             | 2.9 | 2.6 | 2.3 | ns    |
|                                                                                                        |                 | XC4036XLA |             | 3.2 | 2.8 | 2.5 | ns    |
|                                                                                                        |                 | XC4044XLA |             | 3.6 | 3.1 | 2.8 | ns    |
|                                                                                                        |                 | XC4052XLA |             | 3.9 | 3.4 | 3.1 | ns    |
|                                                                                                        |                 | XC4062XLA |             | 4.2 | 3.7 | 3.3 | ns    |
|                                                                                                        |                 | XC4085XLA |             | 5.0 | 4.4 | 3.9 | ns    |
|                                                                                                        |                 |           | Preliminary |     |     |     |       |

## XC4000XLA CLB Switching Characteristic Guidelines

Testing of switching parameters is modeled after testing methods specified by MIL-M-38510/605. All devices are 100% functionally tested. Internal timing parameters are derived from measuring internal test patterns. Listed below are representative values. For more specific, more precise, and worst-case guaranteed data, use the values reported by the static timing analyzer (TRCE in the Xilinx Development System) and back-annotated to the simulation netlist. All timing parameters assume worst-case operating conditions (supply voltage and junction temperature). Values apply to all XC4000XLA devices and expressed in nanoseconds unless otherwise noted.

|                                                                  |                    | Speed Grade                              | -09  |     | -08  |     | -07  |     | Units |
|------------------------------------------------------------------|--------------------|------------------------------------------|------|-----|------|-----|------|-----|-------|
| Description                                                      | Symbol             | Min                                      | Max  | Min | Max  | Min | Max  |     |       |
| Combinatorial Delays                                             |                    |                                          |      |     |      |     |      |     |       |
| F/G inputs to X/Y outputs                                        | T <sub>ILO</sub>   |                                          | 1.1  |     | 1.0  |     | 0.9  | ns  |       |
| F/G inputs via H' to X/Y outputs                                 | T <sub>IHO</sub>   |                                          | 1.9  |     | 1.7  |     | 1.5  | ns  |       |
| F/G inputs via transparent latch to Q outputs                    | T <sub>ITO</sub>   |                                          | 2.0  |     | 1.8  |     | 1.6  | ns  |       |
| C inputs via SR/H0 via H to X/Y outputs                          | T <sub>HH0O</sub>  |                                          | 1.7  |     | 1.6  |     | 1.4  | ns  |       |
| C inputs via H1 via H to X/Y outputs                             | T <sub>HH1O</sub>  |                                          | 1.6  |     | 1.4  |     | 1.3  | ns  |       |
| C inputs via DIN/H2 via H to X/Y outputs                         | T <sub>HH2O</sub>  |                                          | 1.7  |     | 1.6  |     | 1.4  | ns  |       |
| C inputs via EC, DIN/H2 to YQ, XQ output (bypass)                | T <sub>CBYP</sub>  |                                          | 1.1  |     | 1.0  |     | 0.9  | ns  |       |
| CLB Fast Carry Logic                                             |                    |                                          |      |     |      |     |      |     |       |
| Operand inputs (F1, F2, G1, G4) to C <sub>OUT</sub>              | T <sub>OPCY</sub>  |                                          | 1.0  |     | 0.9  |     | 0.8  | ns  |       |
| Add/Subtract input (F3) to C <sub>OUT</sub>                      | T <sub>ASCY</sub>  |                                          | 1.2  |     | 1.1  |     | 1.0  | ns  |       |
| Initialization inputs (F1, F3) to C <sub>OUT</sub>               | T <sub>INCY</sub>  |                                          | 0.8  |     | 0.7  |     | 0.6  | ns  |       |
| C <sub>IN</sub> through function generators to X/Y outputs       | T <sub>SUM</sub>   |                                          | 1.7  |     | 1.5  |     | 1.3  | ns  |       |
| C <sub>IN</sub> to C <sub>OUT</sub> , bypass function generators | T <sub>BYP</sub>   |                                          | 0.1  |     | 0.1  |     | 0.1  | ns  |       |
| Carry Net Delay, C <sub>OUT</sub> to C <sub>IN</sub>             | T <sub>NET</sub>   |                                          | 0.17 |     | 0.15 |     | 0.13 | ns  |       |
| Sequential Delays                                                |                    |                                          |      |     |      |     |      |     |       |
| Clock K to Flip-Flop outputs Q                                   | T <sub>CKO</sub>   |                                          | 1.5  |     | 1.3  |     | 1.2  | ns  |       |
| Clock K to Latch outputs Q                                       | T <sub>CKLO</sub>  |                                          | 1.5  |     | 1.3  |     | 1.2  | ns  |       |
| Setup Time before Clock K                                        |                    |                                          |      |     |      |     |      |     |       |
| F/G inputs                                                       | T <sub>ICK</sub>   | 0.7                                      |      | 0.7 |      | 0.6 |      | ns  |       |
| F/G inputs via H                                                 | T <sub>IHCK</sub>  | 1.4                                      |      | 1.3 |      | 1.2 |      | ns  |       |
| C inputs via H0 through H                                        | T <sub>HH0CK</sub> | 1.3                                      |      | 1.2 |      | 1.1 |      | ns  |       |
| C inputs via H1 through H                                        | T <sub>HH1CK</sub> | 1.2                                      |      | 1.1 |      | 1.0 |      | ns  |       |
| C inputs via H2 through H                                        | T <sub>HH2CK</sub> | 1.3                                      |      | 1.2 |      | 1.1 |      | ns  |       |
| C inputs via DIN                                                 | T <sub>DICK</sub>  | 0.6                                      |      | 0.6 |      | 0.5 |      | ns  |       |
| C inputs via EC                                                  | T <sub>ECCK</sub>  | 0.7                                      |      | 0.6 |      | 0.5 |      | ns  |       |
| C inputs via S/R, going Low (inactive)                           | T <sub>RCK</sub>   | 0.5                                      |      | 0.4 |      | 0.4 |      | ns  |       |
| CIN input via F/G                                                | T <sub>CCK</sub>   | 1.2                                      |      | 1.1 |      | 1.0 |      | ns  |       |
| CIN input via F/G and H                                          | T <sub>CHCK</sub>  | 2.0                                      |      | 1.7 |      | 1.6 |      | ns  |       |
| Hold Time after Clock K                                          |                    |                                          |      |     |      |     |      |     |       |
| All Hold Times                                                   |                    | 0.0                                      |      | 0.0 |      | 0.0 |      | ns  |       |
| Clock                                                            |                    |                                          |      |     |      |     |      |     |       |
| Clock High time                                                  | T <sub>CH</sub>    | 2.2                                      |      | 1.9 |      | 1.7 |      | ns  |       |
| Clock Low time                                                   | T <sub>CL</sub>    | 2.2                                      |      | 1.9 |      | 1.7 |      | ns  |       |
| Set/Reset Direct                                                 |                    |                                          |      |     |      |     |      |     |       |
| Width (High)                                                     | T <sub>RPW</sub>   | 2.3                                      |      | 2.3 |      | 2.3 |      | ns  |       |
| Delay from C inputs via S/R, going High to Q                     | T <sub>RIO</sub>   |                                          | 2.5  |     | 2.2  |     | 2.0  | ns  |       |
| Global Set/Reset                                                 |                    |                                          |      |     |      |     |      |     |       |
| Minimum GSR Pulse Width                                          | T <sub>MRW</sub>   |                                          | 12.8 |     | 11.4 |     | 10.2 | ns  |       |
| Delay from GSR input to any Q                                    | T <sub>MRQ</sub>   | See page 189 for TRRI values per device. |      |     |      |     |      |     |       |
| Toggle Frequency (MHz) (for export control)                      | F <sub>TOG</sub>   |                                          | 227  |     | 263  |     | 294  | MHz |       |
| Preliminary                                                      |                    |                                          |      |     |      |     |      |     |       |

## XC4000XLA RAM Synchronous (Edge-Triggered) Write Operation Guidelines

Testing of switching parameters is modeled after testing methods specified by MIL-M-38510/605. All devices are 100% functionally tested. Internal timing parameters are derived from measuring internal test patterns. Listed below are representative values. For more specific, more precise, and worst-case guaranteed data, use the values reported by the static timing analyzer (TRCE in the Xilinx Development System) and back-annotated to the simulation netlist. All timing parameters assume worst-case operating conditions (supply voltage and junction temperature). Values apply to all XC4000XLA devices and are expressed in nanoseconds unless otherwise noted.

| Single Port RAM                                   | Speed Grade |                   | -09        |     | -08 |     | -07 |     | Units |
|---------------------------------------------------|-------------|-------------------|------------|-----|-----|-----|-----|-----|-------|
|                                                   | Size        | Symbol            | Min        | Max | Min | Max | Min | Max |       |
| Write Operation                                   |             |                   |            |     |     |     |     |     |       |
| Address write cycle time (clock K period)         | 16x2        | T <sub>WCS</sub>  | 6.7        |     | 5.9 |     | 5.3 |     | ns    |
|                                                   | 32x1        | T <sub>WCTS</sub> | 6.7        |     | 5.9 |     | 5.3 |     | ns    |
| Clock K pulse width (active edge)                 | 16x2        | T <sub>WPS</sub>  | 3.4        |     | 3.0 |     | 2.7 |     | ns    |
|                                                   | 32x1        | T <sub>WPTS</sub> | 3.4        |     | 3.0 |     | 2.7 |     | ns    |
| Address setup time before clock K                 | 16x2        | T <sub>ASS</sub>  | 1.5        |     | 1.3 |     | 1.2 |     | ns    |
|                                                   | 32x1        | T <sub>ASTS</sub> | 1.5        |     | 1.3 |     | 1.2 |     | ns    |
| Address hold time after clock K                   | 16x2        | T <sub>AHS</sub>  | 0.0        |     | 0.0 |     | 0.0 |     | ns    |
|                                                   | 32x1        | T <sub>AHTS</sub> | 0.0        |     | 0.0 |     | 0.0 |     | ns    |
| DIN setup time before clock K                     | 16x2        | T <sub>DSS</sub>  | 1.5        |     | 1.3 |     | 1.2 |     | ns    |
|                                                   | 32x1        | T <sub>DSTS</sub> | 2.11<br>.8 |     | 1.6 |     | 1.5 |     | ns    |
| DIN hold time after clock K                       | 16x2        | T <sub>DHS</sub>  | 0.0        |     | 0.0 |     | 0.0 |     | ns    |
|                                                   | 32x1        | T <sub>DHTS</sub> | 0.0        |     | 0.0 |     | 0.0 |     | ns    |
| WE setup time before clock K                      | 16x2        | T <sub>WSS</sub>  | 1.4        |     | 1.3 |     | 1.1 |     | ns    |
|                                                   | 32x1        | T <sub>WSTS</sub> | 1.3        |     | 1.2 |     | 1.1 |     | ns    |
| WE hold time after clock K                        | 16x2        | T <sub>WHS</sub>  | 0.0        |     | 0.0 |     | 0.0 |     | ns    |
|                                                   | 32x1        | T <sub>WHTS</sub> | 0.0        |     | 0.0 |     | 0.0 |     | ns    |
| Data valid after clock K                          | 16x2        | T <sub>WOS</sub>  |            | 5.0 |     | 4.4 |     | 4.2 | ns    |
|                                                   | 32x1        | T <sub>WOTS</sub> |            | 5.8 |     | 5.2 |     | 4.7 | ns    |
| Read Operation                                    |             |                   |            |     |     |     |     |     |       |
| Address read cycle time                           | 16x2        | T <sub>RC</sub>   | 2.6        |     | 2.6 |     | 2.6 |     | ns    |
|                                                   | 32x1        | T <sub>RCT</sub>  | 3.8        |     | 3.8 |     | 3.8 |     | ns    |
| Data Valid after address change (no Write Enable) | 16x2        | T <sub>ILO</sub>  |            | 1.1 |     | 1.0 |     | 0.9 | ns    |
|                                                   | 32x1        | T <sub>IHO</sub>  |            | 1.9 |     | 1.7 |     | 1.5 | ns    |
| Address setup time before clock K                 | 16x2        | T <sub>ICK</sub>  | 0.7        |     | 0.7 |     | 0.6 |     | ns    |
|                                                   | 32x1        | T <sub>IHCK</sub> | 1.4        |     | 1.3 |     | 1.2 |     | ns    |
|                                                   |             |                   | Advance    |     |     |     |     |     |       |

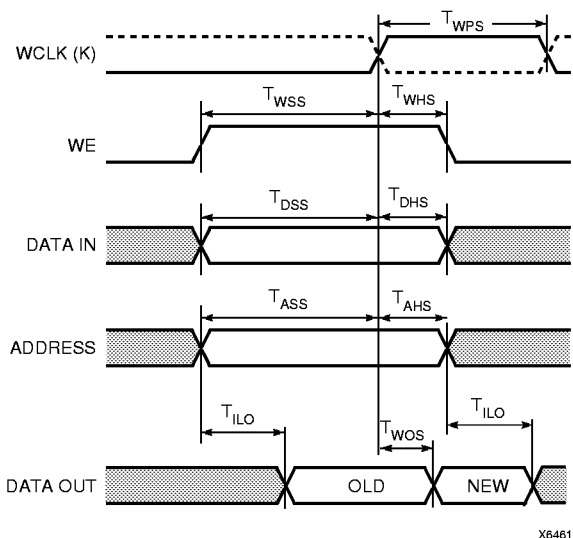
## XC4000XLA CLB RAM Synchronous (Edge-Triggered) Write Operation Guidelines

Testing of switching parameters is modeled after testing methods specified by MIL-M-38510/605. All devices are 100% functionally tested. Internal timing parameters are derived from measuring internal test patterns. Listed below are representative values. For more specific, more precise, and worst-case guaranteed data, use the values reported by the static timing analyzer (TRCE in the Xilinx Development System) and back-annotated to the simulation netlist. All timing parameters assume worst-case operating conditions (supply voltage and junction temperature). Values apply to all XC4000XLA devices and are expressed in nanoseconds unless otherwise noted.

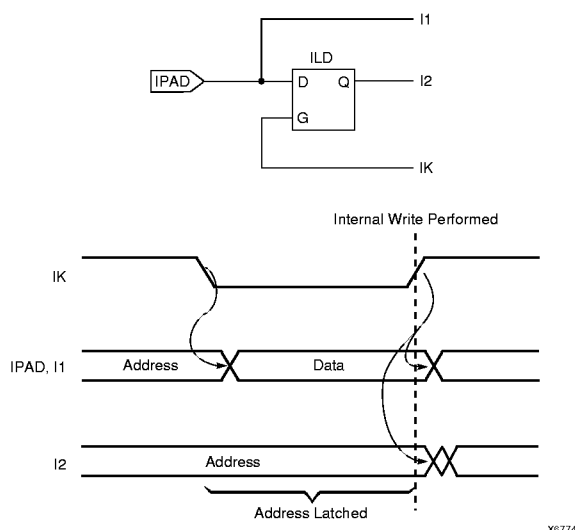
| Dual Port RAM                             | Speed Grade |                   | --09        |     | -08 |     | -07 |     | Units |
|-------------------------------------------|-------------|-------------------|-------------|-----|-----|-----|-----|-----|-------|
|                                           | Size        | Symbol            | Min         | Max | Min | Max | Min | Max |       |
|                                           |             |                   |             |     |     |     |     |     |       |
| Address write cycle time (clock K period) | 16x1        | T <sub>WCDS</sub> | 6.7         |     | 5.9 |     | 5.3 |     | ns    |
| Clock K pulse width (active edge)         | 16x1        | T <sub>WPDS</sub> | 3.4         |     | 3.0 |     | 2.7 |     | ns    |
| Address setup time before clock K         | 16x1        | T <sub>ASDS</sub> | 1.5         |     | 1.3 |     | 1.2 |     | ns    |
| Address hold time after clock K           | 16x1        | T <sub>AHDS</sub> | 0.0         |     | 0.0 |     | 0.0 |     | ns    |
| DIN setup time before clock K             | 16x1        | T <sub>DSDS</sub> | 1.7         |     | 1.6 |     | 1.4 |     | ns    |
| DIN hold time after clock K               | 16x1        | T <sub>DHDS</sub> | 0.0         |     | 0.0 |     | 0.0 |     | ns    |
| WE setup time before clock K              | 16x1        | T <sub>WSDS</sub> | 1.4         |     | 1.3 |     | 1.1 |     | ns    |
| WE hold time after clock K                | 16x1        | T <sub>WHDS</sub> | 0.0         |     | 0.0 |     | 0.0 |     | ns    |
| Data valid after clock K                  | 16x1        | T <sub>WODS</sub> |             | 5.7 |     | 5.1 |     | 4.6 | ns    |
|                                           |             |                   | Preliminary |     |     |     |     |     |       |

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## XC4000XLA CLB RAM Synchronous (Edge-Triggered) Write Timing



X6461

**Single Port RAM**


X6774

**Dual Port RAM**

## XC4000XLA Pin-to-Pin Output Parameter Guidelines

Testing of switching parameters is modeled after testing methods specified by MIL-M-38510/605. All devices are 100% functionally tested. Pin-to-pin timing parameters are derived from measuring external and internal test patterns and are guaranteed over worst-case operating conditions (supply voltage and junction temperature). Listed below are representative values for typical pin locations and normal clock loading. For more specific, more precise, and worst-case guaranteed data, reflecting the actual routing structure, use the values provided by the static timing analyzer (TRCE in the Xilinx Development System) and back-annotated to the simulation netlist. These path delays, provided as a guideline, have been extracted from the static timing analyzer report. Values are expressed in nanoseconds unless otherwise noted.

### XC4000XLA Global Clock Input to Output Delay

| Speed Grade                                                              |                    |             | All | -09        | -08 | -07 | Units |
|--------------------------------------------------------------------------|--------------------|-------------|-----|------------|-----|-----|-------|
| Description                                                              | Symbol             | Device      | Min | Max        | Max | Max |       |
| Global Low Skew (GLS) Clock Input to Output Delay using Output Flip-Flop | T <sub>ICKOF</sub> | XC4013XLA   |     | <b>5.6</b> | 5.0 | 4.5 | ns    |
|                                                                          |                    | XC4020XLA   |     | 5.8        | 5.2 | 4.7 | ns    |
|                                                                          |                    | XC4028XLA   |     | 6.1        | 5.5 | 4.9 | ns    |
|                                                                          |                    | XC4036XLA   |     | <b>6.4</b> | 5.7 | 5.1 | ns    |
|                                                                          |                    | XC4044XLA   |     | 6.8        | 6.0 | 5.4 | ns    |
|                                                                          |                    | XC4052XLA   |     | <b>7.1</b> | 6.3 | 5.7 | ns    |
|                                                                          |                    | XC4062XLA   |     | <b>7.4</b> | 6.6 | 5.9 | ns    |
|                                                                          |                    | XC4085XLA   |     | <b>8.2</b> | 7.3 | 6.5 | ns    |
| For output SLOW option add                                               | T <sub>SLOW</sub>  | All Devices |     | 1.7        | 1.6 | 1.4 | ns    |
| Preliminary                                                              |                    |             |     |            |     |     |       |

Notes: Listed above are representative values where one global clock input drives one vertical clock line in each accessible column, and where all accessible IOB and CLB flip-flops are clocked by the global clock net.

Output timing is measured at ~50% V<sub>CC</sub> threshold with 50 pF external capacitive load. For different loads, see Figure 7.

Note: Values in **bold face** are preliminary, all other values are advance.

### XC4000XLA FastCLK Input to Output Delay for BUFNW, BUFSW, BUFNE, & BUFSE

| Speed Grade                                                                                              |                     |             | All | -09 | -08 | -07 | Units |
|----------------------------------------------------------------------------------------------------------|---------------------|-------------|-----|-----|-----|-----|-------|
| Description                                                                                              | Symbol              | Device      | Min | Max | Max | Max |       |
| FastCLK Input to Output Delay using Output Flip-Flop for FastCLK buffers BUFNW, BUFSW, BUFNE, and BUFSE. | T <sub>ICKFOF</sub> | XC4013XLA   |     | 4.6 | 4.1 | 3.7 | ns    |
|                                                                                                          |                     | XC4020XLA   |     | 4.7 | 4.2 | 3.7 | ns    |
|                                                                                                          |                     | XC4028XLA   |     | 4.8 | 4.3 | 3.8 | ns    |
|                                                                                                          |                     | XC4036XLA   |     | 4.9 | 4.4 | 3.9 | ns    |
|                                                                                                          |                     | XC4044XLA   |     | 5.0 | 4.4 | 4.0 | ns    |
|                                                                                                          |                     | XC4052XLA   |     | 5.1 | 4.5 | 4.1 | ns    |
|                                                                                                          |                     | XC4062XLA   |     | 5.2 | 4.6 | 4.1 | ns    |
|                                                                                                          |                     | XC4085XLA   |     | 5.4 | 4.8 | 4.3 | ns    |
| For output SLOW option add                                                                               | T <sub>SLOW</sub>   | All Devices |     | 4.6 | 4.1 | 3.7 | ns    |
| Preliminary                                                                                              |                     |             |     |     |     |     |       |

Notes: Listed above are representative values where one global clock input drives one vertical clock line in each accessible column, and where all accessible IOB and CLB flip-flops are clocked by the global clock net.

Output timing is measured at ~50% V<sub>CC</sub> threshold with 50 pF external capacitive load. For different loads, see Figure 7.

Note: Values in **bold face** are preliminary, all other values are advance.

## XC4000XLA Pin-to-Pin Output Parameter Guidelines

Testing of switching parameters is modeled after testing methods specified by MIL-M-38510/605. All devices are 100% functionally tested. Pin-to-pin timing parameters are derived from measuring external and internal test patterns and are guaranteed over worst-case operating conditions (supply voltage and junction temperature). Listed below are representative values for typical pin locations and normal clock loading. For more specific, more precise, and worst-case guaranteed data, reflecting the actual routing structure, use the values provided by the static timing analyzer (TRCE in the Xilinx Development System) and back-annotated to the simulation netlist. These path delays, provided as a guideline, have been extracted from the static timing analyzer report. Values are expressed in nanoseconds unless otherwise noted.

### XC4000XLA Global Early Clock Input to Output Delay for BUFGE #s 1, 2, 5, and 6

| Speed Grade                                                                                                                         |                     |           | All         | -09 | -08 | -07 | Units |
|-------------------------------------------------------------------------------------------------------------------------------------|---------------------|-----------|-------------|-----|-----|-----|-------|
| Description                                                                                                                         | Symbol              | Device    | Min         | Max | Max | Max |       |
| Global Clock Signal Input to Output Delay using Global Early (GE) clock buffer to clock Output Flip-Flop for BUFGE #s 1, 2, 5, & 6. | T <sub>ICKEOF</sub> | XC4013XLA |             | 4.9 | 4.4 | 3.9 | ns    |
|                                                                                                                                     |                     | XC4020XLA |             | 5.1 | 4.6 | 4.1 | ns    |
|                                                                                                                                     |                     | XC4028XLA |             | 5.3 | 4.8 | 4.3 | ns    |
|                                                                                                                                     |                     | XC4036XLA |             | 5.6 | 5.1 | 4.5 | ns    |
|                                                                                                                                     |                     | XC4044XLA |             | 5.9 | 5.3 | 4.8 | ns    |
|                                                                                                                                     |                     | XC4052XLA |             | 6.2 | 5.6 | 5.0 | ns    |
|                                                                                                                                     |                     | XC4062XLA |             | 6.5 | 5.9 | 5.3 | ns    |
|                                                                                                                                     |                     | XC4085XLA |             | 6.9 | 6.2 | 5.6 | ns    |
|                                                                                                                                     |                     |           | Preliminary |     |     |     |       |

**6**

Notes: Listed above are representative values where one global clock input drives one vertical clock line in each accessible column, and where all accessible IOB and CLB flip-flops are clocked by the global clock net. Output timing is measured at ~50% V<sub>CC</sub> threshold with 50 pF external capacitive load. For different loads, see Figure 7.

### XC4000XLA Global Early Clock Input to Output Delay for BUFGE #s 3, 4, 7, and 8

| Speed Grade                                                                                                                         |                     |           | All         | -09 | -08 | -07 | Units |
|-------------------------------------------------------------------------------------------------------------------------------------|---------------------|-----------|-------------|-----|-----|-----|-------|
| Description                                                                                                                         | Symbol              | Device    | Min         | Max | Max | Max |       |
| Global Clock Signal Input to Output Delay using Global Early (GE) clock buffer to clock Output Flip-Flop for BUFGE #s 3, 4, 7, & 8. | T <sub>ICKEOF</sub> | XC4013XLA |             | 5.7 | 5.1 | 4.5 | ns    |
|                                                                                                                                     |                     | XC4020XLA |             | 5.9 | 5.3 | 4.7 | ns    |
|                                                                                                                                     |                     | XC4028XLA |             | 6.1 | 5.4 | 4.9 | ns    |
|                                                                                                                                     |                     | XC4036XLA |             | 6.3 | 5.6 | 5.0 | ns    |
|                                                                                                                                     |                     | XC4044XLA |             | 6.5 | 5.8 | 5.2 | ns    |
|                                                                                                                                     |                     | XC4052XLA |             | 6.8 | 6.0 | 5.4 | ns    |
|                                                                                                                                     |                     | XC4062XLA |             | 7.0 | 6.3 | 5.6 | ns    |
|                                                                                                                                     |                     | XC4085XLA |             | 7.5 | 6.7 | 6.0 | ns    |
|                                                                                                                                     |                     |           | Preliminary |     |     |     |       |

Notes: Listed above are representative values where one global clock input drives one vertical clock line in each accessible column, and where all accessible IOB and CLB flip-flops are clocked by the global clock net. Output timing is measured at ~50% V<sub>CC</sub> threshold with 50 pF external capacitive load. For different loads, see Figure 7.

## Capacitive Load Factor

Figure 7 shows the relationship between I/O output delay and load capacitance. It allows a user to adjust the specified output delay if the load capacitance is different than 50 pF. For example, if the actual load capacitance is 120 pF, add 2.5 ns to the specified delay. If the load capacitance is 20 pF, subtract 0.8 ns from the specified output delay.

Figure 7 is usable over the specified operating conditions of voltage and temperature and is independent of the output slew rate control.

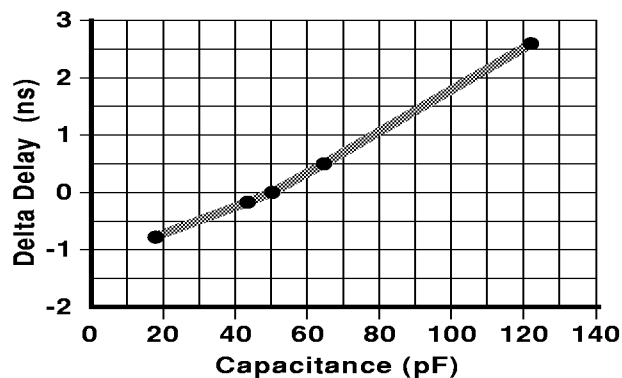


Figure 7: Delay Factor at Various Capacitive Loads X8257

## XC4000XLA Pin-to-Pin Input Parameter Guidelines

Testing of switching parameters is modeled after testing methods specified by MIL-M-38510/605. All devices are 100% functionally tested. Pin-to-pin timing parameters are derived from measuring external and internal test patterns and are guaranteed over worst-case operating conditions (supply voltage and junction temperature). Listed below are representative values for typical pin locations and normal clock loading. For more specific, more precise, and worst-case guaranteed data, reflecting the actual routing structure, use the values provided by the static timing analyzer (TRCE in the Xilinx Development System) and back-annotated to the simulation netlist. These path delays, provided as a guideline, have been extracted from the static timing analyzer report. Values are expressed in nanoseconds unless otherwise noted.

### XC4000XLA Global Low Skew Clock, Set-Up and Hold

| Speed Grade                                                     |                   |           | -09              | -08       | -07       | Units |
|-----------------------------------------------------------------|-------------------|-----------|------------------|-----------|-----------|-------|
| Description                                                     | Symbol            | Device    | Min              | Min       | Min       |       |
| Input Setup and Hold Time Relative to Global Clock Input Signal |                   |           |                  |           |           |       |
| <b>No Delay</b><br>Global Low Skew Clock and IFF                | $T_{PSN}/T_{PHN}$ | XC4013XLA | <b>1.0 / 3.0</b> | 0.8 / 2.6 | 0.2 / 2.5 | ns    |
|                                                                 |                   | XC4020XLA | 0.9 / 3.2        | 0.7 / 2.9 | 0.1 / 2.7 | ns    |
|                                                                 |                   | XC4028XLA | 0.8 / 3.8        | 0.6 / 3.3 | 0.0 / 3.0 | ns    |
|                                                                 |                   | XC4036XLA | <b>0.6 / 4.0</b> | 0.4 / 3.5 | 0.0 / 3.3 | ns    |
|                                                                 |                   | XC4044XLA | 0.4 / 4.4        | 0.2 / 3.9 | 0.0 / 3.6 | ns    |
|                                                                 |                   | XC4052XLA | <b>0.3 / 4.6</b> | 0.2 / 4.1 | 0.0 / 3.9 | ns    |
|                                                                 |                   | XC4062XLA | <b>0.2 / 5.0</b> | 0.1 / 4.5 | 0.0 / 4.2 | ns    |
|                                                                 |                   | XC4085XLA | <b>0.0 / 5.4</b> | 0.0 / 4.8 | 0.0 / 4.5 | ns    |
| <b>Partial Delay</b><br>Global Low Skew Clock and IFF           | $T_{PSP}/T_{PHP}$ | XC4013XLA | <b>4.4 / 0.5</b> | 4.1 / 0.3 | 3.7/ 0.0  | ns    |
|                                                                 |                   | XC4020XLA | 4.5 / 0.6        | 4.1 / 0.3 | 3.7 / 0.0 | ns    |
|                                                                 |                   | XC4028XLA | 4.6 / 0.7        | 4.2 / 0.4 | 3.7/ 0.0  | ns    |
|                                                                 |                   | XC4036XLA | <b>4.6 / 0.8</b> | 4.2 / 0.4 | 3.7/ 0.0  | ns    |
|                                                                 |                   | XC4044XLA | 4.7 / 0.9        | 4.3 / 0.5 | 3.8 / 0.0 | ns    |
|                                                                 |                   | XC4052XLA | <b>4.8 / 1.0</b> | 4.3 / 0.6 | 3.8 / 0.2 | ns    |
|                                                                 |                   | XC4062XLA | <b>5.0 / 1.0</b> | 4.4 / 0.7 | 3.8 / 0.4 | ns    |
|                                                                 |                   | XC4085XLA | <b>5.5 / 1.2</b> | 4.7 / 0.9 | 3.8 / 0.5 | ns    |
| <b>Full Delay</b><br>Global Low Skew Clock and IFF              | $T_{PSD}/T_{PHD}$ | XC4013XLA | <b>4.4 / 0.0</b> | 4.1 / 0.0 | 3.7 / 0.0 | ns    |
|                                                                 |                   | XC4020XLA | 4.6 / 0.0        | 4.2 / 0.0 | 3.8 / 0.0 | ns    |
|                                                                 |                   | XC4028XLA | 4.8 / 0.0        | 4.4 / 0.0 | 3.9 / 0.0 | ns    |
|                                                                 |                   | XC4036XLA | <b>4.9 / 0.0</b> | 4.5 / 0.0 | 4.0 / 0.0 | ns    |
|                                                                 |                   | XC4044XLA | 5.0 / 0.0        | 4.6 / 0.0 | 4.1 / 0.0 | ns    |
|                                                                 |                   | XC4052XLA | <b>5.2 / 0.0</b> | 4.7 / 0.0 | 4.2 / 0.0 | ns    |
|                                                                 |                   | XC4062XLA | <b>5.5 / 0.0</b> | 4.9 / 0.0 | 4.3 / 0.0 | ns    |
|                                                                 |                   | XC4085XLA | <b>6.0 / 0.0</b> | 5.2/ 0.0  | 4.4 / 0.0 | ns    |
|                                                                 |                   |           | Preliminary      |           |           |       |

IFF = Input Flip-Flop or Latch

Notes: Setup time is measured relative to the Global Clock input signal with the fastest route and the lightest load. Hold time is measured relative to the Global Clock input signal using the furthest distance and a reference load of one clock pin per two IOBs. Use the static timing analyzer (TRCE) to determine the setup and hold times under given design conditions.

## XC4000XLA Pin-to-Pin Input Parameter Guidelines (Cont.)

Testing of switching parameters is modeled after testing methods specified by MIL-M-38510/605. All devices are 100% functionally tested. Pin-to-pin timing parameters are derived from measuring external and internal test patterns and are guaranteed over worst-case operating conditions (supply voltage and junction temperature). Listed below are representative values for typical pin locations and normal clock loading. For more specific, more precise, and worst-case guaranteed data, reflecting the actual routing structure, use the values provided by the static timing analyzer (TRCE in the Xilinx Development System) and back-annotated to the simulation netlist. These path delays, provided as a guideline, have been extracted from the static timing analyzer report. Values are expressed in nanoseconds unless otherwise noted.

### XC4000XLA FastCLK Input Set-Up and Hold for BUFNW, BUFSW, BUFNE, & BUFSE

| Speed Grade                                                   |                                      |           | -09         | -08       | -07       | Units |
|---------------------------------------------------------------|--------------------------------------|-----------|-------------|-----------|-----------|-------|
| Description                                                   | Symbol                               | Device    | Min         | Min       | Min       |       |
| Input Setup and Hold Time<br>Relative to FastCLK Input Signal |                                      |           |             |           |           |       |
| <b>No Delay</b><br>FastCLK and IFF                            | T <sub>PSFN</sub> /T <sub>PHFN</sub> | XC4013XLA | 0.0 / 3.2   | 0.0 / 2.9 | 0.0 / 2.6 | ns    |
|                                                               |                                      | XC4020XLA | 0.0 / 3.3   | 0.0 / 3.0 | 0.0 / 2.7 | ns    |
|                                                               |                                      | XC4028XLA | 0.0 / 3.4   | 0.0 / 3.1 | 0.0 / 2.8 | ns    |
|                                                               |                                      | XC4036XLA | 0.0 / 3.5   | 0.0 / 3.2 | 0.0 / 2.9 | ns    |
|                                                               |                                      | XC4044XLA | 0.0 / 3.6   | 0.0 / 3.3 | 0.0 / 3.0 | ns    |
|                                                               |                                      | XC4052XLA | 0.0 / 3.7   | 0.0 / 3.4 | 0.0 / 3.1 | ns    |
|                                                               |                                      | XC4062XLA | 0.0 / 3.8   | 0.0 / 3.5 | 0.0 / 3.2 | ns    |
|                                                               |                                      | XC4085XLA | 0.0 / 3.9   | 0.0 / 3.6 | 0.0 / 3.3 | ns    |
| <b>Partial Delay</b><br>FastCLK and IFF                       | T <sub>PSFP</sub> T <sub>PHFP</sub>  | XC4013XLA | 3.5 / 0.6   | 3.2 / 0.3 | 2.9 / 0.0 | ns    |
|                                                               |                                      | XC4020XLA | 3.7 / 0.4   | 3.4 / 0.2 | 3.1 / 0.0 | ns    |
|                                                               |                                      | XC4028XLA | 3.9 / 0.2   | 3.6 / 0.1 | 3.3 / 0.0 | ns    |
|                                                               |                                      | XC4036XLA | 4.1 / 0.0   | 3.8 / 0.0 | 3.5 / 0.0 | ns    |
|                                                               |                                      | XC4044XLA | 4.3 / 0.0   | 4.0 / 0.0 | 3.7 / 0.0 | ns    |
|                                                               |                                      | XC4052XLA | 4.5 / 0.0   | 4.2 / 0.0 | 3.9 / 0.0 | ns    |
|                                                               |                                      | XC4062XLA | 4.7 / 0.0   | 4.4 / 0.0 | 4.1 / 0.0 | ns    |
|                                                               |                                      | XC4085XLA | 5.1 / 0.0   | 4.8 / 0.0 | 4.5 / 0.0 | ns    |
| <b>Full Delay</b><br>FastCLK and IFF                          | T <sub>PSFD</sub> /T <sub>PHFD</sub> | XC4013XLA | 3.5 / 0.6   | 3.2 / 0.3 | 2.9 / 0.0 | ns    |
|                                                               |                                      | XC4020XLA | 3.8 / 0.4   | 3.5 / 0.2 | 3.2 / 0.0 | ns    |
|                                                               |                                      | XC4028XLA | 4.0 / 0.2   | 3.7 / 0.1 | 3.4 / 0.0 | ns    |
|                                                               |                                      | XC4036XLA | 4.3 / 0.0   | 4.0 / 0.0 | 3.7 / 0.0 | ns    |
|                                                               |                                      | XC4044XLA | 4.6 / 0.0   | 4.3 / 0.0 | 4.0 / 0.0 | ns    |
|                                                               |                                      | XC4052XLA | 4.9 / 0.0   | 4.6 / 0.0 | 4.3 / 0.0 | ns    |
|                                                               |                                      | XC4062XLA | 5.3 / 0.0   | 5.0 / 0.0 | 4.7 / 0.0 | ns    |
|                                                               |                                      | XC4085XLA | 6.1 / 0.0   | 5.8 / 0.0 | 5.5 / 0.0 | ns    |
|                                                               |                                      |           | Preliminary |           |           |       |

IFF = Input Flip-Flop

Notes: Setup time is measured with the fastest route and the lightest load. Hold time is measured using the furthest distance and a reference load of one clock pin per two IOBs. Use the static timing analyzer (TRCE) to determine the setup and hold times under given design conditions.

**XC4000XLA BUFGE #s 1, 2, 5, and 6 Global Early Clock, Set-up and Hold for IFF and FCL**

Testing of switching parameters is modeled after testing methods specified by MIL-M-38510/605. All devices are 100% functionally tested. Pin-to-pin timing parameters are derived from measuring external and internal test patterns and are guaranteed over worst-case operating conditions (supply voltage and junction temperature). Listed below are representative values for typical pin locations and normal clock loading. For more specific, more precise, and worst-case guaranteed data, reflecting the actual routing structure, use the values provided by the static timing analyzer (TRCE in the Xilinx Development System) and back-annotated to the simulation netlist. These path delays, provided as a guideline, have been extracted from the static timing analyzer report. Values are expressed in nanoseconds unless otherwise noted.

| Speed Grade                                                                      |                                              |           | -09         | -08       | -07       | Units |
|----------------------------------------------------------------------------------|----------------------------------------------|-----------|-------------|-----------|-----------|-------|
| Description                                                                      | Symbol                                       | Device    | Min         | Min       | Min       |       |
| Input Setup and Hold Time Relative to Global Clock Input Signal                  |                                              |           |             |           |           |       |
| <b>No Delay</b><br>Global Early Clock and IFF<br>Global Early Clock and FCL      | $T_{PSEN}/T_{PHEN}$<br>$T_{PFSEN}/T_{PFHEN}$ | XC4013XLA | 1.0 / 3.2   | 0.8 / 2.6 | 0.5 / 1.8 | ns    |
|                                                                                  |                                              | XC4020XLA | 1.0 / 3.4   | 0.8 / 2.8 | 0.5 / 2.0 | ns    |
|                                                                                  |                                              | XC4028XLA | 1.0 / 3.5   | 0.8 / 3.0 | 0.5 / 2.2 | ns    |
|                                                                                  |                                              | XC4036XLA | 1.0 / 3.6   | 0.8 / 3.1 | 0.5 / 2.4 | ns    |
|                                                                                  |                                              | XC4044XLA | 1.0 / 3.8   | 0.8 / 3.3 | 0.5 / 2.6 | ns    |
|                                                                                  |                                              | XC4052XLA | 1.0 / 4.0   | 0.8 / 3.5 | 0.5 / 2.8 | ns    |
|                                                                                  |                                              | XC4062XLA | 1.0 / 4.2   | 0.8 / 3.7 | 0.5 / 3.0 | ns    |
|                                                                                  |                                              | XC4085XLA | 1.0 / 4.6   | 0.8 / 4.0 | 0.5 / 3.2 | ns    |
| <b>Partial Delay</b><br>Global Early Clock and IFF<br>Global Early Clock and FCL | $T_{PSEP}/T_{PHEP}$<br>$T_{PFSEP}/T_{PFHEP}$ | XC4013XLA | 4.6 / 0.0   | 4.2 / 0.0 | 3.9 / 0.0 | ns    |
|                                                                                  |                                              | XC4020XLA | 4.8 / 0.1   | 4.4 / 0.1 | 4.1 / 0.0 | ns    |
|                                                                                  |                                              | XC4028XLA | 4.9 / 0.1   | 4.6 / 0.1 | 4.4 / 0.0 | ns    |
|                                                                                  |                                              | XC4036XLA | 5.0 / 0.2   | 4.7 / 0.1 | 4.5 / 0.0 | ns    |
|                                                                                  |                                              | XC4044XLA | 5.5 / 0.3   | 5.1 / 0.2 | 4.8 / 0.0 | ns    |
|                                                                                  |                                              | XC4052XLA | 5.8 / 0.3   | 5.3 / 0.2 | 5.0 / 0.0 | ns    |
|                                                                                  |                                              | XC4062XLA | 6.2 / 0.4   | 5.6 / 0.2 | 5.2 / 0.0 | ns    |
|                                                                                  |                                              | XC4085XLA | 6.5 / 0.5   | 5.9 / 0.3 | 5.4 / 0.0 | ns    |
| <b>Full Delay</b><br>Global Early Clock and IFF                                  | $T_{PSED}/T_{PHED}$                          | XC4013XLA | 4.6 / 0.0   | 4.2 / 0.0 | 3.9 / 0.0 | ns    |
|                                                                                  |                                              | XC4020XLA | 4.9 / 0.0   | 4.5 / 0.0 | 4.1 / 0.0 | ns    |
|                                                                                  |                                              | XC4028XLA | 5.1 / 0.0   | 4.7 / 0.0 | 4.4 / 0.0 | ns    |
|                                                                                  |                                              | XC4036XLA | 5.3 / 0.0   | 4.9 / 0.0 | 4.5 / 0.0 | ns    |
|                                                                                  |                                              | XC4044XLA | 5.8 / 0.0   | 5.3 / 0.0 | 5.0 / 0.0 | ns    |
|                                                                                  |                                              | XC4052XLA | 6.2 / 0.0   | 5.7 / 0.0 | 5.3 / 0.0 | ns    |
|                                                                                  |                                              | XC4062XLA | 6.7 / 0.0   | 6.1 / 0.0 | 5.6 / 0.0 | ns    |
|                                                                                  |                                              | XC4085XLA | 7.0 / 0.0   | 6.4 / 0.0 | 6.0 / 0.0 | ns    |
|                                                                                  |                                              |           | Preliminary |           |           |       |

IFF = Input Flip-Flop or Latch, FCL = Fast Capture Latch

Notes: Setup time is measured relative to the Global Clock input signal with the fastest route and the lightest load. Hold time is measured relative to the Global Clock input signal using the furthest distance and a reference load of one clock pin per two IOBs. Use the static timing analyzer (TRCE) to determine the setup and hold times under given design conditions.

**XC4000XLA BUFGE #s 3, 4, 7, and 8 Global Early Clock, Set-up and Hold for IFF and FCL**

Testing of switching parameters is modeled after testing methods specified by MIL-M-38510/605. All devices are 100% functionally tested. Pin-to-pin timing parameters are derived from measuring external and internal test patterns and are guaranteed over worst-case operating conditions (supply voltage and junction temperature). Listed below are representative values for typical pin locations and normal clock loading. For more specific, more precise, and worst-case guaranteed data, reflecting the actual routing structure, use the values provided by the static timing analyzer (TRCE in the Xilinx Development System) and back-annotated to the simulation netlist. These path delays, provided as a guideline, have been extracted from the static timing analyzer report. Values are expressed in nanoseconds unless otherwise noted.

| Speed Grade                                                                      |                                              |           | -09         | -08       | -07       | Units |
|----------------------------------------------------------------------------------|----------------------------------------------|-----------|-------------|-----------|-----------|-------|
| Description                                                                      | Symbol                                       | Device    | Min         | Min       | Min       |       |
| Input Setup and Hold Time Relative to Global Clock Input Signal                  |                                              |           |             |           |           |       |
| <b>No Delay</b><br>Global Early Clock and IFF<br>Global Early Clock and FCL      | $T_{PSEN}/T_{PHEN}$<br>$T_{PFSEN}/T_{PFHEN}$ | XC4013XLA | 0.8 / 3.2   | 0.6 / 2.6 | 0.4 / 2.0 | ns    |
|                                                                                  |                                              | XC4020XLA | 0.8 / 3.4   | 0.6 / 2.8 | 0.4 / 2.2 | ns    |
|                                                                                  |                                              | XC4028XLA | 0.8 / 3.5   | 0.6 / 3.0 | 0.4 / 2.4 | ns    |
|                                                                                  |                                              | XC4036XLA | 0.8 / 3.6   | 0.6 / 3.1 | 0.4 / 2.6 | ns    |
|                                                                                  |                                              | XC4044XLA | 0.8 / 3.8   | 0.6 / 3.3 | 0.4 / 2.8 | ns    |
|                                                                                  |                                              | XC4052XLA | 0.8 / 4.0   | 0.6 / 3.5 | 0.4 / 3.0 | ns    |
|                                                                                  |                                              | XC4062XLA | 0.8 / 4.2   | 0.6 / 3.7 | 0.4 / 3.2 | ns    |
|                                                                                  |                                              | XC4085XLA | 0.8 / 4.6   | 0.6 / 4.0 | 0.4 / 3.4 | ns    |
| <b>Partial Delay</b><br>Global Early Clock and IFF<br>Global Early Clock and FCL | $T_{PSEP}/T_{PHEP}$<br>$T_{PFSEP}/T_{PFHEP}$ | XC4013XLA | 4.4 / 0.0   | 4.0 / 0.0 | 3.6 / 0.0 | ns    |
|                                                                                  |                                              | XC4020XLA | 4.6 / 0.1   | 4.2 / 0.1 | 3.8 / 0.0 | ns    |
|                                                                                  |                                              | XC4028XLA | 4.7 / 0.1   | 4.4 / 0.1 | 4.1 / 0.0 | ns    |
|                                                                                  |                                              | XC4036XLA | 4.8 / 0.2   | 4.5 / 0.2 | 4.2 / 0.0 | ns    |
|                                                                                  |                                              | XC4044XLA | 5.2 / 0.3   | 4.8 / 0.3 | 4.4 / 0.0 | ns    |
|                                                                                  |                                              | XC4052XLA | 5.6 / 0.3   | 5.1 / 0.3 | 4.6 / 0.0 | ns    |
|                                                                                  |                                              | XC4062XLA | 6.0 / 0.4   | 5.4 / 0.4 | 4.8 / 0.0 | ns    |
|                                                                                  |                                              | XC4085XLA | 6.3 / 0.5   | 5.7 / 0.5 | 5.0 / 0.0 | ns    |
| <b>Full Delay</b><br>Global Early Clock and IFF                                  | $T_{PSED}/T_{PHED}$                          | XC4013XLA | 4.4 / 0.0   | 4.0 / 0.0 | 3.6 / 0.0 | ns    |
|                                                                                  |                                              | XC4020XLA | 4.7 / 0.0   | 4.3 / 0.0 | 3.8 / 0.0 | ns    |
|                                                                                  |                                              | XC4028XLA | 4.9 / 0.0   | 4.5 / 0.0 | 4.1 / 0.0 | ns    |
|                                                                                  |                                              | XC4036XLA | 5.1 / 0.0   | 4.7 / 0.0 | 4.2 / 0.0 | ns    |
|                                                                                  |                                              | XC4044XLA | 5.6 / 0.0   | 5.1 / 0.0 | 4.6 / 0.0 | ns    |
|                                                                                  |                                              | XC4052XLA | 6.0 / 0.0   | 5.5 / 0.0 | 4.9 / 0.0 | ns    |
|                                                                                  |                                              | XC4062XLA | 6.5 / 0.0   | 5.9 / 0.0 | 5.2 / 0.0 | ns    |
|                                                                                  |                                              | XC4085XLA | 6.8 / 0.0   | 6.2 / 0.0 | 5.6 / 0.0 | ns    |
|                                                                                  |                                              |           | Preliminary |           |           |       |

, FCL = Fast Capture Latch IFF = Input Flip-Flop or Latch, FCL = Fast Capture Latch

Notes: Setup time is measured relative to the Global Clock input signal with the fastest route and the lightest load. Hold time is measured relative to the Global Clock input signal using the furthest distance and a reference load of one clock pin per two IOBs. Use the static timing analyzer (TRCE) to determine the setup and hold times under given design conditions.

## XC4000XLA IOB Input Switching Characteristic Guidelines

Testing of switching parameters is modeled after testing methods specified by MIL-M-38510/605. All devices are 100% functionally tested. Internal timing parameters are derived from measuring internal test patterns. Listed below are representative values. For more specific, more precise, and worst-case guaranteed data, use the values reported by the static timing analyzer (TRCE in the Xilinx Development System) and back-annotated to the simulation netlist. These path delays, provided as a guideline, have been extracted from the static timing analyzer report. All timing parameters assume worst-case operating conditions (supply voltage and junction temperature).

| Speed Grade                                                                  |                    |             | -09         |      | -08  |      | -07  |      | Units |
|------------------------------------------------------------------------------|--------------------|-------------|-------------|------|------|------|------|------|-------|
| Description                                                                  | Symbol             | Device      | Min         | Max  | Min  | Max  | Min  | Max  |       |
| Clocks                                                                       |                    |             |             |      |      |      |      |      |       |
| Clock Enable (EC) to Clock (IK)                                              | T <sub>ECIK</sub>  | All devices | 0.0         |      | 0.0  |      | 0.0  |      | ns    |
| Delay from FCL enable (OK) active edge to IFF clock (IK) active edge         | T <sub>OKIK</sub>  | All Devices | 1.4         |      | 1.3  |      | 1.2  |      | ns    |
| Setup Times                                                                  |                    |             |             |      |      |      |      |      |       |
| Pad to Clock (IK), no delay                                                  | T <sub>PICK</sub>  | All Devices | 1.2         |      | 1.0  |      | 0.9  |      | ns    |
| Pad to Clock (IK), via transparent Fast Capture Latch, no delay              | T <sub>PICKF</sub> | All Devices | 1.6         |      | 1.4  |      | 1.3  |      | ns    |
| Pad to Fast Capture Latch Enable (OK), no delay                              | T <sub>POCK</sub>  | All Devices | 0.8         |      | 0.7  |      | 0.6  |      | ns    |
| Hold Times                                                                   |                    |             |             |      |      |      |      |      |       |
| All Hold Times                                                               |                    | All Devices | 0.0         |      | 0.0  |      | 0.0  |      | ns    |
| Global Set/Reset                                                             |                    |             |             |      |      |      |      |      |       |
| Minimum GSR Pulse Width                                                      | T <sub>MRW</sub>   | All devices | 12.8        |      | 11.4 |      | 10.2 |      | ns    |
| Global Set/Reset                                                             |                    |             |             |      |      |      |      |      |       |
| Delay from GSR input to any Q                                                | T <sub>RR1</sub> * | XC4013XLA   |             | 11.4 |      | 10.2 |      | 9.1  | ns    |
|                                                                              |                    | XC4020XLA   |             | 13.3 |      | 11.9 |      | 10.6 | ns    |
|                                                                              |                    | XC4028XLA   |             | 14.3 |      | 12.8 |      | 11.4 | ns    |
|                                                                              |                    | XC4036XLA   |             | 16.2 |      | 14.5 |      | 12.9 | ns    |
|                                                                              |                    | XC4044XLA   |             | 18.1 |      | 16.2 |      | 14.4 | ns    |
|                                                                              |                    | XC4052XLA   |             | 19.5 |      | 17.4 |      | 15.6 | ns    |
|                                                                              |                    | XC4062XLA   |             | 20.9 |      | 18.7 |      | 16.7 | ns    |
|                                                                              |                    | XC4085XLA   |             | 24.7 |      | 22.1 |      | 19.7 | ns    |
| Propagation Delays                                                           |                    |             |             |      |      |      |      |      |       |
| Pad to I1, I2                                                                | T <sub>PID</sub>   | All devices |             | 1.0  |      | 0.9  |      | 0.8  | ns    |
| Pad to I1, I2 via transparent input latch, no delay                          | T <sub>PLI</sub>   | All devices |             | 2.1  |      | 1.9  |      | 1.7  | ns    |
| Pad to I1, I2 via transparent FCL and input latch, no delay                  | T <sub>PFLI</sub>  | All devices |             | 2.5  |      | 2.2  |      | 2.0  | ns    |
| Clock (IK) to I1, I2 (flip-flop)                                             | T <sub>IKRI</sub>  | All devices |             | 1.1  |      | 1.0  |      | 0.9  | ns    |
| Clock (IK) to I1, I2 (latch enable, active Low)                              | T <sub>IKLI</sub>  | All devices |             | 1.2  |      | 1.1  |      | 1.0  | ns    |
| FCL Enable (OK) active edge to I1, I2 (via transparent standard input latch) | T <sub>OKLI</sub>  | All devices |             | 2.4  |      | 2.1  |      | 1.9  | ns    |
|                                                                              |                    |             | Preliminary |      |      |      |      |      |       |

Notes: IFF = Input Flip-Flop or Latch, FCL = Fast Capture Latch  
 \* Indicates Minimum Amount of Time to Assure Valid Data.

## XC4000XLA IOB Output Switching Characteristic Guidelines

Testing of switching parameters is modeled after testing methods specified by MIL-M-38510/605. All devices are 100% functionally tested. Internal timing parameters are derived from measuring internal test patterns. Listed below are representative values. For more specific, more precise, and worst-case guaranteed data, use the values reported by the static timing analyzer (TRCE in the Xilinx Development System) and back-annotated to the simulation netlist. These path delays, provided as a guideline, have been extracted from the static timing analyzer report. All timing parameters assume worst-case operating conditions (supply voltage and junction temperature). For Propagation Delays, slew-rate = fast unless otherwise noted. Values are expressed in nanoseconds unless otherwise noted.

|                                             |                    |           | -09         |      | -08  |      | -07  |      | Units |
|---------------------------------------------|--------------------|-----------|-------------|------|------|------|------|------|-------|
| Description                                 | Symbol             |           | Min         | Max  | Min  | Max  | Min  | Max  |       |
| Clocks                                      |                    |           |             |      |      |      |      |      |       |
| Clock High                                  | T <sub>CH</sub>    |           | 2.2         |      | 1.9  |      | 1.7  |      | ns    |
| Clock Low                                   | T <sub>CL</sub>    |           | 2.2         |      | 1.9  |      | 1.7  |      | ns    |
| Propagation Delays                          |                    |           |             |      |      |      |      |      |       |
| Clock (OK) to Pad                           | T <sub>OKPOF</sub> |           |             | 3.2  |      | 2.9  |      | 2.6  | ns    |
| Output (O) to Pad                           | T <sub>OPF</sub>   |           |             | 2.6  |      | 2.4  |      | 2.1  | ns    |
| 3-state to Pad hi-Z (slew-rate independent) | T <sub>TSHZ</sub>  |           |             | 2.7  |      | 2.4  |      | 2.2  | ns    |
| 3-state to Pad active and valid             | T <sub>TSONF</sub> |           |             | 2.8  |      | 2.5  |      | 2.3  | ns    |
| Output (O) to Pad via Fast Output MUX       | T <sub>OFFP</sub>  |           |             | 3.6  |      | 3.2  |      | 2.9  | ns    |
| Select (OK) to Pad via Fast MUX             | T <sub>OKFPF</sub> |           |             | 3.3  |      | 3.0  |      | 2.6  | ns    |
| Setup and Hold Times                        |                    |           |             |      |      |      |      |      |       |
| Output (O) to clock (OK) setup time         | T <sub>OOK</sub>   |           | 0.3         |      | 0.3  |      | 0.3  |      | ns    |
| Output (O) to clock (OK) hold time          | T <sub>OKO</sub>   |           | 0.0         |      | 0.0  |      | 0.0  |      | ns    |
| Clock Enable (EC) to clock (OK) setup time  | T <sub>ECOK</sub>  |           | 0.0         |      | 0.0  |      | 0.0  |      | ns    |
| Clock Enable (EC) to clock (OK) hold time   | T <sub>OKEC</sub>  |           | 0.0         |      | 0.0  |      | 0.0  |      | ns    |
| Global Set/Reset                            |                    |           |             |      |      |      |      |      |       |
| Minimum GSR pulse width                     | T <sub>MRW</sub>   |           | 12.8        |      | 11.4 |      | 10.2 |      | ns    |
| Delay from GSR input to any Pad             | T <sub>RPO</sub> * | XC4013XLA |             | 14.4 |      | 12.8 |      | 11.5 |       |
|                                             |                    | XC4020XLA |             | 16.3 |      | 14.5 |      | 13.0 |       |
|                                             |                    | XC4028XLA |             | 17.3 |      | 15.4 |      | 13.8 |       |
|                                             |                    | XC4036XLA |             | 19.1 |      | 17.1 |      | 15.3 |       |
|                                             |                    | XC4044XLA |             | 21.0 |      | 18.8 |      | 16.8 |       |
|                                             |                    | XC4052XLA |             | 22.5 |      | 20.1 |      | 17.9 |       |
|                                             |                    | XC4062XLA |             | 23.9 |      | 21.3 |      | 19.0 |       |
|                                             |                    | XC4085XLA |             | 27.7 |      | 24.7 |      | 22.1 |       |
| Slew Rate Adjustment                        |                    |           |             |      |      |      |      |      |       |
| For output SLOW option add                  | T <sub>SLOW</sub>  |           | 1.7         |      | 1.6  |      | 1.4  |      | ns    |
|                                             |                    |           | Preliminary |      |      |      |      |      |       |

\* Indicates Minimum Amount of Time to Assure Valid Data

## XC4000XV D.C. and Switching Performance Characteristics

### Definition of Terms

In the following tables, some specifications may be designated as Advance or Preliminary. These terms are defined as follows:

**Advance:** Initial estimates based on simulation and/or extrapolation from other speed grades, devices, or families. Values are subject to change. Use as estimates, not for production.

**Preliminary:** Based on preliminary characterization. Further changes are not expected.

**Unmarked:** Specifications not identified as either Advance or Preliminary are to be considered Final.

All specifications subject to change without notice.

### Additional Specifications

Except for pin-to-pin input and output parameters, the a.c. parameter delay specifications included in this document are derived from measuring internal test patterns. All specifications are representative of worst-case supply voltage and junction temperature conditions. The parameters included are common to popular designs and typical applications.

### Absolute Maximum Ratings

| Symbol             | Description                                              | Value            | Units |
|--------------------|----------------------------------------------------------|------------------|-------|
| V <sub>CCINT</sub> | Supply voltage relative to GND                           | -0.5 to 3.0      | V     |
| V <sub>CCIO</sub>  | Supply voltage relative to GND                           | -0.5 to 4.0      | V     |
| V <sub>IN</sub>    | Input voltage relative to GND (Note 1)                   | -0.5 to 5.5      | V     |
| V <sub>TS</sub>    | Voltage applied to 3-state output (Note 1)               | -0.5 to 5.5      | V     |
| V <sub>CC</sub>    | Longest Supply Voltage Rise Time from 1 V to 3V          | 50               | ms    |
| T <sub>STG</sub>   | Storage temperature (ambient)                            | -65 to +150      | °C    |
| T <sub>SOL</sub>   | Maximum soldering temperature (10 s @ 1/16 in. = 1.5 mm) | +260             | °C    |
| T <sub>J</sub>     | Junction temperature                                     | Ceramic packages | +150  |
|                    |                                                          | Plastic packages | +125  |

Notes: Maximum DC overshoot or undershoot above V<sub>cc</sub> or below GND must be limited to either 0.5 V or 10 mA, whichever is easier to achieve. During transitions, the device pins may undershoot to -2.0 V or overshoot to + 7.0 V, provided this over- or undershoot lasts less than 10 ns and with the forcing current being limited to 200 mA.

Stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those listed under Operating Conditions is not implied. Exposure to Absolute Maximum Ratings conditions for extended periods of time may affect device reliability.

## Recommended Operating Conditions

| Symbol      | Description                                                                                           |            | Min             | Max             | Units |
|-------------|-------------------------------------------------------------------------------------------------------|------------|-----------------|-----------------|-------|
| $V_{CCINT}$ | Supply voltage relative to GND, $T_J = 0\text{ }^{\circ}\text{C}$ to $+85\text{ }^{\circ}\text{C}$    | Commercial | 2.3             | 2.7             | V     |
|             | Supply voltage relative to GND, $T_J = -40\text{ }^{\circ}\text{C}$ to $+100\text{ }^{\circ}\text{C}$ | Industrial | 2.3             | 2.7             | V     |
| $V_{CCIO}$  | Supply voltage relative to GND, $T_J = 0\text{ }^{\circ}\text{C}$ to $+85\text{ }^{\circ}\text{C}$    | Commercial | 3.0             | 3.6             | V     |
|             | Supply voltage relative to GND, $T_J = -40\text{ }^{\circ}\text{C}$ to $+100\text{ }^{\circ}\text{C}$ | Industrial | 3.0             | 3.6             | V     |
| $V_{IH}$    | High-level input voltage                                                                              |            | 50% of $V_{CC}$ | 5.5             | V     |
| $V_{IL}$    | Low-level input voltage                                                                               |            | 0               | 30% of $V_{CC}$ | V     |
| $T_{IN}$    | Input signal transition time                                                                          |            |                 | 250             | ns    |

Notes 1: At junction temperatures above those listed as Operating Conditions, all delay parameters increase by 0.35% per  $^{\circ}\text{C}$ .  
Input and output measurement threshold is ~50% of  $V_{CC}$ .

## DC Characteristics Over Recommended Operating Conditions

| Symbol      | Description                                                                            | Min                              | Max          | Units         |
|-------------|----------------------------------------------------------------------------------------|----------------------------------|--------------|---------------|
| $V_{OH}$    | High-level output voltage @ $I_{OH} = -4.0\text{ mA}$ , $V_{CC}$ min (LVTTL)           | 2.4                              |              | V             |
|             | High-level output voltage @ $I_{OH} = -500\text{ }\mu\text{A}$ , (LVCMOS)              | 90% $V_{CC}$                     |              | V             |
| $V_{OL}$    | Low-level output voltage @ $I_{OL} = 24.0\text{ mA}$ , $V_{CC}$ min (LVTTL) (Note 1)   |                                  | 0.4          | V             |
|             | Low-level output voltage @ $I_{OL} = 1500\text{ }\mu\text{A}$ , (LVCMOS)               |                                  | 10% $V_{CC}$ | V             |
| $V_{DRINT}$ | $V_{CCINT}$ Data Retention Supply Voltage (below which configuration data may be lost) | 2.1                              |              | V             |
| $V_{DRIO}$  | $V_{CCIO}$ Data Retention Supply Voltage (below which configuration data may be lost)  | 2.5                              |              | V             |
| $I_{CCO}$   | Quiescent FPGA supply current (Note 2)                                                 |                                  | 10           | mA            |
| $I_L$       | Input or output leakage current                                                        | -10                              | +10          | $\mu\text{A}$ |
| $C_{IN}$    | Input capacitance (sample tested)                                                      | BGA, SBGA, PQ, HQ, & MQ packages | 10           | pF            |
|             |                                                                                        | PGA packages                     | 16           | pF            |
| $I_{RPU}$   | Pad pull-up (when selected) @ $V_{in} = 0\text{ V}$ (sample tested)                    | 0.02                             | 0.25         | mA            |
| $I_{RPD}$   | Pad pull-down (when selected) @ $V_{in} = 3.6\text{ V}$ (sample tested)                | 0.02                             | 0.15         | mA            |
| $I_{RLL}$   | Horizontal Longline pull-up (when selected) @ logic Low                                | 0.3                              | 2.0          | mA            |

Note 1: With up to 64 pins simultaneously sinking 24 mA.

Note 2: With no output current loads, no active input or Longline pull-up resistors, all I/O pins Tri-stated and floating.

## XC4000XV Global Buffer Switching Characteristic Guidelines

Testing of the switching parameters is modeled after testing methods specified by MIL-M-38510/605. All devices are 100% functionally tested. Internal timing parameters are derived from measuring internal test patterns. Listed below are representative values where one global clock input drives one vertical clock line in each accessible column, and where all accessible IOB and CLB flip-flops are clocked by the global clock net.

When fewer vertical clock lines are connected, the clock distribution is faster; when multiple clock lines per column are driven from the same global clock, the delay is longer. For more specific, more precise, and worst-case guaranteed data, reflecting the actual routing structure, use the values provided by the static timing analyzer (TRCE in the Xilinx Development System) and back-annotated to the simulation netlist. These path delays, provided as a guideline, have been extracted from the static timing analyzer report. All timing parameters assume worst-case operating conditions (supply voltage and junction temperature).

| Speed Grade                                                                                               |                      |           | All     | -09 | -08 | -07 | Units |
|-----------------------------------------------------------------------------------------------------------|----------------------|-----------|---------|-----|-----|-----|-------|
| Description                                                                                               | Symbol               | Device    | Min     | Max | Max | Max |       |
| Delay from pad through Global Low Skew (GLS) clock buffer to any clock input, K.                          | T <sub>GLS</sub>     | XC40110XV |         | 7.7 | 6.7 | 5.8 | ns    |
|                                                                                                           |                      | XC40150XV |         | 7.8 | 6.8 | 5.9 | ns    |
|                                                                                                           |                      | XC40200XV |         | 9.3 | 8.1 | 7.0 | ns    |
|                                                                                                           |                      | XC40250XV |         | 9.4 | 8.2 | 7.1 | ns    |
| Delay from pad through Global Early (GE) clock buffer to any IOB clock input for BUFGE #s 1, 2, 5, and 6. | T <sub>GE_1256</sub> | XC40110XV |         | 5.6 | 4.9 | 4.2 | ns    |
|                                                                                                           |                      | XC40150XV |         | 5.7 | 5.0 | 4.3 | ns    |
|                                                                                                           |                      | XC40200XV |         | 6.1 | 5.3 | 4.6 | ns    |
|                                                                                                           |                      | XC40250XV |         | 6.2 | 5.4 | 4.7 | ns    |
| Delay from pad through Global Early (GE) clock buffer to any IOB clock input for BUFGE #s 3, 4, 7, and 8. | T <sub>GE_3478</sub> | XC40110XV |         | 5.6 | 4.9 | 4.2 | ns    |
|                                                                                                           |                      | XC40150XV |         | 5.7 | 5.0 | 4.3 | ns    |
|                                                                                                           |                      | XC40200XV |         | 6.1 | 5.3 | 4.6 | ns    |
|                                                                                                           |                      | XC40250XV |         | 6.2 | 5.4 | 4.7 | ns    |
| Delay from pad through FastCLK buffer to any IOB clock input                                              | T <sub>FCLK</sub>    | XC40110XV |         | 3.0 | 2.6 | 2.2 | ns    |
|                                                                                                           |                      | XC40150XV |         | 3.1 | 2.7 | 2.3 | ns    |
|                                                                                                           |                      | XC40200XV |         | 3.4 | 3.0 | 2.6 | ns    |
|                                                                                                           |                      | XC40250XV |         | 3.5 | 3.1 | 2.7 | ns    |
|                                                                                                           |                      |           | Advance |     |     |     |       |

## XC4000XV CLB Switching Characteristic Guidelines

Testing of switching parameters is modeled after testing methods specified by MIL-M-38510/605. All devices are 100% functionally tested. Internal timing parameters are derived from measuring internal test patterns. Listed below are representative values. For more specific, more precise, and worst-case guaranteed data, use the values reported by the static timing analyzer (TRCE in the Xilinx Development System) and back-annotated to the simulation netlist. All timing parameters assume worst-case operating conditions (supply voltage and junction temperature). Values are expressed in nanoseconds unless otherwise noted.

| Speed Grade                                                      |                    | -09                                     |      | -08 |      | -07 |      | Units |
|------------------------------------------------------------------|--------------------|-----------------------------------------|------|-----|------|-----|------|-------|
| Description                                                      | Symbol             | Min                                     | Max  | Min | Max  | Min | Max  |       |
| Combinatorial Delays                                             |                    |                                         |      |     |      |     |      |       |
| F/G inputs to X/Y outputs                                        | T <sub>ILO</sub>   |                                         | 1.2  |     | 1.1  |     | 0.9  | ns    |
| F/G inputs via H' to X/Y outputs                                 | T <sub>IHO</sub>   |                                         | 2.3  |     | 2.0  |     | 1.7  | ns    |
| F/G inputs via transparent latch to Q outputs                    | T <sub>ITO</sub>   |                                         | 1.9  |     | 1.7  |     | 1.5  | ns    |
| C inputs via SR/H0 via H to X/Y outputs                          | T <sub>HH0O</sub>  |                                         | 1.5  |     | 1.3  |     | 1.1  | ns    |
| C inputs via H1 via H to X/Y outputs                             | T <sub>HH1O</sub>  |                                         | 1.3  |     | 1.1  |     | 1.0  | ns    |
| C inputs via DIN/H2 via H to X/Y outputs                         | T <sub>HH2O</sub>  |                                         | 1.5  |     | 1.3  |     | 1.1  | ns    |
| C inputs via EC, DIN/H2 to YQ, XQ output (bypass0                | T <sub>CBYP</sub>  |                                         | 0.8  |     | 0.7  |     | 0.6  | ns    |
| CLB Fast Carry Logic                                             |                    |                                         |      |     |      |     |      |       |
| Operand inputs (F1, F2, G1, G4) to C <sub>OUT</sub>              | T <sub>OPCY</sub>  |                                         | 2.5  |     | 2.2  |     | 1.9  | ns    |
| Add/Subtract input (F3) to C <sub>OUT</sub>                      | T <sub>ASCY</sub>  |                                         | 3.1  |     | 2.7  |     | 2.4  | ns    |
| Initialization inputs (F1, F3) to C <sub>OUT</sub>               | T <sub>INCY</sub>  |                                         | 1.9  |     | 1.6  |     | 1.4  | ns    |
| C <sub>IN</sub> through function generators to X/Y outputs       | T <sub>SUM</sub>   |                                         | 2.5  |     | 2.2  |     | 1.9  | ns    |
| C <sub>IN</sub> to C <sub>OUT</sub> , bypass function generators | T <sub>BYP</sub>   |                                         | 0.3  |     | 0.3  |     | 0.2  | ns    |
| Carry Net Delay, C <sub>OUT</sub> to C <sub>IN</sub>             | T <sub>NET</sub>   |                                         | 0.4  |     | 0.3  |     | 0.3  | ns    |
| Sequential Delays                                                |                    |                                         |      |     |      |     |      |       |
| Clock K to Flip-Flop outputs Q                                   | T <sub>CKO</sub>   |                                         | 1.6  |     | 1.4  |     | 1.2  | ns    |
| Clock K to Latch outputs Q                                       | T <sub>CKLO</sub>  |                                         | 1.6  |     | 1.4  |     | 1.2  | ns    |
| Setup Time before Clock K                                        |                    |                                         |      |     |      |     |      |       |
| F/G inputs                                                       | T <sub>ICK</sub>   | 1.5                                     |      | 1.3 |      | 1.2 |      | ns    |
| F/G inputs via H                                                 | T <sub>IHCK</sub>  | 2.6                                     |      | 2.2 |      | 1.9 |      | ns    |
| C inputs via H0 through H                                        | T <sub>HH0CK</sub> | 1.8                                     |      | 1.5 |      | 1.3 |      | ns    |
| C inputs via H1 through H                                        | T <sub>HH1CK</sub> | 1.6                                     |      | 1.4 |      | 1.2 |      | ns    |
| C inputs via H2 through H                                        | T <sub>HH2CK</sub> | 1.8                                     |      | 1.5 |      | 1.3 |      | ns    |
| C inputs via DIN                                                 | T <sub>DICK</sub>  | 0.7                                     |      | 0.6 |      | 0.6 |      | ns    |
| C inputs via EC                                                  | T <sub>ECCK</sub>  | 0.8                                     |      | 0.7 |      | 0.6 |      | ns    |
| C inputs via S/R, going Low (inactive)                           | T <sub>RCK</sub>   | 0.4                                     |      | 0.4 |      | 0.3 |      | ns    |
| CIN input via F/G                                                | T <sub>CCK</sub>   | 2.8                                     |      | 2.4 |      | 2.1 |      | ns    |
| CIN input via F/G and H                                          | T <sub>CHC</sub>   | 3.8                                     |      | 3.3 |      | 2.9 |      | ns    |
| Hold Time after Clock K                                          |                    |                                         |      |     |      |     |      |       |
| All Hold Times                                                   |                    | 0.0                                     |      | 0.0 |      | 0.0 |      | ns    |
| Clocks                                                           |                    |                                         |      |     |      |     |      |       |
| Clock High time                                                  | T <sub>CH</sub>    | 2.7                                     |      | 2.3 |      | 2.0 |      | ns    |
| Clock Low time                                                   | T <sub>CL</sub>    | 2.7                                     |      | 2.3 |      | 2.0 |      | ns    |
| Set/Reset Direct                                                 |                    |                                         |      |     |      |     |      |       |
| Width (High)                                                     | T <sub>RPW</sub>   | 3.0                                     |      | 2.8 |      | 2.5 |      | ns    |
| Delay from C inputs via S/R, going High to Q                     | T <sub>RIO</sub>   |                                         | 2.9  |     | 2.5  |     | 2.2  | ns    |
| Global Set/Reset                                                 |                    |                                         |      |     |      |     |      |       |
| Minimum GSR Pulse Width                                          | T <sub>MRW</sub>   |                                         | 18.4 |     | 16.0 |     | 13.9 | ns    |
| Delay from GSR input to any Q                                    | T <sub>MRQ</sub>   | See page 201 for TRRI values per device |      |     |      |     |      |       |
| Toggle Frequency (MHz) (for export control purposes)             | F <sub>TOG</sub>   |                                         | 188  |     | 217  |     | 250  | MHz   |
|                                                                  |                    | Advance                                 |      |     |      |     |      |       |

**XC4000XV RAM Synchronous (Edge-Triggered) Write Operation Guidelines**

Testing of switching parameters is modeled after testing methods specified by MIL-M-38510/605. All devices are 100% functionally tested. Internal timing parameters are derived from measuring internal test patterns. Listed below are representative values. For more specific, more precise, and worst-case guaranteed data, use the values reported by the static timing analyzer (TRCE in the Xilinx Development System) and back-annotated to the simulation netlist. All timing parameters assume worst-case operating conditions (supply voltage and junction temperature). Values apply to all XC4000XV devices and are expressed in nanoseconds unless otherwise noted.

| Single Port RAM                                   | Speed Grade |                   | -09     |     | -08 |     | -07 |     | Units |
|---------------------------------------------------|-------------|-------------------|---------|-----|-----|-----|-----|-----|-------|
|                                                   | Size        | Symbol            | Min     | Max | Min | Max | Min | Max |       |
| Write Operation                                   |             |                   |         |     |     |     |     |     |       |
| Address write cycle time (clock K period)         | 16x2        | T <sub>WCS</sub>  | 9.6     |     | 8.4 |     | 7.3 |     | ns    |
|                                                   | 32x1        | T <sub>WCTS</sub> | 9.6     |     | 8.4 |     | 7.3 |     | ns    |
| Clock K pulse width (active edge)                 | 16x2        | T <sub>WPS</sub>  | 4.8     |     | 4.2 |     | 3.7 |     | ns    |
|                                                   | 32x1        | T <sub>WPTS</sub> | 4.8     |     | 4.2 |     | 3.7 |     | ns    |
| Address setup time before clock K                 | 16x2        | T <sub>ASS</sub>  | 2.6     |     | 2.3 |     | 2.0 |     | ns    |
|                                                   | 32x1        | T <sub>ASTS</sub> | 2.0     |     | 1.8 |     | 1.5 |     | ns    |
| Address hold time after clock K                   | 16x2        | T <sub>AHS</sub>  | 0.0     |     | 0.0 |     | 0.0 |     | ns    |
|                                                   | 32x1        | T <sub>AHTS</sub> | 0.0     |     | 0.0 |     | 0.0 |     | ns    |
| DIN setup time before clock K                     | 16x2        | T <sub>DSS</sub>  | 2.0     |     | 1.8 |     | 1.5 |     | ns    |
|                                                   | 32x1        | T <sub>DSTS</sub> | 2.5     |     | 2.2 |     | 1.9 |     | ns    |
| DIN hold time after clock K                       | 16x2        | T <sub>DHS</sub>  | 0.0     |     | 0.0 |     | 0.0 |     | ns    |
|                                                   | 32x1        | T <sub>DHTS</sub> | 0.0     |     | 0.0 |     | 0.0 |     | ns    |
| WE setup time before clock K                      | 16x2        | T <sub>WSS</sub>  | 1.9     |     | 1.6 |     | 1.4 |     | ns    |
|                                                   | 32x1        | T <sub>WSTS</sub> | 1.8     |     | 1.5 |     | 1.3 |     | ns    |
| WE hold time after clock K                        | 16x2        | T <sub>WHS</sub>  | 0.0     |     | 0.0 |     | 0.0 |     | ns    |
|                                                   | 32x1        | T <sub>WHTS</sub> | 0.0     |     | 0.0 |     | 0.0 |     | ns    |
| Data valid after clock K                          | 16x2        | T <sub>WOS</sub>  |         | 6.2 |     | 5.4 |     | 4.7 | ns    |
|                                                   | 32x1        | T <sub>WOTS</sub> |         | 7.5 |     | 6.5 |     | 5.7 | ns    |
| Read Operation                                    |             |                   |         |     |     |     |     |     |       |
| Address read cycle time                           | 16x2        | T <sub>RC</sub>   | 4.5     |     | 3.1 |     | 3.1 |     | ns    |
|                                                   | 32x1        | T <sub>RCT</sub>  | 6.5     |     | 5.5 |     | 5.5 |     | ns    |
| Data Valid after address change (no Write Enable) | 16x2        | T <sub>ILO</sub>  |         | 1.2 |     | 1.1 |     | 0.9 | ns    |
|                                                   | 32x1        | T <sub>IHO</sub>  |         | 2.3 |     | 2.0 |     | 1.7 | ns    |
| Address setup time before clock K                 | 16x2        | T <sub>ICK</sub>  | 1.5     |     | 1.3 |     | 1.2 |     | ns    |
|                                                   | 32x1        | T <sub>IHCK</sub> | 2.6     |     | 2.2 |     | 1.9 |     | ns    |
|                                                   |             |                   | Advance |     |     |     |     |     |       |

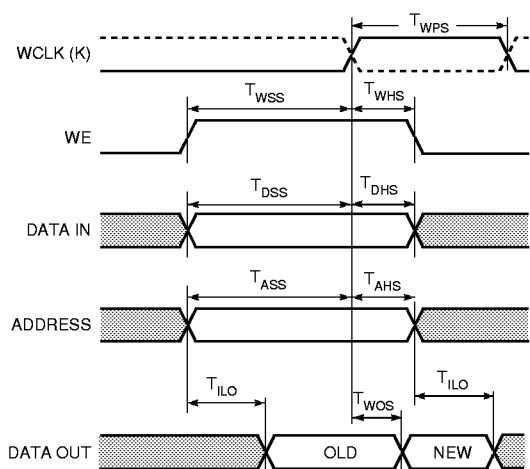
## XC4000XV CLB RAM Synchronous (Edge-Triggered) Write Operation Guidelines

Testing of switching parameters is modeled after testing methods specified by MIL-M-38510/605. All devices are 100% functionally tested. Pin-to-pin timing parameters are derived from measuring external and internal test patterns and are guaranteed over worst-case operating conditions (supply voltage and junction temperature). Listed below are representative values for typical pin locations and normal clock loading. For more specific, more precise, and worst-case guaranteed data, reflecting the actual routing structure, use the values provided by the static timing analyzer (TRCE in the Xilinx Development System) and back-annotated to the simulation netlist. These path delays, provided as a guideline, have been extracted from the static timing analyzer report.

| Dual Port RAM                             | Speed Grade |            | -09 |     | -08 |     | -07 |     | Units |
|-------------------------------------------|-------------|------------|-----|-----|-----|-----|-----|-----|-------|
|                                           | Size        | Symbol     | Min | Max | Min | Max | Min | Max |       |
| Address write cycle time (clock K period) | 16x1        | $T_{WCDS}$ | 9.6 |     | 8.4 |     | 7.3 |     | ns    |
| Clock K pulse width (active edge)         | 16x1        | $T_{WPDS}$ | 4.8 |     | 4.2 |     | 3.7 |     | ns    |
| Address setup time before clock K         | 16x1        | $T_{ASDS}$ | 2.6 |     | 2.3 |     | 2.0 |     | ns    |
| Address hold time after clock K           | 16x1        | $T_{AHDS}$ | 0.0 |     | 0.0 |     | 0.0 |     | ns    |
| DIN setup time before clock K             | 16x1        | $T_{DSDS}$ | 2.4 |     | 2.1 |     | 1.8 |     | ns    |
| DIN hold time after clock K               | 16x1        | $T_{DHDS}$ | 0.0 |     | 0.0 |     | 0.0 |     | ns    |
| WE setup time before clock K              | 16x1        | $T_{WSDS}$ | 1.9 |     | 1.6 |     | 1.4 |     | ns    |
| WE hold time after clock K                | 16x1        | $T_{WHDS}$ | 0.0 |     | 0.0 |     | 0.0 |     | ns    |
| Data valid after clock K                  | 16x1        | $T_{WODS}$ |     | 7.3 |     | 6.4 |     | 5.6 | ns    |
| Advance                                   |             |            |     |     |     |     |     |     |       |

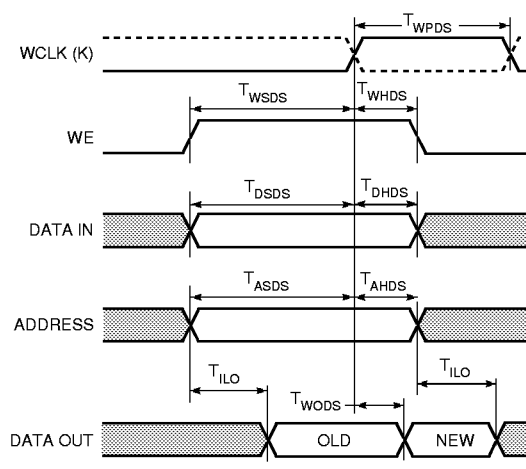
Note: Timing for 16x1 option is identical to 16x2 RAM.

