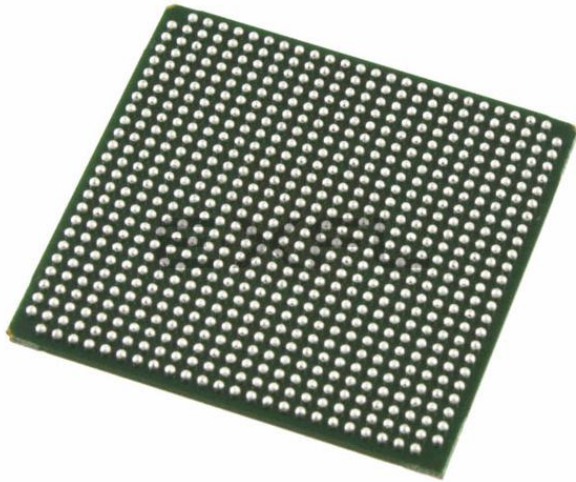




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## Understanding [Embedded - FPGAs \(Field Programmable Gate Array\)](#)

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.

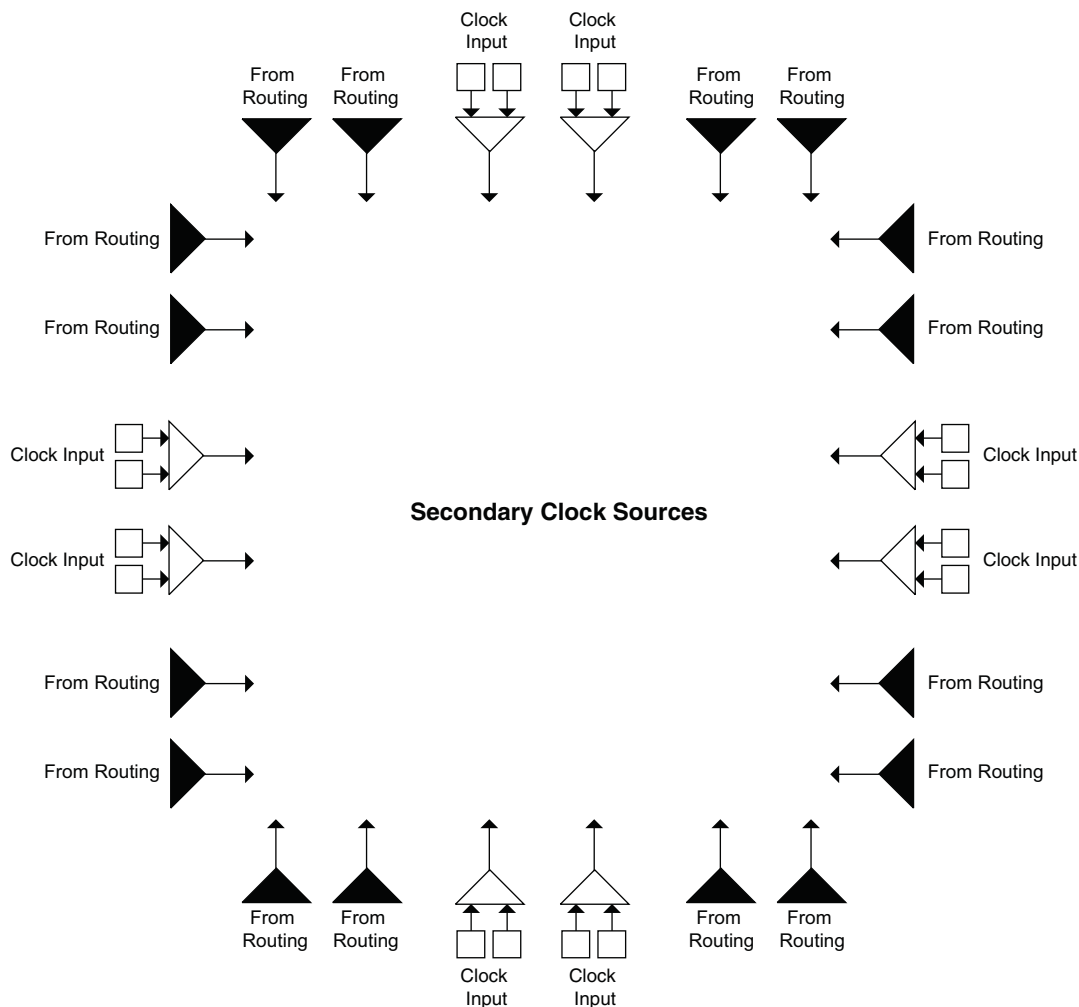
### Details

|                                |                                                                                                                                                                         |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product Status                 | Active                                                                                                                                                                  |
| Number of LABs/CLBs            | 8500                                                                                                                                                                    |
| Number of Logic Elements/Cells | 68000                                                                                                                                                                   |
| Total RAM Bits                 | 1056768                                                                                                                                                                 |
| Number of I/O                  | 500                                                                                                                                                                     |
| Number of Gates                | -                                                                                                                                                                       |
| Voltage - Supply               | 1.14V ~ 1.26V                                                                                                                                                           |
