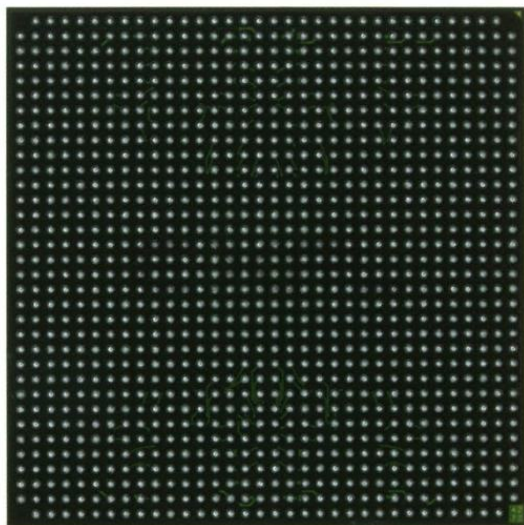




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### Understanding **Embedded - FPGAs (Field Programmable Gate Array)**

Embedded - FPGAs, or Field Programmable Gate Arrays, are advanced integrated circuits that offer unparalleled flexibility and performance for digital systems. Unlike traditional fixed-function logic devices, FPGAs can be programmed and reprogrammed to execute a wide array of logical operations, enabling customized functionality tailored to specific applications. This reprogrammability allows developers to iterate designs quickly and implement complex functions without the need for custom hardware.

### Applications of Embedded - FPGAs

The versatility of Embedded - FPGAs makes them indispensable in numerous fields. In telecommunications.

#### Details

|                                |                                                                                                                                             |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Product Status                 | Obsolete                                                                                                                                    |
| Number of LABs/CLBs            | 11648                                                                                                                                       |
| Number of Logic Elements/Cells | -                                                                                                                                           |
| Total RAM Bits                 | 3096576                                                                                                                                     |
| Number of I/O                  | 824                                                                                                                                         |
| Number of Gates                | 8000000                                                                                                                                     |
| Voltage - Supply               | 1.425V ~ 1.575V                                                                                                                             |
| Mounting Type                  | Surface Mount                                                                                                                               |
| Operating Temperature          | 0°C ~ 85°C (TJ)                                                                                                                             |
| Package / Case                 | 1152-BBGA, FCBGA                                                                                                                            |
| Supplier Device Package        | 1152-FCBGA (35x35)                                                                                                                          |
| Purchase URL                   | <a href="https://www.e-xfl.com/product-detail/xilinx/xc2v8000-5ffg1152c">https://www.e-xfl.com/product-detail/xilinx/xc2v8000-5ffg1152c</a> |

Figure 12 provides examples illustrating the use of the SSTL2\_I\_DCI, SSTL2\_II\_DCI, SSTL3\_I\_DCI, and SSTL3\_II\_DCI I/O standards. For a complete list, see the [Virtex-II Platform FPGA User Guide](#).

|                                         | SSTL2_I               | SSTL2_II              | SSTL3_I               | SSTL3_II              |
|-----------------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Conventional                            |                       |                       |                       |                       |
| DCI Transmit<br>Conventional<br>Receive |                       |                       |                       |                       |
| Conventional<br>Transmit<br>DCI Receive |                       |                       |                       |                       |
| DCI Transmit<br>DCI Receive             |                       |                       |                       |                       |
| Bidirectional                           | N/A                   |                       | N/A                   |                       |
| Reference<br>Resistor                   | $VRN = VRP = R = Z_0$ | $VRN = VRP = R = Z_0$ | $VRN = VRP = R = Z_0$ | $VRN = VRP = R = Z_0$ |
| Recommended<br>$Z_0^{(2)}$              | 50 Ω                  | 50 Ω                  | 50 Ω                  | 50 Ω                  |

Notes:

1. The SSTL-compatible 25Ω series resistor is accounted for in the DCI buffer, and it is not DCI controlled.
2.  $Z_0$  is the recommended PCB trace impedance.

DS031\_65b\_112502

Figure 12: SSTL DCI Usage Examples

## Notice of Disclaimer

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## Virtex-II Data Sheet

The Virtex-II Data Sheet contains the following modules:

- [Virtex-II Platform FPGAs: Introduction and Overview \(Module 1\)](#)
- [Virtex-II Platform FPGAs: Functional Description \(Module 2\)](#)
- [Virtex-II Platform FPGAs: DC and Switching Characteristics \(Module 3\)](#)
- [Virtex-II Platform FPGAs: Pinout Information \(Module 4\)](#)

Table 5: Minimum Power On Current Required for Virtex-II Devices

|                | Device (mA)                         |          |          |          |          |          |          |          |
|----------------|-------------------------------------|----------|----------|----------|----------|----------|----------|----------|
|                | XC2V40, XC2V80,<br>XC2V250, XC2V500 | XC2V1000 | XC2V1500 | XC2V2000 | XC2V3000 | XC2V4000 | XC2V6000 | XC2V8000 |
| $I_{CCINTMIN}$ | 200                                 | 250      | 350      | 400      | 500      | 650      | 800      | 1100     |
| $I_{CCAUXMIN}$ | 100                                 | 100      | 100      | 100      | 100      | 100      | 100      | 100      |
| $I_{CCOMIN}$   | 50                                  | 50       | 100      | 100      | 100      | 100      | 100      | 100      |

**Notes:**

- Values specified for power on current parameters are Commercial Grade. For Industrial Grade values, multiply Commercial Grade values by 1.25.
- $I_{CCOMIN}$  values listed here apply to the entire device (all banks).

## General Power Supply Requirements

Proper decoupling of all FPGA power supplies is essential. Consult Xilinx Application Note [XAPP623](#) for detailed information on power distribution system design.

$V_{CCAUX}$  powers critical resources in the FPGA. Thus,  $V_{CCAUX}$  is especially susceptible to power supply noise.

Changes in  $V_{CCAUX}$  voltage outside of 200 mV peak to peak should take place at a rate no faster than 10 mV per millisecond. Techniques to help reduce jitter and period distortion are provided in Xilinx Answer Record 13756, available at [www.support.xilinx.com](#).

$V_{CCAUX}$  can share a power plane with 3.3V  $V_{CCO}$ , but only if  $V_{CCO}$  does not have excessive noise. Using simultaneously switching output (SSO) limits are essential for keeping power supply noise to a minimum. Refer to [XAPP689](#), "Managing Ground Bounce in Large FPGAs," to determine the number of simultaneously switching outputs allowed per bank at the package level.

## DC Input and Output Levels

Values for  $V_{IL}$  and  $V_{IH}$  are recommended input voltages. Values for  $I_{OL}$  and  $I_{OH}$  are guaranteed over the recommended operating conditions at the  $V_{OL}$  and  $V_{OH}$  test points. Only selected standards are tested. These are chosen to ensure that all standards meet their specifications. The selected standards are tested at minimum  $V_{CCO}$  with the respective  $V_{OL}$  and  $V_{OH}$  voltage levels shown. Other standards are sample tested.