## XC4000XV CLB RAM Synchronous (Edge-Triggered) Write Timing



X6461

Single Port RAM



X6474

Dual Port RAM

## XC4000XV Pin-to-Pin Output Parameter Guidelines

Testing of switching parameters is modeled after testing methods specified by MIL-M-38510/605. All devices are 100% functionally tested. Pin-to-pin timing parameters are derived from measuring external and internal test patterns and are guaranteed over worst-case operating conditions (supply voltage and junction temperature). Listed below are representative values for typical pin locations and normal clock loading. For more specific, more precise, and worst-case guaranteed data, reflecting the actual routing structure, use the values provided by the static timing analyzer (TRCE in the Xilinx Development System) and back-annotated to the simulation netlist. These path delays, provided as a guideline, have been extracted from the static timing analyzer report.

### XC4000XV Global Clock Input to Output Delay

| Speed Grade                                                               |                    |             | All | -09  | -08  | -07 | Units |
|---------------------------------------------------------------------------|--------------------|-------------|-----|------|------|-----|-------|
| Description                                                               | Symbol             | Device      | Min | Max  | Max  | Max |       |
| Global Low Skew (GLS) Clock Input to Output Delay using Output Flip-Flop. | T <sub>ICKOF</sub> | XC40110XV   |     | 10.6 | 9.2  | 8.0 | ns    |
|                                                                           |                    | XC40150XV   |     | 10.7 | 9.3  | 8.1 | ns    |
|                                                                           |                    | XC40200XV   |     | 12.2 | 10.6 | 9.2 | ns    |
|                                                                           |                    | XC40250XV   |     | 12.3 | 10.7 | 9.3 | ns    |
| For output SLOW option add                                                | T <sub>SLOW</sub>  | All Devices |     | 1.7  | 1.6  | 1.4 | ns    |
| Advance                                                                   |                    |             |     |      |      |     |       |

Notes: Listed above are representative values where one global clock input drives one vertical clock line in each accessible column, and where all accessible IOB and CLB flip-flops are clocked by the global clock net.

Clock-to-out minimum delay is measured with the fastest route and the lightest load. Clock-to-out maximum delay is measured using the farthest distance and a reference load of one clock pin (IK or OK) per IOB as well as driving all accessible CLB flip-flops. For designs with fewer number of clock loads, the pad-to-IOB clock pin delay as determined by the static timing analyzer (TRCE) can be added to the AC parameter Tokpof and used as a worst-case pin-to-pin clock-to-out delay for clocked outputs in FAST mode specification.

Output timing is measured at ~50% V<sub>CC</sub> threshold with 50 pF external capacitive load. For different loads, see Figure 8.

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### XC4000XV FastCLK Input to Output Delay for BUFNW, BUF SW, BUFNE, and BUFSE

| Speed Grade                                                                                               |                     |           | All     | -09 | -08 | -07 | Units |
|-----------------------------------------------------------------------------------------------------------|---------------------|-----------|---------|-----|-----|-----|-------|
| Description                                                                                               | Symbol              | Device    | Min     | Max | Max | Max |       |
| FastCLK Input to Output Delay using Output Flip-Flop for FastCLK buffers BUFNW, BUF SW, BUFNE, and BUFSE. | T <sub>ICKFOF</sub> | XC40110XV |         | 5.9 | 5.1 | 4.4 | ns    |
|                                                                                                           |                     | XC40150XV |         | 6.0 | 5.2 | 4.5 | ns    |
|                                                                                                           |                     | XC40200XV |         | 6.3 | 5.5 | 4.8 | ns    |
|                                                                                                           |                     | XC40250XV |         | 6.4 | 5.6 | 4.9 | ns    |
|                                                                                                           |                     |           | Advance |     |     |     |       |

OFF = Output Flip Flop

Notes: Listed above are representative values where one FastCLK input drives one vertical clock line in each accessible column, and where all accessible IOB and CLB flip-flops are clocked by the FastCLK net.

Clock-to-out minimum delay is measured with the fastest route and the lightest load. Clock-to-out maximum delay is measured using the farthest distance and a reference load of one clock pin (IK or OK) per IOB as well as driving all accessible CLB flip-flops. For designs with fewer number of clock loads, the pad-to-IOB clock pin delay as determined by the static timing analyzer (TRCE) can be added to the AC parameter Tokpof and used as a worst-case pin-to-pin clock-to-out delay for clocked outputs in FAST slew mode specification.

Output timing is measured at ~50% V<sub>CC</sub> threshold with 50 pF external capacitive load. For different loads, see Figure 8.

## XC4000XV Pin-to-Pin Output Parameter Guidelines

### XC4000XV Global Early Clock Input to Output Delay for BUFGE #s 1, 2, 5, and 6

| Speed Grade                                                                                                                           |                          |           | All     | -09 | -08 | -07 | Units |
|---------------------------------------------------------------------------------------------------------------------------------------|--------------------------|-----------|---------|-----|-----|-----|-------|
| Description                                                                                                                           | Symbol                   | Device    | Min     | Max | Max | Max |       |
| Global Clock Signal Input to Output Delay using Global Early (GE) clock buffer to clock Output Flip-Flop for BUFGE #s 1, 2, 5, and 6. | T <sub>ICKEOF_1256</sub> | XC40110XV |         | 8.5 | 7.4 | 6.4 | ns    |
|                                                                                                                                       |                          | XC40150XV |         | 8.6 | 7.5 | 6.5 | ns    |
|                                                                                                                                       |                          | XC40200XV |         | 9.0 | 7.8 | 6.8 | ns    |
|                                                                                                                                       |                          | XC40250XV |         | 9.1 | 7.9 | 6.9 | ns    |
|                                                                                                                                       |                          |           | Advance |     |     |     |       |

OFF = Output Flip Flop

Notes: Clock-to-out minimum delay is measured with the fastest route and the lightest load, Clock-to-out maximum delay is measured using the farthest distance and a reference load of one clock pin (IK or OK) per IOB as well as driving all accessible CLB flip-flops. For designs with fewer number of clock loads, the pad-to-IOB clock pin delay as determined by the static timing analyzer (TRCE) can be added to the AC parameter Tokpof and used as a worst-case pin-to-pin clock-to-out delay for clocked outputs in FAST mode specification.

Output timing is measured at ~50% V<sub>CC</sub> threshold with 50 pF external capacitive load. For different loads, see Figure 8.

### XC4000XV Global Early Clock Input to Output Delay for BUFGE #s 3, 4, 7, and 8

| Speed Grade                                                                                                                           |                          |           | All     | -09 | -08 | -07 | Units |
|---------------------------------------------------------------------------------------------------------------------------------------|--------------------------|-----------|---------|-----|-----|-----|-------|
| Description                                                                                                                           | Symbol                   | Device    | Min     | Max | Max | Max |       |
| Global Clock Signal Input to Output Delay using Global Early (GE) clock buffer to clock Output Flip-Flop for BUFGE #s 3, 4, 7, and 8. | T <sub>ICKEOF_3478</sub> | XC40110XV |         | 8.5 | 7.4 | 6.4 | ns    |
|                                                                                                                                       |                          | XC40150XV |         | 8.6 | 7.5 | 6.5 | ns    |
|                                                                                                                                       |                          | XC40200XV |         | 9.0 | 7.8 | 6.8 | ns    |
|                                                                                                                                       |                          | XC40250XV |         | 9.1 | 7.9 | 6.9 | ns    |
|                                                                                                                                       |                          |           | Advance |     |     |     |       |

OFF = Output Flip Flop

Notes: Clock-to-out minimum delay is measured with the fastest route and the lightest load, Clock-to-out maximum delay is measured using the farthest distance and a reference load of one clock pin (IK or OK) per IOB as well as driving all accessible CLB flip-flops. For designs with fewer number of clock loads, the pad-to-IOB clock pin delay as determined by the static timing analyzer (TRCE) can be added to the AC parameter Tokpof and used as a worst-case pin-to-pin clock-to-out delay for clocked outputs in FAST mode specification.

Output timing is measured at ~50% V<sub>CC</sub> threshold with 50 pF external capacitive load. For different loads, see Figure 8.

## Capacitive Load Factor

Figure 8 shows the relationship between I/O output delay and load capacitance. It allows a user to adjust the specified output delay if the load capacitance is different than 50 pF. For example, if the actual load capacitance is 120 pF, add 2.5 ns to the specified delay. If the load capacitance is 20 pF, subtract 0.8 ns from the specified output delay.

Figure 8 is usable over the specified operating conditions of voltage and temperature and is independent of the output slew rate control.

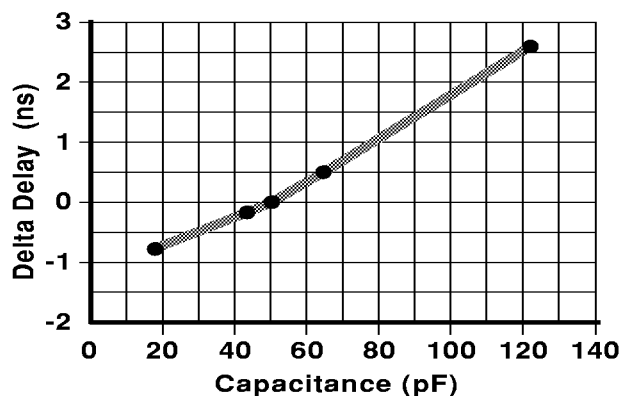


Figure 8: Delay Factor at Various Capacitive Loads

X8257

## XC4000XV Pin-to-Pin Input Parameter Guidelines

Testing of switching parameters is modeled after testing methods specified by MIL-M-38510/605. All devices are 100% functionally tested. Pin-to-pin timing parameters are derived from measuring external and internal test patterns and are guaranteed over worst-case operating conditions (supply voltage and junction temperature). Listed below are representative values for typical pin locations and normal clock loading. For more specific, more precise, and worst-case guaranteed data, reflecting the actual routing structure, use the values provided by the static timing analyzer (TRCE in the Xilinx Development System) and back-annotated to the simulation netlist. These path delays, provided as a guideline, have been extracted from the static timing analyzer report.

### XC4000XV Global Low Skew Clock, Set-Up and Hold

| Speed Grade                                                                            |                   |           | -09            | -08       | -07       | Units |
|----------------------------------------------------------------------------------------|-------------------|-----------|----------------|-----------|-----------|-------|
| Description                                                                            | Symbol            | Device    | Min            | Min       | Min       |       |
| Input Setup and Hold Time Relative to Global Clock Input Signal                        |                   |           |                |           |           |       |
| <b>No Delay</b><br>Global Low Skew Clock and IFF<br>Global Low Skew Clock and FCL      | $T_{PSN}/T_{PHN}$ | XC40110XV | 0.0 / 6.8      | 0.0 / 5.9 | 0.0 / 5.1 | ns    |
|                                                                                        |                   | XC40150XV | 0.0 / 6.9      | 0.0 / 6.0 | 0.0 / 5.2 | ns    |
|                                                                                        |                   | XC40200XV | 0.0 / 7.9      | 0.0 / 6.9 | 0.0 / 6.0 | ns    |
|                                                                                        |                   | XC40250XV | 0.0 / 8.7      | 0.0 / 7.6 | 0.0 / 6.6 | ns    |
| <b>Partial Delay</b><br>Global Low Skew Clock and IFF<br>Global Low Skew Clock and FCL | $T_{PSP}/T_{PHP}$ | XC40110XV | 5.7 / 1.0      | 5.0 / 0.9 | 4.3 / 0.8 | ns    |
|                                                                                        |                   | XC40150XV | 5.8 / 1.0      | 5.1 / 0.9 | 4.4 / 0.8 | ns    |
|                                                                                        |                   | XC40200XV | 6.2 / 1.0      | 5.4 / 0.9 | 4.7 / 0.8 | ns    |
|                                                                                        |                   | XC40250XV | 6.6 / 1.0      | 5.8 / 0.9 | 5.0 / 0.8 | ns    |
| <b>Full Delay</b><br>Global Low Skew Clock and IFF                                     | $T_{PSD}/T_{PHD}$ | XC40110XV | 6.5 / 0.0      | 5.7 / 0.0 | 4.9 / 0.0 | ns    |
|                                                                                        |                   | XC40150XV | 6.6 / 0.0      | 5.8 / 0.0 | 5.0 / 0.0 | ns    |
|                                                                                        |                   | XC40200XV | 7.3 / 0.0      | 6.3 / 0.0 | 5.5 / 0.0 | ns    |
|                                                                                        |                   | XC40250XV | 7.9 / 0.0      | 6.9 / 0.0 | 6.0 / 0.0 | ns    |
|                                                                                        |                   |           | <b>Advance</b> |           |           |       |

IFF = Input Flip-Flop or Latch, FCL = Fast Capture Latch

Notes: Setup time is measured relative to the Global Clock input signal with the fastest route and the lightest load. Hold time is measured relative to the Global Clock input signal using the furthest distance and a reference load of one clock pin per two IOBs. Use the static timing analyzer (TRCE) to determine the setup and hold times under given design conditions.

### XC4000XV FastCLK Input Set-Up and Hold for BUFNW, BUFSW, BUFNE, & BUFSE

| Speed Grade                                                |                     |           | -09            | -08       | -07       | Units |
|------------------------------------------------------------|---------------------|-----------|----------------|-----------|-----------|-------|
| Description                                                | Symbol              | Device    | Min            | Min       | Min       |       |
| Input Setup and Hold Time Relative to FastCLK Input Signal |                     |           |                |           |           |       |
| <b>No Delay</b><br>FastCLK and IFF                         | $T_{PSFN}/T_{PHFN}$ | XC40110XV | 3.3 / 2.6      | 2.9 / 2.2 | 2.5 / 1.9 | ns    |
|                                                            |                     | XC40150XV | 3.3 / 2.7      | 2.9 / 2.3 | 2.5 / 2.0 | ns    |
|                                                            |                     | XC40200XV | 3.3 / 2.9      | 2.9 / 2.5 | 2.5 / 2.2 | ns    |
|                                                            |                     | XC40250XV | 3.3 / 3.2      | 2.9 / 2.8 | 2.5 / 2.4 | ns    |
|                                                            |                     |           | <b>Advance</b> |           |           |       |

IFF = Input Flip-Flop or Latch

Notes: Setup time is measured relative to the FastCLK input signal with the fastest route and the lightest load. Hold time is measured relative to the FastCLK input signal using the furthest distance and a reference load of one clock pin per two IOBs. Use the static timing analyzer (TRCE) to determine the setup and hold times under given design conditions.

## XC4000XV BUFGE #s 1, 2, 5, &amp; 6 Global Early Clock, Set-Up and Hold for IFF and FCL

| Speed Grade                                                                     |                                              |           | -09        | -08        | -07       | Units |
|---------------------------------------------------------------------------------|----------------------------------------------|-----------|------------|------------|-----------|-------|
| Description                                                                     | Symbol                                       | Device    | Min        | Min        | Min       |       |
| Input Setup and Hold Time Relative to Global Clock Input Signal                 |                                              |           |            |            |           |       |
| <b>No Delay</b><br>Global Early Clock and IFF<br>Global Early Clock and FCL     | $T_{PSEN}/T_{PHEN}$<br>$T_{PFSEN}/T_{PFHEN}$ | XC40110XV | 0.7 / 5.2  | 0.6 / 4.5  | 0.5 / 3.9 | ns    |
|                                                                                 |                                              | XC40150XV | 0.7 / 5.3  | 0.6 / 4.6  | 0.5 / 4.0 | ns    |
|                                                                                 |                                              | XC40200XV | 0.7 / 5.6  | 0.6 / 4.8  | 0.5 / 4.2 | ns    |
|                                                                                 |                                              | XC40250XV | 0.7 / 5.8  | 0.6 / 5.1  | 0.5 / 4.4 | ns    |
| <b>Partial Delay</b><br>Global Early Clock andIFF<br>Global Early Clock and FCL | $T_{PSEP}/T_{PHEP}$<br>$T_{PFSEP}/T_{PFHEP}$ | XC40110XV | 8.9 / 0.0  | 7.7 / 0.0  | 6.7 / 0.0 | ns    |
|                                                                                 |                                              | XC40150XV | 9.0 / 0.0  | 7.8 / 0.0  | 6.8 / 0.0 | ns    |
|                                                                                 |                                              | XC40200XV | 9.7 / 0.0  | 8.4 / 0.0  | 7.3 / 0.0 | ns    |
|                                                                                 |                                              | XC40250XV | 10.3 / 0.0 | 9.0 / 0.0  | 7.8 / 0.0 | ns    |
| <b>FullDelay</b><br>Global Early Clock and IFF                                  | $T_{PSED}/T_{PHED}$                          | XC40110XV | 9.4 / 0.0  | 8.2 / 0.0  | 7.1 / 0.0 | ns    |
|                                                                                 |                                              | XC40150XV | 9.5 / 0.0  | 8.3 / 0.0  | 7.2 / 0.0 | ns    |
|                                                                                 |                                              | XC40200XV | 10.7 / 0.0 | 9.3 / 0.0  | 8.1 / 0.0 | ns    |
|                                                                                 |                                              | XC40250XV | 11.9 / 0.0 | 10.4 / 0.0 | 9.0 / 0.0 | ns    |
|                                                                                 |                                              |           | Advance    |            |           |       |

IFF = Input Flip-Flop or Latch, FCL = Fast Capture Latch

Notes: Setup time is measured relative to the Global Clock input signal with the fastest route and the lightest load. Hold time is measured relative to the Global Clock input signal using the furthest distance and a reference load of one clock pin per two IOBs. Use the static timing analyzer (TRCE) to determine the setup and hold times under given design conditions.

## XC4000XV BUFGE #s 3, 4, 7, &amp; 8 Global Early Clock, Set-Up and Hold for IFF and FCL

| Speed Grade                                                                      |                                              |           | -09        | -08        | -07       | Units |
|----------------------------------------------------------------------------------|----------------------------------------------|-----------|------------|------------|-----------|-------|
| Description                                                                      | Symbol                                       | Device    | Min        | Min        | Min       |       |
| Input Setup and Hold Time Relative to Global Clock Input Signal                  |                                              |           |            |            |           |       |
| <b>No Delay</b><br>Global Early Clock and IFF<br>Global Early Clock and FCL      | $T_{PSEN}/T_{PHEN}$<br>$T_{PFSEN}/T_{PFHEN}$ | XC40110XV | 0.7 / 5.2  | 0.6 / 4.5  | 0.5 / 3.9 | ns    |
|                                                                                  |                                              | XC40150XV | 0.7 / 5.3  | 0.6 / 4.6  | 0.5 / 4.0 | ns    |
|                                                                                  |                                              | XC40200XV | 0.7 / 5.6  | 0.6 / 4.8  | 0.5 / 4.2 | ns    |
|                                                                                  |                                              | XC40250XV | 0.7 / 5.8  | 0.6 / 5.1  | 0.5 / 4.4 | ns    |
| <b>Partial Delay</b><br>Global Early Clock and IFF<br>Global Early Clock and FCL | $T_{PSEP}/T_{PHEP}$<br>$T_{PFSEP}/T_{PFHEP}$ | XC40110XV | 8.9 / 0.0  | 7.7 / 0.0  | 6.7 / 0.0 | ns    |
|                                                                                  |                                              | XC40150XV | 9.0 / 0.0  | 7.8 / 0.0  | 6.8 / 0.0 | ns    |
|                                                                                  |                                              | XC40200XV | 9.7 / 0.0  | 8.4 / 0.0  | 7.3 / 0.0 | ns    |
|                                                                                  |                                              | XC40250XV | 10.3 / 0.0 | 9.0 / 0.0  | 7.8 / 0.0 | ns    |
| <b>Full Delay</b><br>Global Early Clock and IFF                                  | $T_{PSED}/T_{PHED}$                          | XC40110XV | 9.4 / 0.0  | 8.2 / 0.0  | 7.1 / 0.0 | ns    |
|                                                                                  |                                              | XC40150XV | 9.5 / 0.0  | 8.3 / 0.0  | 7.2 / 0.0 | ns    |
|                                                                                  |                                              | XC40200XV | 10.7 / 0.0 | 9.3 / 0.0  | 8.1 / 0.0 | ns    |
|                                                                                  |                                              | XC40250XV | 11.9 / 0.0 | 10.4 / 0.0 | 9.0 / 0.0 | ns    |
|                                                                                  |                                              |           | Advance    |            |           |       |

IFF = Input Flip-Flop or Latch, FCL = Fast Capture Latch

Notes: Setup time is measured relative to the Global Clock input signal with the fastest route and the lightest load. Hold time is measured relative to the Global Clock input signal using the furthest distance and a reference load of one clock pin per two IOBs. Use the static timing analyzer (TRCE) to determine the setup and hold times under given design conditions.

**XC4000XV IOB Input Switching Characteristic Guidelines**

Testing of switching parameters is modeled after testing methods specified by MIL-M-38510/605. All devices are 100% functionally tested. Internal timing parameters are derived from measuring internal test patterns. Listed below are representative values. For more specific, more precise, and worst-case guaranteed data, use the values reported by the static timing analyzer (TRCE in the Xilinx Development System) and back-annotated to the simulation netlist. These path delays, provided as a guideline, have been extracted from the static timing analyzer report. All timing parameters assume worst-case operating conditions (supply voltage and junction temperature).

| Speed Grade                                                                         |                    |             | -09     |     | -08  |     | -07  |     | Units |
|-------------------------------------------------------------------------------------|--------------------|-------------|---------|-----|------|-----|------|-----|-------|
| Description                                                                         | Symbol             | Device      | Min     | Max | Min  | Max | Min  | Max |       |
| Clocks                                                                              |                    |             |         |     |      |     |      |     |       |
| Clock Enable (EC) to Clock (IK)                                                     | T <sub>ECIK</sub>  | All Devices | 0.0     |     | 0.0  |     | 0.0  |     | ns    |
| Delay from Fast Capture Latch enable (OK) active edge to IFF clock (IK) active edge | T <sub>OKIK</sub>  | All Devices | 2.0     |     | 1.8  |     | 1.5  |     | ns    |
| Setup Times                                                                         |                    |             |         |     |      |     |      |     |       |
| Pad to Clock (IK), no delay                                                         | T <sub>PICK</sub>  | All Devices | 0.7     |     | 0.6  |     | 0.5  |     | ns    |
| Pad to Clock (IK), via transparent Fast Capture Latch, no delay                     | T <sub>PICKF</sub> | All Devices | 1.2     |     | 1.1  |     | 0.9  |     | ns    |
| Pad to Fast Capture Latch Enable (OK), no delay                                     | T <sub>POCK</sub>  | All Devices | 0.2     |     | 0.2  |     | 0.1  |     | ns    |
| Hold Times                                                                          |                    |             |         |     |      |     |      |     |       |
| All Hold Times                                                                      |                    | All Devices | 0.0     |     | 0.0  |     | 0.0  |     | ns    |
| Global Set/Reset                                                                    |                    |             |         |     |      |     |      |     |       |
| Minimum GSR Pulse Width                                                             | T <sub>MRW</sub>   | All Devices | 18.4    |     | 16.0 |     | 13.9 |     | ns    |
| Delay from GSR input to any Q                                                       | T <sub>RRI</sub> * | XC40110XV   | 35.0    |     | 30.5 |     | 26.5 |     | ns    |
|                                                                                     |                    | XC40150XV   | 38.5    |     | 33.5 |     | 29.1 |     | ns    |
|                                                                                     |                    | XC40200XV   | 42.4    |     | 36.9 |     | 32.1 |     | ns    |
|                                                                                     |                    | XC40250XV   | 46.6    |     | 40.5 |     | 35.3 |     | ns    |
| Propagation Delays                                                                  |                    |             |         |     |      |     |      |     |       |
| Pad to I1, I2                                                                       | T <sub>PID</sub>   | All devices |         | 0.1 |      | 0.1 |      | 0.1 | ns    |
| Pad to I1, I2 via transparent input latch, no delay                                 | T <sub>PLI</sub>   | All devices |         | 1.5 |      | 1.3 |      | 1.1 | ns    |
| Pad to I1, I2 via transparent FCL and input latch, no delay                         | T <sub>PFLI</sub>  | All Devices |         | 2.0 |      | 1.8 |      | 1.6 | ns    |
| Clock (IK) to I1, I2 (flip-flop)                                                    | T <sub>IKRI</sub>  | All Devices |         | 1.1 |      | 0.9 |      | 0.8 | ns    |
| Clock (IK) to I1, I2 (latch enable, active Low)                                     | T <sub>IKLI</sub>  | All Devices |         | 1.2 |      | 1.1 |      | 0.9 | ns    |
| FCL Enable (OK) active edge to I1, I2 (via transparent standard input latch)        | T <sub>OKLI</sub>  | All Devices |         | 2.8 |      | 2.5 |      | 2.1 | ns    |
|                                                                                     |                    |             | Advance |     |      |     |      |     |       |

IFF = Input Flip-Flop or Latch, FCL = Fast Capture Latch.

\* Indicates Minimum Amount of Time to Assure Valid Data.

## XC4000XV IOB Output Switching Characteristic Guidelines

Testing of switching parameters is modeled after testing methods specified by MIL-M-38510/605. All devices are 100% functionally tested. Internal timing parameters are derived from measuring internal test patterns. Listed below are representative values. For more specific, more precise, and worst-case guaranteed data, use the values reported by the static timing analyzer (TRCE in the Xilinx Development System) and back-annotated to the simulation netlist. These path delays, provided as a guideline, have been extracted from the static timing analyzer report. All timing parameters assume worst-case operating conditions (supply voltage and junction temperature).

| Speed Grade                                 |                    |           | -09            |      | -08  |      | -07  |      | Units |
|---------------------------------------------|--------------------|-----------|----------------|------|------|------|------|------|-------|
| Description                                 | Symbol             | Device    | Min            | Max  | Min  | Max  | Min  | Max  |       |
| <b>Clocks</b>                               |                    |           |                |      |      |      |      |      |       |
| Clock High                                  | T <sub>CH</sub>    |           | 2.7            |      | 2.3  |      | 2.0  |      | ns    |
| Clock Low                                   | T <sub>CL</sub>    |           | 2.7            |      | 2.3  |      | 2.0  |      | ns    |
| <b>Propagation Delays</b> (See Note 1)      |                    |           |                |      |      |      |      |      |       |
| Clock (OK) to Pad                           | T <sub>OKPOF</sub> |           |                | 3.0  |      | 2.6  |      | 2.3  | ns    |
| Output (O) to Pad                           | T <sub>OPF</sub>   |           |                | 1.6  |      | 1.4  |      | 1.2  | ns    |
| 3-state to Pad hi-Z (slew-rate independent) | T <sub>TSHZ</sub>  |           |                | 3.7  |      | 3.2  |      | 2.8  | ns    |
| 3-state to Pad active and valid             | T <sub>TSONF</sub> |           |                | 4.1  |      | 3.6  |      | 3.1  | ns    |
| Output (O) to Pad via Fast Output MUX       | T <sub>OFPF</sub>  |           |                | 2.9  |      | 2.5  |      | 2.2  | ns    |
| Select (OK) to Pad via Fast MUX             | T <sub>OKFPF</sub> |           |                | 2.5  |      | 2.2  |      | 1.9  | ns    |
| <b>Setup and Hold Times</b>                 |                    |           |                |      |      |      |      |      |       |
| Output (O) to clock (OK) setup time         | T <sub>OOK</sub>   |           | 0.4            |      | 0.4  |      | 0.3  |      | ns    |
| Output (O) to clock (OK) hold time          | T <sub>OKO</sub>   |           | 0.0            |      | 0.0  |      | 0.0  |      | ns    |
| Clock Enable (EC) to clock (OK) setup time  | T <sub>ECOK</sub>  |           | 0.0            |      | 0.0  |      | 0.0  |      | ns    |
| Clock Enable (EC) to clock (OK) hold time   | T <sub>OKEC</sub>  |           | 0.3            |      | 0.2  |      | 0.1  |      | ns    |
| <b>Global Set/Reset</b>                     |                    |           |                |      |      |      |      |      |       |
| Minimum GSR pulse width                     | T <sub>MRW</sub>   |           | 18.4           |      | 16.0 |      | 13.9 |      | ns    |
| Delay from GSR input to any Pad             | T <sub>RPO</sub> * | XC40110XV |                | 37.1 |      | 32.2 |      | 28.0 | ns    |
|                                             |                    | XC40150XV |                | 40.5 |      | 35.3 |      | 30.7 | ns    |
|                                             |                    | XC40200XV |                | 44.4 |      | 38.6 |      | 33.6 | ns    |
|                                             |                    | XC40250XV |                | 48.6 |      | 42.3 |      | 36.8 | ns    |
| <b>Slew Rate Adjustment</b>                 |                    |           |                |      |      |      |      |      |       |
| For output SLOW option add                  | T <sub>SLOW</sub>  |           |                | 1.7  |      | 1.6  |      | 1.4  | ns    |
|                                             |                    |           | <b>Advance</b> |      |      |      |      |      |       |

Note: Output timing is measured at ~50%  $V_{CC}$  threshold, with 50 pF external capacitive loads.

\* Indicates Minimum Amount of Time to Assure Valid Data.

**XC4013XLA Pinout Table**
**XC4013XLA Pinout Table**

| PAD NAME        | PQ160 | PQ208 | PQ240 | BG256 |
|-----------------|-------|-------|-------|-------|
| VCC             | P142  | P183  | P212  | VCC*  |
| I/O (A8)        | P143  | P184  | P213  | C10   |
| I/O (A9)        | P144  | P185  | P214  | D10   |
| I/O (A19)       | P145  | P186  | P215  | A9    |
| I/O (A18)       | P146  | P187  | P216  | B9    |
| I/O             | —     | P188  | P217  | C9    |
| I/O             | —     | P189  | P218  | D9    |
| GND             | —     | —     | P219  | GND*  |
| I/O (A10)       | P147  | P190  | P220  | A8    |
| I/O (A11)       | P148  | P191  | P221  | B8    |
| VCC             | —     | —     | P222  | VCC*  |
| I/O             | —     | —     | P223  | A6    |
| I/O             | —     | —     | P224  | C7    |
| I/O             | P149  | P192  | P225  | B6    |
| I/O             | P150  | P193  | P226  | A5    |
| GND             | P151  | P194  | P227  | GND*  |
| I/O             | —     | P195  | P228  | C6    |
| I/O             | —     | P196  | P229  | B5    |
| I/O             | P152  | P197  | P230  | A4    |
| I/O             | P153  | P198  | P231  | C5    |
| I/O (A12)       | P154  | P199  | P232  | B4    |
| I/O (A13)       | P155  | P200  | P233  | A3    |
| GND             | —     | —     | —     | GND*  |
| VCC             | —     | —     | —     | VCC*  |
| I/O             | —     | —     | P234  | D5    |
| I/O             | —     | —     | P235  | C4    |
| I/O             | P156  | P201  | P236  | B3    |
| I/O             | P157  | P202  | P237  | B2    |
| I/O (A14)       | P158  | P203  | P238  | A2    |
| I/O, GCK8 (A15) | P159  | P204  | P239  | C3    |
| VCC             | P160  | P205  | P240  | VCC*  |
| GND             | P1    | P2    | P1    | GND*  |
| I/O, GCK1 (A16) | P2    | P4    | P2    | B1    |
| I/O (A17)       | P3    | P5    | P3    | C2    |
| I/O             | P4    | P6    | P4    | D2    |
| I/O             | P5    | P7    | P5    | D3    |
| I/O (TDI)       | P6    | P8    | P6    | E4    |
| I/O (TCK)       | P7    | P9    | P7    | C1    |
| VCC             | —     | —     | —     | VCC*  |
| GND             | —     | —     | —     | GND*  |
| I/O             | P8    | P10   | P8    | D1    |
| I/O             | P9    | P11   | P9    | E3    |
| I/O             | —     | P12   | P10   | E2    |
| I/O             | —     | P13   | P11   | E1    |
| I/O             | —     | —     | P12   | F3    |

**XC4013XLA Pinout Table (Continued)**

| PAD NAME   | PQ160 | PQ208 | PQ240 | BG256 |
|------------|-------|-------|-------|-------|
| I/O        | —     | —     | P13   | F2    |
| GND        | P10   | P14   | P14   | GND*  |
| I/O, FCLK1 | P11   | P15   | P15   | G3    |
| I/O        | P12   | P16   | P16   | G2    |
| I/O (TMS)  | P13   | P17   | P17   | G1    |
| I/O        | P14   | P18   | P18   | H3    |
| VCC        | —     | —     | P19   | VCC*  |
| I/O        | —     | —     | P20   | H2    |
| I/O        | —     | —     | P21   | H1    |
| GND        | —     | —     | P22   | GND*  |
| I/O        | —     | P19   | P23   | J2    |
| I/O        | —     | P20   | P24   | J1    |
| I/O        | P15   | P21   | P25   | K2    |
| I/O        | P16   | P22   | P26   | K3    |
| I/O        | P17   | P23   | P27   | K1    |
| I/O        | P18   | P24   | P28   | L1    |
| GND        | P19   | P25   | P29   | GND*  |
| VCC        | P20   | P26   | P30   | VCC*  |
| I/O        | P21   | P27   | P31   | L2    |
| I/O        | P22   | P28   | P32   | L3    |
| I/O        | P23   | P29   | P33   | L4    |
| I/O        | P24   | P30   | P34   | M1    |
| I/O        | —     | P31   | P35   | M2    |
| I/O        | —     | P32   | P36   | M3    |
| GND        | —     | —     | P37   | GND*  |
| I/O        | —     | —     | P38   | N1    |
| I/O        | —     | —     | P39   | N2    |
| VCC        | —     | —     | P40   | VCC*  |
| I/O        | P25   | P33   | P41   | P1    |
| I/O        | P26   | P34   | P42   | P2    |
| I/O        | P27   | P35   | P43   | R1    |
| I/O, FCLK2 | P28   | P36   | P44   | P3    |
| GND        | P29   | P37   | P45   | GND*  |
| I/O        | —     | —     | P46   | T1    |
| I/O        | —     | —     | P47   | R3    |
| I/O        | —     | P38   | P48   | T2    |
| I/O        | —     | P39   | P49   | U1    |
| I/O        | P30   | P40   | P50   | T3    |
| I/O        | P31   | P41   | P51   | U2    |
| GND        | —     | —     | —     | GND*  |
| VCC        | —     | —     | —     | VCC*  |
| I/O        | P32   | P42   | P52   | V1    |
| I/O        | P33   | P43   | P53   | T4    |
| I/O        | P34   | P44   | P54   | U3    |
| I/O        | P35   | P45   | P55   | V2    |
| I/O        | P36   | P46   | P56   | W1    |

XC4013XLA Pinout Table (Continued)

| PAD NAME    | PQ160 | PQ208 | PQ240 | BG256 |
|-------------|-------|-------|-------|-------|
| I/O, GCK2   | P37   | P47   | P57   | V3    |
| O (M1)      | P38   | P48   | P58   | W2    |
| GND         | P39   | P49   | P59   | GND*  |
| I (M0)      | P40   | P50   | P60   | Y1    |
| VCC         | P41   | P55   | P61   | VCC*  |
| I (M2)      | P42   | P56   | P62   | W3    |
| I/O, GCK3   | P43   | P57   | P63   | Y2    |
| I/O (HDC)   | P44   | P58   | P64   | W4    |
| I/O         | P45   | P59   | P65   | V4    |
| I/O         | P46   | P60   | P66   | U5    |
| I/O         | P47   | P61   | P67   | Y3    |
| I/O (/LDC)  | P48   | P62   | P68   | Y4    |
| VCC         | —     | —     | —     | VCC*  |
| GND         | —     | —     | —     | GND*  |
| I/O         | P49   | P63   | P69   | V5    |
| I/O         | P50   | P64   | P70   | W5    |
| I/O         | —     | P65   | P71   | Y5    |
| I/O         | —     | P66   | P72   | V6    |
| I/O         | —     | —     | P73   | W6    |
| I/O         | —     | —     | P74   | Y6    |
| GND         | P51   | P67   | P75   | GND*  |
| I/O         | P52   | P68   | P76   | W7    |
| I/O         | P53   | P69   | P77   | Y7    |
| I/O         | P54   | P70   | P78   | V8    |
| I/O         | P55   | P71   | P79   | W8    |
| VCC         | —     | —     | P80   | VCC*  |
| I/O         | —     | P72   | P81   | Y8    |
| I/O         | —     | P73   | P82   | U9    |
| GND         | —     | —     | P83   | GND*  |
| I/O         | —     | —     | P84   | Y9    |
| I/O         | —     | —     | P85   | W10   |
| I/O         | P56   | P74   | P86   | V10   |
| I/O         | P57   | P75   | P87   | Y10   |
| I/O         | P58   | P76   | P88   | Y11   |
| I/O (/INIT) | P59   | P77   | P89   | W11   |
| VCC         | P60   | P78   | P90   | VCC*  |
| GND         | P61   | P79   | P91   | GND*  |
| I/O         | P62   | P80   | P92   | V11   |
| I/O         | P63   | P81   | P93   | U11   |
| I/O         | P64   | P82   | P94   | Y12   |
| I/O         | P65   | P83   | P95   | W12   |
| I/O         | —     | P84   | P96   | V12   |
| I/O         | —     | P85   | P97   | U12   |
| GND         | —     | —     | P98   | GND*  |
| I/O         | —     | —     | P99   | V13   |
| I/O         | —     | —     | P100  | Y14   |

XC4013XLA Pinout Table (Continued)

| PAD NAME   | PQ160 | PQ208 | PQ240 | BG256 |
|------------|-------|-------|-------|-------|
| VCC        | —     | —     | P101  | VCC*  |
| I/O        | P66   | P86   | P102  | Y15   |
| I/O        | P67   | P87   | P103  | V14   |
| I/O        | P68   | P88   | P104  | W15   |
| I/O        | P69   | P89   | P105  | Y16   |
| GND        | P70   | P90   | P106  | GND*  |
| I/O        | —     | —     | P107  | V15   |
| I/O        | —     | —     | P108  | W16   |
| I/O        | —     | P91   | P109  | Y17   |
| I/O        | —     | P92   | P110  | V16   |
| I/O        | P71   | P93   | P111  | W17   |
| I/O        | P72   | P94   | P112  | Y18   |
| GND        | —     | —     | —     | GND*  |
| VCC        | —     | —     | —     | VCC*  |
| I/O        | P73   | P95   | P113  | U16   |
| I/O        | P74   | P96   | P114  | V17   |
| I/O        | P75   | P97   | P115  | W18   |
| I/O        | P76   | P98   | P116  | Y19   |
| I/O        | P77   | P99   | P117  | V18   |
| I/O, GCK4  | P78   | P100  | P118  | W19   |
| GND        | P79   | P101  | P119  | GND*  |
| DONE       | P80   | P103  | P120  | Y20   |
| VCC        | P81   | P106  | P121  | VCC*  |
| /PROGRAM   | P82   | P108  | P122  | V19   |
| I/O (D7)   | P83   | P109  | P123  | U19   |
| I/O, GCK5  | P84   | P110  | P124  | U18   |
| I/O        | P85   | P111  | P125  | T17   |
| I/O        | P86   | P112  | P126  | V20   |
| I/O        | —     | —     | P127  | U20   |
| I/O        | —     | —     | P128  | T18   |
| VCC        | —     | —     | —     | VCC*  |
| GND        | —     | —     | —     | GND*  |
| I/O (D6)   | P87   | P113  | P129  | T19   |
| I/O        | P88   | P114  | P130  | T20   |
| I/O        | P89   | P115  | P131  | R18   |
| I/O        | P90   | P116  | P132  | R19   |
| I/O        | —     | P117  | P133  | R20   |
| I/O        | —     | P118  | P134  | P18   |
| GND        | P91   | P119  | P135  | GND*  |
| I/O        | —     | —     | P136  | P20   |
| I/O        | —     | —     | P137  | N18   |
| I/O, FCLK3 | P92   | P120  | P138  | N19   |
| I/O        | P93   | P121  | P139  | N20   |
| VCC        | —     | —     | P140  | VCC*  |
| I/O (D5)   | P94   | P122  | P141  | M17   |
| I/O (/CS0) | P95   | P123  | P142  | M18   |

**XC4013XLA Pinout Table (Continued)**

| PAD NAME               | PQ160 | PQ208 | PQ240 | BG256 |
|------------------------|-------|-------|-------|-------|
| GND                    | —     | —     | P143  | GND*  |
| I/O                    | —     | P124  | P144  | M20   |
| I/O                    | —     | P125  | P145  | L19   |
| I/O                    | P96   | P126  | P146  | L18   |
| I/O                    | P97   | P127  | P147  | L20   |
| I/O (D4)               | P98   | P128  | P148  | K20   |
| I/O                    | P99   | P129  | P149  | K19   |
| VCC                    | P100  | P130  | P150  | VCC*  |
| GND                    | P101  | P131  | P151  | GND*  |
| I/O (D3)               | P102  | P132  | P152  | K18   |
| I/O (/RS)              | P103  | P133  | P153  | K17   |
| I/O                    | P104  | P134  | P154  | J20   |
| I/O                    | P105  | P135  | P155  | J19   |
| I/O                    | —     | P136  | P156  | J18   |
| I/O                    | —     | P137  | P157  | J17   |
| GND                    | —     | —     | P158  | GND*  |
| I/O (D2)               | P106  | P138  | P159  | H19   |
| I/O                    | P107  | P139  | P160  | H18   |
| VCC                    | —     | —     | P161  | VCC*  |
| I/O                    | P108  | P140  | P162  | G19   |
| I/O, FCLK4             | P109  | P141  | P163  | F20   |
| I/O                    | —     | —     | P164  | G18   |
| I/O                    | —     | —     | P165  | F19   |
| GND                    | P110  | P142  | P166  | GND*  |
| I/O                    | —     | —     | P167  | F18   |
| I/O                    | —     | —     | P168  | E19   |
| I/O                    | —     | P143  | P169  | D20   |
| I/O                    | —     | P144  | P170  | E18   |
| I/O                    | P111  | P145  | P171  | D19   |
| I/O                    | P112  | P146  | P172  | C20   |
| GND                    | —     | —     | —     | GND*  |
| VCC                    | —     | —     | —     | VCC*  |
| I/O (D1)               | P113  | P147  | P173  | E17   |
| I/O (/RCK, RDY_/_BUSY) | P114  | P148  | P174  | D18   |
| I/O                    | P115  | P149  | P175  | C19   |
| I/O                    | P116  | P150  | P176  | B20   |
| I/O (D0, DIN)          | P117  | P151  | P177  | C18   |
| I/O, GCK6 (DOUT)       | P118  | P152  | P178  | B19   |
| CCLK                   | P119  | P153  | P179  | A20   |
| VCC                    | P120  | P154  | P180  | VCC*  |
| O, TDO                 | P121  | P159  | P181  | A19   |
| GND                    | P122  | P160  | P182  | GND*  |
| I/O (A0, /WS)          | P123  | P161  | P183  | B18   |
| I/O, GCK7 (A1)         | P124  | P162  | P184  | B17   |
| I/O                    | P125  | P163  | P185  | C17   |
| I/O                    | P126  | P164  | P186  | D16   |

**XC4013XLA Pinout Table (Continued)**

| PAD NAME       | PQ160 | PQ208 | PQ240 | BG256 |
|----------------|-------|-------|-------|-------|
| I/O, (CS1, A2) | P127  | P165  | P187  | A18   |
| I/O (A3)       | P128  | P166  | P188  | A17   |
| VCC            | —     | —     | —     | VCC*  |
| GND            | —     | —     | —     | GND*  |
| I/O            | —     | —     | P189  | C16   |
| I/O            | —     | —     | P190  | B16   |
| I/O            | P129  | P167  | P191  | A16   |
| I/O            | P130  | P168  | P192  | C15   |
| I/O            | —     | P169  | P193  | B15   |
| I/O            | —     | P170  | P194  | A15   |
| GND            | P131  | P171  | P196  | GND*  |
| I/O            | P132  | P172  | P197  | B14   |
| I/O            | P133  | P173  | P198  | A14   |
| I/O            | —     | —     | P199  | C13   |
| I/O            | —     | —     | P200  | B13   |
| VCC            | —     | —     | P201  | VCC*  |
| I/O (A4)       | P134  | P174  | P202  | C12   |
| I/O (A5)       | P135  | P175  | P203  | B12   |
| GND            | —     | —     | P204  | GND*  |
| I/O            | —     | P176  | P205  | A12   |
| I/O            | P136  | P177  | P206  | B11   |
| I/O (A21)      | P137  | P178  | P207  | C11   |
| I/O (A20)      | P138  | P179  | P208  | A11   |
| I/O (A6)       | P139  | P180  | P209  | A10   |
| I/O (A7)       | P140  | P181  | P210  | B10   |
| GND            | P141  | P182  | P211  | GND*  |
|                |       |       |       |       |
| VCC            | —     | —     | —     | D6    |
| VCC            | —     | —     | —     | D11   |
| VCC            | —     | —     | —     | D15   |
| VCC            | —     | —     | —     | F4    |
| VCC            | —     | —     | —     | F17   |
| VCC            | —     | —     | —     | K4    |
| VCC            | —     | —     | —     | L17   |
| VCC            | —     | —     | —     | R4    |
| VCC            | —     | —     | —     | R17   |
| VCC            | —     | —     | —     | U6    |
| VCC            | —     | —     | —     | U10   |
| VCC            | —     | —     | —     | U15   |
| VCC            | —     | —     | —     | C14   |
| VCC            | —     | —     | —     | F1    |
| VCC            | —     | —     | —     | R2    |
| VCC            | —     | —     | —     | E20   |
| VCC            | —     | —     | —     | P19   |
| VCC            | —     | —     | —     | V7    |
| VCC            | —     | —     | —     | D7    |

XC4013XLA Pinout Table (Continued)

| PAD NAME | PQ160 | PQ208 | PQ240 | BG256 |
|----------|-------|-------|-------|-------|
| VCC      | —     | —     | —     | D14   |
| VCC      | —     | —     | —     | G17   |
| VCC      | —     | —     | —     | P17   |
| VCC      | —     | —     | —     | W20   |
| VCC      | —     | —     | —     | U14   |
| VCC      | —     | —     | —     | U7    |
| VCC      | —     | —     | —     | P4    |
| VCC      | —     | —     | —     | G4    |
|          |       |       |       |       |
| GND      | —     | —     | —     | A1    |
| GND      | —     | —     | —     | D4    |
| GND      | —     | —     | —     | D8    |
| GND      | —     | —     | —     | D13   |
| GND      | —     | —     | —     | D17   |
| GND      | —     | —     | —     | H4    |
| GND      | —     | —     | —     | H17   |
| GND      | —     | —     | —     | N4    |
| GND      | —     | —     | —     | N17   |
| GND      | —     | —     | —     | U4    |
| GND      | —     | —     | —     | U8    |
| GND      | —     | —     | —     | U13   |
| GND      | —     | —     | —     | U17   |
| GND      | —     | —     | —     | B7    |
| GND      | —     | —     | —     | N3    |

XC4013XLA Pinout Table (Continued)

| PAD NAME | PQ160 | PQ208 | PQ240 | BG256 |
|----------|-------|-------|-------|-------|
| GND      | —     | —     | —     | W14   |
| GND      | —     | —     | —     | G20   |
|          |       |       |       |       |
| NC       | —     | P1    | P195  | A7    |
| NC       | —     | P3    | —     | C8    |
| NC       | —     | P51   | —     | D12   |
| NC       | —     | P52   | —     | A13   |
| NC       | —     | P53   | —     | H20   |
| NC       | —     | P54   | —     | Y13   |
| NC       | —     | P102  | —     | W13   |
| NC       | —     | P104  | —     | M19   |
| NC       | —     | P105  | —     | W9    |
| NC       | —     | P107  | —     | V9    |
| NC       | —     | P155  | —     | M4    |
| NC       | —     | P156  | —     | J3    |
| NC       | —     | P157  | —     | J4    |
| NC       | —     | P158  | —     | —     |
| NC       | —     | P206  | —     | —     |
| NC       | —     | P207  | —     | —     |
| NC       | —     | P208  | —     | —     |

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## XC4020XLA Pinout Table

XC4020XLA Pinout Table

| PAD NAME         | PQ160 | PQ208 | PQ240 | BG256 |
|------------------|-------|-------|-------|-------|
| VCC              | P142  | P183  | P212  | VCC*  |
| I/O (A8)         | P143  | P184  | P213  | C10   |
| I/O (A9)         | P144  | P185  | P214  | D10   |
| I/O (A19)        | P145  | P186  | P215  | A9    |
| I/O (A18)        | P146  | P187  | P216  | B9    |
| I/O              | —     | P188  | P217  | C9    |
| I/O              | —     | P189  | P218  | D9    |
| GND              | —     | —     | P219  | GND*  |
| I/O (A10)        | P147  | P190  | P220  | A8    |
| I/O (A11)        | P148  | P191  | P221  | B8    |
| I/O              | —     | —     | —     | C8    |
| I/O              | —     | —     | —     | A7    |
| VCC              | —     | —     | P222  | VCC*  |
| I/O              | —     | —     | P223  | A6    |
| I/O              | —     | —     | P224  | C7    |
| I/O              | P149  | P192  | P225  | B6    |
| I/O              | P150  | P193  | P226  | A5    |
| GND              | P151  | P194  | P227  | GND*  |
| I/O              | —     | P195  | P228  | C6    |
| I/O              | —     | P196  | P229  | B5    |
| I/O              | P152  | P197  | P230  | A4    |
| I/O              | P153  | P198  | P231  | C5    |
| I/O (A12)        | P154  | P199  | P232  | B4    |
| I/O (A13)        | P155  | P200  | P233  | A3    |
| GND              | —     | —     | —     | GND*  |
| VCC              | —     | —     | —     | VCC*  |
| I/O              | —     | —     | P234  | D5    |
| I/O              | —     | —     | P235  | C4    |
| I/O              | P156  | P201  | P236  | B3    |
| I/O              | P157  | P202  | P237  | B2    |
| I/O (A14)        | P158  | P203  | P238  | A2    |
| I/O, GCK8 (A15)* | P159  | P204  | P239  | C3    |
| VCC              | P160  | P205  | P240  | VCC   |
| GND              | P1    | P2    | P1    | GND*  |
| I/O, GCK1 (A16)  | P2    | P4    | P2    | B1    |
| I/O (A17)        | P3    | P5    | P3    | C2    |
| I/O              | P4    | P6    | P4    | D2    |
| I/O              | P5    | P7    | P5    | D3    |
| I/O (TDI)        | P6    | P8    | P6    | E4    |
| I/O (TCK)        | P7    | P9    | P7    | C1    |
| VCC              | —     | —     | —     | VCC*  |
| GND              | —     | —     | —     | GND*  |
| I/O              | P8    | P10   | P8    | D1    |
| I/O              | P9    | P11   | P9    | E3    |
| I/O              | —     | P12   | P10   | E2    |
| I/O              | —     | P13   | P11   | E1    |
| I/O              | —     | —     | P12   | F3    |
| I/O              | —     | —     | P13   | F2    |
| GND              | P10   | P14   | P14   | GND*  |
| I/O, FCLK1       | P11   | P15   | P15   | G3    |
| I/O              | P12   | P16   | P16   | G2    |
| I/O (TMS)        | P13   | P17   | P17   | G1    |
| I/O              | P14   | P18   | P18   | H3    |
| VCC              | —     | —     | P19   | VCC*  |
| I/O              | —     | —     | P20   | H2    |

XC4020XLA Pinout Table (Continued)

| PAD NAME   | PQ160 | PQ208 | PQ240 | BG256 |
|------------|-------|-------|-------|-------|
| I/O        | —     | —     | P21   | H1    |
| GND        | —     | —     | P22   | GND*  |
| I/O        | —     | —     | —     | J4    |
| I/O        | —     | —     | —     | J3    |
| I/O        | —     | P19   | P23   | J2    |
| I/O        | —     | P20   | P24   | J1    |
| I/O        | P15   | P21   | P25   | K2    |
| I/O        | P16   | P22   | P26   | K3    |
| I/O        | P17   | P23   | P27   | K1    |
| I/O        | P18   | P24   | P28   | L1    |
| GND        | P19   | P25   | P29   | GND*  |
| VCC        | P20   | P26   | P30   | VCC*  |
| I/O        | P21   | P27   | P31   | L2    |
| I/O        | P22   | P28   | P32   | L3    |
| I/O        | P23   | P29   | P33   | L4    |
| I/O        | P24   | P30   | P34   | M1    |
| I/O        | —     | P31   | P35   | M2    |
| I/O        | —     | P32   | P36   | M3    |
| I/O        | —     | —     | —     | M4    |
| GND        | —     | —     | P37   | GND*  |
| I/O        | —     | —     | P38   | N1    |
| I/O        | —     | —     | P39   | N2    |
| VCC        | —     | —     | P40   | VCC*  |
| I/O        | P25   | P33   | P41   | P1    |
| I/O        | P26   | P34   | P42   | P2    |
| I/O        | P27   | P35   | P43   | R1    |
| I/O, FCLK2 | P28   | P36   | P44   | P3    |
| GND        | P29   | P37   | P45   | GND*  |
| I/O        | —     | —     | P46   | T1    |
| I/O        | —     | —     | P47   | R3    |
| I/O        | —     | P38   | P48   | T2    |
| I/O        | —     | P39   | P49   | U1    |
| I/O        | P30   | P40   | P50   | T3    |
| I/O        | P31   | P41   | P51   | U2    |
| GND        | —     | —     | —     | GND*  |
| VCC        | —     | —     | —     | VCC*  |
| I/O        | P32   | P42   | P52   | V1    |
| I/O        | P33   | P43   | P53   | T4    |
| I/O        | P34   | P44   | P54   | U3    |
| I/O        | P35   | P45   | P55   | V2    |
| I/O        | P36   | P46   | P56   | W1    |
| I/O, GCK2  | P37   | P47   | P57   | V3    |
| O (M1)     | P38   | P48   | P58   | W2    |
| GND        | P39   | P49   | P59   | GND*  |
| I (M0)     | P40   | P50   | P60   | Y1    |
| VCC        | P41   | P55   | P61   | VCC*  |
| I (M2)     | P42   | P56   | P62   | W3    |
| I/O, GCK3  | P43   | P57   | P63   | Y2    |
| I/O (HDC)  | P44   | P58   | P64   | W4    |
| I/O        | P45   | P59   | P65   | V4    |
| I/O        | P46   | P60   | P66   | U5    |
| I/O        | P47   | P61   | P67   | Y3    |
| I/O (LDC)  | P48   | P62   | P68   | Y4    |
| VCC        | —     | —     | —     | VCC*  |
| GND        | —     | —     | —     | GND*  |
| I/O        | P49   | P63   | P69   | V5    |
| I/O        | P50   | P64   | P70   | W5    |

XC4020XLA Pinout Table (Continued)

| PAD NAME    | PQ160 | PQ208 | PQ240 | BG256 |
|-------------|-------|-------|-------|-------|
| I/O         | —     | P65   | P71   | Y5    |
| I/O         | —     | P66   | P72   | V6    |
| I/O         | —     | —     | P73   | W6    |
| I/O         | —     | —     | P74   | Y6    |
| GND         | P51   | P67   | P75   | GND*  |
| I/O         | P52   | P68   | P76   | W7    |
| I/O         | P53   | P69   | P77   | Y7    |
| I/O         | P54   | P70   | P78   | V8    |
| I/O         | P55   | P71   | P79   | W8    |
| VCC         | —     | —     | P80   | VCC*  |
| I/O         | —     | P72   | P81   | Y8    |
| I/O         | —     | P73   | P82   | U9    |
| GND         | —     | —     | P83   | GND*  |
| I/O         | —     | —     | —     | V9    |
| I/O         | —     | —     | —     | W9    |
| I/O         | —     | —     | P84   | Y9    |
| I/O         | —     | —     | P85   | W10   |
| I/O         | P56   | P74   | P86   | V10   |
| I/O         | P57   | P75   | P87   | Y10   |
| I/O         | P58   | P76   | P88   | Y11   |
| I/O (/INIT) | P59   | P77   | P89   | W11   |
| VCC         | P60   | P78   | P90   | VCC*  |
| GND         | P61   | P79   | P91   | GND*  |
| I/O         | P62   | P80   | P92   | V11   |
| I/O         | P63   | P81   | P93   | U11   |
| I/O         | P64   | P82   | P94   | Y12   |
| I/O         | P65   | P83   | P95   | W12   |
| I/O         | —     | P84   | P96   | V12   |
| I/O         | —     | P85   | P97   | U12   |
| I/O         | —     | —     | —     | Y13   |
| I/O         | —     | —     | —     | W13   |
| GND         | —     | —     | P98   | GND*  |
| I/O         | —     | —     | P99   | V13   |
| I/O         | —     | —     | P100  | Y14   |
| VCC         | —     | —     | P101  | VCC*  |
| I/O         | P66   | P86   | P102  | Y15   |
| I/O         | P67   | P87   | P103  | V14   |
| I/O         | P68   | P88   | P104  | W15   |
| I/O         | P69   | P89   | P105  | Y16   |
| GND         | P70   | P90   | P106  | GND*  |
| I/O         | —     | —     | P107  | V15   |
| I/O         | —     | —     | P108  | W16   |
| I/O         | —     | P91   | P109  | Y17   |
| I/O         | —     | P92   | P110  | V16   |
| I/O         | P71   | P93   | P111  | W17   |
| I/O         | P72   | P94   | P112  | Y18   |
| GND         | —     | —     | —     | GND*  |
| VCC         | —     | —     | —     | VCC*  |
| I/O         | P73   | P95   | P113  | U16   |
| I/O         | P74   | P96   | P114  | V17   |
| I/O         | P75   | P97   | P115  | W18   |
| I/O         | P76   | P98   | P116  | Y19   |
| I/O         | P77   | P99   | P117  | V18   |
| I/O, GCK4   | P78   | P100  | P118  | W19   |
| GND         | P79   | P101  | P119  | GND*  |
| DONE        | P80   | P103  | P120  | Y20   |
| VCC         | P81   | P106  | P121  | VCC*  |

XC4020XLA Pinout Table (Continued)

| PAD NAME   | PQ160 | PQ208 | PQ240 | BG256 |
|------------|-------|-------|-------|-------|
| /PROGRAM   | P82   | P108  | P122  | V19   |
| I/O (D7)   | P83   | P109  | P123  | U19   |
| I/O, GCK5  | P84   | P110  | P124  | U18   |
| I/O        | P85   | P111  | P125  | T17   |
| I/O        | P86   | P112  | P126  | V20   |
| I/O        | —     | —     | P127  | U20   |
| I/O        | —     | —     | P128  | T18   |
| VCC        | —     | —     | —     | VCC*  |
| GND        | —     | —     | —     | GND*  |
| I/O (D6)   | P87   | P113  | P129  | T19   |
| I/O        | P88   | P114  | P130  | T20   |
| I/O        | P89   | P115  | P131  | R18   |
| I/O        | P90   | P116  | P132  | R19   |
| I/O        | —     | P117  | P133  | R20   |
| I/O        | —     | P118  | P134  | P18   |
| GND        | P91   | P119  | P135  | GND*  |
| I/O        | —     | —     | P136  | P20   |
| I/O        | —     | —     | P137  | N18   |
| I/O, FCLK3 | P92   | P120  | P138  | N19   |
| I/O        | P93   | P121  | P139  | N20   |
| VCC        | —     | —     | P140  | VCC*  |
| I/O (D5)   | P94   | P122  | P141  | M17   |
| I/O (/CS0) | P95   | P123  | P142  | M18   |
| GND        | —     | —     | P143  | GND*  |
| I/O        | —     | —     | —     | M19   |
| I/O        | —     | P124  | P144  | M20   |
| I/O        | —     | P125  | P145  | L19   |
| I/O        | P96   | P126  | P146  | L18   |
| I/O        | P97   | P127  | P147  | L20   |
| I/O (D4)   | P98   | P128  | P148  | K20   |
| I/O        | P99   | P129  | P149  | K19   |
| VCC        | P100  | P130  | P150  | VCC*  |
| GND        | P101  | P131  | P151  | GND*  |
| I/O (D3)   | P102  | P132  | P152  | K18   |
| I/O (/RS)  | P103  | P133  | P153  | K17   |
| I/O        | P104  | P134  | P154  | J20   |
| I/O        | P105  | P135  | P155  | J19   |
| I/O        | —     | P136  | P156  | J18   |
| I/O        | —     | P137  | P157  | J17   |
| I/O        | —     | —     | —     | H20   |
| GND        | —     | —     | P158  | GND*  |
| I/O (D2)   | P106  | P138  | P159  | H19   |
| I/O        | P107  | P139  | P160  | H18   |
| VCC        | —     | —     | P161  | VCC*  |
| I/O        | P108  | P140  | P162  | G19   |
| I/O, FCLK4 | P109  | P141  | P163  | F20   |
| I/O        | —     | —     | P164  | G18   |
| I/O        | —     | —     | P165  | F19   |
| GND        | P110  | P142  | P166  | GND*  |
| I/O        | —     | —     | P167  | F18   |
| I/O        | —     | —     | P168  | E19   |
| I/O        | —     | P143  | P169  | D20   |
| I/O        | —     | P144  | P170  | E18   |
| I/O        | P111  | P145  | P171  | D19   |
| I/O        | P112  | P146  | P172  | C20   |
| GND        | —     | —     | —     | GND*  |
| VCC        | —     | —     | —     | VCC*  |

XC4020XLA Pinout Table (Continued)

| PAD NAME              | PQ160 | PQ208 | PQ240 | BG256 |
|-----------------------|-------|-------|-------|-------|
| I/O (D1)              | P113  | P147  | P173  | E17   |
| I/O (/RCK, RDY./BUSY) | P114  | P148  | P174  | D18   |
| I/O                   | P115  | P149  | P175  | C19   |
| I/O                   | P116  | P150  | P176  | B20   |
| I/O (D0, DIN)         | P117  | P151  | P177  | C18   |
| I/O, GCK6 (DOUT)      | P118  | P152  | P178  | B19   |
| CCLK                  | P119  | P153  | P179  | A20   |
| VCC                   | P120  | P154  | P180  | VCC*  |
| O, TDO                | P121  | P159  | P181  | A19   |
| GND                   | P122  | P160  | P182  | GND*  |
| I/O (A0, /WS)         | P123  | P161  | P183  | B18   |
| I/O, GCK7 (A1)"       | P124  | P162  | P184  | B17   |
| I/O                   | P125  | P163  | P185  | C17   |
| I/O                   | P126  | P164  | P186  | D16   |
| I/O, (CS1, A2)        | P127  | P165  | P187  | A18   |
| I/O (A3)              | P128  | P166  | P188  | A17   |
| VCC                   | —     | —     | —     | VCC*  |
| GND                   | —     | —     | —     | GND*  |
| I/O                   | —     | —     | P189  | C16   |
| I/O                   | —     | —     | P190  | B16   |
| I/O                   | P129  | P167  | P191  | A16   |
| I/O                   | P130  | P168  | P192  | C15   |
| I/O                   | —     | P169  | P193  | B15   |
| I/O                   | —     | P170  | P194  | A15   |
| GND                   | P131  | P171  | P196  | GND*  |
| I/O                   | P132  | P172  | P197  | B14   |
| I/O                   | P133  | P173  | P198  | A14   |
| I/O                   | —     | —     | P199  | C13   |
| I/O                   | —     | —     | P200  | B13   |
| VCC                   | —     | —     | P201  | VCC*  |
| I/O                   | —     | —     | —     | A13   |
| I/O                   | —     | —     | —     | D12   |
| I/O (A4)              | P134  | P174  | P202  | C12   |
| I/O (A5)              | P135  | P175  | P203  | B12   |
| GND                   | —     | —     | P204  | GND*  |
| I/O                   | —     | P176  | P205  | A12   |
| I/O                   | P136  | P177  | P206  | B11   |
| I/O (A21)             | P137  | P178  | P207  | C11   |
| I/O (A20)             | P138  | P179  | P208  | A11   |
| I/O (A6)              | P139  | P180  | P209  | A10   |
| I/O (A7)              | P140  | P181  | P210  | B10   |
| GND                   | P141  | P182  | P211  | GND*  |
|                       |       |       |       |       |
| VCC                   | —     | —     | —     | D6    |
| VCC                   | —     | —     | —     | D11   |
| VCC                   | —     | —     | —     | D15   |
| VCC                   | —     | —     | —     | F4    |
| VCC                   | —     | —     | —     | F17   |
| VCC                   | —     | —     | —     | K4    |
| VCC                   | —     | —     | —     | L17   |
| VCC                   | —     | —     | —     | R4    |
| VCC                   | —     | —     | —     | R17   |
| VCC                   | —     | —     | —     | U6    |
| VCC                   | —     | —     | —     | U10   |
| VCC                   | —     | —     | —     | U15   |
| VCC                   | —     | —     | —     | C14   |
| VCC                   | —     | —     | —     | F1    |

XC4020XLA Pinout Table (Continued)

| PAD NAME | PQ160 | PQ208 | PQ240 | BG256    |
|----------|-------|-------|-------|----------|
| VCC      | —     | —     | —     | R2       |
| VCC      | —     | —     | —     | E20      |
| VCC      | —     | —     | —     | P19      |
| VCC      | —     | —     | —     | V7       |
| VCC      | —     | —     | —     | D7-CORE  |
| VCC      | —     | —     | —     | D14-CORE |
| VCC      | —     | —     | —     | G17      |
| VCC      | —     | —     | —     | P17      |
| VCC      | —     | —     | —     | W20      |
| VCC      | —     | —     | —     | U14-CORE |
| VCC      | —     | —     | —     | U7-CORE  |
| VCC      | —     | —     | —     | P4       |
| VCC      | —     | —     | —     | G4-CORE  |
|          |       |       |       |          |
| GND      | —     | —     | —     | A1       |
| GND      | —     | —     | —     | D4       |
| GND      | —     | —     | —     | D8       |
| GND      | —     | —     | —     | D13      |
| GND      | —     | —     | —     | D17      |
| GND      | —     | —     | —     | H4       |
| GND      | —     | —     | —     | H17      |
| GND      | —     | —     | —     | N4       |
| GND      | —     | —     | —     | N17      |
| GND      | —     | —     | —     | U4       |
| GND      | —     | —     | —     | U8       |
| GND      | —     | —     | —     | U13      |
| GND      | —     | —     | —     | U17      |
| GND      | —     | —     | —     | B7       |
| GND      | —     | —     | —     | N3       |
| GND      | —     | —     | —     | W14      |
| GND      | —     | —     | —     | G20      |
|          |       |       |       |          |
| NC       | —     | P1    | P195  | —        |
| NC       | —     | P3    | —     | —        |
| NC       | —     | P51   | —     | —        |
| NC       | —     | P52   | —     | —        |
| NC       | —     | P53   | —     | —        |
| NC       | —     | P54   | —     | —        |
| NC       | —     | P102  | —     | —        |
| NC       | —     | P104  | —     | —        |
| NC       | —     | P105  | —     | —        |
| NC       | —     | P107  | —     | —        |
| NC       | —     | P155  | —     | —        |
| NC       | —     | P156  | —     | —        |
| NC       | —     | P157  | —     | —        |
| NC       | —     | P158  | —     | —        |
| NC       | —     | P206  | —     | —        |
| NC       | —     | P207  | —     | —        |
| NC       | —     | P208  | —     | —        |

12/18/98



## XC4028XLA Pinout Table

XC4028XLA Pinout Table

| PAD NAME        | HQ160 | HQ208 | HQ240 | BG256 | HQ304 | BG352 |
|-----------------|-------|-------|-------|-------|-------|-------|
| VCC             | P142  | P183  | P212  | VCC*  | P38   | VCC*  |
| I/O (A8)        | P143  | P184  | P213  | C10   | P37   | D14   |
| I/O (A9)        | P144  | P185  | P214  | D10   | P36   | C14   |
| I/O (A19)       | P145  | P186  | P215  | A9    | P35   | A15   |
| I/O (A18)       | P146  | P187  | P216  | B9    | P34   | B15   |
| I/O             | —     | P188  | P217  | C9    | P33   | C15   |
| I/O             | —     | P189  | P218  | D9    | P32   | D15   |
| I/O (A10)       | P147  | P190  | P220  | A8    | P31   | A16   |
| I/O (A11)       | P148  | P191  | P221  | B8    | P30   | B16   |
| GND             | —     | —     | —     | GND*  | —     | GND*  |
| I/O             | —     | —     | —     | —     | P29   | C16   |
| I/O             | —     | —     | —     | —     | P28   | B17   |
| I/O             | —     | —     | —     | C8    | P27   | C17   |
| I/O             | —     | —     | —     | A7    | P26   | B18   |
| VCC             | —     | —     | P222  | VCC*  | P25   | VCC*  |
| I/O             | —     | —     | P223  | A6    | P23   | C18   |
| I/O             | —     | —     | P224  | C7    | P22   | D17   |
| I/O             | P149  | P192  | P225  | B6    | P21   | A20   |
| I/O             | P150  | P193  | P226  | A5    | P20   | B19   |
| GND             | P151  | P194  | P227  | GND*  | P19   | GND*  |
| I/O             | —     | —     | —     | —     | P18   | C19   |
| I/O             | —     | —     | —     | —     | P17   | D18   |
| I/O             | —     | P195  | P228  | C6    | P16   | A21   |
| I/O             | —     | P196  | P229  | B5    | P15   | B20   |
| I/O             | P152  | P197  | P230  | A4    | P14   | C20   |
| I/O             | P153  | P198  | P231  | C5    | P13   | B21   |
| I/O (A12)       | P154  | P199  | P232  | B4    | P12   | B22   |
| I/O (A13)       | P155  | P200  | P233  | A3    | P10   | C21   |
| GND             | —     | —     | —     | GND*  | —     | GND*  |
| VCC             | —     | —     | —     | VCC*  | —     | VCC*  |
| I/O             | —     | —     | —     | —     | P9    | D20   |
| I/O             | —     | —     | —     | —     | P8    | A23   |
| I/O             | —     | —     | P234  | D5    | P7    | D21   |
| I/O             | —     | —     | P235  | C4    | P6    | C22   |
| I/O             | P156  | P201  | P236  | B3    | P5    | B24   |
| I/O             | P157  | P202  | P237  | B2    | P4    | C23   |
| I/O (A14)       | P158  | P203  | P238  | A2    | P3    | D22   |
| I/O, GCK8 (A15) | P159  | P204  | P239  | C3    | P2    | C24   |
| VCC             | P160  | P205  | P240  | VCC*  | P1    | VCC*  |
| GND             | P1    | P2    | P1    | GND*  | P304  | GND*  |
| I/O, GCK1 (A16) | P2    | P4    | P2    | B1    | P303  | D23   |
| I/O (A17)       | P3    | P5    | P3    | C2    | P302  | C25   |
| I/O             | P4    | P6    | P4    | D2    | P301  | D24   |
| I/O             | P5    | P7    | P5    | D3    | P300  | E23   |
| I/O (TDI)       | P6    | P8    | P6    | E4    | P299  | C26   |
| I/O (TCK)       | P7    | P9    | P7    | C1    | P298  | E24   |
| I/O             | —     | —     | —     | —     | P297  | F24   |
| I/O             | —     | —     | —     | —     | P296  | E25   |
| VCC             | —     | —     | —     | VCC*  | —     | VCC*  |
| GND             | —     | —     | —     | GND*  | —     | GND*  |
| I/O             | P8    | P10   | P8    | D1    | P295  | D26   |
| I/O             | P9    | P11   | P9    | E3    | P294  | G24   |
| I/O             | —     | P12   | P10   | E2    | P293  | F25   |
| I/O             | —     | P13   | P11   | E1    | P292  | F26   |
| I/O             | —     | —     | P12   | F3    | P291  | H23   |

XC4028XLA Pinout Table (Continued)

| PAD NAME   | HQ160 | HQ208 | HQ240 | BG256 | HQ304 | BG352 |
|------------|-------|-------|-------|-------|-------|-------|
| I/O        | —     | —     | P13   | F2    | P290  | H24   |
| I/O        | —     | —     | —     | —     | P289  | G25   |
| I/O        | —     | —     | —     | —     | P288  | G26   |
| GND        | P10   | P14   | P14   | GND*  | P287  | GND*  |
| I/O, FCLK1 | P11   | P15   | P15   | G3    | P286  | J23   |
| I/O        | P12   | P16   | P16   | G2    | P285  | J24   |
| I/O (TMS)  | P13   | P17   | P17   | G1    | P284  | H25   |
| I/O        | P14   | P18   | P18   | H3    | P283  | K23   |
| VCC        | —     | —     | P19   | VCC*  | P282  | VCC*  |
| I/O        | —     | —     | P20   | H2    | P280  | K24   |
| I/O        | —     | —     | P21   | H1    | P279  | J25   |
| I/O        | —     | —     | —     | —     | P278  | L24   |
| I/O        | —     | —     | —     | —     | P277  | K25   |
| GND        | —     | —     | P22   | GND*  | —     | GND*  |
| I/O        | —     | —     | —     | J4    | P276  | L25   |
| I/O        | —     | —     | —     | J3    | P275  | L26   |
| I/O        | —     | P19   | P23   | J2    | P274  | M23   |
| I/O        | —     | P20   | P24   | J1    | P273  | M24   |
| I/O        | P15   | P21   | P25   | K2    | P272  | M25   |
| I/O        | P16   | P22   | P26   | K3    | P271  | M26   |
| I/O        | P17   | P23   | P27   | K1    | P270  | N24   |
| I/O        | P18   | P24   | P28   | L1    | P269  | N25   |
| GND        | P19   | P25   | P29   | GND*  | P268  | GND*  |
| VCC        | P20   | P26   | P30   | VCC*  | P267  | VCC*  |
| I/O        | P21   | P27   | P31   | L2    | P266  | N26   |
| I/O        | P22   | P28   | P32   | L3    | P265  | P25   |
| I/O        | P23   | P29   | P33   | L4    | P264  | P23   |
| I/O        | P24   | P30   | P34   | M1    | P263  | P24   |
| I/O        | —     | P31   | P35   | M2    | P262  | R26   |
| I/O        | —     | P32   | P36   | M3    | P261  | R25   |
| I/O        | —     | —     | —     | M4    | P260  | R24   |
| I/O        | —     | —     | —     | —     | P259  | R23   |
| GND        | —     | —     | P37   | GND*  | —     | GND*  |
| I/O        | —     | —     | —     | —     | P258  | T26   |
| I/O        | —     | —     | —     | —     | P257  | T25   |
| I/O        | —     | —     | P38   | N1    | P256  | T23   |
| I/O        | —     | —     | P39   | N2    | P255  | V26   |
| VCC        | —     | —     | P40   | VCC*  | P253  | VCC*  |
| I/O        | P25   | P33   | P41   | P1    | P252  | U24   |
| I/O        | P26   | P34   | P42   | P2    | P251  | V25   |
| I/O        | P27   | P35   | P43   | R1    | P250  | V24   |
| I/O, FCLK2 | P28   | P36   | P44   | P3    | P249  | U23   |
| GND        | P29   | P37   | P45   | GND*  | P248  | GND*  |
| I/O        | —     | —     | —     | —     | P247  | Y26   |
| I/O        | —     | —     | —     | —     | P246  | W25   |
| I/O        | —     | —     | P46   | T1    | P245  | W24   |
| I/O        | —     | —     | P47   | R3    | P244  | V23   |
| I/O        | —     | P38   | P48   | T2    | P243  | AA26  |
| I/O        | —     | P39   | P49   | U1    | P242  | Y25   |
| I/O        | P30   | P40   | P50   | T3    | P241  | Y24   |
| I/O        | P31   | P41   | P51   | U2    | P240  | AA25  |
| GND        | —     | —     | —     | GND*  | —     | GND*  |
| VCC        | —     | —     | —     | VCC*  | —     | VCC*  |
| I/O        | —     | —     | —     | —     | P239  | AB25  |
| I/O        | —     | —     | —     | —     | P238  | AA24  |
| I/O        | P32   | P42   | P52   | V1    | P237  | Y23   |
| I/O        | P33   | P43   | P53   | T4    | P236  | AC26  |

XC4028XLA Pinout Table (Continued)

| PAD NAME   | HQ160 | HQ208 | HQ240 | BG256 | HQ304 | BG352 |
|------------|-------|-------|-------|-------|-------|-------|
| I/O        | P34   | P44   | P54   | U3    | P235  | AA23  |
| I/O        | P35   | P45   | P55   | V2    | P234  | AB24  |
| I/O        | P36   | P46   | P56   | W1    | P233  | AD25  |
| I/O, GCK2  | P37   | P47   | P57   | V3    | P232  | AC24  |
| O (M1)     | P38   | P48   | P58   | W2    | P231  | AB23  |
| GND        | P39   | P49   | P59   | GND*  | P230  | GND*  |
| I (M0)     | P40   | P50   | P60   | Y1    | P229  | AD24  |
| VCC        | P41   | P55   | P61   | VCC*  | P228  | VCC*  |
| I (M2)     | P42   | P56   | P62   | W3    | P227  | AC23  |
| I/O, GCK3  | P43   | P57   | P63   | Y2    | P226  | AE24  |
| I/O (HDC)  | P44   | P58   | P64   | W4    | P225  | AD23  |
| I/O        | P45   | P59   | P65   | V4    | P224  | AC22  |
| I/O        | P46   | P60   | P66   | U5    | P223  | AF24  |
| I/O        | P47   | P61   | P67   | Y3    | P222  | AD22  |
| I/O (LDC)  | P48   | P62   | P68   | Y4    | P221  | AE23  |
| I/O        | —     | —     | —     | —     | P220  | AE22  |
| I/O        | —     | —     | —     | —     | P219  | AF23  |
| VCC        | —     | —     | —     | VCC*  | —     | VCC*  |
| GND        | —     | —     | —     | GND*  | —     | GND*  |
| I/O        | P49   | P63   | P69   | V5    | P218  | AD20  |
| I/O        | P50   | P64   | P70   | W5    | P217  | AE21  |
| I/O        | —     | P65   | P71   | Y5    | P216  | AF21  |
| I/O        | —     | P66   | P72   | V6    | P215  | AC19  |
| I/O        | —     | —     | P73   | W6    | P214  | AD19  |
| I/O        | —     | —     | P74   | Y6    | P213  | AE20  |
| I/O        | —     | —     | —     | —     | P212  | AF20  |
| I/O        | —     | —     | —     | —     | P211  | AC18  |
| GND        | P51   | P67   | P75   | GND*  | P210  | GND*  |
| I/O        | P52   | P68   | P76   | W7    | P209  | AD18  |
| I/O        | P53   | P69   | P77   | Y7    | P208  | AE19  |
| I/O        | P54   | P70   | P78   | V8    | P207  | AC17  |
| I/O        | P55   | P71   | P79   | W8    | P206  | AD17  |
| VCC        | —     | —     | P80   | VCC*  | P204  | VCC*  |
| I/O        | —     | P72   | P81   | Y8    | P203  | AE18  |
| I/O        | —     | P73   | P82   | U9    | P202  | AF18  |
| I/O        | —     | —     | —     | —     | P201  | AE17  |
| I/O        | —     | —     | —     | —     | P200  | AE16  |
| GND        | —     | —     | P83   | GND*  | —     | GND*  |
| I/O        | —     | —     | —     | V9    | P199  | AF16  |
| I/O        | —     | —     | —     | W9    | P198  | AC15  |
| I/O        | —     | —     | P84   | Y9    | P197  | AD15  |
| I/O        | —     | —     | P85   | W10   | P196  | AE15  |
| I/O        | P56   | P74   | P86   | V10   | P195  | AF15  |
| I/O        | P57   | P75   | P87   | Y10   | P194  | AD14  |
| I/O        | P58   | P76   | P88   | Y11   | P193  | AE14  |
| I/O (INIT) | P59   | P77   | P89   | W11   | P192  | AF14  |
| VCC        | P60   | P78   | P90   | VCC*  | P191  | VCC*  |
| GND        | P61   | P79   | P91   | GND*  | P190  | GND*  |
| I/O        | P62   | P80   | P92   | V11   | P189  | AE13  |
| I/O        | P63   | P81   | P93   | U11   | P188  | AC13  |
| I/O        | P64   | P82   | P94   | Y12   | P187  | AD13  |
| I/O        | P65   | P83   | P95   | W12   | P186  | AF12  |
| I/O        | —     | P84   | P96   | V12   | P185  | AE12  |
| I/O        | —     | P85   | P97   | U12   | P184  | AD12  |
| I/O        | —     | —     | —     | Y13   | P183  | AC12  |
| I/O        | —     | —     | —     | W13   | P182  | AF11  |
| GND        | —     | —     | P98   | GND*  | —     | GND*  |

XC4028XLA Pinout Table (Continued)

| PAD NAME   | HQ160 | HQ208 | HQ240 | BG256 | HQ304 | BG352 |
|------------|-------|-------|-------|-------|-------|-------|
| I/O        | —     | —     | —     | —     | P181  | AE11  |
| I/O        | —     | —     | —     | —     | P180  | AD11  |
| I/O        | —     | —     | P99   | V13   | P179  | AF9   |
| I/O        | —     | —     | P100  | Y14   | P178  | AD10  |
| VCC        | —     | —     | P101  | VCC*  | P177  | VCC*  |
| I/O        | P66   | P86   | P102  | Y15   | P175  | AE9   |
| I/O        | P67   | P87   | P103  | V14   | P174  | AD9   |
| I/O        | P68   | P88   | P104  | W15   | P173  | AC10  |
| I/O        | P69   | P89   | P105  | Y16   | P172  | AF7   |
| GND        | P70   | P90   | P106  | GND*  | P171  | GND*  |
| I/O        | —     | —     | —     | —     | P170  | AE8   |
| I/O        | —     | —     | —     | —     | P169  | AD8   |
| I/O        | —     | —     | —     | V15   | P168  | AC9   |
| I/O        | —     | —     | —     | W16   | P167  | AF6   |
| I/O        | —     | —     | —     | Y17   | P166  | AE7   |
| I/O        | —     | P92   | P110  | V16   | P165  | AD7   |
| I/O        | P71   | P93   | P111  | W17   | P164  | AE6   |
| I/O        | P72   | P94   | P112  | Y18   | P163  | AE5   |
| GND        | —     | —     | —     | GND*  | —     | GND*  |
| VCC        | —     | —     | —     | VCC*  | —     | VCC*  |
| I/O        | —     | —     | —     | —     | P162  | AD6   |
| I/O        | —     | —     | —     | —     | P161  | AC7   |
| I/O        | P73   | P95   | P113  | U16   | P160  | AF4   |
| I/O        | P74   | P96   | P114  | V17   | P159  | AF3   |
| I/O        | P75   | P97   | P115  | W18   | P158  | AD5   |
| I/O        | P76   | P98   | P116  | Y19   | P157  | AE3   |
| I/O        | P77   | P99   | P117  | V18   | P156  | AD4   |
| I/O, GCK4  | P78   | P100  | P118  | W19   | P155  | AC5   |
| GND        | P79   | P101  | P119  | GND*  | P154  | GND*  |
| DONE       | P80   | P103  | P120  | Y20   | P153  | AD3   |
| VCC        | P81   | P106  | P121  | VCC*  | P152  | VCC*  |
| /PROGRAM   | P82   | P108  | P122  | V19   | P151  | AC4   |
| I/O (D7)   | P83   | P109  | P123  | U19   | P150  | AD2   |
| I/O, GCK5  | P84   | P110  | P124  | U18   | P149  | AC3   |
| I/O        | P85   | P111  | P125  | T17   | P148  | AB4   |
| I/O        | P86   | P112  | P126  | V20   | P147  | AD1   |
| I/O        | —     | —     | P127  | U20   | P146  | AA4   |
| I/O        | —     | —     | P128  | T18   | P145  | AA3   |
| I/O        | —     | —     | —     | —     | P144  | AB2   |
| I/O        | —     | —     | —     | —     | P143  | AC1   |
| VCC        | —     | —     | —     | VCC*  | —     | VCC*  |
| GND        | —     | —     | —     | GND*  | —     | GND*  |
| I/O (D6)   | P87   | P113  | P129  | T19   | P142  | Y3    |
| I/O        | P88   | P114  | P130  | T20   | P141  | AA2   |
| I/O        | P89   | P115  | P131  | R18   | P140  | AA1   |
| I/O        | P90   | P116  | P132  | R19   | P139  | W4    |
| I/O        | —     | P117  | P133  | R20   | P138  | W3    |
| I/O        | —     | P118  | P134  | P18   | P137  | Y2    |
| I/O        | —     | —     | —     | —     | P136  | Y1    |
| I/O        | —     | —     | —     | —     | P135  | V4    |
| GND        | P91   | P119  | P135  | GND*  | P134  | GND*  |
| I/O        | —     | —     | P136  | P20   | P133  | V3    |
| I/O        | —     | —     | P137  | N18   | P132  | W2    |
| I/O, FCLK3 | P92   | P120  | P138  | N19   | P131  | U4    |
| I/O        | P93   | P121  | P139  | N20   | P130  | U3    |
| VCC        | —     | —     | P140  | VCC*  | P129  | VCC*  |
| I/O (D5)   | P94   | P122  | P141  | M17   | P127  | V2    |