| Mounting Type                  | Surface Mount                                                                                                                                                           |
| Operating Temperature          | -40°C ~ 100°C (TJ)                                                                                                                                                      |
| Package / Case                 | 672-BBGA                                                                                                                                                                |
| Supplier Device Package        | 672-FPBGA (27x27)                                                                                                                                                       |
| Purchase URL                   | <a href="https://www.e-xfl.com/product-detail/lattice-semiconductor/lfe2-70se-5fn672i">https://www.e-xfl.com/product-detail/lattice-semiconductor/lfe2-70se-5fn672i</a> |

## Secondary Clock/Control Sources

LatticeECP2/M devices derive secondary clocks (SC0 through SC7) from eight dedicated clock input pads and the rest from routing. Figure 2-11 shows the secondary clock sources.

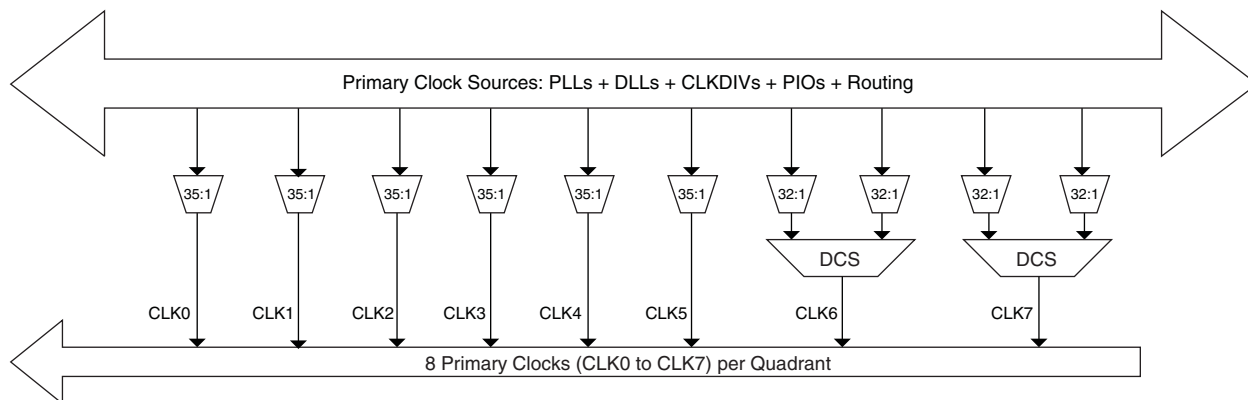
**Figure 2-11. Secondary Clock Sources**



## Primary Clock Routing

The clock routing structure in LatticeECP2/M devices consists of a network of eight primary clock lines (CLK0 through CLK7) per quadrant. The primary clocks of each quadrant are generated from muxes located in the center of the device. All the clock sources are connected to these muxes. Figure 2-13 shows the clock routing for one quadrant. Each quadrant mux is identical. If desired, any clock can be routed globally