Table 6: DC Input and Output Levels

| Input/Output<br>Standard | $V_{IL}$ |                  | $V_{IH}$         |                 | $V_{OL}$      | $V_{OH}$        | $I_{OL}$ | $I_{OH}$ |
|--------------------------|----------|------------------|------------------|-----------------|---------------|-----------------|----------|----------|
|                          | V, Min   | V, Max           | V, Min           | V, Max          | V, Max        | V, Min          | mA       | mA       |
| LVTTL <sup>(1)</sup>     | -0.5     | 0.8              | 2.0              | 3.6             | 0.4           | 2.4             | 24       | -24      |
| LVC MOS33                | -0.5     | 0.8              | 2.0              | 3.6             | 0.4           | $V_{CCO} - 0.4$ | 24       | -24      |
| LVC MOS25                | -0.5     | 0.7              | 1.7              | 2.7             | 0.4           | $V_{CCO} - 0.4$ | 24       | -24      |
| LVC MOS18                | -0.5     | 35% $V_{CCO}$    | 65% $V_{CCO}$    | 1.95            | 0.4           | $V_{CCO} - 0.4$ | 16       | -16      |
| LVC MOS15                | -0.5     | 35% $V_{CCO}$    | 65% $V_{CCO}$    | 1.7             | 0.4           | $V_{CCO} - 0.4$ | 16       | -16      |
| PCI33_3                  | -0.5     | 30% $V_{CCO}$    | 50% $V_{CCO}$    | $V_{CCO} + 0.5$ | 10% $V_{CCO}$ | 90% $V_{CCO}$   | Note 2   | Note 2   |
| PCI66_3                  | -0.5     | 30% $V_{CCO}$    | 50% $V_{CCO}$    | $V_{CCO} + 0.5$ | 10% $V_{CCO}$ | 90% $V_{CCO}$   | Note 2   | Note 2   |
| PCI-X                    | -0.5     | Note 2           | Note 2           | Note 2          | Note 2        | Note 2          | Note 2   | Note 2   |
| GTLP                     | -0.5     | $V_{REF} - 0.1$  | $V_{REF} + 0.1$  | $V_{CCO} + 0.5$ | 0.6           | n/a             | 36       | n/a      |
| GTL                      | -0.5     | $V_{REF} - 0.05$ | $V_{REF} + 0.05$ | $V_{CCO} + 0.5$ | 0.4           | n/a             | 40       | n/a      |
| HSTL I                   | -0.5     | $V_{REF} - 0.1$  | $V_{REF} + 0.1$  | $V_{CCO} + 0.5$ | 0.4           | $V_{CCO} - 0.4$ | 8        | -8       |
| HSTL II                  | -0.5     | $V_{REF} - 0.1$  | $V_{REF} + 0.1$  | $V_{CCO} + 0.5$ | 0.4           | $V_{CCO} - 0.4$ | 16       | -16      |
| HSTL III                 | -0.5     | $V_{REF} - 0.1$  | $V_{REF} + 0.1$  | $V_{CCO} + 0.5$ | 0.4           | $V_{CCO} - 0.4$ | 24       | -8       |
| HSTL IV                  | -0.5     | $V_{REF} - 0.1$  | $V_{REF} + 0.1$  | $V_{CCO} + 0.5$ | 0.4           | $V_{CCO} - 0.4$ | 48       | -8       |

## Clock Distribution Switching Characteristics

Table 20: Clock Distribution Switching Characteristics

| Description                                                | Symbol            | Speed Grade |         |         | Units   |
|------------------------------------------------------------|-------------------|-------------|---------|---------|---------|
|                                                            |                   | -6          | -5      | -4      |         |
| Global Clock Buffer I input to O output                    | $T_{GIO}$         | 0.47        | 0.52    | 0.59    | ns, Max |
| Global Clock Buffer S input Setup/Hold to I1 and I2 inputs | $T_{GSI}/T_{GIS}$ | 0.55/ 0     | 0.61/ 0 | 0.70/ 0 | ns, Max |

## CLB Switching Characteristics

Delays originating at F/G inputs vary slightly according to the input used (see Figure 16 in Module 2). The values listed below are worst-case. Precise values are provided by the timing analyzer.

Table 21: CLB Switching Characteristics

| Description                                                          | Symbol                               | Speed Grade |            |            | Units   |
|----------------------------------------------------------------------|--------------------------------------|-------------|------------|------------|---------|
|                                                                      |                                      | -6          | -5         | -4         |         |
| Combinatorial Delays                                                 |                                      |             |            |            |         |
| 4-input function: F/G inputs to X/Y outputs                          | T <sub>ILO</sub>                     | 0.35        | 0.39       | 0.44       | ns, Max |
| 5-input function: F/G inputs to F5 output                            | T <sub>IF5</sub>                     | 0.57        | 0.63       | 0.72       | ns, Max |
| 5-input function: F/G inputs to X output                             | T <sub>IF5X</sub>                    | 0.76        | 0.83       | 0.95       | ns, Max |
| FXINA or FXINB inputs to Y output via MUXFX                          | T <sub>IFXY</sub>                    | 0.36        | 0.39       | 0.45       | ns, Max |
| FXINA input to FX output via MUXFX                                   | T <sub>INAFX</sub>                   | 0.26        | 0.28       | 0.32       | ns, Max |
| FXINB input to FX output via MUXFX                                   | T <sub>INBFX</sub>                   | 0.26        | 0.28       | 0.32       | ns, Max |
| SOPIN input to SOPOUT output via ORCY                                | T <sub>SOPSOP</sub>                  | 0.35        | 0.38       | 0.44       | ns, Max |
| Incremental delay routing through transparent latch to XQ/YQ outputs | T <sub>IFNCTL</sub>                  | 0.41        | 0.45       | 0.51       | ns, Max |
| Sequential Delays                                                    |                                      |             |            |            |         |
| FF Clock CLK to XQ/YQ outputs                                        | T <sub>CKO</sub>                     | 0.45        | 0.50       | 0.57       | ns, Max |
| Latch Clock CLK to XQ/YQ outputs                                     | T <sub>CKLO</sub>                    | 0.54        | 0.59       | 0.68       | ns, Max |
| Setup and Hold Times Before/After Clock CLK                          |                                      |             |            |            |         |
| BX/BY inputs                                                         | T <sub>DICK</sub> /T <sub>CKDI</sub> | 0.30/–0.07  | 0.33/–0.08 | 0.37/–0.09 | ns, Min |
| DY inputs                                                            | T <sub>DYCK</sub> /T <sub>CKDY</sub> | 0.30/–0.07  | 0.33/–0.08 | 0.37/–0.09 | ns, Min |
| DX inputs                                                            | T <sub>DXCK</sub> /T <sub>CKDX</sub> | 0.30/–0.07  | 0.33/–0.08 | 0.37/–0.09 | ns, Min |
| CE input                                                             | T <sub>CECK</sub> /T <sub>CKCE</sub> | 0.19/–0.06  | 0.21/–0.07 | 0.24/–0.08 | ns, Min |
| SR/BY inputs (synchronous)                                           | T <sub>SRCK</sub> /T <sub>SCKR</sub> | 0.21/–0.02  | 0.23/–0.03 | 0.26/–0.03 | ns, Min |
| Clock CLK                                                            |                                      |             |            |            |         |
| Minimum Pulse Width, High                                            | T <sub>CH</sub>                      | 0.61        | 0.67       | 0.77       | ns, Min |
| Minimum Pulse Width, Low                                             | T <sub>CL</sub>                      | 0.61        | 0.67       | 0.77       | ns, Min |
| Set/Reset                                                            |                                      |             |            |            |         |
| Minimum Pulse Width, SR/BY inputs (asynchronous)                     | T <sub>RPW</sub>                     | 0.61        | 0.67       | 0.77       | ns, Min |
| Delay from SR/BY inputs to XQ/YQ outputs (asynchronous)              | T <sub>RQ</sub>                      | 1.06        | 1.17       | 1.34       | ns, Max |
| Toggle Frequency (MHz) (for export control)                          | F <sub>TOG</sub>                     | 820         | 750        | 650        | MHz     |