XC4028XLA Pinout Table (Continued)

| PAD NAME               | HQ160 | HQ208 | HQ240 | BG256 | HQ304 | BG352 |
|------------------------|-------|-------|-------|-------|-------|-------|
| I/O (/CS0)             | P95   | P123  | P142  | M18   | P126  | V1    |
| I/O                    | —     | —     | —     | —     | P125  | U2    |
| I/O                    | —     | —     | —     | —     | P124  | T2    |
| GND                    | —     | —     | P143* | GND*  | —     | GND*  |
| I/O                    | —     | —     | —     | —     | P123  | T1    |
| I/O                    | —     | —     | —     | M19   | P122  | R4    |
| I/O                    | —     | P124  | P144  | M20   | P121  | R3    |
| I/O                    | —     | P125  | P145  | L19   | P120  | R2    |
| I/O                    | P96   | P126  | P146  | L18   | P119  | R1    |
| I/O                    | P97   | P127  | P147  | L20   | P118  | P3    |
| I/O (D4)               | P98   | P128  | P148  | K20   | P117  | P2    |
| I/O                    | P99   | P129  | P149  | K19   | P116  | P1    |
| VCC                    | P100  | P130  | P150  | VCC*  | P115  | VCC*  |
| GND                    | P101  | P131  | P151  | GND*  | P114  | GND*  |
| I/O (D3)               | P102  | P132  | P152  | K18   | P113  | N2    |
| I/O (/RS)              | P103  | P133  | P153  | K17   | P112  | N4    |
| I/O                    | P104  | P134  | P154  | J20   | P111  | N3    |
| I/O                    | P105  | P135  | P155  | J19   | P110  | M1    |
| I/O                    | —     | P136  | P156  | J18   | P109  | M2    |
| I/O                    | —     | P137  | P157  | J17   | P108  | M3    |
| I/O                    | —     | —     | —     | H20   | P107  | M4    |
| I/O                    | —     | —     | —     | —     | P106  | L1    |
| GND                    | —     | —     | —     | GND*  | —     | GND*  |
| I/O                    | —     | —     | —     | —     | P105  | L2    |
| I/O                    | —     | —     | —     | —     | P104  | L3    |
| I/O (D2)               | P106  | P138  | P159  | H19   | P103  | J1    |
| I/O                    | P107  | P139  | P160  | H18   | P102  | K3    |
| VCC                    | —     | —     | P161  | VCC*  | P101  | VCC*  |
| I/O                    | P108  | P140  | P162  | G19   | P99   | J2    |
| I/O, FCLK4             | P109  | P141  | P163  | F20   | P98   | J3    |
| I/O                    | —     | —     | P164  | G18   | P97   | K4    |
| I/O                    | —     | —     | P165  | F19   | P96   | G1    |
| GND                    | P110  | P142  | P166  | GND*  | P95   | GND*  |
| I/O                    | —     | —     | —     | —     | P94   | H2    |
| I/O                    | —     | —     | —     | —     | P93   | H3    |
| I/O                    | —     | —     | P167  | F18   | P92   | J4    |
| I/O                    | —     | —     | P168  | E19   | P91   | F1    |
| I/O                    | —     | P143  | P169  | D20   | P90   | G2    |
| I/O                    | —     | P144  | P170  | E18   | P89   | G3    |
| I/O                    | P111  | P145  | P171  | D19   | P88   | F2    |
| I/O                    | P112  | P146  | P172  | C20   | P87   | E2    |
| GND                    | —     | —     | —     | GND*  | —     | GND*  |
| VCC                    | —     | —     | —     | VCC*  | —     | VCC*  |
| I/O (D1)               | P113  | P147  | P173  | E17   | P86   | F3    |
| I/O (/RCK, RDY_ /BUSY) | P114  | P148  | P174  | D18   | P85   | G4    |
| I/O                    | —     | —     | —     | —     | P84   | D2    |
| I/O                    | —     | —     | —     | —     | P83   | F4    |
| I/O                    | P115  | P149  | P175  | C19   | P82   | E3    |
| I/O                    | P116  | P150  | P176  | B20   | P81   | C2    |
| I/O (D0, DIN)          | P117  | P151  | P177  | C18   | P80   | D3    |
| I/O, GCK6 (DOUT)       | P118  | P152  | P178  | B19   | P79   | E4    |
| CCLK                   | P119  | P153  | P179  | A20   | P78   | C3    |
| VCC                    | P120  | P154  | P180  | VCC*  | P77   | VCC*  |
| O, TDO                 | P121  | P159  | P181  | A19   | P76   | D4    |
| GND                    | P122  | P160  | P182  | GND*  | P75   | GND*  |
| I/O (A0, /WS)          | P123  | P161  | P183  | B18   | P74   | B3    |
| I/O, GCK7 (A1)         | P124  | P162  | P184  | B17   | P73   | C4    |

XC4028XLA Pinout Table (Continued)

| PAD NAME       | HQ160 | HQ208 | HQ240 | BG256 | HQ304 | BG352 |
|----------------|-------|-------|-------|-------|-------|-------|
| I/O            | P125  | P163  | P185  | C17   | P72   | D5    |
| I/O            | P126  | P164  | P186  | D16   | P71   | A3    |
| I/O, (CS1, A2) | P127  | P165  | P187  | A18   | P70   | D6    |
| I/O (A3)       | P128  | P166  | P188  | A17   | P69   | C6    |
| I/O            | —     | —     | —     | —     | P68   | B5    |
| I/O            | —     | —     | —     | —     | P67   | A4    |
| VCC            | —     | —     | —     | VCC*  | —     | VCC*  |
| GND            | —     | —     | —     | GND*  | —     | GND*  |
| I/O            | —     | —     | P189  | C16   | P66   | C7    |
| I/O            | —     | —     | P190  | B16   | P65   | B6    |
| I/O            | P129  | P167  | P191  | A16   | P64   | A6    |
| I/O            | P130  | P168  | P192  | C15   | P63   | D8    |
| I/O            | —     | P169  | P193  | B15   | P62   | B7    |
| I/O            | —     | P170  | P194  | A15   | P61   | A7    |
| I/O            | —     | —     | P195  | —     | P60   | D9    |
| I/O            | —     | —     | —     | —     | P59   | C9    |
| GND            | P131  | P171  | P196  | GND*  | P58   | GND*  |
| I/O            | P132  | P172  | P197  | B14   | P57   | B8    |
| I/O            | P133  | P173  | P198  | A14   | P56   | D10   |
| I/O            | —     | —     | P199  | C13   | P55   | C10   |
| I/O            | —     | —     | P200  | B13   | P54   | B9    |
| VCC*           | —     | —     | P201  | VCC*  | P52   | VCC*  |
| I/O            | —     | —     | —     | A13   | P51   | A9    |
| I/O            | —     | —     | —     | D12   | P50   | D11   |
| I/O            | —     | —     | —     | —     | P49   | B11   |
| I/O            | —     | —     | —     | —     | P48   | A11   |
| GND            | —     | —     | —     | GND*  | —     | GND*  |
| I/O (A4)       | P134  | P174  | P202  | C12   | P47   | D12   |
| I/O (A5)       | P135  | P175  | P203  | B12   | P46   | C12   |
| I/O            | —     | P176  | P205  | A12   | P45   | B12   |
| I/O            | P136  | P177  | P206  | B11   | P44   | A12   |
| I/O (A21)      | P137  | P178  | P207  | C11   | P43   | C13   |
| I/O (A20)      | P138  | P179  | P208  | A11   | P42   | B13   |
| I/O (A6)       | P139  | P180  | P209  | A10   | P41   | A13   |
| I/O (A7)       | P140  | P181  | P210  | B10   | P40   | B14   |
| GND            | P141  | P182  | P211  | GND*  | P39   | GND*  |
| VCC            | —     | —     | —     | D6    | —     | A10   |
| VCC            | —     | —     | —     | D11   | —     | A17   |
| VCC            | —     | —     | —     | D15   | —     | AC14  |
| VCC            | —     | —     | —     | F4    | —     | AC20  |
| VCC            | —     | —     | —     | F17   | —     | AC8   |
| VCC            | —     | —     | —     | K4    | —     | AF10  |
| VCC            | —     | —     | —     | L17   | —     | AF17  |
| VCC            | —     | —     | —     | R4    | —     | D7    |
| VCC            | —     | —     | —     | R17   | —     | D13   |
| VCC            | —     | —     | —     | U6    | —     | D19   |
| VCC            | —     | —     | —     | U10   | —     | G23   |
| VCC            | —     | —     | —     | U15   | —     | H4    |
| VCC            | —     | —     | —     | C14   | —     | K1    |
| VCC            | —     | —     | —     | F1    | —     | K26   |
| VCC            | —     | —     | —     | R2    | —     | N23   |
| VCC            | —     | —     | —     | E20   | —     | P4    |
| VCC            | —     | —     | —     | P19   | —     | U1    |
| VCC            | —     | —     | —     | V7    | —     | U26   |
| VCC            | —     | —     | —     | —     | —     | W23   |
| VCC            | —     | —     | —     | —     | —     | Y4    |
| VCC            | —     | —     | —     | D7    | —     | B2    |

XC4028XLA Pinout Table (Continued)

| PAD NAME | HQ160 | HQ208 | HQ240 | BG256 | HQ304 | BG352 |
|----------|-------|-------|-------|-------|-------|-------|
| VCC      | —     | —     | —     | D14   | —     | B25   |
| VCC      | —     | —     | —     | G17   | —     | AE2   |
| VCC      | —     | —     | —     | P17   | —     | AE25  |
| VCC      | —     | —     | —     | W20   | —     | —     |
| VCC      | —     | —     | —     | U14   | —     | —     |
| VCC      | —     | —     | —     | U7    | —     | —     |
| VCC      | —     | —     | —     | P4    | —     | —     |
| VCC      | —     | —     | —     | G4    | —     | —     |
|          |       |       |       |       |       |       |
| GND      | —     | —     | —     | A1    | —     | A1    |
| GND      | —     | —     | —     | D4    | —     | A14   |
| GND      | —     | —     | —     | D8    | —     | A19   |
| GND      | —     | —     | —     | D13   | —     | A2    |
| GND      | —     | —     | —     | D17   | —     | A22   |
| GND      | —     | —     | —     | H4    | —     | A25   |
| GND      | —     | —     | —     | H17   | —     | A26   |
| GND      | —     | —     | —     | N4    | —     | A5    |
| GND      | —     | —     | —     | N17   | —     | A8    |
| GND      | —     | —     | —     | U4    | —     | AB1   |
| GND      | —     | —     | —     | U8    | —     | AB26  |
| GND      | —     | —     | —     | U13   | —     | AE1   |
| GND      | —     | —     | —     | U17   | —     | AE26  |
| GND      | —     | —     | —     | B7    | —     | AF1   |
| GND      | —     | —     | —     | N3    | —     | AF13  |
| GND      | —     | —     | —     | W14   | —     | AF19  |
| GND      | —     | —     | —     | G20   | —     | AF2   |
| GND      | —     | —     | —     | —     | —     | AF22  |
| GND      | —     | —     | —     | —     | —     | AF25  |
| GND      | —     | —     | —     | —     | —     | AF26  |
| GND      | —     | —     | —     | —     | —     | AF5   |
| GND      | —     | —     | —     | —     | —     | AF8   |
| GND      | —     | —     | —     | —     | —     | B1    |
| GND      | —     | —     | —     | —     | —     | B26   |
| GND      | —     | —     | —     | —     | —     | E1    |
| GND      | —     | —     | —     | —     | —     | E26   |
| GND      | —     | —     | —     | —     | —     | H1    |
| GND      | —     | —     | —     | —     | —     | H26   |
| GND      | —     | —     | —     | —     | —     | N1    |
| GND      | —     | —     | —     | —     | —     | P26   |
| GND      | —     | —     | —     | —     | —     | W1    |
| GND      | —     | —     | —     | —     | —     | W26   |
| GND      | —     | —     | P204  | —     | —     | —     |
| GND      | —     | —     | P219  | —     | —     | —     |
|          |       |       |       |       |       |       |
| NC       | —     | P1    | —     | —     | P11   | A18   |
| NC       | —     | P3    | —     | —     | P24   | A24   |
| NC       | —     | P51   | —     | —     | P53   | B4    |
| NC       | —     | P52   | —     | —     | P100  | B10   |
| NC       | —     | P53   | —     | —     | P128  | B23   |
| NC       | —     | P54   | —     | —     | P176  | C1    |
| NC       | —     | P102  | —     | —     | P205  | C5    |
| NC       | —     | P104  | —     | —     | P254  | C11   |
| NC       | —     | P105  | —     | —     | P281  | D1    |
| NC       | —     | P107  | —     | —     | —     | D16   |
| NC       | —     | P155  | —     | —     | —     | D25   |
| NC       | —     | P156  | —     | —     | —     | F23   |
| NC       | —     | P157  | —     | —     | —     | J26   |

XC4028XLA Pinout Table (Continued)

| PAD NAME | HQ160 | HQ208 | HQ240 | BG256 | HQ304 | BG352 |
|----------|-------|-------|-------|-------|-------|-------|
| NC       | —     | P158  | —     | —     | —     | L23   |
| NC       | —     | P206  | —     | —     | —     | T3    |
| NC       | —     | P207  | —     | —     | —     | T4    |
| NC       | —     | P208  | —     | —     | —     | T24   |
| NC       | —     | —     | —     | —     | —     | U25   |
| NC       | —     | —     | —     | —     | —     | AB3   |
| NC       | —     | —     | —     | —     | —     | AC2   |
| NC       | —     | —     | —     | —     | —     | AC6   |
| NC       | —     | —     | —     | —     | —     | AC11  |
| NC       | —     | —     | —     | —     | —     | AC16  |
| NC       | —     | —     | —     | —     | —     | AC21  |
| NC       | —     | —     | —     | —     | —     | AC25  |
| NC       | —     | —     | —     | —     | —     | AD16  |
| NC       | —     | —     | —     | —     | —     | AD21  |
| NC       | —     | —     | —     | —     | —     | AD26  |
| NC       | —     | —     | —     | —     | —     | AE4   |
| NC       | —     | —     | —     | —     | —     | AE10  |
| NC       | —     | —     | —     | —     | —     | C8    |
| NC       | —     | —     | —     | —     | —     | L4    |
| NC       | —     | —     | —     | —     | —     | K2    |

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## XC4036XLA Pinout Table

XC4036XLA Pinout Table

| PAD NAME        | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 |
|-----------------|-------|-------|-------|-------|-------|-------|
| VCC             | P142  | P183  | P212  | P38   | VCC*  | VCC*  |
| I/O (A8)        | P143  | P184  | P213  | P37   | D14   | D17   |
| I/O (A9)        | P144  | P185  | P214  | P36   | C14   | A17   |
| I/O (A19)       | P145  | P186  | P215  | P35   | A15   | C18   |
| I/O (A18)       | P146  | P187  | P216  | P34   | B15   | D18   |
| I/O             | —     | P188  | P217  | P33   | C15   | B18   |
| I/O             | —     | P189  | P218  | P32   | D15   | A19   |
| I/O (A10)       | P147  | P190  | P220  | P31   | A16   | B19   |
| I/O (A11)       | P148  | P191  | P221  | P30   | B16   | C19   |
| VCC             | —     | —     | —     | —     | VCC*  | VCC*  |
| GND             | —     | —     | —     | —     | GND*  | GND*  |
| I/O             | —     | —     | —     | P29   | C16   | D19   |
| I/O             | —     | —     | —     | P28   | B17   | A20   |
| I/O             | —     | —     | —     | —     | D16   | B20   |
| I/O             | —     | —     | —     | —     | A18   | C20   |
| I/O             | —     | —     | —     | P27   | C17   | C21   |
| I/O             | —     | —     | —     | P26   | B18   | A22   |
| VCC             | —     | —     | P222  | P25   | VCC*  | VCC*  |
| I/O             | —     | —     | P223  | P23   | C18   | B22   |
| I/O             | —     | —     | P224  | P22   | D17   | C22   |
| I/O             | P149  | P192  | P225  | P21   | A20   | B23   |
| I/O             | P150  | P193  | P226  | P20   | B19   | A24   |
| GND             | P151  | P194  | P227  | P19   | GND*  | GND*  |
| I/O             | —     | —     | —     | P18   | C19   | D22   |
| I/O             | —     | —     | —     | P17   | D18   | C23   |
| I/O             | —     | P195  | P228  | P16   | A21   | B24   |
| I/O             | —     | P196  | P229  | P15   | B20   | C24   |
| I/O             | P152  | P197  | P230  | P14   | C20   | A26   |
| I/O             | P153  | P198  | P231  | P13   | B21   | C25   |
| I/O (A12)       | P154  | P199  | P232  | P12   | B22   | D24   |
| I/O (A13)       | P155  | P200  | P233  | P10   | C21   | B26   |
| GND             | —     | —     | —     | —     | GND*  | GND*  |
| VCC             | —     | —     | —     | —     | VCC*  | VCC*  |
| I/O             | —     | —     | —     | P9    | D20   | A27   |
| I/O             | —     | —     | —     | P8    | A23   | D25   |
| I/O             | —     | —     | —     | —     | A24   | C26   |
| I/O             | —     | —     | —     | —     | B23   | B27   |
| I/O             | —     | —     | P234  | P7    | D21   | C27   |
| I/O             | —     | —     | P235  | P6    | C22   | B28   |
| I/O             | P156  | P201  | P236  | P5    | B24   | D27   |
| I/O             | P157  | P202  | P237  | P4    | C23   | B29   |
| I/O (A14)       | P158  | P203  | P238  | P3    | D22   | C28   |
| I/O, GCK8 (A15) | P159  | P204  | P239  | P2    | C24   | D28   |
| VCC             | P160  | P205  | P240  | P1    | VCC*  | VCC*  |
| GND             | P1    | P2    | P1    | P304  | GND*  | GND*  |
| I/O, GCK1 (A16) | P2    | P4    | P2    | P303  | D23   | D29   |
| I/O (A17)       | P3    | P5    | P3    | P302  | C25   | C30   |
| I/O             | P4    | P6    | P4    | P301  | D24   | E28   |
| I/O             | P5    | P7    | P5    | P300  | E23   | E29   |
| I/O (TDI)       | P6    | P8    | P6    | P299  | C26   | D30   |
| I/O (TCK)       | P7    | P9    | P7    | P298  | E24   | D31   |
| I/O             | —     | —     | —     | —     | D25   | E30   |
| I/O             | —     | —     | —     | —     | F23   | E31   |
| I/O             | —     | —     | —     | P297  | F24   | G28   |
| I/O             | —     | —     | —     | P296  | E25   | G29   |

XC4036XLA Pinout Table (Continued)

| PAD NAME   | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 |
|------------|-------|-------|-------|-------|-------|-------|
| VCC        | —     | —     | —     | —     | VCC*  | VCC*  |
| GND        | —     | —     | —     | —     | GND*  | GND*  |
| I/O        | P8    | P10   | P8    | P295  | D26   | H28   |
| I/O        | P9    | P11   | P9    | P294  | G24   | H29   |
| I/O        | —     | P12   | P10   | P293  | F25   | G30   |
| I/O        | —     | P13   | P11   | P292  | F26   | H30   |
| I/O        | —     | —     | P12   | P291  | H23   | J28   |
| I/O        | —     | —     | P13   | P290  | H24   | J29   |
| I/O        | —     | —     | —     | P289  | G25   | H31   |
| I/O        | —     | —     | —     | P288  | G26   | J30   |
| GND        | P10   | P14   | P14   | P287  | GND*  | GND*  |
| I/O, FCLK1 | P11   | P15   | P15   | P286  | J23   | K28   |
| I/O        | P12   | P16   | P16   | P285  | J24   | K29   |
| I/O (TMS)  | P13   | P17   | P17   | P284  | H25   | K30   |
| I/O        | P14   | P18   | P18   | P283  | K23   | K31   |
| VCC        | —     | —     | P19   | P282  | VCC*  | VCC*  |
| I/O        | —     | —     | P20   | P280  | K24   | L29   |
| I/O        | —     | —     | P21   | P279  | J25   | L30   |
| I/O        | —     | —     | —     | —     | J26   | M29   |
| I/O        | —     | —     | —     | —     | L23   | M31   |
| I/O        | —     | —     | —     | P278  | L24   | N31   |
| I/O        | —     | —     | —     | P277  | K25   | N28   |
| GND        | —     | —     | P22   | —     | GND*  | GND*  |
| VCC        | —     | —     | —     | —     | VCC*  | VCC*  |
| I/O        | —     | —     | —     | P276  | L25   | P30   |
| I/O        | —     | —     | —     | P275  | L26   | P28   |
| I/O        | —     | P19   | P23   | P274  | M23   | P29   |
| I/O        | —     | P20   | P24   | P273  | M24   | R31   |
| I/O        | P15   | P21   | P25   | P272  | M25   | R30   |
| I/O        | P16   | P22   | P26   | P271  | M26   | R28   |
| I/O        | P17   | P23   | P27   | P270  | N24   | R29   |
| I/O        | P18   | P24   | P28   | P269  | N25   | T31   |
| GND        | P19   | P25   | P29   | P268  | GND*  | GND*  |
| VCC        | P20   | P26   | P30   | P267  | VCC*  | VCC*  |
| I/O        | P21   | P27   | P31   | P266  | N26   | T30   |
| I/O        | P22   | P28   | P32   | P265  | P25   | T29   |
| I/O        | P23   | P29   | P33   | P264  | P23   | U31   |
| I/O        | P24   | P30   | P34   | P263  | P24   | U30   |
| I/O        | —     | P31   | P35   | P262  | R26   | U28   |
| I/O        | —     | P32   | P36   | P261  | R25   | U29   |
| I/O        | —     | —     | —     | P260  | R24   | V30   |
| I/O        | —     | —     | —     | P259  | R23   | V29   |
| VCC        | —     | —     | —     | —     | VCC*  | VCC*  |
| GND        | —     | —     | P37   | —     | GND*  | GND*  |
| I/O        | —     | —     | —     | P258  | T26   | W30   |
| I/O        | —     | —     | —     | P257  | T25   | W29   |
| I/O        | —     | —     | —     | —     | T24   | Y30   |
| I/O        | —     | —     | —     | —     | U25   | Y29   |
| I/O        | —     | —     | P38   | P256  | T23   | Y28   |
| I/O        | —     | —     | P39   | P255  | V26   | AA30  |
| VCC        | —     | —     | P40   | P253  | VCC*  | VCC*  |
| I/O        | P25   | P33   | P41   | P252  | U24   | AA29  |
| I/O        | P26   | P34   | P42   | P251  | V25   | AB31  |
| I/O        | P27   | P35   | P43   | P250  | V24   | AB30  |
| I/O, FCLK2 | P28   | P36   | P44   | P249  | U23   | AB29  |
| GND        | P29   | P37   | P45   | P248  | GND*  | GND*  |
| I/O        | —     | —     | —     | P247  | Y26   | AB28  |

XC4036XLA Pinout Table (Continued)

| PAD NAME  | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 |
|-----------|-------|-------|-------|-------|-------|-------|
| I/O       | —     | —     | —     | P246  | W25   | AC30  |
| I/O       | —     | —     | P46   | P245  | W24   | AC29  |
| I/O       | —     | —     | P47   | P244  | V23   | AC28  |
| I/O       | —     | P38   | P48   | P243  | AA26  | AD29  |
| I/O       | —     | P39   | P49   | P242  | Y25   | AD28  |
| I/O       | P30   | P40   | P50   | P241  | Y24   | AE30  |
| I/O       | P31   | P41   | P51   | P240  | AA25  | AE29  |
| GND       | —     | —     | —     | —     | GND*  | GND*  |
| VCC       | —     | —     | —     | —     | VCC*  | VCC*  |
| I/O       | —     | —     | —     | P239  | AB25  | AF31  |
| I/O       | —     | —     | —     | P238  | AA24  | AE28  |
| I/O       | P32   | P42   | P52   | P237  | Y23   | AG31  |
| I/O       | P33   | P43   | P53   | P236  | AC26  | AF28  |
| I/O       | —     | —     | —     | —     | AD26  | AG30  |
| I/O       | —     | —     | —     | —     | AC25  | AG29  |
| I/O       | P34   | P44   | P54   | P235  | AA23  | AH31  |
| I/O       | P35   | P45   | P55   | P234  | AB24  | AG28  |
| I/O       | P36   | P46   | P56   | P233  | AD25  | AH30  |
| I/O, GCK2 | P37   | P47   | P57   | P232  | AC24  | AJ30  |
| O (M1)    | P38   | P48   | P58   | P231  | AB23  | AH29  |
| GND       | P39   | P49   | P59   | P230  | GND*  | GND*  |
| I (M0)    | P40   | P50   | P60   | P229  | AD24  | AH28  |
| VCC       | P41   | P55   | P61   | P228  | VCC*  | VCC*  |
| I (M2)    | P42   | P56   | P62   | P227  | AC23  | AJ28  |
| I/O, GCK3 | P43   | P57   | P63   | P226  | AE24  | AK29  |
| I/O (HDC) | P44   | P58   | P64   | P225  | AD23  | AH27  |
| I/O       | P45   | P59   | P65   | P224  | AC22  | AK28  |
| I/O       | P46   | P60   | P66   | P223  | AF24  | AJ27  |
| I/O       | P47   | P61   | P67   | P222  | AD22  | AL28  |
| I/O (LDC) | P48   | P62   | P68   | P221  | AE23  | AH26  |
| I/O       | —     | —     | —     | —     | AC21  | AL27  |
| I/O       | —     | —     | —     | —     | AD21  | AH25  |
| I/O       | —     | —     | —     | P220  | AE22  | AK26  |
| I/O       | —     | —     | —     | P219  | AF23  | AL26  |
| VCC       | —     | —     | —     | —     | VCC*  | VCC*  |
| GND       | —     | —     | —     | —     | GND*  | GND*  |
| I/O       | P49   | P63   | P69   | P218  | AD20  | AH24  |
| I/O       | P50   | P64   | P70   | P217  | AE21  | AJ25  |
| I/O       | —     | P65   | P71   | P216  | AF21  | AK25  |
| I/O       | —     | P66   | P72   | P215  | AC19  | AJ24  |
| I/O       | —     | —     | P73   | P214  | AD19  | AL24  |
| I/O       | —     | —     | P74   | P213  | AE20  | AH22  |
| I/O       | —     | —     | —     | P212  | AF20  | AJ23  |
| I/O       | —     | —     | —     | P211  | AC18  | AK23  |
| GND       | P51   | P67   | P75   | P210  | GND*  | GND*  |
| I/O       | P52   | P68   | P76   | P209  | AD18  | AJ22  |
| I/O       | P53   | P69   | P77   | P208  | AE19  | AK22  |
| I/O       | P54   | P70   | P78   | P207  | AC17  | AL22  |
| I/O       | P55   | P71   | P79   | P206  | AD17  | AJ21  |
| VCC       | —     | —     | P80   | P204  | VCC*  | VCC*  |
| I/O       | —     | P72   | P81   | P203  | AE18  | AH20  |
| I/O       | —     | P73   | P82   | P202  | AF18  | AK21  |
| I/O       | —     | —     | —     | —     | AC16  | AK20  |
| I/O       | —     | —     | —     | —     | AD16  | AJ19  |
| I/O       | —     | —     | —     | P201  | AE17  | AL20  |
| I/O       | —     | —     | —     | P200  | AE16  | AH18  |
| GND       | —     | —     | P83   | —     | GND*  | GND*  |

XC4036XLA Pinout Table (Continued)

| PAD NAME    | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 |
|-------------|-------|-------|-------|-------|-------|-------|
| VCC         | —     | —     | —     | —     | VCC*  | VCC*  |
| I/O         | —     | —     | —     | P199  | AF16  | AK19  |
| I/O         | —     | —     | —     | P198  | AC15  | AJ18  |
| I/O         | —     | —     | P84   | P197  | AD15  | AL19  |
| I/O         | —     | —     | P85   | P196  | AE15  | AK18  |
| I/O         | P56   | P74   | P86   | P195  | AF15  | AH17  |
| I/O         | P57   | P75   | P87   | P194  | AD14  | AJ17  |
| I/O         | P58   | P76   | P88   | P193  | AE14  | AJ16  |
| I/O (/INIT) | P59   | P77   | P89   | P192  | AF14  | AK16  |
| VCC         | P60   | P78   | P90   | P191  | VCC*  | VCC*  |
| GND         | P61   | P79   | P91   | P190  | GND*  | GND*  |
| I/O         | P62   | P80   | P92   | P189  | AE13  | AL16  |
| I/O         | P63   | P81   | P93   | P188  | AC13  | AH15  |
| I/O         | P64   | P82   | P94   | P187  | AD13  | AK15  |
| I/O         | P65   | P83   | P95   | P186  | AF12  | AJ14  |
| I/O         | —     | P84   | P96   | P185  | AE12  | AH14  |
| I/O         | —     | P85   | P97   | P184  | AD12  | AK14  |
| I/O         | —     | —     | —     | P183  | AC12  | AL13  |
| I/O         | —     | —     | —     | P182  | AF11  | AK13  |
| VCC         | —     | —     | —     | —     | VCC*  | VCC*  |
| GND         | —     | —     | P98   | —     | GND*  | GND*  |
| I/O         | —     | —     | —     | P181  | AE11  | AJ13  |
| I/O         | —     | —     | —     | P180  | AD11  | AH13  |
| I/O         | —     | —     | —     | —     | AE10  | AL12  |
| I/O         | —     | —     | —     | —     | AC11  | AK12  |
| I/O         | —     | —     | P99   | P179  | AF9   | AH12  |
| I/O         | —     | —     | P100  | P178  | AD10  | AJ11  |
| VCC         | —     | —     | P101  | P177  | VCC*  | VCC*  |
| I/O         | P66   | P86   | P102  | P175  | AE9   | AL10  |
| I/O         | P67   | P87   | P103  | P174  | AD9   | AK10  |
| I/O         | P68   | P88   | P104  | P173  | AC10  | AJ10  |
| I/O         | P69   | P89   | P105  | P172  | AF7   | AK9   |
| GND         | P70   | P90   | P106  | P171  | GND*  | GND*  |
| I/O         | —     | —     | —     | P170  | AE8   | AL8   |
| I/O         | —     | —     | —     | P169  | AD8   | AH10  |
| I/O         | —     | —     | P107  | P168  | AC9   | AJ9   |
| I/O         | —     | —     | P108  | P167  | AF6   | AK8   |
| I/O         | —     | P91   | P109  | P166  | AE7   | AK7   |
| I/O         | —     | P92   | P110  | P165  | AD7   | AL6   |
| I/O         | P71   | P93   | P111  | P164  | AE6   | AJ7   |
| I/O         | P72   | P94   | P112  | P163  | AE5   | AH8   |
| GND         | —     | —     | —     | —     | GND*  | GND*  |
| VCC         | —     | —     | —     | —     | VCC*  | VCC*  |
| I/O         | —     | —     | —     | P162  | AD6   | AK6   |
| I/O         | —     | —     | —     | P161  | AC7   | AL5   |
| I/O         | P73   | P95   | P113  | P160  | AF4   | AH7   |
| I/O         | P74   | P96   | P114  | P159  | AF3   | AJ6   |
| I/O         | —     | —     | —     | —     | AE4   | AK5   |
| I/O         | —     | —     | —     | —     | AC6   | AL4   |
| I/O         | P75   | P97   | P115  | P158  | AD5   | AK4   |
| I/O         | P76   | P98   | P116  | P157  | AE3   | AH5   |
| I/O         | P77   | P99   | P117  | P156  | AD4   | AK3   |
| I/O, GCK4   | P78   | P100  | P118  | P155  | AC5   | AJ4   |
| GND         | P79   | P101  | P119  | P154  | GND*  | GND*  |
| DONE        | P80   | P103  | P120  | P153  | AD3   | AH4   |
| VCC         | P81   | P106  | P121  | P152  | VCC*  | VCC*  |
| /PROGRAM    | P82   | P108  | P122  | P151  | AC4   | AH3   |

XC4036XLA Pinout Table (Continued)

| PAD NAME   | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 |
|------------|-------|-------|-------|-------|-------|-------|
| I/O (D7)   | P83   | P109  | P123  | P150  | AD2   | AJ2   |
| I/O, GCK5  | P84   | P110  | P124  | P149  | AC3   | AG4   |
| I/O        | P85   | P111  | P125  | P148  | AB4   | AG3   |
| I/O        | P86   | P112  | P126  | P147  | AD1   | AH2   |
| I/O        | —     | —     | —     | —     | AB3   | AH1   |
| I/O        | —     | —     | —     | —     | AC2   | AF4   |
| I/O        | —     | —     | P127  | P146  | AA4   | AF3   |
| I/O        | —     | —     | P128  | P145  | AA3   | AG2   |
| I/O        | —     | —     | —     | P144  | AB2   | AE3   |
| I/O        | —     | —     | —     | P143  | AC1   | AF2   |
| VCC        | —     | —     | —     | —     | VCC*  | VCC*  |
| GND        | —     | —     | —     | —     | GND*  | GND*  |
| I/O (D6)   | P87   | P113  | P129  | P142  | Y3    | AF1   |
| I/O        | P88   | P114  | P130  | P141  | AA2   | AD4   |
| I/O        | P89   | P115  | P131  | P140  | AA1   | AD3   |
| I/O        | P90   | P116  | P132  | P139  | W4    | AE2   |
| I/O        | —     | P117  | P133  | P138  | W3    | AC3   |
| I/O        | —     | P118  | P134  | P137  | Y2    | AD1   |
| I/O        | —     | —     | —     | P136  | Y1    | AC2   |
| I/O        | —     | —     | —     | P135  | V4    | AB4   |
| GND        | P91   | P119  | P135  | P134  | GND*  | GND*  |
| I/O        | —     | —     | P136  | P133  | V3    | AB3   |
| I/O        | —     | —     | P137  | P132  | W2    | AB2   |
| I/O, FCLK3 | P92   | P120  | P138  | P131  | U4    | AB1   |
| I/O        | P93   | P121  | P139  | P130  | U3    | AA3   |
| VCC        | —     | —     | P140  | P129  | VCC*  | VCC*  |
| I/O (D5)   | P94   | P122  | P141  | P127  | V2    | AA2   |
| I/O (/CS0) | P95   | P123  | P142  | P126  | V1    | Y2    |
| I/O        | —     | —     | —     | —     | T4    | Y4    |
| I/O        | —     | —     | —     | —     | T3    | Y3    |
| I/O        | —     | —     | —     | P125  | U2    | W4    |
| I/O        | —     | —     | —     | P124  | T2    | W3    |
| GND        | —     | —     | P143* | —     | GND*  | GND*  |
| VCC        | —     | —     | —     | —     | VCC*  | VCC*  |
| I/O        | —     | —     | —     | P123  | T1    | V4    |
| I/O        | —     | —     | —     | P122  | R4    | V3    |
| I/O        | —     | P124  | P144  | P121  | R3    | U1    |
| I/O        | —     | P125  | P145  | P120  | R2    | U2    |
| I/O        | P96   | P126  | P146  | P119  | R1    | U4    |
| I/O        | P97   | P127  | P147  | P118  | P3    | U3    |
| I/O (D4)   | P98   | P128  | P148  | P117  | P2    | T1    |
| I/O        | P99   | P129  | P149  | P116  | P1    | T2    |
| VCC        | P100  | P130  | P150  | P115  | VCC*  | VCC*  |
| GND        | P101  | P131  | P151  | P114  | GND*  | GND*  |
| I/O (D3)   | P102  | P132  | P152  | P113  | N2    | T3    |
| I/O (/RS)  | P103  | P133  | P153  | P112  | N4    | R1    |
| I/O        | P104  | P134  | P154  | P111  | N3    | R2    |
| I/O        | P105  | P135  | P155  | P110  | M1    | R4    |
| I/O        | —     | P136  | P156  | P109  | M2    | R3    |
| I/O        | —     | P137  | P157  | P108  | M3    | P2    |
| I/O        | —     | —     | —     | P107  | M4    | P3    |
| I/O        | —     | —     | —     | P106  | L1    | P4    |
| VCC        | —     | —     | —     | —     | VCC*  | VCC*  |
| GND        | —     | —     | P158  | —     | GND*  | GND*  |
| I/O        | —     | —     | —     | P105  | L2    | N3    |
| I/O        | —     | —     | —     | P104  | L3    | N4    |
| I/O        | —     | —     | —     | —     | K2    | M1    |

XC4036XLA Pinout Table (Continued)

| PAD NAME               | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 |
|------------------------|-------|-------|-------|-------|-------|-------|
| I/O                    | —     | —     | —     | —     | L4    | M2    |
| I/O (D2)               | P106  | P138  | P159  | P103  | J1    | L2    |
| I/O                    | P107  | P139  | P160  | P102  | K3    | L3    |
| VCC                    | —     | —     | P161  | P101  | VCC*  | VCC*  |
| I/O                    | P108  | P140  | P162  | P99   | J2    | K1    |
| I/O, FCLK4             | P109  | P141  | P163  | P98   | J3    | K2    |
| I/O                    | —     | —     | P164  | P97   | K4    | K3    |
| I/O                    | —     | —     | P165  | P96   | G1    | K4    |
| GND                    | P110  | P142  | P166  | P95   | GND*  | GND*  |
| I/O                    | —     | —     | —     | P94   | H2    | J2    |
| I/O                    | —     | —     | —     | P93   | H3    | J3    |
| I/O                    | —     | —     | P167  | P92   | J4    | J4    |
| I/O                    | —     | —     | P168  | P91   | F1    | H1    |
| I/O                    | —     | P143  | P169  | P90   | G2    | H2    |
| I/O                    | —     | P144  | P170  | P89   | G3    | H3    |
| I/O                    | P111  | P145  | P171  | P88   | F2    | H4    |
| I/O                    | P112  | P146  | P172  | P87   | E2    | G2    |
| GND                    | —     | —     | —     | —     | GND*  | GND*  |
| VCC                    | —     | —     | —     | —     | VCC*  | VCC*  |
| I/O (D1)               | P113  | P147  | P173  | P86   | F3    | G4    |
| I/O (/RCK, RDY, /BUSY) | P114  | P148  | P174  | P85   | G4    | F2    |
| I/O                    | —     | —     | —     | —     | D1    | F3    |
| I/O                    | —     | —     | —     | —     | C1    | E1    |
| I/O                    | —     | —     | —     | P84   | D2    | E3    |
| I/O                    | —     | —     | —     | P83   | F4    | D1    |
| I/O                    | P115  | P149  | P175  | P82   | E3    | E4    |
| I/O                    | P116  | P150  | P176  | P81   | C2    | D2    |
| I/O (D0, DIN)"         | P117  | P151  | P177  | P80   | D3    | C2    |
| I/O, GCK6 (DOUT)       | P118  | P152  | P178  | P79   | E4    | D3    |
| OCLK                   | P119  | P153  | P179  | P78   | C3    | D4    |
| VCC                    | P120  | P154  | P180  | P77   | VCC*  | VCC*  |
| O, TDO                 | P121  | P159  | P181  | P76   | D4    | C4    |
| GND                    | P122  | P160  | P182  | P75   | GND*  | GND*  |
| I/O (A0, /WS)          | P123  | P161  | P183  | P74   | B3    | B3    |
| I/O, GCK7 (A1)         | P124  | P162  | P184  | P73   | C4    | D5    |
| I/O                    | P125  | P163  | P185  | P72   | D5    | B4    |
| I/O                    | P126  | P164  | P186  | P71   | A3    | C5    |
| I/O                    | —     | —     | —     | —     | C5    | B5    |
| I/O                    | —     | —     | —     | —     | B4    | C6    |
| I/O, (CS1, A2)         | P127  | P165  | P187  | P70   | D6    | A5    |
| I/O (A3)               | P128  | P166  | P188  | P69   | C6    | D7    |
| I/O                    | —     | —     | —     | P68   | B5    | B6    |
| I/O                    | —     | —     | —     | P67   | A4    | A6    |
| VCC                    | —     | —     | —     | —     | VCC*  | VCC*  |
| GND                    | —     | —     | —     | —     | GND*  | GND*  |
| I/O                    | —     | —     | P189  | P66   | C7    | D8    |
| I/O                    | —     | —     | P190  | P65   | B6    | C7    |
| I/O                    | P129  | P167  | P191  | P64   | A6    | B7    |
| I/O                    | P130  | P168  | P192  | P63   | D8    | D9    |
| I/O                    | —     | P169  | P193  | P62   | B7    | D10   |
| I/O                    | —     | P170  | P194  | P61   | A7    | C9    |
| I/O                    | —     | —     | P195  | P60   | D9    | B9    |
| I/O                    | —     | —     | —     | P59   | C9    | C10   |
| GND                    | P131  | P171  | P196  | P58   | GND*  | GND*  |
| I/O                    | P132  | P172  | P197  | P57   | B8    | B10   |
| I/O                    | P133  | P173  | P198  | P56   | D10   | A10   |
| I/O                    | —     | —     | P199  | P55   | C10   | C11   |

XC4036XLA Pinout Table (Continued)

| PAD NAME  | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 |
|-----------|-------|-------|-------|-------|-------|-------|
| I/O       | —     | —     | P200  | P54   | B9    | D12   |
| VCC       | —     | —     | P201  | P52   | VCC*  | VCC*  |
| I/O       | —     | —     | —     | P51   | A9    | B11   |
| I/O       | —     | —     | —     | P50   | D11   | C12   |
| I/O       | —     | —     | —     | —     | C11   | C13   |
| I/O       | —     | —     | —     | —     | B10   | A12   |
| I/O       | —     | —     | —     | P49   | B11   | D14   |
| I/O       | —     | —     | —     | P48   | A11   | B13   |
| GND       | —     | —     | —     | —     | GND*  | GND*  |
| VCC       | —     | —     | —     | —     | VCC*  | VCC*  |
| I/O (A4)  | P134  | P174  | P202  | P47   | D12   | C14   |
| I/O (A5)  | P135  | P175  | P203  | P46   | C12   | A13   |
| I/O       | —     | P176  | P205  | P45   | B12   | B14   |
| I/O       | P136  | P177  | P206  | P44   | A12   | D15   |
| I/O (A21) | P137  | P178  | P207  | P43   | C13   | C15   |
| I/O (A20) | P138  | P179  | P208  | P42   | B13   | B15   |
| I/O (A6)  | P139  | P180  | P209  | P41   | A13   | B16   |
| I/O (A7)  | P140  | P181  | P210  | P40   | B14   | A16   |
| GND       | P141  | P182  | P211  | P39   | GND*  | GND*  |
| VCC       | —     | —     | —     | —     | A10   | A1    |
| VCC       | —     | —     | —     | —     | A17   | A11   |
| VCC       | —     | —     | —     | —     | AC14  | A21   |
| VCC       | —     | —     | —     | —     | AC20  | A31   |
| VCC       | —     | —     | —     | —     | AC8   | D11   |
| VCC       | —     | —     | —     | —     | AF10  | D21   |
| VCC       | —     | —     | —     | —     | AF17  | L1    |
| VCC       | —     | —     | —     | —     | D7    | L4    |
| VCC       | —     | —     | —     | —     | D13   | L28   |
| VCC       | —     | —     | —     | —     | D19   | L31   |
| VCC       | —     | —     | —     | —     | G23   | AA1   |
| VCC       | —     | —     | —     | —     | H4    | AA4   |
| VCC       | —     | —     | —     | —     | K1    | AA28  |
| VCC       | —     | —     | —     | —     | K26   | AA31  |
| VCC       | —     | —     | —     | —     | N23   | AH11  |
| VCC       | —     | —     | —     | —     | P4    | AH21  |
| VCC       | —     | —     | —     | —     | U1    | AL1   |
| VCC       | —     | —     | —     | —     | U26   | AL11  |
| VCC       | —     | —     | —     | —     | W23   | AL21  |
| VCC       | —     | —     | —     | —     | Y4    | AL31  |
| VCC       | —     | —     | —     | —     | B2    | C3    |
| VCC       | —     | —     | —     | —     | B25   | C29   |
| VCC       | —     | —     | —     | —     | AE2   | AJ3   |
| VCC       | —     | —     | —     | —     | AE25  | AJ29  |
|           |       |       |       |       |       |       |
| GND       | —     | —     | —     | —     | A1    | A2    |
| GND       | —     | —     | —     | —     | A14   | A3    |
| GND       | —     | —     | —     | —     | A19   | A7    |
| GND       | —     | —     | —     | —     | A2    | A9    |
| GND       | —     | —     | —     | —     | A22   | A14   |
| GND       | —     | —     | —     | —     | A25   | A18   |
| GND       | —     | —     | —     | —     | A26   | A23   |
| GND       | —     | —     | —     | —     | A5    | A25   |
| GND       | —     | —     | —     | —     | A8    | A29   |
| GND       | —     | —     | —     | —     | AB1   | A30   |
| GND       | —     | —     | —     | —     | AB26  | B1    |
| GND       | —     | —     | —     | —     | AE1   | B2    |
| GND       | —     | —     | —     | —     | AE26  | B30   |

XC4036XLA Pinout Table (Continued)

| PAD NAME | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 |
|----------|-------|-------|-------|-------|-------|-------|
| GND      | —     | —     | —     | —     | AF1   | B31   |
| GND      | —     | —     | —     | —     | AF13  | C1    |
| GND      | —     | —     | —     | —     | AF19  | C31   |
| GND      | —     | —     | —     | —     | AF2   | D16   |
| GND      | —     | —     | —     | —     | AF22  | G1    |
| GND      | —     | —     | —     | —     | AF25  | G31   |
| GND      | —     | —     | —     | —     | AF26  | J1    |
| GND      | —     | —     | —     | —     | AF5   | J31   |
| GND      | —     | —     | —     | —     | AF8   | P1    |
| GND      | —     | —     | —     | —     | B1    | P31   |
| GND      | —     | —     | —     | —     | B26   | T4    |
| GND      | —     | —     | —     | —     | E1    | T28   |
| GND      | —     | —     | —     | —     | E26   | V1    |
| GND      | —     | —     | —     | —     | H1    | V31   |
| GND      | —     | —     | —     | —     | H26   | AC1   |
| GND      | —     | —     | —     | —     | N1    | AC31  |
| GND      | —     | —     | —     | —     | P26   | AE1   |
| GND      | —     | —     | —     | —     | W1    | AE31  |
| GND      | —     | —     | —     | —     | W26   | AH16  |
| GND      | —     | —     | —     | —     | —     | AJ1   |
| GND      | —     | —     | —     | —     | —     | AJ31  |
| GND      | —     | —     | —     | —     | —     | AK1   |
| GND      | —     | —     | —     | —     | —     | AK2   |
| GND      | —     | —     | —     | —     | —     | AK30  |
| GND      | —     | —     | —     | —     | —     | AK31  |
| GND      | —     | —     | —     | —     | —     | AL2   |
| GND      | —     | —     | —     | —     | —     | AL3   |
| GND      | —     | —     | —     | —     | —     | AL7   |
| GND      | —     | —     | —     | —     | —     | AL9   |
| GND      | —     | —     | —     | —     | —     | AL14  |
| GND      | —     | —     | —     | —     | —     | AL18  |
| GND      | —     | —     | —     | —     | —     | AL23  |
| GND      | —     | —     | —     | —     | —     | AL25  |
| GND      | —     | —     | —     | —     | —     | AL29  |
| GND      | —     | —     | —     | —     | —     | AL30  |
| GND      | —     | —     | P204  | —     | —     | —     |
| GND      | —     | —     | P219  | —     | —     | —     |
|          |       |       |       |       |       |       |
| NC       | —     | P1    | —     | P11   | C8    | D26   |
| NC       | —     | P3    | —     | P24   | —     | A28   |
| NC       | —     | P51   | —     | P53   | —     | B25   |
| NC       | —     | P52   | —     | P100  | —     | D23   |
| NC       | —     | P53   | —     | P128  | —     | D20   |
| NC       | —     | P54   | —     | P176  | —     | B21   |
| NC       | —     | P102  | —     | P205  | —     | B17   |
| NC       | —     | P104  | —     | P254  | —     | C17   |
| NC       | —     | P105  | —     | P281  | —     | C16   |
| NC       | —     | P107  | —     | —     | —     | A15   |
| NC       | —     | P155  | —     | —     | —     | B12   |
| NC       | —     | P156  | —     | —     | —     | D13   |
| NC       | —     | P157  | —     | —     | —     | A8    |
| NC       | —     | P158  | —     | —     | —     | B8    |
| NC       | —     | P206  | —     | —     | —     | D6    |
| NC       | —     | P207  | —     | —     | —     | A4    |
| NC       | —     | P208  | —     | —     | —     | E2    |
| NC       | —     | —     | —     | —     | —     | F4    |
| NC       | —     | —     | —     | —     | —     | F1    |

XC4036XLA Pinout Table (Continued)

| PAD NAME | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 |
|----------|-------|-------|-------|-------|-------|-------|
| NC       | —     | —     | —     | —     | —     | G3    |
| NC       | —     | —     | —     | —     | —     | M4    |
| NC       | —     | —     | —     | —     | —     | M3    |
| NC       | —     | —     | —     | —     | —     | N2    |
| NC       | —     | —     | —     | —     | —     | N1    |
| NC       | —     | —     | —     | —     | —     | V2    |
| NC       | —     | —     | —     | —     | —     | W2    |
| NC       | —     | —     | —     | —     | —     | W1    |
| NC       | —     | —     | —     | —     | —     | Y1    |
| NC       | —     | —     | —     | —     | —     | AC4   |
| NC       | —     | —     | —     | —     | —     | AD2   |
| NC       | —     | —     | —     | —     | —     | AE4   |
| NC       | —     | —     | —     | —     | —     | AG1   |
| NC       | —     | —     | —     | —     | —     | AJ5   |
| NC       | —     | —     | —     | —     | —     | AH6   |
| NC       | —     | —     | —     | —     | —     | AH9   |
| NC       | —     | —     | —     | —     | —     | AJ8   |
| NC       | —     | —     | —     | —     | —     | AK11  |
| NC       | —     | —     | —     | —     | —     | AJ12  |
| NC       | —     | —     | —     | —     | —     | AJ15  |
| NC       | —     | —     | —     | —     | —     | AL15  |
| NC       | —     | —     | —     | —     | —     | AL17  |
| NC       | —     | —     | —     | —     | —     | AK17  |
| NC       | —     | —     | —     | —     | —     | AH19  |
| NC       | —     | —     | —     | —     | —     | AJ20  |
| NC       | —     | —     | —     | —     | —     | AK24  |
| NC       | —     | —     | —     | —     | —     | AH23  |
| NC       | —     | —     | —     | —     | —     | AJ26  |
| NC       | —     | —     | —     | —     | —     | AK27  |
| NC       | —     | —     | —     | —     | —     | AF29  |
| NC       | —     | —     | —     | —     | —     | AF30  |
| NC       | —     | —     | —     | —     | —     | AD30  |
| NC       | —     | —     | —     | —     | —     | AD31  |
| NC       | —     | —     | —     | —     | —     | Y31   |
| NC       | —     | —     | —     | —     | —     | W28   |
| NC       | —     | —     | —     | —     | —     | W31   |
| NC       | —     | —     | —     | —     | —     | V28   |
| NC       | —     | —     | —     | —     | —     | N30   |
| NC       | —     | —     | —     | —     | —     | N29   |
| NC       | —     | —     | —     | —     | —     | M28   |
| NC       | —     | —     | —     | —     | —     | M30   |
| NC       | —     | —     | —     | —     | —     | F31   |
| NC       | —     | —     | —     | —     | —     | F30   |
| NC       | —     | —     | —     | —     | —     | F29   |
| NC       | —     | —     | —     | —     | —     | F28   |
| NC       | —     | —     | —     | —     | —     | C8    |

12/18/98



**XC4044XLA Pinout Table**
**XC4044XLA Pinout Table**

| PAD NAME        | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 |
|-----------------|-------|-------|-------|-------|-------|-------|
| VCC             | P142  | P183  | P212  | P38   | VCC*  | VCC*  |
| I/O (A8)        | P143  | P184  | P213  | P37   | D14   | D17   |
| I/O (A9)        | P144  | P185  | P214  | P36   | C14   | A17   |
| I/O             | —     | —     | —     | —     | —     | C17   |
| I/O             | —     | —     | —     | —     | —     | B17   |
| I/O (A19)       | P145  | P186  | P215  | P35   | A15   | C18   |
| I/O (A18)       | P146  | P187  | P216  | P34   | B15   | D18   |
| I/O             | —     | P188  | P217  | P33   | C15   | B18   |
| I/O             | —     | P189  | P218  | P32   | D15   | A19   |
| I/O (A10)       | P147  | P190  | P220  | P31   | A16   | B19   |
| I/O (A11)       | P148  | P191  | P221  | P30   | B16   | C19   |
| VCC             | —     | —     | —     | —     | VCC*  | VCC*  |
| GND             | —     | —     | —     | —     | GND*  | GND*  |
| I/O             | —     | —     | —     | P29   | C16   | D19   |
| I/O             | —     | —     | —     | P28   | B17   | A20   |
| I/O             | —     | —     | —     | —     | D16   | B20   |
| I/O             | —     | —     | —     | —     | A18   | C20   |
| I/O             | —     | —     | —     | P27   | C17   | C21   |
| I/O             | —     | —     | —     | P26   | B18   | A22   |
| VCC             | —     | —     | P222  | P25   | VCC*  | VCC*  |
| I/O             | —     | —     | P223  | P23   | C18   | B22   |
| I/O             | —     | —     | P224  | P22   | D17   | C22   |
| I/O             | P149  | P192  | P225  | P21   | A20   | B23   |
| I/O             | P150  | P193  | P226  | P20   | B19   | A24   |
| GND             | P151  | P194  | P227  | P19   | GND*  | GND*  |
| I/O             | —     | —     | —     | P18   | C19   | D22   |
| I/O             | —     | —     | —     | P17   | D18   | C23   |
| I/O             | —     | P195  | P228  | P16   | A21   | B24   |
| I/O             | —     | P196  | P229  | P15   | B20   | C24   |
| I/O             | —     | —     | —     | —     | —     | D23   |
| I/O             | —     | —     | —     | —     | —     | B25   |
| I/O             | P152  | P197  | P230  | P14   | C20   | A26   |
| I/O             | P153  | P198  | P231  | P13   | B21   | C25   |
| I/O (A12)       | P154  | P199  | P232  | P12   | B22   | D24   |
| I/O (A13)       | P155  | P200  | P233  | P10   | C21   | B26   |
| GND             | —     | —     | —     | —     | GND*  | GND*  |
| VCC             | —     | —     | —     | —     | VCC*  | VCC*  |
| I/O             | —     | —     | —     | P9    | D20   | A27   |
| I/O             | —     | —     | —     | P8    | A23   | D25   |
| I/O             | —     | —     | —     | —     | A24   | C26   |
| I/O             | —     | —     | —     | —     | B23   | B27   |
| I/O             | —     | —     | P234  | P7    | D21   | C27   |
| I/O             | —     | —     | P235  | P6    | C22   | B28   |
| I/O             | P156  | P201  | P236  | P5    | B24   | D27   |
| I/O             | P157  | P202  | P237  | P4    | C23   | B29   |
| I/O (A14)       | P158  | P203  | P238  | P3    | D22   | C28   |
| I/O, GCK8 (A15) | P159  | P204  | P239  | P2    | C24   | D28   |
| VCC             | P160  | P205  | P240  | P1    | VCC*  | VCC*  |
| GND             | P1    | P2    | P1    | P304  | GND*  | GND*  |
| I/O, GCK1 (A16) | P2    | P4    | P2    | P303  | D23   | D29   |
| I/O (A17)       | P3    | P5    | P3    | P302  | C25   | C30   |
| I/O             | P4    | P6    | P4    | P301  | D24   | E28   |
| I/O             | P5    | P7    | P5    | P300  | E23   | E29   |
| I/O (TDI)       | P6    | P8    | P6    | P299  | C26   | D30   |
| I/O (TCK)       | P7    | P9    | P7    | P298  | E24   | D31   |

**XC4044XLA Pinout Table (Continued)**

| PAD NAME   | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 |
|------------|-------|-------|-------|-------|-------|-------|
| I/O        | —     | —     | —     | —     | D25   | E30   |
| I/O        | —     | —     | —     | —     | F23   | E31   |
| I/O        | —     | —     | —     | P297  | F24   | G28   |
| I/O        | —     | —     | —     | P296  | E25   | G29   |
| VCC        | —     | —     | —     | —     | VCC*  | VCC*  |
| GND        | —     | —     | —     | —     | GND*  | GND*  |
| I/O        | —     | —     | —     | —     | —     | F30   |
| I/O        | —     | —     | —     | —     | —     | F31   |
| I/O        | P8    | P10   | P8    | P295  | D26   | H28   |
| I/O        | P9    | P11   | P9    | P294  | G24   | H29   |
| I/O        | —     | P12   | P10   | P293  | F25   | G30   |
| I/O        | —     | P13   | P11   | P292  | F26   | H30   |
| I/O        | —     | —     | P12   | P291  | H23   | J28   |
| I/O        | —     | —     | P13   | P290  | H24   | J29   |
| I/O        | —     | —     | —     | P289  | G25   | H31   |
| I/O        | —     | —     | —     | P288  | G26   | J30   |
| GND        | P10   | P14   | P14   | P287  | GND*  | GND*  |
| I/O, FCLK1 | P11   | P15   | P15   | P286  | J23   | K28   |
| I/O        | P12   | P16   | P16   | P285  | J24   | K29   |
| I/O (TMS)  | P13   | P17   | P17   | P284  | H25   | K30   |
| I/O        | P14   | P18   | P18   | P283  | K23   | K31   |
| VCC        | —     | —     | P19   | P282  | VCC*  | VCC*  |
| I/O        | —     | —     | P20   | P280  | K24   | L29   |
| I/O        | —     | —     | P21   | P279  | J25   | L30   |
| I/O        | —     | —     | —     | —     | J26   | M29   |
| I/O        | —     | —     | —     | —     | L23   | M31   |
| I/O        | —     | —     | —     | P278  | L24   | N31   |
| I/O        | —     | —     | —     | P277  | K25   | N28   |
| GND        | —     | —     | P22   | —     | GND*  | GND*  |
| VCC        | —     | —     | —     | —     | VCC*  | VCC*  |
| I/O        | —     | —     | —     | —     | —     | N29   |
| I/O        | —     | —     | —     | —     | —     | N30   |
| I/O        | —     | —     | —     | P276  | L25   | P30   |
| I/O        | —     | —     | —     | P275  | L26   | P28   |
| I/O        | —     | P19   | P23   | P274  | M23   | P29   |
| I/O        | —     | P20   | P24   | P273  | M24   | R31   |
| I/O        | P15   | P21   | P25   | P272  | M25   | R30   |
| I/O        | P16   | P22   | P26   | P271  | M26   | R28   |
| I/O        | P17   | P23   | P27   | P270  | N24   | R29   |
| I/O        | P18   | P24   | P28   | P269  | N25   | T31   |
| GND        | P19   | P25   | P29   | P268  | GND*  | GND*  |
| VCC        | P20   | P26   | P30   | P267  | VCC*  | VCC*  |
| I/O        | P21   | P27   | P31   | P266  | N26   | T30   |
| I/O        | P22   | P28   | P32   | P265  | P25   | T29   |
| I/O        | P23   | P29   | P33   | P264  | P23   | U31   |
| I/O        | P24   | P30   | P34   | P263  | P24   | U30   |
| I/O        | —     | P31   | P35   | P262  | R26   | U28   |
| I/O        | —     | P32   | P36   | P261  | R25   | U29   |
| I/O        | —     | —     | —     | P260  | R24   | V30   |
| I/O        | —     | —     | —     | P259  | R23   | V29   |
| I/O        | —     | —     | —     | —     | —     | V28   |
| I/O        | —     | —     | —     | —     | —     | W31   |
| VCC        | —     | —     | —     | —     | VCC*  | VCC*  |
| GND        | —     | —     | P37   | —     | GND*  | GND*  |
| I/O        | —     | —     | —     | P258  | T26   | W30   |
| I/O        | —     | —     | —     | P257  | T25   | W29   |
| I/O        | —     | —     | —     | —     | T24   | Y30   |

XC4044XLA Pinout Table (Continued)

| PAD NAME   | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 |
|------------|-------|-------|-------|-------|-------|-------|
| I/O        | —     | —     | —     | —     | U25   | Y29   |
| I/O        | —     | —     | P38   | P256  | T23   | Y28   |
| I/O        | —     | —     | P39   | P255  | V26   | AA30  |
| VCC        | —     | —     | P40   | P253  | VCC*  | VCC*  |
| I/O        | P25   | P33   | P41   | P252  | U24   | AA29  |
| I/O        | P26   | P34   | P42   | P251  | V25   | AB31  |
| I/O        | P27   | P35   | P43   | P250  | V24   | AB30  |
| I/O, FCLK2 | P28   | P36   | P44   | P249  | U23   | AB29  |
| GND        | P29   | P37   | P45   | P248  | GND*  | GND*  |
| I/O        | —     | —     | —     | P247  | Y26   | AB28  |
| I/O        | —     | —     | —     | P246  | W25   | AC30  |
| I/O        | —     | —     | P46   | P245  | W24   | AC29  |
| I/O        | —     | —     | P47   | P244  | V23   | AC28  |
| I/O        | —     | —     | —     | —     | —     | AD31  |
| I/O        | —     | —     | —     | —     | —     | AD30  |
| I/O        | —     | P38   | P48   | P243  | AA26  | AD29  |
| I/O        | —     | P39   | P49   | P242  | Y25   | AD28  |
| I/O        | P30   | P40   | P50   | P241  | Y24   | AE30  |
| I/O        | P31   | P41   | P51   | P240  | AA25  | AE29  |
| GND        | —     | —     | —     | —     | GND*  | GND*  |
| VCC        | —     | —     | —     | —     | VCC*  | VCC*  |
| I/O        | —     | —     | —     | P239  | AB25  | AF31  |
| I/O        | —     | —     | —     | P238  | AA24  | AE28  |
| I/O        | P32   | P42   | P52   | P237  | Y23   | AG31  |
| I/O        | P33   | P43   | P53   | P236  | AC26  | AF28  |
| I/O        | —     | —     | —     | —     | AD26  | AG30  |
| I/O        | —     | —     | —     | —     | AC25  | AG29  |
| I/O        | P34   | P44   | P54   | P235  | AA23  | AH31  |
| I/O        | P35   | P45   | P55   | P234  | AB24  | AG28  |
| I/O        | P36   | P46   | P56   | P233  | AD25  | AH30  |
| I/O, GCK2  | P37   | P47   | P57   | P232  | AC24  | AJ30  |
| O (M1)     | P38   | P48   | P58   | P231  | AB23  | AH29  |
| GND        | P39   | P49   | P59   | P230  | GND*  | GND*  |
| I (M0)     | P40   | P50   | P60   | P229  | AD24  | AH28  |
| VCC        | P41   | P55   | P61   | P228  | VCC*  | VCC*  |
| I (M2)     | P42   | P56   | P62   | P227  | AC23  | AJ28  |
| I/O, GCK3  | P43   | P57   | P63   | P226  | AE24  | AK29  |
| I/O (HDC)  | P44   | P58   | P64   | P225  | AD23  | AH27  |
| I/O        | P45   | P59   | P65   | P224  | AC22  | AK28  |
| I/O        | P46   | P60   | P66   | P223  | AF24  | AJ27  |
| I/O        | P47   | P61   | P67   | P222  | AD22  | AL28  |
| I/O (LDC)  | P48   | P62   | P68   | P221  | AE23  | AH26  |
| I/O        | —     | —     | —     | —     | AC21  | AL27  |
| I/O        | —     | —     | —     | —     | AD21  | AH25  |
| I/O        | —     | —     | —     | P220  | AE22  | AK26  |
| I/O        | —     | —     | —     | P219  | AF23  | AL26  |
| VCC        | —     | —     | —     | —     | VCC*  | VCC*  |
| GND        | —     | —     | —     | —     | GND*  | GND*  |
| I/O        | P49   | P63   | P69   | P218  | AD20  | AH24  |
| I/O        | P50   | P64   | P70   | P217  | AE21  | AJ25  |
| I/O        | —     | P65   | P71   | P216  | AF21  | AK25  |
| I/O        | —     | P66   | P72   | P215  | AC19  | AJ24  |
| I/O        | —     | —     | —     | —     | —     | AH23  |
| I/O        | —     | —     | —     | —     | —     | AK24  |
| I/O        | —     | —     | P73   | P214  | AD19  | AL24  |
| I/O        | —     | —     | P74   | P213  | AE20  | AH22  |
| I/O        | —     | —     | —     | P212  | AF20  | AJ23  |

XC4044XLA Pinout Table (Continued)

| PAD NAME    | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 |
|-------------|-------|-------|-------|-------|-------|-------|
| I/O         | —     | —     | —     | P211  | AC18  | AK23  |
| GND         | P51   | P67   | P75   | P210  | GND*  | GND*  |
| I/O         | P52   | P68   | P76   | P209  | AD18  | AJ22  |
| I/O         | P53   | P69   | P77   | P208  | AE19  | AK22  |
| I/O         | P54   | P70   | P78   | P207  | AC17  | AL22  |
| I/O         | P55   | P71   | P79   | P206  | AD17  | AJ21  |
| VCC         | —     | —     | P80   | P204  | VCC*  | VCC*  |
| I/O         | —     | P72   | P81   | P203  | AE18  | AH20  |
| I/O         | —     | P73   | P82   | P202  | AF18  | AK21  |
| I/O         | —     | —     | —     | —     | AC16  | AK20  |
| I/O         | —     | —     | —     | —     | AD16  | AJ19  |
| I/O         | —     | —     | —     | P201  | AE17  | AL20  |
| I/O         | —     | —     | —     | P200  | AE16  | AH18  |
| GND         | —     | —     | P83   | —     | GND*  | GND*  |
| VCC         | —     | —     | —     | —     | VCC*  | VCC*  |
| I/O         | —     | —     | —     | P199  | AF16  | AK19  |
| I/O         | —     | —     | —     | P198  | AC15  | AJ18  |
| I/O         | —     | —     | P84   | P197  | AD15  | AL19  |
| I/O         | —     | —     | P85   | P196  | AE15  | AK18  |
| I/O         | P56   | P74   | P86   | P195  | AF15  | AH17  |
| I/O         | P57   | P75   | P87   | P194  | AD14  | AJ17  |
| I/O         | —     | —     | —     | —     | —     | AK17  |
| I/O         | —     | —     | —     | —     | —     | AL17  |
| I/O         | P58   | P76   | P88   | P193  | AE14  | AJ16  |
| I/O (/INIT) | P59   | P77   | P89   | P192  | AF14  | AK16  |
| VCC         | P60   | P78   | P90   | P191  | VCC*  | VCC*  |
| GND         | P61   | P79   | P91   | P190  | GND*  | GND*  |
| I/O         | P62   | P80   | P92   | P189  | AE13  | AL16  |
| I/O         | P63   | P81   | P93   | P188  | AC13  | AH15  |
| I/O         | —     | —     | —     | —     | —     | AL15  |
| I/O         | —     | —     | —     | —     | —     | AJ15  |
| I/O         | P64   | P82   | P94   | P187  | AD13  | AK15  |
| I/O         | P65   | P83   | P95   | P186  | AF12  | AJ14  |
| I/O         | —     | P84   | P96   | P185  | AE12  | AH14  |
| I/O         | —     | P85   | P97   | P184  | AD12  | AK14  |
| I/O         | —     | —     | —     | P183  | AC12  | AL13  |
| I/O         | —     | —     | —     | P182  | AF11  | AK13  |
| VCC         | —     | —     | —     | —     | VCC*  | VCC*  |
| GND         | —     | —     | P98   | —     | GND*  | GND*  |
| I/O         | —     | —     | —     | P181  | AE11  | AJ13  |
| I/O         | —     | —     | —     | P180  | AD11  | AH13  |
| I/O         | —     | —     | —     | —     | AE10  | AL12  |
| I/O         | —     | —     | —     | —     | AC11  | AK12  |
| I/O         | —     | —     | P99   | P179  | AF9   | AH12  |
| I/O         | —     | —     | P100  | P178  | AD10  | AJ11  |
| VCC         | —     | —     | P101  | P177  | VCC*  | VCC*  |
| I/O         | P66   | P86   | P102  | P175  | AE9   | AL10  |
| I/O         | P67   | P87   | P103  | P174  | AD9   | AK10  |
| I/O         | P68   | P88   | P104  | P173  | AC10  | AJ10  |
| I/O         | P69   | P89   | P105  | P172  | AF7   | AK9   |
| GND         | P70   | P90   | P106  | P171  | GND*  | GND*  |
| I/O         | —     | —     | —     | P170  | AE8   | AL8   |
| I/O         | —     | —     | —     | P169  | AD8   | AH10  |
| I/O         | —     | —     | P107  | P168  | AC9   | AJ9   |
| I/O         | —     | —     | P108  | P167  | AF6   | AK8   |
| I/O         | —     | —     | —     | —     | —     | AJ8   |
| I/O         | —     | —     | —     | —     | —     | AH9   |

XC4044XLA Pinout Table (Continued)

| PAD NAME   | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 |
|------------|-------|-------|-------|-------|-------|-------|
| I/O        | —     | P91   | P109  | P166  | AE7   | AK7   |
| I/O        | —     | P92   | P110  | P165  | AD7   | AL6   |
| I/O        | P71   | P93   | P111  | P164  | AE6   | AJ7   |
| I/O        | P72   | P94   | P112  | P163  | AE5   | AH8   |
| GND        | —     | —     | —     | —     | GND*  | GND*  |
| VCC        | —     | —     | —     | —     | VCC*  | VCC*  |
| I/O        | —     | —     | —     | P162  | AD6   | AK6   |
| I/O        | —     | —     | —     | P161  | AC7   | AL5   |
| I/O        | P73   | P95   | P113  | P160  | AF4   | AH7   |
| I/O        | P74   | P96   | P114  | P159  | AF3   | AJ6   |
| I/O        | —     | —     | —     | —     | AE4   | AK5   |
| I/O        | —     | —     | —     | —     | AC6   | AL4   |
| I/O        | P75   | P97   | P115  | P158  | AD5   | AK4   |
| I/O        | P76   | P98   | P116  | P157  | AE3   | AH5   |
| I/O        | P77   | P99   | P117  | P156  | AD4   | AK3   |
| I/O, GCK4  | P78   | P100  | P118  | P155  | AC5   | AJ4   |
| GND        | P79   | P101  | P119  | P154  | GND*  | GND*  |
| DONE       | P80   | P103  | P120  | P153  | AD3   | AH4   |
| VCC        | P81   | P106  | P121  | P152  | VCC*  | VCC*  |
| /PROGRAM   | P82   | P108  | P122  | P151  | AC4   | AH3   |
| I/O (D7)   | P83   | P109  | P123  | P150  | AD2   | AJ2   |
| I/O, GCK5  | P84   | P110  | P124  | P149  | AC3   | AG4   |
| I/O        | P85   | P111  | P125  | P148  | AB4   | AG3   |
| I/O        | P86   | P112  | P126  | P147  | AD1   | AH2   |
| I/O        | —     | —     | —     | —     | AB3   | AH1   |
| I/O        | —     | —     | —     | —     | AC2   | AF4   |
| I/O        | —     | —     | P127  | P146  | AA4   | AF3   |
| I/O        | —     | —     | P128  | P145  | AA3   | AG2   |
| I/O        | —     | —     | —     | P144  | AB2   | AE3   |
| I/O        | —     | —     | —     | P143  | AC1   | AF2   |
| VCC        | —     | —     | —     | —     | VCC*  | VCC*  |
| GND        | —     | —     | —     | —     | GND*  | GND*  |
| I/O (D6)   | P87   | P113  | P129  | P142  | Y3    | AF1   |
| I/O        | P88   | P114  | P130  | P141  | AA2   | AD4   |
| I/O        | P89   | P115  | P131  | P140  | AA1   | AD3   |
| I/O        | P90   | P116  | P132  | P139  | W4    | AE2   |
| I/O        | —     | —     | —     | —     | —     | AD2   |
| I/O        | —     | —     | —     | —     | —     | AC4   |
| I/O        | —     | P117  | P133  | P138  | W3    | AC3   |
| I/O        | —     | P118  | P134  | P137  | Y2    | AD1   |
| I/O        | —     | —     | —     | P136  | Y1    | AC2   |
| I/O        | —     | —     | —     | P135  | V4    | AB4   |
| GND        | P91   | P119  | P135  | P134  | GND*  | GND*  |
| I/O        | —     | —     | P136  | P133  | V3    | AB3   |
| I/O        | —     | —     | P137  | P132  | W2    | AB2   |
| I/O, FCLK3 | P92   | P120  | P138  | P131  | U4    | AB1   |
| I/O        | P93   | P121  | P139  | P130  | U3    | AA3   |
| VCC        | —     | —     | P140  | P129  | VCC*  | VCC*  |
| I/O (D5)   | P94   | P122  | P141  | P127  | V2    | AA2   |
| I/O (/CS0) | P95   | P123  | P142  | P126  | V1    | Y2    |
| I/O        | —     | —     | —     | —     | T4    | Y4    |
| I/O        | —     | —     | —     | —     | T3    | Y3    |
| I/O        | —     | —     | —     | P125  | U2    | W4    |
| I/O        | —     | —     | —     | P124  | T2    | W3    |
| GND        | —     | —     | P143* | —     | GND*  | GND*  |
| VCC        | —     | —     | —     | —     | VCC*  | VCC*  |
| I/O        | —     | —     | —     | —     | —     | W2    |

XC4044XLA Pinout Table (Continued)

| PAD NAME              | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 |
|-----------------------|-------|-------|-------|-------|-------|-------|
| I/O                   | —     | —     | —     | —     | —     | V2    |
| I/O                   | —     | —     | —     | P123  | T1    | V4    |
| I/O                   | —     | —     | —     | P122  | R4    | V3    |
| I/O                   | —     | P124  | P144  | P121  | R3    | U1    |
| I/O                   | —     | P125  | P145  | P120  | R2    | U2    |
| I/O                   | P96   | P126  | P146  | P119  | R1    | U4    |
| I/O                   | P97   | P127  | P147  | P118  | P3    | U3    |
| I/O (D4)              | P98   | P128  | P148  | P117  | P2    | T1    |
| I/O                   | P99   | P129  | P149  | P116  | P1    | T2    |
| VCC                   | P100  | P130  | P150  | P115  | VCC*  | VCC*  |
| GND                   | P101  | P131  | P151  | P114  | GND*  | GND*  |
| I/O (D3)              | P102  | P132  | P152  | P113  | N2    | T3    |
| I/O (/RS)             | P103  | P133  | P153  | P112  | N4    | R1    |
| I/O                   | P104  | P134  | P154  | P111  | N3    | R2    |
| I/O                   | P105  | P135  | P155  | P110  | M1    | R4    |
| I/O                   | —     | P136  | P156  | P109  | M2    | R3    |
| I/O                   | —     | P137  | P157  | P108  | M3    | P2    |
| I/O                   | —     | —     | —     | P107  | M4    | P3    |
| I/O                   | —     | —     | —     | P106  | L1    | P4    |
| I/O                   | —     | —     | —     | —     | —     | N1    |
| I/O                   | —     | —     | —     | —     | —     | N2    |
| VCC                   | —     | —     | —     | —     | VCC*  | VCC*  |
| GND                   | —     | —     | P158  | —     | GND*  | GND*  |
| I/O                   | —     | —     | —     | P105  | L2    | N3    |
| I/O                   | —     | —     | —     | P104  | L3    | N4    |
| I/O                   | —     | —     | —     | —     | K2    | M1    |
| I/O                   | —     | —     | —     | —     | L4    | M2    |
| I/O (D2)              | P106  | P138  | P159  | P103  | J1    | L2    |
| I/O                   | P107  | P139  | P160  | P102  | K3    | L3    |
| VCC                   | —     | —     | P161  | P101  | VCC*  | VCC*  |
| I/O                   | P108  | P140  | P162  | P99   | J2    | K1    |
| I/O, FCLK4            | P109  | P141  | P163  | P98   | J3    | K2    |
| I/O                   | —     | —     | P164  | P97   | K4    | K3    |
| I/O                   | —     | —     | P165  | P96   | G1    | K4    |
| GND                   | P110  | P142  | P166  | P95   | GND*  | GND*  |
| I/O                   | —     | —     | —     | P94   | H2    | J2    |
| I/O                   | —     | —     | —     | P93   | H3    | J3    |
| I/O                   | —     | —     | P167  | P92   | J4    | J4    |
| I/O                   | —     | —     | P168  | P91   | F1    | H1    |
| I/O                   | —     | P143  | P169  | P90   | G2    | H2    |
| I/O                   | —     | P144  | P170  | P89   | G3    | H3    |
| I/O                   | P111  | P145  | P171  | P88   | F2    | H4    |
| I/O                   | P112  | P146  | P172  | P87   | E2    | G2    |
| I/O                   | —     | —     | —     | —     | —     | G3    |
| I/O                   | —     | —     | —     | —     | —     | F1    |
| GND                   | —     | —     | —     | —     | GND*  | GND*  |
| VCC                   | —     | —     | —     | —     | VCC*  | VCC*  |
| I/O (D1)              | P113  | P147  | P173  | P86   | F3    | G4    |
| I/O (/RCK, RDY_/BUSY) | P114  | P148  | P174  | P85   | G4    | F2    |
| I/O                   | —     | —     | —     | —     | D1    | F3    |
| I/O                   | —     | —     | —     | —     | C1    | E1    |
| I/O                   | —     | —     | —     | P84   | D2    | E3    |
| I/O                   | —     | —     | —     | P83   | F4    | D1    |
| I/O                   | P115  | P149  | P175  | P82   | E3    | E4    |
| I/O                   | P116  | P150  | P176  | P81   | C2    | D2    |
| I/O (D0, DIN)         | P117  | P151  | P177  | P80   | D3    | C2    |

XC4044XLA Pinout Table (Continued)

| PAD NAME         | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 |
|------------------|-------|-------|-------|-------|-------|-------|
| I/O, GCK6 (DOUT) | P118  | P152  | P178  | P79   | E4    | D3    |
| CCLK             | P119  | P153  | P179  | P78   | C3    | D4    |
| VCC              | P120  | P154  | P180  | P77   | VCC*  | VCC*  |
| O, TDO           | P121  | P159  | P181  | P76   | D4    | C4    |
| GND              | P122  | P160  | P182  | P75   | GND*  | GND*  |
| I/O (A0, /WS)    | P123  | P161  | P183  | P74   | B3    | B3    |
| I/O, GCK7 (A1)   | P124  | P162  | P184  | P73   | C4    | D5    |
| I/O              | P125  | P163  | P185  | P72   | D5    | B4    |
| I/O              | P126  | P164  | P186  | P71   | A3    | C5    |
| I/O              | —     | —     | —     | —     | C5    | B5    |
| I/O              | —     | —     | —     | —     | B4    | C6    |
| I/O, (CS1, A2)   | P127  | P165  | P187  | P70   | D6    | A5    |
| I/O (A3)         | P128  | P166  | P188  | P69   | C6    | D7    |
| I/O              | —     | —     | —     | P68   | B5    | B6    |
| I/O              | —     | —     | —     | P67   | A4    | A6    |
| VCC              | —     | —     | —     | —     | VCC*  | VCC*  |
| GND              | —     | —     | —     | —     | GND*  | GND*  |
| I/O              | —     | —     | P189  | P66   | C7    | D8    |
| I/O              | —     | —     | P190  | P65   | B6    | C7    |
| I/O              | P129  | P167  | P191  | P64   | A6    | B7    |
| I/O              | P130  | P168  | P192  | P63   | D8    | D9    |
| I/O              | —     | —     | —     | —     | C8    | B8    |
| I/O              | —     | —     | —     | —     | —     | A8    |
| I/O              | —     | P169  | P193  | P62   | B7    | D10   |
| I/O              | —     | P170  | P194  | P61   | A7    | C9    |
| I/O              | —     | —     | P195  | P60   | D9    | B9    |
| I/O              | —     | —     | —     | P59   | C9    | C10   |
| GND              | P131  | P171  | P196  | P58   | GND*  | GND*  |
| I/O              | P132  | P172  | P197  | P57   | B8    | B10   |
| I/O              | P133  | P173  | P198  | P56   | D10   | A10   |
| I/O              | —     | —     | P199  | P55   | C10   | C11   |
| I/O              | —     | —     | P200  | P54   | B9    | D12   |
| VCC              | —     | —     | P201  | P52   | VCC*  | VCC*  |
| I/O              | —     | —     | —     | P51   | A9    | B11   |
| I/O              | —     | —     | —     | P50   | D11   | C12   |
| I/O              | —     | —     | —     | —     | C11   | C13   |
| I/O              | —     | —     | —     | —     | B10   | A12   |
| I/O              | —     | —     | —     | P49   | B11   | D14   |
| I/O              | —     | —     | —     | P48   | A11   | B13   |
| GND              | —     | —     | —     | —     | GND*  | GND*  |
| VCC              | —     | —     | —     | —     | VCC*  | VCC*  |
| I/O (A4)         | P134  | P174  | P202  | P47   | D12   | C14   |
| I/O (A5)         | P135  | P175  | P203  | P46   | C12   | A13   |
| I/O              | —     | P176  | P205  | P45   | B12   | B14   |
| I/O              | P136  | P177  | P206  | P44   | A12   | D15   |
| I/O (A21)        | P137  | P178  | P207  | P43   | C13   | C15   |
| I/O (A20)        | P138  | P179  | P208  | P42   | B13   | B15   |
| I/O              | —     | —     | —     | —     | —     | A15   |
| I/O              | —     | —     | —     | —     | —     | C16   |
| I/O (A6)         | P139  | P180  | P209  | P41   | A13   | B16   |
| I/O (A7)         | P140  | P181  | P210  | P40   | B14   | A16   |
| GND              | P141  | P182  | P211  | P39   | GND*  | GND*  |
| VCC              | —     | —     | —     | —     | A10   | A1    |
| VCC              | —     | —     | —     | —     | A17   | A11   |
| VCC              | —     | —     | —     | —     | AC14  | A21   |
| VCC              | —     | —     | —     | —     | AC20  | A31   |
| VCC              | —     | —     | —     | —     | AC8   | D11   |