**Figure 2-13. Per Quadrant Primary Clock Selection**

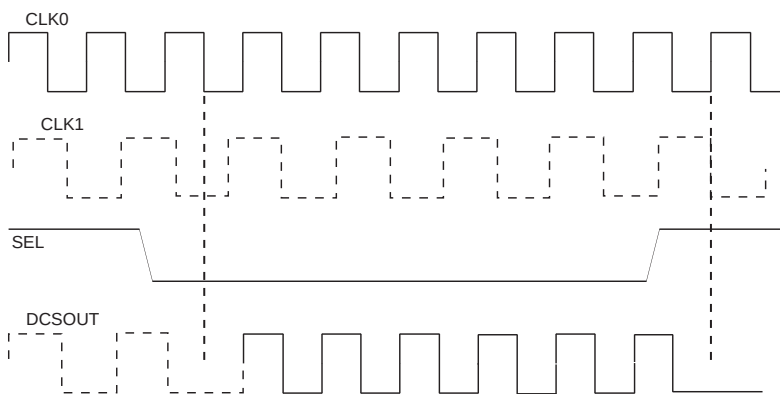


## Dynamic Clock Select (DCS)

The DCS is a smart multiplexer function available in the primary clock routing. It switches between two independent input clock sources without any glitches or runt pulses. This is achieved regardless of when the select signal is toggled. There are two DCS blocks per quadrant; in total, there are eight DCS blocks per device. The inputs to the DCS block come from the center muxes. The output of the DCS is connected to primary clocks CLK6 and CLK7 (see Figure 2-13).

Figure 2-14 shows the timing waveforms of the default DCS operating mode. The DCS block can be programmed to other modes. For more information about the DCS, please see the list of additional technical documentation at the end of this data sheet.