Table 5: CS144/CSG144 — XC2V40, XC2V80, and XC2V250

| Bank | Pin Description                    | Pin Number | No Connect in the XC2V40 |
|------|------------------------------------|------------|--------------------------|
| 2    | IO_L96N_2                          | G11        |                          |
| 2    | IO_L96P_2                          | G13        |                          |
|      |                                    |            |                          |
| 3    | IO_L96N_3                          | G12        |                          |
| 3    | IO_L96P_3                          | H12        |                          |
| 3    | IO_L94N_3                          | H11        |                          |
| 3    | IO_L94P_3                          | J13        |                          |
| 3    | IO_L03N_3/VREF_3                   | J10        |                          |
| 3    | IO_L03P_3                          | K13        |                          |
| 3    | IO_L02N_3/VRP_3                    | K12        |                          |
| 3    | IO_L02P_3/VRN_3                    | K11        |                          |
| 3    | IO_L01N_3                          | K10        |                          |
| 3    | IO_L01P_3                          | L13        |                          |
|      |                                    |            |                          |
| 4    | IO_L01N_4/BUSY/DOUT <sup>(1)</sup> | M11        |                          |
| 4    | IO_L01P_4/INIT_B                   | N11        |                          |
| 4    | IO_L02N_4/D0/DIN <sup>(1)</sup>    | L10        |                          |
| 4    | IO_L02P_4/D1                       | M10        |                          |
| 4    | IO_L03N_4/D2/ALT_VRP_4             | N10        |                          |
| 4    | IO_L03P_4/D3/ALT_VRN_4             | K9         |                          |
| 4    | IO_L94N_4/VREF_4                   | N9         |                          |
| 4    | IO_L94P_4                          | K8         |                          |
| 4    | IO_L95N_4/GCLK3S                   | L8         |                          |
| 4    | IO_L95P_4/GCLK2P                   | M8         |                          |
| 4    | IO_L96N_4/GCLK1S                   | N8         |                          |
| 4    | IO_L96P_4/GCLK0P                   | K7         |                          |
|      |                                    |            |                          |
| 5    | IO_L96N_5/GCLK7S                   | N7         |                          |
| 5    | IO_L96P_5/GCLK6P                   | M7         |                          |
| 5    | IO_L95N_5/GCLK5S                   | N6         |                          |
| 5    | IO_L95P_5/GCLK4P                   | M6         |                          |
| 5    | IO_L94N_5                          | L6         |                          |
| 5    | IO_L94P_5/VREF_5                   | K6         |                          |
| 5    | IO_L03N_5/D4/ALT_VRP_5             | L5         |                          |
| 5    | IO_L03P_5/D5/ALT_VRN_5             | K5         |                          |
| 5    | IO_L02N_5/D6                       | N4         |                          |
| 5    | IO_L02P_5/D7                       | M4         |                          |
| 5    | IO_L01N_5/RDWR_B                   | L4         |                          |
| 5    | IO_L01P_5/CS_B                     | K4         |                          |

Table 6: FG256/FGG256 BGA — XC2V40, XC2V80, XC2V250, XC2V500, and XC2V1000

| Bank | Pin Description  | Pin Number | No Connect in XC2V40 | No Connect in XC2V80 |
|------|------------------|------------|----------------------|----------------------|
| 5    | IO_L01P_5/CS_B   | T3         |                      |                      |
| 6    | IO_L01P_6        | P1         |                      |                      |
| 6    | IO_L01N_6        | N1         |                      |                      |
| 6    | IO_L02P_6/VRN_6  | N3         |                      |                      |
| 6    | IO_L02N_6/VRP_6  | N2         |                      |                      |
| 6    | IO_L03P_6        | M4         |                      |                      |
| 6    | IO_L03N_6/VREF_6 | M3         |                      |                      |
| 6    | IO_L04P_6        | M2         | NC                   |                      |
| 6    | IO_L04N_6        | M1         | NC                   |                      |
| 6    | IO_L06P_6        | L4         | NC                   |                      |
| 6    | IO_L06N_6        | L3         | NC                   |                      |
| 6    | IO_L43P_6        | L2         | NC                   | NC                   |
| 6    | IO_L43N_6        | L1         | NC                   | NC                   |
| 6    | IO_L45P_6        | L5         | NC                   | NC                   |
| 6    | IO_L45N_6/VREF_6 | K5         | NC                   | NC                   |
| 6    | IO_L91P_6        | K4         | NC                   |                      |
| 6    | IO_L91N_6        | K3         | NC                   |                      |
| 6    | IO_L93P_6        | K2         | NC                   |                      |
| 6    | IO_L93N_6/VREF_6 | K1         | NC                   |                      |
| 6    | IO_L94P_6        | J4         |                      |                      |
| 6    | IO_L94N_6        | J3         |                      |                      |
| 6    | IO_L96P_6        | J2         |                      |                      |
| 6    | IO_L96N_6        | J1         |                      |                      |
| 7    | IO_L96P_7        | H1         |                      |                      |
| 7    | IO_L96N_7        | H2         |                      |                      |
| 7    | IO_L94P_7        | H3         |                      |                      |
| 7    | IO_L94N_7        | H4         |                      |                      |
| 7    | IO_L93P_7/VREF_7 | G1         | NC                   |                      |
| 7    | IO_L93N_7        | G2         | NC                   |                      |
| 7    | IO_L91P_7        | G3         | NC                   |                      |
| 7    | IO_L91N_7        | G4         | NC                   |                      |
| 7    | IO_L45P_7/VREF_7 | G5         | NC                   | NC                   |