XC4044XLA Pinout Table (Continued)

| PAD NAME | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 |
|----------|-------|-------|-------|-------|-------|-------|
| VCC      | —     | —     | —     | —     | AF10  | D21   |
| VCC      | —     | —     | —     | —     | AF17  | L1    |
| VCC      | —     | —     | —     | —     | D7    | L4    |
| VCC      | —     | —     | —     | —     | D13   | L28   |
| VCC      | —     | —     | —     | —     | D19   | L31   |
| VCC      | —     | —     | —     | —     | G23   | AA1   |
| VCC      | —     | —     | —     | —     | H4    | AA4   |
| VCC      | —     | —     | —     | —     | K1    | AA28  |
| VCC      | —     | —     | —     | —     | K26   | AA31  |
| VCC      | —     | —     | —     | —     | N23   | AH11  |
| VCC      | —     | —     | —     | —     | P4    | AH21  |
| VCC      | —     | —     | —     | —     | U1    | AL1   |
| VCC      | —     | —     | —     | —     | U26   | AL11  |
| VCC      | —     | —     | —     | —     | W23   | AL21  |
| VCC      | —     | —     | —     | —     | Y4    | AL31  |
| VCC      | —     | —     | —     | —     | B2    | C3    |
| VCC      | —     | —     | —     | —     | B25   | C29   |
| VCC      | —     | —     | —     | —     | AE2   | AJ3   |
| VCC      | —     | —     | —     | —     | AE25  | AJ29  |
|          |       |       |       |       |       |       |
| GND      | —     | —     | —     | —     | A1    | A2    |
| GND      | —     | —     | —     | —     | A14   | A3    |
| GND      | —     | —     | —     | —     | A19   | A7    |
| GND      | —     | —     | —     | —     | A2    | A9    |
| GND      | —     | —     | —     | —     | A22   | A14   |
| GND      | —     | —     | —     | —     | A25   | A18   |
| GND      | —     | —     | —     | —     | A26   | A23   |
| GND      | —     | —     | —     | —     | A5    | A25   |
| GND      | —     | —     | —     | —     | A8    | A29   |
| GND      | —     | —     | —     | —     | AB1   | A30   |
| GND      | —     | —     | —     | —     | AB26  | B1    |
| GND      | —     | —     | —     | —     | AE1   | B2    |
| GND      | —     | —     | —     | —     | AE26  | B30   |
| GND      | —     | —     | —     | —     | AF1   | B31   |
| GND      | —     | —     | —     | —     | AF13  | C1    |
| GND      | —     | —     | —     | —     | AF19  | C31   |
| GND      | —     | —     | —     | —     | AF2   | D16   |
| GND      | —     | —     | —     | —     | AF22  | G1    |
| GND      | —     | —     | —     | —     | AF25  | G31   |
| GND      | —     | —     | —     | —     | AF26  | J1    |
| GND      | —     | —     | —     | —     | AF5   | J31   |
| GND      | —     | —     | —     | —     | AF8   | P1    |
| GND      | —     | —     | —     | —     | B1    | P31   |
| GND      | —     | —     | —     | —     | B26   | T4    |
| GND      | —     | —     | —     | —     | E1    | T28   |
| GND      | —     | —     | —     | —     | E26   | V1    |
| GND      | —     | —     | —     | —     | H1    | V31   |
| GND      | —     | —     | —     | —     | H26   | AC1   |
| GND      | —     | —     | —     | —     | N1    | AC31  |
| GND      | —     | —     | —     | —     | P26   | AE1   |
| GND      | —     | —     | —     | —     | W1    | AE31  |
| GND      | —     | —     | —     | —     | W26   | AH16  |
| GND      | —     | —     | —     | —     | —     | AJ1   |
| GND      | —     | —     | —     | —     | —     | AJ31  |
| GND      | —     | —     | —     | —     | —     | AK1   |
| GND      | —     | —     | —     | —     | —     | AK2   |
| GND      | —     | —     | —     | —     | —     | AK30  |

XC4044XLA Pinout Table (Continued)

| PAD NAME | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 |
|----------|-------|-------|-------|-------|-------|-------|
| GND      | —     | —     | —     | —     | —     | AK31  |
| GND      | —     | —     | —     | —     | —     | AL2   |
| GND      | —     | —     | —     | —     | —     | AL3   |
| GND      | —     | —     | —     | —     | —     | AL7   |
| GND      | —     | —     | —     | —     | —     | AL9   |
| GND      | —     | —     | —     | —     | —     | AL14  |
| GND      | —     | —     | —     | —     | —     | AL18  |
| GND      | —     | —     | —     | —     | —     | AL23  |
| GND      | —     | —     | —     | —     | —     | AL25  |
| GND      | —     | —     | —     | —     | —     | AL29  |
| GND      | —     | —     | —     | —     | —     | AL30  |
| GND      | —     | —     | P219  | —     | —     | —     |
| GND      | —     | —     | P204  | —     | —     | —     |
|          |       |       |       |       |       |       |
| NC       | —     | P1    | —     | P11   | —     | D26   |
| NC       | —     | P3    | —     | P24   | —     | A28   |
| NC       | —     | P51   | —     | P53   | —     | D20   |
| NC       | —     | P52   | —     | P100  | —     | B21   |
| NC       | —     | P53   | —     | P128  | —     | B12   |
| NC       | —     | P54   | —     | P176  | —     | D13   |
| NC       | —     | P102  | —     | P205  | —     | D6    |
| NC       | —     | P104  | —     | P254  | —     | A4    |
| NC       | —     | P105  | —     | P281  | —     | E2    |
| NC       | —     | P107  | —     | —     | —     | F4    |
| NC       | —     | P155  | —     | —     | —     | M4    |
| NC       | —     | P156  | —     | —     | —     | M3    |
| NC       | —     | P157  | —     | —     | —     | W1    |
| NC       | —     | P158  | —     | —     | —     | Y1    |
| NC       | —     | P206  | —     | —     | —     | AE4   |
| NC       | —     | P207  | —     | —     | —     | AG1   |
| NC       | —     | P208  | —     | —     | —     | AJ5   |
| NC       | —     | —     | —     | —     | —     | AH6   |
| NC       | —     | —     | —     | —     | —     | AK11  |
| NC       | —     | —     | —     | —     | —     | AJ12  |
| NC       | —     | —     | —     | —     | —     | AH19  |
| NC       | —     | —     | —     | —     | —     | AJ20  |
| NC       | —     | —     | —     | —     | —     | AJ26  |
| NC       | —     | —     | —     | —     | —     | AK27  |
| NC       | —     | —     | —     | —     | —     | AF29  |
| NC       | —     | —     | —     | —     | —     | AF30  |
| NC       | —     | —     | —     | —     | —     | W28   |
| NC       | —     | —     | —     | —     | —     | Y31   |
| NC       | —     | —     | —     | —     | —     | M28   |
| NC       | —     | —     | —     | —     | —     | M30   |
| NC       | —     | —     | —     | —     | —     | F29   |
| NC       | —     | —     | —     | —     | —     | F28   |
| NC       | —     | —     | —     | —     | —     | C8    |

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**XC4052XLA Pinout Table**
**XC4052XLA Pinout Table**

| PAD NAME        | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 | BG560 |
|-----------------|-------|-------|-------|-------|-------|-------|-------|
| VCC             | P142  | P183  | P212  | P38   | VCC*  | VCC*  | VCC*  |
| I/O (A8)        | P143  | P184  | P213  | P37   | D14   | D17   | A17   |
| I/O (A9)        | P144  | P185  | P214  | P36   | C14   | A17   | B18   |
| I/O             | -     | -     | -     | -     | -     | C17   | C18   |
| I/O             | -     | -     | -     | -     | -     | B17   | E18   |
| GND             | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O (A19)       | P145  | P186  | P215  | P35   | A15   | C18   | C19   |
| I/O (A18)       | P146  | P187  | P216  | P34   | B15   | D18   | D19   |
| I/O             | -     | P188  | P217  | P33   | C15   | B18   | E19   |
| I/O             | -     | P189  | P218  | P32   | D15   | A19   | B20   |
| I/O (A10)       | P147  | P190  | P220  | P31   | A16   | B19   | C20   |
| I/O (A11)       | P148  | P191  | P221  | P30   | B16   | C19   | D20   |
| VCC             | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| GND             | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| I/O             | -     | -     | -     | P29   | C16   | D19   | A21   |
| I/O             | -     | -     | -     | P28   | B17   | A20   | E20   |
| I/O             | -     | -     | -     | -     | D16   | B20   | B21   |
| I/O             | -     | -     | -     | -     | A18   | C20   | C21   |
| I/O             | -     | -     | -     | -     | -     | B21   | D21   |
| I/O             | -     | -     | -     | -     | -     | D20   | B22   |
| GND             | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O             | -     | -     | -     | P27   | C17   | C21   | C23   |
| I/O             | -     | -     | -     | P26   | B18   | A22   | E22   |
| VCC             | -     | -     | P222  | P25   | VCC*  | VCC*  | VCC*  |
| I/O             | -     | -     | P223  | P23   | C18   | B22   | B24   |
| I/O             | -     | -     | P224  | P22   | D17   | C22   | D23   |
| I/O             | P149  | P192  | P225  | P21   | A20   | B23   | C24   |
| I/O             | P150  | P193  | P226  | P20   | B19   | A24   | A25   |
| GND             | P151  | P194  | P227  | P19   | GND*  | GND*  | GND*  |
| I/O             | -     | -     | -     | P18   | C19   | D22   | E23   |
| I/O             | -     | -     | -     | P17   | D18   | C23   | B25   |
| I/O             | -     | P195  | P228  | P16   | A21   | B24   | D24   |
| I/O             | -     | P196  | P229  | P15   | B20   | C24   | C25   |
| GND             | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O             | -     | -     | -     | -     | -     | D23   | E25   |
| I/O             | -     | -     | -     | -     | -     | B25   | C27   |
| I/O             | P152  | P197  | P230  | P14   | C20   | A26   | D26   |
| I/O             | P153  | P198  | P231  | P13   | B21   | C25   | B28   |
| I/O (A12)       | P154  | P199  | P232  | P12   | B22   | D24   | B29   |
| I/O (A13)       | P155  | P200  | P233  | P10   | C21   | B26   | E26   |
| GND             | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| VCC             | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| I/O             | -     | -     | -     | P9    | D20   | A27   | C28   |
| I/O             | -     | -     | -     | P8    | A23   | D25   | D27   |
| I/O             | -     | -     | -     | -     | A24   | C26   | B30   |
| I/O             | -     | -     | -     | -     | B23   | B27   | C29   |
| I/O             | -     | -     | -     | -     | -     | A28   | E27   |
| I/O             | -     | -     | -     | -     | -     | D26   | A31   |
| GND             | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O             | -     | -     | P234  | P7    | D21   | C27   | D28   |
| I/O             | -     | -     | P235  | P6    | C22   | B28   | C30   |
| I/O             | P156  | P201  | P236  | P5    | B24   | D27   | D29   |
| I/O             | P157  | P202  | P237  | P4    | C23   | B29   | E28   |
| I/O (A14)       | P158  | P203  | P238  | P3    | D22   | C28   | D30   |
| I/O, GCK8 (A15) | P159  | P204  | P239  | P2    | C24   | D28   | E29   |

**XC4052XLA Pinout Table (Continued)**

| PAD NAME        | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 | BG560 |
|-----------------|-------|-------|-------|-------|-------|-------|-------|
| VCC             | P160  | P205  | P240  | P1    | VCC*  | VCC*  | VCC*  |
| GND             | P1    | P2    | P1    | P304  | GND*  | GND*  | GND*  |
| I/O, GCK1 (A16) | P2    | P4    | P2    | P303  | D23   | D29   | B33   |
| I/O (A17)       | P3    | P5    | P3    | P302  | C25   | C30   | F29   |
| I/O             | P4    | P6    | P4    | P301  | D24   | E28   | E30   |
| I/O             | P5    | P7    | P5    | P300  | E23   | E29   | D31   |
| I/O (TDI)       | P6    | P8    | P6    | P299  | C26   | D30   | F30   |
| I/O (TCK)       | P7    | P9    | P7    | P298  | E24   | D31   | C33   |
| GND             | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O             | -     | -     | -     | -     | -     | F28   | G29   |
| I/O             | -     | -     | -     | -     | -     | F29   | E31   |
| I/O             | -     | -     | -     | -     | D25   | E30   | D32   |
| I/O             | -     | -     | -     | -     | F23   | E31   | G30   |
| I/O             | -     | -     | -     | P297  | F24   | G28   | F31   |
| I/O             | -     | -     | -     | P296  | E25   | G29   | H29   |
| VCC             | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| GND             | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| I/O             | -     | -     | -     | -     | -     | F30   | H30   |
| I/O             | -     | -     | -     | -     | -     | F31   | G31   |
| I/O             | P8    | P10   | P8    | P295  | D26   | H28   | J29   |
| I/O             | P9    | P11   | P9    | P294  | G24   | H29   | F33   |
| I/O             | -     | P12   | P10   | P293  | F25   | G30   | G32   |
| I/O             | -     | P13   | P11   | P292  | F26   | H30   | J30   |
| GND             | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O             | -     | -     | P12   | P291  | H23   | J28   | K30   |
| I/O             | -     | -     | P13   | P290  | H24   | J29   | H33   |
| I/O             | -     | -     | -     | P289  | G25   | H31   | L29   |
| I/O             | -     | -     | -     | P288  | G26   | J30   | K31   |
| GND             | P10   | P14   | P14   | P287  | GND*  | GND*  | GND*  |
| I/O, FCLK1      | P11   | P15   | P15   | P286  | J23   | K28   | L30   |
| I/O             | P12   | P16   | P16   | P285  | J24   | K29   | K32   |
| I/O (TMS)       | P13   | P17   | P17   | P284  | H25   | K30   | J33   |
| I/O             | P14   | P18   | P18   | P283  | K23   | K31   | M29   |
| VCC             | -     | -     | P19   | P282  | VCC*  | VCC*  | VCC*  |
| I/O             | -     | -     | P20   | P280  | K24   | L29   | L32   |
| I/O             | -     | -     | P21   | P279  | J25   | L30   | M31   |
| GND             | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O             | -     | -     | -     | -     | -     | M30   | N29   |
| I/O             | -     | -     | -     | -     | -     | M28   | L33   |
| I/O             | -     | -     | -     | -     | J26   | M29   | M32   |
| I/O             | -     | -     | -     | -     | L23   | M31   | P29   |
| I/O             | -     | -     | -     | P278  | L24   | N31   | P30   |
| I/O             | -     | -     | -     | P277  | K25   | N28   | N33   |
| GND             | -     | -     | P22   | -     | GND*  | GND*  | GND*  |
| VCC             | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| I/O             | -     | -     | -     | -     | -     | N29   | P31   |
| I/O             | -     | -     | -     | -     | -     | N30   | P32   |
| I/O             | -     | -     | -     | P276  | L25   | P30   | R29   |
| I/O             | -     | -     | -     | P275  | L26   | P28   | R30   |
| I/O             | -     | P19   | P23   | P274  | M23   | P29   | R31   |
| I/O             | -     | P20   | P24   | P273  | M24   | R31   | R33   |
| GND             | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O             | P15   | P21   | P25   | P272  | M25   | R30   | T31   |
| I/O             | P16   | P22   | P26   | P271  | M26   | R28   | T29   |
| I/O             | P17   | P23   | P27   | P270  | N24   | R29   | U32   |
| I/O             | P18   | P24   | P28   | P269  | N25   | T31   | U31   |
| GND             | P19   | P25   | P29   | P268  | GND*  | GND*  | GND*  |

XC4052XLA Pinout Table (Continued)

| PAD NAME   | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 | BG560 |
|------------|-------|-------|-------|-------|-------|-------|-------|
| VCC        | P20   | P26   | P30   | P267  | VCC*  | VCC*  | VCC*  |
| I/O        | P21   | P27   | P31   | P266  | N26   | T30   | U29   |
| I/O        | P22   | P28   | P32   | P265  | P25   | T29   | U30   |
| I/O        | P23   | P29   | P33   | P264  | P23   | U31   | V31   |
| I/O        | P24   | P30   | P34   | P263  | P24   | U30   | V29   |
| GND        | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O        | -     | P31   | P35   | P262  | R26   | U28   | V30   |
| I/O        | -     | P32   | P36   | P261  | R25   | U29   | W33   |
| I/O        | -     | -     | -     | P260  | R24   | V30   | W31   |
| I/O        | -     | -     | -     | P259  | R23   | V29   | W30   |
| I/O        | -     | -     | -     | -     | -     | V28   | W29   |
| I/O        | -     | -     | -     | -     | -     | W31   | Y32   |
| VCC        | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| GND        | -     | -     | P37   | -     | GND*  | GND*  | GND*  |
| I/O        | -     | -     | -     | P258  | T26   | W30   | Y31   |
| I/O        | -     | -     | -     | P257  | T25   | W29   | Y30   |
| I/O        | -     | -     | -     | -     | -     | W28   | AA32  |
| I/O        | -     | -     | -     | -     | -     | Y31   | AA31  |
| I/O        | -     | -     | -     | -     | T24   | Y30   | AA30  |
| I/O        | -     | -     | -     | -     | U25   | Y29   | AB32  |
| GND        | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O        | -     | -     | P38   | P256  | T23   | Y28   | AA29  |
| I/O        | -     | -     | P39   | P255  | V26   | AA30  | AB31  |
| VCC        | -     | -     | P40   | P253  | VCC*  | VCC*  | VCC*  |
| I/O        | P25   | P33   | P41   | P252  | U24   | AA29  | AC31  |
| I/O        | P26   | P34   | P42   | P251  | V25   | AB31  | AB29  |
| I/O        | P27   | P35   | P43   | P250  | V24   | AB30  | AD32  |
| I/O, FCLK2 | P28   | P36   | P44   | P249  | U23   | AB29  | AC30  |
| GND        | P29   | P37   | P45   | P248  | GND*  | GND*  | GND*  |
| I/O        | -     | -     | -     | P247  | Y26   | AB28  | AD31  |
| I/O        | -     | -     | -     | P246  | W25   | AC30  | AE33  |
| I/O        | -     | -     | P46   | P245  | W24   | AC29  | AC29  |
| I/O        | -     | -     | P47   | P244  | V23   | AC28  | AE32  |
| GND        | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O        | -     | -     | -     | -     | -     | AD31  | AG33  |
| I/O        | -     | -     | -     | -     | -     | AD30  | AH33  |
| I/O        | -     | P38   | P48   | P243  | AA26  | AD29  | AE29  |
| I/O        | -     | P39   | P49   | P242  | Y25   | AD28  | AG31  |
| I/O        | P30   | P40   | P50   | P241  | Y24   | AE30  | AF30  |
| I/O        | P31   | P41   | P51   | P240  | AA25  | AE29  | AH32  |
| GND        | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| VCC        | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| I/O        | -     | -     | -     | P239  | AB25  | AF31  | AJ32  |
| I/O        | -     | -     | -     | P238  | AA24  | AE28  | AF29  |
| I/O        | -     | -     | -     | -     | -     | AF30  | AH31  |
| I/O        | -     | -     | -     | -     | -     | AF29  | AG30  |
| I/O        | P32   | P42   | P52   | P237  | Y23   | AG31  | AK32  |
| I/O        | P33   | P43   | P53   | P236  | AC26  | AF28  | AJ31  |
| GND        | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O        | -     | -     | -     | -     | AD26  | AG30  | AG29  |
| I/O        | -     | -     | -     | -     | AC25  | AG29  | AL33  |
| I/O        | P34   | P44   | P54   | P235  | AA23  | AH31  | AH30  |
| I/O        | P35   | P45   | P55   | P234  | AB24  | AG28  | AK31  |
| I/O        | P36   | P46   | P56   | P233  | AD25  | AH30  | AJ30  |
| I/O, GCK2  | P37   | P47   | P57   | P232  | AC24  | AJ30  | AH29  |
| O (M1)     | P38   | P48   | P58   | P231  | AB23  | AH29  | AK30  |
| GND        | P39   | P49   | P59   | P230  | GND*  | GND*  | GND*  |

XC4052XLA Pinout Table (Continued)

| PAD NAME   | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 | BG560 |
|------------|-------|-------|-------|-------|-------|-------|-------|
| I (M0)     | P40   | P50   | P60   | P229  | AD24  | AH28  | AJ29  |
| VCC        | P41   | P55   | P61   | P228  | VCC*  | VCC*  | VCC*  |
| I (M2)     | P42   | P56   | P62   | P227  | AC23  | AJ28  | AN32  |
| I/O, GCK3  | P43   | P57   | P63   | P226  | AE24  | AK29  | AJ28  |
| I/O (HDC)  | P44   | P58   | P64   | P225  | AD23  | AH27  | AK29  |
| I/O        | P45   | P59   | P65   | P224  | AC22  | AK28  | AL30  |
| I/O        | P46   | P60   | P66   | P223  | AF24  | AJ27  | AK28  |
| I/O        | P47   | P61   | P67   | P222  | AD22  | AL28  | AM31  |
| I/O (LDC)  | P48   | P62   | P68   | P221  | AE23  | AH26  | AJ27  |
| GND        | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O        | -     | -     | -     | -     | -     | AK27  | AN31  |
| I/O        | -     | -     | -     | -     | -     | AJ26  | AL29  |
| I/O        | -     | -     | -     | -     | AC21  | AL27  | AK27  |
| I/O        | -     | -     | -     | -     | AD21  | AH25  | AL28  |
| I/O        | -     | -     | -     | P220  | AE22  | AK26  | AJ26  |
| I/O        | -     | -     | -     | P219  | AF23  | AL26  | AM30  |
| VCC        | -     | -     | -     | -     | VCC*  | VCC*  | VCC   |
| GND        | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| I/O        | P49   | P63   | P69   | P218  | AD20  | AH24  | AM29  |
| I/O        | P50   | P64   | P70   | P217  | AE21  | AJ25  | AK26  |
| I/O        | -     | P65   | P71   | P216  | AF21  | AK25  | AL27  |
| I/O        | -     | P66   | P72   | P215  | AC19  | AJ24  | AJ25  |
| I/O        | -     | -     | -     | -     | -     | AH23  | AN29  |
| I/O        | -     | -     | -     | -     | -     | AK24  | AN28  |
| GND        | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O        | -     | -     | P73   | P214  | AD19  | AL24  | AL25  |
| I/O        | -     | -     | P74   | P213  | AE20  | AH22  | AJ23  |
| I/O        | -     | -     | -     | P212  | AF20  | AJ23  | AN26  |
| I/O        | -     | -     | -     | P211  | AC18  | AK23  | AL24  |
| GND        | P51   | P67   | P75   | P210  | GND*  | GND*  | GND*  |
| I/O        | P52   | P68   | P76   | P209  | AD18  | AJ22  | AK23  |
| I/O        | P53   | P69   | P77   | P208  | AE19  | AK22  | AN25  |
| I/O        | P54   | P70   | P78   | P207  | AC17  | AL22  | AJ22  |
| I/O        | P55   | P71   | P79   | P206  | AD17  | AJ21  | AL23  |
| VCC        | -     | -     | P80   | P204  | VCC*  | VCC*  | VCC*  |
| I/O        | -     | P72   | P81   | P203  | AE18  | AH20  | AM24  |
| I/O        | -     | P73   | P82   | P202  | AF18  | AK21  | AK22  |
| GND        | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O        | -     | -     | -     | -     | -     | AJ20  | AK21  |
| I/O        | -     | -     | -     | -     | -     | AH19  | AM22  |
| I/O        | -     | -     | -     | -     | AC16  | AK20  | AJ20  |
| I/O        | -     | -     | -     | -     | AD16  | AJ19  | AL21  |
| I/O        | -     | -     | -     | P201  | AE17  | AL20  | AN21  |
| I/O        | -     | -     | -     | P200  | AE16  | AH18  | AK20  |
| GND        | -     | -     | P83   | -     | GND*  | GND*  | GND*  |
| VCC        | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| I/O        | -     | -     | -     | P199  | AF16  | AK19  | AL20  |
| I/O        | -     | -     | -     | P198  | AC15  | AJ18  | AJ19  |
| I/O        | -     | -     | P84   | P197  | AD15  | AL19  | AM20  |
| I/O        | -     | -     | P85   | P196  | AE15  | AK18  | AK19  |
| I/O        | P56   | P74   | P86   | P195  | AF15  | AH17  | AL19  |
| I/O        | P57   | P75   | P87   | P194  | AD14  | AJ17  | AN19  |
| GND        | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O        | -     | -     | -     | -     | -     | AK17  | AL18  |
| I/O        | -     | -     | -     | -     | -     | AL17  | AM18  |
| I/O        | P58   | P76   | P88   | P193  | AE14  | AJ16  | AK17  |
| I/O (INIT) | P59   | P77   | P89   | P192  | AF14  | AK16  | AJ17  |

XC4052XLA Pinout Table (Continued)

| PAD NAME  | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 | BG560 |
|-----------|-------|-------|-------|-------|-------|-------|-------|
| VCC       | P60   | P78   | P90   | P191  | VCC*  | VCC*  | VCC*  |
| GND       | P61   | P79   | P91   | P190  | GND*  | GND*  | GND*  |
| I/O       | P62   | P80   | P92   | P189  | AE13  | AL16  | AL17  |
| I/O       | P63   | P81   | P93   | P188  | AC13  | AH15  | AM17  |
| I/O       | -     | -     | -     | -     | -     | AL15  | AN17  |
| I/O       | -     | -     | -     | -     | -     | AJ15  | AK16  |
| GND       | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O       | P64   | P82   | P94   | P187  | AD13  | AK15  | AM16  |
| I/O       | P65   | P83   | P95   | P186  | AF12  | AJ14  | AL15  |
| I/O       | -     | P84   | P96   | P185  | AE12  | AH14  | AK15  |
| I/O       | -     | P85   | P97   | P184  | AD12  | AK14  | AJ15  |
| I/O       | -     | -     | -     | P183  | AC12  | AL13  | AN15  |
| I/O       | -     | -     | -     | P182  | AF11  | AK13  | AM14  |
| VCC       | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| GND       | -     | -     | P98   | -     | GND*  | GND*  | GND*  |
| I/O       | -     | -     | -     | P181  | AE11  | AJ13  | AL14  |
| I/O       | -     | -     | -     | P180  | AD11  | AH13  | AK14  |
| I/O       | -     | -     | -     | -     | AE10  | AL12  | AJ14  |
| I/O       | -     | -     | -     | -     | AC11  | AK12  | AN13  |
| I/O       | -     | -     | -     | -     | -     | AJ12  | AM13  |
| I/O       | -     | -     | -     | -     | -     | AK11  | AL13  |
| GND       | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O       | -     | -     | P99   | P179  | AF9   | AH12  | AK12  |
| I/O       | -     | -     | P100  | P178  | AD10  | AJ11  | AN11  |
| VCC       | -     | -     | P101  | P177  | VCC*  | VCC*  | VCC*  |
| I/O       | P66   | P86   | P102  | P175  | AE9   | AL10  | AJ12  |
| I/O       | P67   | P87   | P103  | P174  | AD9   | AK10  | AL11  |
| I/O       | P68   | P88   | P104  | P173  | AC10  | AJ10  | AK11  |
| I/O       | P69   | P89   | P105  | P172  | AF7   | AK9   | AM10  |
| GND       | P70   | P90   | P106  | P171  | GND*  | GND*  | GND*  |
| I/O       | -     | -     | -     | P170  | AE8   | AL8   | AL10  |
| I/O       | -     | -     | -     | P169  | AD8   | AH10  | AJ11  |
| I/O       | -     | -     | P107  | P168  | AC9   | AJ9   | AN9   |
| I/O       | -     | -     | P108  | P167  | AF6   | AK8   | AK10  |
| GND       | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O       | -     | -     | -     | -     | -     | AJ8   | AN7   |
| I/O       | -     | -     | -     | -     | -     | AH9   | AJ9   |
| I/O       | -     | P91   | P109  | P166  | AE7   | AK7   | AL7   |
| I/O       | -     | P92   | P110  | P165  | AD7   | AL6   | AK8   |
| I/O       | P71   | P93   | P111  | P164  | AE6   | AJ7   | AN6   |
| I/O       | P72   | P94   | P112  | P163  | AE5   | AH8   | AM6   |
| GND       | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| VCC       | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| I/O       | -     | -     | -     | P162  | AD6   | AK6   | AJ8   |
| I/O       | -     | -     | -     | P161  | AC7   | AL5   | AL6   |
| I/O       | P73   | P95   | P113  | P160  | AF4   | AH7   | AK7   |
| I/O       | P74   | P96   | P114  | P159  | AF3   | AJ6   | AM5   |
| I/O       | -     | -     | -     | -     | AE4   | AK5   | AM4   |
| I/O       | -     | -     | -     | -     | AC6   | AL4   | AJ7   |
| GND       | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O       | -     | -     | -     | -     | -     | AH6   | AL5   |
| I/O       | -     | -     | -     | -     | -     | AJ5   | AK6   |
| I/O       | P75   | P97   | P115  | P158  | AD5   | AK4   | AN3   |
| I/O       | P76   | P98   | P116  | P157  | AE3   | AH5   | AK5   |
| I/O       | P77   | P99   | P117  | P156  | AD4   | AK3   | AJ6   |
| I/O, GCK4 | P78   | P100  | P118  | P155  | AC5   | AJ4   | AL4   |
| GND       | P79   | P101  | P119  | P154  | GND*  | GND*  | GND*  |

XC4052XLA Pinout Table (Continued)

| PAD NAME   | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 | BG560 |
|------------|-------|-------|-------|-------|-------|-------|-------|
| DONE       | P80   | P103  | P120  | P153  | AD3   | AH4   | AJ5   |
| VCC        | P81   | P106  | P121  | P152  | VCC*  | VCC*  | VCC*  |
| /PROGRAM   | P82   | P108  | P122  | P151  | AC4   | AH3   | AM1   |
| I/O (D7)   | P83   | P109  | P123  | P150  | AD2   | AJ2   | AH5   |
| I/O, GCK5  | P84   | P110  | P124  | P149  | AC3   | AG4   | AJ4   |
| I/O        | P85   | P111  | P125  | P148  | AB4   | AG3   | AK3   |
| I/O        | P86   | P112  | P126  | P147  | AD1   | AH2   | AH4   |
| I/O        | -     | -     | -     | -     | AB3   | AH1   | AL1   |
| I/O        | -     | -     | -     | -     | AC2   | AF4   | AG5   |
| GND        | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O        | -     | -     | P127  | P146  | AA4   | AF3   | AJ3   |
| I/O        | -     | -     | P128  | P145  | AA3   | AG2   | AK2   |
| I/O        | -     | -     | -     | -     | -     | AG1   | AG4   |
| I/O        | -     | -     | -     | -     | -     | AE4   | AH3   |
| I/O        | -     | -     | -     | P144  | AB2   | AE3   | AF5   |
| I/O        | -     | -     | -     | P143  | AC1   | AF2   | AJ2   |
| VCC        | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| GND        | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| I/O (D6)   | P87   | P113  | P129  | P142  | Y3    | AF1   | AJ1   |
| I/O        | P88   | P114  | P130  | P141  | AA2   | AD4   | AF4   |
| I/O        | P89   | P115  | P131  | P140  | AA1   | AD3   | AG3   |
| I/O        | P90   | P116  | P132  | P139  | W4    | AE2   | AE5   |
| I/O        | -     | -     | -     | -     | -     | AD2   | AH1   |
| I/O        | -     | -     | -     | -     | -     | AC4   | AF3   |
| GND        | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O        | -     | P117  | P133  | P138  | W3    | AC3   | AE3   |
| I/O        | -     | P118  | P134  | P137  | Y2    | AD1   | AC5   |
| I/O        | -     | -     | -     | P136  | Y1    | AC2   | AE1   |
| I/O        | -     | -     | -     | P135  | V4    | AB4   | AD3   |
| GND        | P91   | P119  | P135  | P134  | GND*  | GND*  | GND*  |
| I/O        | -     | -     | P136  | P133  | V3    | AB3   | AC4   |
| I/O        | -     | -     | P137  | P132  | W2    | AB2   | AD2   |
| I/O, FCLK3 | P92   | P120  | P138  | P131  | U4    | AB1   | AB5   |
| I/O        | P93   | P121  | P139  | P130  | U3    | AA3   | AC3   |
| VCC        | -     | -     | P140  | P129  | VCC*  | VCC*  | VCC*  |
| I/O (D5)   | P94   | P122  | P141  | P127  | V2    | AA2   | AA5   |
| I/O (/CS0) | P95   | P123  | P142  | P126  | V1    | Y2    | AB3   |
| GND        | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O        | -     | -     | -     | -     | T4    | Y4    | AB2   |
| I/O        | -     | -     | -     | -     | T3    | Y3    | AA4   |
| I/O        | -     | -     | -     | -     | -     | Y1    | AA3   |
| I/O        | -     | -     | -     | -     | -     | W1    | Y5    |
| I/O        | -     | -     | -     | P125  | U2    | W4    | Y3    |
| I/O        | -     | -     | -     | P124  | T2    | W3    | Y2    |
| GND        | -     | -     | P143* | -     | GND*  | GND*  | GND*  |
| VCC        | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| I/O        | -     | -     | -     | -     | -     | W2    | W5    |
| I/O        | -     | -     | -     | -     | -     | V2    | W4    |
| I/O        | -     | -     | -     | P123  | T1    | V4    | W3    |
| I/O        | -     | -     | -     | P122  | R4    | V3    | W1    |
| I/O        | -     | P124  | P144  | P121  | R3    | U1    | V3    |
| I/O        | -     | P125  | P145  | P120  | R2    | U2    | V5    |
| GND        | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O        | P96   | P126  | P146  | P119  | R1    | U4    | V4    |
| I/O        | P97   | P127  | P147  | P118  | P3    | U3    | V2    |
| I/O (D4)   | P98   | P128  | P148  | P117  | P2    | T1    | U5    |
| I/O        | P99   | P129  | P149  | P116  | P1    | T2    | U4    |

XC4052XLA Pinout Table (Continued)

| PAD NAME              | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 | BG560 |
|-----------------------|-------|-------|-------|-------|-------|-------|-------|
| VCC                   | P100  | P130  | P150  | P115  | VCC*  | VCC*  | VCC*  |
| GND                   | P101  | P131  | P151  | P114  | GND*  | GND*  | GND*  |
| I/O (D3)              | P102  | P132  | P152  | P113  | N2    | T3    | U3    |
| I/O (/RS)             | P103  | P133  | P153  | P112  | N4    | R1    | T2    |
| I/O                   | P104  | P134  | P154  | P111  | N3    | R2    | T4    |
| I/O                   | P105  | P135  | P155  | P110  | M1    | R4    | R1    |
| GND                   | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O                   | -     | P136  | P156  | P109  | M2    | R3    | R3    |
| I/O                   | -     | P137  | P157  | P108  | M3    | P2    | R4    |
| I/O                   | -     | -     | -     | P107  | M4    | P3    | R5    |
| I/O                   | -     | -     | -     | P106  | L1    | P4    | P2    |
| I/O                   | -     | -     | -     | -     | -     | N1    | P3    |
| I/O                   | -     | -     | -     | -     | -     | N2    | P4    |
| VCC                   | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| GND                   | -     | -     | P158  | -     | GND*  | GND*  | GND*  |
| I/O                   | -     | -     | -     | P105  | L2    | N3    | N1    |
| I/O                   | -     | -     | -     | P104  | L3    | N4    | P5    |
| I/O                   | -     | -     | -     | -     | K2    | M1    | N2    |
| I/O                   | -     | -     | -     | -     | L4    | M2    | N3    |
| I/O                   | -     | -     | -     | -     | -     | M3    | N5    |
| I/O                   | -     | -     | -     | -     | -     | M4    | M3    |
| GND                   | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O (D2)              | P106  | P138  | P159  | P103  | J1    | L2    | M4    |
| I/O                   | P107  | P139  | P160  | P102  | K3    | L3    | L1    |
| VCC                   | -     | -     | P161  | P101  | VCC*  | VCC*  | VCC*  |
| I/O                   | P108  | P140  | P162  | P99   | J2    | K1    | K2    |
| I/O, FCLK4            | P109  | P141  | P163  | P98   | J3    | K2    | L4    |
| I/O                   | -     | -     | P164  | P97   | K4    | K3    | J1    |
| I/O                   | -     | -     | P165  | P96   | G1    | K4    | K3    |
| GND                   | P110  | P142  | P166  | P95   | GND*  | GND*  | GND*  |
| I/O                   | -     | -     | -     | P94   | H2    | J2    | L5    |
| I/O                   | -     | -     | -     | P93   | H3    | J3    | J2    |
| I/O                   | -     | -     | P167  | P92   | J4    | J4    | K4    |
| I/O                   | -     | -     | P168  | P91   | F1    | H1    | J3    |
| GND                   | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O                   | -     | P143  | P169  | P90   | G2    | H2    | G1    |
| I/O                   | -     | P144  | P170  | P89   | G3    | H3    | F1    |
| I/O                   | P111  | P145  | P171  | P88   | F2    | H4    | J5    |
| I/O                   | P112  | P146  | P172  | P87   | E2    | G2    | G3    |
| I/O                   | -     | -     | -     | -     | -     | G3    | H4    |
| I/O                   | -     | -     | -     | -     | -     | F1    | F2    |
| GND                   | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| VCC                   | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| I/O (D1)              | P113  | P147  | P173  | P86   | F3    | G4    | F3    |
| I/O (/RCK, RDY /BUSY) | P114  | P148  | P174  | P85   | G4    | F2    | G4    |
| I/O                   | -     | -     | -     | -     | D1    | F3    | D2    |
| I/O                   | -     | -     | -     | -     | C1    | E1    | E3    |
| I/O                   | -     | -     | -     | -     | -     | F4    | G5    |
| I/O                   | -     | -     | -     | -     | -     | E2    | C1    |
| GND                   | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O                   | -     | -     | -     | P84   | D2    | E3    | F4    |
| I/O                   | -     | -     | -     | P83   | F4    | D1    | D3    |
| I/O                   | P115  | P149  | P175  | P82   | E3    | E4    | B3    |
| I/O                   | P116  | P150  | P176  | P81   | C2    | D2    | F5    |
| I/O (D0, DIN)         | P117  | P151  | P177  | P80   | D3    | C2    | E4    |

XC4052XLA Pinout Table (Continued)

| PAD NAME         | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 | BG560 |
|------------------|-------|-------|-------|-------|-------|-------|-------|
| I/O, GCK6 (DOUT) | P118  | P152  | P178  | P79   | E4    | D3    | D4    |
| CCLK             | P119  | P153  | P179  | P78   | C3    | D4    | C4    |
| VCC              | P120  | P154  | P180  | P77   | VCC*  | VCC*  | VCC*  |
| O, TDO           | P121  | P159  | P181  | P76   | D4    | C4    | E6    |
| GND              | P122  | P160  | P182  | P75   | GND*  | GND*  | GND*  |
| I/O (A0, /WS)    | P123  | P161  | P183  | P74   | B3    | B3    | D5    |
| I/O, GCK7 (A1)   | P124  | P162  | P184  | P73   | C4    | D5    | A2    |
| I/O              | P125  | P163  | P185  | P72   | D5    | B4    | D6    |
| I/O              | P126  | P164  | P186  | P71   | A3    | C5    | A3    |
| I/O              | -     | -     | -     | -     | -     | A4    | E7    |
| I/O              | -     | -     | -     | -     | -     | D6    | C5    |
| GND              | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O              | -     | -     | -     | -     | C5    | B5    | B4    |
| I/O              | -     | -     | -     | -     | -     | B4    | D7    |
| I/O, (CS1, A2)   | P127  | P165  | P187  | P70   | D6    | A5    | C6    |
| I/O (A3)         | P128  | P166  | P188  | P69   | C6    | D7    | E8    |
| I/O              | -     | -     | -     | P68   | B5    | B6    | B5    |
| I/O              | -     | -     | -     | P67   | A4    | A6    | A5    |
| VCC              | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| GND              | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| I/O              | -     | -     | P189  | P66   | C7    | D8    | D8    |
| I/O              | -     | -     | P190  | P65   | B6    | C7    | C7    |
| I/O              | P129  | P167  | P191  | P64   | A6    | B7    | E9    |
| I/O              | P130  | P168  | P192  | P63   | D8    | D9    | A6    |
| I/O              | -     | -     | -     | -     | C8    | B8    | B7    |
| I/O              | -     | -     | -     | -     | -     | A8    | D9    |
| GND              | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O              | -     | P169  | P193  | P62   | B7    | D10   | E11   |
| I/O              | -     | P170  | P194  | P61   | A7    | C9    | A9    |
| I/O              | -     | -     | P195  | P60   | D9    | B9    | C10   |
| I/O              | -     | -     | -     | P59   | C9    | C10   | D11   |
| GND              | P131  | P171  | P196  | P58   | GND*  | GND*  | GND*  |
| I/O              | P132  | P172  | P197  | P57   | B8    | B10   | B10   |
| I/O              | P133  | P173  | P198  | P56   | D10   | A10   | E12   |
| I/O              | -     | -     | P199  | P55   | C10   | C11   | C11   |
| I/O              | -     | -     | P200  | P54   | B9    | D12   | B11   |
| VCC              | -     | -     | P201  | P52   | VCC*  | VCC*  | VCC*  |
| I/O              | -     | -     | -     | P51   | A9    | B11   | D12   |
| I/O              | -     | -     | -     | P50   | D11   | C12   | A11   |
| GND              | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O              | -     | -     | -     | -     | -     | D13   | C13   |
| I/O              | -     | -     | -     | -     | -     | B12   | E14   |
| I/O              | -     | -     | -     | -     | C11   | C13   | A13   |
| I/O              | -     | -     | -     | -     | B10   | A12   | D14   |
| I/O              | -     | -     | -     | P49   | B11   | D14   | C14   |
| I/O              | -     | -     | -     | P48   | A11   | B13   | B14   |
| GND              | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| VCC              | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| I/O (A4)         | P134  | P174  | P202  | P47   | D12   | C14   | E15   |
| I/O (A5)         | P135  | P175  | P203  | P46   | C12   | A13   | D15   |
| I/O              | -     | P176  | P205  | P45   | B12   | B14   | C15   |
| I/O              | P136  | P177  | P206  | P44   | A12   | D15   | A15   |
| I/O (A21)        | P137  | P178  | P207  | P43   | C13   | C15   | C16   |
| I/O (A20)        | P138  | P179  | P208  | P42   | B13   | B15   | E16   |
| GND              | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O              | -     | -     | -     | -     | -     | A15   | B17   |

XC4052XLA Pinout Table (Continued)

| PAD NAME | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 | BG560 |
|----------|-------|-------|-------|-------|-------|-------|-------|
| I/O      | -     | -     | -     | -     | -     | C16   | C17   |
| I/O (A6) | P139  | P180  | P209  | P41   | A13   | B16   | E17   |
| I/O (A7) | P140  | P181  | P210  | P40   | B14   | A16   | D17   |
| GND      | P141  | P182  | P211  | P39   | GND*  | GND*  | GND*  |
| VCC      | -     | -     | -     | -     | A10   | A1    | A4    |
| VCC      | -     | -     | -     | -     | A17   | A11   | A10   |
| VCC      | -     | -     | -     | -     | AC14  | A21   | A16   |
| VCC      | -     | -     | -     | -     | AC20  | A31   | A22   |
| VCC      | -     | -     | -     | -     | AC8   | D11   | A26   |
| VCC      | -     | -     | -     | -     | AF10  | D21   | A30   |
| VCC      | -     | -     | -     | -     | AF17  | L1    | B2    |
| VCC      | -     | -     | -     | -     | D7    | L4    | B13   |
| VCC      | -     | -     | -     | -     | D13   | L28   | B19   |
| VCC      | -     | -     | -     | -     | D19   | L31   | B32   |
| VCC      | -     | -     | -     | -     | G23   | AA1   | C3    |
| VCC      | -     | -     | -     | -     | H4    | AA4   | C32   |
| VCC      | -     | -     | -     | -     | K1    | AA28  | D1    |
| VCC      | -     | -     | -     | -     | K26   | AA31  | D33   |
| VCC      | -     | -     | -     | -     | N23   | AH11  | H1    |
| VCC      | -     | -     | -     | -     | P4    | AH21  | K33   |
| VCC      | -     | -     | -     | -     | U1    | AL1   | M1    |
| VCC      | -     | -     | -     | -     | U26   | AL11  | N32   |
| VCC      | -     | -     | -     | -     | W23   | AL21  | R2    |
| VCC      | -     | -     | -     | -     | Y4    | AL31  | T33   |
| VCC      | -     | -     | -     | -     | B2    | -     | V1    |
| VCC      | -     | -     | -     | -     | B25   | -     | W32   |
| VCC      | -     | -     | -     | -     | AE2   | -     | AA2   |
| VCC      | -     | -     | -     | -     | AE25  | -     | AB33  |
| VCC      | -     | -     | -     | -     | -     | -     | AD1   |
| VCC      | -     | -     | -     | -     | -     | -     | AF33  |
| VCC      | -     | -     | -     | -     | -     | -     | AK1   |
| VCC      | -     | -     | -     | -     | -     | -     | AK33  |
| VCC      | -     | -     | -     | -     | -     | -     | AL2   |
| VCC      | -     | -     | -     | -     | -     | -     | AL3   |
| VCC      | -     | -     | -     | -     | -     | -     | AM2   |
| VCC      | -     | -     | -     | -     | -     | -     | AM15  |
| VCC      | -     | -     | -     | -     | -     | -     | AM21  |
| VCC      | -     | -     | -     | -     | -     | -     | AM32  |
| VCC      | -     | -     | -     | -     | -     | -     | AN4   |
| VCC      | -     | -     | -     | -     | -     | -     | AN8   |
| VCC      | -     | -     | -     | -     | -     | -     | AN12  |
| VCC      | -     | -     | -     | -     | -     | -     | AN18  |
| VCC      | -     | -     | -     | -     | -     | -     | AN24  |
| VCC      | -     | -     | -     | -     | -     | -     | AN30  |
| VCC      | -     | -     | -     | -     | -     | C3    | AL31  |
| VCC      | -     | -     | -     | -     | -     | C29   | E5    |
| VCC      | -     | -     | -     | -     | -     | AJ3   | C31   |
| VCC      | -     | -     | -     | -     | -     | AJ29  | AK4   |
|          |       |       |       |       |       |       |       |
| GND      | -     | -     | -     | -     | A1    | A2    | A7    |
| GND      | -     | -     | -     | -     | A14   | A3    | A12   |
| GND      | -     | -     | -     | -     | A19   | A7    | A14   |
| GND      | -     | -     | -     | -     | A2    | A9    | A18   |
| GND      | -     | -     | -     | -     | A22   | A14   | A20   |
| GND      | -     | -     | -     | -     | A25   | A18   | A24   |
| GND      | -     | -     | -     | -     | A26   | A23   | A29   |
| GND      | -     | -     | -     | -     | A5    | A25   | A32   |

XC4052XLA Pinout Table (Continued)

| PAD NAME | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 | BG560 |
|----------|-------|-------|-------|-------|-------|-------|-------|
| GND      | -     | -     | -     | -     | A8    | A29   | B1    |
| GND      | -     | -     | -     | -     | AB1   | A30   | B6    |
| GND      | -     | -     | -     | -     | AB26  | B1    | B9    |
| GND      | -     | -     | -     | -     | AE1   | B2    | B15   |
| GND      | -     | -     | -     | -     | AE26  | B30   | B23   |
| GND      | -     | -     | -     | -     | AF1   | B31   | B27   |
| GND      | -     | -     | -     | -     | AF13  | C1    | B31   |
| GND      | -     | -     | -     | -     | AF19  | C31   | C2    |
| GND      | -     | -     | -     | -     | AF2   | D16   | E1    |
| GND      | -     | -     | -     | -     | AF22  | G1    | F32   |
| GND      | -     | -     | -     | -     | AF25  | G31   | G2    |
| GND      | -     | -     | -     | -     | AF26  | J1    | G33   |
| GND      | -     | -     | -     | -     | AF5   | J31   | J32   |
| GND      | -     | -     | -     | -     | AF8   | P1    | K1    |
| GND      | -     | -     | -     | -     | B1    | P31   | L2    |
| GND      | -     | -     | -     | -     | B26   | T4    | M33   |
| GND      | -     | -     | -     | -     | E1    | T28   | P1    |
| GND      | -     | -     | -     | -     | E26   | V1    | P33   |
| GND      | -     | -     | -     | -     | H1    | V31   | R32   |
| GND      | -     | -     | -     | -     | H26   | AC1   | T1    |
| GND      | -     | -     | -     | -     | N1    | AC31  | V33   |
| GND      | -     | -     | -     | -     | P26   | AE1   | W2    |
| GND      | -     | -     | -     | -     | W1    | AE31  | Y1    |
| GND      | -     | -     | -     | -     | W26   | AH16  | Y33   |
| GND      | -     | -     | -     | -     | -     | AJ1   | AB1   |
| GND      | -     | -     | -     | -     | -     | AJ31  | AC32  |
| GND      | -     | -     | -     | -     | -     | AK1   | AD33  |
| GND      | -     | -     | -     | -     | -     | AK2   | AE2   |
| GND      | -     | -     | -     | -     | -     | AK30  | AG1   |
| GND      | -     | -     | -     | -     | -     | AK31  | AG32  |
| GND      | -     | -     | -     | -     | -     | AL2   | AH2   |
| GND      | -     | -     | -     | -     | -     | AL3   | AJ33  |
| GND      | -     | -     | -     | -     | -     | AL7   | AL32  |
| GND      | -     | -     | -     | -     | -     | AL9   | AM3   |
| GND      | -     | -     | -     | -     | -     | AL14  | AM11  |
| GND      | -     | -     | -     | -     | -     | AL18  | AM19  |
| GND      | -     | -     | -     | -     | -     | AL23  | AM25  |
| GND      | -     | -     | -     | -     | -     | AL25  | AM28  |
| GND      | -     | -     | -     | -     | -     | AL29  | AM33  |
| GND      | -     | -     | -     | -     | -     | AL30  | AM7   |
| GND      | -     | -     | -     | -     | -     | -     | AN2   |
| GND      | -     | -     | -     | -     | -     | -     | AN5   |
| GND      | -     | -     | -     | -     | -     | -     | AN10  |
| GND      | -     | -     | -     | -     | -     | -     | AN14  |
| GND      | -     | -     | -     | -     | -     | -     | AN16  |
| GND      | -     | -     | -     | -     | -     | -     | AN20  |
| GND      | -     | -     | -     | -     | -     | -     | AN22  |
| GND      | -     | -     | -     | -     | -     | -     | AN27  |
| GND      | -     | -     | P219  | -     | -     | -     | -     |
| GND      | -     | -     | P204  | -     | -     | -     | -     |
|          |       |       |       |       |       |       |       |
| NC       | -     | P1    | -     | P11   | -     | C8    | A28   |
| NC       | -     | P3    | -     | P24   | -     | -     | A27   |
| NC       | -     | P51   | -     | P53   | -     | -     | D25   |
| NC       | -     | P52   | -     | P100  | -     | -     | C26   |
| NC       | -     | P53   | -     | P128  | -     | -     | A23   |
| NC       | -     | P54   | -     | P176  | -     | -     | D22   |

XC4052XLA Pinout Table (Continued)

| PAD NAME | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 | BG560 |
|----------|-------|-------|-------|-------|-------|-------|-------|
| NC       | -     | P102  | -     | P205  | -     | -     | C22   |
| NC       | -     | P104  | -     | P254  | -     | -     | E21   |
| NC       | -     | P105  | -     | P281  | -     | -     | D13   |
| NC       | -     | P107  | -     | -     | -     | -     | B12   |
| NC       | -     | P155  | -     | -     | -     | -     | C12   |
| NC       | -     | P156  | -     | -     | -     | -     | E13   |
| NC       | -     | P157  | -     | -     | -     | -     | A8    |
| NC       | -     | P158  | -     | -     | -     | -     | B8    |
| NC       | -     | P206  | -     | -     | -     | -     | E10   |
| NC       | -     | P207  | -     | -     | -     | -     | C8    |
| NC       | -     | P208  | -     | -     | -     | -     | H5    |
| NC       | -     | -     | -     | -     | -     | -     | E2    |
| NC       | -     | -     | -     | -     | -     | -     | J4    |
| NC       | -     | -     | -     | -     | -     | -     | H3    |
| NC       | -     | -     | -     | -     | -     | -     | M5    |
| NC       | -     | -     | -     | -     | -     | -     | L3    |
| NC       | -     | -     | -     | -     | -     | -     | M2    |
| NC       | -     | -     | -     | -     | -     | -     | N4    |
| NC       | -     | -     | -     | -     | -     | -     | Y4    |
| NC       | -     | -     | -     | -     | -     | -     | AA1   |
| NC       | -     | -     | -     | -     | -     | -     | AC1   |
| NC       | -     | -     | -     | -     | -     | -     | AB4   |
| NC       | -     | -     | -     | -     | -     | -     | AF2   |
| NC       | -     | -     | -     | -     | -     | -     | AD5   |
| NC       | -     | -     | -     | -     | -     | -     | AG2   |
| NC       | -     | -     | -     | -     | -     | -     | AE4   |
| NC       | -     | -     | -     | -     | -     | -     | AL8   |
| NC       | -     | -     | -     | -     | -     | -     | AK9   |
| NC       | -     | -     | -     | -     | -     | -     | AM8   |
| NC       | -     | -     | -     | -     | -     | -     | AJ10  |
| NC       | -     | -     | -     | -     | -     | -     | AL12  |
| NC       | -     | -     | -     | -     | -     | -     | AM12  |
| NC       | -     | -     | -     | -     | -     | -     | AJ13  |
| NC       | -     | -     | -     | -     | -     | -     | AK13  |
| NC       | -     | -     | -     | -     | -     | -     | AN23  |
| NC       | -     | -     | -     | -     | -     | -     | AL22  |
| NC       | -     | -     | -     | -     | -     | -     | AJ21  |
| NC       | -     | -     | -     | -     | -     | -     | AM23  |
| NC       | -     | -     | -     | -     | -     | -     | AM27  |
| NC       | -     | -     | -     | -     | -     | -     | AJ24  |
| NC       | -     | -     | -     | -     | -     | -     | AL26  |
| NC       | -     | -     | -     | -     | -     | -     | AK25  |
| NC       | -     | -     | -     | -     | -     | -     | AE30  |
| NC       | -     | -     | -     | -     | -     | -     | AF31  |
| NC       | -     | -     | -     | -     | -     | -     | AD29  |
| NC       | -     | -     | -     | -     | -     | -     | AF32  |
| NC       | -     | -     | -     | -     | -     | -     | AC33  |
| NC       | -     | -     | -     | -     | -     | -     | AB30  |
| NC       | -     | -     | -     | -     | -     | -     | Y29   |
| NC       | -     | -     | -     | -     | -     | -     | AA33  |
| NC       | -     | -     | -     | -     | -     | -     | N31   |
| NC       | -     | -     | -     | -     | -     | -     | N30   |
| NC       | -     | -     | -     | -     | -     | -     | M30   |
| NC       | -     | -     | -     | -     | -     | -     | L31   |
| NC       | -     | -     | -     | -     | -     | -     | K29   |
| NC       | -     | -     | -     | -     | -     | -     | H31   |
| NC       | -     | -     | -     | -     | -     | -     | E33   |

XC4052XLA Pinout Table (Continued)

| PAD NAME | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 | BG560 |
|----------|-------|-------|-------|-------|-------|-------|-------|
| NC       | -     | -     | -     | -     | -     | -     | E32   |
| NC       | -     | -     | -     | -     | -     | -     | AC2   |
| NC       | -     | -     | -     | -     | -     | -     | A1    |
| NC       | -     | -     | -     | -     | -     | -     | A33   |
| NC       | -     | -     | -     | -     | -     | -     | AN1   |
| NC       | -     | -     | -     | -     | -     | -     | AN33  |
| NC       | -     | -     | -     | -     | -     | -     | A19   |
| NC       | -     | -     | -     | -     | -     | -     | D18   |
| NC       | -     | -     | -     | -     | -     | -     | E24   |
| NC       | -     | -     | -     | -     | -     | -     | B26   |
| NC       | -     | -     | -     | -     | -     | -     | K5    |
| NC       | -     | -     | -     | -     | -     | -     | H2    |
| NC       | -     | -     | -     | -     | -     | -     | B16   |
| NC       | -     | -     | -     | -     | -     | -     | D16   |
| NC       | -     | -     | -     | -     | -     | -     | T5    |
| NC       | -     | -     | -     | -     | -     | -     | T3    |
| NC       | -     | -     | -     | -     | -     | -     | U1    |
| NC       | -     | -     | -     | -     | -     | -     | U2    |
| NC       | -     | -     | -     | -     | -     | -     | AD4   |
| NC       | -     | -     | -     | -     | -     | -     | AF1   |
| NC       | -     | -     | -     | -     | -     | -     | AL9   |
| NC       | -     | -     | -     | -     | -     | -     | AM9   |
| NC       | -     | -     | -     | -     | -     | -     | AL16  |
| NC       | -     | -     | -     | -     | -     | -     | AJ16  |
| NC       | -     | -     | -     | -     | -     | -     | AK18  |
| NC       | -     | -     | -     | -     | -     | -     | AJ18  |
| NC       | -     | -     | -     | -     | -     | -     | AK24  |
| NC       | -     | -     | -     | -     | -     | -     | AM26  |
| NC       | -     | -     | -     | -     | -     | -     | AE31  |
| NC       | -     | -     | -     | -     | -     | -     | AD30  |
| NC       | -     | -     | -     | -     | -     | -     | V32   |
| NC       | -     | -     | -     | -     | -     | -     | U33   |
| NC       | -     | -     | -     | -     | -     | -     | T32   |
| NC       | -     | -     | -     | -     | -     | -     | T30   |
| NC       | -     | -     | -     | -     | -     | -     | J31   |
| NC       | -     | -     | -     | -     | -     | -     | H32   |
| NC       | -     | -     | -     | -     | -     | -     | C9    |
| NC       | -     | -     | -     | -     | -     | -     | D10   |

12/18/98

**XC4062XLA Pinout Table**
**XC4062XLA Pinout Table**

| PAD NAME  | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 | BG560 |
|-----------|-------|-------|-------|-------|-------|-------|-------|
| VCC       | P142  | P183  | P212  | P38   | VCC*  | VCC*  | VCC*  |
| I/O (A8)  | P143  | P184  | P213  | P37   | D14   | D17   | A17   |
| I/O (A9)  | P144  | P185  | P214  | P36   | C14   | A17   | B18   |
| I/O       | -     | -     | -     | -     | -     | C17   | C18   |
| I/O       | -     | -     | -     | -     | -     | B17   | E18   |
| I/O       | -     | -     | -     | -     | -     | -     | D18   |
| I/O       | -     | -     | -     | -     | -     | -     | A19   |
| GND       | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O (A19) | P145  | P186  | P215  | P35   | A15   | C18   | C19   |
| I/O (A18) | P146  | P187  | P216  | P34   | B15   | D18   | D19   |
| I/O       | -     | P188  | P217  | P33   | C15   | B18   | E19   |
| I/O       | -     | P189  | P218  | P32   | D15   | A19   | B20   |
| I/O (A10) | P147  | P190  | P220  | P31   | A16   | B19   | C20   |
| I/O (A11) | P148  | P191  | P221  | P30   | B16   | C19   | D20   |
| VCC       | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| GND       | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| I/O       | -     | -     | -     | P29   | C16   | D19   | A21   |
| I/O       | -     | -     | -     | P28   | B17   | A20   | E20   |
| I/O       | -     | -     | -     | -     | D16   | B20   | B21   |
| I/O       | -     | -     | -     | -     | A18   | C20   | C21   |
| I/O       | -     | -     | -     | -     | -     | B21   | D21   |
| I/O       | -     | -     | -     | -     | -     | D20   | B22   |
| GND       | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O       | -     | -     | -     | P27   | C17   | C21   | C23   |
| I/O       | -     | -     | -     | P26   | B18   | A22   | E22   |
| VCC       | -     | -     | P222  | P25   | VCC*  | VCC*  | VCC*  |
| I/O       | -     | -     | P223  | P23   | C18   | B22   | B24   |
| I/O       | -     | -     | P224  | P22   | D17   | C22   | D23   |
| I/O       | P149  | P192  | P225  | P21   | A20   | B23   | C24   |
| I/O       | P150  | P193  | P226  | P20   | B19   | A24   | A25   |
| GND       | P151  | P194  | P227  | P19   | GND*  | GND*  | GND*  |
| I/O       | -     | -     | -     | P18   | C19   | D22   | E23   |
| I/O       | -     | -     | -     | P17   | D18   | C23   | B25   |
| I/O       | -     | P195  | P228  | P16   | A21   | B24   | D24   |
| I/O       | -     | P196  | P229  | P15   | B20   | C24   | C25   |
| I/O       | -     | -     | -     | -     | -     | -     | B26   |
| I/O       | -     | -     | -     | -     | -     | -     | E24   |
| GND       | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O       | -     | -     | -     | -     | -     | D23   | E25   |
| I/O       | -     | -     | -     | -     | -     | B25   | C27   |
| I/O       | P152  | P197  | P230  | P14   | C20   | A26   | D26   |
| I/O       | P153  | P198  | P231  | P13   | B21   | C25   | B28   |
| I/O (A12) | P154  | P199  | P232  | P12   | B22   | D24   | B29   |
| I/O (A13) | P155  | P200  | P233  | P10   | C21   | B26   | E26   |
| GND       | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| VCC       | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| I/O       | -     | -     | -     | P9    | D20   | A27   | C28   |
| I/O       | -     | -     | -     | P8    | A23   | D25   | D27   |
| I/O       | -     | -     | -     | -     | A24   | C26   | B30   |
| I/O       | -     | -     | -     | -     | B23   | B27   | C29   |
| I/O       | -     | -     | -     | -     | -     | A28   | E27   |
| I/O       | -     | -     | -     | -     | -     | D26   | A31   |
| GND       | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O       | -     | -     | P234  | P7    | D21   | C27   | D28   |
| I/O       | -     | -     | P235  | P6    | C22   | B28   | C30   |

**XC4062XLA Pinout Table (Continued)**

| PAD NAME        | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 | BG560 |
|-----------------|-------|-------|-------|-------|-------|-------|-------|
| I/O             | P156  | P201  | P236  | P5    | B24   | D27   | D29   |
| I/O             | P157  | P202  | P237  | P4    | C23   | B29   | E28   |
| I/O (A14)       | P158  | P203  | P238  | P3    | D22   | C28   | D30   |
| I/O, GCK8 (A15) | P159  | P204  | P239  | P2    | C24   | D28   | E29   |
| VCC             | P160  | P205  | P240  | P1    | VCC*  | VCC*  | VCC*  |
| GND             | P1    | P2    | P1    | P304  | GND*  | GND*  | GND*  |
| I/O, GCK1 (A16) | P2    | P4    | P2    | P303  | D23   | D29   | B33   |
| I/O (A17)       | P3    | P5    | P3    | P302  | C25   | C30   | F29   |
| I/O             | P4    | P6    | P4    | P301  | D24   | E28   | E30   |
| I/O             | P5    | P7    | P5    | P300  | E23   | E29   | D31   |
| I/O (TDI)       | P6    | P8    | P6    | P299  | C26   | D30   | F30   |
| I/O (TCK)       | P7    | P9    | P7    | P298  | E24   | D31   | C33   |
| GND             | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O             | -     | -     | -     | -     | -     | F28   | G29   |
| I/O             | -     | -     | -     | -     | -     | F29   | E31   |
| I/O             | -     | -     | -     | -     | D25   | E30   | D32   |
| I/O             | -     | -     | -     | -     | F23   | E31   | G30   |
| I/O             | -     | -     | -     | P297  | F24   | G28   | F31   |
| I/O             | -     | -     | -     | P296  | E25   | G29   | H29   |
| VCC             | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| GND             | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| I/O             | -     | -     | -     | -     | -     | F30   | H30   |
| I/O             | -     | -     | -     | -     | -     | F31   | G31   |
| I/O             | P8    | P10   | P8    | P295  | D26   | H28   | J29   |
| I/O             | P9    | P11   | P9    | P294  | G24   | H29   | F33   |
| I/O             | -     | P12   | P10   | P293  | F25   | G30   | G32   |
| I/O             | -     | P13   | P11   | P292  | F26   | H30   | J30   |
| GND             | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O             | -     | -     | -     | -     | -     | -     | H32   |
| I/O             | -     | -     | -     | -     | -     | -     | J31   |
| I/O             | -     | -     | P12   | P291  | H23   | J28   | K30   |
| I/O             | -     | -     | P13   | P290  | H24   | J29   | H33   |
| I/O             | -     | -     | -     | P289  | G25   | H31   | L29   |
| I/O             | -     | -     | -     | P288  | G26   | J30   | K31   |
| GND             | P10   | P14   | P14   | P287  | GND*  | GND*  | GND*  |
| I/O, FCLK1      | P11   | P15   | P15   | P286  | J23   | K28   | L30   |
| I/O             | P12   | P16   | P16   | P285  | J24   | K29   | K32   |
| I/O (TMS)       | P13   | P17   | P17   | P284  | H25   | K30   | J33   |
| I/O             | P14   | P18   | P18   | P283  | K23   | K31   | M29   |
| VCC             | -     | -     | P19   | P282  | VCC*  | VCC*  | VCC*  |
| I/O             | -     | -     | P20   | P280  | K24   | L29   | L32   |
| I/O             | -     | -     | P21   | P279  | J25   | L30   | M31   |
| GND             | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O             | -     | -     | -     | -     | -     | M30   | N29   |
| I/O             | -     | -     | -     | -     | -     | M28   | L33   |
| I/O             | -     | -     | -     | -     | J26   | M29   | M32   |
| I/O             | -     | -     | -     | -     | L23   | M31   | P29   |
| I/O             | -     | -     | -     | P278  | L24   | N31   | P30   |
| I/O             | -     | -     | -     | P277  | K25   | N28   | N33   |
| GND             | -     | -     | P22   | -     | GND*  | GND*  | GND*  |
| VCC             | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| I/O             | -     | -     | -     | -     | -     | N29   | P31   |
| I/O             | -     | -     | -     | -     | -     | N30   | P32   |
| I/O             | -     | -     | -     | P276  | L25   | P30   | R29   |
| I/O             | -     | -     | -     | P275  | L26   | P28   | R30   |
| I/O             | -     | P19   | P23   | P274  | M23   | P29   | R31   |
| I/O             | -     | P20   | P24   | P273  | M24   | R31   | R33   |

XC4062XLA Pinout Table (Continued)

| PAD NAME   | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 | BG560 |
|------------|-------|-------|-------|-------|-------|-------|-------|
| GND        | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O        | P15   | P21   | P25   | P272  | M25   | R30   | T31   |
| I/O        | P16   | P22   | P26   | P271  | M26   | R28   | T29   |
| I/O        | -     | -     | -     | -     | -     | -     | T30   |
| I/O        | -     | -     | -     | -     | -     | -     | T32   |
| I/O        | P17   | P23   | P27   | P270  | N24   | R29   | U32   |
| I/O        | P18   | P24   | P28   | P269  | N25   | T31   | U31   |
| GND        | P19   | P25   | P29   | P268  | GND*  | GND*  | GND*  |
| VCC        | P20   | P26   | P30   | P267  | VCC*  | VCC*  | VCC*  |
| I/O        | P21   | P27   | P31   | P266  | N26   | T30   | U29   |
| I/O        | P22   | P28   | P32   | P265  | P25   | T29   | U30   |
| I/O        | -     | -     | -     | -     | -     | -     | U33   |
| I/O        | -     | -     | -     | -     | -     | -     | V32   |
| I/O        | P23   | P29   | P33   | P264  | P23   | U31   | V31   |
| I/O        | P24   | P30   | P34   | P263  | P24   | U30   | V29   |
| GND        | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O        | -     | P31   | P35   | P262  | R26   | U28   | V30   |
| I/O        | -     | P32   | P36   | P261  | R25   | U29   | W33   |
| I/O        | -     | -     | -     | P260  | R24   | V30   | W31   |
| I/O        | -     | -     | -     | P259  | R23   | V29   | W30   |
| I/O        | -     | -     | -     | -     | -     | V28   | W29   |
| I/O        | -     | -     | -     | -     | -     | W31   | Y32   |
| VCC        | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| GND        | -     | -     | P37   | -     | GND*  | GND*  | GND*  |
| I/O        | -     | -     | -     | P258  | T26   | W30   | Y31   |
| I/O        | -     | -     | -     | P257  | T25   | W29   | Y30   |
| I/O        | -     | -     | -     | -     | -     | W28   | AA32  |
| I/O        | -     | -     | -     | -     | -     | Y31   | AA31  |
| I/O        | -     | -     | -     | -     | T24   | Y30   | AA30  |
| I/O        | -     | -     | -     | -     | U25   | Y29   | AB32  |
| GND        | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O        | -     | -     | P38   | P256  | T23   | Y28   | AA29  |
| I/O        | -     | -     | P39   | P255  | V26   | AA30  | AB31  |
| VCC        | -     | -     | P40   | P253  | VCC*  | VCC*  | VCC*  |
| I/O        | P25   | P33   | P41   | P252  | U24   | AA29  | AC31  |
| I/O        | P26   | P34   | P42   | P251  | V25   | AB31  | AB29  |
| I/O        | P27   | P35   | P43   | P250  | V24   | AB30  | AD32  |
| I/O, FCLK2 | P28   | P36   | P44   | P249  | U23   | AB29  | AC30  |
| GND        | P29   | P37   | P45   | P248  | GND*  | GND*  | GND*  |
| I/O        | -     | -     | -     | P247  | Y26   | AB28  | AD31  |
| I/O        | -     | -     | -     | P246  | W25   | AC30  | AE33  |
| I/O        | -     | -     | P46   | P245  | W24   | AC29  | AC29  |
| I/O        | -     | -     | P47   | P244  | V23   | AC28  | AE32  |
| I/O        | -     | -     | -     | -     | -     | -     | AD30  |
| I/O        | -     | -     | -     | -     | -     | -     | AE31  |
| GND        | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O        | -     | -     | -     | -     | -     | AD31  | AG33  |
| I/O        | -     | -     | -     | -     | -     | AD30  | AH33  |
| I/O        | -     | P38   | P48   | P243  | AA26  | AD29  | AE29  |
| I/O        | -     | P39   | P49   | P242  | Y25   | AD28  | AG31  |
| I/O        | P30   | P40   | P50   | P241  | Y24   | AE30  | AF30  |
| I/O        | P31   | P41   | P51   | P240  | AA25  | AE29  | AH32  |
| GND        | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| VCC        | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| I/O        | -     | -     | -     | P239  | AB25  | AF31  | AJ32  |
| I/O        | -     | -     | -     | P238  | AA24  | AE28  | AF29  |
| I/O        | -     | -     | -     | -     | -     | AF30  | AH31  |

XC4062XLA Pinout Table (Continued)

| PAD NAME   | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 | BG560 |
|------------|-------|-------|-------|-------|-------|-------|-------|
| I/O        | -     | -     | -     | -     | -     | AF29  | AG30  |
| I/O        | P32   | P42   | P52   | P237  | Y23   | AG31  | AK32  |
| I/O        | P33   | P43   | P53   | P236  | AC26  | AF28  | AJ31  |
| GND        | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O        | -     | -     | -     | -     | AD26  | AG30  | AG29  |
| I/O        | -     | -     | -     | -     | AC25  | AG29  | AL33  |
| I/O        | P34   | P44   | P54   | P235  | AA23  | AH31  | AH30  |
| I/O        | P35   | P45   | P55   | P234  | AB24  | AG28  | AK31  |
| I/O        | P36   | P46   | P56   | P233  | AD25  | AH30  | AJ30  |
| I/O, GCK2  | P37   | P47   | P57   | P232  | AC24  | AJ30  | AH29  |
| O (M1)     | P38   | P48   | P58   | P231  | AB23  | AH29  | AK30  |
| GND        | P39   | P49   | P59   | P230  | GND*  | GND*  | GND*  |
| I (M0)     | P40   | P50   | P60   | P229  | AD24  | AH28  | AJ29  |
| VCC        | P41   | P55   | P61   | P228  | VCC*  | VCC*  | VCC*  |
| I (M2)     | P42   | P56   | P62   | P227  | AC23  | AJ28  | AN32  |
| I/O, GCK3  | P43   | P57   | P63   | P226  | AE24  | AK29  | AJ28  |
| I/O (HDC)  | P44   | P58   | P64   | P225  | AD23  | AH27  | AK29  |
| I/O        | P45   | P59   | P65   | P224  | AC22  | AK28  | AL30  |
| I/O        | P46   | P60   | P66   | P223  | AF24  | AJ27  | AK28  |
| I/O        | P47   | P61   | P67   | P222  | AD22  | AL28  | AM31  |
| I/O (/LDC) | P48   | P62   | P68   | P221  | AE23  | AH26  | AJ27  |
| GND        | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O        | -     | -     | -     | -     | -     | AK27  | AN31  |
| I/O        | -     | -     | -     | -     | -     | AJ26  | AL29  |
| I/O        | -     | -     | -     | -     | AC21  | AL27  | AK27  |
| I/O        | -     | -     | -     | -     | AD21  | AH25  | AL28  |
| I/O        | -     | -     | -     | P220  | AE22  | AK26  | AJ26  |
| I/O        | -     | -     | -     | P219  | AF23  | AL26  | AM30  |
| VCC        | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| GND        | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| I/O        | P49   | P63   | P69   | P218  | AD20  | AH24  | AM29  |
| I/O        | P50   | P64   | P70   | P217  | AE21  | AJ25  | AK26  |
| I/O        | -     | P65   | P71   | P216  | AF21  | AK25  | AL27  |
| I/O        | -     | P66   | P72   | P215  | AC19  | AJ24  | AJ25  |
| I/O        | -     | -     | -     | -     | -     | AH23  | AN29  |
| I/O        | -     | -     | -     | -     | -     | AK24  | AN28  |
| GND        | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O        | -     | -     | -     | -     | -     | -     | AM26  |
| I/O        | -     | -     | -     | -     | -     | -     | AK24  |
| I/O        | -     | -     | P73   | P214  | AD19  | AL24  | AL25  |
| I/O        | -     | -     | P74   | P213  | AE20  | AH22  | AJ23  |
| I/O        | -     | -     | -     | P212  | AF20  | AJ23  | AN26  |
| I/O        | -     | -     | -     | P211  | AC18  | AK23  | AL24  |
| GND        | P51   | P67   | P75   | P210  | GND*  | GND*  | GND*  |
| I/O        | P52   | P68   | P76   | P209  | AD18  | AJ22  | AK23  |
| I/O        | P53   | P69   | P77   | P208  | AE19  | AK22  | AN25  |
| I/O        | P54   | P70   | P78   | P207  | AC17  | AL22  | AJ22  |
| I/O        | P55   | P71   | P79   | P206  | AD17  | AJ21  | AL23  |
| VCC        | -     | -     | P80   | P204  | VCC*  | VCC*  | VCC*  |
| I/O        | -     | P72   | P81   | P203  | AE18  | AH20  | AM24  |
| I/O        | -     | P73   | P82   | P202  | AF18  | AK21  | AK22  |
| GND        | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O        | -     | -     | -     | -     | -     | AJ20  | AK21  |
| I/O        | -     | -     | -     | -     | -     | AH19  | AM22  |
| I/O        | -     | -     | -     | -     | AC16  | AK20  | AJ20  |
| I/O        | -     | -     | -     | -     | AD16  | AJ19  | AL21  |
| I/O        | -     | -     | -     | P201  | AE17  | AL20  | AN21  |

XC4062XLA Pinout Table (Continued)

| PAD NAME    | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 | BG560 |
|-------------|-------|-------|-------|-------|-------|-------|-------|
| I/O         | -     | -     | -     | P200  | AE16  | AH18  | AK20  |
| GND         | -     | -     | P83   | -     | GND*  | GND*  | GND*  |
| VCC         | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| I/O         | -     | -     | -     | P199  | AF16  | AK19  | AL20  |
| I/O         | -     | -     | -     | P198  | AC15  | AJ18  | AJ19  |
| I/O         | -     | -     | P84   | P197  | AD15  | AL19  | AM20  |
| I/O         | -     | -     | P85   | P196  | AE15  | AK18  | AK19  |
| I/O         | P56   | P74   | P86   | P195  | AF15  | AH17  | AL19  |
| I/O         | P57   | P75   | P87   | P194  | AD14  | AJ17  | AN19  |
| GND         | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O         | -     | -     | -     | -     | -     | -     | AJ18  |
| I/O         | -     | -     | -     | -     | -     | -     | AK18  |
| I/O         | -     | -     | -     | -     | -     | AK17  | AL18  |
| I/O         | -     | -     | -     | -     | -     | AL17  | AM18  |
| I/O         | P58   | P76   | P88   | P193  | AE14  | AJ16  | AK17  |
| I/O (/INIT) | P59   | P77   | P89   | P192  | AF14  | AK16  | AJ17  |
| VCC         | P60   | P78   | P90   | P191  | VCC*  | VCC*  | VCC*  |
| GND         | P61   | P79   | P91   | P190  | GND*  | GND*  | GND*  |
| I/O         | P62   | P80   | P92   | P189  | AE13  | AL16  | AL17  |
| I/O         | P63   | P81   | P93   | P188  | AC13  | AH15  | AM17  |
| I/O         | -     | -     | -     | -     | -     | AL15  | AN17  |
| I/O         | -     | -     | -     | -     | -     | AJ15  | AK16  |
| I/O         | -     | -     | -     | -     | -     | -     | AJ16  |
| I/O         | -     | -     | -     | -     | -     | -     | AL16  |
| GND         | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O         | P64   | P82   | P94   | P187  | AD13  | AK15  | AM16  |
| I/O         | P65   | P83   | P95   | P186  | AF12  | AJ14  | AL15  |
| I/O         | -     | P84   | P96   | P185  | AE12  | AH14  | AK15  |
| I/O         | -     | P85   | P97   | P184  | AD12  | AK14  | AJ15  |
| I/O         | -     | -     | -     | P183  | AC12  | AL13  | AN15  |
| I/O         | -     | -     | -     | P182  | AF11  | AK13  | AM14  |
| VCC         | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| GND         | -     | -     | P98   | -     | GND*  | GND*  | GND*  |
| I/O         | -     | -     | -     | P181  | AE11  | AJ13  | AL14  |
| I/O         | -     | -     | -     | P180  | AD11  | AH13  | AK14  |
| I/O         | -     | -     | -     | -     | AE10  | AL12  | AJ14  |
| I/O         | -     | -     | -     | -     | AC11  | AK12  | AN13  |
| I/O         | -     | -     | -     | -     | -     | AJ12  | AM13  |
| I/O         | -     | -     | -     | -     | -     | AK11  | AL13  |
| GND         | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O         | -     | -     | P99   | P179  | AF9   | AH12  | AK12  |
| I/O         | -     | -     | P100  | P178  | AD10  | AJ11  | AN11  |
| VCC         | -     | -     | P101  | P177  | VCC*  | VCC*  | VCC*  |
| I/O         | P66   | P86   | P102  | P175  | AE9   | AL10  | AJ12  |
| I/O         | P67   | P87   | P103  | P174  | AD9   | AK10  | AL11  |
| I/O         | P68   | P88   | P104  | P173  | AC10  | AJ10  | AK11  |
| I/O         | P69   | P89   | P105  | P172  | AF7   | AK9   | AM10  |
| GND         | P70   | P90   | P106  | P171  | GND*  | GND*  | GND*  |
| I/O         | -     | -     | -     | P170  | AE8   | AL8   | AL10  |
| I/O         | -     | -     | -     | P169  | AD8   | AH10  | AJ11  |
| I/O         | -     | -     | P107  | P168  | AC9   | AJ9   | AN9   |
| I/O         | -     | -     | P108  | P167  | AF6   | AK8   | AK10  |
| I/O         | -     | -     | -     | -     | -     | -     | AM9   |
| I/O         | -     | -     | -     | -     | -     | -     | AL9   |
| GND         | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O         | -     | -     | -     | -     | -     | AJ8   | AN7   |
| I/O         | -     | -     | -     | -     | -     | AH9   | AJ9   |