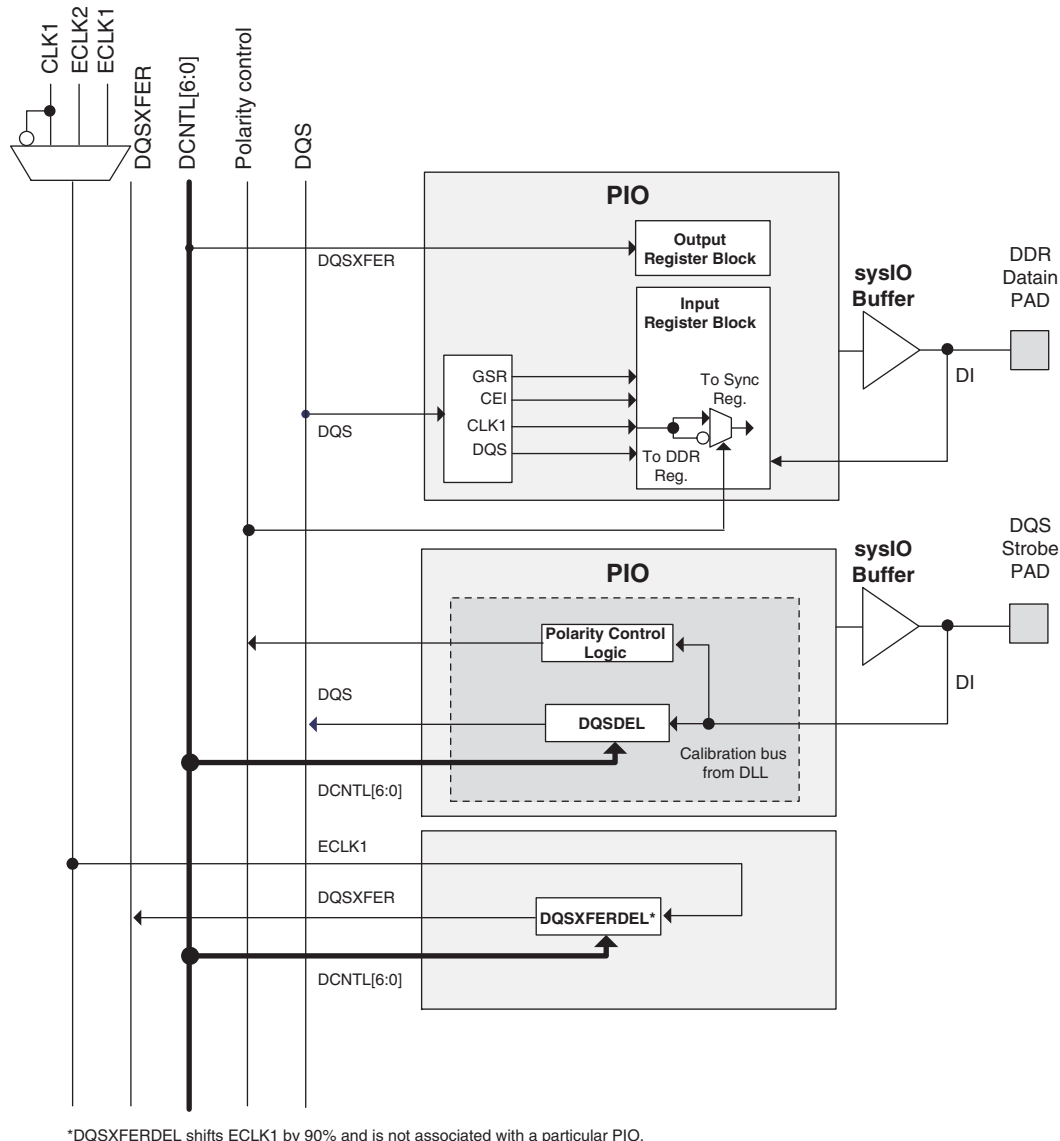
**Figure 2-14. DCS Waveforms**



## Secondary Clock/Control Routing

Secondary clocks in the LatticeECP2 devices are region-based resources. The benefit of region-based resources is the relatively low injection delay and skew within the region, as compared to primary clocks. EBR/DSP rows and a special vertical routing channel bound the secondary clock regions. This special vertical routing channel aligns with