Table 7: FG456/FGG456 BGA — XC2V250, XC2V500, and XC2V1000

| Bank | Pin Description                 | Pin Number | No Connect in XC2V250 | No Connect in XC2V500 |
|------|---------------------------------|------------|-----------------------|-----------------------|
| 4    | IO_L02N_4/D0/DIN <sup>(1)</sup> | V18        |                       |                       |
| 4    | IO_L02P_4/D1                    | V17        |                       |                       |
| 4    | IO_L03N_4/D2/ALT_VRP_4          | W18        |                       |                       |
| 4    | IO_L03P_4/D3/ALT_VRN_4          | Y18        |                       |                       |
| 4    | IO_L04N_4/VREF_4                | AA18       |                       |                       |
| 4    | IO_L04P_4                       | AB18       |                       |                       |
| 4    | IO_L05N_4/VRP_4                 | W17        |                       |                       |
| 4    | IO_L05P_4/VRN_4                 | Y17        |                       |                       |
| 4    | IO_L06N_4                       | AA17       |                       |                       |
| 4    | IO_L06P_4                       | AB17       |                       |                       |
| 4    | IO_L19N_4                       | V16        | NC                    | NC                    |
| 4    | IO_L19P_4                       | V15        | NC                    | NC                    |
| 4    | IO_L21N_4                       | W16        | NC                    | NC                    |
| 4    | IO_L21P_4/VREF_4                | Y16        | NC                    | NC                    |
| 4    | IO_L22N_4                       | AA16       | NC                    | NC                    |
| 4    | IO_L22P_4                       | AB16       | NC                    | NC                    |
| 4    | IO_L24N_4                       | W15        | NC                    | NC                    |
| 4    | IO_L24P_4                       | Y15        | NC                    | NC                    |
| 4    | IO_L49N_4                       | AA15       | NC                    |                       |
| 4    | IO_L49P_4                       | AB15       | NC                    |                       |
| 4    | IO_L51N_4                       | U14        | NC                    |                       |
| 4    | IO_L51P_4/VREF_4                | V14        | NC                    |                       |
| 4    | IO_L52N_4                       | W14        | NC                    |                       |
| 4    | IO_L52P_4                       | Y14        | NC                    |                       |
| 4    | IO_L54N_4                       | AA14       | NC                    |                       |
| 4    | IO_L54P_4                       | AB14       | NC                    |                       |
| 4    | IO_L91N_4/VREF_4                | U13        |                       |                       |
| 4    | IO_L91P_4                       | V13        |                       |                       |
| 4    | IO_L92N_4                       | W13        |                       |                       |
| 4    | IO_L92P_4                       | Y13        |                       |                       |
| 4    | IO_L93N_4                       | AA13       |                       |                       |
| 4    | IO_L93P_4                       | AB13       |                       |                       |
| 4    | IO_L94N_4/VREF_4                | U12        |                       |                       |
| 4    | IO_L94P_4                       | V12        |                       |                       |



Table 8: FG676/FGG676 BGA — XC2V1500, XC2V2000, and XC2V3000

| Bank | Pin Description                    | Pin Number | No Connect in XC2V1500 | No Connect in XC2V2000 |
|------|------------------------------------|------------|------------------------|------------------------|
| 3    | IO_L46P_3                          | Y26        |                        |                        |
| 3    | IO_L45N_3/VREF_3                   | U20        |                        |                        |
| 3    | IO_L45P_3                          | V20        |                        |                        |
| 3    | IO_L43N_3                          | W25        |                        |                        |
| 3    | IO_L43P_3                          | W24        |                        |                        |
| 3    | IO_L25N_3                          | V21        | NC                     | NC                     |
| 3    | IO_L25P_3                          | W21        | NC                     | NC                     |
| 3    | IO_L24N_3                          | AA26       |                        |                        |
| 3    | IO_L24P_3                          | AA25       |                        |                        |
| 3    | IO_L22N_3                          | Y24        |                        |                        |
| 3    | IO_L22P_3                          | Y23        |                        |                        |
| 3    | IO_L21N_3/VREF_3                   | W22        |                        |                        |
| 3    | IO_L21P_3                          | W23        |                        |                        |
| 3    | IO_L19N_3                          | AB26       |                        |                        |
| 3    | IO_L19P_3                          | AB25       |                        |                        |
| 3    | IO_L06N_3                          | AC26       |                        |                        |
| 3    | IO_L06P_3                          | AC25       |                        |                        |
| 3    | IO_L04N_3                          | AD26       |                        |                        |
| 3    | IO_L04P_3                          | AD25       |                        |                        |
| 3    | IO_L03N_3/VREF_3                   | AA24       |                        |                        |
| 3    | IO_L03P_3                          | AA23       |                        |                        |
| 3    | IO_L02N_3/VRP_3                    | AB24       |                        |                        |
| 3    | IO_L02P_3/VRN_3                    | AB23       |                        |                        |
| 3    | IO_L01N_3                          | Y22        |                        |                        |
| 3    | IO_L01P_3                          | AA22       |                        |                        |
|      |                                    |            |                        |                        |
| 4    | IO_L01N_4/BUSY/DOUT <sup>(1)</sup> | AD21       |                        |                        |
| 4    | IO_L01P_4/INIT_B                   | AC21       |                        |                        |
| 4    | IO_L02N_4/D0/DIN <sup>(1)</sup>    | Y20        |                        |                        |
| 4    | IO_L02P_4/D1                       | Y19        |                        |                        |
| 4    | IO_L03N_4/D2/ALT_VRP_4             | AA20       |                        |                        |
| 4    | IO_L03P_4/D3/ALT_VRN_4             | AB20       |                        |                        |
| 4    | IO_L04N_4/VREF_4                   | AC22       |                        |                        |
| 4    | IO_L04P_4                          | AE21       |                        |                        |
| 4    | IO_L05N_4/VRP_4                    | AE26       |                        |                        |
| 4    | IO_L05P_4/VRN_4                    | AF25       |                        |                        |
| 4    | IO_L06N_4                          | W20        |                        |                        |

Table 8: FG676/FGG676 BGA — XC2V1500, XC2V2000, and XC2V3000

| Bank | Pin Description | Pin Number | No Connect in XC2V1500 | No Connect in XC2V2000 |
|------|-----------------|------------|------------------------|------------------------|
| NA   | GND             | L11        |                        |                        |
| NA   | GND             | L10        |                        |                        |
| NA   | GND             | K17        |                        |                        |
| NA   | GND             | K16        |                        |                        |
| NA   | GND             | K15        |                        |                        |
| NA   | GND             | K14        |                        |                        |
| NA   | GND             | K13        |                        |                        |
| NA   | GND             | K12        |                        |                        |
| NA   | GND             | K11        |                        |                        |
| NA   | GND             | K10        |                        |                        |
| NA   | GND             | F21        |                        |                        |
| NA   | GND             | F6         |                        |                        |
| NA   | GND             | E22        |                        |                        |
| NA   | GND             | E5         |                        |                        |
| NA   | GND             | D23        |                        |                        |
| NA   | GND             | D4         |                        |                        |
| NA   | GND             | C24        |                        |                        |
| NA   | GND             | C3         |                        |                        |
| NA   | GND             | B25        |                        |                        |
| NA   | GND             | B14        |                        |                        |
| NA   | GND             | B13        |                        |                        |
| NA   | GND             | B2         |                        |                        |
| NA   | GND             | A26        |                        |                        |
| NA   | GND             | A1         |                        |                        |

**Notes:**

- See Table 4 for an explanation of the signals available on this pin.