XC4062XLA Pinout Table (Continued)

| PAD NAME   | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 | BG560 |
|------------|-------|-------|-------|-------|-------|-------|-------|
| I/O        | -     | P91   | P109  | P166  | AE7   | AK7   | AL7   |
| I/O        | -     | P92   | P110  | P165  | AD7   | AL6   | AK8   |
| I/O        | P71   | P93   | P111  | P164  | AE6   | AJ7   | AN6   |
| I/O        | P72   | P94   | P112  | P163  | AE5   | AH8   | AM6   |
| GND        | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| VCC        | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| I/O        | -     | -     | -     | P162  | AD6   | AK6   | AJ8   |
| I/O        | -     | -     | -     | P161  | AC7   | AL5   | AL6   |
| I/O        | P73   | P95   | P113  | P160  | AF4   | AH7   | AK7   |
| I/O        | P74   | P96   | P114  | P159  | AF3   | AJ6   | AM5   |
| I/O        | -     | -     | -     | -     | AE4   | AK5   | AM4   |
| I/O        | -     | -     | -     | -     | AC6   | AL4   | AJ7   |
| GND        | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O        | -     | -     | -     | -     | -     | AH6   | AL5   |
| I/O        | -     | -     | -     | -     | -     | AJ5   | AK6   |
| I/O        | P75   | P97   | P115  | P158  | AD5   | AK4   | AN3   |
| I/O        | P76   | P98   | P116  | P157  | AE3   | AH5   | AK5   |
| I/O        | P77   | P99   | P117  | P156  | AD4   | AK3   | AJ6   |
| I/O, GCK4  | P78   | P100  | P118  | P155  | AC5   | AJ4   | AL4   |
| GND        | P79   | P101  | P119  | P154  | GND*  | GND*  | GND*  |
| DONE       | P80   | P103  | P120  | P153  | AD3   | AH4   | AJ5   |
| VCC        | P81   | P106  | P121  | P152  | VCC*  | VCC*  | VCC*  |
| /PROGRAM   | P82   | P108  | P122  | P151  | AC4   | AH3   | AM1   |
| I/O (D7)   | P83   | P109  | P123  | P150  | AD2   | AJ2   | AH5   |
| I/O, GCK5  | P84   | P110  | P124  | P149  | AC3   | AG4   | AJ4   |
| I/O        | P85   | P111  | P125  | P148  | AB4   | AG3   | AK3   |
| I/O        | P86   | P112  | P126  | P147  | AD1   | AH2   | AH4   |
| I/O        | -     | -     | -     | -     | AB3   | AH1   | AL1   |
| I/O        | -     | -     | -     | -     | AC2   | AF4   | AG5   |
| GND        | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O        | -     | -     | P127  | P146  | AA4   | AF3   | AJ3   |
| I/O        | -     | -     | P128  | P145  | AA3   | AG2   | AK2   |
| I/O        | -     | -     | -     | -     | -     | AG1   | AG4   |
| I/O        | -     | -     | -     | -     | -     | AE4   | AH3   |
| I/O        | -     | -     | -     | P144  | AB2   | AE3   | AF5   |
| I/O        | -     | -     | -     | P143  | AC1   | AF2   | AJ2   |
| VCC        | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| GND        | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| I/O (D6)   | P87   | P113  | P129  | P142  | Y3    | AF1   | AJ1   |
| I/O        | P88   | P114  | P130  | P141  | AA2   | AD4   | AF4   |
| I/O        | P89   | P115  | P131  | P140  | AA1   | AD3   | AG3   |
| I/O        | P90   | P116  | P132  | P139  | W4    | AE2   | AE5   |
| I/O        | -     | -     | -     | -     | -     | AD2   | AH1   |
| I/O        | -     | -     | -     | -     | -     | AC4   | AF3   |
| GND        | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O        | -     | -     | -     | -     | -     | -     | AF1   |
| I/O        | -     | -     | -     | -     | -     | -     | AD4   |
| I/O        | -     | P117  | P133  | P138  | W3    | AC3   | AE3   |
| I/O        | -     | P118  | P134  | P137  | Y2    | AD1   | AC5   |
| I/O        | -     | -     | -     | P136  | Y1    | AC2   | AE1   |
| I/O        | -     | -     | -     | P135  | V4    | AB4   | AD3   |
| GND        | P91   | P119  | P135  | P134  | GND*  | GND*  | GND*  |
| I/O        | -     | -     | P136  | P133  | V3    | AB3   | AC4   |
| I/O        | -     | -     | P137  | P132  | W2    | AB2   | AD2   |
| I/O, FCLK3 | P92   | P120  | P138  | P131  | U4    | AB1   | AB5   |
| I/O        | P93   | P121  | P139  | P130  | U3    | AA3   | AC3   |
| VCC        | -     | -     | P140  | P129  | VCC*  | VCC*  | VCC*  |

XC4062XLA Pinout Table (Continued)

| PAD NAME   | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 | BG560 |
|------------|-------|-------|-------|-------|-------|-------|-------|
| I/O (D5)   | P94   | P122  | P141  | P127  | V2    | AA2   | AA5   |
| I/O (/CS0) | P95   | P123  | P142  | P126  | V1    | Y2    | AB3   |
| GND        | -     | -     | P143* | -     | -     | GND*  | GND*  |
| I/O        | -     | -     | -     | -     | T4    | Y4    | AB2   |
| I/O        | -     | -     | -     | -     | T3    | Y3    | AA4   |
| I/O        | -     | -     | -     | -     | -     | Y1    | AA3   |
| I/O        | -     | -     | -     | -     | -     | W1    | Y5    |
| I/O        | -     | -     | -     | P125  | U2    | W4    | Y3    |
| I/O        | -     | -     | -     | P124  | T2    | W3    | Y2    |
| GND        | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| VCC        | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| I/O        | -     | -     | -     | -     | -     | W2    | W5    |
| I/O        | -     | -     | -     | -     | -     | V2    | W4    |
| I/O        | -     | -     | -     | P123  | T1    | V4    | W3    |
| I/O        | -     | -     | -     | P122  | R4    | V3    | W1    |
| I/O        | -     | P124  | P144  | P121  | R3    | U1    | V3    |
| I/O        | -     | P125  | P145  | P120  | R2    | U2    | V5    |
| GND        | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O        | P96   | P126  | P146  | P119  | R1    | U4    | V4    |
| I/O        | P97   | P127  | P147  | P118  | P3    | U3    | V2    |
| I/O        | -     | -     | -     | -     | -     | -     | U2    |
| I/O        | -     | -     | -     | -     | -     | -     | U1    |
| I/O (D4)   | P98   | P128  | P148  | P117  | P2    | T1    | U5    |
| I/O        | P99   | P129  | P149  | P116  | P1    | T2    | U4    |
| VCC        | P100  | P130  | P150  | P115  | VCC*  | VCC*  | VCC*  |
| GND        | P101  | P131  | P151  | P114  | GND*  | GND*  | GND*  |
| I/O (D3)   | P102  | P132  | P152  | P113  | N2    | T3    | U3    |
| I/O (/RS)  | P103  | P133  | P153  | P112  | N4    | R1    | T2    |
| I/O        | -     | -     | -     | -     | -     | -     | T3    |
| I/O        | -     | -     | -     | -     | -     | -     | T5    |
| I/O        | P104  | P134  | P154  | P111  | N3    | R2    | T4    |
| I/O        | P105  | P135  | P155  | P110  | M1    | R4    | R1    |
| GND        | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O        | -     | P136  | P156  | P109  | M2    | R3    | R3    |
| I/O        | -     | P137  | P157  | P108  | M3    | P2    | R4    |
| I/O        | -     | -     | -     | P107  | M4    | P3    | R5    |
| I/O        | -     | -     | -     | P106  | L1    | P4    | P2    |
| I/O        | -     | -     | -     | -     | -     | N1    | P3    |
| I/O        | -     | -     | -     | -     | -     | N2    | P4    |
| VCC        | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| GND        | -     | -     | P158  | -     | GND*  | GND*  | GND*  |
| I/O        | -     | -     | -     | P105  | L2    | N3    | N1    |
| I/O        | -     | -     | -     | P104  | L3    | N4    | P5    |
| I/O        | -     | -     | -     | -     | K2    | M1    | N2    |
| I/O        | -     | -     | -     | -     | L4    | M2    | N3    |
| I/O        | -     | -     | -     | -     | -     | M3    | N5    |
| I/O        | -     | -     | -     | -     | -     | M4    | M3    |
| GND        | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O (D2)   | P106  | P138  | P159  | P103  | J1    | L2    | M4    |
| I/O        | P107  | P139  | P160  | P102  | K3    | L3    | L1    |
| VCC        | -     | -     | P161  | P101  | VCC*  | VCC*  | VCC*  |
| I/O        | P108  | P140  | P162  | P99   | J2    | K1    | K2    |
| I/O, FCLK4 | P109  | P141  | P163  | P98   | J3    | K2    | L4    |
| I/O        | -     | -     | P164  | P97   | K4    | K3    | J1    |
| I/O        | -     | -     | P165  | P96   | G1    | K4    | K3    |
| GND        | P110  | P142  | P166  | P95   | GND*  | GND*  | GND*  |
| I/O        | -     | -     | -     | P94   | H2    | J2    | L5    |

XC4062XLA Pinout Table (Continued)

| PAD NAME              | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 | BG560 |
|-----------------------|-------|-------|-------|-------|-------|-------|-------|
| I/O                   | -     | -     | -     | P93   | H3    | J3    | J2    |
| I/O                   | -     | -     | P167  | P92   | J4    | J4    | K4    |
| I/O                   | -     | -     | P168  | P91   | F1    | H1    | J3    |
| I/O                   | -     | -     | -     | -     | -     | -     | H2    |
| I/O                   | -     | -     | -     | -     | -     | -     | K5    |
| GND                   | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O                   | -     | P143  | P169  | P90   | G2    | H2    | G1    |
| I/O                   | -     | P144  | P170  | P89   | G3    | H3    | F1    |
| I/O                   | P111  | P145  | P171  | P88   | F2    | H4    | J5    |
| I/O                   | P112  | P146  | P172  | P87   | E2    | G2    | G3    |
| I/O                   | -     | -     | -     | -     | -     | G3    | H4    |
| I/O                   | -     | -     | -     | -     | -     | F1    | F2    |
| GND                   | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| VCC                   | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| I/O (D1)              | P113  | P147  | P173  | P86   | F3    | G4    | F3    |
| I/O (/RCK, RDY /BUSY) | P114  | P148  | P174  | P85   | G4    | F2    | G4    |
| I/O                   | -     | -     | -     | -     | D1    | F3    | D2    |
| I/O                   | -     | -     | -     | -     | C1    | E1    | E3    |
| I/O                   | -     | -     | -     | -     | -     | F4    | G5    |
| I/O                   | -     | -     | -     | -     | -     | E2    | C1    |
| GND                   | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O                   | -     | -     | -     | P84   | D2    | E3    | F4    |
| I/O                   | -     | -     | -     | P83   | F4    | D1    | D3    |
| I/O                   | P115  | P149  | P175  | P82   | E3    | E4    | B3    |
| I/O                   | P116  | P150  | P176  | P81   | C2    | D2    | F5    |
| I/O (D0, DIN)         | P117  | P151  | P177  | P80   | D3    | C2    | E4    |
| I/O, GCK6 (DOUT)      | P118  | P152  | P178  | P79   | E4    | D3    | D4    |
| CCLK                  | P119  | P153  | P179  | P78   | C3    | D4    | C4    |
| VCC                   | P120  | P154  | P180  | P77   | VCC*  | VCC*  | VCC*  |
| O, TDO                | P121  | P159  | P181  | P76   | D4    | C4    | E6    |
| GND                   | P122  | P160  | P182  | P75   | GND*  | GND*  | GND*  |
| I/O (A0, /WS)         | P123  | P161  | P183  | P74   | B3    | B3    | D5    |
| I/O, GCK7 (A1)        | P124  | P162  | P184  | P73   | C4    | D5    | A2    |
| I/O                   | P125  | P163  | P185  | P72   | D5    | B4    | D6    |
| I/O                   | P126  | P164  | P186  | P71   | A3    | C5    | A3    |
| I/O                   | -     | -     | -     | -     | -     | A4    | E7    |
| I/O                   | -     | -     | -     | -     | -     | D6    | C5    |
| GND                   | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O                   | -     | -     | -     | -     | C5    | B5    | B4    |
| I/O                   | -     | -     | -     | -     | B4    | C6    | D7    |
| I/O, (CS1, A2)        | P127  | P165  | P187  | P70   | D6    | A5    | C6    |
| I/O (A3)              | P128  | P166  | P188  | P69   | C6    | D7    | E8    |
| I/O                   | -     | -     | -     | P68   | B5    | B6    | B5    |
| I/O                   | -     | -     | -     | P67   | A4    | A6    | A5    |
| VCC                   | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| GND                   | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| I/O                   | -     | -     | P189  | P66   | C7    | D8    | D8    |
| I/O                   | -     | -     | P190  | P65   | B6    | C7    | C7    |
| I/O                   | P129  | P167  | P191  | P64   | A6    | B7    | E9    |
| I/O                   | P130  | P168  | P192  | P63   | D8    | D9    | A6    |
| I/O                   | -     | -     | -     | -     | C8    | B8    | B7    |
| I/O                   | -     | -     | -     | -     | -     | A8    | D9    |
| GND                   | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O                   | -     | -     | -     | -     | -     | -     | D10   |
| I/O                   | -     | -     | -     | -     | -     | -     | C9    |

XC4062XLA Pinout Table (Continued)

| PAD NAME  | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 | BG560 |
|-----------|-------|-------|-------|-------|-------|-------|-------|
| I/O       | -     | P169  | P193  | P62   | B7    | D10   | E11   |
| I/O       | -     | P170  | P194  | P61   | A7    | C9    | A9    |
| I/O       | -     | -     | P195  | P60   | D9    | B9    | C10   |
| I/O       | -     | -     | -     | P59   | C9    | C10   | D11   |
| GND       | P131  | P171  | P196  | P58   | GND*  | GND*  | GND*  |
| I/O       | P132  | P172  | P197  | P57   | B8    | B10   | B10   |
| I/O       | P133  | P173  | P198  | P56   | D10   | A10   | E12   |
| I/O       | -     | -     | P199  | P55   | C10   | C11   | C11   |
| I/O       | -     | -     | P200  | P54   | B9    | D12   | B11   |
| VCC       | -     | -     | P201  | P52   | VCC*  | VCC*  | VCC*  |
| I/O       | -     | -     | -     | P51   | A9    | B11   | D12   |
| I/O       | -     | -     | -     | P50   | D11   | C12   | A11   |
| GND       | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O       | -     | -     | -     | -     | -     | D13   | C13   |
| I/O       | -     | -     | -     | -     | -     | B12   | E14   |
| I/O       | -     | -     | -     | -     | C11   | C13   | A13   |
| I/O       | -     | -     | -     | -     | B10   | A12   | D14   |
| I/O       | -     | -     | -     | P49   | B11   | D14   | C14   |
| I/O       | -     | -     | -     | P48   | A11   | B13   | B14   |
| GND       | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| VCC       | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| I/O (A4)  | P134  | P174  | P202  | P47   | D12   | C14   | E15   |
| I/O (A5)  | P135  | P175  | P203  | P46   | C12   | A13   | D15   |
| I/O       | -     | P176  | P205  | P45   | B12   | B14   | C15   |
| I/O       | P136  | P177  | P206  | P44   | A12   | D15   | A15   |
| I/O (A21) | P137  | P178  | P207  | P43   | C13   | C15   | C16   |
| I/O (A20) | P138  | P179  | P208  | P42   | B13   | B15   | E16   |
| GND       | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O       | -     | -     | -     | -     | -     | -     | D16   |
| I/O       | -     | -     | -     | -     | -     | -     | B16   |
| I/O       | -     | -     | -     | -     | -     | A15   | B17   |
| I/O       | -     | -     | -     | -     | -     | C16   | C17   |
| I/O (A6)  | P139  | P180  | P209  | P41   | A13   | B16   | E17   |
| I/O (A7)  | P140  | P181  | P210  | P40   | B14   | A16   | D17   |
| GND       | P141  | P182  | P211  | P39   | GND*  | GND*  | GND*  |
| VCC       | -     | -     | -     | -     | A10   | A1    | A4    |
| VCC       | -     | -     | -     | -     | A17   | A11   | A10   |
| VCC       | -     | -     | -     | -     | AC14  | A21   | A16   |
| VCC       | -     | -     | -     | -     | AC20  | A31   | A22   |
| VCC       | -     | -     | -     | -     | AC8   | D11   | A26   |
| VCC       | -     | -     | -     | -     | AF10  | D21   | A30   |
| VCC       | -     | -     | -     | -     | AF17  | L1    | B2    |
| VCC       | -     | -     | -     | -     | D7    | L4    | B13   |
| VCC       | -     | -     | -     | -     | D13   | L28   | B19   |
| VCC       | -     | -     | -     | -     | D19   | L31   | B32   |
| VCC       | -     | -     | -     | -     | G23   | AA1   | C3    |
| VCC       | -     | -     | -     | -     | H4    | AA4   | C32   |
| VCC       | -     | -     | -     | -     | K1    | AA28  | D1    |
| VCC       | -     | -     | -     | -     | K26   | AA31  | D33   |
| VCC       | -     | -     | -     | -     | N23   | AH11  | H1    |
| VCC       | -     | -     | -     | -     | P4    | AH21  | K33   |
| VCC       | -     | -     | -     | -     | U1    | AL1   | M1    |
| VCC       | -     | -     | -     | -     | U26   | AL11  | N32   |
| VCC       | -     | -     | -     | -     | W23   | AL21  | R2    |
| VCC       | -     | -     | -     | -     | Y4    | AL31  | T33   |
| VCC       | -     | -     | -     | -     | B2    | -     | V1    |
| VCC       | -     | -     | -     | -     | B25   | -     | W32   |

XC4062XLA Pinout Table (Continued)

| PAD NAME | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 | BG560 |
|----------|-------|-------|-------|-------|-------|-------|-------|
| VCC      | -     | -     | -     | -     | AE2   | -     | AA2   |
| VCC      | -     | -     | -     | -     | AE25  | -     | AB33  |
| VCC      | -     | -     | -     | -     | -     | -     | AD1   |
| VCC      | -     | -     | -     | -     | -     | -     | AF33  |
| VCC      | -     | -     | -     | -     | -     | -     | AK1   |
| VCC      | -     | -     | -     | -     | -     | -     | AK33  |
| VCC      | -     | -     | -     | -     | -     | -     | AL2   |
| VCC      | -     | -     | -     | -     | -     | -     | AL3   |
| VCC      | -     | -     | -     | -     | -     | -     | AM2   |
| VCC      | -     | -     | -     | -     | -     | -     | AM15  |
| VCC      | -     | -     | -     | -     | -     | -     | AM21  |
| VCC      | -     | -     | -     | -     | -     | -     | AM32  |
| VCC      | -     | -     | -     | -     | -     | -     | AN4   |
| VCC      | -     | -     | -     | -     | -     | -     | AN8   |
| VCC      | -     | -     | -     | -     | -     | -     | AN12  |
| VCC      | -     | -     | -     | -     | -     | -     | AN18  |
| VCC      | -     | -     | -     | -     | -     | -     | AN24  |
| VCC      | -     | -     | -     | -     | -     | -     | AN30  |
| VCC      | -     | -     | -     | -     | -     | C3    | AL31  |
| VCC      | -     | -     | -     | -     | -     | C29   | E5    |
| VCC      | -     | -     | -     | -     | -     | AJ3   | C31   |
| VCC      | -     | -     | -     | -     | -     | AJ29  | AK4   |
|          |       |       |       |       |       |       |       |
| GND      | -     | -     | -     | -     | A1    | A2    | A7    |
| GND      | -     | -     | -     | -     | A14   | A3    | A12   |
| GND      | -     | -     | -     | -     | A19   | A7    | A14   |
| GND      | -     | -     | -     | -     | A2    | A9    | A18   |
| GND      | -     | -     | -     | -     | A22   | A14   | A20   |
| GND      | -     | -     | -     | -     | A25   | A18   | A24   |
| GND      | -     | -     | -     | -     | A26   | A23   | A29   |
| GND      | -     | -     | -     | -     | A5    | A25   | A32   |
| GND      | -     | -     | -     | -     | A8    | A29   | B1    |
| GND      | -     | -     | -     | -     | AB1   | A30   | B6    |
| GND      | -     | -     | -     | -     | AB26  | B1    | B9    |
| GND      | -     | -     | -     | -     | AE1   | B2    | B15   |
| GND      | -     | -     | -     | -     | AE26  | B30   | B23   |
| GND      | -     | -     | -     | -     | AF1   | B31   | B27   |
| GND      | -     | -     | -     | -     | AF13  | C1    | B31   |
| GND      | -     | -     | -     | -     | AF19  | C31   | C2    |
| GND      | -     | -     | -     | -     | AF2   | D16   | E1    |
| GND      | -     | -     | -     | -     | AF22  | G1    | F32   |
| GND      | -     | -     | -     | -     | AF25  | G31   | G2    |
| GND      | -     | -     | -     | -     | AF26  | J1    | G33   |
| GND      | -     | -     | -     | -     | AF5   | J31   | J32   |
| GND      | -     | -     | -     | -     | AF8   | P1    | K1    |
| GND      | -     | -     | -     | -     | B1    | P31   | L2    |
| GND      | -     | -     | -     | -     | B26   | T4    | M33   |
| GND      | -     | -     | -     | -     | E1    | T28   | P1    |
| GND      | -     | -     | -     | -     | E26   | V1    | P33   |
| GND      | -     | -     | -     | -     | H1    | V31   | R32   |
| GND      | -     | -     | -     | -     | H26   | AC1   | T1    |
| GND      | -     | -     | -     | -     | N1    | AC31  | V33   |
| GND      | -     | -     | -     | -     | P26   | AE1   | W2    |
| GND      | -     | -     | -     | -     | W1    | AE31  | Y1    |
| GND      | -     | -     | -     | -     | W26   | AH16  | Y33   |
| GND      | -     | -     | -     | -     | -     | AJ1   | AB1   |
| GND      | -     | -     | -     | -     | -     | AJ31  | AC32  |

XC4062XLA Pinout Table (Continued)

| PAD NAME | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 | BG560 |
|----------|-------|-------|-------|-------|-------|-------|-------|
| GND      | -     | -     | -     | -     | -     | AK1   | AD33  |
| GND      | -     | -     | -     | -     | -     | AK2   | AE2   |
| GND      | -     | -     | -     | -     | -     | AK30  | AG1   |
| GND      | -     | -     | -     | -     | -     | AK31  | AG32  |
| GND      | -     | -     | -     | -     | -     | AL2   | AH2   |
| GND      | -     | -     | -     | -     | -     | AL3   | AJ33  |
| GND      | -     | -     | -     | -     | -     | AL7   | AL32  |
| GND      | -     | -     | -     | -     | -     | AL9   | AM3   |
| GND      | -     | -     | -     | -     | -     | AL14  | AM11  |
| GND      | -     | -     | -     | -     | -     | AL18  | AM19  |
| GND      | -     | -     | -     | -     | -     | AL23  | AM25  |
| GND      | -     | -     | -     | -     | -     | AL25  | AM28  |
| GND      | -     | -     | -     | -     | -     | AL29  | AM33  |
| GND      | -     | -     | -     | -     | -     | AL30  | AM7   |
| GND      | -     | -     | -     | -     | -     | -     | AN2   |
| GND      | -     | -     | -     | -     | -     | -     | AN5   |
| GND      | -     | -     | -     | -     | -     | -     | AN10  |
| GND      | -     | -     | -     | -     | -     | -     | AN14  |
| GND      | -     | -     | -     | -     | -     | -     | AN16  |
| GND      | -     | -     | -     | -     | -     | -     | AN20  |
| GND      | -     | -     | -     | -     | -     | -     | AN22  |
| GND      | -     | -     | -     | -     | -     | -     | AN27  |
| GND      | -     | -     | P204  | -     | -     | -     | -     |
| GND      | -     | -     | P219  | -     | -     | -     | -     |
|          |       |       |       |       |       |       |       |
| NC       | -     | P1    | -     | P11   | -     | C8    | A28   |
| NC       | -     | P3    | -     | P24   | -     | -     | A27   |
| NC       | -     | P51   | -     | P53   | -     | -     | D25   |
| NC       | -     | P52   | -     | P100  | -     | -     | C26   |
| NC       | -     | P53   | -     | P128  | -     | -     | A23   |
| NC       | -     | P54   | -     | P176  | -     | -     | D22   |
| NC       | -     | P102  | -     | P205  | -     | -     | C22   |
| NC       | -     | P104  | -     | P254  | -     | -     | E21   |
| NC       | -     | P105  | -     | P281  | -     | -     | D13   |
| NC       | -     | P107  | -     | -     | -     | -     | B12   |
| NC       | -     | P155  | -     | -     | -     | -     | C12   |
| NC       | -     | P156  | -     | -     | -     | -     | E13   |
| NC       | -     | P157  | -     | -     | -     | -     | A8    |
| NC       | -     | P158  | -     | -     | -     | -     | B8    |
| NC       | -     | P206  | -     | -     | -     | -     | E10   |
| NC       | -     | P207  | -     | -     | -     | -     | C8    |
| NC       | -     | P208  | -     | -     | -     | -     | H5    |
| NC       | -     | -     | -     | -     | -     | -     | E2    |
| NC       | -     | -     | -     | -     | -     | -     | J4    |
| NC       | -     | -     | -     | -     | -     | -     | H3    |
| NC       | -     | -     | -     | -     | -     | -     | M5    |
| NC       | -     | -     | -     | -     | -     | -     | L3    |
| NC       | -     | -     | -     | -     | -     | -     | M2    |
| NC       | -     | -     | -     | -     | -     | -     | N4    |
| NC       | -     | -     | -     | -     | -     | -     | Y4    |
| NC       | -     | -     | -     | -     | -     | -     | AA1   |
| NC       | -     | -     | -     | -     | -     | -     | AC1   |
| NC       | -     | -     | -     | -     | -     | -     | AB4   |
| NC       | -     | -     | -     | -     | -     | -     | AF2   |
| NC       | -     | -     | -     | -     | -     | -     | AD5   |
| NC       | -     | -     | -     | -     | -     | -     | AG2   |
| NC       | -     | -     | -     | -     | -     | -     | AE4   |

XC4062XLA Pinout Table (Continued)

| PAD NAME | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 | BG560 |
|----------|-------|-------|-------|-------|-------|-------|-------|
| NC       | -     | -     | -     | -     | -     | -     | AL8   |
| NC       | -     | -     | -     | -     | -     | -     | AK9   |
| NC       | -     | -     | -     | -     | -     | -     | AM8   |
| NC       | -     | -     | -     | -     | -     | -     | AJ10  |
| NC       | -     | -     | -     | -     | -     | -     | AL12  |
| NC       | -     | -     | -     | -     | -     | -     | AM12  |
| NC       | -     | -     | -     | -     | -     | -     | AJ13  |
| NC       | -     | -     | -     | -     | -     | -     | AK13  |
| NC       | -     | -     | -     | -     | -     | -     | AN23  |
| NC       | -     | -     | -     | -     | -     | -     | AL22  |
| NC       | -     | -     | -     | -     | -     | -     | AJ21  |
| NC       | -     | -     | -     | -     | -     | -     | AM23  |
| NC       | -     | -     | -     | -     | -     | -     | AM27  |
| NC       | -     | -     | -     | -     | -     | -     | AJ24  |
| NC       | -     | -     | -     | -     | -     | -     | AL26  |
| NC       | -     | -     | -     | -     | -     | -     | AK25  |
| NC       | -     | -     | -     | -     | -     | -     | AE30  |
| NC       | -     | -     | -     | -     | -     | -     | AF31  |
| NC       | -     | -     | -     | -     | -     | -     | AD29  |
| NC       | -     | -     | -     | -     | -     | -     | AF32  |
| NC       | -     | -     | -     | -     | -     | -     | AC33  |
| NC       | -     | -     | -     | -     | -     | -     | AB30  |
| NC       | -     | -     | -     | -     | -     | -     | Y29   |
| NC       | -     | -     | -     | -     | -     | -     | AA33  |
| NC       | -     | -     | -     | -     | -     | -     | N31   |
| NC       | -     | -     | -     | -     | -     | -     | N30   |
| NC       | -     | -     | -     | -     | -     | -     | M30   |
| NC       | -     | -     | -     | -     | -     | -     | L31   |
| NC       | -     | -     | -     | -     | -     | -     | K29   |
| NC       | -     | -     | -     | -     | -     | -     | H31   |
| NC       | -     | -     | -     | -     | -     | -     | E33   |
| NC       | -     | -     | -     | -     | -     | -     | E32   |
| NC       | -     | -     | -     | -     | -     | -     | A1    |
| NC       | -     | -     | -     | -     | -     | -     | A33   |
| NC       | -     | -     | -     | -     | -     | -     | AN1   |
| NC       | -     | -     | -     | -     | -     | -     | AN33  |
| NC       | -     | -     | -     | -     | -     | -     | AC2   |

12/18/98

## XC4085XLA Pinout Table

XC4085XLA Pinout Table

| PAD NAME  | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 | BG560 |
|-----------|-------|-------|-------|-------|-------|-------|-------|
| VCC       | P142  | P183  | P212  | P38   | VCC*  | VCC*  | VCC*  |
| I/O (A8)  | P143  | P184  | P213  | P37   | D14   | D17   | A17   |
| I/O (A9)  | P144  | P185  | P214  | P36   | C14   | A17   | B18   |
| I/O       | -     | -     | -     | -     | -     | C17   | C18   |
| I/O       | -     | -     | -     | -     | -     | B17   | E18   |
| I/O       | -     | -     | -     | -     | -     | -     | D18   |
| I/O       | -     | -     | -     | -     | -     | -     | A19   |
| GND       | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| I/O (A19) | P145  | P186  | P215  | P35   | A15   | C18   | C19   |
| I/O (A18) | P146  | P187  | P216  | P34   | B15   | D18   | D19   |
| I/O       | -     | P188  | P217  | P33   | C15   | B18   | E19   |
| I/O       | -     | P189  | P218  | P32   | D15   | A19   | B20   |
| I/O (A10) | P147  | P190  | P220  | P31   | A16   | B19   | C20   |
| I/O (A11) | P148  | P191  | P221  | P30   | B16   | C19   | D20   |
| VCC       | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| GND       | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| I/O       | -     | -     | -     | P29   | C16   | D19   | A21   |
| I/O       | -     | -     | -     | P28   | B17   | A20   | E20   |
| I/O       | -     | -     | -     | -     | D16   | B20   | B21   |
| I/O       | -     | -     | -     | -     | A18   | C20   | C21   |
| I/O       | -     | -     | -     | -     | -     | B21   | D21   |
| I/O       | -     | -     | -     | -     | -     | D20   | B22   |
| I/O       | -     | -     | -     | -     | -     | -     | E21   |
| I/O       | -     | -     | -     | -     | -     | -     | C22   |
| GND       | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| I/O       | -     | -     | -     | -     | -     | -     | D22   |
| I/O       | -     | -     | -     | -     | -     | -     | A23   |
| I/O       | -     | -     | -     | P27   | C17   | C21   | C23   |
| I/O       | -     | -     | -     | P26   | B18   | A22   | E22   |
| VCC       | -     | -     | P222  | P25   | VCC*  | VCC*  | VCC*  |
| I/O       | -     | -     | P223  | P23   | C18   | B22   | B24   |
| I/O       | -     | -     | P224  | P22   | D17   | C22   | D23   |
| I/O       | P149  | P192  | P225  | P21   | A20   | B23   | C24   |
| I/O       | P150  | P193  | P226  | P20   | B19   | A24   | A25   |
| GND       | P151  | P194  | P227  | P19   | GND*  | GND*  | GND*  |
| I/O       | -     | -     | -     | P18   | C19   | D22   | E23   |
| I/O       | -     | -     | -     | P17   | D18   | C23   | B25   |
| I/O       | -     | P195  | P228  | P16   | A21   | B24   | D24   |
| I/O       | -     | P196  | P229  | P15   | B20   | C24   | C25   |
| I/O       | -     | -     | -     | -     | -     | -     | B26   |
| I/O       | -     | -     | -     | -     | -     | -     | E24   |
| I/O       | -     | -     | -     | -     | -     | -     | C26   |
| I/O       | -     | -     | -     | -     | -     | -     | D25   |
| GND       | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| VCC       | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| I/O       | -     | -     | -     | -     | -     | -     | A27   |
| I/O       | -     | -     | -     | -     | -     | -     | A28   |
| I/O       | -     | -     | -     | -     | -     | D23   | E25   |
| I/O       | -     | -     | -     | -     | -     | B25   | C27   |
| I/O       | P152  | P197  | P230  | P14   | C20   | A26   | D26   |
| I/O       | P153  | P198  | P231  | P13   | B21   | C25   | B28   |
| I/O (A12) | P154  | P199  | P232  | P12   | B22   | D24   | B29   |
| I/O (A13) | P155  | P200  | P233  | P10   | C21   | B26   | E26   |
| GND       | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| VCC       | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |

XC4085XLA Pinout Table (Continued)

| PAD NAME        | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 | BG560 |
|-----------------|-------|-------|-------|-------|-------|-------|-------|
| I/O             | -     | -     | -     | P9    | D20   | A27   | C28   |
| I/O             | -     | -     | -     | P8    | A23   | D25   | D27   |
| I/O             | -     | -     | -     | -     | A24   | C26   | B30   |
| I/O             | -     | -     | -     | -     | B23   | B27   | C29   |
| I/O             | -     | -     | -     | -     | -     | A28   | E27   |
| I/O             | -     | -     | -     | -     | -     | D26   | A31   |
| GND             | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| I/O             | -     | -     | P234  | P7    | D21   | C27   | D28   |
| I/O             | -     | -     | P235  | P6    | C22   | B28   | C30   |
| I/O             | P156  | P201  | P236  | P5    | B24   | D27   | D29   |
| I/O             | P157  | P202  | P237  | P4    | C23   | B29   | E28   |
| I/O (A14)       | P158  | P203  | P238  | P3    | D22   | C28   | D30   |
| I/O, GCK8 (A15) | P159  | P204  | P239  | P2    | C24   | D28   | E29   |
| VCC             | P160  | P205  | P240  | P1    | VCC*  | VCC*  | VCC*  |
| GND             | P1    | P2    | P1    | P304  | GND*  | GND*  | GND*  |
| I/O, GCK1 (A16) | P2    | P4    | P2    | P303  | D23   | D29   | B33   |
| I/O (A17)       | P3    | P5    | P3    | P302  | C25   | C30   | F29   |
| I/O             | P4    | P6    | P4    | P301  | D24   | E28   | E30   |
| I/O             | P5    | P7    | P5    | P300  | E23   | E29   | D31   |
| I/O (TDI)       | P6    | P8    | P6    | P299  | C26   | D30   | F30   |
| I/O (TCK)       | P7    | P9    | P7    | P298  | E24   | D31   | C33   |
| GND             | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| I/O             | -     | -     | -     | -     | -     | F28   | G29   |
| I/O             | -     | -     | -     | -     | -     | F29   | E31   |
| I/O             | -     | -     | -     | -     | D25   | E30   | D32   |
| I/O             | -     | -     | -     | -     | F23   | E31   | G30   |
| I/O             | -     | -     | -     | P297  | F24   | G28   | F31   |
| I/O             | -     | -     | -     | P296  | E25   | G29   | H29   |
| VCC             | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| GND             | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| I/O             | -     | -     | -     | -     | -     | -     | E32   |
| I/O             | -     | -     | -     | -     | -     | -     | E33   |
| I/O             | -     | -     | -     | -     | -     | F30   | H30   |
| I/O             | -     | -     | -     | -     | -     | F31   | G31   |
| I/O             | P8    | P10   | P8    | P295  | D26   | H28   | J29   |
| I/O             | P9    | P11   | P9    | P294  | G24   | H29   | F33   |
| I/O             | -     | P12   | P10   | P293  | F25   | G30   | G32   |
| I/O             | -     | P13   | P11   | P292  | F26   | H30   | J30   |
| VCC             | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| GND             | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| I/O             | -     | -     | -     | -     | -     | -     | H31   |
| I/O             | -     | -     | -     | -     | -     | -     | K29   |
| I/O             | -     | -     | -     | -     | -     | -     | H32   |
| I/O             | -     | -     | -     | -     | -     | -     | J31   |
| I/O             | -     | -     | P12   | P291  | H23   | J28   | K30   |
| I/O             | -     | -     | P13   | P290  | H24   | J29   | H33   |
| I/O             | -     | -     | -     | P289  | G25   | H31   | L29   |
| I/O             | -     | -     | -     | P288  | G26   | J30   | K31   |
| GND             | P10   | P14   | P14   | P287  | GND*  | GND*  | GND*  |
| I/O, FCLK1      | P11   | P15   | P15   | P286  | J23   | K28   | L30   |
| I/O             | P12   | P16   | P16   | P285  | J24   | K29   | K32   |
| I/O (TMS)       | P13   | P17   | P17   | P284  | H25   | K30   | J33   |
| I/O             | P14   | P18   | P18   | P283  | K23   | K31   | M29   |
| VCC             | -     | -     | P19   | P282  | VCC*  | VCC*  | VCC*  |
| I/O             | -     | -     | -     | -     | -     | -     | L31   |
| I/O             | -     | -     | -     | -     | -     | -     | M30   |
| I/O             | -     | -     | P20   | P280  | K24   | L29   | L32   |

XC4085XLA Pinout Table (Continued)

| PAD NAME | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 | BG560 |
|----------|-------|-------|-------|-------|-------|-------|-------|
| I/O      | -     | -     | P21   | P279  | J25   | L30   | M31   |
| GND      | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| I/O      | -     | -     | -     | -     | -     | M30   | N29   |
| I/O      | -     | -     | -     | -     | -     | M28   | L33   |
| I/O      | -     | -     | -     | -     | -     | -     | N30   |
| I/O      | -     | -     | -     | -     | -     | -     | N31   |
| I/O      | -     | -     | -     | -     | J26   | M29   | M32   |
| I/O      | -     | -     | -     | -     | L23   | M31   | P29   |
| I/O      | -     | -     | -     | P278  | L24   | N31   | P30   |
| I/O      | -     | -     | -     | P277  | K25   | N28   | N33   |
| GND      | -     | -     | P22   | -     | GND*  | GND*  | GND*  |
| VCC      | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| I/O      | -     | -     | -     | -     | -     | N29   | P31   |
| I/O      | -     | -     | -     | -     | -     | N30   | P32   |
| I/O      | -     | -     | -     | P276  | L25   | P30   | R29   |
| I/O      | -     | -     | -     | P275  | L26   | P28   | R30   |
| I/O      | -     | P19   | P23   | P274  | M23   | P29   | R31   |
| I/O      | -     | P20   | P24   | P273  | M24   | R31   | R33   |
| GND      | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| I/O      | P15   | P21   | P25   | P272  | M25   | R30   | T31   |
| I/O      | P16   | P22   | P26   | P271  | M26   | R28   | T29   |
| I/O      | -     | -     | -     | -     | -     | -     | T30   |
| I/O      | -     | -     | -     | -     | -     | -     | T32   |
| I/O      | P17   | P23   | P27   | P270  | N24   | R29   | U32   |
| I/O      | P18   | P24   | P28   | P269  | N25   | T31   | U31   |
| GND      | P19   | P25   | P29   | P268  | GND*  | GND*  | GND*  |
| VCC      | P20   | P26   | P30   | P267  | VCC*  | VCC*  | VCC*  |
| I/O      | P21   | P27   | P31   | P266  | N26   | T30   | U29   |
| I/O      | P22   | P28   | P32   | P265  | P25   | T29   | U30   |
| I/O      | -     | -     | -     | -     | -     | -     | U33   |
| I/O      | -     | -     | -     | -     | -     | -     | V32   |
| I/O      | P23   | P29   | P33   | P264  | P23   | U31   | V31   |
| I/O      | P24   | P30   | P34   | P263  | P24   | U30   | V29   |
| GND      | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| I/O      | -     | P31   | P35   | P262  | R26   | U28   | V30   |
| I/O      | -     | P32   | P36   | P261  | R25   | U29   | W33   |
| I/O      | -     | -     | -     | P260  | R24   | V30   | W31   |
| I/O      | -     | -     | -     | P259  | R23   | V29   | W30   |
| I/O      | -     | -     | -     | -     | -     | V28   | W29   |
| I/O      | -     | -     | -     | -     | -     | W31   | Y32   |
| VCC      | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| GND      | -     | -     | P37   | -     | GND*  | GND*  | GND*  |
| I/O      | -     | -     | -     | P258  | T26   | W30   | Y31   |
| I/O      | -     | -     | -     | P257  | T25   | W29   | Y30   |
| I/O      | -     | -     | -     | -     | -     | -     | AA33  |
| I/O      | -     | -     | -     | -     | -     | -     | Y29   |
| I/O      | -     | -     | -     | -     | -     | W28   | AA32  |
| I/O      | -     | -     | -     | -     | -     | Y31   | AA31  |
| I/O      | -     | -     | -     | -     | T24   | Y30   | AA30  |
| I/O      | -     | -     | -     | -     | U25   | Y29   | AB32  |
| GND      | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| I/O      | -     | -     | P38   | P256  | T23   | Y28   | AA29  |
| I/O      | -     | -     | P39   | P255  | V26   | AA30  | AB31  |
| I/O      | -     | -     | -     | -     | -     | -     | AB30  |
| I/O      | -     | -     | -     | -     | -     | -     | AC33  |
| VCC      | -     | -     | P40   | P253  | VCC*  | VCC*  | VCC*  |
| I/O      | P25   | P33   | P41   | P252  | U24   | AA29  | AC31  |

XC4085XLA Pinout Table (Continued)

| PAD NAME   | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 | BG560 |
|------------|-------|-------|-------|-------|-------|-------|-------|
| I/O        | P26   | P34   | P42   | P251  | V25   | AB31  | AB29  |
| I/O        | P27   | P35   | P43   | P250  | V24   | AB30  | AD32  |
| I/O, FCLK2 | P28   | P36   | P44   | P249  | U23   | AB29  | AC30  |
| GND        | P29   | P37   | P45   | P248  | GND*  | GND*  | GND*  |
| I/O        | -     | -     | -     | P247  | Y26   | AB28  | AD31  |
| I/O        | -     | -     | -     | P246  | W25   | AC30  | AE33  |
| I/O        | -     | -     | P46   | P245  | W24   | AC29  | AC29  |
| I/O        | -     | -     | P47   | P244  | V23   | AC28  | AE32  |
| I/O        | -     | -     | -     | -     | -     | -     | AD30  |
| I/O        | -     | -     | -     | -     | -     | -     | AE31  |
| I/O        | -     | -     | -     | -     | -     | -     | AF32  |
| I/O        | -     | -     | -     | -     | -     | -     | AD29  |
| GND        | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| VCC        | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| I/O        | -     | -     | -     | -     | -     | -     | AF31  |
| I/O        | -     | -     | -     | -     | -     | -     | AE30  |
| I/O        | -     | -     | -     | -     | -     | AD31  | AG33  |
| I/O        | -     | -     | -     | -     | -     | AD30  | AH33  |
| I/O        | -     | P38   | P48   | P243  | AA26  | AD29  | AE29  |
| I/O        | -     | P39   | P49   | P242  | Y25   | AD28  | AG31  |
| I/O        | P30   | P40   | P50   | P241  | Y24   | AE30  | AF30  |
| I/O        | P31   | P41   | P51   | P240  | AA25  | AE29  | AH32  |
| GND        | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| VCC        | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| I/O        | -     | -     | -     | P239  | AB25  | AF31  | AJ32  |
| I/O        | -     | -     | -     | P238  | AA24  | AE28  | AF29  |
| I/O        | -     | -     | -     | -     | -     | AF30  | AH31  |
| I/O        | -     | -     | -     | -     | -     | AF29  | AG30  |
| I/O        | P32   | P42   | P52   | P237  | Y23   | AG31  | AK32  |
| I/O        | P33   | P43   | P53   | P236  | AC26  | AF28  | AJ31  |
| GND        | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| I/O        | -     | -     | -     | -     | AD26  | AG30  | AG29  |
| I/O        | -     | -     | -     | -     | AC25  | AG29  | AL33  |
| I/O        | P34   | P44   | P54   | P235  | AA23  | AH31  | AH30  |
| I/O        | P35   | P45   | P55   | P234  | AB24  | AG28  | AK31  |
| I/O        | P36   | P46   | P56   | P233  | AD25  | AH30  | AJ30  |
| I/O, GCK2  | P37   | P47   | P57   | P232  | AC24  | AJ30  | AH29  |
| O (M1)     | P38   | P48   | P58   | P231  | AB23  | AH29  | AK30  |
| GND        | P39   | P49   | P59   | P230  | GND*  | GND*  | GND*  |
| I (M0)     | P40   | P50   | P60   | P229  | AD24  | AH28  | AJ29  |
| VCC        | P41   | P55   | P61   | P228  | VCC*  | VCC*  | VCC*  |
| I (M2)     | P42   | P56   | P62   | P227  | AC23  | AJ28  | AN32  |
| I/O, GCK3  | P43   | P57   | P63   | P226  | AE24  | AK29  | AJ28  |
| I/O (HDC)  | P44   | P58   | P64   | P225  | AD23  | AH27  | AK29  |
| I/O        | P45   | P59   | P65   | P224  | AC22  | AK28  | AL30  |
| I/O        | P46   | P60   | P66   | P223  | AF24  | AJ27  | AK28  |
| I/O        | P47   | P61   | P67   | P222  | AD22  | AL28  | AM31  |
| I/O (/LDC) | P48   | P62   | P68   | P221  | AE23  | AH26  | AJ27  |
| GND        | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| I/O        | -     | -     | -     | -     | -     | AK27  | AN31  |
| I/O        | -     | -     | -     | -     | -     | AJ26  | AL29  |
| I/O        | -     | -     | -     | -     | AC21  | AL27  | AK27  |
| I/O        | -     | -     | -     | -     | AD21  | AH25  | AL28  |
| I/O        | -     | -     | -     | P220  | AE22  | AK26  | AJ26  |
| I/O        | -     | -     | -     | P219  | AF23  | AL26  | AM30  |
| VCC        | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| GND        | -     | -     | -     | -     | GND*  | GND*  | GND*  |

XC4085XLA Pinout Table (Continued)

| PAD NAME    | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 | BG560 |
|-------------|-------|-------|-------|-------|-------|-------|-------|
| I/O         | P49   | P63   | P69   | P218  | AD20  | AH24  | AM29  |
| I/O         | P50   | P64   | P70   | P217  | AE21  | AJ25  | AK26  |
| I/O         | -     | P65   | P71   | P216  | AF21  | AK25  | AL27  |
| I/O         | -     | P66   | P72   | P215  | AC19  | AJ24  | AJ25  |
| I/O         | -     | -     | -     | -     | -     | AH23  | AN29  |
| I/O         | -     | -     | -     | -     | -     | AK24  | AN28  |
| I/O         | -     | -     | -     | -     | -     | -     | AK25  |
| I/O         | -     | -     | -     | -     | -     | -     | AL26  |
| VCC         | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| GND         | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| I/O         | -     | -     | -     | -     | -     | -     | AJ24  |
| I/O         | -     | -     | -     | -     | -     | -     | AM27  |
| I/O         | -     | -     | -     | -     | -     | -     | AM26  |
| I/O         | -     | -     | -     | -     | -     | -     | AK24  |
| I/O         | -     | -     | P73   | P214  | AD19  | AL24  | AL25  |
| I/O         | -     | -     | P74   | P213  | AE20  | AH22  | AJ23  |
| I/O         | -     | -     | -     | P212  | AF20  | AJ23  | AN26  |
| I/O         | -     | -     | -     | P211  | AC18  | AK23  | AL24  |
| GND         | P51   | P67   | P75   | P210  | GND*  | GND*  | GND*  |
| I/O         | P52   | P68   | P76   | P209  | AD18  | AJ22  | AK23  |
| I/O         | P53   | P69   | P77   | P208  | AE19  | AK22  | AN25  |
| I/O         | P54   | P70   | P78   | P207  | AC17  | AL22  | AJ22  |
| I/O         | P55   | P71   | P79   | P206  | AD17  | AJ21  | AL23  |
| VCC         | -     | -     | P80   | P204  | VCC*  | VCC*  | VCC*  |
| I/O         | -     | P72   | P81   | P203  | AE18  | AH20  | AM24  |
| I/O         | -     | P73   | P82   | P202  | AF18  | AK21  | AK22  |
| I/O         | -     | -     | -     | -     | -     | -     | AM23  |
| I/O         | -     | -     | -     | -     | -     | -     | AJ21  |
| GND         | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| I/O         | -     | -     | -     | -     | -     | -     | AL22  |
| I/O         | -     | -     | -     | -     | -     | -     | AN23  |
| I/O         | -     | -     | -     | -     | -     | AJ20  | AK21  |
| I/O         | -     | -     | -     | -     | -     | AH19  | AM22  |
| I/O         | -     | -     | -     | -     | AC16  | AK20  | AJ20  |
| I/O         | -     | -     | -     | -     | AD16  | AJ19  | AL21  |
| I/O         | -     | -     | -     | P201  | AE17  | AL20  | AN21  |
| I/O         | -     | -     | -     | P200  | AE16  | AH18  | AK20  |
| GND         | -     | -     | P83   | -     | GND*  | GND*  | GND*  |
| VCC         | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| I/O         | -     | -     | -     | P199  | AF16  | AK19  | AL20  |
| I/O         | -     | -     | -     | P198  | AC15  | AJ18  | AJ19  |
| I/O         | -     | -     | P84   | P197  | AD15  | AL19  | AM20  |
| I/O         | -     | -     | P85   | P196  | AE15  | AK18  | AK19  |
| I/O         | P56   | P74   | P86   | P195  | AF15  | AH17  | AL19  |
| I/O         | P57   | P75   | P87   | P194  | AD14  | AJ17  | AN19  |
| GND         | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| I/O         | -     | -     | -     | -     | -     | -     | AJ18  |
| I/O         | -     | -     | -     | -     | -     | -     | AK18  |
| I/O         | -     | -     | -     | -     | -     | AK17  | AL18  |
| I/O         | -     | -     | -     | -     | -     | AL17  | AM18  |
| I/O         | P58   | P76   | P88   | P193  | AE14  | AJ16  | AK17  |
| I/O (/INIT) | P59   | P77   | P89   | P192  | AF14  | AK16  | AJ17  |
| VCC         | P60   | P78   | P90   | P191  | VCC*  | VCC*  | VCC*  |
| GND         | P61   | P79   | P91   | P190  | GND*  | GND*  | GND*  |
| I/O         | P62   | P80   | P92   | P189  | AE13  | AL16  | AL17  |
| I/O         | P63   | P81   | P93   | P188  | AC13  | AH15  | AM17  |
| I/O         | -     | -     | -     | -     | -     | AL15  | AN17  |

XC4085XLA Pinout Table (Continued)

| PAD NAME | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 | BG560 |
|----------|-------|-------|-------|-------|-------|-------|-------|
| I/O      | -     | -     | -     | -     | -     | AJ15  | AK16  |
| I/O      | -     | -     | -     | -     | -     | -     | AJ16  |
| I/O      | -     | -     | -     | -     | -     | -     | AL16  |
| GND      | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| I/O      | P64   | P82   | P94   | P187  | AD13  | AK15  | AM16  |
| I/O      | P65   | P83   | P95   | P186  | AF12  | AJ14  | AL15  |
| I/O      | -     | P84   | P96   | P185  | AE12  | AH14  | AK15  |
| I/O      | -     | P85   | P97   | P184  | AD12  | AK14  | AJ15  |
| I/O      | -     | -     | -     | P183  | AC12  | AL13  | AN15  |
| I/O      | -     | -     | -     | P182  | AF11  | AK13  | AM14  |
| VCC      | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| GND      | -     | -     | P98   | -     | GND*  | GND*  | GND*  |
| I/O      | -     | -     | -     | P181  | AE11  | AJ13  | AL14  |
| I/O      | -     | -     | -     | P180  | AD11  | AH13  | AK14  |
| I/O      | -     | -     | -     | -     | AE10  | AL12  | AJ14  |
| I/O      | -     | -     | -     | -     | AC11  | AK12  | AN13  |
| I/O      | -     | -     | -     | -     | -     | AJ12  | AM13  |
| I/O      | -     | -     | -     | -     | -     | AK11  | AL13  |
| I/O      | -     | -     | -     | -     | -     | -     | AK13  |
| I/O      | -     | -     | -     | -     | -     | -     | AJ13  |
| GND      | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| I/O      | -     | -     | -     | -     | -     | -     | AM12  |
| I/O      | -     | -     | -     | -     | -     | -     | AL12  |
| I/O      | -     | -     | P99   | P179  | AF9   | AH12  | AK12  |
| I/O      | -     | -     | P100  | P178  | AD10  | AJ11  | AN11  |
| VCC      | -     | -     | P101  | P177  | VCC*  | VCC*  | VCC*  |
| I/O      | P66   | P86   | P102  | P175  | AE9   | AL10  | AJ12  |
| I/O      | P67   | P87   | P103  | P174  | AD9   | AK10  | AL11  |
| I/O      | P68   | P88   | P104  | P173  | AC10  | AJ10  | AK11  |
| I/O      | P69   | P89   | P105  | P172  | AF7   | AK9   | AM10  |
| GND      | P70   | P90   | P106  | P171  | GND*  | GND*  | GND*  |
| I/O      | -     | -     | -     | P170  | AE8   | AL8   | AL10  |
| I/O      | -     | -     | -     | P169  | AD8   | AH10  | AJ11  |
| I/O      | -     | -     | P107  | P168  | AC9   | AJ9   | AN9   |
| I/O      | -     | -     | P108  | P167  | AF6   | AK8   | AK10  |
| I/O      | -     | -     | -     | -     | -     | -     | AM9   |
| I/O      | -     | -     | -     | -     | -     | -     | AL9   |
| I/O      | -     | -     | -     | -     | -     | -     | AJ10  |
| I/O      | -     | -     | -     | -     | -     | -     | AM8   |
| GND      | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| VCC      | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| I/O      | -     | -     | -     | -     | -     | -     | AK9   |
| I/O      | -     | -     | -     | -     | -     | -     | AL8   |
| I/O      | -     | -     | -     | -     | -     | AJ8   | AN7   |
| I/O      | -     | -     | -     | -     | -     | AH9   | AJ9   |
| I/O      | -     | P91   | P109  | P166  | AE7   | AK7   | AL7   |
| I/O      | -     | P92   | P110  | P165  | AD7   | AL6   | AK8   |
| I/O      | P71   | P93   | P111  | P164  | AE6   | AJ7   | AN6   |
| I/O      | P72   | P94   | P112  | P163  | AE5   | AH8   | AM6   |
| GND      | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| VCC      | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| I/O      | -     | -     | -     | P162  | AD6   | AK6   | AJ8   |
| I/O      | -     | -     | -     | P161  | AC7   | AL5   | AL6   |
| I/O      | P73   | P95   | P113  | P160  | AF4   | AH7   | AK7   |
| I/O      | P74   | P96   | P114  | P159  | AF3   | AJ6   | AM5   |
| I/O      | -     | -     | -     | -     | AE4   | AK5   | AM4   |
| I/O      | -     | -     | -     | -     | AC6   | AL4   | AJ7   |

XC4085XLA Pinout Table (Continued)

| PAD NAME   | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 | BG560 |
|------------|-------|-------|-------|-------|-------|-------|-------|
| GND        | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| I/O        | -     | -     | -     | -     | -     | AH6   | AL5   |
| I/O        | -     | -     | -     | -     | -     | AJ5   | AK6   |
| I/O        | P75   | P97   | P115  | P158  | AD5   | AK4   | AN3   |
| I/O        | P76   | P98   | P116  | P157  | AE3   | AH5   | AK5   |
| I/O        | P77   | P99   | P117  | P156  | AD4   | AK3   | AJ6   |
| I/O, GCK4  | P78   | P100  | P118  | P155  | AC5   | AJ4   | AL4   |
| GND        | P79   | P101  | P119  | P154  | GND*  | GND*  | GND*  |
| DONE       | P80   | P103  | P120  | P153  | AD3   | AH4   | AJ5   |
| VCC        | P81   | P106  | P121  | P152  | VCC*  | VCC*  | VCC*  |
| /PROGRAM   | P82   | P108  | P122  | P151  | AC4   | AH3   | AM1   |
| I/O (D7)   | P83   | P109  | P123  | P150  | AD2   | AJ2   | AH5   |
| I/O, GCK5  | P84   | P110  | P124  | P149  | AC3   | AG4   | AJ4   |
| I/O        | P85   | P111  | P125  | P148  | AB4   | AG3   | AK3   |
| I/O        | P86   | P112  | P126  | P147  | AD1   | AH2   | AH4   |
| I/O        | -     | -     | -     | -     | AB3   | AH1   | AL1   |
| I/O        | -     | -     | -     | -     | AC2   | AF4   | AG5   |
| GND        | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| I/O        | -     | -     | P127  | P146  | AA4   | AF3   | AJ3   |
| I/O        | -     | -     | P128  | P145  | AA3   | AG2   | AK2   |
| I/O        | -     | -     | -     | -     | -     | AG1   | AG4   |
| I/O        | -     | -     | -     | -     | -     | AE4   | AH3   |
| I/O        | -     | -     | -     | P144  | AB2   | AE3   | AF5   |
| I/O        | -     | -     | -     | P143  | AC1   | AF2   | AJ2   |
| VCC        | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| GND        | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| I/O (D6)   | P87   | P113  | P129  | P142  | Y3    | AF1   | AJ1   |
| I/O        | P88   | P114  | P130  | P141  | AA2   | AD4   | AF4   |
| I/O        | P89   | P115  | P131  | P140  | AA1   | AD3   | AG3   |
| I/O        | P90   | P116  | P132  | P139  | W4    | AE2   | AE5   |
| I/O        | -     | -     | -     | -     | -     | AD2   | AH1   |
| I/O        | -     | -     | -     | -     | -     | AC4   | AF3   |
| I/O        | -     | -     | -     | -     | -     | -     | AE4   |
| I/O        | -     | -     | -     | -     | -     | -     | AG2   |
| VCC        | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| GND        | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| I/O        | -     | -     | -     | -     | -     | -     | AD5   |
| I/O        | -     | -     | -     | -     | -     | -     | AF2   |
| I/O        | -     | -     | -     | -     | -     | -     | AF1   |
| I/O        | -     | -     | -     | -     | -     | -     | AD4   |
| I/O        | -     | P117  | P133  | P138  | W3    | AC3   | AE3   |
| I/O        | -     | P118  | P134  | P137  | Y2    | AD1   | AC5   |
| I/O        | -     | -     | -     | P136  | Y1    | AC2   | AE1   |
| I/O        | -     | -     | -     | P135  | V4    | AB4   | AD3   |
| GND        | P91   | P119  | P135  | P134  | GND*  | GND*  | GND*  |
| I/O        | -     | -     | P136  | P133  | V3    | AB3   | AC4   |
| I/O        | -     | -     | P137  | P132  | W2    | AB2   | AD2   |
| I/O, FCLK3 | P92   | P120  | P138  | P131  | U4    | AB1   | AB5   |
| I/O        | P93   | P121  | P139  | P130  | U3    | AA3   | AC3   |
| VCC        | -     | -     | P140  | P129  | VCC*  | VCC*  | VCC*  |
| I/O        | -     | -     | -     | -     | -     | -     | AB4   |
| I/O        | -     | -     | -     | -     | -     | -     | AC1   |
| I/O (D5)   | P94   | P122  | P141  | P127  | V2    | AA2   | AA5   |
| I/O (/CS0) | P95   | P123  | P142  | P126  | V1    | Y2    | AB3   |
| GND        | -     | -     | P143  | -     | GND*  | GND*  | GND*  |
| I/O        | -     | -     | -     | -     | T4    | Y4    | AB2   |
| I/O        | -     | -     | -     | -     | T3    | Y3    | AA4   |

XC4085XLA Pinout Table (Continued)

| PAD NAME   | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 | BG560 |
|------------|-------|-------|-------|-------|-------|-------|-------|
| I/O        | -     | -     | -     | -     | -     | Y1    | AA3   |
| I/O        | -     | -     | -     | -     | -     | W1    | Y5    |
| I/O        | -     | -     | -     | -     | -     | -     | AA1   |
| I/O        | -     | -     | -     | -     | -     | -     | Y4    |
| I/O        | -     | -     | -     | P125  | U2    | W4    | Y3    |
| I/O        | -     | -     | -     | P124  | T2    | W3    | Y2    |
| GND        | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| VCC        | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| I/O        | -     | -     | -     | -     | -     | W2    | W5    |
| I/O        | -     | -     | -     | -     | -     | V2    | W4    |
| I/O        | -     | -     | -     | P123  | T1    | V4    | W3    |
| I/O        | -     | -     | -     | P122  | R4    | V3    | W1    |
| I/O        | -     | P124  | P144  | P121  | R3    | U1    | V3    |
| I/O        | -     | P125  | P145  | P120  | R2    | U2    | V5    |
| GND        | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| I/O        | P96   | P126  | P146  | P119  | R1    | U4    | V4    |
| I/O        | P97   | P127  | P147  | P118  | P3    | U3    | V2    |
| I/O        | -     | -     | -     | -     | -     | -     | U2    |
| I/O        | -     | -     | -     | -     | -     | -     | U1    |
| I/O (D4)   | P98   | P128  | P148  | P117  | P2    | T1    | U5    |
| I/O        | P99   | P129  | P149  | P116  | P1    | T2    | U4    |
| VCC        | P100  | P130  | P150  | P115  | VCC*  | VCC*  | VCC*  |
| GND        | P101  | P131  | P151  | P114  | GND*  | GND*  | GND*  |
| I/O (D3)   | P102  | P132  | P152  | P113  | N2    | T3    | U3    |
| I/O (/RS)  | P103  | P133  | P153  | P112  | N4    | R1    | T2    |
| I/O        | -     | -     | -     | -     | -     | -     | T3    |
| I/O        | -     | -     | -     | -     | -     | -     | T5    |
| I/O        | P104  | P134  | P154  | P111  | N3    | R2    | T4    |
| I/O        | P105  | P135  | P155  | P110  | M1    | R4    | R1    |
| GND        | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| I/O        | -     | P136  | P156  | P109  | M2    | R3    | R3    |
| I/O        | -     | P137  | P157  | P108  | M3    | P2    | R4    |
| I/O        | -     | -     | -     | P107  | M4    | P3    | R5    |
| I/O        | -     | -     | -     | P106  | L1    | P4    | P2    |
| I/O        | -     | -     | -     | -     | -     | N1    | P3    |
| I/O        | -     | -     | -     | -     | -     | N2    | P4    |
| VCC        | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| GND        | -     | -     | P158  | -     | GND*  | GND*  | GND*  |
| I/O        | -     | -     | -     | P105  | L2    | N3    | N1    |
| I/O        | -     | -     | -     | P104  | L3    | N4    | P5    |
| I/O        | -     | -     | -     | -     | K2    | M1    | N2    |
| I/O        | -     | -     | -     | -     | L4    | M2    | N3    |
| I/O        | -     | -     | -     | -     | -     | -     | N4    |
| I/O        | -     | -     | -     | -     | -     | -     | M2    |
| I/O        | -     | -     | -     | -     | -     | M3    | N5    |
| I/O        | -     | -     | -     | -     | -     | M4    | M3    |
| GND        | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| I/O (D2)   | P106  | P138  | P159  | P103  | J1    | L2    | M4    |
| I/O        | P107  | P139  | P160  | P102  | K3    | L3    | L1    |
| I/O        | -     | -     | -     | -     | -     | -     | L3    |
| I/O        | -     | -     | -     | -     | -     | -     | M5    |
| VCC        | -     | -     | P161  | P101  | VCC*  | VCC*  | VCC*  |
| I/O        | P108  | P140  | P162  | P99   | J2    | K1    | K2    |
| I/O, FCLK4 | P109  | P141  | P163  | P98   | J3    | K2    | L4    |
| I/O        | -     | -     | P164  | P97   | K4    | K3    | J1    |
| I/O        | -     | -     | P165  | P96   | G1    | K4    | K3    |
| GND        | P110  | P142  | P166  | P95   | GND*  | GND*  | GND*  |

XC4085XLA Pinout Table (Continued)

| PAD NAME               | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 | BG560 |
|------------------------|-------|-------|-------|-------|-------|-------|-------|
| I/O                    | -     | -     | -     | P94   | H2    | J2    | L5    |
| I/O                    | -     | -     | -     | P93   | H3    | J3    | J2    |
| I/O                    | -     | -     | P167  | P92   | J4    | J4    | K4    |
| I/O                    | -     | -     | P168  | P91   | F1    | H1    | J3    |
| I/O                    | -     | -     | -     | -     | -     | -     | H2    |
| I/O                    | -     | -     | -     | -     | -     | -     | K5    |
| I/O                    | -     | -     | -     | -     | -     | -     | H3    |
| I/O                    | -     | -     | -     | -     | -     | -     | J4    |
| GND                    | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| VCC                    | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| I/O                    | -     | P143  | P169  | P90   | G2    | H2    | G1    |
| I/O                    | -     | P144  | P170  | P89   | G3    | H3    | F1    |
| I/O                    | P111  | P145  | P171  | P88   | F2    | H4    | J5    |
| I/O                    | P112  | P146  | P172  | P87   | E2    | G2    | G3    |
| I/O                    | -     | -     | -     | -     | -     | G3    | H4    |
| I/O                    | -     | -     | -     | -     | -     | F1    | F2    |
| I/O                    | -     | -     | -     | -     | -     | -     | E2    |
| I/O                    | -     | -     | -     | -     | -     | -     | H5    |
| GND                    | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| VCC                    | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| I/O (D1)               | P113  | P147  | P173  | P86   | F3    | G4    | F3    |
| I/O (/RCK, RDY, /BUSY) | P114  | P148  | P174  | P85   | G4    | F2    | G4    |
| I/O                    | -     | -     | -     | -     | D1    | F3    | D2    |
| I/O                    | -     | -     | -     | -     | C1    | E1    | E3    |
| I/O                    | -     | -     | -     | -     | -     | F4    | G5    |
| I/O                    | -     | -     | -     | -     | -     | E2    | C1    |
| GND                    | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| I/O                    | -     | -     | -     | P84   | D2    | E3    | F4    |
| I/O                    | -     | -     | -     | P83   | F4    | D1    | D3    |
| I/O                    | P115  | P149  | P175  | P82   | E3    | E4    | B3    |
| I/O                    | P116  | P150  | P176  | P81   | C2    | D2    | F5    |
| I/O (D0, DIN)          | P117  | P151  | P177  | P80   | D3    | C2    | E4    |
| "I/O, GCK6 (DOUT)"     | P118  | P152  | P178  | P79   | E4    | D3    | D4    |
| CCLK                   | P119  | P153  | P179  | P78   | C3    | D4    | C4    |
| VCC                    | P120  | P154  | P180  | P77   | VCC*  | VCC*  | VCC*  |
| O, TDO                 | P121  | P159  | P181  | P76   | D4    | C4    | E6    |
| GND                    | P122  | P160  | P182  | P75   | GND*  | GND*  | GND*  |
| I/O (A0, /WS)          | P123  | P161  | P183  | P74   | B3    | B3    | D5    |
| "I/O, GCK7 (A1)"       | P124  | P162  | P184  | P73   | C4    | D5    | A2    |
| I/O                    | P125  | P163  | P185  | P72   | D5    | B4    | D6    |
| I/O                    | P126  | P164  | P186  | P71   | A3    | C5    | A3    |
| I/O                    | -     | -     | -     | -     | -     | A4    | E7    |
| I/O                    | -     | -     | -     | -     | -     | D6    | C5    |
| GND                    | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| I/O                    | -     | -     | -     | -     | C5    | B5    | B4    |
| I/O                    | -     | -     | -     | -     | B4    | C6    | D7    |
| I/O, (CS1, A2)         | P127  | P165  | P187  | P70   | D6    | A5    | C6    |
| I/O (A3)               | P128  | P166  | P188  | P69   | C6    | D7    | E8    |
| I/O                    | -     | -     | -     | P68   | B5    | B6    | B5    |
| I/O                    | -     | -     | -     | P67   | A4    | A6    | A5    |
| VCC                    | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| GND                    | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| I/O                    | -     | -     | P189  | P66   | C7    | D8    | D8    |
| I/O                    | -     | -     | P190  | P65   | B6    | C7    | C7    |
| I/O                    | P129  | P167  | P191  | P64   | A6    | B7    | E9    |

XC4085XLA Pinout Table (Continued)

| PAD NAME  | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 | BG560 |
|-----------|-------|-------|-------|-------|-------|-------|-------|
| I/O       | P130  | P168  | P192  | P63   | D8    | D9    | A6    |
| I/O       | -     | -     | -     | -     | C8    | B8    | B7    |
| I/O       | -     | -     | -     | -     | -     | A8    | D9    |
| I/O       | -     | -     | -     | -     | -     | -     | C8    |
| I/O       | -     | -     | -     | -     | -     | -     | E10   |
| VCC       | -     | -     | -     | -     | -     | VCC*  | VCC*  |
| GND       | -     | -     | -     | -     | -     | GND*  | GND*  |
| I/O       | -     | -     | -     | -     | -     | -     | B8    |
| I/O       | -     | -     | -     | -     | -     | -     | A8    |
| I/O       | -     | -     | -     | -     | -     | -     | D10   |
| I/O       | -     | -     | -     | -     | -     | -     | C9    |
| I/O       | -     | P169  | P193  | P62   | B7    | D10   | E11   |
| I/O       | -     | P170  | P194  | P61   | A7    | C9    | A9    |
| I/O       | -     | -     | P195  | P60   | D9    | B9    | C10   |
| I/O       | -     | -     | -     | P59   | C9    | C10   | D11   |
| GND       | P131  | P171  | P196  | P58   | GND*  | GND*  | GND*  |
| I/O       | P132  | P172  | P197  | P57   | B8    | B10   | B10   |
| I/O       | P133  | P173  | P198  | P56   | D10   | A10   | E12   |
| I/O       | -     | -     | P199  | P55   | C10   | C11   | C11   |
| I/O       | -     | -     | P200  | P54   | B9    | D12   | B11   |
| VCC       | -     | -     | P201  | P52   | VCC*  | VCC*  | VCC*  |
| I/O       | -     | -     | -     | P51   | A9    | B11   | D12   |
| I/O       | -     | -     | -     | P50   | D11   | C12   | A11   |
| I/O       | -     | -     | -     | -     | -     | -     | E13   |
| I/O       | -     | -     | -     | -     | -     | -     | C12   |
| GND       | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| I/O       | -     | -     | -     | -     | -     | -     | B12   |
| I/O       | -     | -     | -     | -     | -     | -     | D13   |
| I/O       | -     | -     | -     | -     | -     | D13   | C13   |
| I/O       | -     | -     | -     | -     | -     | B12   | E14   |
| I/O       | -     | -     | -     | -     | C11   | C13   | A13   |
| I/O       | -     | -     | -     | -     | B10   | A12   | D14   |
| I/O       | -     | -     | -     | P49   | B11   | D14   | C14   |
| I/O       | -     | -     | -     | P48   | A11   | B13   | B14   |
| GND       | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| VCC       | -     | -     | -     | -     | VCC*  | VCC*  | VCC*  |
| I/O (A4)  | P134  | P174  | P202  | P47   | D12   | C14   | E15   |
| I/O (A5)  | P135  | P175  | P203  | P46   | C12   | A13   | D15   |
| I/O       | -     | P176  | P205  | P45   | B12   | B14   | C15   |
| I/O       | P136  | P177  | P206  | P44   | A12   | D15   | A15   |
| I/O (A21) | P137  | P178  | P207  | P43   | C13   | C15   | C16   |
| I/O (A20) | P138  | P179  | P208  | P42   | B13   | B15   | E16   |
| GND       | -     | -     | -     | -     | GND*  | GND*  | GND*  |
| I/O       | -     | -     | -     | -     | -     | -     | D16   |
| I/O       | -     | -     | -     | -     | -     | -     | B16   |
| I/O       | -     | -     | -     | -     | -     | A15   | B17   |
| I/O       | -     | -     | -     | -     | -     | C16   | C17   |
| I/O (A6)  | P139  | P180  | P209  | P41   | A13   | B16   | E17   |
| I/O (A7)  | P140  | P181  | P210  | P40   | B14   | A16   | D17   |
| GND       | P141  | P182  | P211  | P39   | GND*  | GND*  | GND*  |
| VCC       | -     | -     | -     | -     | A10   | A1    | A4    |
| VCC       | -     | -     | -     | -     | A17   | A11   | A10   |
| VCC       | -     | -     | -     | -     | AC14  | A21   | A16   |
| VCC       | -     | -     | -     | -     | AC20  | A31   | A22   |
| VCC       | -     | -     | -     | -     | AC8   | D11   | A26   |
| VCC       | -     | -     | -     | -     | AF10  | D21   | A30   |
| VCC       | -     | -     | -     | -     | AF17  | L1    | B2    |

XC4085XLA Pinout Table (Continued)

| PAD NAME | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 | BG560 |
|----------|-------|-------|-------|-------|-------|-------|-------|
| VCC      | -     | -     | -     | -     | D7    | L4    | B13   |
| VCC      | -     | -     | -     | -     | D13   | L28   | B19   |
| VCC      | -     | -     | -     | -     | D19   | L31   | B32   |
| VCC      | -     | -     | -     | -     | G23   | AA1   | C3    |
| VCC      | -     | -     | -     | -     | H4    | AA4   | C32   |
| VCC      | -     | -     | -     | -     | K1    | AA28  | D1    |
| VCC      | -     | -     | -     | -     | K26   | AA31  | D33   |
| VCC      | -     | -     | -     | -     | N23   | AH11  | H1    |
| VCC      | -     | -     | -     | -     | P4    | AH21  | K33   |
| VCC      | -     | -     | -     | -     | U1    | AL1   | M1    |
| VCC      | -     | -     | -     | -     | U26   | AL11  | N32   |
| VCC      | -     | -     | -     | -     | W23   | AL21  | R2    |
| VCC      | -     | -     | -     | -     | Y4    | AL31  | T33   |
| VCC      | -     | -     | -     | -     | B2    | -     | V1    |
| VCC      | -     | -     | -     | -     | B25   | -     | W32   |
| VCC      | -     | -     | -     | -     | AE2   | -     | AA2   |
| VCC      | -     | -     | -     | -     | AE25  | -     | AB33  |
| VCC      | -     | -     | -     | -     | -     | -     | AD1   |
| VCC      | -     | -     | -     | -     | -     | -     | AF33  |
| VCC      | -     | -     | -     | -     | -     | -     | AK1   |
| VCC      | -     | -     | -     | -     | -     | -     | AK33  |
| VCC      | -     | -     | -     | -     | -     | -     | AL2   |
| VCC      | -     | -     | -     | -     | -     | -     | AL3   |
| VCC      | -     | -     | -     | -     | -     | -     | AM2   |
| VCC      | -     | -     | -     | -     | -     | -     | AM15  |
| VCC      | -     | -     | -     | -     | -     | -     | AM21  |
| VCC      | -     | -     | -     | -     | -     | -     | AM32  |
| VCC      | -     | -     | -     | -     | -     | -     | AN4   |
| VCC      | -     | -     | -     | -     | -     | -     | AN8   |
| VCC      | -     | -     | -     | -     | -     | -     | AN12  |
| VCC      | -     | -     | -     | -     | -     | -     | AN18  |
| VCC      | -     | -     | -     | -     | -     | -     | AN24  |
| VCC      | -     | -     | -     | -     | -     | -     | AN30  |
| VCC      | -     | -     | -     | -     | -     | C3    | AL31  |
| VCC      | -     | -     | -     | -     | -     | C29   | E5    |
| VCC      | -     | -     | -     | -     | -     | AJ3   | C31   |
| VCC      | -     | -     | -     | -     | -     | AJ29  | AK4   |
|          |       |       |       |       |       |       |       |
| GND      | -     | -     | -     | -     | A1    | A2    | A7    |
| GND      | -     | -     | -     | -     | A14   | A3    | A12   |
| GND      | -     | -     | -     | -     | A19   | A7    | A14   |
| GND      | -     | -     | -     | -     | A2    | A9    | A18   |
| GND      | -     | -     | -     | -     | A22   | A14   | A20   |
| GND      | -     | -     | -     | -     | A25   | A18   | A24   |
| GND      | -     | -     | -     | -     | A26   | A23   | A29   |
| GND      | -     | -     | -     | -     | A5    | A25   | A32   |
| GND      | -     | -     | -     | -     | A8    | A29   | B1    |
| GND      | -     | -     | -     | -     | AB1   | A30   | B6    |
| GND      | -     | -     | -     | -     | AB26  | B1    | B9    |
| GND      | -     | -     | -     | -     | AE1   | B2    | B15   |
| GND      | -     | -     | -     | -     | AE26  | B30   | B23   |
| GND      | -     | -     | -     | -     | AF1   | B31   | B27   |
| GND      | -     | -     | -     | -     | AF13  | C1    | B31   |
| GND      | -     | -     | -     | -     | AF19  | C31   | C2    |
| GND      | -     | -     | -     | -     | AF2   | D16   | E1    |
| GND      | -     | -     | -     | -     | AF22  | G1    | F32   |
| GND      | -     | -     | -     | -     | AF25  | G31   | G2    |

XC4085XLA Pinout Table (Continued)

| PAD NAME | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 | BG560 |
|----------|-------|-------|-------|-------|-------|-------|-------|
| GND      | -     | -     | -     | -     | AF26  | J1    | G33   |
| GND      | -     | -     | -     | -     | AF5   | J31   | J32   |
| GND      | -     | -     | -     | -     | AF8   | P1    | K1    |
| GND      | -     | -     | -     | -     | B1    | P31   | L2    |
| GND      | -     | -     | -     | -     | B26   | T4    | M33   |
| GND      | -     | -     | -     | -     | E1    | T28   | P1    |
| GND      | -     | -     | -     | -     | E26   | V1    | P33   |
| GND      | -     | -     | -     | -     | H1    | V31   | R32   |
| GND      | -     | -     | -     | -     | H26   | AC1   | T1    |
| GND      | -     | -     | -     | -     | N1    | AC31  | V33   |
| GND      | -     | -     | -     | -     | P26   | AE1   | W2    |
| GND      | -     | -     | -     | -     | W1    | AE31  | Y1    |
| GND      | -     | -     | -     | -     | W26   | AH16  | Y33   |
| GND      | -     | -     | -     | -     | -     | AJ1   | AB1   |
| GND      | -     | -     | -     | -     | -     | AJ31  | AC32  |
| GND      | -     | -     | -     | -     | -     | AK1   | AD33  |
| GND      | -     | -     | -     | -     | -     | AK2   | AE2   |
| GND      | -     | -     | -     | -     | -     | AK30  | AG1   |
| GND      | -     | -     | -     | -     | -     | AK31  | AG32  |
| GND      | -     | -     | -     | -     | -     | AL2   | AH2   |
| GND      | -     | -     | -     | -     | -     | AL3   | AJ33  |
| GND      | -     | -     | -     | -     | -     | AL7   | AL32  |
| GND      | -     | -     | -     | -     | -     | AL9   | AM3   |
| GND      | -     | -     | -     | -     | -     | AL14  | AM11  |
| GND      | -     | -     | -     | -     | -     | AL18  | AM19  |
| GND      | -     | -     | -     | -     | -     | AL23  | AM25  |
| GND      | -     | -     | -     | -     | -     | AL25  | AM28  |
| GND      | -     | -     | -     | -     | -     | AL29  | AM33  |
| GND      | -     | -     | -     | -     | -     | AL30  | AM7   |
| GND      | -     | -     | -     | -     | -     | -     | AN2   |
| GND      | -     | -     | -     | -     | -     | -     | AN5   |
| GND      | -     | -     | -     | -     | -     | -     | AN10  |
| GND      | -     | -     | -     | -     | -     | -     | AN14  |
| GND      | -     | -     | -     | -     | -     | -     | AN16  |
| GND      | -     | -     | -     | -     | -     | -     | AN20  |
| GND      | -     | -     | -     | -     | -     | -     | AN22  |
| GND      | -     | -     | -     | -     | -     | -     | AN27  |
| GND      | -     | -     | P204  | -     | -     | -     | -     |
| GND      | -     | -     | P219  | -     | -     | -     | -     |
|          |       |       |       |       |       |       |       |
| NC       | -     | P1    | -     | P11   | -     | C8    | A1    |
| NC       | -     | P3    | -     | P24   | -     | -     | A33   |
| NC       | -     | P51   | -     | P53   | -     | -     | AN1   |
| NC       | -     | P52   | -     | P100  | -     | -     | AN33  |
| NC       | -     | P53   | -     | P128  | -     | -     | AC2   |
| NC       | -     | P54   | -     | P176  | -     | -     | -     |
| NC       | -     | P102  | -     | P205  | -     | -     | -     |
| NC       | -     | P104  | -     | P254  | -     | -     | -     |
| NC       | -     | P105  | -     | P281  | -     | -     | -     |
| NC       | -     | P107  | -     | -     | -     | -     | -     |
| NC       | -     | P155  | -     | -     | -     | -     | -     |
| NC       | -     | P156  | -     | -     | -     | -     | -     |
| NC       | -     | P157  | -     | -     | -     | -     | -     |
| NC       | -     | P158  | -     | -     | -     | -     | -     |
| NC       | -     | P206  | -     | -     | -     | -     | -     |
| NC       | -     | P207  | -     | -     | -     | -     | -     |
| NC       | -     | P208  | -     | -     | -     | -     | -     |

XC4085XLA Pinout Table (Continued)

| PAD NAME | HQ160 | HQ208 | HQ240 | HQ304 | BG352 | BG432 | BG560 |
|----------|-------|-------|-------|-------|-------|-------|-------|
|----------|-------|-------|-------|-------|-------|-------|-------|

12/18/98

\* Note: Pads labelled GND\* or VCC\* are internally bonded to Ground or VCC planes within the associated package. They have no direct connection to any specific package pin.