either the left edge of the center DSP block in the DSP row or the center of the DSP row. Figure 2-15 shows

**Figure 2-36. DQS Local Bus**



\*DQSXFERDEL shifts ECLK1 by 90% and is not associated with a particular PIO.

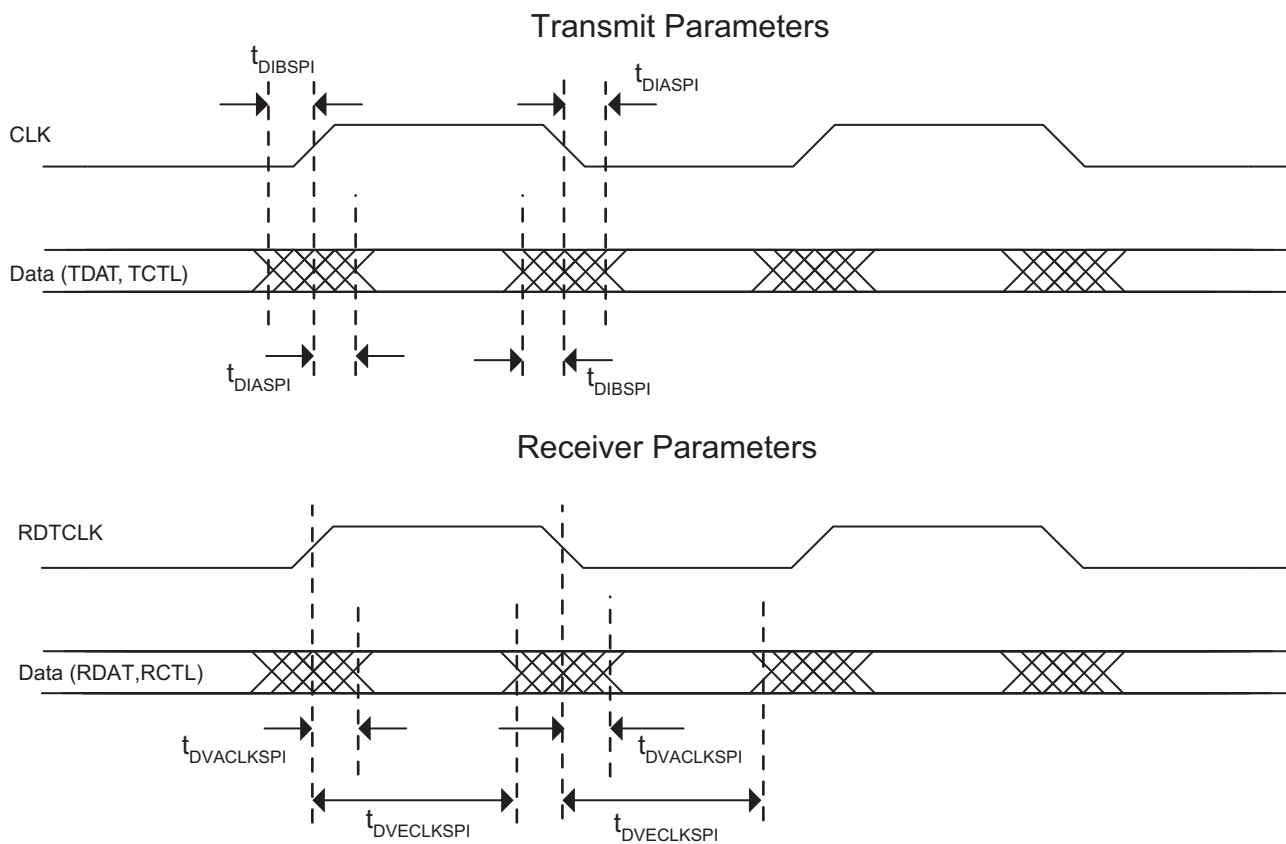
## Polarity Control Logic

In a typical DDR Memory interface design, the phase relationship between the incoming delayed DQS strobe and the internal system clock (during the READ cycle) is unknown.