Table 11: FF896 BGA — XC2V1000, XC2V1500, and XC2V2000

| Bank | Pin Description  | Pin Number | No Connect in the XC2V1000 | No Connect in the XC2V1500 |
|------|------------------|------------|----------------------------|----------------------------|
| 1    | IO_L68P_1        | G12        | NC                         |                            |
| 1    | IO_L67N_1        | A9         | NC                         |                            |
| 1    | IO_L67P_1        | A10        | NC                         |                            |
| 1    | IO_L54N_1        | E10        |                            |                            |
| 1    | IO_L54P_1        | E11        |                            |                            |
| 1    | IO_L53N_1        | H12        |                            |                            |
| 1    | IO_L53P_1        | H11        |                            |                            |
| 1    | IO_L52N_1        | D9         |                            |                            |
| 1    | IO_L52P_1        | D10        |                            |                            |
| 1    | IO_L51N_1/VREF_1 | C9         |                            |                            |
| 1    | IO_L51P_1        | C8         |                            |                            |
| 1    | IO_L50N_1        | F11        |                            |                            |
| 1    | IO_L50P_1        | F10        |                            |                            |
| 1    | IO_L49N_1        | B8         |                            |                            |
| 1    | IO_L49P_1        | B9         |                            |                            |
| 1    | IO_L24N_1        | E8         |                            |                            |
| 1    | IO_L24P_1        | E9         |                            |                            |
| 1    | IO_L23N_1        | G11        |                            |                            |
| 1    | IO_L23P_1        | H10        |                            |                            |
| 1    | IO_L22N_1        | B7         |                            |                            |
| 1    | IO_L22P_1        | A7         |                            |                            |
| 1    | IO_L21N_1/VREF_1 | D8         |                            |                            |
| 1    | IO_L21P_1        | E7         |                            |                            |
| 1    | IO_L20N_1        | G10        |                            |                            |
| 1    | IO_L20P_1        | G9         |                            |                            |
| 1    | IO_L19N_1        | A5         |                            |                            |
| 1    | IO_L19P_1        | A6         |                            |                            |
| 1    | IO_L06N_1        | C6         |                            |                            |
| 1    | IO_L06P_1        | C7         |                            |                            |
| 1    | IO_L05N_1        | F9         |                            |                            |
| 1    | IO_L05P_1        | G8         |                            |                            |
| 1    | IO_L04N_1        | B6         |                            |                            |
| 1    | IO_L04P_1/VREF_1 | C5         |                            |                            |
| 1    | IO_L03N_1/VRP_1  | D7         |                            |                            |
| 1    | IO_L03P_1/VRN_1  | D6         |                            |                            |
| 1    | IO_L02N_1        | F8         |                            |                            |
| 1    | IO_L02P_1        | F7         |                            |                            |

Table 11: FF896 BGA — XC2V1000, XC2V1500, and XC2V2000

| Bank | Pin Description  | Pin Number | No Connect in the XC2V1000 | No Connect in the XC2V1500 |
|------|------------------|------------|----------------------------|----------------------------|
| 7    | IO_L04N_7        | D29        |                            |                            |
| 7    | IO_L03P_7/VREF_7 | E28        |                            |                            |
| 7    | IO_L03N_7        | D28        |                            |                            |
| 7    | IO_L02P_7/VRN_7  | H23        |                            |                            |
| 7    | IO_L02N_7/VRP_7  | G23        |                            |                            |
| 7    | IO_L01P_7        | B30        |                            |                            |
| 7    | IO_L01N_7        | C30        |                            |                            |
|      |                  |            |                            |                            |
| 0    | VCCO_0           | K20        |                            |                            |
| 0    | VCCO_0           | K19        |                            |                            |
| 0    | VCCO_0           | K18        |                            |                            |
| 0    | VCCO_0           | K17        |                            |                            |
| 0    | VCCO_0           | K16        |                            |                            |
| 0    | VCCO_0           | J21        |                            |                            |
| 0    | VCCO_0           | J20        |                            |                            |
| 0    | VCCO_0           | J19        |                            |                            |
| 0    | VCCO_0           | J18        |                            |                            |
| 0    | VCCO_0           | C18        |                            |                            |
| 0    | VCCO_0           | B26        |                            |                            |
| 1    | VCCO_1           | K15        |                            |                            |
| 1    | VCCO_1           | K14        |                            |                            |
| 1    | VCCO_1           | K13        |                            |                            |
| 1    | VCCO_1           | K12        |                            |                            |
| 1    | VCCO_1           | K11        |                            |                            |
| 1    | VCCO_1           | J13        |                            |                            |
| 1    | VCCO_1           | J12        |                            |                            |
| 1    | VCCO_1           | J11        |                            |                            |
| 1    | VCCO_1           | J10        |                            |                            |
| 1    | VCCO_1           | C13        |                            |                            |
| 1    | VCCO_1           | B5         |                            |                            |
| 2    | VCCO_2           | R10        |                            |                            |
| 2    | VCCO_2           | P10        |                            |                            |
| 2    | VCCO_2           | N10        |                            |                            |
| 2    | VCCO_2           | N9         |                            |                            |
| 2    | VCCO_2           | N3         |                            |                            |
| 2    | VCCO_2           | M10        |                            |                            |
| 2    | VCCO_2           | M9         |                            |                            |