## XC40110XV Pinout Table

XC40110XV Pinout Table

| PAD NAME       | EPIC PAD# | HQ240 | BG352  | BG432   | BG560   | PG559   |
|----------------|-----------|-------|--------|---------|---------|---------|
| VCCIO          | -         | P240  | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| I/O GCK8 (A15) | 1         | P239  | C24    | D28     | E29     | E3      |
| I/O (A14)      | 2         | P238  | D22    | C28     | D30     | F4      |
| I/O            | 3         | P237  | C23    | B29     | E28     | J7      |
| I/O            | 4         | P236  | B24    | D27     | D29     | D2      |
| I/O            | 5         | P235  | C22    | B28     | C30     | K8      |
| I/O            | 6         | P234  | D21    | C27     | D28     | H6      |
| I/O            | 7         | -     | -      | -       | -       | -       |
| I/O            | 8         | -     | -      | -       | -       | -       |
| VCCIO          | -         | -     | -      | VCCIO*  | VCCIO*  | -       |
| GND            | -         | -     | -      | GND*    | GND*    | GND*    |
| I/O            | 9         | -     | -      | -       | -       | -       |
| I/O            | 10        | -     | -      | -       | -       | -       |
| I/O            | 11        | -     | -      | D26     | A31     | G5      |
| I/O            | 12        | -     | -      | A28     | E27     | F2      |
| I/O            | 13        | -     | B23    | B27     | C29     | H4      |
| I/O            | 14        | -     | A24    | C26     | B30     | G1      |
| I/O            | 15        | -     | A23    | D25     | D27     | J5      |
| I/O            | 16        | -     | D20    | A27     | C28     | L7      |
| VCCIO          | -         | -     | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| GND            | -         | -     | GND*   | GND*    | GND*    | GND*    |
| I/O (A13)      | 17        | P233  | C21    | B26     | E26     | J3      |
| I/O (A12)      | 18        | P232  | B22    | D24     | B29     | K4      |
| I/O            | 19        | P231  | B21    | C25     | B28     | H2      |
| I/O            | 20        | P230  | C20    | A26     | D26     | L5      |
| I/O            | 21        | -     | -      | B25     | C27     | J1      |
| I/O            | 22        | -     | -      | D23     | E25     | M6      |
| I/O            | 23        | -     | -      | -       | A28     | K2      |
| I/O            | 24        | -     | -      | -       | A27     | N7      |
| VCCIO          | -         | -     | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| GND            | -         | -     | -      | GND*    | GND*    | GND*    |
| I/O            | 25        | -     | -      | -       | D25     | P8      |
| I/O            | 26        | -     | -      | -       | C26     | L3      |
| I/O            | 27        | -     | -      | -       | E24     | L1      |
| I/O            | 28        | -     | -      | -       | B26     | M4      |
| I/O            | 29        | P229  | B20    | C24     | C25     | P2      |
| I/O            | 30        | P228  | A21    | B24     | D24     | N5      |
| I/O            | 31        | -     | D18    | C23     | B25     | R1      |
| I/O            | 32        | -     | C19    | D22     | E23     | N3      |
| VCCIO          | -         | -     | -      | VCCIO*  | VCCIO*  | -       |
| GND            | -         | P227  | GND*   | GND*    | GND*    | GND*    |
| I/O            | 33        | P226  | B19    | A24     | A25     | R7      |
| I/O            | 34        | -     | -      | -       | -       | P4      |
| VCCINT         | -         | P225  | A20    | VCCINT* | VCCINT* | VCCINT* |
| I/O            | 35        | P224  | D17    | C22     | D23     | T2      |
| I/O            | 36        | P223  | C18    | B22     | B24     | T8      |
| VCCIO          | -         | P222  | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| I/O            | 37        | -     | B18    | A22     | E22     | R5      |

## XC40110XV Pinout Table (Continued)

| PAD NAME  | EPIC PAD# | HQ240 | BG352  | BG432   | BG560   | PG559   |
|-----------|-----------|-------|--------|---------|---------|---------|
| I/O       | 38        | -     | C17    | C21     | C23     | R3      |
| I/O       | 39        | -     | -      | -       | A23     | U1      |
| I/O       | 40        | -     | -      | -       | D22     | T4      |
| GND       | -         | -     | -      | GND*    | GND*    | GND*    |
| VCCIO     | -         | -     | -      | VCCIO*  | VCCIO*  | -       |
| I/O       | 41        | -     | -      | -       | C22     | U5      |
| I/O       | 42        | -     | -      | -       | E21     | V2      |
| I/O       | 43        | -     | -      | D20     | B22     | U7      |
| I/O       | 44        | -     | -      | B21     | D21     | U3      |
| I/O       | 45        | -     | A18    | C20     | C21     | Y2      |
| I/O       | 46        | -     | D16    | B20     | B21     | V4      |
| I/O       | 47        | -     | B17    | A20     | E20     | V6      |
| I/O       | 48        | -     | C16    | D19     | A21     | W5      |
| GND       | -         | -     | GND*   | GND*    | GND*    | GND*    |
| VCCIO     | -         | -     | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| I/O (A11) | 49        | P221  | B16    | C19     | D20     | W7      |
| I/O (A10) | 50        | P220  | A16    | B19     | C20     | Y4      |
| I/O       | 51        | P218  | D15    | A19     | B20     | AA1     |
| I/O       | 52        | P217  | C15    | B18     | E19     | Y6      |
| I/O (A18) | 53        | P216  | B15    | D18     | D19     | AB2     |
| I/O (A19) | 54        | P215  | A15    | C18     | C19     | Y8      |
| I/O       | 55        | -     | -      | -       | -       | -       |
| I/O       | 56        | -     | -      | -       | -       | -       |
| GND       | -         | -     | -      | GND*    | GND*    | GND*    |
| VCCIO     | -         | -     | -      | VCCIO*  | VCCIO*  | -       |
| I/O       | 57        | -     | -      | -       | -       | -       |
| I/O       | 58        | -     | -      | -       | -       | -       |
| I/O       | 59        | -     | -      | -       | A19     | AA3     |
| I/O       | 60        | -     | -      | -       | D18     | AA5     |
| I/O       | 61        | -     | -      | B17     | E18     | AC1     |
| I/O       | 62        | -     | -      | C17     | C18     | AA7     |
| I/O (A9)  | 63        | P214  | C14    | A17     | B18     | AB4     |
| I/O (A8)  | 64        | P213  | D14    | D17     | A17     | AB6     |
| VCCIO     | -         | P212  | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| GND       | -         | P211  | GND*   | GND*    | GND*    | GND*    |
| I/O (A7)  | 65        | P210  | B14    | A16     | D17     | AC3     |
| I/O (A6)  | 66        | P209  | A13    | B16     | E17     | AC5     |
| VCCINT    | -         | -     | -      | VCCINT* | VCCINT* | VCCINT* |
| I/O       | 67        | -     | -      | -       | -       | AD2     |
| I/O       | 68        | -     | -      | A15     | B17     | AC7     |
| I/O       | 69        | -     | -      | -       | B16     | AF2     |
| I/O       | 70        | -     | -      | -       | D16     | AD4     |
| I/O       | 71        | -     | -      | -       | -       | -       |
| I/O       | 72        | -     | -      | -       | -       | -       |
| VCCIO     | -         | -     | -      | VCCIO*  | VCCIO*  | -       |
| GND       | -         | -     | -      | GND*    | GND*    | GND*    |
| I/O       | 73        | -     | -      | -       | -       | -       |
| I/O       | 74        | -     | -      | -       | -       | -       |
| I/O (A20) | 75        | P208  | B13    | B15     | E16     | AD6     |
| I/O (A21) | 76        | P207  | C13    | C15     | C16     | AE5     |

**XC40110XV Pinout Table (Continued)**

| PAD NAME | EPIC PAD# | HQ240 | BG352  | BG432   | BG560   | PG559   |
|----------|-----------|-------|--------|---------|---------|---------|
| I/O      | 77        | P206  | A12    | D15     | A15     | AF4     |
| I/O      | 78        | P205  | B12    | B14     | C15     | AG1     |
| I/O (A5) | 79        | P203  | C12    | A13     | D15     | AD8     |
| I/O (A4) | 80        | P202  | D12    | C14     | E15     | AG3     |
| VCCIO    | -         | -     | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| GND      | -         | -     | GND*   | GND*    | GND*    | GND*    |
| I/O      | 81        | -     | A11    | B13     | B14     | AH4     |
| I/O      | 82        | -     | B11    | D14     | C14     | AE7     |
| I/O      | 83        | -     | B10    | A12     | D14     | AH2     |
| I/O      | 84        | -     | C11    | C13     | A13     | AF6     |
| I/O      | 85        | -     | -      | B12     | E14     | AJ1     |
| I/O      | 86        | -     | -      | D13     | C13     | AG5     |
| I/O      | 87        | -     | -      | -       | D13     | AJ3     |
| I/O      | 88        | -     | -      | -       | B12     | AK4     |
| VCCIO    | -         | -     | -      | VCCIO*  | VCCIO*  | -       |
| GND      | -         | -     | -      | GND*    | GND*    | GND*    |
| I/O      | 89        | -     | -      | -       | C12     | AG7     |
| I/O      | 90        | -     | -      | -       | E13     | AK2     |
| I/O      | 91        | -     | D11    | C12     | A11     | AJ5     |
| I/O      | 92        | -     | A9     | B11     | D12     | AL3     |
| VCCIO    | -         | P201  | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| I/O      | 93        | P200  | B9     | D12     | B11     | AM4     |
| I/O      | 94        | P199  | C10    | C11     | C11     | AN1     |
| VCCINT   | -         | P198  | D10    | VCCINT* | VCCINT* | VCCINT* |
| I/O      | 95        | -     | -      | -       | -       | AL5     |
| I/O      | 96        | P197  | B8     | B10     | B10     | AH8     |
| GND      | -         | P196  | GND*   | GND*    | GND*    | GND*    |
| VCCIO    | -         | -     | -      | VCCIO*  | VCCIO*  | -       |
| I/O      | 97        | -     | C9     | C10     | D11     | AJ7     |
| I/O      | 98        | P195  | D9     | B9      | C10     | AP2     |
| I/O      | 99        | P194  | A7     | C9      | A9      | AN3     |
| I/O      | 100       | P193  | B7     | D10     | E11     | AP4     |
| I/O      | 101       | -     | -      | -       | C9      | AR1     |
| I/O      | 102       | -     | -      | -       | D10     | AN5     |
| I/O      | 103       | -     | -      | -       | A8      | AM6     |
| I/O      | 104       | -     | -      | -       | B8      | AK8     |
| GND      | -         | -     | -      | GND*    | GND*    | GND*    |
| VCCIO    | -         | -     | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| I/O      | 105       | -     | -      | -       | E10     | AL7     |
| I/O      | 106       | -     | -      | -       | C8      | AT2     |
| I/O      | 107       | -     | -      | A8      | D9      | AR3     |
| I/O      | 108       | -     | -      | B8      | B7      | AU1     |
| I/O      | 109       | P192  | D8     | D9      | A6      | AT4     |
| I/O      | 110       | P191  | A6     | B7      | E9      | AV2     |
| I/O      | 111       | P190  | B6     | C7      | C7      | AR5     |
| I/O      | 112       | P189  | C7     | D8      | D8      | AN7     |
| GND      | -         | -     | GND*   | GND*    | GND*    | GND*    |
| VCCIO    | -         | -     | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| I/O      | 113       | -     | A4     | A6      | A5      | AW3     |
| I/O      | 114       | -     | B5     | B6      | B5      | AV4     |

**XC40110XV Pinout Table (Continued)**

| PAD NAME               | EPIC PAD# | HQ240 | BG352 | BG432   | BG560   | PG559   |
|------------------------|-----------|-------|-------|---------|---------|---------|
| I/O (A3)               | 115       | P188  | C6    | D7      | E8      | BA1     |
| I/O, (CS1,A2)          | 116       | P187  | D6    | A5      | C6      | AU5     |
| I/O                    | 117       | -     | B4    | C6      | D7      | AY2     |
| I/O                    | 118       | -     | C5    | B5      | B4      | AT6     |
| I/O                    | 119       | -     | -     | -       | -       | -       |
| I/O                    | 120       | -     | -     | -       | -       | -       |
| GND                    | -         | -     | -     | GND*    | GND*    | GND*    |
| VCCIO                  | -         | -     | -     | VCCIO*  | VCCIO*  | -       |
| I/O                    | 121       | -     | -     | -       | -       | -       |
| I/O                    | 122       | -     | -     | -       | -       | -       |
| I/O                    | 123       | -     | -     | D6      | C5      | AP8     |
| I/O                    | 124       | -     | -     | A4      | E7      | AR7     |
| I/O                    | 125       | -     | -     | C5      | A3      | AY4     |
| I/O                    | 126       | P186  | A3    | -       | -       | BB2     |
| VCCINT                 | -         | P185  | D5    | VCCINT* | VCCINT* | VCCINT* |
| I/O GCK7 (A1)          | 127       | P184  | C4    | D5      | A2      | AV6     |
| I/O (A0, /WS)          | 128       | P183  | B3    | B3      | D5      | AT8     |
| GND                    | -         | P182  | GND*  | GND*    | GND*    | GND*    |
| O, TDO                 | -         | P181  | D4    | C4      | E6      | BA3     |
| VCCIO                  | -         | P180  | -     | VCCIO*  | VCCIO*  | VCCIO*  |
| CCLK                   | -         | P179  | C3    | D4      | C4      | BA5     |
| I/O GCK6 (DOUT)        | 129       | P178  | E4    | D3      | D4      | BB4     |
| I/O (D0, DIN)          | 130       | P177  | D3    | C2      | E4      | AY6     |
| I/O                    | 131       | P176  | C2    | D2      | F5      | BC3     |
| I/O                    | 132       | P175  | E3    | E4      | B3      | AW7     |
| I/O                    | 133       | -     | F4    | D1      | D3      | BB6     |
| I/O                    | 134       | -     | D2    | E3      | F4      | AU9     |
| I/O                    | 135       | -     | -     | -       | -       | -       |
| I/O                    | 136       | -     | -     | -       | -       | -       |
| VCCIO                  | -         | -     | -     | VCCIO*  | VCCIO*  | -       |
| GND                    | -         | -     | -     | GND*    | GND*    | GND*    |
| I/O                    | 137       | -     | -     | -       | -       | -       |
| I/O                    | 138       | -     | -     | -       | -       | -       |
| I/O                    | 139       | -     | -     | E2      | C1      | AT10    |
| I/O                    | 140       | -     | -     | F4      | G5      | AV8     |
| I/O                    | 141       | -     | C1    | E1      | E3      | AY8     |
| I/O                    | 142       | -     | D1    | F3      | D2      | BC7     |
| I/O (/RCK, RDY, /BUSY) | 143       | P174  | G4    | F2      | G4      | AW9     |
| I/O (D1)               | 144       | P173  | F3    | G4      | F3      | BA9     |
| VCCIO                  | -         | -     | -     | VCCIO*  | VCCIO*  | VCCIO*  |
| GND                    | -         | -     | -     | GND*    | GND*    | GND*    |
| I/O                    | 145       | -     | -     | -       | H5      | AU11    |
| I/O                    | 146       | -     | -     | -       | E2      | AY10    |
| I/O                    | 147       | -     | -     | F1      | F2      | BB8     |
| I/O                    | 148       | -     | -     | G3      | H4      | AW11    |

XC40110XV Pinout Table (Continued)

| PAD NAME   | EPIC PAD# | HQ240 | BG352  | BG432   | BG560   | PG559   |
|------------|-----------|-------|--------|---------|---------|---------|
| I/O        | 149       | -     | -      | G2      | G3      | BC9     |
| I/O        | 150       | -     | -      | H4      | J5      | AV12    |
| GND        | -         | -     | -      | -       | -       | -       |
| I/O        | 151       | P172  | E2     | H3      | F1      | AU13    |
| I/O        | 152       | P171  | F2     | H2      | G1      | AT14    |
| VCCIO      | -         | -     | -      | VCCIO*  | VCCIO*  | VCCIO*  |
| GND        | -         | -     | -      | GND*    | GND*    | GND*    |
| I/O        | 153       | -     | -      | -       | J4      | BA11    |
| I/O        | 154       | -     | -      | -       | H3      | AY12    |
| I/O        | 155       | P170  | G3     | -       | K5      | BB10    |
| I/O        | 156       | P169  | G2     | -       | H2      | AW13    |
| I/O        | 157       | P168  | F1     | H1      | J3      | BC11    |
| I/O        | 158       | P167  | J4     | J4      | K4      | AU15    |
| I/O        | 159       | -     | H3     | J3      | J2      | BB14    |
| I/O        | 160       | -     | H2     | J2      | L5      | AT16    |
| VCCIO      | -         | -     | -      | VCCIO*  | VCCIO*  | -       |
| GND        | -         | P166  | GND*   | GND*    | GND*    | GND*    |
| I/O        | 161       | P165  | G1     | K4      | K3      | BA13    |
| I/O        | 162       | -     | -      | -       | -       | AY14    |
| VCCINT     | -         | P164  | K4     | VCCINT* | VCCINT* | VCCINT* |
| I/O, FCLK4 | 163       | P163  | J3     | K2      | L4      | BC15    |
| I/O        | 164       | P162  | J2     | K1      | K2      | AW15    |
| VCCIO      | -         | P161  | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| I/O        | 165       | -     | -      | -       | M5      | BA15    |
| I/O        | 166       | -     | -      | -       | L3      | AU17    |
| I/O        | 167       | P160  | K3     | L3      | L1      | BB16    |
| I/O (D2)   | 168       | P159  | J1     | L2      | M4      | AY16    |
| GND        | -         | -     | -      | GND*    | GND*    | GND*    |
| VCCIO      | -         | -     | -      | VCCIO*  | VCCIO*  | -       |
| I/O        | 169       | -     | -      | M4      | M3      | AW17    |
| I/O        | 170       | -     | -      | M3      | N5      | AV18    |
| I/O        | 171       | -     | -      | -       | M2      | BA17    |
| I/O        | 172       | -     | -      | -       | N4      | BC17    |
| I/O        | 173       | -     | L4     | M2      | N3      | AU19    |
| I/O        | 174       | -     | K2     | M1      | N2      | BB18    |
| I/O        | 175       | -     | L3     | N4      | P5      | AY18    |
| I/O        | 176       | -     | L2     | N3      | N1      | AW19    |
| GND        | -         | P158  | GND*   | GND*    | GND*    | GND*    |
| VCCIO      | -         | -     | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| I/O        | 177       | -     | -      | -       | -       | -       |
| I/O        | 178       | -     | -      | -       | -       | -       |
| I/O        | 179       | -     | -      | N2      | P4      | AV20    |
| I/O        | 180       | -     | -      | N1      | P3      | AT20    |
| I/O        | 181       | -     | L1     | P4      | P2      | BB20    |
| I/O        | 182       | -     | M4     | P3      | R5      | AY20    |
| I/O        | 183       | P157  | M3     | P2      | R4      | BC21    |
| I/O        | 184       | P156  | M2     | R3      | R3      | BA21    |
| GND        | -         | -     | -      | GND*    | GND*    | GND*    |
| VCCIO      | -         | -     | -      | VCCIO*  | VCCIO*  | -       |

XC40110XV Pinout Table (Continued)

| PAD NAME   | EPIC PAD# | HQ240 | BG352  | BG432   | BG560   | PG559   |
|------------|-----------|-------|--------|---------|---------|---------|
| I/O        | 185       | P155  | M1     | R4      | R1      | AW21    |
| I/O        | 186       | -     | -      | -       | T4      | AU21    |
| I/O        | 187       | -     | -      | -       | T5      | BB22    |
| I/O        | 188       | -     | -      | -       | -       | AY22    |
| I/O        | 189       | -     | -      | -       | -       | -       |
| I/O        | 190       | -     | -      | -       | -       | -       |
| VCCINT     | -         | P154  | N3     | VCCINT* | VCCINT* | VCCINT* |
| I/O (/RS)  | 191       | P153  | N4     | R1      | T2      | AV22    |
| I/O (D3)   | 192       | P152  | N2     | T3      | U3      | BA23    |
| GND        | -         | P151  | -      | GND*    | GND*    | GND*    |
| VCCIO      | -         | P150  | -      | VCCIO*  | VCCIO*  | VCCIO*  |
| I/O        | 193       | P149  | P1     | T2      | U4      | AW23    |
| I/O (D4)   | 194       | P148  | P2     | T1      | U5      | AY24    |
| I/O        | 195       | -     | -      | -       | -       | -       |
| I/O        | 196       | -     | -      | -       | -       | -       |
| I/O        | 197       | -     | -      | -       | U1      | BC23    |
| I/O        | 198       | -     | -      | -       | U2      | BA27    |
| I/O        | 199       | P147  | P3     | U3      | V2      | AU23    |
| I/O        | 200       | P146  | R1     | U4      | V4      | AV24    |
| VCCIO      | -         | -     | -      | VCCIO*  | VCCIO*  | -       |
| GND        | -         | -     | -      | GND*    | GND*    | GND*    |
| I/O        | 201       | P145  | R2     | U2      | V5      | AY26    |
| I/O        | 202       | P144  | R3     | U1      | V3      | BB24    |
| I/O        | 203       | -     | R4     | V3      | W1      | AW25    |
| I/O        | 204       | -     | T1     | V4      | W3      | BB26    |
| I/O        | 205       | -     | -      | V2      | W4      | AT24    |
| I/O        | 206       | -     | -      | W2      | W5      | BA29    |
| I/O        | 207       | -     | -      | -       | -       | -       |
| I/O        | 208       | -     | -      | -       | -       | -       |
| VCCIO      | -         | -     | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| GND        | -         | P143  | GND*   | GND*    | GND*    | GND*    |
| I/O        | 209       | -     | T2     | W3      | Y2      | AY28    |
| I/O        | 210       | -     | U2     | W4      | Y3      | AU25    |
| I/O        | 211       | -     | -      | -       | Y4      | AV26    |
| I/O        | 212       | -     | -      | -       | AA1     | BC27    |
| I/O        | 213       | -     | -      | W1      | Y5      | AW27    |
| I/O        | 214       | -     | -      | Y1      | AA3     | BB28    |
| I/O        | 215       | -     | T3     | Y3      | AA4     | BA31    |
| I/O        | 216       | -     | T4     | Y4      | AB2     | AY30    |
| VCCIO      | -         | -     | -      | VCCIO*  | VCCIO*  | VCCIO*  |
| GND        | -         | -     | -      | GND*    | GND*    | GND*    |
| I/O (/CS0) | 217       | P142  | V1     | Y2      | AB3     | AW29    |
| I/O (D5)   | 218       | P141  | V2     | AA2     | AA5     | BC29    |
| I/O        | 219       | -     | -      | -       | AC1     | AU27    |
| I/O        | 220       | -     | -      | -       | AB4     | BA33    |
| VCCIO      | -         | P140  | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| I/O        | 221       | P139  | U3     | AA3     | AC3     | AY32    |
| I/O, FCLK3 | 222       | P138  | U4     | AB1     | AB5     | AW31    |
| VCCINT     | -         | P137  | W2     | VCCINT* | VCCINT* | VCCINT* |

**XC40110XV Pinout Table (Continued)**

| PAD NAME  | EPIC PAD# | HQ240 | BG352  | BG432   | BG560   | PG559   |
|-----------|-----------|-------|--------|---------|---------|---------|
| I/O       | 223       | -     | -      | -       | -       | BB30    |
| I/O       | 224       | P136  | V3     | AB3     | AC4     | BA35    |
| GND       | -         | P135  | GND*   | GND*    | GND*    | GND*    |
| VCCIO     | -         | -     | -      | VCCIO*  | VCCIO*  | -       |
| I/O       | 225       | -     | V4     | AB4     | AD3     | AT28    |
| I/O       | 226       | -     | Y1     | AC2     | AE1     | AU29    |
| I/O       | 227       | P134  | Y2     | AD1     | AC5     | BC33    |
| I/O       | 228       | P133  | W3     | AC3     | AE3     | AY34    |
| I/O       | 229       | -     | -      | -       | AD4     | BB34    |
| I/O       | 230       | -     | -      | -       | AF1     | AW33    |
| I/O       | 231       | -     | -      | -       | AF2     | AU31    |
| I/O       | 232       | -     | -      | -       | AD5     | AV32    |
| GND       | -         | -     | -      | GND*    | GND*    | GND*    |
| VCCIO     | -         | -     | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| I/O       | 233       | -     | -      | -       | AG2     | AT30    |
| I/O       | 234       | -     | -      | -       | AE4     | AU33    |
| I/O       | 235       | -     | -      | AC4     | AF3     | AW35    |
| I/O       | 236       | -     | -      | AD2     | AH1     | BC35    |
| I/O       | 237       | P132  | W4     | AE2     | AE5     | AY36    |
| I/O       | 238       | P131  | AA1    | AD3     | AG3     | BB36    |
| I/O       | 239       | P130  | AA2    | AD4     | AF4     | AV36    |
| I/O (D6)  | 240       | P129  | Y3     | AF1     | AJ1     | AU35    |
| GND       | -         | -     | -      | GND*    | GND*    | GND*    |
| VCCIO     | -         | -     | -      | VCCIO*  | VCCIO*  | VCCIO*  |
| I/O       | 241       | -     | AC1    | AF2     | AJ2     | AT34    |
| I/O       | 242       | -     | AB2    | AE3     | AF5     | AW37    |
| I/O       | 243       | -     | -      | -       | -       | -       |
| I/O       | 244       | -     | -      | -       | -       | -       |
| I/O       | 245       | -     | -      | AE4     | AH3     | BC37    |
| I/O       | 246       | -     | -      | AG1     | AG4     | AY38    |
| I/O       | 247       | P128  | AA3    | AG2     | AK2     | BB38    |
| I/O       | 248       | P127  | AA4    | AF3     | AJ3     | BA41    |
| GND       | -         | -     | -      | GND*    | GND*    | GND*    |
| VCCIO     | -         | -     | -      | VCCIO*  | VCCIO*  | -       |
| I/O       | 249       | -     | -      | -       | -       | -       |
| I/O       | 250       | -     | -      | -       | -       | -       |
| I/O       | 251       | -     | AC2    | AF4     | AG5     | AY40    |
| I/O       | 252       | -     | AB3    | AH1     | AL1     | BB40    |
| I/O       | 253       | P126  | AD1    | AH2     | AH4     | AT36    |
| I/O       | 254       | P125  | AB4    | AG3     | AK3     | BA39    |
| I/O, GCK5 | 255       | P124  | AC3    | AG4     | AJ4     | AV38    |
| I/O (D7)  | 256       | P123  | AD2    | AJ2     | AH5     | BC41    |
| /PRO-GRAM | -         | P122  | AC4    | AH3     | AM1     | BB42    |
| VCCIO     | -         | P121  | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| DONE      | -         | P120  | AD3    | AH4     | AJ5     | AY42    |
| GND       | -         | P119  | GND*   | GND*    | GND*    | GND*    |
| I/O, GCK4 | 257       | P118  | AC5    | AJ4     | AL4     | AW41    |
| I/O       | 258       | P117  | AD4    | AK3     | AJ6     | AV40    |
| VCCINT    | -         | P116  | AE3    | VCCINT* | VCCINT* | VCCINT* |

**XC40110XV Pinout Table (Continued)**

| PAD NAME | EPIC PAD# | HQ240 | BG352  | BG432   | BG560   | PG559   |
|----------|-----------|-------|--------|---------|---------|---------|
| I/O      | 259       | -     | -      | -       | -       | AV42    |
| I/O      | 260       | P115  | AD5    | AK4     | AN3     | AR37    |
| I/O      | 261       | -     | -      | AJ5     | AK6     | AP36    |
| I/O      | 262       | -     | -      | AH6     | AL5     | AT38    |
| I/O      | 263       | -     | -      | -       | -       | -       |
| I/O      | 264       | -     | -      | -       | -       | -       |
| VCCIO    | -         | -     | -      | VCCIO*  | VCCIO*  | -       |
| GND      | -         | -     | -      | GND*    | GND*    | GND*    |
| I/O      | 265       | -     | -      | -       | -       | -       |
| I/O      | 266       | -     | -      | -       | -       | -       |
| I/O      | 267       | -     | AC6    | AL4     | AJ7     | AU39    |
| I/O      | 268       | -     | AE4    | AK5     | AM4     | AU43    |
| I/O      | 269       | P114  | AF3    | AJ6     | AM5     | BA43    |
| I/O      | 270       | P113  | AF4    | AH7     | AK7     | AT42    |
| I/O      | 271       | -     | AC7    | AL5     | AL6     | AR39    |
| I/O      | 272       | -     | AD6    | AK6     | AJ8     | AN37    |
| VCCIO    | -         | -     | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| GND      | -         | -     | GND*   | GND*    | GND*    | GND*    |
| I/O      | 273       | P112  | AE5    | AH8     | AM6     | AT40    |
| I/O      | 274       | P111  | AE6    | AJ7     | AN6     | AP40    |
| I/O      | 275       | P110  | AD7    | AL6     | AK8     | AR43    |
| I/O      | 276       | P109  | AE7    | AK7     | AL7     | AN39    |
| I/O      | 277       | -     | -      | AH9     | AJ9     | AP42    |
| I/O      | 278       | -     | -      | AJ8     | AN7     | AM38    |
| I/O      | 279       | -     | -      | -       | AL8     | AN43    |
| I/O      | 280       | -     | -      | -       | AK9     | AL37    |
| VCCIO    | -         | -     | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| GND      | -         | -     | -      | GND*    | GND*    | GND*    |
| I/O      | 281       | -     | -      | -       | AM8     | AK36    |
| I/O      | 282       | -     | -      | -       | AJ10    | AR41    |
| I/O      | 283       | -     | -      | -       | AL9     | AL41    |
| I/O      | 284       | -     | -      | -       | AM9     | AN41    |
| I/O      | 285       | P108  | AF6    | AK8     | AK10    | AK42    |
| I/O      | 286       | P107  | AC9    | AJ9     | AN9     | AM40    |
| I/O      | 287       | -     | AD8    | AH10    | AJ11    | AJ43    |
| I/O      | 288       | -     | AE8    | AL8     | AL10    | AJ37    |
| VCCIO    | -         | -     | -      | VCCIO*  | VCCIO*  | -       |
| GND      | -         | P106  | GND*   | GND*    | GND*    | GND*    |
| I/O      | 289       | P105  | AF7    | AK9     | AM10    | AL39    |
| I/O      | 290       | -     | -      | -       | -       | AH36    |
| VCCINT   | -         | P104  | AC10   | VCCINT* | VCCINT* | VCCINT* |
| I/O      | 291       | P103  | AD9    | AK10    | AL11    | AH42    |
| I/O      | 292       | P102  | AE9    | AL10    | AJ12    | AJ39    |
| VCCIO    | -         | P101  | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| I/O      | 293       | P100  | AD10   | AJ11    | AN11    | AK40    |
| I/O      | 294       | P99   | AF9    | AH12    | AK12    | AG41    |
| I/O      | 295       | -     | -      | -       | AL12    | AJ41    |
| I/O      | 296       | -     | -      | -       | AM12    | AH40    |
| GND      | -         | -     | -      | GND*    | GND*    | GND*    |
| VCCIO    | -         | -     | -      | VCCIO*  | VCCIO*  | -       |

XC40110XV Pinout Table (Continued)

| PAD NAME    | EPIC PAD# | HQ240 | BG352  | BG432   | BG560   | PG559   |
|-------------|-----------|-------|--------|---------|---------|---------|
| I/O         | 297       | -     | -      | -       | AJ13    | AG37    |
| I/O         | 298       | -     | -      | -       | AK13    | AG43    |
| I/O         | 299       | -     | -      | AK11    | AL13    | AG39    |
| I/O         | 300       | -     | -      | AJ12    | AM13    | AF38    |
| I/O         | 301       | -     | AC11   | AK12    | AN13    | AF42    |
| I/O         | 302       | -     | AE10   | AL12    | AJ14    | AD42    |
| I/O         | 303       | -     | AD11   | AH13    | AK14    | AF40    |
| I/O         | 304       | -     | AE11   | AJ13    | AL14    | AE37    |
| GND         | -         | P98   | GND*   | GND*    | GND*    | GND*    |
| VCCIO       | -         | -     | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| I/O         | 305       | -     | AF11   | AK13    | AM14    | AE39    |
| I/O         | 306       | -     | AC12   | AL13    | AN15    | AD40    |
| I/O         | 307       | P97   | AD12   | AK14    | AJ15    | AC43    |
| I/O         | 308       | P96   | AE12   | AH14    | AK15    | AD38    |
| I/O         | 309       | P95   | AF12   | AJ14    | AL15    | AC41    |
| I/O         | 310       | P94   | AD13   | AK15    | AM16    | AD36    |
| I/O         | 311       | -     | -      | -       | -       | -       |
| I/O         | 312       | -     | -      | -       | -       | -       |
| GND         | -         | -     | -      | GND*    | GND*    | GND*    |
| VCCIO       | -         | -     | -      | VCCIO*  | VCCIO*  | -       |
| I/O         | 313       | -     | -      | -       | -       | -       |
| I/O         | 314       | -     | -      | -       | -       | -       |
| I/O         | 315       | -     | -      | -       | AL16    | AC39    |
| I/O         | 316       | -     | -      | -       | AJ16    | AC37    |
| I/O         | 317       | -     | -      | AJ15    | AK16    | AB40    |
| I/O         | 318       | -     | -      | AL15    | AN17    | AB42    |
| VCCINT      | -         | P93   | AC13   | VCCINT* | VCCINT* | VCCINT* |
| I/O         | 319       | -     | -      | -       | -       | AB38    |
| I/O         | 320       | P92   | AE13   | AL16    | AL17    | AA41    |
| GND         | -         | P91   | GND*   | GND*    | GND*    | GND*    |
| VCCIO       | -         | P90   | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| I/O (/INIT) | 321       | P89   | AF14   | AK16    | AJ17    | AA39    |
| I/O         | 322       | P88   | AE14   | AJ16    | AK17    | AA37    |
| I/O         | 323       | -     | -      | AL17    | AM18    | Y40     |
| I/O         | 324       | -     | -      | AK17    | AL18    | Y38     |
| I/O         | 325       | -     | -      | -       | AK18    | AA43    |
| I/O         | 326       | -     | -      | -       | AJ18    | W39     |
| I/O         | 327       | -     | -      | -       | -       | -       |
| I/O         | 328       | -     | -      | -       | -       | -       |
| VCCIO       | -         | -     | -      | VCCIO*  | VCCIO*  | -       |
| GND         | -         | -     | -      | GND*    | GND*    | GND*    |
| I/O         | 329       | -     | -      | -       | -       | -       |
| I/O         | 330       | -     | -      | -       | -       | -       |
| I/O         | 331       | P87   | AD14   | AJ17    | AN19    | V40     |
| I/O         | 332       | P86   | AF15   | AH17    | AL19    | Y36     |
| I/O         | 333       | P85   | AE15   | AK18    | AK19    | U41     |
| I/O         | 334       | P84   | AD15   | AL19    | AM20    | Y42     |
| I/O         | 335       | -     | AC15   | AJ18    | AJ19    | T40     |
| I/O         | 336       | -     | AF16   | AK19    | AL20    | W37     |
| VCCIO       | -         | -     | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |

XC40110XV Pinout Table (Continued)

| PAD NAME | EPIC PAD# | HQ240 | BG352  | BG432   | BG560   | PG559   |
|----------|-----------|-------|--------|---------|---------|---------|
| GND      | -         | P83   | GND*   | GND*    | GND*    | GND*    |
| I/O      | 337       | -     | AE16   | AH18    | AK20    | V38     |
| I/O      | 338       | -     | AE17   | AL20    | AN21    | U39     |
| I/O      | 339       | -     | AD16   | AJ19    | AL21    | V42     |
| I/O      | 340       | -     | AC16   | AK20    | AJ20    | R41     |
| I/O      | 341       | -     | -      | AH19    | AM22    | U43     |
| I/O      | 342       | -     | -      | AJ20    | AK21    | P40     |
| I/O      | 343       | -     | -      | -       | AN23    | T42     |
| I/O      | 344       | -     | -      | -       | AL22    | U37     |
| VCCIO    | -         | -     | -      | VCCIO*  | VCCIO*  | VCCIO*  |
| GND      | -         | -     | -      | GND*    | GND*    | GND*    |
| I/O      | 345       | -     | -      | -       | AJ21    | R39     |
| I/O      | 346       | -     | -      | -       | AM23    | N41     |
| I/O      | 347       | P82   | AF18   | AK21    | AK22    | R43     |
| I/O      | 348       | P81   | AE18   | AH20    | AM24    | M40     |
| VCCIO    | -         | P80   | VCCIO* | VCCIO*  | VCCIO*  | -       |
| I/O      | 349       | P79   | AD17   | AJ21    | AL23    | N39     |
| I/O      | 350       | P78   | AC17   | AL22    | AJ22    | T36     |
| VCCINT   | -         | P77   | AE19   | VCCINT* | VCCINT* | VCCINT* |
| I/O      | 351       | -     | -      | -       | -       | P42     |
| I/O      | 352       | P76   | AD18   | AJ22    | AK23    | R37     |
| GND      | -         | P75   | GND*   | GND*    | GND*    | GND*    |
| VCCIO    | -         | -     | -      | VCCIO*  | VCCIO*  | -       |
| I/O      | 353       | -     | AC18   | AK23    | AL24    | L41     |
| I/O      | 354       | -     | AF20   | AJ23    | AN26    | L43     |
| I/O      | 355       | P74   | AE20   | AH22    | AJ23    | K40     |
| I/O      | 356       | P73   | AD19   | AL24    | AL25    | K42     |
| I/O      | 357       | -     | -      | -       | AK24    | L39     |
| I/O      | 358       | -     | -      | -       | AM26    | J43     |
| I/O      | 359       | -     | -      | -       | AM27    | M38     |
| I/O      | 360       | -     | -      | -       | AJ24    | P36     |
| GND      | -         | -     | -      | GND*    | GND*    | GND*    |
| VCCIO    | -         | -     | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| I/O      | 361       | -     | -      | -       | AL26    | N37     |
| I/O      | 362       | -     | -      | -       | AK25    | H42     |
| I/O      | 363       | -     | -      | AK24    | AN28    | J41     |
| I/O      | 364       | -     | -      | AH23    | AN29    | G43     |
| I/O      | 365       | P72   | AC19   | AJ24    | AJ25    | H40     |
| I/O      | 366       | P71   | AF21   | AK25    | AL27    | F42     |
| I/O      | 367       | P70   | AE21   | AJ25    | AK26    | J39     |
| I/O      | 368       | P69   | AD20   | AH24    | AM29    | L37     |
| GND      | -         | -     | GND*   | GND*    | GND*    | GND*    |
| VCCIO    | -         | -     | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| I/O      | 369       | -     | AF23   | AL26    | AM30    | E41     |
| I/O      | 370       | -     | AE22   | AK26    | AJ26    | F40     |
| I/O      | 371       | -     | AD21   | AH25    | AL28    | C43     |
| I/O      | 372       | -     | AC21   | AL27    | AK27    | G39     |
| I/O      | 373       | -     | -      | AJ26    | AL29    | D42     |
| I/O      | 374       | -     | -      | AK27    | AN31    | H38     |
| I/O      | 375       | -     | -      | -       | -       | -       |

**XC40110XV Pinout Table (Continued)**

| PAD NAME   | EPIC PAD# | HQ240 | BG352  | BG432   | BG560   | PG559   |
|------------|-----------|-------|--------|---------|---------|---------|
| I/O        | 376       | -     | -      | -       | -       | -       |
| GND        | -         | -     | -      | GND*    | GND*    | GND*    |
| VCCIO      | -         | -     | -      | VCCIO*  | VCCIO*  | -       |
| I/O        | 377       | -     | -      | -       | -       | -       |
| I/O        | 378       | -     | -      | -       | -       | -       |
| I/O (/LDC) | 379       | P68   | AE23   | AH26    | AJ27    | K36     |
| I/O        | 380       | P67   | AD22   | AL28    | AM31    | J37     |
| I/O        | 381       | P66   | AF24   | AJ27    | AK28    | B42     |
| I/O        | 382       | P65   | AC22   | AK28    | AL30    | D40     |
| I/O (HDC)  | 383       | P64   | AD23   | AH27    | AK29    | C41     |
| I/O, GCK3  | 384       | P63   | AE24   | AK29    | AJ28    | F38     |
| I (M2)     | -         | P62   | AC23   | AJ28    | AN32    | H36     |
| VCCIO      | -         | P61   | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| I (M0)     | -         | P60   | AD24   | AH28    | AJ29    | C39     |
| GND        | -         | P59   | GND*   | GND*    | GND*    | GND*    |
| O (M1)     | -         | P58   | AB23   | AH29    | AK30    | D38     |
| I/O, GCK2  | 385       | P57   | AC24   | AJ30    | AH29    | E37     |
| I/O        | 386       | P56   | AD25   | AH30    | AJ30    | B40     |
| VCCINT     | -         | P55   | AB24   | VCCINT* | VCCINT* | VCCINT* |
| I/O        | 387       | -     | -      | -       | -       | H34     |
| I/O        | 388       | P54   | AA23   | AH31    | AH30    | G35     |
| I/O        | 389       | -     | AC25   | AG29    | AL33    | F36     |
| I/O        | 390       | -     | AD26   | AG30    | AG29    | D36     |
| I/O        | 391       | -     | -      | -       | -       | -       |
| I/O        | 392       | -     | -      | -       | -       | -       |
| VCCIO      | -         | -     | -      | VCCIO*  | VCCIO*  | -       |
| GND        | -         | -     | -      | GND*    | GND*    | GND*    |
| I/O        | 393       | P53   | AC26   | AF28    | AJ31    | E35     |
| I/O        | 394       | P52   | Y23    | AG31    | AK32    | A41     |
| I/O        | 395       | -     | -      | AF29    | AG30    | G33     |
| I/O        | 396       | -     | -      | AF30    | AH31    | B38     |
| I/O        | 397       | -     | -      | -       | -       | -       |
| I/O        | 398       | -     | -      | -       | -       | -       |
| I/O        | 399       | -     | AA24   | AE28    | AF29    | D34     |
| I/O        | 400       | -     | AB25   | AF31    | AJ32    | E33     |
| VCCIO      | -         | -     | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| GND        | -         | -     | GND*   | GND*    | GND*    | GND*    |
| I/O        | 401       | P51   | AA25   | AE29    | AH32    | F32     |
| I/O        | 402       | P50   | Y24    | AE30    | AF30    | G31     |
| I/O        | 403       | P49   | Y25    | AD28    | AG31    | A37     |
| I/O        | 404       | P48   | AA26   | AD29    | AE29    | H30     |
| I/O        | 405       | -     | -      | AD30    | AH33    | B36     |
| I/O        | 406       | -     | -      | AD31    | AG33    | C33     |
| I/O        | 407       | -     | -      | -       | AE30    | C35     |
| I/O        | 408       | -     | -      | -       | AF31    | D32     |
| VCCIO      | -         | -     | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| GND        | -         | -     | -      | GND*    | GND*    | GND*    |
| I/O        | 409       | -     | -      | -       | AD29    | E31     |
| I/O        | 410       | -     | -      | -       | AF32    | G29     |
| I/O        | 411       | -     | -      | -       | AE31    | A35     |

**XC40110XV Pinout Table (Continued)**

| PAD NAME   | EPIC PAD# | HQ240 | BG352  | BG432   | BG560   | PG559   |
|------------|-----------|-------|--------|---------|---------|---------|
| I/O        | 412       | -     | -      | -       | AD30    | H28     |
| I/O        | 413       | P47   | V23    | AC28    | AE32    | B34     |
| I/O        | 414       | P46   | W24    | AC29    | AC29    | C31     |
| I/O        | 415       | -     | W25    | AC30    | AE33    | A33     |
| I/O        | 416       | -     | Y26    | AB28    | AD31    | D30     |
| VCCIO      | -         | -     | -      | VCCIO*  | VCCIO*  | -       |
| GND        | -         | P45   | GND*   | GND*    | GND*    | GND*    |
| I/O, FCLK2 | 417       | P44   | U23    | AB29    | AC30    | E29     |
| I/O        | 418       | -     | -      | -       | -       | C29     |
| VCCINT     | -         | P43   | V24    | VCCINT* | VCCINT* | VCCINT* |
| I/O        | 419       | P42   | V25    | AB31    | AB29    | B30     |
| I/O        | 420       | P41   | U24    | AA29    | AC31    | G27     |
| VCCIO      | -         | P40   | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| I/O        | 421       | -     | -      | -       | AC33    | D28     |
| I/O        | 422       | -     | -      | -       | AB30    | A29     |
| I/O        | 423       | P39   | V26    | AA30    | AB31    | E27     |
| I/O        | 424       | P38   | T23    | Y28     | AA29    | F26     |
| GND        | -         | -     | -      | GND*    | GND*    | GND*    |
| VCCIO      | -         | -     | -      | VCCIO*  | VCCIO*  | -       |
| I/O        | 425       | -     | U25    | Y29     | AB32    | C27     |
| I/O        | 426       | -     | T24    | Y30     | AA30    | B28     |
| I/O        | 427       | -     | -      | Y31     | AA31    | G25     |
| I/O        | 428       | -     | -      | W28     | AA32    | A27     |
| I/O        | 429       | -     | -      | -       | Y29     | D26     |
| I/O        | 430       | -     | -      | -       | AA33    | B26     |
| I/O        | 431       | -     | T25    | W29     | Y30     | E25     |
| I/O        | 432       | -     | T26    | W30     | Y31     | F24     |
| GND        | -         | P37   | GND*   | GND*    | GND*    | GND*    |
| VCCIO      | -         | -     | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| I/O        | 433       | -     | -      | -       | -       | -       |
| I/O        | 434       | -     | -      | -       | -       | -       |
| I/O        | 435       | -     | -      | W31     | Y32     | H24     |
| I/O        | 436       | -     | -      | V28     | W29     | B24     |
| I/O        | 437       | -     | R23    | V29     | W30     | D24     |
| I/O        | 438       | -     | R24    | V30     | W31     | A23     |
| I/O        | 439       | P36   | R25    | U29     | W33     | C23     |
| I/O        | 440       | P35   | R26    | U28     | V30     | E23     |
| GND        | -         | -     | -      | GND*    | GND*    | GND*    |
| VCCIO      | -         | -     | -      | VCCIO*  | VCCIO*  | -       |
| I/O        | 441       | P34   | P24    | U30     | V29     | G23     |
| I/O        | 442       | P33   | P23    | U31     | V31     | B22     |
| I/O        | 443       | -     | -      | -       | V32     | D22     |
| I/O        | 444       | -     | -      | -       | U33     | A21     |
| I/O        | 445       | -     | -      | -       | -       | -       |
| I/O        | 446       | -     | -      | -       | -       | -       |
| I/O        | 447       | P32   | P25    | T29     | U30     | F22     |
| I/O        | 448       | P31   | N26    | T30     | U29     | C21     |
| VCCIO      | -         | P30   | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| GND        | -         | P29   | GND*   | GND*    | GND*    | GND*    |

XC40110XV Pinout Table (Continued)

| PAD NAME   | EPIC PAD# | HQ240 | BG352  | BG432   | BG560   | PG559   |
|------------|-----------|-------|--------|---------|---------|---------|
| I/O        | 449       | P28   | N25    | T31     | U31     | E21     |
| I/O        | 450       | -     | -      | -       | -       | D20     |
| VCCINT     | -         | P27   | N24    | VCCINT* | VCCINT* | VCCINT* |
| I/O        | 451       | -     | -      | -       | -       | -       |
| I/O        | 452       | -     | -      | -       | -       | -       |
| I/O        | 453       | -     | -      | -       | T32     | C17     |
| I/O        | 454       | -     | -      | -       | T30     | G21     |
| I/O        | 455       | P26   | M26    | R28     | T29     | F20     |
| I/O        | 456       | P25   | M25    | R30     | T31     | D18     |
| VCCIO      | -         | -     | -      | VCCIO*  | VCCIO*  | -       |
| GND        | -         | -     | -      | GND*    | GND*    | GND*    |
| I/O        | 457       | P24   | M24    | R31     | R33     | E19     |
| I/O        | 458       | P23   | M23    | P29     | R31     | B20     |
| I/O        | 459       | -     | L26    | P28     | R30     | H20     |
| I/O        | 460       | -     | L25    | P30     | R29     | B18     |
| I/O        | 461       | -     | -      | N30     | P32     | C15     |
| I/O        | 462       | -     | -      | N29     | P31     | D16     |
| I/O        | 463       | -     | -      | -       | -       | -       |
| I/O        | 464       | -     | -      | -       | -       | -       |
| VCCIO      | -         | -     | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| GND        | -         | P22   | GND*   | GND*    | GND*    | GND*    |
| I/O        | 465       | -     | K25    | N28     | N33     | G19     |
| I/O        | 466       | -     | L24    | N31     | P30     | A17     |
| I/O        | 467       | -     | L23    | M31     | P29     | F18     |
| I/O        | 468       | -     | J26    | M29     | M32     | E17     |
| I/O        | 469       | -     | -      | -       | N31     | B16     |
| I/O        | 470       | -     | -      | -       | N30     | C13     |
| I/O        | 471       | -     | -      | M28     | L33     | A15     |
| I/O        | 472       | -     | -      | M30     | N29     | D14     |
| VCCIO      | -         | -     | -      | VCCIO*  | VCCIO*  | -       |
| GND        | -         | -     | -      | GND*    | GND*    | GND*    |
| I/O        | 473       | P21   | J25    | L30     | M31     | E15     |
| I/O        | 474       | P20   | K24    | L29     | L32     | G17     |
| I/O        | 475       | -     | -      | -       | M30     | B14     |
| I/O        | 476       | -     | -      | -       | L31     | C11     |
| VCCIO      | -         | P19   | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| I/O        | 477       | P18   | K23    | K31     | M29     | D12     |
| I/O (TMS)  | 478       | P17   | H25    | K30     | J33     | A11     |
| VCCINT     | -         | P16   | J24    | VCCINT* | VCCINT* | VCCINT* |
| I/O        | 479       | -     | -      | -       | -       | E13     |
| I/O, FCLK1 | 480       | P15   | J23    | K28     | L30     | C9      |
| GND        | -         | P14   | GND*   | GND*    | GND*    | GND*    |
| VCCIO      | -         | -     | -      | VCCIO*  | VCCIO*  | -       |
| I/O        | 481       | -     | G26    | J30     | K31     | H16     |
| I/O        | 482       | -     | G25    | H31     | L29     | B10     |
| I/O        | 483       | P13   | H24    | J29     | H33     | G15     |
| I/O        | 484       | P12   | H23    | J28     | K30     | A9      |
| I/O        | 485       | -     | -      | -       | J31     | D10     |
| I/O        | 486       | -     | -      | -       | H32     | B8      |

XC40110XV Pinout Table (Continued)

| PAD NAME        | EPIC PAD# | HQ240 | BG352  | BG432   | BG560   | PG559   |
|-----------------|-----------|-------|--------|---------|---------|---------|
| I/O             | 487       | P11   | F26    | -       | K29     | E11     |
| I/O             | 488       | P10   | F25    | -       | H31     | G13     |
| GND             | -         | -     | -      | GND*    | GND*    | GND*    |
| VCCIO           | -         | -     | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| I/O             | 489       | P9    | G24    | H30     | J30     | F12     |
| I/O             | 490       | P8    | D26    | G30     | G32     | H14     |
| I/O             | 491       | -     | -      | H29     | F33     | G11     |
| I/O             | 492       | -     | -      | H28     | J29     | A7      |
| I/O             | 493       | -     | -      | F31     | G31     | E9      |
| I/O             | 494       | -     | -      | F30     | H30     | B6      |
| I/O             | 495       | -     | -      | -       | E33     | D8      |
| I/O             | 496       | -     | -      | -       | E32     | F8      |
| GND             | -         | -     | GND*   | GND*    | GND*    | GND*    |
| VCCIO           | -         | -     | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| I/O             | 497       | -     | E25    | G29     | H29     | G9      |
| I/O             | 498       | -     | F24    | G28     | F31     | H10     |
| I/O             | 499       | -     | F23    | E31     | G30     | B4      |
| I/O             | 500       | -     | D25    | E30     | D32     | E7      |
| I/O             | 501       | -     | -      | F29     | E31     | C5      |
| I/O             | 502       | -     | -      | F28     | G29     | D6      |
| I/O             | 503       | -     | -      | -       | -       | -       |
| I/O             | 504       | -     | -      | -       | -       | -       |
| GND             | -         | -     | -      | GND*    | GND*    | GND*    |
| VCCIO           | -         | -     | -      | VCCIO*  | VCCIO*  | -       |
| I/O             | 505       | -     | -      | -       | -       | -       |
| I/O             | 506       | -     | -      | -       | -       | -       |
| I/O (TCK)       | 507       | P7    | E24    | D31     | C33     | D4      |
| I/O (TDI)       | 508       | P6    | C26    | D30     | F30     | H8      |
| I/O             | 509       | P5    | E23    | E29     | D31     | A3      |
| I/O             | 510       | -     | -      | -       | -       | F6      |
| VCCINT          | -         | P4    | D24    | VCCINT* | VCCINT* | VCCINT* |
| I/O (A17)       | 511       | P3    | C25    | C30     | F29     | C3      |
| I/O, GCK1 (A16) | 512       | P2    | D23    | D29     | B33     | C1      |
| GND             | -         | P1    | GND*   | GND*    | GND*    | GND*    |
| VCCIO           | -         | -     | A10    | A1      | A4      | A13     |
| VCCIO           | -         | -     | A17    | A11     | A10     | A31     |
| VCCIO           | -         | -     | AC14   | A21     | A16     | A43     |
| VCCIO           | -         | -     | AC20   | A31     | A22     | B2      |
| VCCIO           | -         | -     | AC8    | D11     | A26     | C7      |
| VCCIO           | -         | -     | AF10   | D21     | A30     | C19     |
| VCCIO           | -         | -     | AF17   | L1      | B2      | C25     |
| VCCIO           | -         | -     | D7     | L4      | B13     | C37     |
| VCCIO           | -         | -     | D13    | L28     | B19     | F14     |
| VCCIO           | -         | -     | D19    | L31     | B32     | F30     |
| VCCIO           | -         | -     | G23    | AA1     | C3      | G3      |
| VCCIO           | -         | -     | H4     | AA4     | C31     | G7      |
| VCCIO           | -         | -     | K1     | AA28    | C32     | G37     |
| VCCIO           | -         | -     | K26    | AA31    | D1      | G41     |
| VCCIO           | -         | -     | N23    | AH11    | D33     | N1      |

**XC40110XV Pinout Table (Continued)**

| PAD NAME | EPIC PAD# | HQ240 | BG352 | BG432 | BG560 | PG559 |
|----------|-----------|-------|-------|-------|-------|-------|
| VCCIO    | -         | -     | P4    | AH21  | E5    | N43   |
| VCCIO    | -         | -     | U1    | AL1   | H1    | P6    |
| VCCIO    | -         | -     | U26   | AL11  | K33   | P38   |
| VCCIO    | -         | -     | W23   | AL21  | M1    | W3    |
| VCCIO    | -         | -     | Y4    | AL31  | N32   | W41   |
| VCCIO    | -         | -     | B2    | C3    | R2    | AE3   |
| VCCIO    | -         | -     | B25   | C29   | T33   | AE41  |
| VCCIO    | -         | -     | AE2   | AJ3   | V1    | AK6   |
| VCCIO    | -         | -     | AE25  | AJ29  | W32   | AK38  |
| VCCIO    | -         | -     | -     | -     | AA2   | AL1   |
| VCCIO    | -         | -     | -     | -     | AB33  | AL43  |
| VCCIO    | -         | -     | -     | -     | AD1   | AU3   |
| VCCIO    | -         | -     | -     | -     | AF33  | AU7   |
| VCCIO    | -         | -     | -     | -     | AK1   | AU37  |
| VCCIO    | -         | -     | -     | -     | AK4   | AU41  |
| VCCIO    | -         | -     | -     | -     | AK33  | AV14  |
| VCCIO    | -         | -     | -     | -     | AL2   | AV30  |
| VCCIO    | -         | -     | -     | -     | AL3   | BA7   |
| VCCIO    | -         | -     | -     | -     | AL31  | BA19  |
| VCCIO    | -         | -     | -     | -     | AM2   | BA25  |
| VCCIO    | -         | -     | -     | -     | AM15  | BA37  |
| VCCIO    | -         | -     | -     | -     | AM21  | BC1   |
| VCCIO    | -         | -     | -     | -     | AM32  | BC13  |
| VCCIO    | -         | -     | -     | -     | AN4   | BC31  |
| VCCIO    | -         | -     | -     | -     | AN8   | BC43  |
| VCCIO    | -         | -     | -     | -     | AN12  | -     |
| VCCIO    | -         | -     | -     | -     | AN18  | -     |
| VCCIO    | -         | -     | -     | -     | AN24  | -     |
| VCCIO    | -         | -     | -     | -     | AN30  | -     |
|          |           |       |       |       |       |       |
| VCCINT   | -         | -     | -     | A10   | E12   | H12   |
| VCCINT   | -         | -     | -     | AB2   | AD2   | H18   |
| VCCINT   | -         | -     | -     | AB30  | AD32  | H26   |
| VCCINT   | -         | -     | -     | AG28  | AK31  | H32   |
| VCCINT   | -         | -     | -     | AH15  | AM17  | M8    |
| VCCINT   | -         | -     | -     | AH5   | AK5   | M36   |
| VCCINT   | -         | -     | -     | AJ10  | AK11  | V8    |
| VCCINT   | -         | -     | -     | AK22  | AN25  | V36   |
| VCCINT   | -         | -     | -     | B23   | C24   | AF8   |
| VCCINT   | -         | -     | -     | B4    | D6    | AF36  |
| VCCINT   | -         | -     | -     | C16   | C17   | AM8   |
| VCCINT   | -         | -     | -     | E28   | E30   | AM36  |
| VCCINT   | -         | -     | -     | K29   | K32   | AT12  |
| VCCINT   | -         | -     | -     | K3    | J1    | AT18  |
| VCCINT   | -         | -     | -     | R2    | T3    | AT26  |
| VCCINT   | -         | -     | -     | R29   | U32   | AT32  |
|          |           |       |       |       |       |       |
| GND      | -         | -     | A1    | A2    | A7    | A5    |
| GND      | -         | -     | A14   | A3    | A12   | A19   |
| GND      | -         | -     | A19   | A7    | A14   | A25   |

**XC40110XV Pinout Table (Continued)**

| PAD NAME | EPIC PAD# | HQ240 | BG352 | BG432 | BG560 | PG559 |
|----------|-----------|-------|-------|-------|-------|-------|
| GND      | -         | -     | A2    | A9    | A18   | A39   |
| GND      | -         | -     | A22   | A14   | A20   | B12   |
| GND      | -         | -     | A25   | A18   | A24   | B32   |
| GND      | -         | -     | A26   | A23   | A29   | E1    |
| GND      | -         | -     | A5    | A25   | A32   | E5    |
| GND      | -         | -     | A8    | A29   | B1    | E39   |
| GND      | -         | -     | AB1   | A30   | B6    | E43   |
| GND      | -         | -     | AB26  | B1    | B9    | F10   |
| GND      | -         | -     | AE1   | B2    | B15   | F16   |
| GND      | -         | -     | AE26  | B30   | B23   | F28   |
| GND      | -         | -     | AF1   | B31   | B27   | F34   |
| GND      | -         | -     | AF13  | C1    | B31   | H22   |
| GND      | -         | -     | AF19  | C31   | C2    | K6    |
| GND      | -         | -     | AF2   | D16   | E1    | K38   |
| GND      | -         | -     | AF22  | G1    | F32   | M2    |
| GND      | -         | -     | AF25  | G31   | G2    | M42   |
| GND      | -         | -     | AF26  | J1    | G33   | T6    |
| GND      | -         | -     | AF5   | J31   | J32   | T38   |
| GND      | -         | -     | AF8   | P1    | K1    | W1    |
| GND      | -         | -     | B1    | P31   | L2    | W43   |
| GND      | -         | -     | B26   | T4    | M33   | AB8   |
| GND      | -         | -     | E1    | T28   | P1    | AB36  |
| GND      | -         | -     | E26   | V1    | P33   | AE1   |
| GND      | -         | -     | H1    | V31   | R32   | AE43  |
| GND      | -         | -     | H26   | AC1   | T1    | AH6   |
| GND      | -         | -     | N1    | AC31  | V33   | AH38  |
| GND      | -         | -     | P26   | AE1   | W2    | AM2   |
| GND      | -         | -     | W1    | AE31  | Y1    | AM42  |
| GND      | -         | -     | W26   | AH16  | Y33   | AP6   |
| GND      | -         | -     | -     | AJ1   | AB1   | AP38  |
| GND      | -         | -     | -     | AJ31  | AC32  | AT22  |
| GND      | -         | -     | -     | AK1   | AD33  | AV10  |
| GND      | -         | -     | -     | AK2   | AE2   | AV16  |
| GND      | -         | -     | -     | AK30  | AG1   | AV28  |
| GND      | -         | -     | -     | AK31  | AG32  | AV34  |
| GND      | -         | -     | -     | AL2   | AH2   | AW1   |
| GND      | -         | -     | -     | AL3   | AJ33  | AW5   |
| GND      | -         | -     | -     | AL7   | AL32  | AW39  |
| GND      | -         | -     | -     | AL9   | AM3   | AW43  |
| GND      | -         | -     | -     | AL14  | AM11  | BB12  |
| GND      | -         | -     | -     | AL18  | AM19  | BB32  |
| GND      | -         | -     | -     | AL23  | AM25  | BC5   |
| GND      | -         | -     | -     | AL25  | AM28  | BC19  |
| GND      | -         | -     | -     | AL29  | AM33  | BC25  |
| GND      | -         | -     | -     | AL30  | AM7   | BC39  |
| GND      | -         | -     | -     | -     | AN2   | -     |
| GND      | -         | -     | -     | -     | AN5   | -     |
| GND      | -         | -     | -     | -     | AN10  | -     |
| GND      | -         | -     | -     | -     | AN14  | -     |
| GND      | -         | -     | -     | -     | AN16  | -     |

XC40110XV Pinout Table (Continued)

| PAD NAME | EPIC PAD# | HQ240 | BG352 | BG432 | BG560 | PG559 |
|----------|-----------|-------|-------|-------|-------|-------|
| GND      | -         | -     | -     | -     | AN20  | -     |
| GND      | -         | -     | -     | -     | AN22  | -     |
| GND      | -         | -     | -     | -     | AN27  | -     |
|          |           |       |       |       |       |       |
| NC       | -         | P204  | C8    | C8    | A1    | -     |
| NC       | -         | P219  | -     | -     | A33   | -     |
| NC       | -         | -     | -     | -     | AC2   | -     |
| NC       | -         | -     | -     | -     | AN1   | -     |
| NC       | -         | -     | -     | -     | AN33  | -     |

## XC40150XV Pinout Table (Continued)

## XC40150XV Pinout Table

| PAD NAME        | EPIC PAD # | HQ240 | BG352  | BG432   | BG560   | PG559   |
|-----------------|------------|-------|--------|---------|---------|---------|
| VCCIO           | -          | P240  | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| I/O, GCK8 (A15) | 1          | P239  | C24    | D28     | E29     | E3      |
| I/O (A14)       | 2          | P238  | D22    | C28     | D30     | F4      |
| I/O             | 3          | P237  | C23    | B29     | E28     | J7      |
| I/O             | 4          | P236  | B24    | D27     | D29     | D2      |
| I/O             | 5          | P235  | C22    | B28     | C30     | K8      |
| I/O             | 6          | P234  | D21    | C27     | D28     | H6      |
| I/O             | 7          | -     | -      | -       | -       | -       |
| I/O             | 8          | -     | -      | -       | -       | -       |
| VCCIO           | -          | -     | -      | VCCIO*  | VCCIO*  | -       |
| GND             | -          | -     | -      | GND*    | GND*    | GND*    |
| I/O             | 9          | -     | -      | -       | -       | -       |
| I/O             | 10         | -     | -      | -       | -       | -       |
| I/O             | 11         | -     | -      | -       | -       | -       |
| I/O             | 12         | -     | -      | -       | -       | -       |
| I/O             | 13         | -     | -      | D28     | A31     | G5      |
| I/O             | 14         | -     | -      | A28     | E27     | F2      |
| I/O             | 15         | -     | B23    | B27     | C29     | H4      |
| I/O             | 16         | -     | A24    | C26     | B30     | G1      |
| I/O             | 17         | -     | A23    | D25     | D27     | J5      |
| I/O             | 18         | -     | D20    | A27     | C28     | L7      |
| VCCIO           | -          | -     | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| GND             | -          | -     | GND*   | GND*    | GND*    | GND*    |
| I/O (A13)       | 19         | P233  | C21    | B26     | E26     | J3      |
| I/O (A12)       | 20         | P232  | B22    | D24     | B29     | K4      |
| I/O             | 21         | P231  | B21    | C25     | B28     | H2      |
| I/O             | 22         | P230  | C20    | A26     | D26     | L5      |
| I/O             | 23         | -     | -      | B25     | C27     | J1      |
| I/O             | 24         | -     | -      | D23     | E25     | M6      |
| I/O             | 25         | -     | -      | -       | A28     | K2      |
| I/O             | 26         | -     | -      | -       | A27     | N7      |
| I/O             | 27         | -     | -      | -       | -       | -       |
| I/O             | 28         | -     | -      | -       | -       | -       |
| VCCIO           | -          | -     | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| GND             | -          | -     | -      | GND*    | GND*    | GND*    |
| I/O             | 29         | -     | -      | -       | D25     | P8      |
| I/O             | 30         | -     | -      | -       | C26     | L3      |
| I/O             | 31         | -     | -      | -       | E24     | L1      |
| I/O             | 32         | -     | -      | -       | B26     | M4      |
| I/O             | 33         | P229  | B20    | C24     | C25     | P2      |
| I/O             | 34         | P228  | A21    | B24     | D24     | N5      |
| I/O             | 35         | -     | D18    | C23     | B25     | R1      |
| I/O             | 36         | -     | C19    | D22     | E23     | N3      |
| VCCIO           | -          | -     | -      | VCCIO*  | VCCIO*  | -       |
| GND             | -          | P227  | GND*   | GND*    | GND*    | GND*    |
| I/O             | 37         | P226  | B19    | A24     | A25     | R7      |
| I/O             | 38         | -     | -      | -       | -       | P4      |
| VCCINT          | -          | P225  | A20    | VCCINT* | VCCINT* | VCCINT* |
| I/O             | 39         | P224  | D17    | C22     | D23     | T2      |
| I/O             | 40         | P223  | C18    | B22     | B24     | T8      |
| VCCIO           | -          | P222  | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| I/O             | 41         | -     | B18    | A22     | E22     | R5      |
| I/O             | 42         | -     | C17    | C21     | C23     | R3      |
| I/O             | 43         | -     | -      | -       | A23     | U1      |

| PAD NAME  | EPIC PAD # | HQ240 | BG352  | BG432   | BG560   | PG559   |
|-----------|------------|-------|--------|---------|---------|---------|
| I/O       | 44         | -     | -      | -       | D22     | T4      |
| GND       | -          | -     | -      | GND*    | GND*    | GND*    |
| VCCIO     | -          | -     | -      | VCCIO*  | VCCIO*  | -       |
| I/O       | 45         | -     | -      | -       | -       | -       |
| I/O       | 46         | -     | -      | -       | -       | -       |
| I/O       | 47         | -     | -      | -       | C22     | U5      |
| I/O       | 48         | -     | -      | -       | E21     | V2      |
| I/O       | 49         | -     | -      | D20     | B22     | U7      |
| I/O       | 50         | -     | -      | B21     | D21     | U3      |
| I/O       | 51         | -     | A18    | C20     | C21     | Y2      |
| I/O       | 52         | -     | D16    | B20     | B21     | V4      |
| I/O       | 53         | -     | B17    | A20     | E20     | V6      |
| I/O       | 54         | -     | C16    | D19     | A21     | W5      |
| GND       | -          | -     | GND*   | GND*    | GND*    | GND*    |
| VCCIO     | -          | -     | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| I/O (A11) | 55         | P221  | B16    | C19     | D20     | W7      |
| I/O (A10) | 56         | P220  | A16    | B19     | C20     | Y4      |
| I/O       | 57         | P218  | D15    | A19     | B20     | AA1     |
| I/O       | 58         | P217  | C15    | B18     | E19     | Y6      |
| I/O (A18) | 59         | P216  | B15    | D18     | D19     | AB2     |
| I/O (A19) | 60         | P215  | A15    | C18     | C19     | Y8      |
| I/O       | 61         | -     | -      | -       | -       | -       |
| I/O       | 62         | -     | -      | -       | -       | -       |
| I/O       | 63         | -     | -      | -       | -       | -       |
| I/O       | 64         | -     | -      | -       | -       | -       |
| GND       | -          | -     | -      | GND*    | GND*    | GND*    |
| VCCIO     | -          | -     | -      | VCCIO*  | VCCIO*  | -       |
| I/O       | 65         | -     | -      | -       | -       | -       |
| I/O       | 66         | -     | -      | -       | -       | -       |
| I/O       | 67         | -     | -      | -       | A19     | AA3     |
| I/O       | 68         | -     | -      | -       | D18     | AA5     |
| I/O       | 69         | -     | -      | B17     | E18     | AC1     |
| I/O       | 70         | -     | -      | C17     | C18     | AA7     |
| I/O (A9)  | 71         | P214  | C14    | A17     | B18     | AB4     |
| I/O (A8)  | 72         | P213  | D14    | D17     | A17     | AB6     |
| VCCIO     | -          | P212  | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| GND       | -          | P211  | GND*   | GND*    | GND*    | GND*    |
| I/O (A7)  | 73         | P210  | B14    | A16     | D17     | AC3     |
| I/O (A6)  | 74         | P209  | A13    | B16     | E17     | AC5     |
| VCCINT    | -          | -     | -      | VCCINT* | VCCINT* | VCCINT* |
| I/O       | 75         | -     | -      | -       | -       | AD2     |
| I/O       | 76         | -     | -      | A15     | B17     | AC7     |
| I/O       | 77         | -     | -      | -       | B16     | AF2     |
| I/O       | 78         | -     | -      | -       | D16     | AD4     |
| I/O       | 79         | -     | -      | -       | -       | -       |
| I/O       | 80         | -     | -      | -       | -       | -       |
| VCCIO     | -          | -     | -      | VCCIO*  | VCCIO*  | -       |
| GND       | -          | -     | -      | GND*    | GND*    | GND*    |
| I/O       | 81         | -     | -      | -       | -       | -       |
| I/O       | 82         | -     | -      | -       | -       | -       |
| I/O       | 83         | -     | -      | -       | -       | -       |
| I/O       | 84         | -     | -      | -       | -       | -       |
| I/O (A20) | 85         | P208  | B13    | B15     | E16     | AD6     |
| I/O (A21) | 86         | P207  | C13    | C15     | C16     | AE5     |
| I/O       | 87         | P206  | A12    | D15     | A15     | AF4     |
| I/O       | 88         | P205  | B12    | B14     | C15     | AG1     |

XC40150XV Pinout Table (Continued)

| PAD NAME       | EPIC PAD # | HQ240 | BG352  | BG432   | BG560   | PG559   |
|----------------|------------|-------|--------|---------|---------|---------|
| I/O (A5)       | 89         | P203  | C12    | A13     | D15     | AD8     |
| I/O (A4)       | 90         | P202  | D12    | C14     | E15     | AG3     |
| VCCIO          | -          | -     | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| GND            | -          | -     | GND*   | GND*    | GND*    | GND*    |
| I/O            | 91         | -     | A11    | B13     | B14     | AH4     |
| I/O            | 92         | -     | B11    | D14     | C14     | AE7     |
| I/O            | 93         | -     | B10    | A12     | D14     | AH2     |
| I/O            | 94         | -     | C11    | C13     | A13     | AF6     |
| I/O            | 95         | -     | -      | B12     | E14     | AJ1     |
| I/O            | 96         | -     | -      | D13     | C13     | AG5     |
| I/O            | 97         | -     | -      | -       | D13     | AJ3     |
| I/O            | 98         | -     | -      | -       | B12     | AK4     |
| I/O            | 99         | -     | -      | -       | -       | -       |
| I/O            | 100        | -     | -      | -       | -       | -       |
| VCCIO          | -          | -     | -      | VCCIO*  | VCCIO*  | -       |
| GND            | -          | -     | -      | GND*    | GND*    | GND*    |
| I/O            | 101        | -     | -      | -       | C12     | AG7     |
| I/O            | 102        | -     | -      | -       | E13     | AK2     |
| I/O            | 103        | 0     | D11    | C12     | A11     | AJ5     |
| I/O            | 104        | 0     | A9     | B11     | D12     | AL3     |
| VCCIO          | -          | P201  | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| I/O            | 105        | P200  | B9     | D12     | B11     | AM4     |
| I/O            | 106        | P199  | C10    | C11     | C11     | AN1     |
| VCCINT         | -          | P198  | D10    | VCCINT* | VCCINT* | VCCINT* |
| I/O            | 107        | -     | -      | -       | -       | AL5     |
| I/O            | 108        | P197  | B8     | B10     | B10     | AH8     |
| GND            | -          | P196  | GND*   | GND*    | GND*    | GND*    |
| VCCIO          | -          | -     | -      | VCCIO   | VCCIO*  | -       |
| I/O            | 109        | -     | C9     | C10     | D11     | AJ7     |
| I/O            | 110        | P195  | D9     | B9      | C10     | AP2     |
| I/O            | 111        | P194  | A7     | C9      | A9      | AN3     |
| I/O            | 112        | P193  | B7     | D10     | E11     | AP4     |
| I/O            | 113        | -     | -      | -       | C9      | AR1     |
| I/O            | 114        | -     | -      | -       | D10     | AN5     |
| I/O            | 115        | -     | -      | -       | A8      | AM6     |
| I/O            | 116        | -     | -      | -       | B8      | AK8     |
| GND            | -          | -     | -      | GND*    | GND*    | GND*    |
| VCCIO          | -          | -     | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| I/O            | 117        | -     | -      | -       | -       | -       |
| I/O            | 118        | -     | -      | -       | -       | -       |
| I/O            | 119        | -     | -      | -       | E10     | AL7     |
| I/O            | 120        | -     | -      | -       | C8      | AT2     |
| I/O            | 121        | -     | -      | A8      | D9      | AR3     |
| I/O            | 122        | -     | -      | B8      | B7      | AU1     |
| I/O            | 123        | P192  | D8     | D9      | A6      | AT4     |
| I/O            | 124        | P191  | A6     | B7      | E9      | AV2     |
| I/O            | 125        | P190  | B6     | C7      | C7      | AR5     |
| I/O            | 126        | P189  | C7     | D8      | D8      | AN7     |
| GND            | -          | -     | GND*   | GND*    | GND*    | GND*    |
| VCCIO          | -          | -     | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| I/O            | 127        | -     | A4     | A6      | A5      | AW3     |
| I/O            | 128        | -     | B5     | B6      | B5      | AV4     |
| I/O (A3)       | 129        | P188  | C6     | D7      | E8      | BA1     |
| I/O, (CS1, A2) | 130        | P187  | D6     | A5      | C6      | AU5     |
| I/O            | 131        | -     | B4     | C6      | D7      | AY2     |

XC40150XV Pinout Table (Continued)

| PAD NAME               | EPIC PAD # | HQ240 | BG352 | BG432   | BG560   | PG559   |
|------------------------|------------|-------|-------|---------|---------|---------|
| I/O                    | 132        | -     | C5    | B5      | B4      | AT6     |
| I/O                    | 133        | -     | -     | -       | -       | -       |
| I/O                    | 134        | -     | -     | -       | -       | -       |
| I/O                    | 135        | -     | -     | -       | -       | -       |
| I/O                    | 136        | -     | -     | -       | -       | -       |
| GND                    | -          | -     | -     | GND*    | GND*    | GND*    |
| VCCIO                  | -          | -     | -     | VCCIO*  | VCCIO*  | -       |
| I/O                    | 137        | -     | -     | -       | -       | -       |
| I/O                    | 138        | -     | -     | -       | -       | -       |
| I/O                    | 139        | -     | -     | D6      | C5      | AP8     |
| I/O                    | 140        | -     | -     | A4      | E7      | AR7     |
| I/O                    | 141        | -     | -     | C5      | A3      | AY4     |
| I/O                    | 142        | P186  | A3    | -       | -       | BB2     |
| VCCINT                 | -          | P185  | D5    | VCCINT* | VCCINT* | VCCINT* |
| I/O, GCK7 (A1)         | 143        | P184  | C4    | D5      | A2      | AV6     |
| I/O (A0, /WS)          | 144        | P183  | B3    | B3      | D5      | AT8     |
| GND                    | -          | P182  | GND*  | GND*    | GND*    | GND*    |
| O, TDO                 | -          | P181  | D4    | C4      | E6      | BA3     |
| VCCIO                  | -          | P180  | -     | VCCIO*  | VCCIO*  | VCCIO*  |
| CCLK                   | -          | P179  | C3    | D4      | C4      | BA5     |
| I/O, GCK6 (DOUT)       | 145        | P178  | E4    | D3      | D4      | BB4     |
| I/O (D0, DIN)          | 146        | P177  | D3    | C2      | E4      | AY6     |
| I/O                    | 147        | P176  | C2    | D2      | F5      | BC3     |
| I/O                    | 148        | P175  | E3    | E4      | B3      | AW7     |
| I/O                    | 149        | -     | F4    | D1      | D3      | BB6     |
| I/O                    | 150        | -     | D2    | E3      | F4      | AU9     |
| I/O                    | 151        | -     | -     | -       | -       | -       |
| I/O                    | 152        | -     | -     | -       | -       | -       |
| VCCIO                  | -          | -     | -     | VCCIO*  | VCCIO*  | -       |
| GND                    | -          | -     | -     | GND*    | GND*    | GND*    |
| I/O                    | 153        | -     | -     | -       | -       | -       |
| I/O                    | 154        | -     | -     | -       | -       | -       |
| I/O                    | 155        | -     | -     | E2      | C1      | AT10    |
| I/O                    | 156        | -     | -     | F4      | G5      | AV8     |
| I/O                    | 157        | -     | C1    | E1      | E3      | AY8     |
| I/O                    | 158        | -     | D1    | F3      | D2      | BC7     |
| I/O                    | 159        | -     | -     | -       | -       | -       |
| I/O                    | 160        | -     | -     | -       | -       | -       |
| I/O (/RCK, RDY, /BUSY) | 161        | P174  | G4    | F2      | G4      | AW9     |
| I/O (D1)               | 162        | P173  | F3    | G4      | F3      | BA9     |
| VCCIO                  | -          | -     | -     | VCCIO*  | VCCIO*  | VCCIO*  |
| GND                    | -          | -     | -     | GND*    | GND*    | GND*    |
| I/O                    | 163        | -     | -     | -       | -       | -       |
| I/O                    | 164        | -     | -     | -       | -       | -       |
| I/O                    | 165        | -     | -     | F1      | H5      | AU11    |
| I/O                    | 166        | -     | -     | G3      | E2      | AY10    |
| I/O                    | 167        | -     | -     | G2      | F2      | BB8     |
| I/O                    | 168        | -     | -     | H4      | H4      | AW11    |
| I/O                    | 169        | P172  | E2    | H3      | G3      | BC9     |
| I/O                    | 170        | P171  | F2    | H2      | J5      | AV12    |
| I/O                    | 171        | P170  | G3    | -       | F1      | AU13    |
| I/O                    | 172        | P169  | G2    | -       | G1      | AT14    |
| VCCIO                  | -          | -     | -     | VCCIO*  | VCCIO*  | VCCIO*  |
| GND                    | -          | -     | -     | GND*    | GND*    | GND*    |

**XC40150XV Pinout Table (Continued)**

| PAD NAME   | EPIC PAD # | HQ240 | BG352  | BG432   | BG560   | PG559   |
|------------|------------|-------|--------|---------|---------|---------|
| I/O        | 173        | -     | -      | -       | J4      | BA11    |
| I/O        | 174        | -     | -      | -       | H3      | AY12    |
| I/O        | 175        | -     | -      | -       | K5      | BB10    |
| I/O        | 176        | -     | -      | -       | H2      | AW13    |
| I/O        | 177        | P168  | F1     | H1      | J3      | BC11    |
| I/O        | 178        | P167  | J4     | J4      | K4      | AU15    |
| I/O        | 179        | -     | H3     | J3      | J2      | BB14    |
| I/O        | 180        | -     | H2     | J2      | L5      | AT16    |
| VCCIO      | -          | -     | -      | VCCIO*  | VCCIO*  | -       |
| GND        | -          | P166  | GND*   | GND*    | GND*    | GND*    |
| I/O        | 181        | P165  | G1     | K4      | K3      | BA13    |
| I/O        | 182        | -     | -      | -       | -       | AY14    |
| VCCINT     | -          | P164  | K4     | VCCINT* | VCCINT* | VCCINT* |
| I/O, FCLK4 | 183        | P163  | J3     | K2      | L4      | BC15    |
| I/O        | 184        | P162  | J2     | K1      | K2      | AW15    |
| VCCIO      | -          | P161  | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| I/O        | 185        | -     | -      | -       | M5      | BA15    |
| I/O        | 186        | -     | -      | -       | L3      | AU17    |
| I/O        | 187        | P160  | K3     | L3      | L1      | BB16    |
| I/O (D2)   | 188        | P159  | J1     | L2      | M4      | AY16    |
| GND        | -          | -     | -      | GND*    | GND*    | GND*    |
| VCCIO      | -          | -     | -      | VCCIO*  | VCCIO*  | -       |
| I/O        | 189        | -     | -      | M4      | M3      | AW17    |
| I/O        | 190        | -     | -      | M3      | N5      | AV18    |
| I/O        | 191        | -     | -      | -       | M2      | BA17    |
| I/O        | 192        | -     | -      | -       | N4      | BC17    |
| I/O        | 193        | -     | -      | -       | -       | -       |
| I/O        | 194        | -     | -      | -       | -       | -       |
| I/O        | 195        | -     | L4     | M2      | N3      | AU19    |
| I/O        | 196        | -     | K2     | M1      | N2      | BB18    |
| I/O        | 197        | -     | L3     | N4      | P5      | AY18    |
| I/O        | 198        | -     | L2     | N3      | N1      | AW19    |
| GND        | -          | P158  | GND*   | GND*    | GND*    | GND*    |
| VCCIO      | -          | -     | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| I/O        | 199        | -     | -      | -       | -       | -       |
| I/O        | 200        | -     | -      | -       | -       | -       |
| I/O        | 201        | -     | -      | -       | -       | -       |
| I/O        | 202        | -     | -      | -       | -       | -       |
| I/O        | 203        | -     | -      | N2      | P4      | AV20    |
| I/O        | 204        | -     | -      | N1      | P3      | AT20    |
| I/O        | 205        | -     | L1     | P4      | P2      | BB20    |
| I/O        | 206        | -     | M4     | P3      | R5      | AY20    |
| I/O        | 207        | P157  | M3     | P2      | R4      | BC21    |
| I/O        | 208        | P156  | M2     | R3      | R3      | BA21    |
| GND        | -          | -     | -      | GND*    | GND*    | GND*    |
| VCCIO      | -          | -     | -      | VCCIO*  | VCCIO*  | -       |
| I/O        | 209        | P155  | M1     | R4      | R1      | AW21    |
| I/O        | 210        | -     | -      | -       | T4      | AU21    |
| I/O        | 211        | -     | -      | -       | T5      | BB22    |
| I/O        | 212        | -     | -      | -       | -       | AY22    |
| I/O        | 213        | -     | -      | -       | -       | -       |
| I/O        | 214        | -     | -      | -       | -       | -       |
| VCCINT     | -          | P154  | N3     | VCCINT* | VCCINT* | VCCINT* |
| I/O (/RS)  | 215        | P153  | N4     | R1      | T2      | AV22    |
| I/O (D3)   | 216        | P152  | N2     | T3      | U3      | BA23    |
| GND        | -          | P151  | -      | GND*    | GND*    | GND*    |