The LatticeECP2/M family contains dedicated circuits to transfer data between these domains. To prevent set-up and hold violations, at the domain transfer between DQS (delayed) and the system clock, a clock polarity selector is used. This changes the edge on which the data is registered in the synchronizing registers in the input register block. This requires evaluation at the start of each READ cycle for the correct clock polarity.

Prior to the READ operation in DDR memories, DQS is in tristate (pulled by termination). The DDR memory device drives DQS low at the start of the preamble state. A dedicated circuit detects the first DQS rising edge after the preamble state. This signal is used to control the polarity of the clock to the synchronizing registers.

**Figure 3-6. SPI4.2 Parameters**



## LatticeECP2/M sysCONFIG Port Timing Specifications

Over Recommended Operating Conditions

| Parameter                                        | Description                                                  | Min.     | Max.     | Units  |
|--------------------------------------------------|--------------------------------------------------------------|----------|----------|--------|
| <b>sysCONFIG Byte Data Flow</b>                  |                                                              |          |          |        |
| t <sub>SUCBDI</sub>                              | Byte D[0:7] Setup Time to CCLK                               | 7        | —        | ns     |
| t <sub>HCBDI</sub>                               | Byte D[0:7] Hold Time to CCLK                                | 1        | —        | ns     |
| t <sub>CODO</sub>                                | CCLK to DOUT in Flowthrough Mode                             | —        | 12       | ns     |
| t <sub>SUCS</sub>                                | CSN[0:1] Setup Time to CCLK                                  | 7        | —        | ns     |
| t <sub>HCS</sub>                                 | CSN[0:1] Hold Time to CCLK                                   | 1        | —        | ns     |
| t <sub>SUWD</sub>                                | Write Signal Setup Time to CCLK                              | 7        | —        | ns     |
| t <sub>HWd</sub>                                 | Write Signal Hold Time to CCLK                               | 1        | —        | ns     |
| t <sub>DCB</sub>                                 | CCLK to BUSY Delay Time                                      | —        | 12       | ns     |
| t <sub>CORD</sub>                                | CCLK to Out for Read Data                                    | —        | 12       | ns     |
| <b>sysCONFIG Byte Slave Clocking</b>             |                                                              |          |          |        |
| t <sub>BSCH</sub>                                | Byte Slave CCLK Minimum High Pulse                           | 6        | —        | ns     |
| t <sub>BSCL</sub>                                | Byte Slave CCLK Minimum Low Pulse                            | 9        | —        | ns     |
| t <sub>BSCYC</sub>                               | Byte Slave CCLK Cycle Time                                   | 15       | —        | ns     |
| <b>sysCONFIG Serial (Bit) Data Flow</b>          |                                                              |          |          |        |
| t <sub>SUSCDI</sub>                              | DI Setup Time to CCLK Slave Mode                             | 7        | —        | ns     |
| t <sub>HSCDI</sub>                               | DI Hold Time to CCLK Slave Mode                              | 1        | —        | ns     |
| t <sub>CODO</sub>                                | CCLK to DOUT in Flowthrough Mode                             | —        | 12       | ns     |
| <b>sysCONFIG Serial Slave Clocking</b>           |                                                              |          |          |        |
| t <sub>SSCH</sub>                                | Serial Slave CCLK Minimum High Pulse                         | 6        | —        | ns     |
| t <sub>SSCL</sub>                                | Serial Slave CCLK Minimum Low Pulse                          | 6        | —        | ns     |
| <b>sysCONFIG POR, Initialization and Wake-up</b> |                                                              |          |          |        |
| t <sub>ICFG</sub>                                | Minimum Vcc to INITN High                                    | —        | 28       | ms     |
| t <sub>VMC</sub>                                 | Time from t <sub>ICFG</sub> to Valid Master CCLK             | —        | 2        | us     |
| t <sub>PRGMRJ</sub>                              | PROGRAMN Pin Pulse Rejection                                 | —        | 8        | ns     |
| t <sub>PRGM</sub>                                | PROGRAMN Low Time to Start Configuration                     | 25       | —        | ns     |
| t <sub>DINIT</sub>                               | PROGRAMN High to INITN High Delay <sup>1</sup>               | —        | 1.5      | ms     |
| t <sub>DPPINIT</sub>                             | Delay Time from PROGRAMN Low to INITN Low                    | —        | 37       | ns     |
| t <sub>DPPDONE</sub>                             | Delay Time from PROGRAMN Low to DONE Low                     | —        | 37       | ns     |
| t <sub>IODISS</sub>                              | User I/O Disable from PROGRAMN Low                           | —        | 35       | ns     |
| t <sub>IOENSS</sub>                              | User I/O Enabled Time from CCLK Edge During Wake-up Sequence | —        | 25       | ns     |
| t <sub>MWC</sub>                                 | Additional Wake Master Clock Signals after DONE Pin High     | 120      | —        | cycles |
| <b>sysCONFIG SPI Port<sup>2</sup></b>            |                                                              |          |          |        |
| t <sub>CFGX</sub>                                | INITN High to CCLK Low                                       | —        | 1        | μs     |
| t <sub>CSSPI</sub>                               | INITN High to CSSPIN Low                                     | —        | 2        | us     |
| t <sub>CSCCLK</sub>                              | CCLK Low before CSSPIN Low                                   | 0        | —        | ns     |
| t <sub>SOCDO</sub>                               | CCLK Low to Output Valid                                     | —        | 15       | ns     |
| t <sub>SOE</sub>                                 | CSSPIN[0:1] Active Setup Time                                | 300      | —        | ns     |
| t <sub>CSPID</sub>                               | CSSPIN[0:1] Low to First CCLK Edge Setup Time                | 300+3cyc | 600+6cyc | ns     |