Table 12: FF1152 BGA — XC2V3000, XC2V4000, XC2V6000, and XC2V8000

| Bank | Pin Description  | Pin Number | No Connect in the XC2V3000 |
|------|------------------|------------|----------------------------|
| 1    | IO_L93P_1        | F17        |                            |
| 1    | IO_L92N_1        | G16        |                            |
| 1    | IO_L92P_1        | G17        |                            |
| 1    | IO_L91N_1        | C16        |                            |
| 1    | IO_L91P_1/VREF_1 | C15        |                            |
| 1    | IO_L84N_1        | D14        | NC                         |
| 1    | IO_L84P_1        | D15        | NC                         |
| 1    | IO_L83N_1        | J17        | NC                         |
| 1    | IO_L83P_1        | K17        | NC                         |
| 1    | IO_L82N_1        | B17        | NC                         |
| 1    | IO_L82P_1        | A17        | NC                         |
| 1    | IO_L81N_1/VREF_1 | A15        | NC                         |
| 1    | IO_L81P_1        | B16        | NC                         |
| 1    | IO_L80N_1        | L17        | NC                         |
| 1    | IO_L80P_1        | L16        | NC                         |
| 1    | IO_L79N_1        | A13        | NC                         |
| 1    | IO_L79P_1        | A14        | NC                         |
| 1    | IO_L78N_1        | C13        |                            |
| 1    | IO_L78P_1        | C14        |                            |
| 1    | IO_L77N_1        | K16        |                            |
| 1    | IO_L77P_1        | K15        |                            |
| 1    | IO_L76N_1        | B13        |                            |
| 1    | IO_L76P_1        | B14        |                            |
| 1    | IO_L75N_1/VREF_1 | F15        |                            |
| 1    | IO_L75P_1        | G15        |                            |
| 1    | IO_L74N_1        | H15        |                            |
| 1    | IO_L74P_1        | H14        |                            |
| 1    | IO_L73N_1        | A11        |                            |
| 1    | IO_L73P_1        | A12        |                            |
| 1    | IO_L72N_1        | E13        |                            |
| 1    | IO_L72P_1        | E14        |                            |
| 1    | IO_L71N_1        | J15        |                            |
| 1    | IO_L71P_1        | J14        |                            |
| 1    | IO_L70N_1        | D12        |                            |
| 1    | IO_L70P_1        | D13        |                            |
| 1    | IO_L69N_1/VREF_1 | F14        |                            |

Table 12: FF1152 BGA — XC2V3000, XC2V4000, XC2V6000, and XC2V8000

| Bank | Pin Description  | Pin Number | No Connect in the XC2V3000 |
|------|------------------|------------|----------------------------|
| 2    | IO_L51N_2        | L6         |                            |
| 2    | IO_L51P_2/VREF_2 | M6         |                            |
| 2    | IO_L52N_2        | M3         |                            |
| 2    | IO_L52P_2        | L3         |                            |
| 2    | IO_L53N_2        | L4         |                            |
| 2    | IO_L53P_2        | K4         |                            |
| 2    | IO_L54N_2        | N4         |                            |
| 2    | IO_L54P_2        | M4         |                            |
| 2    | IO_L67N_2        | M2         |                            |
| 2    | IO_L67P_2        | L2         |                            |
| 2    | IO_L68N_2        | N8         |                            |
| 2    | IO_L68P_2        | P8         |                            |
| 2    | IO_L69N_2        | N6         |                            |
| 2    | IO_L69P_2/VREF_2 | P6         |                            |
| 2    | IO_L70N_2        | P5         |                            |
| 2    | IO_L70P_2        | N5         |                            |
| 2    | IO_L71N_2        | P10        |                            |
| 2    | IO_L71P_2        | R10        |                            |
| 2    | IO_L72N_2        | P3         |                            |
| 2    | IO_L72P_2        | N3         |                            |
| 2    | IO_L73N_2        | M1         |                            |
| 2    | IO_L73P_2        | L1         |                            |
| 2    | IO_L74N_2        | P9         |                            |
| 2    | IO_L74P_2        | R9         |                            |
| 2    | IO_L75N_2        | P2         |                            |
| 2    | IO_L75P_2/VREF_2 | N2         |                            |
| 2    | IO_L76N_2        | R4         |                            |
| 2    | IO_L76P_2        | P4         |                            |
| 2    | IO_L77N_2        | R8         |                            |
| 2    | IO_L77P_2        | T8         |                            |
| 2    | IO_L78N_2        | T3         |                            |
| 2    | IO_L78P_2        | R3         |                            |
| 2    | IO_L79N_2        | P1         | NC                         |
| 2    | IO_L79P_2        | N1         | NC                         |
| 2    | IO_L80N_2        | T11        | NC                         |
| 2    | IO_L80P_2        | U11        | NC                         |

Table 12: FF1152 BGA — XC2V3000, XC2V4000, XC2V6000, and XC2V8000

| Bank | Pin Description | Pin Number | No Connect in the XC2V3000 |
|------|-----------------|------------|----------------------------|
| NA   | GND             | P20        |                            |
| NA   | GND             | P19        |                            |
| NA   | GND             | P18        |                            |
| NA   | GND             | P17        |                            |
| NA   | GND             | P16        |                            |
| NA   | GND             | P15        |                            |
| NA   | GND             | P14        |                            |
| NA   | GND             | P7         |                            |
| NA   | GND             | M30        |                            |
| NA   | GND             | M5         |                            |
| NA   | GND             | K32        |                            |
| NA   | GND             | K3         |                            |
| NA   | GND             | J19        |                            |
| NA   | GND             | J16        |                            |
| NA   | GND             | H34        |                            |
| NA   | GND             | H27        |                            |
| NA   | GND             | H8         |                            |
| NA   | GND             | H1         |                            |
| NA   | GND             | G28        |                            |
| NA   | GND             | G21        |                            |
| NA   | GND             | G14        |                            |
| NA   | GND             | G7         |                            |
| NA   | GND             | F29        |                            |
| NA   | GND             | F6         |                            |
| NA   | GND             | E30        |                            |
| NA   | GND             | E23        |                            |
| NA   | GND             | E12        |                            |
| NA   | GND             | E5         |                            |
| NA   | GND             | D31        |                            |
| NA   | GND             | D4         |                            |
| NA   | GND             | C34        |                            |
| NA   | GND             | C32        |                            |
| NA   | GND             | C25        |                            |
| NA   | GND             | C10        |                            |
| NA   | GND             | C3         |                            |
| NA   | GND             | C1         |                            |