**XC40150XV Pinout Table (Continued)**

| PAD NAME   | EPIC PAD # | HQ240 | BG352  | BG432   | BG560   | PG559   |
|------------|------------|-------|--------|---------|---------|---------|
| VCCIO      | -          | P150  | -      | VCCIO*  | VCCIO*  | VCCIO*  |
| I/O        | 217        | P149  | P1     | T2      | U4      | AW23    |
| I/O (D4)   | 218        | P148  | P2     | T1      | U5      | AY24    |
| I/O        | 219        | -     | -      | -       | -       | -       |
| I/O        | 220        | -     | -      | -       | -       | -       |
| I/O        | 221        | -     | -      | -       | U1      | BC23    |
| I/O        | 222        | -     | -      | -       | U2      | BA27    |
| I/O        | 223        | P147  | P3     | U3      | V2      | AU23    |
| I/O        | 224        | P146  | R1     | U4      | V4      | AV24    |
| VCCIO      | -          | -     | -      | VCCIO*  | VCCIO*  | -       |
| GND        | -          | -     | -      | GND*    | GND*    | GND*    |
| I/O        | 225        | P145  | R2     | U2      | V5      | AY26    |
| I/O        | 226        | P144  | R3     | U1      | V3      | BB24    |
| I/O        | 227        | -     | R4     | V3      | W1      | AW25    |
| I/O        | 228        | -     | T1     | V4      | W3      | BB26    |
| I/O        | 229        | -     | -      | V2      | W4      | AT24    |
| I/O        | 230        | -     | -      | W2      | W5      | BA29    |
| I/O        | 231        | -     | -      | -       | -       | -       |
| I/O        | 232        | -     | -      | -       | -       | -       |
| I/O        | 233        | -     | -      | -       | -       | -       |
| I/O        | 234        | -     | -      | -       | -       | -       |
| VCCIO      | -          | -     | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| GND        | -          | P143  | GND*   | GND*    | GND*    | GND*    |
| I/O        | 235        | -     | T2     | W3      | Y2      | AY28    |
| I/O        | 236        | -     | U2     | W4      | Y3      | AU25    |
| I/O        | 237        | -     | -      | -       | Y4      | AV26    |
| I/O        | 238        | -     | -      | -       | AA1     | BC27    |
| I/O        | 239        | -     | -      | -       | -       | -       |
| I/O        | 240        | -     | -      | -       | -       | -       |
| I/O        | 241        | -     | -      | W1      | Y5      | AW27    |
| I/O        | 242        | -     | -      | Y1      | AA3     | BB28    |
| I/O        | 243        | -     | T3     | Y3      | AA4     | BA31    |
| I/O        | 244        | -     | T4     | Y4      | AB2     | AY30    |
| VCCIO      | -          | -     | -      | VCCIO*  | VCCIO*  | VCCIO*  |
| GND        | -          | -     | -      | GND*    | GND*    | GND*    |
| I/O (/CS0) | 245        | P142  | V1     | Y2      | AB3     | AW29    |
| I/O (D5)   | 246        | P141  | V2     | AA2     | AA5     | BC29    |
| I/O        | 247        | -     | -      | -       | AC1     | AU27    |
| I/O        | 248        | -     | -      | -       | AB4     | BA33    |
| VCCIO      | -          | P140  | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| I/O        | 249        | P139  | U3     | AA3     | AC3     | AY32    |
| I/O, FCLK3 | 250        | P138  | U4     | AB1     | AB5     | AW31    |
| VCCINT     | -          | P137  | W2     | VCCINT* | VCCINT* | VCCINT* |
| I/O        | 251        | -     | -      | -       | -       | BB30    |
| I/O        | 252        | P136  | V3     | AB3     | AC4     | BA35    |
| GND        | -          | P135  | GND*   | GND*    | GND*    | GND*    |
| VCCIO      | -          | -     | -      | VCCIO*  | VCCIO*  | -       |
| I/O        | 253        | -     | V4     | AB4     | AD3     | AT28    |
| I/O        | 254        | -     | Y1     | AC2     | AE1     | AU29    |
| I/O        | 255        | P134  | Y2     | AD1     | AC5     | BC33    |
| I/O        | 256        | P133  | W3     | AC3     | AE3     | AY34    |
| I/O        | 257        | -     | -      | -       | AD4     | BB34    |
| I/O        | 258        | -     | -      | -       | AF1     | AW33    |
| I/O        | 259        | -     | -      | -       | AF2     | AU31    |
| I/O        | 260        | -     | -      | -       | AD5     | AV32    |
| GND        | -          | -     | -      | GND*    | GND*    | GND*    |

XC40150XV Pinout Table (Continued)

| PAD NAME  | EPIC PAD # | HQ240 | BG352  | BG432   | BG560   | PG559   |
|-----------|------------|-------|--------|---------|---------|---------|
| VCCIO     | -          | -     | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| I/O       | 261        | -     | -      | -       | -       | -       |
| I/O       | 262        | -     | -      | -       | -       | -       |
| I/O       | 263        | -     | -      | -       | AG2     | AT30    |
| I/O       | 264        | -     | -      | -       | AE4     | AU33    |
| I/O       | 265        | -     | -      | AC4     | AF3     | AW35    |
| I/O       | 266        | -     | -      | AD2     | AH1     | BC35    |
| I/O       | 267        | P132  | W4     | AE2     | AE5     | AY36    |
| I/O       | 268        | P131  | AA1    | AD3     | AG3     | BB36    |
| I/O       | 269        | P130  | AA2    | AD4     | AF4     | AV36    |
| I/O (D6)  | 270        | P129  | Y3     | AF1     | AJ1     | AU35    |
| GND       | -          | -     | -      | GND*    | GND*    | GND*    |
| VCCIO     | -          | -     | -      | VCCIO*  | VCCIO*  | VCCIO*  |
| I/O       | 271        | -     | AC1    | AF2     | AJ2     | AT34    |
| I/O       | 272        | -     | AB2    | AE3     | AF5     | AW37    |
| I/O       | 273        | -     | -      | -       | -       | -       |
| I/O       | 274        | -     | -      | -       | -       | -       |
| I/O       | 275        | -     | -      | -       | -       | -       |
| I/O       | 276        | -     | -      | -       | -       | -       |
| I/O       | 277        | -     | -      | AE4     | AH3     | BC37    |
| I/O       | 278        | -     | -      | AG1     | AG4     | AY38    |
| I/O       | 279        | P128  | AA3    | AG2     | AK2     | BB38    |
| I/O       | 280        | P127  | AA4    | AF3     | AJ3     | BA41    |
| GND       | -          | -     | -      | GND*    | GND*    | GND*    |
| VCCIO     | -          | -     | -      | VCCIO*  | VCCIO*  | -       |
| I/O       | 281        | -     | -      | -       | -       | -       |
| I/O       | 282        | -     | -      | -       | -       | -       |
| I/O       | 283        | -     | AC2    | AF4     | AG5     | AY40    |
| I/O       | 284        | -     | AB3    | AH1     | AL1     | BB40    |
| I/O       | 285        | P126  | AD1    | AH2     | AH4     | AT36    |
| I/O       | 286        | P125  | AB4    | AG3     | AK3     | BA39    |
| I/O, GCK5 | 287        | P124  | AC3    | AG4     | AJ4     | AV38    |
| I/O (D7)  | 288        | P123  | AD2    | AJ2     | AH5     | BC41    |
| /PROGRAM  | -          | P122  | AC4    | AH3     | AM1     | BB42    |
| VCCIO     | -          | P121  | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| DONE      | -          | P120  | AD3    | AH4     | AJ5     | AY42    |
| GND       | -          | P119  | GND*   | GND*    | GND*    | GND*    |
| I/O, GCK4 | 289        | P118  | AC5    | AJ4     | AL4     | AW41    |
| I/O       | 290        | P117  | AD4    | AK3     | AJ6     | AV40    |
| VCCINT    | -          | P116  | AE3    | VCCINT* | VCCINT* | VCCINT* |
| I/O       | 291        | -     | -      | -       | -       | AV42    |
| I/O       | 292        | P115  | AD5    | AK4     | AN3     | AR37    |
| I/O       | 293        | -     | -      | AJ5     | AK6     | AP36    |
| I/O       | 294        | -     | -      | AH6     | AL5     | AT38    |
| I/O       | 295        | -     | -      | -       | -       | -       |
| I/O       | 296        | -     | -      | -       | -       | -       |
| VCCIO     | -          | -     | -      | VCCIO*  | VCCIO*  | -       |
| GND       | -          | -     | -      | GND*    | GND*    | GND*    |
| I/O       | 297        | -     | -      | -       | -       | -       |
| I/O       | 298        | -     | -      | -       | -       | -       |
| I/O       | 299        | -     | -      | -       | -       | -       |
| I/O       | 300        | -     | -      | -       | -       | -       |
| I/O       | 301        | -     | AC6    | AL4     | AJ7     | AU39    |
| I/O       | 302        | -     | AE4    | AK5     | AM4     | AU43    |
| I/O       | 303        | P114  | AF3    | AJ6     | AM5     | BA43    |
| I/O       | 304        | P113  | AF4    | AH7     | AK7     | AT42    |

XC40150XV Pinout Table (Continued)

| PAD NAME | EPIC PAD # | HQ240 | BG352  | BG432   | BG560   | PG559   |
|----------|------------|-------|--------|---------|---------|---------|
| I/O      | 305        | -     | AC7    | AL5     | AL6     | AR39    |
| I/O      | 306        | -     | AD6    | AK6     | AJ8     | AN37    |
| VCCIO    | -          | -     | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| GND      | -          | -     | GND*   | GND*    | GND*    | GND*    |
| I/O      | 307        | P112  | AE5    | AH8     | AM6     | AT40    |
| I/O      | 308        | P111  | AE6    | AJ7     | AN6     | AP40    |
| I/O      | 309        | P110  | AD7    | AL6     | AK8     | AR43    |
| I/O      | 310        | P109  | AE7    | AK7     | AL7     | AN39    |
| I/O      | 311        | -     | -      | AH9     | AJ9     | AP42    |
| I/O      | 312        | -     | -      | AJ8     | AN7     | AM38    |
| I/O      | 313        | -     | -      | -       | AL8     | AN43    |
| I/O      | 314        | -     | -      | -       | AK9     | AL37    |
| I/O      | 315        | -     | -      | -       | -       | -       |
| I/O      | 316        | -     | -      | -       | -       | -       |
| VCCIO    | -          | -     | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| GND      | -          | -     | -      | GND*    | GND*    | GND*    |
| I/O      | 317        | -     | -      | -       | AM8     | AK36    |
| I/O      | 318        | -     | -      | -       | AJ10    | AR41    |
| I/O      | 319        | -     | -      | -       | AL9     | AL41    |
| I/O      | 320        | -     | -      | -       | AM9     | AN41    |
| I/O      | 321        | P108  | AF6    | AK8     | AK10    | AK42    |
| I/O      | 322        | P107  | AC9    | AJ9     | AN9     | AM40    |
| I/O      | 323        | -     | AD8    | AH10    | AJ11    | AJ43    |
| I/O      | 324        | -     | AE8    | AL8     | AL10    | AJ37    |
| VCCIO    | -          | -     | -      | VCCIO*  | VCCIO*  | -       |
| GND      | -          | P106  | GND*   | GND*    | GND*    | GND*    |
| I/O      | 325        | P105  | AF7    | AK9     | AM10    | AL39    |
| I/O      | 326        | -     | -      | -       | -       | AH36    |
| VCCINT   | -          | P104  | AC10   | VCCINT* | VCCINT* | VCCINT* |
| I/O      | 327        | P103  | AD9    | AK10    | AL11    | AH42    |
| I/O      | 328        | P102  | AE9    | AL10    | AJ12    | AJ39    |
| VCCIO    | -          | P101  | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| I/O      | 329        | P100  | AD10   | AJ11    | AN11    | AK40    |
| I/O      | 330        | P99   | AF9    | AH12    | AK12    | AG41    |
| I/O      | 331        | -     | -      | -       | AL12    | AJ41    |
| I/O      | 332        | -     | -      | -       | AM12    | AH40    |
| GND      | -          | -     | -      | GND*    | GND*    | GND*    |
| VCCIO    | -          | -     | -      | VCCIO*  | VCCIO*  | -       |
| I/O      | 333        | -     | -      | -       | -       | -       |
| I/O      | 334        | -     | -      | -       | -       | -       |
| I/O      | 335        | -     | -      | -       | AJ13    | AG37    |
| I/O      | 336        | -     | -      | -       | AK13    | AG43    |
| I/O      | 337        | -     | -      | AK11    | AL13    | AG39    |
| I/O      | 338        | -     | -      | AJ12    | AM13    | AF38    |
| I/O      | 339        | -     | AC11   | AK12    | AN13    | AF42    |
| I/O      | 340        | -     | AE10   | AL12    | AJ14    | AD42    |
| I/O      | 341        | -     | AD11   | AH13    | AK14    | AF40    |
| I/O      | 342        | -     | AE11   | AJ13    | AL14    | AE37    |
| GND      | -          | P98   | GND*   | GND*    | GND*    | GND*    |
| VCCIO    | -          | -     | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| I/O      | 343        | -     | AF11   | AK13    | AM14    | AE39    |
| I/O      | 344        | -     | AC12   | AL13    | AN15    | AD40    |
| I/O      | 345        | P97   | AD12   | AK14    | AJ15    | AC43    |
| I/O      | 346        | P96   | AE12   | AH14    | AK15    | AD38    |
| I/O      | 347        | P95   | AF12   | AJ14    | AL15    | AC41    |
| I/O      | 348        | P94   | AD13   | AK15    | AM16    | AD36    |

**XC40150XV Pinout Table (Continued)**

| PAD NAME    | EPIC PAD # | HQ240 | BG352  | BG432   | BG560   | PG559   |
|-------------|------------|-------|--------|---------|---------|---------|
| I/O         | 349        | -     | -      | -       | -       | -       |
| I/O         | 350        | -     | -      | -       | -       | -       |
| I/O         | 351        | -     | -      | -       | -       | -       |
| I/O         | 352        | -     | -      | -       | -       | -       |
| GND         | -          | -     | -      | GND*    | GND*    | GND*    |
| VCCIO       | -          | -     | -      | VCCIO*  | VCCIO*  | -       |
| I/O         | 353        | -     | -      | -       | -       | -       |
| I/O         | 354        | -     | -      | -       | -       | -       |
| I/O         | 355        | -     | -      | -       | AL16    | AC39    |
| I/O         | 356        | -     | -      | -       | AJ16    | AC37    |
| I/O         | 357        | -     | -      | AJ15    | AK16    | AB40    |
| I/O         | 358        | -     | -      | AL15    | AN17    | AB42    |
| VCCINT      | -          | P93   | AC13   | VCCINT* | VCCINT* | VCCINT* |
| I/O         | 359        | -     | -      | -       | -       | AB38    |
| I/O         | 360        | P92   | AE13   | AL16    | AL17    | AA41    |
| GND         | -          | P91   | GND*   | GND*    | GND*    | GND*    |
| VCCIO       | -          | P90   | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| I/O (/INIT) | 361        | P89   | AF14   | AK16    | AJ17    | AA39    |
| I/O         | 362        | P88   | AE14   | AJ16    | AK17    | AA37    |
| I/O         | 363        | -     | -      | AL17    | AM18    | Y40     |
| I/O         | 364        | -     | -      | AK17    | AL18    | Y38     |
| I/O         | 365        | -     | -      | -       | AK18    | AA43    |
| I/O         | 366        | -     | -      | -       | AJ18    | W39     |
| I/O         | 367        | -     | -      | -       | -       | -       |
| I/O         | 368        | -     | -      | -       | -       | -       |
| VCCIO       | -          | -     | -      | VCCIO*  | VCCIO*  | -       |
| GND         | -          | -     | -      | GND*    | GND*    | GND*    |
| I/O         | 369        | -     | -      | -       | -       | -       |
| I/O         | 370        | -     | -      | -       | -       | -       |
| I/O         | 371        | -     | -      | -       | -       | -       |
| I/O         | 372        | -     | -      | -       | -       | -       |
| I/O         | 373        | P87   | AD14   | AJ17    | AN19    | V40     |
| I/O         | 374        | P86   | AF15   | AH17    | AL19    | Y36     |
| I/O         | 375        | P85   | AE15   | AK18    | AK19    | U41     |
| I/O         | 376        | P84   | AD15   | AL19    | AM20    | Y42     |
| I/O         | 377        | -     | AC15   | AJ18    | AJ19    | T40     |
| I/O         | 378        | -     | AF16   | AK19    | AL20    | W37     |
| VCCIO       | -          | -     | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| GND         | -          | P83   | GND*   | GND*    | GND*    | GND*    |
| I/O         | 379        | -     | AE16   | AH18    | AK20    | V38     |
| I/O         | 380        | -     | AE17   | AL20    | AN21    | U39     |
| I/O         | 381        | -     | AD16   | AJ19    | AL21    | V42     |
| I/O         | 382        | -     | AC16   | AK20    | AJ20    | R41     |
| I/O         | 383        | -     | -      | AH19    | AM22    | U43     |
| I/O         | 384        | -     | -      | AJ20    | AK21    | P40     |
| I/O         | 385        | -     | -      | -       | AN23    | T42     |
| I/O         | 386        | -     | -      | -       | AL22    | U37     |
| I/O         | 387        | -     | -      | -       | -       | -       |
| I/O         | 388        | -     | -      | -       | -       | -       |
| VCCIO       | -          | -     | -      | VCCIO*  | VCCIO*  | VCCIO*  |
| GND         | -          | -     | -      | GND*    | GND*    | GND*    |
| I/O         | 389        | -     | -      | -       | AJ21    | R39     |
| I/O         | 390        | -     | -      | -       | AM23    | N41     |
| I/O         | 391        | P82   | AF18   | AK21    | AK22    | R43     |
| I/O         | 392        | P81   | AE18   | AH20    | AM24    | M40     |
| VCCIO       | -          | P80   | VCCIO* | VCCIO*  | VCCIO*  | -       |

**XC40150XV Pinout Table (Continued)**

| PAD NAME   | EPIC PAD # | HQ240 | BG352  | BG432   | BG560   | PG559   |
|------------|------------|-------|--------|---------|---------|---------|
| I/O        | 393        | P79   | AD17   | AJ21    | AL23    | N39     |
| I/O        | 394        | P78   | AC17   | AL22    | AJ22    | T36     |
| VCCINT     | -          | P77   | AE19   | VCCINT* | VCCINT* | VCCINT* |
| I/O        | 395        | -     | -      | -       | -       | P42     |
| I/O        | 396        | P76   | AD18   | AJ22    | AK23    | R37     |
| GND        | -          | P75   | GND*   | GND*    | GND*    | GND*    |
| VCCIO      | -          | -     | -      | VCCIO*  | VCCIO*  | -       |
| I/O        | 397        | -     | AC18   | AK23    | AL24    | L41     |
| I/O        | 398        | -     | AF20   | AJ23    | AN26    | L43     |
| I/O        | 399        | P74   | AE20   | AH22    | AJ23    | K40     |
| I/O        | 400        | P73   | AD19   | AL24    | AL25    | K42     |
| I/O        | 401        | -     | -      | -       | AK24    | L39     |
| I/O        | 402        | -     | -      | -       | AM26    | J43     |
| I/O        | 403        | -     | -      | -       | AM27    | M38     |
| I/O        | 404        | -     | -      | -       | AJ24    | P36     |
| GND        | -          | -     | -      | GND*    | GND*    | GND*    |
| VCCIO      | -          | -     | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| I/O        | 405        | -     | -      | -       | -       | -       |
| I/O        | 406        | -     | -      | -       | -       | -       |
| I/O        | 407        | -     | -      | -       | AL26    | N37     |
| I/O        | 408        | -     | -      | -       | AK25    | H42     |
| I/O        | 409        | -     | -      | AK24    | AN28    | J41     |
| I/O        | 410        | -     | -      | AH23    | AN29    | G43     |
| I/O        | 411        | P72   | AC19   | AJ24    | AJ25    | H40     |
| I/O        | 412        | P71   | AF21   | AK25    | AL27    | F42     |
| I/O        | 413        | P70   | AE21   | AJ25    | AK26    | J39     |
| I/O        | 414        | P69   | AD20   | AH24    | AM29    | L37     |
| GND        | -          | -     | GND*   | GND*    | GND*    | GND*    |
| VCCIO      | -          | -     | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| I/O        | 415        | -     | AE23   | AL26    | AM30    | E41     |
| I/O        | 416        | -     | AE22   | AK26    | AJ26    | F40     |
| I/O        | 417        | -     | AD21   | AH25    | AL28    | C43     |
| I/O        | 418        | -     | AC21   | AL27    | AK27    | G39     |
| I/O        | 419        | -     | -      | AJ26    | AL29    | D42     |
| I/O        | 420        | -     | -      | AK27    | AN31    | H38     |
| I/O        | 421        | -     | -      | -       | -       | -       |
| I/O        | 422        | -     | -      | -       | -       | -       |
| I/O        | 423        | -     | -      | -       | -       | -       |
| I/O        | 424        | -     | -      | -       | -       | -       |
| GND        | -          | -     | -      | GND*    | GND*    | GND*    |
| VCCIO      | -          | -     | -      | VCCIO*  | VCCIO*  | -       |
| I/O        | 425        | -     | -      | -       | -       | -       |
| I/O        | 426        | -     | -      | -       | -       | -       |
| I/O (/LDC) | 427        | P68   | AE23   | AH26    | AJ27    | K36     |
| I/O        | 428        | P67   | AD22   | AL28    | AM31    | J37     |
| I/O        | 429        | P66   | AF24   | AJ27    | AK28    | B42     |
| I/O        | 430        | P65   | AC22   | AK28    | AL30    | D40     |
| I/O (HDC)  | 431        | P64   | AD23   | AH27    | AK29    | C41     |
| I/O, GCK3  | 432        | P63   | AE24   | AK29    | AJ28    | F38     |
| I (M2)     | -          | P62   | AC23   | AJ28    | AN32    | H36     |
| VCCIO      | -          | P61   | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| I (M0)     | -          | P60   | AD24   | AH28    | AJ29    | C39     |
| GND        | -          | P59   | GND*   | GND*    | GND*    | GND*    |
| O (M1)     | -          | P58   | AB23   | AH29    | AK30    | D38     |
| I/O, GCK2  | 433        | P57   | AC24   | AJ30    | AH29    | E37     |
| I/O        | 434        | P56   | AD25   | AH30    | AJ30    | B40     |

XC40150XV Pinout Table (Continued)

| PAD NAME   | EPIC PAD # | HQ240 | BG352  | BG432   | BG560   | PG559   |
|------------|------------|-------|--------|---------|---------|---------|
| VCCINT     | -          | P55   | AB24   | VCCINT* | VCCINT* | VCCINT* |
| I/O        | 435        | -     | -      | -       | -       | H34     |
| I/O        | 436        | P54   | AA23   | AH31    | AH30    | G35     |
| I/O        | 437        | -     | AC25   | AG29    | AL33    | F36     |
| I/O        | 438        | -     | AD26   | AG30    | AG29    | D36     |
| I/O        | 439        | -     | -      | -       | -       | -       |
| I/O        | 440        | -     | -      | -       | -       | -       |
| VCCIO      | -          | -     | -      | VCCIO*  | VCCIO*  | -       |
| GND        | -          | -     | -      | GND*    | GND*    | GND*    |
| I/O        | 441        | P53   | AC26   | AF28    | AJ31    | E35     |
| I/O        | 442        | P52   | Y23    | AG31    | AK32    | A41     |
| I/O        | 443        | -     | -      | AF29    | AG30    | G33     |
| I/O        | 444        | -     | -      | AF30    | AH31    | B38     |
| I/O        | 445        | -     | -      | -       | -       | -       |
| I/O        | 446        | -     | -      | -       | -       | -       |
| I/O        | 447        | -     | -      | -       | -       | -       |
| I/O        | 448        | -     | -      | -       | -       | -       |
| I/O        | 449        | -     | AA24   | AE28    | AF29    | D34     |
| I/O        | 450        | -     | AB25   | AF31    | AJ32    | E33     |
| VCCIO      | -          | -     | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| GND        | -          | -     | GND*   | GND*    | GND*    | GND*    |
| I/O        | 451        | P51   | AA25   | AE29    | AH32    | F32     |
| I/O        | 452        | P50   | Y24    | AE30    | AF30    | G31     |
| I/O        | 453        | P49   | Y25    | AD28    | AG31    | A37     |
| I/O        | 454        | P48   | AA26   | AD29    | AE29    | H30     |
| I/O        | 455        | -     | -      | AD30    | AH33    | B36     |
| I/O        | 456        | -     | -      | AD31    | AG33    | C33     |
| I/O        | 457        | -     | -      | -       | AE30    | C35     |
| I/O        | 458        | -     | -      | -       | AF31    | D32     |
| I/O        | 459        | -     | -      | -       | -       | -       |
| I/O        | 460        | -     | -      | -       | -       | -       |
| VCCIO      | -          | -     | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| GND        | -          | -     | -      | GND*    | GND*    | GND*    |
| I/O        | 461        | -     | -      | -       | AD29    | E31     |
| I/O        | 462        | -     | -      | -       | AF32    | G29     |
| I/O        | 463        | -     | -      | -       | AE31    | A35     |
| I/O        | 464        | -     | -      | -       | AD30    | H28     |
| I/O        | 465        | P47   | V23    | AC28    | AE32    | B34     |
| I/O        | 466        | P46   | W24    | AC29    | AC29    | C31     |
| I/O        | 467        | -     | W25    | AC30    | AE33    | A33     |
| I/O        | 468        | -     | Y26    | AB28    | AD31    | D30     |
| VCCIO      | -          | -     | -      | VCCIO*  | VCCIO*  | -       |
| GND        | -          | P45   | GND*   | GND*    | GND*    | GND*    |
| I/O, FCLK2 | 469        | P44   | U23    | AB29    | AC30    | E29     |
| I/O        | 470        | -     | -      | -       | -       | C29     |
| VCCINT     | -          | P43   | V24    | VCCINT* | VCCINT* | VCCINT* |
| I/O        | 471        | P42   | V25    | AB31    | AB29    | B30     |
| I/O        | 472        | P41   | U24    | AA29    | AC31    | G27     |
| VCCIO      | -          | P40   | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| I/O        | 473        | -     | -      | -       | AC33    | D28     |
| I/O        | 474        | -     | -      | -       | AB30    | A29     |
| I/O        | 475        | P39   | V26    | AA30    | AB31    | E27     |
| I/O        | 476        | P38   | T23    | Y28     | AA29    | F26     |
| GND        | -          | -     | -      | GND*    | GND*    | GND*    |
| VCCIO      | -          | -     | -      | VCCIO*  | VCCIO*  | -       |
| I/O        | 477        | -     | U25    | Y29     | AB32    | C27     |

XC40150XV Pinout Table (Continued)

| PAD NAME | EPIC PAD # | HQ240 | BG352  | BG432   | BG560   | PG559   |
|----------|------------|-------|--------|---------|---------|---------|
| I/O      | 478        | -     | T24    | Y30     | AA30    | B28     |
| I/O      | 479        | -     | -      | Y31     | AA31    | G25     |
| I/O      | 480        | -     | -      | W28     | AA32    | A27     |
| I/O      | 481        | -     | -      | -       | -       | -       |
| I/O      | 482        | -     | -      | -       | -       | -       |
| I/O      | 483        | -     | -      | -       | Y29     | D26     |
| I/O      | 484        | -     | -      | -       | AA33    | B26     |
| I/O      | 485        | -     | T25    | W29     | Y30     | E25     |
| I/O      | 486        | -     | T26    | W30     | Y31     | F24     |
| GND      | -          | P37   | GND*   | GND*    | GND*    | GND*    |
| VCCIO    | -          | -     | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| I/O      | 487        | -     | -      | -       | -       | -       |
| I/O      | 488        | -     | -      | -       | -       | -       |
| I/O      | 489        | -     | -      | -       | -       | -       |
| I/O      | 490        | -     | -      | -       | -       | -       |
| I/O      | 491        | -     | -      | W31     | Y32     | H24     |
| I/O      | 492        | -     | -      | V28     | W29     | B24     |
| I/O      | 493        | -     | R23    | V29     | W30     | D24     |
| I/O      | 494        | -     | R24    | V30     | W31     | A23     |
| I/O      | 495        | P36   | R25    | U29     | W33     | C23     |
| I/O      | 496        | P35   | R26    | U28     | V30     | E23     |
| GND      | -          | -     | -      | GND*    | GND*    | GND*    |
| VCCIO    | -          | -     | -      | VCCIO*  | VCCIO*  | -       |
| I/O      | 497        | P34   | P24    | U30     | V29     | G23     |
| I/O      | 498        | P33   | P23    | U31     | V31     | B22     |
| I/O      | 499        | -     | -      | -       | V32     | D22     |
| I/O      | 500        | -     | -      | -       | U33     | A21     |
| I/O      | 501        | -     | -      | -       | -       | -       |
| I/O      | 502        | -     | -      | -       | -       | -       |
| I/O      | 503        | P32   | P25    | T29     | U30     | F22     |
| I/O      | 504        | P31   | N26    | T30     | U29     | C21     |
| VCCIO    | -          | P30   | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| GND      | -          | P29   | GND*   | GND*    | GND*    | GND*    |
| I/O      | 505        | P28   | N25    | T31     | U31     | E21     |
| I/O      | 506        | -     | -      | -       | -       | D20     |
| VCCINT   | -          | P27   | N24    | VCCINT* | VCCINT* | VCCINT* |
| I/O      | 507        | -     | -      | -       | -       | -       |
| I/O      | 508        | -     | -      | -       | -       | -       |
| I/O      | 509        | -     | -      | -       | T32     | C17     |
| I/O      | 510        | -     | -      | -       | T30     | G21     |
| I/O      | 511        | P26   | M26    | R28     | T29     | F20     |
| I/O      | 512        | P25   | M25    | R30     | T31     | D18     |
| VCCIO    | -          | -     | -      | VCCIO*  | VCCIO*  | -       |
| GND      | -          | -     | -      | GND*    | GND*    | GND*    |
| I/O      | 513        | P24   | M24    | R31     | R33     | E19     |
| I/O      | 514        | P23   | M23    | P29     | R31     | B20     |
| I/O      | 515        | -     | L26    | P28     | R30     | H20     |
| I/O      | 516        | -     | L25    | P30     | R29     | B18     |
| I/O      | 517        | -     | -      | N30     | P32     | C15     |
| I/O      | 518        | -     | -      | N29     | P31     | D16     |
| I/O      | 519        | -     | -      | -       | -       | -       |
| I/O      | 520        | -     | -      | -       | -       | -       |
| I/O      | 521        | -     | -      | -       | -       | -       |
| I/O      | 522        | -     | -      | -       | -       | -       |
| VCCIO    | -          | -     | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| GND      | -          | P22   | GND*   | GND*    | GND*    | GND*    |

**XC40150XV Pinout Table (Continued)**

| PAD NAME   | EPIC PAD # | HQ240 | BG352  | BG432   | BG560   | PG559   |
|------------|------------|-------|--------|---------|---------|---------|
| I/O        | 523        | -     | K25    | N28     | N33     | G19     |
| I/O        | 524        | -     | L24    | N31     | P30     | A17     |
| VCCINT     | -          | -     | -      | -       | -       | -       |
| I/O        | 525        | -     | L23    | M31     | P29     | F18     |
| I/O        | 526        | -     | J26    | M29     | M32     | E17     |
| I/O        | 527        | -     | -      | -       | -       | -       |
| I/O        | 528        | -     | -      | -       | -       | -       |
| I/O        | 529        | -     | -      | -       | N31     | B16     |
| I/O        | 530        | -     | -      | -       | N30     | C13     |
| I/O        | 531        | -     | -      | M28     | L33     | A15     |
| I/O        | 532        | -     | -      | M30     | N29     | D14     |
| VCCIO      | -          | -     | -      | VCCIO*  | VCCIO*  | -       |
| GND        | -          | -     | -      | GND*    | GND*    | GND*    |
| I/O        | 533        | P21   | J25    | L30     | M31     | E15     |
| I/O        | 534        | P20   | K24    | L29     | L32     | G17     |
| I/O        | 535        | -     | -      | -       | M30     | B14     |
| I/O        | 536        | -     | -      | -       | L31     | C11     |
| VCCIO      | -          | P19   | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| I/O        | 537        | P18   | K23    | K31     | M29     | D12     |
| I/O (TMS)  | 538        | P17   | H25    | K30     | J33     | A11     |
| VCCINT     | -          | P16   | J24    | VCCINT* | VCCINT* | VCCINT* |
| I/O        | 539        | -     | -      | -       | -       | E13     |
| I/O, FCLK1 | 540        | P15   | J23    | K28     | L30     | C9      |
| GND        | -          | P14   | GND*   | GND*    | GND*    | GND*    |
| VCCIO      | -          | -     | -      | VCCIO*  | VCCIO*  | -       |
| I/O        | 541        | -     | G26    | J30     | K31     | H16     |
| I/O        | 542        | -     | G25    | H31     | L29     | B10     |
| I/O        | 543        | P13   | H24    | J29     | H33     | G15     |
| I/O        | 544        | P12   | H23    | J28     | K30     | A9      |
| I/O        | 545        | -     | -      | -       | J31     | D10     |
| I/O        | 546        | -     | -      | -       | H32     | B8      |
| I/O        | 547        | -     | -      | -       | K29     | E11     |
| I/O        | 548        | -     | -      | -       | H31     | G13     |
| GND        | -          | -     | -      | GND*    | GND*    | GND*    |
| VCCIO      | -          | -     | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| I/O        | 549        | P11   | F26    | -       | J30     | F12     |
| I/O        | 550        | P10   | F25    | -       | G32     | H14     |
| I/O        | 551        | P9    | G24    | H30     | F33     | G11     |
| I/O        | 552        | P8    | D26    | G30     | J29     | A7      |
| I/O        | 553        | -     | -      | H29     | G31     | E9      |
| I/O        | 554        | -     | -      | H28     | H30     | B6      |
| I/O        | 555        | -     | -      | F31     | E33     | D8      |
| I/O        | 556        | -     | -      | F30     | E32     | F8      |
| I/O        | 557        | -     | -      | -       | -       | -       |
| I/O        | 558        | -     | -      | -       | -       | -       |
| GND        | -          | -     | GND*   | GND*    | GND*    | GND*    |
| VCCIO      | -          | -     | VCCIO* | VCCIO*  | VCCIO*  | VCCIO*  |
| I/O        | 559        | -     | E25    | G29     | H29     | G9      |
| I/O        | 560        | -     | F24    | G28     | F31     | H10     |
| I/O        | 561        | -     | -      | -       | -       | -       |
| I/O        | 562        | -     | -      | -       | -       | -       |
| I/O        | 563        | -     | F23    | E31     | G30     | B4      |
| I/O        | 564        | -     | D25    | E30     | D32     | E7      |
| I/O        | 565        | -     | -      | F29     | E31     | C5      |
| I/O        | 566        | -     | -      | F28     | G29     | D6      |
| I/O        | 567        | -     | -      | -       | -       | -       |

**XC40150XV Pinout Table (Continued)**

| PAD NAME        | EPIC PAD # | HQ240 | BG352 | BG432   | BG560   | PG559   |
|-----------------|------------|-------|-------|---------|---------|---------|
| I/O             | 568        | -     | -     | -       | -       | -       |
| GND             | -          | -     | -     | GND*    | GND*    | GND*    |
| VCCIO           | -          | -     | -     | VCCIO*  | VCCIO*  | -       |
| I/O             | 569        | -     | -     | -       | -       | -       |
| I/O             | 570        | -     | -     | -       | -       | -       |
| I/O (TCK)       | 571        | P7    | E24   | D31     | C33     | D4      |
| I/O (TDI)       | 572        | P6    | C26   | D30     | F30     | H8      |
| I/O             | 573        | P5    | E23   | E29     | D31     | A3      |
| I/O             | 574        | -     | -     | -       | -       | F6      |
| VCCINT          | -          | P4    | D24   | VCCINT* | VCCINT* | VCCINT* |
| I/O (A17)       | 575        | P3    | C25   | C30     | F29     | C3      |
| I/O, GCK1 (A16) | 576        | P2    | D23   | D29     | B33     | C1      |
| GND             | -          | P1    | GND*  | GND*    | GND*    | GND*    |
|                 |            |       |       |         |         |         |
| VCCIO           | -          | -     | A10   | A1      | A4      | A13     |
| VCCIO           | -          | -     | A17   | A11     | A10     | A31     |
| VCCIO           | -          | -     | AC14  | A21     | A16     | A43     |
| VCCIO           | -          | -     | AC20  | A31     | A22     | B2      |
| VCCIO           | -          | -     | AC8   | D11     | A26     | C7      |
| VCCIO           | -          | -     | AF10  | D21     | A30     | C19     |
| VCCIO           | -          | -     | AF17  | L1      | B2      | C25     |
| VCCIO           | -          | -     | D7    | L4      | B13     | C37     |
| VCCIO           | -          | -     | D13   | L28     | B19     | F14     |
| VCCIO           | -          | -     | D19   | L31     | B32     | F30     |
| VCCIO           | -          | -     | G23   | AA1     | C3      | G3      |
| VCCIO           | -          | -     | H4    | AA4     | C31     | G7      |
| VCCIO           | -          | -     | K1    | AA28    | C32     | G37     |
| VCCIO           | -          | -     | K26   | AA31    | D1      | G41     |
| VCCIO           | -          | -     | N23   | AH11    | D33     | N1      |
| VCCIO           | -          | -     | P4    | AH21    | E5      | N43     |
| VCCIO           | -          | -     | U1    | AL1     | H1      | P6      |
| VCCIO           | -          | -     | U26   | AL11    | K33     | P38     |
| VCCIO           | -          | -     | W23   | AL21    | M1      | W3      |
| VCCIO           | -          | -     | Y4    | AL31    | N32     | W41     |
| VCCIO           | -          | -     | B2    | C3      | R2      | AE3     |
| VCCIO           | -          | -     | B25   | C29     | T33     | AE41    |
| VCCIO           | -          | -     | AE2   | AJ3     | V1      | AK6     |
| VCCIO           | -          | -     | AE25  | AJ29    | W32     | AK38    |
| VCCIO           | -          | -     | -     | -       | AA2     | AL1     |
| VCCIO           | -          | -     | -     | -       | AB33    | AL43    |
| VCCIO           | -          | -     | -     | -       | AD1     | AU3     |
| VCCIO           | -          | -     | -     | -       | AF33    | AU7     |
| VCCIO           | -          | -     | -     | -       | AK1     | AU37    |
| VCCIO           | -          | -     | -     | -       | AK4     | AU41    |
| VCCIO           | -          | -     | -     | -       | AK33    | AV14    |
| VCCIO           | -          | -     | -     | -       | AL2     | AV30    |
| VCCIO           | -          | -     | -     | -       | AL3     | BA7     |
| VCCIO           | -          | -     | -     | -       | AL31    | BA19    |
| VCCIO           | -          | -     | -     | -       | AM2     | BA25    |
| VCCIO           | -          | -     | -     | -       | AM15    | BA37    |
| VCCIO           | -          | -     | -     | -       | AM21    | BC1     |
| VCCIO           | -          | -     | -     | -       | AM32    | BC13    |
| VCCIO           | -          | -     | -     | -       | AN4     | BC31    |
| VCCIO           | -          | -     | -     | -       | AN8     | BC43    |
| VCCIO           | -          | -     | -     | -       | AN12    | -       |
| VCCIO           | -          | -     | -     | -       | AN18    | -       |

XC40150XV Pinout Table (Continued)

| PAD NAME | EPIC PAD # | HQ240 | BG352 | BG432 | BG560 | PG559 |
|----------|------------|-------|-------|-------|-------|-------|
| VCCIO    | -          | -     | -     | -     | AN24  | -     |
| VCCIO    | -          | -     | -     | -     | AN30  | -     |
|          |            |       |       |       |       |       |
| VCCINT   | -          | -     | -     | A10   | E12   | H12   |
| VCCINT   | -          | -     | -     | AB2   | AD2   | H18   |
| VCCINT   | -          | -     | -     | AB30  | AD32  | H26   |
| VCCINT   | -          | -     | -     | AG28  | AK31  | H32   |
| VCCINT   | -          | -     | -     | AH15  | AM17  | M8    |
| VCCINT   | -          | -     | -     | AH5   | AK5   | M36   |
| VCCINT   | -          | -     | -     | AJ10  | AK11  | V8    |
| VCCINT   | -          | -     | -     | AK22  | AN25  | V36   |
| VCCINT   | -          | -     | -     | B23   | C24   | AF8   |
| VCCINT   | -          | -     | -     | B4    | D6    | AF36  |
| VCCINT   | -          | -     | -     | C16   | C17   | AM8   |
| VCCINT   | -          | -     | -     | E28   | E30   | AM36  |
| VCCINT   | -          | -     | -     | K29   | K32   | AT12  |
| VCCINT   | -          | -     | -     | K3    | J1    | AT18  |
| VCCINT   | -          | -     | -     | R2    | T3    | AT26  |
| VCCINT   | -          | -     | -     | R29   | U32   | AT32  |
|          |            |       |       |       |       |       |
| GND      | -          | -     | A1    | A2    | A7    | A5    |
| GND      | -          | -     | A14   | A3    | A12   | A19   |
| GND      | -          | -     | A19   | A7    | A14   | A25   |
| GND      | -          | -     | A2    | A9    | A18   | A39   |
| GND      | -          | -     | A22   | A14   | A20   | B12   |
| GND      | -          | -     | A25   | A18   | A24   | B32   |
| GND      | -          | -     | A26   | A23   | A29   | E1    |
| GND      | -          | -     | A5    | A25   | A32   | E5    |
| GND      | -          | -     | A8    | A29   | B1    | E39   |
| GND      | -          | -     | AB1   | A30   | B6    | E43   |
| GND      | -          | -     | AB26  | B1    | B9    | F10   |
| GND      | -          | -     | AE1   | B2    | B15   | F16   |
| GND      | -          | -     | AE26  | B30   | B23   | F28   |
| GND      | -          | -     | AF1   | B31   | B27   | F34   |
| GND      | -          | -     | AF13  | C1    | B31   | H22   |
| GND      | -          | -     | AF19  | C31   | C2    | K6    |
| GND      | -          | -     | AF2   | D16   | E1    | K38   |
| GND      | -          | -     | AF22  | G1    | F32   | M2    |
| GND      | -          | -     | AF25  | G31   | G2    | M42   |
| GND      | -          | -     | AF26  | J1    | G33   | T6    |
| GND      | -          | -     | AF5   | J31   | J32   | T38   |
| GND      | -          | -     | AF8   | P1    | K1    | W1    |
| GND      | -          | -     | B1    | P31   | L2    | W43   |
| GND      | -          | -     | B26   | T4    | M33   | AB8   |

XC40150XV Pinout Table (Continued)

| PAD NAME | EPIC PAD # | HQ240 | BG352 | BG432 | BG560 | PG559 |
|----------|------------|-------|-------|-------|-------|-------|
| GND      | -          | -     | E1    | T28   | P1    | AB36  |
| GND      | -          | -     | E26   | V1    | P33   | AE1   |
| GND      | -          | -     | H1    | V31   | R32   | AE43  |
| GND      | -          | -     | H26   | AC1   | T1    | AH6   |
| GND      | -          | -     | N1    | AC31  | V33   | AH38  |
| GND      | -          | -     | P26   | AE1   | W2    | AM2   |
| GND      | -          | -     | W1    | AE31  | Y1    | AM42  |
| GND      | -          | -     | W26   | AH16  | Y33   | AP6   |
| GND      | -          | -     | -     | AJ1   | AB1   | AP38  |
| GND      | -          | -     | -     | AJ31  | AC32  | AT22  |
| GND      | -          | -     | -     | AK1   | AD33  | AV10  |
| GND      | -          | -     | -     | AK2   | AE2   | AV16  |
| GND      | -          | -     | -     | AK30  | AG1   | AV28  |
| GND      | -          | -     | -     | AK31  | AG32  | AV34  |
| GND      | -          | -     | -     | AL2   | AH2   | AW1   |
| GND      | -          | -     | -     | AL3   | AJ33  | AW5   |
| GND      | -          | -     | -     | AL7   | AL32  | AW39  |
| GND      | -          | -     | -     | AL9   | AM3   | AW43  |
| GND      | -          | -     | -     | AL14  | AM11  | BB12  |
| GND      | -          | -     | -     | AL18  | AM19  | BB32  |
| GND      | -          | -     | -     | AL23  | AM25  | BC5   |
| GND      | -          | -     | -     | AL25  | AM28  | BC19  |
| GND      | -          | -     | -     | AL29  | AM33  | BC25  |
| GND      | -          | -     | -     | AL30  | AM7   | BC39  |
| GND      | -          | -     | -     | -     | AN2   | -     |
| GND      | -          | -     | -     | -     | AN5   | -     |
| GND      | -          | -     | -     | -     | AN10  | -     |
| GND      | -          | -     | -     | -     | AN14  | -     |
| GND      | -          | -     | -     | -     | AN16  | -     |
| GND      | -          | -     | -     | -     | AN20  | -     |
| GND      | -          | -     | -     | -     | AN22  | -     |
| GND      | -          | -     | -     | -     | AN27  | -     |
|          |            |       |       |       |       |       |
| NC       | -          | P204  | C8    | C8    | A1    | -     |
| NC       | -          | P219  | -     | -     | A33   | -     |
| NC       | -          | -     | -     | -     | AC2   | -     |
| NC       | -          | -     | -     | -     | AN1   | -     |
| NC       | -          | -     | -     | -     | AN33  | -     |

12/21/98

\*Note: Pads labelled GND\*, VCCINT\*, or VCCIO\* are internally bonded to the corresponding power plane within the associated package. They have no direct connection to any specific package pin.

**XC40200XV Pinout Table**

| Pad Name        | EPIC Pad # | BG432  | BG560  | PG559   |
|-----------------|------------|--------|--------|---------|
| VCCIO           | -          | VCCIO* | VCCIO* | VCCIO*  |
| I/O, GCK8 (A15) | 1          | D28    | E29    | E3      |
| I/O (A)14)      | 2          | C28    | D30    | F4      |
| I/O             | 3          | B29    | E28    | J7      |
| I/O             | 4          | D27    | D29    | D2      |
| I/O             | 5          | B28    | C30    | K8      |
| I/O             | 6          | C27    | D28    | H6      |
| I/O             | 7          | -      | -      | -       |
| I/O             | 8          | -      | -      | -       |
| I/O             | 9          | -      | -      | -       |
| I/O             | 10         | -      | -      | -       |
| VCCIO           | -          | VCCIO* | VCCIO* | -       |
| GND             | -          | GND*   | GND*   | GND*    |
| I/O             | 11         | -      | -      | -       |
| I/O             | 12         | -      | -      | -       |
| I/O             | 13         | -      | -      | -       |
| I/O             | 14         | -      | -      | -       |
| I/O             | 15         | D26    | A31    | G5      |
| I/O             | 16         | A28    | E27    | F2      |
| I/O             | 17         | B27    | C29    | H4      |
| I/O             | 18         | C26    | B30    | G1      |
| I/O             | 19         | D25    | D27    | J5      |
| I/O             | 20         | A27    | C28    | L7      |
| VCCIO           | -          | VCCIO* | VCCIO* | VCCIO*  |
| GND             | -          | GND*   | GND*   | GND*    |
| I/O (A13)       | 21         | B26    | E26    | J3      |
| I/O (A12)       | 22         | D24    | B29    | K4      |
| I/O             | 23         | C25    | B28    | H2      |
| I/O             | 24         | A26    | D26    | L5      |
| I/O             | 25         | B25    | C27    | J1      |
| I/O             | 26         | D23    | E25    | M6      |
| I/O             | 27         | -      | A28    | K2      |
| I/O             | 28         | -      | A27    | N7      |
| I/O             | 29         | -      | -      | -       |
| I/O             | 30         | -      | -      | -       |
| VCCIO           | -          | VCCIO* | VCCIO* | VCCIO*  |
| GND             | -          | GND*   | GND*   | GND*    |
| I/O             | 31         | -      | -      | -       |
| I/O             | 32         | -      | -      | -       |
| I/O             | 33         | -      | -      | -       |
| I/O             | 34         | -      | -      | -       |
| I/O             | 35         | -      | D25    | P8      |
| I/O             | 36         | -      | C26    | L3      |
| I/O             | 37         | -      | E24    | L1      |
| I/O             | 38         | -      | B26    | M4      |
| I/O             | 39         | C24    | C25    | P2      |
| I/O             | 40         | B24    | D24    | N5      |
| I/O             | 41         | C23    | B25    | R1      |
| I/O             | 42         | D22    | E23    | N3      |
| VCCIO           | -          | VCCIO* | VCCIO* | -       |
| GND             | -          | GND*   | GND*   | GND*    |
| I/O             | 43         | A24    | A25    | R7      |
| I/O             | 44         | -      | -      | P4      |
| VCCINT          | -          | B23    | C24    | VCCINT* |
| I/O             | 45         | C22    | D23    | T2      |

**XC40200XV Pinout Table (Continued)**

| Pad Name  | EPIC Pad # | BG432  | BG560  | PG559   |
|-----------|------------|--------|--------|---------|
| I/O       | 46         | B22    | B24    | T8      |
| VCCIO     | -          | VCCIO* | VCCIO* | VCCIO*  |
| I/O       | 47         | A22    | E22    | R5      |
| I/O       | 48         | C21    | C23    | R3      |
| I/O       | 49         | -      | A23    | U1      |
| I/O       | 50         | -      | D22    | T4      |
| I/O       | 51         | -      | -      | -       |
| I/O       | 52         | -      | -      | -       |
| I/O       | 53         | -      | -      | -       |
| I/O       | 54         | -      | -      | -       |
| GND       | -          | GND*   | GND*   | GND*    |
| VCCIO     | -          | VCCIO* | VCCIO* | -       |
| I/O       | 55         | -      | -      | -       |
| I/O       | 56         | -      | -      | -       |
| I/O       | 57         | -      | C22    | U5      |
| I/O       | 58         | -      | E21    | V2      |
| I/O       | 59         | D20    | B22    | U7      |
| I/O       | 60         | B21    | D21    | U3      |
| I/O       | 61         | C20    | C21    | Y2      |
| I/O       | 62         | B20    | B21    | V4      |
| I/O       | 63         | A20    | E20    | V6      |
| I/O       | 64         | D19    | A21    | W5      |
| GND       | -          | GND*   | GND*   | GND*    |
| VCCIO     | -          | VCCIO* | VCCIO* | VCCIO*  |
| I/O (A11) | 65         | C19    | D20    | W7      |
| I/O (A10) | 66         | B19    | C20    | Y4      |
| I/O       | 67         | A19    | B20    | AA1     |
| I/O       | 68         | B18    | E19    | Y6      |
| I/O (A18) | 69         | D18    | D19    | AB2     |
| I/O (A19) | 70         | C18    | C19    | Y8      |
| I/O       | 71         | -      | -      | -       |
| I/O       | 72         | -      | -      | -       |
| I/O       | 73         | -      | -      | -       |
| I/O       | 74         | -      | -      | -       |
| GND       | -          | GND*   | GND*   | GND*    |
| VCCIO     | -          | VCCIO* | VCCIO* | -       |
| I/O       | 75         | -      | -      | -       |
| I/O       | 76         | -      | -      | -       |
| I/O       | 77         | -      | -      | -       |
| I/O       | 78         | -      | -      | -       |
| I/O       | 79         | -      | A19    | AA3     |
| I/O       | 80         | -      | D18    | AA5     |
| I/O       | 81         | B17    | E18    | AC1     |
| I/O       | 82         | C17    | C18    | AA7     |
| I/O (A9)  | 83         | A17    | B18    | AB4     |
| I/O (A8)  | 84         | D17    | A17    | AB6     |
| VCCIO     | -          | VCCIO* | VCCIO* | VCCIO*  |
| GND       | -          | GND*   | GND*   | GND*    |
| I/O (A7)  | 85         | A16    | D17    | AC3     |
| I/O (A6)  | 86         | B16    | E17    | AC5     |
| VCCINT    | -          | C16    | C17    | VCCINT* |
| I/O       | 87         | -      | -      | AD2     |
| I/O       | 88         | A15    | B17    | AC7     |
| I/O       | 89         | -      | B16    | AF2     |
| I/O       | 90         | -      | D16    | AD4     |
| I/O       | 91         | -      | -      | -       |

XC40200XV Pinout Table (Continued)

| Pad Name  | EPIC Pad # | BG432  | BG560  | PG559   |
|-----------|------------|--------|--------|---------|
| I/O       | 92         | -      | -      | -       |
| I/O       | 93         | -      | -      | -       |
| I/O       | 94         | -      | -      | -       |
| VCCIO     | -          | VCCIO* | VCCIO* | -       |
| GND       | -          | GND*   | GND*   | GND*    |
| I/O       | 95         | -      | -      | -       |
| I/O       | 96         | -      | -      | -       |
| I/O       | 97         | -      | -      | -       |
| I/O       | 98         | -      | -      | -       |
| I/O (A20) | 99         | B15    | E16    | AD6     |
| I/O (A21) | 100        | C15    | C16    | AE5     |
| I/O       | 101        | D15    | A15    | AF4     |
| I/O       | 102        | B14    | C15    | AG1     |
| I/O (A5)  | 103        | A13    | D15    | AD8     |
| I/O (A4)  | 104        | C14    | E15    | AG3     |
| VCCIO     | -          | VCCIO* | VCCIO* | VCCIO*  |
| GND       | -          | GND*   | GND*   | GND*    |
| I/O       | 105        | B13    | B14    | AH4     |
| I/O       | 106        | D14    | C14    | AE7     |
| I/O       | 107        | A12    | D14    | AH2     |
| I/O       | 108        | C13    | A13    | AF6     |
| I/O       | 109        | B12    | E14    | AJ1     |
| I/O       | 110        | D13    | C13    | AG5     |
| I/O       | 111        | -      | D13    | AJ3     |
| I/O       | 112        | -      | B12    | AK4     |
| I/O       | 113        | -      | -      | -       |
| I/O       | 114        | -      | -      | -       |
| VCCIO     | -          | VCCIO* | VCCIO* | -       |
| GND       | -          | GND*   | GND*   | GND*    |
| I/O       | 115        | -      | -      | -       |
| I/O       | 116        | -      | -      | -       |
| I/O       | 117        | -      | -      | -       |
| I/O       | 118        | -      | -      | -       |
| I/O       | 119        | -      | C12    | AG7     |
| I/O       | 120        | -      | E13    | AK2     |
| I/O       | 121        | C12    | A11    | AJ5     |
| I/O       | 122        | B11    | D12    | AL3     |
| VCCIO     | -          | VCCIO* | VCCIO* | VCCIO*  |
| I/O       | 123        | D12    | B11    | AM4     |
| I/O       | 124        | C11    | C11    | AN1     |
| VCCINT    | -          | A10    | E12    | VCCINT* |
| I/O       | 125        | -      | -      | AL5     |
| VCCINT    | -          | -      | -      | -       |
| I/O       | 126        | B10    | B10    | AH8     |
| GND       | -          | GND*   | GND*   | GND*    |
| VCCIO     | -          | VCCIO  | VCCIO* | -       |
| I/O       | 127        | C10    | D11    | AJ7     |
| I/O       | 128        | B9     | C10    | AP2     |
| I/O       | 129        | C9     | A9     | AN3     |
| I/O       | 130        | D10    | E11    | AP4     |
| I/O       | 131        | -      | C9     | AR1     |
| I/O       | 132        | -      | D10    | AN5     |
| I/O       | 133        | -      | A8     | AM6     |
| I/O       | 134        | -      | B8     | AK8     |
| I/O       | 135        | -      | -      | -       |
| I/O       | 136        | -      | -      | -       |

XC40200XV Pinout Table (Continued)

| Pad Name         | EPIC Pad # | BG432  | BG560  | PG559  |
|------------------|------------|--------|--------|--------|
| I/O              | 137        | -      | -      | -      |
| I/O              | 138        | -      | -      | -      |
| GND              | -          | GND*   | GND*   | GND*   |
| VCCIO            | -          | VCCIO* | VCCIO* | VCCIO* |
| I/O              | 139        | -      | -      | -      |
| I/O              | 140        | -      | -      | -      |
| I/O              | 141        | -      | E10    | AL7    |
| I/O              | 142        | -      | C8     | AT2    |
| I/O              | 143        | A8     | D9     | AR3    |
| I/O              | 144        | B8     | B7     | AU1    |
| I/O              | 145        | D9     | A6     | AT4    |
| I/O              | 146        | B7     | E9     | AV2    |
| I/O              | 147        | C7     | C7     | AR5    |
| I/O              | 148        | D8     | D8     | AN7    |
| GND              | -          | GND*   | GND*   | GND*   |
| VCCIO            | -          | VCCIO* | VCCIO* | VCCIO* |
| I/O              | 149        | A6     | A5     | AW3    |
| I/O              | 150        | B6     | B5     | AV4    |
| I/O (A3)         | 151        | D7     | E8     | BA1    |
| I/O, (CS1, A2)   | 152        | A5     | C6     | AU5    |
| I/O              | 153        | C6     | D7     | AY2    |
| I/O              | 154        | B5     | B4     | AT6    |
| I/O              | 155        | -      | -      | -      |
| I/O              | 156        | -      | -      | -      |
| I/O              | 157        | -      | -      | -      |
| I/O              | 158        | -      | -      | -      |
| GND              | -          | GND*   | GND*   | GND*   |
| VCCIO            | -          | VCCIO* | VCCIO* | -      |
| I/O              | 159        | -      | -      | -      |
| I/O              | 160        | -      | -      | -      |
| I/O              | 161        | -      | -      | -      |
| I/O              | 162        | -      | -      | -      |
| I/O              | 163        | D6     | C5     | AP8    |
| I/O              | 164        | A4     | E7     | AR7    |
| I/O              | 165        | C5     | A3     | AY4    |
| I/O              | 166        | -      | -      | BB2    |
| I/O, GCK7 (A1)   | 167        | D5     | A2     | AV6    |
| I/O (A0, /WS)    | 168        | B3     | D5     | AT8    |
| GND              | -          | GND*   | GND*   | GND*   |
| O, TDO           | -          | C4     | E6     | BA3    |
| VCCIO            | -          | VCCIO* | VCCIO* | VCCIO* |
| CCLK             | -          | D4     | C4     | BA5    |
| I/O, GCK6 (DOUT) | 169        | D3     | D4     | BB4    |
| I/O (D0, DIN)    | 170        | C2     | E4     | AY6    |
| I/O              | 171        | D2     | F5     | BC3    |
| I/O              | 172        | E4     | B3     | AW7    |
| I/O              | 173        | D1     | D3     | BB6    |
| I/O              | 174        | E3     | F4     | AU9    |
| I/O              | 176        | -      | -      | -      |
| I/O              | 177        | -      | -      | -      |
| I/O              | 178        | -      | -      | -      |
| VCCIO            | -          | VCCIO* | VCCIO* | -      |
| GND              | -          | GND*   | GND*   | GND*   |
| I/O              | 179        | -      | -      | -      |
| I/O              | 180        | -      | -      | -      |
| I/O              | 181        | E2     | C1     | AT10   |

**XC40200XV Pinout Table (Continued)**

| Pad Name               | EPIC Pad # | BG432  | BG560  | PG559   |
|------------------------|------------|--------|--------|---------|
| I/O                    | 182        | F4     | G5     | AV8     |
| I/O                    | 183        | E1     | E3     | AY8     |
| I/O                    | 184        | F3     | D2     | BC7     |
| I/O                    | 185        | -      | -      | -       |
| I/O                    | 186        | -      | -      | -       |
| I/O (/RCK, RDY_ /BUSY) | 187        | F2     | G4     | AW9     |
| I/O (D1)               | 188        | G4     | F3     | BA9     |
| VCCIO                  | -          | VCCIO* | VCCIO* | VCCIO*  |
| GND                    | -          | GND*   | GND*   | GND*    |
| I/O                    | 189        | -      | -      | -       |
| I/O                    | 190        | -      | -      | -       |
| I/O                    | 191        | -      | H5     | AU11    |
| I/O                    | 192        | -      | E2     | AY10    |
| I/O                    | 193        | F1     | F2     | BB8     |
| I/O                    | 194        | G3     | H4     | AW11    |
| I/O                    | 195        | G2     | G3     | BC9     |
| I/O                    | 196        | H4     | J5     | AV12    |
| I/O                    | 197        | H3     | F1     | AU13    |
| I/O                    | 198        | H2     | G1     | AT14    |
| VCCIO                  | -          | VCCIO* | VCCIO* | VCCIO*  |
| GND                    | -          | GND*   | GND*   | GND*    |
| I/O                    | 199        | -      | -      | -       |
| I/O                    | 200        | -      | -      | -       |
| I/O                    | 201        | -      | -      | -       |
| I/O                    | 202        | -      | -      | -       |
| I/O                    | 203        | -      | J4     | BA11    |
| I/O                    | 204        | -      | H3     | AY12    |
| I/O                    | 205        | -      | K5     | BB10    |
| I/O                    | 206        | -      | H2     | AW13    |
| I/O                    | 207        | H1     | J3     | BC11    |
| I/O                    | 208        | J4     | K4     | AU15    |
| I/O                    | 209        | J3     | J2     | BB14    |
| I/O                    | 210        | J2     | L5     | AT16    |
| VCCIO                  | -          | VCCIO* | VCCIO* | -       |
| GND                    | -          | GND*   | GND*   | GND*    |
| I/O                    | 211        | K4     | K3     | BA13    |
| I/O                    | 212        | -      | -      | AY14    |
| VCCINT                 | -          | K3     | J1     | VCCINT* |
| I/O, FCLK4             | 213        | K2     | L4     | BC15    |
| I/O                    | 214        | K1     | K2     | AW15    |
| VCCIO                  | -          | VCCIO* | VCCIO* | VCCIO*  |
| I/O                    | 215        | -      | -      | -       |
| I/O                    | 216        | -      | -      | -       |
| I/O                    | 217        | -      | -      | -       |
| I/O                    | 218        | -      | -      | -       |
| I/O                    | 219        | -      | M5     | BA15    |
| I/O                    | 220        | -      | L3     | AU17    |
| I/O                    | 221        | L3     | L1     | BB16    |
| I/O (D2)               | 222        | L2     | M4     | AY16    |
| GND                    | -          | GND*   | GND*   | GND*    |
| VCCIO                  | -          | VCCIO* | VCCIO* | -       |
| I/O                    | 223        | M4     | M3     | AW17    |
| I/O                    | 224        | M3     | N5     | AV18    |
| I/O                    | 225        | -      | M2     | BA17    |
| I/O                    | 226        | -      | N4     | BC17    |
| I/O                    | 227        | -      | -      | -       |

**XC40200XV Pinout Table (Continued)**

| Pad Name  | EPIC Pad # | BG432  | BG560  | PG559   |
|-----------|------------|--------|--------|---------|
| I/O       | 228        | -      | -      | -       |
| I/O       | 229        | M2     | N3     | AU19    |
| I/O       | 230        | M1     | N2     | BB18    |
| I/O       | 231        | N4     | P5     | AY18    |
| I/O       | 232        | N3     | N1     | AW19    |
| GND       | -          | GND*   | GND*   | GND*    |
| VCCIO     | -          | VCCIO* | VCCIO* | VCCIO*  |
| I/O       | 233        | -      | -      | -       |
| I/O       | 234        | -      | -      | -       |
| I/O       | 235        | -      | -      | -       |
| I/O       | 236        | -      | -      | -       |
| I/O       | 237        | N2     | P4     | AV20    |
| I/O       | 238        | N1     | P3     | AT20    |
| I/O       | 239        | P4     | P2     | BB20    |
| I/O       | 240        | P3     | R5     | AY20    |
| I/O       | 241        | P2     | R4     | BC21    |
| I/O       | 242        | R3     | R3     | BA21    |
| GND       | -          | GND*   | GND*   | GND*    |
| VCCIO     | -          | VCCIO* | VCCIO* | -       |
| I/O       | 243        | R4     | R1     | AW21    |
| I/O       | 244        | -      | T4     | AU21    |
| I/O       | 245        | -      | T5     | BB22    |
| I/O       | 246        | -      | -      | AY22    |
| I/O       | 247        | -      | -      | -       |
| I/O       | 248        | -      | -      | -       |
| I/O       | 249        | -      | -      | -       |
| I/O       | 250        | -      | -      | -       |
| VCCINT    | -          | R2     | T3     | VCCINT* |
| I/O (/RS) | 251        | R1     | T2     | AV22    |
| I/O (D3)  | 252        | T3     | U3     | BA23    |
| GND       | -          | GND*   | GND*   | GND*    |
| VCCIO     | -          | VCCIO* | VCCIO* | VCCIO*  |
| I/O       | 253        | T2     | U4     | AW23    |
| I/O (D4)  | 254        | T1     | U5     | AY24    |
| I/O       | 255        | -      | -      | -       |
| I/O       | 256        | -      | -      | -       |
| I/O       | 257        | -      | -      | -       |
| I/O       | 258        | -      | -      | -       |
| I/O       | 259        | -      | U1     | BC23    |
| I/O       | 260        | -      | U2     | BA27    |
| I/O       | 261        | U3     | V2     | AU23    |
| I/O       | 262        | U4     | V4     | AV24    |
| VCCIO     | -          | VCCIO* | VCCIO* | -       |
| GND       | -          | GND*   | GND*   | GND*    |
| I/O       | 263        | U2     | V5     | AY26    |
| I/O       | 264        | U1     | V3     | BB24    |
| I/O       | 265        | V3     | W1     | AW25    |
| I/O       | 266        | V4     | W3     | BB26    |
| I/O       | 267        | V2     | W4     | AT24    |
| I/O       | 268        | W2     | W5     | BA29    |
| I/O       | 269        | -      | -      | -       |
| I/O       | 270        | -      | -      | -       |
| I/O       | 271        | -      | -      | -       |
| I/O       | 272        | -      | -      | -       |
| VCCIO     | -          | VCCIO* | VCCIO* | VCCIO*  |
| GND       | -          | GND*   | GND*   | GND*    |

XC40200XV Pinout Table (Continued)

| Pad Name   | EPIC Pad # | BG432  | BG560  | PG559   |
|------------|------------|--------|--------|---------|
| I/O        | 273        | W3     | Y2     | AY28    |
| I/O        | 274        | W4     | Y3     | AU25    |
| I/O        | 275        | -      | Y4     | AV26    |
| I/O        | 276        | -      | AA1    | BC27    |
| I/O        | 277        | -      | -      | -       |
| I/O        | 278        | -      | -      | -       |
| I/O        | 279        | W1     | Y5     | AW27    |
| I/O        | 280        | Y1     | AA3    | BB28    |
| I/O        | 281        | Y3     | AA4    | BA31    |
| I/O        | 282        | Y4     | AB2    | AY30    |
| VCCIO      | -          | VCCIO* | VCCIO* | VCCIO*  |
| GND        | -          | GND*   | GND*   | GND*    |
| I/O (/CS0) | 283        | Y2     | AB3    | AW29    |
| I/O (D5)   | 284        | AA2    | AA5    | BC29    |
| I/O        | 285        | -      | AC1    | AU27    |
| I/O        | 286        | -      | AB4    | BA33    |
| I/O        | 287        | -      | -      | -       |
| I/O        | 288        | -      | -      | -       |
| I/O        | 289        | -      | -      | -       |
| I/O        | 290        | -      | -      | -       |
| VCCIO      | -          | VCCIO* | VCCIO* | VCCIO*  |
| I/O        | 291        | AA3    | AC3    | AY32    |
| I/O, FCLK3 | 292        | AB1    | AB5    | AW31    |
| VCCINT     | -          | AB2    | AD2    | VCCINT* |
| I/O        | 293        | -      | -      | BB30    |
| I/O        | 294        | AB3    | AC4    | BA35    |
| GND        | -          | GND*   | GND*   | GND*    |
| VCCIO      | -          | VCCIO* | VCCIO* | -       |
| I/O        | 295        | AB4    | AD3    | AT28    |
| I/O        | 296        | AC2    | AE1    | AU29    |
| I/O        | 297        | AD1    | AC5    | BC33    |
| I/O        | 298        | AC3    | AE3    | AY34    |
| I/O        | 299        | -      | AD4    | BB34    |
| I/O        | 300        | -      | AF1    | AW33    |
| I/O        | 301        | -      | AF2    | AU31    |
| I/O        | 302        | -      | AD5    | AV32    |
| I/O        | 303        | -      | -      | -       |
| I/O        | 304        | -      | -      | -       |
| I/O        | 305        | -      | -      | -       |
| I/O        | 306        | -      | -      | -       |
| GND        | -          | GND*   | GND*   | GND*    |
| VCCIO      | -          | VCCIO* | VCCIO* | VCCIO*  |
| I/O        | 307        | -      | -      | -       |
| I/O        | 308        | -      | -      | -       |
| I/O        | 309        | -      | AG2    | AT30    |
| I/O        | 310        | -      | AE4    | AU33    |
| I/O        | 311        | AC4    | AF3    | AW35    |
| I/O        | 312        | AD2    | AH1    | BC35    |
| I/O        | 313        | AE2    | AE5    | AY36    |
| I/O        | 314        | AD3    | AG3    | BB36    |
| I/O        | 315        | AD4    | AF4    | AV36    |
| I/O (D6)   | 316        | AF1    | AJ1    | AU35    |
| GND        | -          | GND*   | GND*   | GND*    |
| VCCIO      | -          | VCCIO* | VCCIO* | VCCIO*  |
| I/O        | 317        | AF2    | AJ2    | AT34    |
| I/O        | 318        | AE3    | AF5    | AW37    |

XC40200XV Pinout Table (Continued)

| Pad Name  | EPIC Pad # | BG432  | BG560  | PG559   |
|-----------|------------|--------|--------|---------|
| I/O       | 319        | -      | -      | -       |
| I/O       | 320        | -      | -      | -       |
| I/O       | 321        | -      | -      | -       |
| I/O       | 322        | -      | -      | -       |
| I/O       | 323        | AE4    | AH3    | BC37    |
| I/O       | 324        | AG1    | AG4    | AY38    |
| I/O       | 325        | AG2    | AK2    | BB38    |
| I/O       | 326        | AF3    | AJ3    | BA41    |
| GND       | -          | GND*   | GND*   | GND*    |
| VCCIO     | -          | VCCIO* | VCCIO* | -       |
| I/O       | 327        | -      | -      | -       |
| I/O       | 328        | -      | -      | -       |
| I/O       | 329        | -      | -      | -       |
| I/O       | 330        | -      | -      | -       |
| I/O       | 331        | AF4    | AG5    | AY40    |
| I/O       | 332        | AH1    | AL1    | BB40    |
| I/O       | 333        | AH2    | AH4    | AT36    |
| I/O       | 334        | AG3    | AK3    | BA39    |
| I/O, GCK5 | 335        | AG4    | AJ4    | AV38    |
| I/O (D7)  | 336        | AJ2    | AH5    | BC41    |
| /PROGRAM  | -          | AH3    | AM1    | BB42    |
| VCCIO     | -          | VCCIO* | VCCIO* | VCCIO*  |
| DONE      | -          | AH4    | AJ5    | AY42    |
| GND       | -          | GND*   | GND*   | GND*    |
| I/O, GCK4 | 337        | AJ4    | AL4    | AW41    |
| I/O       | 338        | AK3    | AJ6    | AV40    |
| VCCINT    | -          | AH5    | AK5    | VCCINT* |
| I/O       | 339        | -      | -      | AV42    |
| I/O       | 340        | AK4    | AN3    | AR37    |
| I/O       | 341        | AJ5    | AK6    | AP36    |
| I/O       | 342        | AH6    | AL5    | AT38    |
| I/O       | 343        | -      | -      | -       |
| I/O       | 344        | -      | -      | -       |
| I/O       | 345        | -      | -      | -       |
| I/O       | 346        | -      | -      | -       |
| VCCIO     | -          | VCCIO* | VCCIO* | -       |
| GND       | -          | GND*   | GND*   | GND*    |
| I/O       | 347        | -      | -      | -       |
| I/O       | 348        | -      | -      | -       |
| I/O       | 349        | -      | -      | -       |
| I/O       | 350        | -      | -      | -       |
| I/O       | 351        | AL4    | AJ7    | AU39    |
| I/O       | 352        | AK5    | AM4    | AU43    |
| I/O       | 353        | AJ6    | AM5    | BA43    |
| I/O       | 354        | AH7    | AK7    | AT42    |
| I/O       | 355        | AL5    | AL6    | AR39    |
| I/O       | 356        | AK6    | AJ8    | AN37    |
| VCCIO     | -          | VCCIO* | VCCIO* | VCCIO*  |
| GND       | -          | GND*   | GND*   | GND*    |
| I/O       | 357        | AH8    | AM6    | AT40    |
| I/O       | 358        | AJ7    | AN6    | AP40    |
| I/O       | 359        | AL6    | AK8    | AR43    |
| I/O       | 360        | AK7    | AL7    | AN39    |
| I/O       | 361        | AH9    | AJ9    | AP42    |
| I/O       | 362        | AJ8    | AN7    | AM38    |
| I/O       | 363        | -      | AL8    | AN43    |

**XC40200XV Pinout Table (Continued)**

| Pad Name | EPIC Pad # | BG432  | BG560  | PG559   |
|----------|------------|--------|--------|---------|
| I/O      | 364        | -      | AK9    | AL37    |
| I/O      | 365        | -      | -      | -       |
| I/O      | 366        | -      | -      | -       |
| VCCIO    | -          | VCCIO* | VCCIO* | VCCIO*  |
| GND      | -          | GND*   | GND*   | GND*    |
| I/O      | 367        | -      | -      | -       |
| I/O      | 368        | -      | -      | -       |
| I/O      | 369        | -      | -      | -       |
| I/O      | 370        | -      | -      | -       |
| I/O      | 371        | -      | AM8    | AK36    |
| I/O      | 372        | -      | AJ10   | AR41    |
| I/O      | 373        | -      | AL9    | AL41    |
| I/O      | 374        | -      | AM9    | AN41    |
| I/O      | 375        | AK8    | AK10   | AK42    |
| I/O      | 376        | AJ9    | AN9    | AM40    |
| I/O      | 377        | AH10   | AJ11   | AJ43    |
| I/O      | 378        | AL8    | AL10   | AJ37    |
| VCCIO    | -          | VCCIO* | VCCIO* | -       |
| GND      | -          | GND*   | GND*   | GND*    |
| I/O      | 379        | AK9    | AM10   | AL39    |
| I/O      | 380        | -      | -      | AH36    |
| VCCINT   | -          | AJ10   | AK11   | VCCINT* |
| I/O      | 381        | AK10   | AL11   | AH42    |
| I/O      | 382        | AL10   | AJ12   | AJ39    |
| VCCIO    | -          | VCCIO* | VCCIO* | VCCIO*  |
| I/O      | 383        | AJ11   | AN11   | AK40    |
| I/O      | 384        | AH12   | AK12   | AG41    |
| I/O      | 385        | -      | AL12   | AJ41    |
| I/O      | 386        | -      | AM12   | AH40    |
| I/O      | 387        | -      | -      | -       |
| I/O      | 388        | -      | -      | -       |
| I/O      | 389        | -      | -      | -       |
| I/O      | 390        | -      | -      | -       |
| GND      | -          | GND*   | GND*   | GND*    |
| VCCIO    | -          | VCCIO* | VCCIO* | -       |
| I/O      | 391        | -      | -      | -       |
| I/O      | 392        | -      | -      | -       |
| I/O      | 393        | -      | AJ13   | AG37    |
| I/O      | 394        | -      | AK13   | AG43    |
| I/O      | 395        | AK11   | AL13   | AG39    |
| I/O      | 396        | AJ12   | AM13   | AF38    |
| I/O      | 397        | AK12   | AN13   | AF42    |
| I/O      | 398        | AL12   | AJ14   | AD42    |
| I/O      | 399        | AH13   | AK14   | AF40    |
| I/O      | 400        | AJ13   | AL14   | AE37    |
| GND      | -          | GND*   | GND*   | GND*    |
| VCCIO    | -          | VCCIO* | VCCIO* | VCCIO*  |
| I/O      | 401        | AK13   | AM14   | AE39    |
| I/O      | 402        | AL13   | AN15   | AD40    |
| I/O      | 403        | AK14   | AJ15   | AC43    |
| I/O      | 404        | AH14   | AK15   | AD38    |
| I/O      | 405        | AJ14   | AL15   | AC41    |
| I/O      | 406        | AK15   | AM16   | AD36    |
| I/O      | 407        | -      | -      | -       |
| I/O      | 408        | -      | -      | -       |
| I/O      | 409        | -      | -      | -       |

**XC40200XV Pinout Table (Continued)**

| Pad Name    | EPIC Pad # | BG432  | BG560  | PG559   |
|-------------|------------|--------|--------|---------|
| I/O         | 410        | -      | -      | -       |
| GND         | -          | GND*   | GND*   | GND*    |
| VCCIO       | -          | VCCIO* | VCCIO* | -       |
| I/O         | 411        | -      | -      | -       |
| I/O         | 412        | -      | -      | -       |
| I/O         | 413        | -      | -      | -       |
| I/O         | 414        | -      | -      | -       |
| I/O         | 415        | -      | AL16   | AC39    |
| I/O         | 416        | -      | AJ16   | AC37    |
| I/O         | 417        | AJ15   | AK16   | AB40    |
| I/O         | 418        | AL15   | AN17   | AB42    |
| VCCINT      | -          | AH15   | AM17   | VCCINT* |
| I/O         | 419        | -      | -      | AB38    |
| I/O         | 420        | AL16   | AL17   | AA41    |
| GND         | -          | GND*   | GND*   | GND*    |
| VCCIO       | -          | VCCIO* | VCCIO* | VCCIO*  |
| I/O (/INIT) | 421        | AK16   | AJ17   | AA39    |
| I/O         | 422        | AJ16   | AK17   | AA37    |
| I/O         | 423        | AL17   | AM18   | Y40     |
| I/O         | 424        | AK17   | AL18   | Y38     |
| I/O         | 425        | -      | AK18   | AA43    |
| I/O         | 426        | -      | AJ18   | W39     |
| I/O         | 427        | -      | -      | -       |
| I/O         | 428        | -      | -      | -       |
| I/O         | 429        | -      | -      | -       |
| I/O         | 430        | -      | -      | -       |
| VCCIO       | -          | VCCIO* | VCCIO* | -       |
| GND         | -          | GND*   | GND*   | GND*    |
| I/O         | 431        | -      | -      | -       |
| I/O         | 432        | -      | -      | -       |
| I/O         | 433        | -      | -      | -       |
| I/O         | 434        | -      | -      | -       |
| I/O         | 435        | AJ17   | AN19   | V40     |
| I/O         | 436        | AH17   | AL19   | Y36     |
| I/O         | 437        | AK18   | AK19   | U41     |
| I/O         | 438        | AL19   | AM20   | Y42     |
| I/O         | 439        | AJ18   | AJ19   | T40     |
| I/O         | 440        | AK19   | AL20   | W37     |
| VCCIO       | -          | VCCIO* | VCCIO* | VCCIO*  |
| GND         | -          | GND*   | GND*   | GND*    |
| I/O         | 441        | AH18   | AK20   | V38     |
| I/O         | 442        | AL20   | AN21   | U39     |
| I/O         | 443        | AJ19   | AL21   | V42     |
| I/O         | 444        | AK20   | AJ20   | R41     |
| I/O         | 445        | AH19   | AM22   | U43     |
| I/O         | 446        | AJ20   | AK21   | P40     |
| VCCIO       | -          | -      | -      | -       |
| GND         | -          | -      | -      | -       |
| I/O         | 447        | -      | AN23   | T42     |
| I/O         | 448        | -      | AL22   | U37     |
| I/O         | 449        | -      | -      | -       |
| I/O         | 450        | -      | -      | -       |
| VCCIO       | -          | VCCIO* | VCCIO* | VCCIO*  |
| GND         | -          | GND*   | GND*   | GND*    |
| I/O         | 451        | -      | -      | -       |
| I/O         | 452        | -      | -      | -       |

XC40200XV Pinout Table (Continued)

| Pad Name | EPIC Pad # | BG432  | BG560  | PG559   |
|----------|------------|--------|--------|---------|
| I/O      | 453        | -      | -      | -       |
| I/O      | 454        | -      | -      | -       |
| I/O      | 455        | -      | AJ21   | R39     |
| I/O      | 456        | -      | AM23   | N41     |
| I/O      | 457        | AK21   | AK22   | R43     |
| I/O      | 458        | AH20   | AM24   | M40     |
| VCCIO    | -          | VCCIO* | VCCIO* | -       |
| I/O      | 459        | AJ21   | AL23   | N39     |
| I/O      | 460        | AL22   | AJ22   | T36     |
| VCCINT   | -          | AK22   | AN25   | VCCINT* |
| I/O      | 461        | -      | -      | P42     |
| I/O      | 462        | AJ22   | AK23   | R37     |
| GND      | -          | GND*   | GND*   | GND*    |
| VCCIO    | -          | VCCIO* | VCCIO* | -       |
| I/O      | 463        | AK23   | AL24   | L41     |
| I/O      | 464        | AJ23   | AN26   | L43     |
| I/O      | 465        | AH22   | AJ23   | K40     |
| I/O      | 466        | AL24   | AL25   | K42     |
| I/O      | 467        | -      | AK24   | L39     |
| I/O      | 468        | -      | AM26   | J43     |
| I/O      | 469        | -      | AM27   | M38     |
| I/O      | 470        | -      | AJ24   | P36     |
| I/O      | 471        | -      | -      | -       |
| I/O      | 472        | -      | -      | -       |
| I/O      | 473        | -      | -      | -       |
| I/O      | 474        | -      | -      | -       |
| GND      | -          | GND*   | GND*   | GND*    |
| VCCIO    | -          | VCCIO* | VCCIO* | VCCIO*  |
| I/O      | 475        | -      | -      | -       |
| I/O      | 476        | -      | -      | -       |
| I/O      | 477        | -      | AL26   | N37     |
| I/O      | 478        | -      | AK25   | H42     |
| I/O      | 479        | AK24   | AN28   | J41     |
| I/O      | 480        | AH23   | AN29   | G43     |
| I/O      | 481        | AJ24   | AJ25   | H40     |
| I/O      | 482        | AK25   | AL27   | F42     |
| VCCINT   | -          | -      | -      | -       |
| I/O      | 483        | AJ25   | AK26   | J39     |
| I/O      | 484        | AH24   | AM29   | L37     |
| GND      | -          | GND*   | GND*   | GND*    |
| VCCIO    | -          | VCCIO* | VCCIO* | VCCIO*  |
| I/O      | 485        | AL26   | AM30   | E41     |
| I/O      | 486        | AK26   | AJ26   | F40     |
| I/O      | 487        | AH25   | AL28   | C43     |
| I/O      | 488        | AL27   | AK27   | G39     |
| I/O      | 489        | AJ26   | AL29   | D42     |
| I/O      | 490        | AK27   | AN31   | H38     |
| I/O      | 491        | -      | -      | -       |
| I/O      | 492        | -      | -      | -       |
| I/O      | 493        | -      | -      | -       |
| I/O      | 494        | -      | -      | -       |
| GND      | -          | GND*   | GND*   | GND*    |
| VCCIO    | -          | VCCIO* | VCCIO* | -       |
| I/O      | 495        | -      | -      | -       |
| I/O      | 496        | -      | -      | -       |
| I/O      | 497        | -      | -      | -       |