## LatticeECP2M Power Supply and NC (Cont.)

| Signal           | 672 fpBGA                                                                                                                                                                                                                                                                                                                                                                                                                | 900 fpBGA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GND <sup>1</sup> | A13, A19, A2, A25, AA2, AA25, AB18, AB22, AB5, AB9, AE1, AE11, AE16, AE22, AE26, AE6, AF13, AF19, AF2, AF25, B1, B11, B16, B22, B26, B6, E18, E22, E5, E9, F2, F25, G11, G16, J22, J5, K11, K13, K14, K16, L10, L11, L16, L17, L2, L20, L25, L7, M13, M14, N10, N12, N13, N14, N15, N17, P10, P12, P13, P14, P15, P17, R13, R14, T10, T11, T16, T17, T2, T20, T25, T7, U11, U13, U14, U16, V22, V5, Y11, Y16             | <p><b>LFE2M50:</b> A1, A13, A18, A24, A30, A7, AA14, AA15, AA16, AA17, AA24, AA27, AA4, AB24, AB7, AD12, AD19, AD27, AE22, AE27, AE4, AE9, AF14, AF17, AF25, AF6, AJ10, AJ21, AJ27, AJ4, AK1, AK13, AK18, AK24, AK30, AK7, B10, B21, B27, B4, D25, D6, E14, E17, F22, F27, F4, F9, G12, G19, J24, J7, K14, K15, K16, K17, K27, K4, L14, L15, L16, L17, M23, M8, N14, N15, N16, N17, N27, N4, P11, P13, P14, P15, P16, P17, P18, P20, R10, R11, R13, R14, R15, R16, R17, R18, R20, R21, R24, R7, T10, T11, T13, T14, T15, T16, T17, T18, T20, T21, T24, T7, U11, U13, U14, U15, U16, U17, U18, U20, V14, V15, V16, V17, V27, V4, W23, W8, Y14, Y15, Y16, Y17</p> <p><b>LFE2M70/LFE2M100:</b> A1, A13, A18, A24, A30, A7, AA14, AA15, AA16, AA17, AA24, AA27, AA4, AB24, AB7, AD12, AD19, AD27, AE22, AE27, AE4, AE9, AF14, AF17, AF25, AF6, AJ10, AJ21, AJ27, AJ4, AK1, AK13, AK18, AK24, AK30, AK7, B10, B21, B27, B4, D25, D6, E14, E17, F22, F27, F4, F9, G12, G19, J24, J7, K14, K15, K16, K17, K27, K4, L14, L15, L16, L17, M23, M8, N14, N15, N16, N17, N27, N4, P11, P13, P14, P15, P16, P17, P18, P20, R10, R11, R13, R14, R15, R16, R17, R18, R20, R21, R24, R7, T10, T11, T13, T14, T15, T16, T17, T18, T20, T21, T24, T7, U11, U13, U14, U15, U16, U17, U18, U20, V14, V15, V16, V17, V27, V4, W23, W8, Y14, Y15, Y16, Y17</p> |
| NC <sup>2</sup>  | <p><b>LFE2M35:</b> AB3, AB4, AC1, AC2, AD15, AD18, AD20, AD23, AE13, AE25, AF16, AF22, B4, B5, C26, D20, D21, D22, D23, D24, D25, D26, E20, E21, E25, E26, F20, G20, K10, K17, R4, U10, U23, V10, W7, N7, V7</p> <p><b>LFE2M50:</b> AB3, AB4, AC1, AC2, B4, B5, C26, D20, D21, D22, D23, D24, D25, D26, E20, E21, E25, E26, F20, G20, K10, K17, R4, U10, U23, V10, W7, AB21, AC20, AC21, AC22, AC23, AC25, AD26, W20</p> | <p><b>LFE2M50:</b> G5, G4, K7, K8, E1, F2, F1, G3, G2, G1, L9, L7, K6, K5, L8, L6, AA1, AA2, Y3, AB1, Y9, Y8, Y7, AA7, AB2, AB3, AA5, AA6, AB4, AB5, AA8, AA9, AJ1, AK4, AH6, AH3, AH11, AH8, AK10, AJ13, AB26, AB27, Y24, Y25, AA29, Y28, Y30, Y29, W22, V22, Y27, Y26, W30, W29, W25, W26, L24, L23, D30, D29, K24, K25, J27, K26, J26, H26, H27, G26, H23, H24, D28, E28, J18, J19, H17, J17, F18, F17, B13, A10, C8, C11, C3, C6, A4, B1, AA26, AB11, AB12, AB13, AB14, AB15, AB16, AB17, AB19, AB20, AB21, AC11, AC21, AC22, AD21, AD22, AE23, AF20, AF23, AG23, AG26, F20, F23, G10, G20, G21, H19, H20, H21, H22, J20, J21, R9, U22, W9</p> <p><b>LFE2M70/LFE2M100:</b> AA26, AB10, AB11, AB12, AB13, AB14, AB15, AB16, AB17, AB19, AB20, AB21, AB9, AC10, AC11, AC21, AC22, AC8, AC9, AD21, AD22, AD4, AD5, AD6, AD7, AD8, AE23, AE5, AE6, AE7, AF20, AF23, AF5, AG23, AG26, D10, E10, E11, F10, F20, F23, F8, G10, G20, G21, G7, G8, G9, H19, H20, H21, H22, H6, H8, H9, J10, J20, J21, J9, K9, R9, U22, W9</p>                                                                                                                                                                                                                                                                                                                 |

1. All grounds must be electrically connected at the board level. For fpBGA packages, the total number of GND balls is less than the actual number of GND logic connections from the die to the common package GND plane.
2. NC pins should not be connected to any active signals, VCC or GND.
3. For package migration across device densities, the designer must comprehend the package pin requirements for the SERDES blocks. Specifically, the SERDES power pins of the largest density device must be accounted to accommodate migration to other smaller devices using the same package. Please refer to TN1160, [LatticeECP2/M Density Migration](#) for more details.

## LFE2-12E/SE and LFE2-20E/SE Logic Signal Connections: 484 fpBGA (Cont.)

| LFE2-12E/12SE |                   |      |               |              | LFE2-20E/20SE     |      |               |              |
|---------------|-------------------|------|---------------|--------------|-------------------|------|---------------|--------------|
| Ball Number   | Ball/Pad Function | Bank | Dual Function | Differential | Ball/Pad Function | Bank | Dual Function | Differential |
| H16           | NC                | -    |               |              | NC                | -    |               |              |
| H20           | NC                | -    |               |              | NC                | -    |               |              |
| H18           | NC                | -    |               |              | NC                | -    |               |              |
| K6            | NC                | -    |               |              | NC                | -    |               |              |
| J16           | NC                | -    |               |              | NC                | -    |               |              |
| N18           | VCC               | -    |               |              | VCC               | -    |               |              |
| N6            | VCC               | -    |               |              | VCC               | -    |               |              |

\* Supports true LVDS. Other differential signals must be emulated with external resistors.