Table 13: FF1517 BGA — XC2V4000, XC2V6000, and XC2V8000

| Bank | Pin Description  | Pin Number | No Connect in the XC2V4000 | No Connect in the XC2V6000 |
|------|------------------|------------|----------------------------|----------------------------|
| 0    | IO_L22P_0        | A34        |                            |                            |
| 0    | IO_L23N_0        | K27        |                            |                            |
| 0    | IO_L23P_0        | K26        |                            |                            |
| 0    | IO_L24N_0        | F29        |                            |                            |
| 0    | IO_L24P_0        | F30        |                            |                            |
| 0    | IO_L25N_0        | B32        |                            |                            |
| 0    | IO_L25P_0        | B33        |                            |                            |
| 0    | IO_L26N_0        | L26        |                            |                            |
| 0    | IO_L26P_0        | L25        |                            |                            |
| 0    | IO_L27N_0        | G28        |                            |                            |
| 0    | IO_L27P_0/VREF_0 | G29        |                            |                            |
| 0    | IO_L28N_0        | C30        |                            |                            |
| 0    | IO_L28P_0        | C31        |                            |                            |
| 0    | IO_L29N_0        | J27        |                            |                            |
| 0    | IO_L29P_0        | J26        |                            |                            |
| 0    | IO_L30N_0        | D30        |                            |                            |
| 0    | IO_L30P_0        | D31        |                            |                            |
| 0    | IO_L31N_0        | A31        | NC                         |                            |
| 0    | IO_L31P_0        | A32        | NC                         |                            |
| 0    | IO_L32N_0        | H27        | NC                         |                            |
| 0    | IO_L32P_0        | H26        | NC                         |                            |
| 0    | IO_L33N_0        | F27        | NC                         |                            |
| 0    | IO_L33P_0/VREF_0 | F28        | NC                         |                            |
| 0    | IO_L34N_0        | B30        | NC                         |                            |
| 0    | IO_L34P_0        | B31        | NC                         |                            |
| 0    | IO_L35N_0        | M24        | NC                         |                            |
| 0    | IO_L35P_0        | M23        | NC                         |                            |
| 0    | IO_L36N_0        | D28        | NC                         |                            |
| 0    | IO_L36P_0        | D29        | NC                         |                            |
| 0    | IO_L49N_0        | C28        |                            |                            |
| 0    | IO_L49P_0        | C29        |                            |                            |
| 0    | IO_L50N_0        | K25        |                            |                            |
| 0    | IO_L50P_0        | L24        |                            |                            |
| 0    | IO_L51N_0        | E27        |                            |                            |
| 0    | IO_L51P_0/VREF_0 | E28        |                            |                            |
| 0    | IO_L52N_0        | A29        |                            |                            |



Table 13: FF1517 BGA — XC2V4000, XC2V6000, and XC2V8000

| Bank | Pin Description  | Pin Number | No Connect in the XC2V4000 | No Connect in the XC2V6000 |
|------|------------------|------------|----------------------------|----------------------------|
| 2    | IO_L81P_2/VREF_2 | U5         |                            |                            |
| 2    | IO_L82N_2        | V2         |                            |                            |
| 2    | IO_L82P_2        | U2         |                            |                            |
| 2    | IO_L83N_2        | V8         |                            |                            |
| 2    | IO_L83P_2        | W8         |                            |                            |
| 2    | IO_L84N_2        | W7         |                            |                            |
| 2    | IO_L84P_2        | V7         |                            |                            |
| 2    | IO_L91N_2        | W1         |                            |                            |
| 2    | IO_L91P_2        | V1         |                            |                            |
| 2    | IO_L92N_2        | Y11        |                            |                            |
| 2    | IO_L92P_2        | Y12        |                            |                            |
| 2    | IO_L93N_2        | W4         |                            |                            |
| 2    | IO_L93P_2/VREF_2 | V4         |                            |                            |
| 2    | IO_L94N_2        | W2         |                            |                            |
| 2    | IO_L94P_2        | W3         |                            |                            |
| 2    | IO_L95N_2        | Y8         |                            |                            |
| 2    | IO_L95P_2        | Y9         |                            |                            |
| 2    | IO_L96N_2        | W5         |                            |                            |
| 2    | IO_L96P_2        | W6         |                            |                            |
|      |                  |            |                            |                            |
| 3    | IO_L96N_3        | AB8        |                            |                            |
| 3    | IO_L96P_3        | AA8        |                            |                            |
| 3    | IO_L95N_3        | Y3         |                            |                            |
| 3    | IO_L95P_3        | AA3        |                            |                            |
| 3    | IO_L94N_3        | Y6         |                            |                            |
| 3    | IO_L94P_3        | AA6        |                            |                            |
| 3    | IO_L93N_3/VREF_3 | AB9        |                            |                            |
| 3    | IO_L93P_3        | AA9        |                            |                            |
| 3    | IO_L92N_3        | AA1        |                            |                            |
| 3    | IO_L92P_3        | AB1        |                            |                            |
| 3    | IO_L91N_3        | Y5         |                            |                            |
| 3    | IO_L91P_3        | AA5        |                            |                            |
| 3    | IO_L84N_3        | AB10       |                            |                            |
| 3    | IO_L84P_3        | AA10       |                            |                            |
| 3    | IO_L83N_3        | AA2        |                            |                            |
| 3    | IO_L83P_3        | AB2        |                            |                            |

Table 13: FF1517 BGA — XC2V4000, XC2V6000, and XC2V8000

| Bank | Pin Description  | Pin Number | No Connect in the XC2V4000 | No Connect in the XC2V6000 |
|------|------------------|------------|----------------------------|----------------------------|
| 3    | IO_L82N_3        | AA4        |                            |                            |
| 3    | IO_L82P_3        | AB4        |                            |                            |
| 3    | IO_L81N_3/VREF_3 | AB11       |                            |                            |
| 3    | IO_L81P_3        | AA11       |                            |                            |
| 3    | IO_L80N_3        | AC1        |                            |                            |
| 3    | IO_L80P_3        | AD1        |                            |                            |
| 3    | IO_L79N_3        | AA7        |                            |                            |
| 3    | IO_L79P_3        | AB7        |                            |                            |
| 3    | IO_L78N_3        | AB12       |                            |                            |
| 3    | IO_L78P_3        | AA12       |                            |                            |
| 3    | IO_L77N_3        | AC2        |                            |                            |
| 3    | IO_L77P_3        | AC3        |                            |                            |
| 3    | IO_L76N_3        | AB5        |                            |                            |
| 3    | IO_L76P_3        | AC5        |                            |                            |
| 3    | IO_L75N_3/VREF_3 | AD9        |                            |                            |
| 3    | IO_L75P_3        | AC9        |                            |                            |
| 3    | IO_L74N_3        | AD2        |                            |                            |
| 3    | IO_L74P_3        | AE2        |                            |                            |
| 3    | IO_L73N_3        | AB6        |                            |                            |
| 3    | IO_L73P_3        | AC6        |                            |                            |
| 3    | IO_L72N_3        | AD10       |                            |                            |
| 3    | IO_L72P_3        | AC10       |                            |                            |
| 3    | IO_L71N_3        | AD3        |                            |                            |
| 3    | IO_L71P_3        | AE3        |                            |                            |
| 3    | IO_L70N_3        | AC7        |                            |                            |
| 3    | IO_L70P_3        | AD7        |                            |                            |
| 3    | IO_L69N_3/VREF_3 | AE8        |                            |                            |
| 3    | IO_L69P_3        | AD8        |                            |                            |
| 3    | IO_L68N_3        | AE1        |                            |                            |
| 3    | IO_L68P_3        | AF1        |                            |                            |
| 3    | IO_L67N_3        | AD4        |                            |                            |
| 3    | IO_L67P_3        | AE4        |                            |                            |
| 3    | IO_L60N_3        | AD12       |                            |                            |
| 3    | IO_L60P_3        | AC12       |                            |                            |
| 3    | IO_L59N_3        | AF3        |                            |                            |
| 3    | IO_L59P_3        | AG3        |                            |                            |