XC40200XV Pinout Table (Continued)

| Pad Name   | EPIC Pad # | BG432  | BG560  | PG559   |
|------------|------------|--------|--------|---------|
| I/O        | 498        | -      | -      | -       |
| I/O (/LDC) | 499        | AH26   | AJ27   | K36     |
| I/O        | 500        | AL28   | AM31   | J37     |
| I/O        | 501        | AJ27   | AK28   | B42     |
| I/O        | 502        | AK28   | AL30   | D40     |
| I/O (HDC)  | 503        | AH27   | AK29   | C41     |
| I/O, GCK3  | 504        | AK29   | AJ28   | F38     |
| I (M2)     | -          | AJ28   | AN32   | H36     |
| VCCIO      | -          | VCCIO* | VCCIO* | VCCIO*  |
| I (M0)     | -          | AH28   | AJ29   | C39     |
| GND        | -          | GND*   | GND*   | GND*    |
| O (M1)     | -          | AH29   | AK30   | D38     |
| I/O, GCK2  | 505        | AJ30   | AH29   | E37     |
| I/O        | 506        | AH30   | AJ30   | B40     |
| VCCINT     | -          | AG28   | AK31   | VCCINT* |
| I/O        | 507        | -      | -      | H34     |
| I/O        | 508        | AH31   | AH30   | G35     |
| I/O        | 509        | AG29   | AL33   | F36     |
| I/O        | 510        | AG30   | AG29   | D36     |
| I/O        | 511        | -      | -      | -       |
| I/O        | 512        | -      | -      | -       |
| I/O        | 513        | -      | -      | -       |
| I/O        | 514        | -      | -      | -       |
| VCCIO      | -          | VCCIO* | VCCIO* | -       |
| GND        | -          | GND*   | GND*   | GND*    |
| I/O        | 515        | AF28   | AJ31   | E35     |
| I/O        | 516        | AG31   | AK32   | A41     |
| I/O        | 517        | AF29   | AG30   | G33     |
| I/O        | 518        | AF30   | AH31   | B38     |
| I/O        | 519        | -      | -      | -       |
| I/O        | 520        | -      | -      | -       |
| I/O        | 521        | -      | -      | -       |
| I/O        | 522        | -      | -      | -       |
| I/O        | 523        | AE28   | AF29   | D34     |
| I/O        | 524        | AF31   | AJ32   | E33     |
| VCCIO      | -          | VCCIO* | VCCIO* | VCCIO*  |
| GND        | -          | GND*   | GND*   | GND*    |
| I/O        | 525        | AE29   | AH32   | F32     |
| I/O        | 526        | AE30   | AF30   | G31     |
| I/O        | 527        | AD28   | AG31   | A37     |
| I/O        | 528        | AD29   | AE29   | H30     |
| I/O        | 529        | AD30   | AH33   | B36     |
| I/O        | 530        | AD31   | AG33   | C33     |
| I/O        | 531        | -      | AE30   | C35     |
| I/O        | 532        | -      | AF31   | D32     |
| I/O        | 533        | -      | -      | -       |
| I/O        | 534        | -      | -      | -       |
| VCCIO      | -          | VCCIO* | VCCIO* | VCCIO*  |
| GND        | -          | GND*   | GND*   | GND*    |
| I/O        | 535        | -      | -      | -       |
| I/O        | 536        | -      | -      | -       |
| I/O        | 537        | -      | -      | -       |
| I/O        | 538        | -      | -      | -       |
| I/O        | 539        | -      | AD29   | E31     |
| I/O        | 540        | -      | AF32   | G29     |
| I/O        | 541        | -      | AE31   | A35     |

**XC40200XV Pinout Table (Continued)**

| Pad Name   | EPIC Pad # | BG432  | BG560  | PG559   |
|------------|------------|--------|--------|---------|
| I/O        | 542        | -      | AD30   | H28     |
| I/O        | 543        | AC28   | AE32   | B34     |
| I/O        | 544        | AC29   | AC29   | C31     |
| I/O        | 545        | AC30   | AE33   | A33     |
| I/O        | 546        | AB28   | AD31   | D30     |
| VCCIO      | -          | VCCIO* | VCCIO* | -       |
| GND        | -          | GND*   | GND*   | GND*    |
| I/O, FCLK2 | 547        | AB29   | AC30   | E29     |
| I/O        | 548        | -      | -      | C29     |
| VCCINT     | -          | AB30   | AD32   | VCCINT* |
| I/O        | 549        | AB31   | AB29   | B30     |
| I/O        | 550        | AA29   | AC31   | G27     |
| VCCIO      | -          | VCCIO* | VCCIO* | VCCIO*  |
| I/O        | 551        | -      | -      | -       |
| I/O        | 552        | -      | -      | -       |
| I/O        | 553        | -      | -      | -       |
| I/O        | 554        | -      | -      | -       |
| I/O        | 555        | -      | AC33   | D28     |
| I/O        | 556        | -      | AB30   | A29     |
| I/O        | 557        | AA30   | AB31   | E27     |
| I/O        | 558        | Y28    | AA29   | F26     |
| GND        | -          | GND*   | GND*   | GND*    |
| VCCIO      | -          | VCCIO* | VCCIO* | -       |
| I/O        | 559        | Y29    | AB32   | C27     |
| I/O        | 560        | Y30    | AA30   | B28     |
| I/O        | 561        | Y31    | AA31   | G25     |
| I/O        | 562        | W28    | AA32   | A27     |
| I/O        | 563        | -      | -      | -       |
| I/O        | 564        | -      | -      | -       |
| I/O        | 565        | -      | Y29    | D26     |
| I/O        | 566        | -      | AA33   | B26     |
| I/O        | 567        | W29    | Y30    | E25     |
| I/O        | 568        | W30    | Y31    | F24     |
| GND        | -          | GND*   | GND*   | GND*    |
| VCCIO      | -          | VCCIO* | VCCIO* | VCCIO*  |
| I/O        | 569        | -      | -      | -       |
| I/O        | 570        | -      | -      | -       |
| I/O        | 571        | -      | -      | -       |
| I/O        | 572        | -      | -      | -       |
| I/O        | 573        | W31    | Y32    | H24     |
| I/O        | 574        | V28    | W29    | B24     |
| I/O        | 575        | V29    | W30    | D24     |
| I/O        | 576        | V30    | W31    | A23     |
| I/O        | 577        | U29    | W33    | C23     |
| I/O        | 578        | U28    | V30    | E23     |
| GND        | -          | GND*   | GND*   | GND*    |
| VCCIO      | -          | VCCIO* | VCCIO* | -       |
| I/O        | 579        | U30    | V29    | G23     |
| I/O        | 580        | U31    | V31    | B22     |
| I/O        | 581        | -      | V32    | D22     |
| I/O        | 582        | -      | U33    | A21     |
| I/O        | 583        | -      | -      | -       |
| I/O        | 584        | -      | -      | -       |
| I/O        | 585        | -      | -      | -       |
| I/O        | 586        | -      | -      | -       |
| I/O        | 587        | T29    | U30    | F22     |

**XC40200XV Pinout Table (Continued)**

| Pad Name   | EPIC Pad # | BG432  | BG560  | PG559   |
|------------|------------|--------|--------|---------|
| I/O        | 588        | T30    | U29    | C21     |
| VCCIO      | -          | VCCIO* | VCCIO* | VCCIO*  |
| GND        | -          | GND*   | GND*   | GND*    |
| I/O        | 589        | T31    | U31    | E21     |
| I/O        | 590        | -      | -      | D20     |
| VCCINT     | -          | R29    | U32    | VCCINT* |
| I/O        | 591        | -      | -      | -       |
| I/O        | 592        | -      | -      | -       |
| I/O        | 593        | -      | -      | -       |
| I/O        | 594        | -      | -      | -       |
| I/O        | 595        | -      | T32    | C17     |
| I/O        | 596        | -      | T30    | G21     |
| I/O        | 597        | R28    | T29    | F20     |
| I/O        | 598        | R30    | T31    | D18     |
| VCCIO      | -          | VCCIO* | VCCIO* | -       |
| GND        | -          | GND*   | GND*   | GND*    |
| I/O        | 599        | R31    | R33    | E19     |
| I/O        | 600        | P29    | R31    | B20     |
| I/O        | 601        | P28    | R30    | H20     |
| I/O        | 602        | P30    | R29    | B18     |
| I/O        | 603        | N30    | P32    | C15     |
| I/O        | 604        | N29    | P31    | D16     |
| I/O        | 605        | -      | -      | -       |
| I/O        | 606        | -      | -      | -       |
| I/O        | 607        | -      | -      | -       |
| I/O        | 608        | -      | -      | -       |
| VCCIO      | -          | VCCIO* | VCCIO* | VCCIO*  |
| GND        | -          | GND*   | GND*   | GND*    |
| I/O        | 609        | N28    | N33    | G19     |
| I/O        | 610        | N31    | P30    | A17     |
| I/O        | 611        | M31    | P29    | F18     |
| I/O        | 612        | M29    | M32    | E17     |
| I/O        | 613        | -      | -      | -       |
| I/O        | 614        | -      | -      | -       |
| I/O        | 615        | -      | N31    | B16     |
| I/O        | 616        | -      | N30    | C13     |
| I/O        | 617        | M28    | L33    | A15     |
| I/O        | 618        | M30    | N29    | D14     |
| VCCIO      | -          | VCCIO* | VCCIO* | -       |
| GND        | -          | GND*   | GND*   | GND*    |
| I/O        | 619        | L30    | M31    | E15     |
| I/O        | 620        | L29    | L32    | G17     |
| I/O        | 621        | -      | M30    | B14     |
| I/O        | 622        | -      | L31    | C11     |
| I/O        | 623        | -      | -      | -       |
| I/O        | 624        | -      | -      | -       |
| I/O        | 625        | -      | -      | -       |
| I/O        | 626        | -      | -      | -       |
| VCCIO      | -          | VCCIO* | VCCIO* | VCCIO*  |
| I/O        | 627        | K31    | M29    | D12     |
| I/O (TMS)  | 628        | K30    | J33    | A11     |
| VCCINT     | -          | K29    | K32    | VCCINT* |
| I/O        | 629        | -      | -      | E13     |
| I/O, FCLK1 | 630        | K28    | L30    | C9      |
| GND        | -          | GND*   | GND*   | GND*    |
| VCCIO      | -          | VCCIO* | VCCIO* | -       |

XC40200XV Pinout Table (Continued)

| Pad Name        | EPIC Pad # | BG432  | BG560  | PG559   |
|-----------------|------------|--------|--------|---------|
| I/O             | 631        | J30    | K31    | H16     |
| I/O             | 632        | H31    | L29    | B10     |
| I/O             | 633        | J29    | H33    | G15     |
| I/O             | 634        | J28    | K30    | A9      |
| I/O             | 635        | -      | J31    | D10     |
| I/O             | 636        | -      | H32    | B8      |
| I/O             | 637        | -      | K29    | E11     |
| I/O             | 638        | -      | H31    | G13     |
| I/O             | 639        | -      | -      | -       |
| I/O             | 640        | -      | -      | -       |
| I/O             | 641        | -      | -      | -       |
| I/O             | 642        | -      | -      | -       |
| GND             | -          | GND*   | GND*   | GND*    |
| VCCIO           | -          | VCCIO* | VCCIO* | VCCIO*  |
| I/O             | 643        | H30    | J30    | F12     |
| I/O             | 644        | G30    | G32    | H14     |
| I/O             | 645        | H29    | F33    | G11     |
| I/O             | 646        | H28    | J29    | A7      |
| I/O             | 647        | F31    | G31    | E9      |
| I/O             | 648        | F30    | H30    | B6      |
| I/O             | 649        | -      | E33    | D8      |
| I/O             | 650        | -      | E32    | F8      |
| I/O             | 651        | -      | -      | -       |
| I/O             | 652        | -      | -      | -       |
| GND             | -          | GND*   | GND*   | GND*    |
| VCCIO           | -          | VCCIO* | VCCIO* | VCCIO*  |
| I/O             | 653        | G29    | H29    | G9      |
| I/O             | 654        | G28    | F31    | H10     |
| I/O             | 655        | -      | -      | -       |
| I/O             | 656        | -      | -      | -       |
| I/O             | 657        | E31    | G30    | B4      |
| I/O             | 658        | E30    | D32    | E7      |
| I/O             | 659        | F29    | E31    | C5      |
| I/O             | 660        | F28    | G29    | D6      |
| I/O             | 661        | -      | -      | -       |
| I/O             | 662        | -      | -      | -       |
| GND             | -          | GND*   | GND*   | GND*    |
| VCCIO           | -          | VCCIO* | VCCIO* | -       |
| I/O             | 663        | -      | -      | -       |
| I/O             | 664        | -      | -      | -       |
| I/O             | 665        | -      | -      | -       |
| I/O             | 666        | -      | -      | -       |
| GND             | -          | -      | -      | -       |
| VCCIO           | -          | -      | -      | -       |
| I/O (TCK)       | 667        | D31    | C33    | D4      |
| I/O (TDI)       | 668        | D30    | F30    | H8      |
| I/O             | 669        | E29    | D31    | A3      |
| I/O             | 670        | -      | -      | F6      |
| VCCINT          | -          | E28    | E30    | VCCINT* |
| I/O (A17)       | 671        | C30    | F29    | C3      |
| I/O, GCK1 (A16) | 672        | D29    | B33    | C1      |
| GND             | -          | GND*   | GND*   | GND*    |
|                 |            |        |        |         |
| VCCIO           | -          | A1     | A4     | A13     |
| VCCIO           | -          | A11    | A10    | A31     |
| VCCIO           | -          | A21    | A16    | A43     |

XC40200XV Pinout Table (Continued)

| Pad Name | EPIC Pad # | BG432 | BG560 | PG559 |
|----------|------------|-------|-------|-------|
| VCCIO    | -          | A31   | A22   | B2    |
| VCCIO    | -          | D11   | A26   | C7    |
| VCCIO    | -          | D21   | A30   | C19   |
| VCCIO    | -          | L1    | B2    | C25   |
| VCCIO    | -          | L4    | B13   | C37   |
| VCCIO    | -          | L28   | B19   | F14   |
| VCCIO    | -          | L31   | B32   | F30   |
| VCCIO    | -          | AA1   | C3    | G3    |
| VCCIO    | -          | AA4   | C31   | G7    |
| VCCIO    | -          | AA28  | C32   | G37   |
| VCCIO    | -          | AA31  | D1    | G41   |
| VCCIO    | -          | AH11  | D33   | N1    |
| VCCIO    | -          | AH21  | E5    | N43   |
| VCCIO    | -          | AL1   | H1    | P6    |
| VCCIO    | -          | AL11  | K33   | P38   |
| VCCIO    | -          | AL21  | M1    | W3    |
| VCCIO    | -          | AL31  | N32   | W41   |
| VCCIO    | -          | C3    | R2    | AE3   |
| VCCIO    | -          | C29   | T33   | AE41  |
| VCCIO    | -          | AJ3   | V1    | AK6   |
| VCCIO    | -          | AJ29  | W32   | AK38  |
| VCCIO    | -          | -     | AA2   | AL1   |
| VCCIO    | -          | -     | AB33  | AL43  |
| VCCIO    | -          | -     | AD1   | AU3   |
| VCCIO    | -          | -     | AF33  | AU7   |
| VCCIO    | -          | -     | AK1   | AU37  |
| VCCIO    | -          | -     | AK4   | AU41  |
| VCCIO    | -          | -     | AK33  | AV14  |
| VCCIO    | -          | -     | AL2   | AV30  |
| VCCIO    | -          | -     | AL3   | BA7   |
| VCCIO    | -          | -     | AL31  | BA19  |
| VCCIO    | -          | -     | AM2   | BA25  |
| VCCIO    | -          | -     | AM15  | BA37  |
| VCCIO    | -          | -     | AM21  | BC1   |
| VCCIO    | -          | -     | AM32  | BC13  |
| VCCIO    | -          | -     | AN4   | BC31  |
| VCCIO    | -          | -     | AN8   | BC43  |
| VCCIO    | -          | -     | AN12  | -     |
| VCCIO    | -          | -     | AN18  | -     |
| VCCIO    | -          | -     | AN24  | -     |
| VCCIO    | -          | -     | AN30  | -     |
|          |            |       |       |       |
| VCCINT   | -          | -     | -     | H12   |
| VCCINT   | -          | -     | -     | H18   |
| VCCINT   | -          | -     | -     | H26   |
| VCCINT   | -          | -     | -     | H32   |
| VCCINT   | -          | -     | -     | M8    |
| VCCINT   | -          | -     | -     | M36   |
| VCCINT   | -          | -     | -     | V8    |
| VCCINT   | -          | -     | -     | V36   |
| VCCINT   | -          | -     | -     | AF8   |
| VCCINT   | -          | -     | -     | AF36  |
| VCCINT   | -          | -     | -     | AM8   |
| VCCINT   | -          | -     | -     | AM36  |
| VCCINT   | -          | -     | -     | AT12  |
| VCCINT   | -          | -     | -     | AT18  |

**XC40200XV Pinout Table (Continued)**

| Pad Name | EPIC Pad # | BG432 | BG560 | PG559 |
|----------|------------|-------|-------|-------|
| VCCINT   | -          | -     | -     | AT26  |
| VCCINT   | -          | -     | -     | AT32  |
|          |            |       |       |       |
| GND      | -          | A2    | A7    | A5    |
| GND      | -          | A3    | A12   | A19   |
| GND      | -          | A7    | A14   | A25   |
| GND      | -          | A9    | A18   | A39   |
| GND      | -          | A14   | A20   | B12   |
| GND      | -          | A18   | A24   | B32   |
| GND      | -          | A23   | A29   | E1    |
| GND      | -          | A25   | A32   | E5    |
| GND      | -          | A29   | B1    | E39   |
| GND      | -          | A30   | B6    | E43   |
| GND      | -          | B1    | B9    | F10   |
| GND      | -          | B2    | B15   | F16   |
| GND      | -          | B30   | B23   | F28   |
| GND      | -          | B31   | B27   | F34   |
| GND      | -          | C1    | B31   | H22   |
| GND      | -          | C31   | C2    | K6    |
| GND      | -          | D16   | E1    | K38   |
| GND      | -          | G1    | F32   | M2    |
| GND      | -          | G31   | G2    | M42   |
| GND      | -          | J1    | G33   | T6    |
| GND      | -          | J31   | J32   | T38   |
| GND      | -          | P1    | K1    | W1    |
| GND      | -          | P31   | L2    | W43   |
| GND      | -          | T4    | M33   | AB8   |
| GND      | -          | T28   | P1    | AB36  |
| GND      | -          | V1    | P33   | AE1   |
| GND      | -          | V31   | R32   | AE43  |
| GND      | -          | AC1   | T1    | AH6   |
| GND      | -          | AC31  | V33   | AH38  |
| GND      | -          | AE1   | W2    | AM2   |
| GND      | -          | AE31  | Y1    | AM42  |
| GND      | -          | AH16  | Y33   | AP6   |

**XC40200XV Pinout Table (Continued)**

| Pad Name | EPIC Pad # | BG432 | BG560 | PG559 |
|----------|------------|-------|-------|-------|
| GND      | -          | AJ1   | AB1   | AP38  |
| GND      | -          | AJ31  | AC32  | AT22  |
| GND      | -          | AK1   | AD33  | AV10  |
| GND      | -          | AK2   | AE2   | AV16  |
| GND      | -          | AK30  | AG1   | AV28  |
| GND      | -          | AK31  | AG32  | AV34  |
| GND      | -          | AL2   | AH2   | AW1   |
| GND      | -          | AL3   | AJ33  | AW5   |
| GND      | -          | AL7   | AL32  | AW39  |
| GND      | -          | AL9   | AM3   | AW43  |
| GND      | -          | AL14  | AM11  | BB12  |
| GND      | -          | AL18  | AM19  | BB32  |
| GND      | -          | AL23  | AM25  | BC5   |
| GND      | -          | AL25  | AM28  | BC19  |
| GND      | -          | AL29  | AM33  | BC25  |
| GND      | -          | AL30  | AM7   | BC39  |
| GND      | -          | -     | AN2   | -     |
| GND      | -          | -     | AN5   | -     |
| GND      | -          | -     | AN10  | -     |
| GND      | -          | -     | AN14  | -     |
| GND      | -          | -     | AN16  | -     |
| GND      | -          | -     | AN20  | -     |
| GND      | -          | -     | AN22  | -     |
| GND      | -          | -     | AN27  | -     |
|          |            |       |       |       |
| NC       | -          | C8    | A1    | -     |
| NC       | -          | -     | A33   | -     |
| NC       | -          | -     | AC2   | -     |
| NC       | -          | -     | AN1   | -     |
| NC       | -          | -     | AN33  | -     |

12/21/98

\*Note: Pads labelled GND\*, VCCINT\*, or VCCIO\* are internally bonded to the corresponding power plane within the associated package. They have no direct connection to any specific package pin.



## XC40250XV Pinout Table

XC40250XV Pinout Table

| Pad Name        | EPIC Pad # | BG432  | BG560  | PG559  |
|-----------------|------------|--------|--------|--------|
| VCCIO           | -          | VCCIO* | VCCIO* | VCCIO* |
| I/O, GCK8 (A15) | 1          | D28    | E29    | E3     |
| I/O (A14)       | 2          | C28    | D30    | F4     |
| I/O             | 3          | B29    | E28    | J7     |
| I/O             | 4          | D27    | D29    | D2     |
| I/O             | 5          | B28    | C30    | K8     |
| I/O             | 6          | C27    | D28    | H6     |
| I/O             | 7          | -      | -      | -      |
| I/O             | 8          | -      | -      | -      |
| I/O             | 9          | -      | -      | -      |
| I/O             | 10         | -      | -      | -      |
| VCCIO           | -          | VCCIO* | VCCIO* | -      |
| GND             | -          | GND*   | GND*   | GND*   |
| I/O             | 11         | -      | -      | -      |
| I/O             | 12         | -      | -      | -      |
| I/O             | 13         | -      | -      | -      |
| I/O             | 14         | -      | -      | -      |
| I/O             | 15         | -      | -      | -      |
| I/O             | 16         | -      | -      | -      |
| I/O             | 17         | D26    | A31    | G5     |
| I/O             | 18         | A28    | E27    | F2     |
| I/O             | 19         | B27    | C29    | H4     |
| I/O             | 20         | C26    | B30    | G1     |
| I/O             | 21         | D25    | D27    | J5     |
| I/O             | 22         | A27    | C28    | L7     |
| VCCIO           | -          | VCCIO* | VCCIO* | VCCIO* |
| GND             | -          | GND*   | GND*   | GND*   |
| I/O (A13)       | 23         | B26    | E26    | J3     |
| I/O (A12)       | 24         | D24    | B29    | K4     |
| I/O             | 25         | C25    | B28    | H2     |
| I/O             | 26         | A26    | D26    | L5     |
| I/O             | 27         | B25    | C27    | J1     |
| I/O             | 28         | D23    | E25    | M6     |
| I/O             | 29         | -      | A28    | K2     |
| I/O             | 30         | -      | A27    | N7     |
| I/O             | 31         | -      | -      | -      |
| I/O             | 32         | -      | -      | -      |
| I/O             | 33         | -      | -      | -      |
| I/O             | 34         | -      | -      | -      |
| VCCIO           | -          | VCCIO* | VCCIO* | VCCIO* |
| GND             | -          | GND*   | GND*   | GND*   |
| I/O             | 35         | -      | -      | -      |
| I/O             | 36         | -      | -      | -      |
| I/O             | 37         | -      | -      | -      |
| I/O             | 38         | -      | -      | -      |
| I/O             | 39         | -      | D25    | P8     |
| I/O             | 40         | -      | C26    | L3     |
| I/O             | 41         | -      | E24    | L1     |
| I/O             | 42         | -      | B26    | M4     |
| I/O             | 43         | C24    | C25    | P2     |
| I/O             | 44         | B24    | D24    | N5     |
| I/O             | 45         | C23    | B25    | R1     |
| I/O             | 46         | D22    | E23    | N3     |
| VCCIO           | -          | VCCIO* | VCCIO* | -      |

XC40250XV Pinout Table (Continued)

| Pad Name  | EPIC Pad # | BG432  | BG560  | PG559   |
|-----------|------------|--------|--------|---------|
| GND       | -          | GND*   | GND*   | GND*    |
| I/O       | 47         | A24    | A25    | R7      |
| I/O       | 48         | -      | -      | P4      |
| VCCINT    | -          | B23    | C24    | VCCINT* |
| I/O       | 49         | C22    | D23    | T2      |
| I/O       | 50         | B22    | B24    | T8      |
| VCCIO     | -          | VCCIO* | VCCIO* | VCCIO*  |
| I/O       | 51         | A22    | E22    | R5      |
| I/O       | 52         | C21    | C23    | R3      |
| I/O       | 53         | -      | A23    | U1      |
| I/O       | 54         | -      | D22    | T4      |
| I/O       | 55         | -      | -      | -       |
| I/O       | 56         | -      | -      | -       |
| I/O       | 57         | -      | -      | -       |
| I/O       | 58         | -      | -      | -       |
| GND       | -          | GND*   | GND*   | GND*    |
| VCCIO     | -          | VCCIO* | VCCIO* | -       |
| I/O       | 59         | -      | -      | -       |
| I/O       | 60         | -      | -      | -       |
| I/O       | 61         | -      | -      | -       |
| I/O       | 62         | -      | -      | -       |
| I/O       | 63         | -      | C22    | U5      |
| I/O       | 64         | -      | E21    | V2      |
| I/O       | 65         | D20    | B22    | U7      |
| I/O       | 66         | B21    | D21    | U3      |
| I/O       | 67         | C20    | C21    | Y2      |
| I/O       | 68         | B20    | B21    | V4      |
| I/O       | 69         | A20    | E20    | V6      |
| I/O       | 70         | D19    | A21    | W5      |
| GND       | -          | GND*   | GND*   | GND*    |
| VCCIO     | -          | VCCIO* | VCCIO* | VCCIO*  |
| I/O (A11) | 71         | C19    | D20    | W7      |
| I/O (A10) | 72         | B19    | C20    | Y4      |
| I/O       | 73         | A19    | B20    | AA1     |
| I/O       | 74         | B18    | E19    | Y6      |
| I/O (A18) | 75         | D18    | D19    | AB2     |
| I/O (A19) | 76         | C18    | C19    | Y8      |
| I/O       | 77         | -      | -      | -       |
| I/O       | 78         | -      | -      | -       |
| I/O       | 79         | -      | -      | -       |
| I/O       | 80         | -      | -      | -       |
| I/O       | 81         | -      | -      | -       |
| I/O       | 82         | -      | -      | -       |
| GND       | -          | GND*   | GND*   | GND*    |
| VCCIO     | -          | VCCIO* | VCCIO* | -       |
| I/O       | 83         | -      | -      | -       |
| I/O       | 84         | -      | -      | -       |
| I/O       | 85         | -      | -      | -       |
| I/O       | 86         | -      | -      | -       |
| I/O       | 87         | -      | A19    | AA3     |
| I/O       | 88         | -      | D18    | AA5     |
| I/O       | 89         | B17    | E18    | AC1     |
| I/O       | 90         | C17    | C18    | AA7     |
| I/O (A9)  | 91         | A17    | B18    | AB4     |
| I/O (A8)  | 92         | D17    | A17    | AB6     |
| VCCIO     | -          | VCCIO* | VCCIO* | VCCIO*  |

XC40250XV Pinout Table (Continued)

| Pad Name  | EPIC Pad # | BG432  | BG560  | PG559   |
|-----------|------------|--------|--------|---------|
| GND       | -          | GND*   | GND*   | GND*    |
| I/O (A7)  | 93         | A16    | D17    | AC3     |
| I/O (A6)  | 94         | B16    | E17    | AC5     |
| VCCINT    | -          | C16    | C17    | VCCINT* |
| I/O       | 95         | -      | -      | AD2     |
| I/O       | 96         | A15    | B17    | AC7     |
| I/O       | 97         | -      | B16    | AF2     |
| I/O       | 98         | -      | D16    | AD4     |
| I/O       | 99         | -      | -      | -       |
| I/O       | 100        | -      | -      | -       |
| I/O       | 101        | -      | -      | -       |
| I/O       | 102        | -      | -      | -       |
| VCCIO     | -          | VCCIO* | VCCIO* | -       |
| GND       | -          | GND*   | GND*   | GND*    |
| I/O       | 103        | -      | -      | -       |
| I/O       | 104        | -      | -      | -       |
| I/O       | 105        | -      | -      | -       |
| I/O       | 106        | -      | -      | -       |
| I/O       | 107        | -      | -      | -       |
| I/O       | 108        | -      | -      | -       |
| I/O (A20) | 109        | B15    | E16    | AD6     |
| I/O (A21) | 110        | C15    | C16    | AE5     |
| I/O       | 111        | D15    | A15    | AF4     |
| I/O       | 112        | B14    | C15    | AG1     |
| I/O (A5)  | 113        | A13    | D15    | AD8     |
| I/O (A4)  | 114        | C14    | E15    | AG3     |
| VCCIO     | -          | VCCIO* | VCCIO* | VCCIO*  |
| GND       | -          | GND*   | GND*   | GND*    |
| I/O       | 115        | B13    | B14    | AH4     |
| I/O       | 116        | D14    | C14    | AE7     |
| I/O       | 117        | A12    | D14    | AH2     |
| I/O       | 118        | C13    | A13    | AF6     |
| I/O       | 119        | B12    | E14    | AJ1     |
| I/O       | 120        | D13    | C13    | AG5     |
| I/O       | 121        | -      | D13    | AJ3     |
| I/O       | 122        | -      | B12    | AK4     |
| I/O       | 123        | -      | -      | -       |
| I/O       | 124        | -      | -      | -       |
| I/O       | 125        | -      | -      | -       |
| I/O       | 126        | -      | -      | -       |
| VCCIO     | -          | VCCIO* | VCCIO* | -       |
| GND       | -          | GND*   | GND*   | GND*    |
| I/O       | 127        | -      | -      | -       |
| I/O       | 128        | -      | -      | -       |
| I/O       | 129        | -      | -      | -       |
| I/O       | 130        | -      | -      | -       |
| I/O       | 131        | -      | C12    | AG7     |
| I/O       | 132        | -      | E13    | AK2     |
| I/O       | 133        | C12    | A11    | AJ5     |
| I/O       | 134        | B11    | D12    | AL3     |
| VCCIO     | -          | VCCIO* | VCCIO* | VCCIO*  |
| I/O       | 135        | D12    | B11    | AM4     |
| I/O       | 136        | C11    | C11    | AN1     |
| VCCINT    | -          | A10    | E12    | VCCINT* |
| I/O       | 137        | -      | -      | AL5     |
| I/O       | 138        | B10    | B10    | AH8     |

XC40250XV Pinout Table (Continued)

| Pad Name        | EPIC Pad # | BG432  | BG560  | PG559   |
|-----------------|------------|--------|--------|---------|
| GND             | -          | GND*   | GND*   | GND*    |
| VCCIO           | -          | VCCIO  | VCCIO* | -       |
| I/O             | 139        | C10    | D11    | AJ7     |
| I/O             | 140        | B9     | C10    | AP2     |
| I/O             | 141        | C9     | A9     | AN3     |
| I/O             | 142        | D10    | E11    | AP4     |
| I/O             | 143        | -      | C9     | AR1     |
| I/O             | 144        | -      | D10    | AN5     |
| I/O             | 145        | -      | A8     | AM6     |
| I/O             | 146        | -      | B8     | AK8     |
| I/O             | 147        | -      | -      | -       |
| I/O             | 148        | -      | -      | -       |
| I/O             | 149        | -      | -      | -       |
| I/O             | 150        | -      | -      | -       |
| GND             | -          | GND*   | GND*   | GND*    |
| VCCIO           | -          | VCCIO* | VCCIO* | VCCIO*  |
| I/O             | 151        | -      | -      | -       |
| I/O             | 152        | -      | -      | -       |
| I/O             | 153        | -      | -      | -       |
| I/O             | 154        | -      | -      | -       |
| I/O             | 155        | -      | E10    | AL7     |
| I/O             | 156        | -      | C8     | AT2     |
| I/O             | 157        | A8     | D9     | AR3     |
| I/O             | 158        | B8     | B7     | AU1     |
| I/O             | 159        | D9     | A6     | AT4     |
| I/O             | 160        | B7     | E9     | AV2     |
| I/O             | 161        | C7     | C7     | AR5     |
| I/O             | 162        | D8     | D8     | AN7     |
| GND             | -          | GND*   | GND*   | GND*    |
| VCCIO           | -          | VCCIO* | VCCIO* | VCCIO*  |
| I/O             | 163        | A6     | A5     | AW3     |
| I/O             | 164        | B6     | B5     | AV4     |
| I/O (A3)        | 165        | D7     | E8     | BA1     |
| I/O,, (CS1, A2) | 166        | A5     | C6     | AU5     |
| I/O             | 167        | C6     | D7     | AY2     |
| I/O             | 168        | B5     | B4     | AT6     |
| I/O             | 169        | -      | -      | -       |
| I/O             | 170        | -      | -      | -       |
| I/O             | 171        | -      | -      | -       |
| I/O             | 172        | -      | -      | -       |
| I/O             | 173        | -      | -      | -       |
| I/O             | 174        | -      | -      | -       |
| GND             | -          | GND*   | GND*   | GND*    |
| VCCIO           | -          | VCCIO* | VCCIO* | -       |
| I/O             | 175        | -      | -      | -       |
| I/O             | 176        | -      | -      | -       |
| I/O             | 177        | -      | -      | -       |
| I/O             | 178        | -      | -      | -       |
| I/O             | 179        | D6     | C5     | AP8     |
| I/O             | 180        | A4     | E7     | AR7     |
| I/O             | 181        | C5     | A3     | AY4     |
| I/O             | 182        | -      | -      | BB2     |
| VCCINT          | -          | B4     | D6     | VCCINT* |
| I/O, GCK7 (A1)  | 183        | D5     | A2     | AV6     |
| I/O (A0, /WS)   | 184        | B3     | D5     | AT8     |
| GND             | -          | GND*   | GND*   | GND*    |

XC40250XV Pinout Table (Continued)

| Pad Name               | EPIC Pad # | BG432  | BG560  | PG559  |
|------------------------|------------|--------|--------|--------|
| O, TDO                 | -          | C4     | E6     | BA3    |
| VCCIO                  | -          | VCCIO* | VCCIO* | VCCIO* |
| CCLK                   | -          | D4     | C4     | BA5    |
| I/O, CK6 (DOUT)        | 185        | D3     | D4     | BB4    |
| I/O (D0, DIN)          | 186        | C2     | E4     | AY6    |
| I/O                    | 187        | D2     | F5     | BC3    |
| I/O                    | 188        | E4     | B3     | AW7    |
| I/O                    | 189        | D1     | D3     | BB6    |
| I/O                    | 190        | E3     | F4     | AU9    |
| I/O                    | 191        | -      | -      | -      |
| I/O                    | 192        | -      | -      | -      |
| I/O                    | 193        | -      | -      | -      |
| I/O                    | 194        | -      | -      | -      |
| VCCIO                  | -          | VCCIO* | VCCIO* | -      |
| GND                    | -          | GND*   | GND*   | GND*   |
| I/O                    | 195        | -      | -      | -      |
| I/O                    | 196        | -      | -      | -      |
| I/O                    | 197        | -      | -      | -      |
| I/O                    | 198        | -      | -      | -      |
| I/O                    | 199        | E2     | C1     | AT10   |
| I/O                    | 200        | F4     | G5     | AV8    |
| I/O                    | 201        | E1     | E3     | AY8    |
| I/O                    | 202        | F3     | D2     | BC7    |
| I/O                    | 203        | -      | -      | -      |
| I/O                    | 204        | -      | -      | -      |
| I/O (/RCK, RDY_/_BUSY) | 205        | F2     | G4     | AW9    |
| I/O (D1)               | 206        | G4     | F3     | BA9    |
| VCCIO                  | -          | VCCIO* | VCCIO* | VCCIO* |
| GND                    | -          | GND*   | GND*   | GND*   |
| I/O                    | 207        | -      | -      | -      |
| I/O                    | 208        | -      | -      | -      |
| I/O                    | 209        | -      | H5     | AU11   |
| I/O                    | 210        | -      | E2     | AY10   |
| I/O                    | 211        | F1     | F2     | BB8    |
| I/O                    | 212        | G3     | H4     | AW11   |
| I/O                    | 213        | G2     | G3     | BC9    |
| I/O                    | 214        | H4     | J5     | AV12   |
| I/O                    | 215        | H3     | F1     | AU13   |
| I/O                    | 216        | H2     | G1     | AT14   |
| I/O                    | 217        | -      | -      | -      |
| I/O                    | 218        | -      | -      | -      |
| VCCIO                  | -          | VCCIO* | VCCIO* | VCCIO* |
| GND                    | -          | GND*   | GND*   | GND*   |
| I/O                    | 219        | -      | -      | -      |
| I/O                    | 220        | -      | -      | -      |
| I/O                    | 221        | -      | -      | -      |
| I/O                    | 222        | -      | -      | -      |
| I/O                    | 223        | -      | J4     | BA11   |
| I/O                    | 224        | -      | H3     | AY12   |
| I/O                    | 225        | -      | K5     | BB10   |
| I/O                    | 226        | -      | H2     | AW13   |
| I/O                    | 227        | H1     | J3     | BC11   |
| I/O                    | 228        | J4     | K4     | AU15   |
| I/O                    | 229        | J3     | J2     | BB14   |
| I/O                    | 230        | J2     | L5     | AT16   |
| VCCIO                  | -          | VCCIO* | VCCIO* | -      |

XC40250XV Pinout Table (Continued)

| Pad Name   | EPIC Pad # | BG432  | BG560  | PG559   |
|------------|------------|--------|--------|---------|
| GND        | -          | GND*   | GND*   | GND*    |
| I/O        | 231        | K4     | K3     | BA13    |
| I/O        | 232        | -      | -      | AY14    |
| VCCINT     | -          | K3     | J1     | VCCINT* |
| I/O, FCLK4 | 233        | K2     | L4     | BC15    |
| I/O        | 234        | K1     | K2     | AW15    |
| VCCIO      | -          | VCCIO* | VCCIO* | VCCIO*  |
| I/O        | 235        | -      | -      | -       |
| I/O        | 236        | -      | -      | -       |
| I/O        | 237        | -      | -      | -       |
| I/O        | 238        | -      | -      | -       |
| I/O        | 239        | -      | M5     | BA15    |
| I/O        | 240        | -      | L3     | AU17    |
| I/O        | 241        | L3     | L1     | BB16    |
| I/O (D2)   | 242        | L2     | M4     | AY16    |
| GND        | -          | GND*   | GND*   | GND*    |
| VCCIO      | -          | VCCIO* | VCCIO* | -       |
| I/O        | 243        | M4     | M3     | AW17    |
| I/O        | 244        | M3     | N5     | AV18    |
| I/O        | 245        | -      | M2     | BA17    |
| I/O        | 246        | -      | N4     | BC17    |
| I/O        | 247        | -      | -      | -       |
| I/O        | 248        | -      | -      | -       |
| I/O        | 249        | -      | -      | -       |
| I/O        | 250        | -      | -      | -       |
| I/O        | 251        | M2     | N3     | AU19    |
| I/O        | 252        | M1     | N2     | BB18    |
| I/O        | 253        | N4     | P5     | AY18    |
| I/O        | 254        | N3     | N1     | AW19    |
| GND        | -          | GND*   | GND*   | GND*    |
| VCCIO      | -          | VCCIO* | VCCIO* | VCCIO*  |
| I/O        | 255        | -      | -      | -       |
| I/O        | 256        | -      | -      | -       |
| I/O        | 257        | -      | -      | -       |
| I/O        | 258        | -      | -      | -       |
| I/O        | 259        | -      | -      | -       |
| I/O        | 260        | -      | -      | -       |
| I/O        | 261        | N2     | P4     | AV20    |
| I/O        | 262        | N1     | P3     | AT20    |
| I/O        | 263        | P4     | P2     | BB20    |
| I/O        | 264        | P3     | R5     | AY20    |
| I/O        | 265        | P2     | R4     | BC21    |
| I/O        | 266        | R3     | R3     | BA21    |
| GND        | -          | GND*   | GND*   | GND*    |
| VCCIO      | -          | VCCIO* | VCCIO* | -       |
| I/O        | 267        | R4     | R1     | AW21    |
| I/O        | 268        | -      | T4     | AU21    |
| I/O        | 269        | -      | T5     | BB22    |
| I/O        | 270        | -      | -      | AY22    |
| I/O        | 271        | -      | -      | -       |
| I/O        | 272        | -      | -      | -       |
| I/O        | 273        | -      | -      | -       |
| I/O        | 274        | -      | -      | -       |
| VCCINT     | -          | R2     | T3     | VCCINT* |
| I/O (/RS)  | 275        | R1     | T2     | AV22    |
| I/O (D3)   | 276        | T3     | U3     | BA23    |

XC40250XV Pinout Table (Continued)

| Pad Name   | EPIC Pad # | BG432  | BG560  | PG559   |
|------------|------------|--------|--------|---------|
| GND        | -          | GND*   | GND*   | GND*    |
| VCCIO      | -          | VCCIO* | VCCIO* | VCCIO*  |
| I/O        | 277        | T2     | U4     | AW23    |
| I/O (D4)   | 278        | T1     | U5     | AY24    |
| I/O        | 279        | -      | -      | -       |
| I/O        | 280        | -      | -      | -       |
| I/O        | 281        | -      | -      | -       |
| I/O        | 282        | -      | -      | -       |
| I/O        | 283        | -      | U1     | BC23    |
| I/O        | 284        | -      | U2     | BA27    |
| I/O        | 285        | U3     | V2     | AU23    |
| I/O        | 286        | U4     | V4     | AV24    |
| VCCIO      | -          | VCCIO* | VCCIO* | -       |
| GND        | -          | GND*   | GND*   | GND*    |
| I/O        | 287        | U2     | V5     | AY26    |
| I/O        | 288        | U1     | V3     | BB24    |
| I/O        | 289        | V3     | W1     | AW25    |
| I/O        | 290        | V4     | W3     | BB26    |
| I/O        | 291        | V2     | W4     | AT24    |
| I/O        | 292        | W2     | W5     | BA29    |
| I/O        | 293        | -      | -      | -       |
| I/O        | 294        | -      | -      | -       |
| I/O        | 295        | -      | -      | -       |
| I/O        | 296        | -      | -      | -       |
| I/O        | 297        | -      | -      | -       |
| I/O        | 298        | -      | -      | -       |
| VCCIO      | -          | VCCIO* | VCCIO* | VCCIO*  |
| GND        | -          | GND*   | GND*   | GND*    |
| I/O        | 299        | W3     | Y2     | AY28    |
| I/O        | 300        | W4     | Y3     | AU25    |
| I/O        | 301        | -      | Y4     | AV26    |
| I/O        | 302        | -      | AA1    | BC27    |
| I/O        | 303        | -      | -      | -       |
| I/O        | 304        | -      | -      | -       |
| I/O        | 305        | -      | -      | -       |
| I/O        | 306        | -      | -      | -       |
| I/O        | 307        | W1     | Y5     | AW27    |
| I/O        | 308        | Y1     | AA3    | BB28    |
| I/O        | 309        | Y3     | AA4    | BA31    |
| I/O        | 310        | Y4     | AB2    | AY30    |
| VCCIO      | -          | VCCIO* | VCCIO* | VCCIO*  |
| GND        | -          | GND*   | GND*   | GND*    |
| I/O (/CS0) | 311        | Y2     | AB3    | AW29    |
| I/O (D5)   | 312        | AA2    | AA5    | BC29    |
| I/O        | 313        | -      | AC1    | AU27    |
| I/O        | 314        | -      | AB4    | BA33    |
| I/O        | 315        | -      | -      | -       |
| I/O        | 316        | -      | -      | -       |
| I/O        | 317        | -      | -      | -       |
| I/O        | 318        | -      | -      | -       |
| VCCIO      | -          | VCCIO* | VCCIO* | VCCIO*  |
| I/O        | 319        | AA3    | AC3    | AY32    |
| I/O, FCLK3 | 320        | AB1    | AB5    | AW31    |
| VCCINT     | -          | AB2    | AD2    | VCCINT* |
| I/O        | 321        | -      | -      | BB30    |
| I/O        | 322        | AB3    | AC4    | BA35    |

XC40250XV Pinout Table (Continued)

| Pad Name  | EPIC Pad # | BG432  | BG560  | PG559  |
|-----------|------------|--------|--------|--------|
| GND       | -          | GND*   | GND*   | GND*   |
| VCCIO     | -          | VCCIO* | VCCIO* | -      |
| I/O       | 323        | AB4    | AD3    | AT28   |
| I/O       | 324        | AC2    | AE1    | AU29   |
| I/O       | 325        | AD1    | AC5    | BC33   |
| I/O       | 326        | AC3    | AE3    | AY34   |
| I/O       | 327        | -      | AD4    | BB34   |
| I/O       | 328        | -      | AF1    | AW33   |
| I/O       | 329        | -      | AF2    | AU31   |
| I/O       | 330        | -      | AD5    | AV32   |
| I/O       | 331        | -      | -      | -      |
| I/O       | 332        | -      | -      | -      |
| I/O       | 333        | -      | -      | -      |
| I/O       | 334        | -      | -      | -      |
| GND       | -          | GND*   | GND*   | GND*   |
| VCCIO     | -          | VCCIO* | VCCIO* | VCCIO* |
| I/O       | 335        | -      | -      | -      |
| I/O       | 336        | -      | -      | -      |
| I/O       | 337        | -      | -      | -      |
| I/O       | 338        | -      | -      | -      |
| I/O       | 339        | -      | AG2    | AT30   |
| I/O       | 340        | -      | AE4    | AU33   |
| I/O       | 341        | AC4    | AF3    | AW35   |
| I/O       | 342        | AD2    | AH1    | BC35   |
| I/O       | 343        | AE2    | AE5    | AY36   |
| I/O       | 344        | AD3    | AG3    | BB36   |
| I/O       | 345        | AD4    | AF4    | AV36   |
| I/O (D6)  | 346        | AF1    | AJ1    | AU35   |
| GND       | -          | GND*   | GND*   | GND*   |
| VCCIO     | -          | VCCIO* | VCCIO* | VCCIO* |
| I/O       | 347        | AF2    | AJ2    | AT34   |
| I/O       | 348        | AE3    | AF5    | AW37   |
| I/O       | 349        | -      | -      | -      |
| I/O       | 350        | -      | -      | -      |
| I/O       | 351        | -      | -      | -      |
| I/O       | 352        | -      | -      | -      |
| I/O       | 353        | AE4    | AH3    | BC37   |
| I/O       | 354        | AG1    | AG4    | AY38   |
| I/O       | 355        | AG2    | AK2    | BB38   |
| I/O       | 356        | AF3    | AJ3    | BA41   |
| I/O       | 357        | -      | -      | -      |
| I/O       | 358        | -      | -      | -      |
| GND       | -          | GND*   | GND*   | GND*   |
| VCCIO     | -          | VCCIO* | VCCIO* | -      |
| I/O       | 359        | -      | -      | -      |
| I/O       | 360        | -      | -      | -      |
| I/O       | 361        | -      | -      | -      |
| I/O       | 362        | -      | -      | -      |
| I/O       | 363        | AF4    | AG5    | AY40   |
| I/O       | 364        | AH1    | AL1    | BB40   |
| I/O       | 365        | AH2    | AH4    | AT36   |
| I/O       | 366        | AG3    | AK3    | BA39   |
| I/O, GCK5 | 367        | AG4    | AJ4    | AV38   |
| I/O (D7)  | 368        | AJ2    | AH5    | BC41   |
| /PROGRAM  | -          | AH3    | AM1    | BB42   |
| VCCIO     | -          | VCCIO* | VCCIO* | VCCIO* |

XC40250XV Pinout Table (Continued)

| Pad Name  | EPIC Pad # | BG432  | BG560  | PG559   |
|-----------|------------|--------|--------|---------|
| DONE      | -          | AH4    | AJ5    | AY42    |
| GND       | -          | GND*   | GND*   | GND*    |
| I/O, GCK4 | 369        | AJ4    | AL4    | AW41    |
| I/O       | 370        | AK3    | AJ6    | AV40    |
| VCCINT    | -          | AH5    | AK5    | VCCINT* |
| I/O       | 371        | -      | -      | AV42    |
| I/O       | 372        | AK4    | AN3    | AR37    |
| I/O       | 373        | AJ5    | AK6    | AP36    |
| I/O       | 374        | AH6    | AL5    | AT38    |
| I/O       | 375        | -      | -      | -       |
| I/O       | 376        | -      | -      | -       |
| I/O       | 377        | -      | -      | -       |
| I/O       | 378        | -      | -      | -       |
| VCCIO     | -          | VCCIO* | VCCIO* | -       |
| GND       | -          | GND*   | GND*   | GND*    |
| I/O       | 379        | -      | -      | -       |
| I/O       | 380        | -      | -      | -       |
| I/O       | 381        | -      | -      | -       |
| I/O       | 382        | -      | -      | -       |
| I/O       | 383        | -      | -      | -       |
| I/O       | 384        | -      | -      | -       |
| I/O       | 385        | AL4    | AJ7    | AU39    |
| I/O       | 386        | AK5    | AM4    | AU43    |
| I/O       | 387        | AJ6    | AM5    | BA43    |
| I/O       | 388        | AH7    | AK7    | AT42    |
| I/O       | 389        | AL5    | AL6    | AR39    |
| I/O       | 390        | AK6    | AJ8    | AN37    |
| VCCIO     | -          | VCCIO* | VCCIO* | VCCIO*  |
| GND       | -          | GND*   | GND*   | GND*    |
| I/O       | 391        | AH8    | AM6    | AT40    |
| I/O       | 392        | AJ7    | AN6    | AP40    |
| I/O       | 393        | AL6    | AK8    | AR43    |
| I/O       | 394        | AK7    | AL7    | AN39    |
| I/O       | 395        | AH9    | AJ9    | AP42    |
| I/O       | 396        | AJ8    | AN7    | AM38    |
| I/O       | 397        | -      | AL8    | AN43    |
| I/O       | 398        | -      | AK9    | AL37    |
| I/O       | 399        | -      | -      | -       |
| I/O       | 400        | -      | -      | -       |
| I/O       | 401        | -      | -      | -       |
| I/O       | 402        | -      | -      | -       |
| VCCIO     | -          | VCCIO* | VCCIO* | VCCIO*  |
| GND       | -          | GND*   | GND*   | GND*    |
| I/O       | 403        | -      | -      | -       |
| I/O       | 404        | -      | -      | -       |
| I/O       | 405        | -      | -      | -       |
| I/O       | 406        | -      | -      | -       |
| I/O       | 407        | -      | AM8    | AK36    |
| I/O       | 408        | -      | AJ10   | AR41    |
| I/O       | 409        | -      | AL9    | AL41    |
| I/O       | 410        | -      | AM9    | AN41    |
| I/O       | 411        | AK8    | AK10   | AK42    |
| I/O       | 412        | AJ9    | AN9    | AM40    |
| I/O       | 413        | AH10   | AJ11   | AJ43    |
| I/O       | 414        | AL8    | AL10   | AJ37    |
| VCCIO     | -          | VCCIO* | VCCIO* | -       |

XC40250XV Pinout Table (Continued)

| Pad Name | EPIC Pad # | BG432  | BG560  | PG559   |
|----------|------------|--------|--------|---------|
| GND      | -          | GND*   | GND*   | GND*    |
| I/O      | 415        | AK9    | AM10   | AL39    |
| I/O      | 416        | -      | -      | AH36    |
| VCCINT   | -          | AJ10   | AK11   | VCCINT* |
| I/O      | 417        | AK10   | AL11   | AH42    |
| I/O      | 418        | AL10   | AJ12   | AJ39    |
| VCCIO    | -          | VCCIO* | VCCIO* | VCCIO*  |
| I/O      | 419        | AJ11   | AN11   | AK40    |
| I/O      | 420        | AH12   | AK12   | AG41    |
| I/O      | 421        | -      | AL12   | AJ41    |
| I/O      | 422        | -      | AM12   | AH40    |
| I/O      | 423        | -      | -      | -       |
| I/O      | 424        | -      | -      | -       |
| I/O      | 425        | -      | -      | -       |
| I/O      | 426        | -      | -      | -       |
| GND      | -          | GND*   | GND*   | GND*    |
| VCCIO    | -          | VCCIO* | VCCIO* | -       |
| I/O      | 427        | -      | -      | -       |
| I/O      | 428        | -      | -      | -       |
| I/O      | 429        | -      | -      | -       |
| I/O      | 430        | -      | -      | -       |
| I/O      | 431        | -      | AJ13   | AG37    |
| I/O      | 432        | -      | AK13   | AG43    |
| I/O      | 433        | AK11   | AL13   | AG39    |
| I/O      | 434        | AJ12   | AM13   | AF38    |
| I/O      | 435        | AK12   | AN13   | AF42    |
| I/O      | 436        | AL12   | AJ14   | AD42    |
| I/O      | 437        | AH13   | AK14   | AF40    |
| I/O      | 438        | AJ13   | AL14   | AE37    |
| GND      | -          | GND*   | GND*   | GND*    |
| VCCIO    | -          | VCCIO* | VCCIO* | VCCIO*  |
| I/O      | 439        | AK13   | AM14   | AE39    |
| I/O      | 440        | AL13   | AN15   | AD40    |
| I/O      | 441        | AK14   | AJ15   | AC43    |
| I/O      | 442        | AH14   | AK15   | AD38    |
| I/O      | 443        | AJ14   | AL15   | AC41    |
| I/O      | 444        | AK15   | AM16   | AD36    |
| I/O      | 445        | -      | -      | -       |
| I/O      | 446        | -      | -      | -       |
| I/O      | 447        | -      | -      | -       |
| I/O      | 448        | -      | -      | -       |
| I/O      | 449        | -      | -      | -       |
| I/O      | 450        | -      | -      | -       |
| GND      | -          | GND*   | GND*   | GND*    |
| VCCIO    | -          | VCCIO* | VCCIO* | -       |
| I/O      | 451        | -      | -      | -       |
| I/O      | 452        | -      | -      | -       |
| I/O      | 453        | -      | -      | -       |
| I/O      | 454        | -      | -      | -       |
| I/O      | 455        | -      | AL16   | AC39    |
| I/O      | 456        | -      | AJ16   | AC37    |
| I/O      | 457        | AJ15   | AK16   | AB40    |
| I/O      | 458        | AL15   | AN17   | AB42    |
| VCCINT   | -          | AH15   | AM17   | VCCINT* |
| I/O      | 459        | -      | -      | AB38    |
| I/O      | 460        | AL16   | AL17   | AA41    |

XC40250XV Pinout Table (Continued)

| Pad Name    | EPIC Pad # | BG432  | BG560  | PG559   |
|-------------|------------|--------|--------|---------|
| GND         | -          | GND*   | GND*   | GND*    |
| VCCIO       | -          | VCCIO* | VCCIO* | VCCIO*  |
| I/O (/INIT) | 461        | AK16   | AJ17   | AA39    |
| I/O         | 462        | AJ16   | AK17   | AA37    |
| I/O         | 463        | AL17   | AM18   | Y40     |
| I/O         | 464        | AK17   | AL18   | Y38     |
| I/O         | 465        | -      | AK18   | AA43    |
| I/O         | 466        | -      | AJ18   | W39     |
| I/O         | 467        | -      | -      | -       |
| I/O         | 468        | -      | -      | -       |
| I/O         | 469        | -      | -      | -       |
| I/O         | 470        | -      | -      | -       |
| VCCIO       | -          | VCCIO* | VCCIO* | -       |
| GND         | -          | GND*   | GND*   | GND*    |
| I/O         | 471        | -      | -      | -       |
| I/O         | 472        | -      | -      | -       |
| I/O         | 473        | -      | -      | -       |
| I/O         | 474        | -      | -      | -       |
| I/O         | 475        | -      | -      | -       |
| I/O         | 476        | -      | -      | -       |
| I/O         | 477        | AJ17   | AN19   | V40     |
| I/O         | 478        | AH17   | AL19   | Y36     |
| I/O         | 479        | AK18   | AK19   | U41     |
| I/O         | 480        | AL19   | AM20   | Y42     |
| I/O         | 481        | AJ18   | AJ19   | T40     |
| I/O         | 482        | AK19   | AL20   | W37     |
| VCCIO       | -          | VCCIO* | VCCIO* | VCCIO*  |
| GND         | -          | GND*   | GND*   | GND*    |
| I/O         | 483        | AH18   | AK20   | V38     |
| I/O         | 484        | AL20   | AN21   | U39     |
| I/O         | 485        | AJ19   | AL21   | V42     |
| I/O         | 486        | AK20   | AJ20   | R41     |
| I/O         | 487        | AH19   | AM22   | U43     |
| I/O         | 488        | AJ20   | AK21   | P40     |
| I/O         | 489        | -      | AN23   | T42     |
| I/O         | 490        | -      | AL22   | U37     |
| I/O         | 491        | -      | -      | -       |
| I/O         | 492        | -      | -      | -       |
| I/O         | 493        | -      | -      | -       |
| I/O         | 494        | -      | -      | -       |
| VCCIO       | -          | VCCIO* | VCCIO* | VCCIO*  |
| GND         | -          | GND*   | GND*   | GND*    |
| I/O         | 495        | -      | -      | -       |
| I/O         | 496        | -      | -      | -       |
| I/O         | 497        | -      | -      | -       |
| I/O         | 498        | -      | -      | -       |
| I/O         | 499        | -      | AJ21   | R39     |
| I/O         | 500        | -      | AM23   | N41     |
| I/O         | 501        | AK21   | AK22   | R43     |
| I/O         | 502        | AH20   | AM24   | M40     |
| VCCIO       | -          | VCCIO* | VCCIO* | -       |
| I/O         | 503        | AJ21   | AL23   | N39     |
| I/O         | 504        | AL22   | AJ22   | T36     |
| VCCINT      | -          | AK22   | AN25   | VCCINT* |
| I/O         | 505        | -      | -      | P42     |
| I/O         | 506        | AJ22   | AK23   | R37     |

XC40250XV Pinout Table (Continued)

| Pad Name  | EPIC Pad # | BG432  | BG560  | PG559  |
|-----------|------------|--------|--------|--------|
| GND       | -          | GND*   | GND*   | GND*   |
| VCCIO     | -          | VCCIO* | VCCIO* | -      |
| I/O       | 507        | AK23   | AL24   | L41    |
| I/O       | 508        | AJ23   | AN26   | L43    |
| I/O       | 509        | AH22   | AJ23   | K40    |
| I/O       | 510        | AL24   | AL25   | K42    |
| I/O       | 511        | -      | AK24   | L39    |
| I/O       | 512        | -      | AM26   | J43    |
| I/O       | 513        | -      | AM27   | M38    |
| I/O       | 514        | -      | AJ24   | P36    |
| I/O       | 515        | -      | -      | -      |
| I/O       | 516        | -      | -      | -      |
| I/O       | 517        | -      | -      | -      |
| I/O       | 518        | -      | -      | -      |
| GND       | -          | GND*   | GND*   | GND*   |
| VCCIO     | -          | VCCIO* | VCCIO* | VCCIO* |
| I/O       | 519        | -      | -      | -      |
| I/O       | 520        | -      | -      | -      |
| I/O       | 521        | -      | -      | -      |
| I/O       | 522        | -      | -      | -      |
| I/O       | 523        | -      | AL26   | N37    |
| I/O       | 524        | -      | AK25   | H42    |
| I/O       | 525        | AK24   | AN28   | J41    |
| I/O       | 526        | AH23   | AN29   | G43    |
| I/O       | 527        | AJ24   | AJ25   | H40    |
| I/O       | 528        | AK25   | AL27   | F42    |
| I/O       | 529        | AJ25   | AK26   | J39    |
| I/O       | 530        | AH24   | AM29   | L37    |
| GND       | -          | GND*   | GND*   | GND*   |
| VCCIO     | -          | VCCIO* | VCCIO* | VCCIO* |
| I/O       | 531        | AL26   | AM30   | E41    |
| I/O       | 532        | AK26   | AJ26   | F40    |
| I/O       | 533        | AH25   | AL28   | C43    |
| I/O       | 534        | AL27   | AK27   | G39    |
| I/O       | 535        | AJ26   | AL29   | D42    |
| I/O       | 536        | AK27   | AN31   | H38    |
| I/O       | 537        | -      | -      | -      |
| I/O       | 538        | -      | -      | -      |
| I/O       | 539        | -      | -      | -      |
| I/O       | 540        | -      | -      | -      |
| I/O       | 541        | -      | -      | -      |
| I/O       | 542        | -      | -      | -      |
| GND       | -          | GND*   | GND*   | GND*   |
| VCCIO     | -          | VCCIO* | VCCIO* | -      |
| I/O       | 543        | -      | -      | -      |
| I/O       | 544        | -      | -      | -      |
| I/O       | 545        | -      | -      | -      |
| I/O       | 546        | -      | -      | -      |
| I/O (LDC) | 547        | AH26   | AJ27   | K36    |
| I/O       | 548        | AL28   | AM31   | J37    |
| I/O       | 549        | AJ27   | AK28   | B42    |
| I/O       | 550        | AK28   | AL30   | D40    |
| I/O (HDC) | 551        | AH27   | AK29   | C41    |
| I/O, GCK3 | 552        | AK29   | AJ28   | F38    |
| I (M2)    | -          | AJ28   | AN32   | H36    |
| VCCIO     | -          | VCCIO* | VCCIO* | VCCIO* |

XC40250XV Pinout Table (Continued)

| Pad Name  | EPIC Pad # | BG432  | BG560  | PG559   |
|-----------|------------|--------|--------|---------|
| I (M0)    | -          | AH28   | AJ29   | C39     |
| GND       | -          | GND*   | GND*   | GND*    |
| O (M1)    | -          | AH29   | AK30   | D38     |
| I/O, GCK2 | 553        | AJ30   | AH29   | E37     |
| I/O       | 554        | AH30   | AJ30   | B40     |
| VCCINT    | -          | AG28   | AK31   | VCCINT* |
| I/O       | 555        | -      | -      | H34     |
| I/O       | 556        | AH31   | AH30   | G35     |
| I/O       | 557        | AG29   | AL33   | F36     |
| I/O       | 558        | AG30   | AG29   | D36     |
| I/O       | 559        | -      | -      | -       |
| I/O       | 560        | -      | -      | -       |
| I/O       | 561        | -      | -      | -       |
| I/O       | 562        | -      | -      | -       |
| VCCIO     | -          | VCCIO* | VCCIO* | -       |
| GND       | -          | GND*   | GND*   | GND*    |
| I/O       | 563        | AF28   | AJ31   | E35     |
| I/O       | 564        | AG31   | AK32   | A41     |
| I/O       | 565        | AF29   | AG30   | G33     |
| I/O       | 566        | AF30   | AH31   | B38     |
| I/O       | 567        | -      | -      | -       |
| I/O       | 568        | -      | -      | -       |
| I/O       | 569        | -      | -      | -       |
| I/O       | 570        | -      | -      | -       |
| I/O       | 571        | -      | -      | -       |
| I/O       | 572        | -      | -      | -       |
| I/O       | 573        | AE28   | AF29   | D34     |
| I/O       | 574        | AF31   | AJ32   | E33     |
| VCCIO     | -          | VCCIO* | VCCIO* | VCCIO*  |
| GND       | -          | GND*   | GND*   | GND*    |
| I/O       | 575        | AE29   | AH32   | F32     |
| I/O       | 576        | AE30   | AF30   | G31     |
| I/O       | 577        | AD28   | AG31   | A37     |
| I/O       | 578        | AD29   | AE29   | H30     |
| I/O       | 579        | AD30   | AH33   | B36     |
| I/O       | 580        | AD31   | AG33   | C33     |
| I/O       | 581        | -      | AE30   | C35     |
| I/O       | 582        | -      | AF31   | D32     |
| I/O       | 583        | -      | -      | -       |
| I/O       | 584        | -      | -      | -       |
| I/O       | 585        | -      | -      | -       |
| I/O       | 586        | -      | -      | -       |
| VCCIO     | -          | VCCIO* | VCCIO* | VCCIO*  |
| GND       | -          | GND*   | GND*   | GND*    |
| I/O       | 587        | -      | -      | -       |
| I/O       | 588        | -      | -      | -       |
| I/O       | 589        | -      | -      | -       |
| I/O       | 590        | -      | -      | -       |
| I/O       | 591        | -      | AD29   | E31     |
| I/O       | 592        | -      | AF32   | G29     |
| I/O       | 593        | -      | AE31   | A35     |
| I/O       | 594        | -      | AD30   | H28     |
| I/O       | 595        | AC28   | AE32   | B34     |
| I/O       | 596        | AC29   | AC29   | C31     |
| I/O       | 597        | AC30   | AE33   | A33     |
| I/O       | 598        | AB28   | AD31   | D30     |

XC40250XV Pinout Table (Continued)

| Pad Name   | EPIC Pad # | BG432  | BG560  | PG559   |
|------------|------------|--------|--------|---------|
| VCCIO      | -          | VCCIO* | VCCIO* | -       |
| GND        | -          | GND*   | GND*   | GND*    |
| I/O, FCLK2 | 599        | AB29   | AC30   | E29     |
| I/O        | 600        | -      | -      | C29     |
| VCCINT     | -          | AB30   | AD32   | VCCINT* |
| I/O        | 601        | AB31   | AB29   | B30     |
| I/O        | 602        | AA29   | AC31   | G27     |
| VCCIO      | -          | VCCIO* | VCCIO* | VCCIO*  |
| I/O        | 603        | -      | -      | -       |
| I/O        | 604        | -      | -      | -       |
| I/O        | 605        | -      | -      | -       |
| I/O        | 606        | -      | -      | -       |
| I/O        | 607        | -      | AC33   | D28     |
| I/O        | 608        | -      | AB30   | A29     |
| I/O        | 609        | AA30   | AB31   | E27     |
| I/O        | 610        | Y28    | AA29   | F26     |
| GND        | -          | GND*   | GND*   | GND*    |
| VCCIO      | -          | VCCIO* | VCCIO* | -       |
| I/O        | 611        | Y29    | AB32   | C27     |
| I/O        | 612        | Y30    | AA30   | B28     |
| I/O        | 613        | Y31    | AA31   | G25     |
| I/O        | 614        | W28    | AA32   | A27     |
| I/O        | 615        | -      | -      | -       |
| I/O        | 616        | -      | -      | -       |
| I/O        | 617        | -      | -      | -       |
| I/O        | 618        | -      | -      | -       |
| I/O        | 619        | -      | Y29    | D26     |
| I/O        | 620        | -      | AA33   | B26     |
| I/O        | 621        | W29    | Y30    | E25     |
| I/O        | 622        | W30    | Y31    | F24     |
| GND        | -          | GND*   | GND*   | GND*    |
| VCCIO      | -          | VCCIO* | VCCIO* | VCCIO*  |
| I/O        | 623        | -      | -      | -       |
| I/O        | 624        | -      | -      | -       |
| I/O        | 625        | -      | -      | -       |
| I/O        | 626        | -      | -      | -       |
| I/O        | 627        | -      | -      | -       |
| I/O        | 628        | -      | -      | -       |
| I/O        | 629        | W31    | Y32    | H24     |
| I/O        | 630        | V28    | W29    | B24     |
| I/O        | 631        | V29    | W30    | D24     |
| I/O        | 632        | V30    | W31    | A23     |
| I/O        | 633        | U29    | W33    | C23     |
| I/O        | 634        | U28    | V30    | E23     |
| GND        | -          | GND*   | GND*   | GND*    |
| VCCIO      | -          | VCCIO* | VCCIO* | -       |
| I/O        | 635        | U30    | V29    | G23     |
| I/O        | 636        | U31    | V31    | B22     |
| I/O        | 637        | -      | V32    | D22     |
| I/O        | 638        | -      | U33    | A21     |
| I/O        | 639        | -      | -      | -       |
| I/O        | 640        | -      | -      | -       |
| I/O        | 641        | -      | -      | -       |
| I/O        | 642        | -      | -      | -       |
| I/O        | 643        | T29    | U30    | F22     |
| I/O        | 644        | T30    | U29    | C21     |

XC40250XV Pinout Table (Continued)

| Pad Name  | EPIC Pad # | BG432  | BG560  | PG559   |
|-----------|------------|--------|--------|---------|
| VCCIO     | -          | VCCIO* | VCCIO* | VCCIO*  |
| GND       | -          | GND*   | GND*   | GND*    |
| I/O       | 645        | T31    | U31    | E21     |
| I/O       | 646        | -      | -      | D20     |
| VCCINT    | -          | R29    | U32    | VCCINT* |
| I/O       | 647        | -      | -      | -       |
| I/O       | 648        | -      | -      | -       |
| I/O       | 649        | -      | -      | -       |
| I/O       | 650        | -      | -      | -       |
| I/O       | 651        | -      | T32    | C17     |
| I/O       | 652        | -      | T30    | G21     |
| I/O       | 653        | R28    | T29    | F20     |
| I/O       | 654        | R30    | T31    | D18     |
| VCCIO     | -          | VCCIO* | VCCIO* | -       |
| GND       | -          | GND*   | GND*   | GND*    |
| I/O       | 655        | R31    | R33    | E19     |
| I/O       | 656        | P29    | R31    | B20     |
| I/O       | 657        | P28    | R30    | H20     |
| I/O       | 658        | P30    | R29    | B18     |
| I/O       | 659        | N30    | P32    | C15     |
| I/O       | 660        | N29    | P31    | D16     |
| I/O       | 661        | -      | -      | -       |
| I/O       | 662        | -      | -      | -       |
| I/O       | 663        | -      | -      | -       |
| I/O       | 664        | -      | -      | -       |
| I/O       | 665        | -      | -      | -       |
| I/O       | 666        | -      | -      | -       |
| VCCIO     | -          | VCCIO* | VCCIO* | VCCIO*  |
| GND       | -          | GND*   | GND*   | GND*    |
| I/O       | 667        | N28    | N33    | G19     |
| I/O       | 668        | N31    | P30    | A17     |
| I/O       | 669        | M31    | P29    | F18     |
| I/O       | 670        | M29    | M32    | E17     |
| I/O       | 671        | -      | -      | -       |
| I/O       | 672        | -      | -      | -       |
| I/O       | 673        | -      | -      | -       |
| I/O       | 674        | -      | -      | -       |
| I/O       | 675        | -      | N31    | B16     |
| I/O       | 676        | -      | N30    | C13     |
| I/O       | 677        | M28    | L33    | A15     |
| I/O       | 678        | M30    | N29    | D14     |
| VCCIO     | -          | VCCIO* | VCCIO* | -       |
| GND       | -          | GND*   | GND*   | GND*    |
| I/O       | 679        | L30    | M31    | E15     |
| I/O       | 680        | L29    | L32    | G17     |
| I/O       | 681        | -      | M30    | B14     |
| I/O       | 682        | -      | L31    | C11     |
| I/O       | 683        | -      | -      | -       |
| I/O       | 684        | -      | -      | -       |
| I/O       | 685        | -      | -      | -       |
| I/O       | 686        | -      | -      | -       |
| VCCIO     | -          | VCCIO* | VCCIO* | VCCIO*  |
| I/O       | 687        | K31    | M29    | D12     |
| I/O (TMS) | 688        | K30    | J33    | A11     |
| VCCINT    | -          | K29    | K32    | VCCINT* |
| I/O       | 689        | -      | -      | E13     |

XC40250XV Pinout Table (Continued)

| Pad Name        | EPIC Pad # | BG432  | BG560  | PG559   |
|-----------------|------------|--------|--------|---------|
| I/O, FCLK1      | 690        | K28    | L30    | C9      |
| GND             | -          | GND*   | GND*   | GND*    |
| VCCIO           | -          | VCCIO* | VCCIO* | -       |
| I/O             | 691        | J30    | K31    | H16     |
| I/O             | 692        | H31    | L29    | B10     |
| I/O             | 693        | J29    | H33    | G15     |
| I/O             | 694        | J28    | K30    | A9      |
| I/O             | 695        | -      | J31    | D10     |
| I/O             | 696        | -      | H32    | B8      |
| I/O             | 697        | -      | K29    | E11     |
| I/O             | 698        | -      | H31    | G13     |
| I/O             | 699        | -      | -      | -       |
| I/O             | 700        | -      | -      | -       |
| I/O             | 701        | -      | -      | -       |
| I/O             | 702        | -      | -      | -       |
| GND             | -          | GND*   | GND*   | GND*    |
| VCCIO           | -          | VCCIO* | VCCIO* | VCCIO*  |
| I/O             | 703        | -      | -      | -       |
| I/O             | 704        | -      | -      | -       |
| I/O             | 705        | H30    | J30    | F12     |
| I/O             | 706        | G30    | G32    | H14     |
| I/O             | 707        | H29    | F33    | G11     |
| I/O             | 708        | H28    | J29    | A7      |
| I/O             | 709        | F31    | G31    | E9      |
| I/O             | 710        | F30    | H30    | B6      |
| I/O             | 711        | -      | E33    | D8      |
| I/O             | 712        | -      | E32    | F8      |
| I/O             | 713        | -      | -      | -       |
| I/O             | 714        | -      | -      | -       |
| GND             | -          | GND*   | GND*   | GND*    |
| VCCIO           | -          | VCCIO* | VCCIO* | VCCIO*  |
| I/O             | 715        | G29    | H29    | G9      |
| I/O             | 716        | G28    | F31    | H10     |
| I/O             | 717        | -      | -      | -       |
| I/O             | 718        | -      | -      | -       |
| I/O             | 719        | E31    | G30    | B4      |
| I/O             | 720        | E30    | D32    | E7      |
| I/O             | 721        | F29    | E31    | C5      |
| I/O             | 722        | F28    | G29    | D6      |
| I/O             | 723        | -      | -      | -       |
| I/O             | 724        | -      | -      | -       |
| I/O             | 725        | -      | -      | -       |
| I/O             | 726        | -      | -      | -       |
| GND             | -          | GND*   | GND*   | GND*    |
| VCCIO           | -          | VCCIO* | VCCIO* | -       |
| I/O             | 727        | -      | -      | -       |
| I/O             | 728        | -      | -      | -       |
| I/O             | 729        | -      | -      | -       |
| I/O             | 730        | -      | -      | -       |
| I/O (TCK)       | 731        | D31    | C33    | D4      |
| I/O (TDI)       | 732        | D30    | F30    | H8      |
| I/O             | 733        | E29    | D31    | A3      |
| I/O             | 734        | -      | -      | F6      |
| VCCINT          | -          | E28    | E30    | VCCINT* |
| I/O (A17)       | 735        | C30    | F29    | C3      |
| I/O, GCK1 (A16) | 736        | D29    | B33    | C1      |

XC40250XV Pinout Table (Continued)

| Pad Name | EPIC Pad # | BG432 | BG560 | PG559 |
|----------|------------|-------|-------|-------|
| GND      | -          | GND*  | GND*  | GND*  |
|          |            |       |       |       |
| VCCIO    | -          | A1    | A4    | A13   |
| VCCIO    | -          | A11   | A10   | A31   |
| VCCIO    | -          | A21   | A16   | A43   |
| VCCIO    | -          | A31   | A22   | B2    |
| VCCIO    | -          | D11   | A26   | C7    |
| VCCIO    | -          | D21   | A30   | C19   |
| VCCIO    | -          | L1    | B2    | C25   |
| VCCIO    | -          | L4    | B13   | C37   |
| VCCIO    | -          | L28   | B19   | F14   |
| VCCIO    | -          | L31   | B32   | F30   |
| VCCIO    | -          | AA1   | C3    | G3    |
| VCCIO    | -          | AA4   | C31   | G7    |
| VCCIO    | -          | AA28  | C32   | G37   |
| VCCIO    | -          | AA31  | D1    | G41   |
| VCCIO    | -          | AH11  | D33   | N1    |
| VCCIO    | -          | AH21  | E5    | N43   |
| VCCIO    | -          | AL1   | H1    | P6    |
| VCCIO    | -          | AL11  | K33   | P38   |
| VCCIO    | -          | AL21  | M1    | W3    |
| VCCIO    | -          | AL31  | N32   | W41   |
| VCCIO    | -          | C3    | R2    | AE3   |
| VCCIO    | -          | C29   | T33   | AE41  |
| VCCIO    | -          | AJ3   | V1    | AK6   |
| VCCIO    | -          | AJ29  | W32   | AK38  |
| VCCIO    | -          | -     | AA2   | AL1   |
| VCCIO    | -          | -     | AB33  | AL43  |
| VCCIO    | -          | -     | AD1   | AU3   |
| VCCIO    | -          | -     | AF33  | AU7   |
| VCCIO    | -          | -     | AK1   | AU37  |
| VCCIO    | -          | -     | AK4   | AU41  |
| VCCIO    | -          | -     | AK33  | AV14  |
| VCCIO    | -          | -     | AL2   | AV30  |
| VCCIO    | -          | -     | AL3   | BA7   |
| VCCIO    | -          | -     | AL31  | BA19  |
| VCCIO    | -          | -     | AM2   | BA25  |
| VCCIO    | -          | -     | AM15  | BA37  |
| VCCIO    | -          | -     | AM21  | BC1   |
| VCCIO    | -          | -     | AM32  | BC13  |
| VCCIO    | -          | -     | AN4   | BC31  |
| VCCIO    | -          | -     | AN8   | BC43  |
| VCCIO    | -          | -     | AN12  | -     |
| VCCIO    | -          | -     | AN18  | -     |
| VCCIO    | -          | -     | AN24  | -     |
| VCCIO    | -          | -     | AN30  | -     |
|          |            |       |       |       |
| VCCINT   | -          | -     | -     | H12   |
| VCCINT   | -          | -     | -     | H18   |
| VCCINT   | -          | -     | -     | H26   |
| VCCINT   | -          | -     | -     | H32   |
| VCCINT   | -          | -     | -     | M8    |
| VCCINT   | -          | -     | -     | M36   |
| VCCINT   | -          | -     | -     | V8    |
| VCCINT   | -          | -     | -     | V36   |
| VCCINT   | -          | -     | -     | AF8   |

XC40250XV Pinout Table (Continued)

| Pad Name | EPIC Pad # | BG432 | BG560 | PG559 |
|----------|------------|-------|-------|-------|
| VCCINT   | -          | -     | -     | AF36  |
| VCCINT   | -          | -     | -     | AM8   |
| VCCINT   | -          | -     | -     | AM36  |
| VCCINT   | -          | -     | -     | AT12  |
| VCCINT   | -          | -     | -     | AT18  |
| VCCINT   | -          | -     | -     | AT26  |
| VCCINT   | -          | -     | -     | AT32  |
|          |            |       |       |       |
| GND      | -          | A2    | A7    | A5    |
| GND      | -          | A3    | A12   | A19   |
| GND      | -          | A7    | A14   | A25   |
| GND      | -          | A9    | A18   | A39   |
| GND      | -          | A14   | A20   | B12   |
| GND      | -          | A18   | A24   | B32   |
| GND      | -          | A23   | A29   | E1    |
| GND      | -          | A25   | A32   | E5    |
| GND      | -          | A29   | B1    | E39   |
| GND      | -          | A30   | B6    | E43   |
| GND      | -          | B1    | B9    | F10   |
| GND      | -          | B2    | B15   | F16   |
| GND      | -          | B30   | B23   | F28   |
| GND      | -          | B31   | B27   | F34   |
| GND      | -          | C1    | B31   | H22   |
| GND      | -          | C31   | C2    | K6    |
| GND      | -          | D16   | E1    | K38   |
| GND      | -          | G1    | F32   | M2    |
| GND      | -          | G31   | G2    | M42   |
| GND      | -          | J1    | G33   | T6    |
| GND      | -          | J31   | J32   | T38   |
| GND      | -          | P1    | K1    | W1    |
| GND      | -          | P31   | L2    | W43   |
| GND      | -          | T4    | M33   | AB8   |
| GND      | -          | T28   | P1    | AB36  |
| GND      | -          | V1    | P33   | AE1   |
| GND      | -          | V31   | R32   | AE43  |
| GND      | -          | AC1   | T1    | AH6   |
| GND      | -          | AC31  | V33   | AH38  |
| GND      | -          | AE1   | W2    | AM2   |
| GND      | -          | AE31  | Y1    | AM42  |
| GND      | -          | AH16  | Y33   | AP6   |
| GND      | -          | AJ1   | AB1   | AP38  |
| GND      | -          | AJ31  | AC32  | AT22  |
| GND      | -          | AK1   | AD33  | AV10  |
| GND      | -          | AK2   | AE2   | AV16  |
| GND      | -          | AK30  | AG1   | AV28  |
| GND      | -          | AK31  | AG32  | AV34  |
| GND      | -          | AL2   | AH2   | AW1   |
| GND      | -          | AL3   | AJ33  | AW5   |
| GND      | -          | AL7   | AL32  | AW39  |
| GND      | -          | AL9   | AM3   | AW43  |
| GND      | -          | AL14  | AM11  | BB12  |
| GND      | -          | AL18  | AM19  | BB32  |
| GND      | -          | AL23  | AM25  | BC5   |
| GND      | -          | AL25  | AM28  | BC19  |
| GND      | -          | AL29  | AM33  | BC25  |
| GND      | -          | AL30  | AM7   | BC39  |

XC40250XV Pinout Table (Continued)

| Pad Name | EPIC<br>Pad # | BG432 | BG560 | PG559 |
|----------|---------------|-------|-------|-------|
| GND      | -             | -     | AN2   | -     |
| GND      | -             | -     | AN5   | -     |
| GND      | -             | -     | AN10  | -     |
| GND      | -             | -     | AN14  | -     |
| GND      | -             | -     | AN16  | -     |
| GND      | -             | -     | AN20  | -     |
| GND      | -             | -     | AN22  | -     |
| GND      | -             | -     | AN27  | -     |
|          |               |       |       |       |
| NC       | -             | C8    | A1    | -     |
| NC       | -             | -     | A33   | -     |
| NC       | -             | -     | AC2   | -     |
| NC       | -             | -     | AN1   | -     |
| NC       | -             | -     | AN33  | -     |

12/21/98

\*Note: Pads labelled GND\*, VCCINT\*, or VCCIO\* are internally bonded to the corresponding power plane within the associated package. They have no direct connection to any specific package pin.