Table 13: FF1517 BGA — XC2V4000, XC2V6000, and XC2V8000

| Bank | Pin Description  | Pin Number | No Connect in the XC2V4000 | No Connect in the XC2V6000 |
|------|------------------|------------|----------------------------|----------------------------|
| 7    | IO_L74P_7        | U31        |                            |                            |
| 7    | IO_L74N_7        | T31        |                            |                            |
| 7    | IO_L73P_7        | R38        |                            |                            |
| 7    | IO_L73N_7        | T38        |                            |                            |
| 7    | IO_L72P_7        | T33        |                            |                            |
| 7    | IO_L72N_7        | U33        |                            |                            |
| 7    | IO_L71P_7        | U30        |                            |                            |
| 7    | IO_L71N_7        | T30        |                            |                            |
| 7    | IO_L70P_7        | R37        |                            |                            |
| 7    | IO_L70N_7        | T37        |                            |                            |
| 7    | IO_L69P_7/VREF_7 | R36        |                            |                            |
| 7    | IO_L69N_7        | T36        |                            |                            |
| 7    | IO_L68P_7        | T32        |                            |                            |
| 7    | IO_L68N_7        | R32        |                            |                            |
| 7    | IO_L67P_7        | P39        |                            |                            |
| 7    | IO_L67N_7        | R39        |                            |                            |
| 7    | IO_L60P_7        | R35        |                            |                            |
| 7    | IO_L60N_7        | T35        |                            |                            |
| 7    | IO_L59P_7        | U28        |                            |                            |
| 7    | IO_L59N_7        | T28        |                            |                            |
| 7    | IO_L58P_7        | N37        |                            |                            |
| 7    | IO_L58N_7        | P37        |                            |                            |
| 7    | IO_L57P_7/VREF_7 | R34        |                            |                            |
| 7    | IO_L57N_7        | T34        |                            |                            |
| 7    | IO_L56P_7        | T29        |                            |                            |
| 7    | IO_L56N_7        | R29        |                            |                            |
| 7    | IO_L55P_7        | M39        |                            |                            |
| 7    | IO_L55N_7        | N39        |                            |                            |
| 7    | IO_L54P_7        | N36        |                            |                            |
| 7    | IO_L54N_7        | P36        |                            |                            |
| 7    | IO_L53P_7        | R30        |                            |                            |
| 7    | IO_L53N_7        | P30        |                            |                            |
| 7    | IO_L52P_7        | M38        |                            |                            |
| 7    | IO_L52N_7        | N38        |                            |                            |
| 7    | IO_L51P_7/VREF_7 | P33        |                            |                            |
| 7    | IO_L51N_7        | R33        |                            |                            |

Table 13: FF1517 BGA — XC2V4000, XC2V6000, and XC2V8000

| Bank | Pin Description | Pin Number | No Connect in the XC2V4000 | No Connect in the XC2V6000 |
|------|-----------------|------------|----------------------------|----------------------------|
| NA   | GND             | AR26       |                            |                            |
| NA   | GND             | AR14       |                            |                            |
| NA   | GND             | AR5        |                            |                            |
| NA   | GND             | AP34       |                            |                            |
| NA   | GND             | AP6        |                            |                            |
| NA   | GND             | AN33       |                            |                            |
| NA   | GND             | AN20       |                            |                            |
| NA   | GND             | AN7        |                            |                            |
| NA   | GND             | AM32       |                            |                            |
| NA   | GND             | AM23       |                            |                            |
| NA   | GND             | AM17       |                            |                            |
| NA   | GND             | AM8        |                            |                            |
| NA   | GND             | AL31       |                            |                            |
| NA   | GND             | AL9        |                            |                            |
| NA   | GND             | AK30       |                            |                            |
| NA   | GND             | AK20       |                            |                            |
| NA   | GND             | AK10       |                            |                            |
| NA   | GND             | AJ38       |                            |                            |
| NA   | GND             | AJ29       |                            |                            |
| NA   | GND             | AJ11       |                            |                            |
| NA   | GND             | AJ2        |                            |                            |
| NA   | GND             | AF35       |                            |                            |
| NA   | GND             | AF5        |                            |                            |
| NA   | GND             | AD23       |                            |                            |
| NA   | GND             | AD22       |                            |                            |
| NA   | GND             | AD21       |                            |                            |
| NA   | GND             | AD20       |                            |                            |
| NA   | GND             | AD19       |                            |                            |
| NA   | GND             | AD18       |                            |                            |
| NA   | GND             | AD17       |                            |                            |
| NA   | GND             | AC36       |                            |                            |
| NA   | GND             | AC32       |                            |                            |
| NA   | GND             | AC24       |                            |                            |
| NA   | GND             | AC23       |                            |                            |
| NA   | GND             | AC22       |                            |                            |
| NA   | GND             | AC21       |                            |                            |

Table 14: BF957 — XC2V2000, XC2V3000, XC2V4000, and XC2V6000

| Bank | Pin Description | Pin Number | No Connect in XC2V2000 |
|------|-----------------|------------|------------------------|
| 5    | VCCO_5          | AJ18       |                        |
| 5    | VCCO_5          | AJ25       |                        |
| 6    | VCCO_6          | U20        |                        |
| 6    | VCCO_6          | U21        |                        |
| 6    | VCCO_6          | V20        |                        |
| 6    | VCCO_6          | V21        |                        |
| 6    | VCCO_6          | V24        |                        |
| 6    | VCCO_6          | V29        |                        |
| 6    | VCCO_6          | W20        |                        |
| 6    | VCCO_6          | W21        |                        |
| 6    | VCCO_6          | Y21        |                        |
| 6    | VCCO_6          | AB26       |                        |
| 6    | VCCO_6          | AE29       |                        |
| 7    | VCCO_7          | G29        |                        |
| 7    | VCCO_7          | K26        |                        |
| 7    | VCCO_7          | M21        |                        |
| 7    | VCCO_7          | N20        |                        |
| 7    | VCCO_7          | N21        |                        |
| 7    | VCCO_7          | P20        |                        |
| 7    | VCCO_7          | P21        |                        |
| 7    | VCCO_7          | P24        |                        |
| 7    | VCCO_7          | P29        |                        |
| 7    | VCCO_7          | R20        |                        |
| 7    | VCCO_7          | R21        |                        |
|      |                 |            |                        |
| NA   | CCLK            | AJ4        |                        |
| NA   | PROG_B          | D27        |                        |
| NA   | DONE            | AG6        |                        |
| NA   | M0              | AH27       |                        |
| NA   | M1              | AJ28       |                        |
| NA   | M2              | AG26       |                        |
| NA   | HSWAP_EN        | E26        |                        |
| NA   | TCK             | K11        |                        |
| NA   | TDI             | C28        |                        |
| NA   | TDO             | C4         |                        |
| NA   | TMS             | J10        |                        |
| NA   | PWRDWN_B        | AH5        |                        |
| NA   | DXN             | F25        |                        |