\*\* These dedicated input pins can be used for GPLLs or GDLLs within the respective quadrant.

Note: VCCIO and GND pads are used to determine the average DC current drawn by I/Os between GND/VCCIO connections, or between the last GND/VCCIO in an I/O bank and the end of an I/O bank. The substrate pads listed in the Pin Table do not necessarily have a one to one connection with a package ball or pin.



## LFE2-20E/SE and LFE2-35E/SE Logic Signal Connections: 672 fpBGA (Cont.)

| LFE2-20E/20SE |                   |      |               |              | LFE2-35E/35SE     |      |               |              |
|---------------|-------------------|------|---------------|--------------|-------------------|------|---------------|--------------|
| Ball Number   | Ball/Pad Function | Bank | Dual Function | Differential | Ball/Pad Function | Bank | Dual Function | Differential |
| A2            | GND               | -    |               |              | GND               | -    |               |              |
| A25           | GND               | -    |               |              | GND               | -    |               |              |
| AA18          | GND               | -    |               |              | GND               | -    |               |              |
| AA24          | GND               | -    |               |              | GND               | -    |               |              |
| AA3           | GND               | -    |               |              | GND               | -    |               |              |
| AA9           | GND               | -    |               |              | GND               | -    |               |              |
| AD11          | GND               | -    |               |              | GND               | -    |               |              |
| AD16          | GND               | -    |               |              | GND               | -    |               |              |
| AD21          | GND               | -    |               |              | GND               | -    |               |              |
| AD6           | GND               | -    |               |              | GND               | -    |               |              |
| AE1           | GND               | -    |               |              | GND               | -    |               |              |
| AE26          | GND               | -    |               |              | GND               | -    |               |              |
| AF2           | GND               | -    |               |              | GND               | -    |               |              |
| AF25          | GND               | -    |               |              | GND               | -    |               |              |
| B1            | GND               | -    |               |              | GND               | -    |               |              |
| B26           | GND               | -    |               |              | GND               | -    |               |              |
| C11           | GND               | -    |               |              | GND               | -    |               |              |
| C16           | GND               | -    |               |              | GND               | -    |               |              |
| C21           | GND               | -    |               |              | GND               | -    |               |              |
| C6            | GND               | -    |               |              | GND               | -    |               |              |
| F18           | GND               | -    |               |              | GND               | -    |               |              |
| F24           | GND               | -    |               |              | GND               | -    |               |              |
| F3            | GND               | -    |               |              | GND               | -    |               |              |
| F9            | GND               | -    |               |              | GND               | -    |               |              |
| J13           | GND               | -    |               |              | GND               | -    |               |              |
| J14           | GND               | -    |               |              | GND               | -    |               |              |
| J21           | GND               | -    |               |              | GND               | -    |               |              |
| J6            | GND               | -    |               |              | GND               | -    |               |              |
| K10           | GND               | -    |               |              | GND               | -    |               |              |
| K11           | GND               | -    |               |              | GND               | -    |               |              |
| K13           | GND               | -    |               |              | GND               | -    |               |              |
| K14           | GND               | -    |               |              | GND               | -    |               |              |
| K16           | GND               | -    |               |              | GND               | -    |               |              |
| K17           | GND               | -    |               |              | GND               | -    |               |              |
| L10           | GND               | -    |               |              | GND               | -    |               |              |
| L11           | GND               | -    |               |              | GND               | -    |               |              |
| L16           | GND               | -    |               |              | GND               | -    |               |              |
| L17           | GND               | -    |               |              | GND               | -    |               |              |
| L24           | GND               | -    |               |              | GND               | -    |               |              |
| L3            | GND               | -    |               |              | GND               | -    |               |              |
| M13           | GND               | -    |               |              | GND               | -    |               |              |
| M14           | GND               | -    |               |              | GND               | -    |               |              |
| N10           | GND               | -    |               |              | GND               | -    |               |              |
| N12           | GND               | -    |               |              | GND               | -    |               |              |
| N13           | GND               | -    |               |              | GND               | -    |               |              |
| N14           | GND               | -    |               |              | GND               | -    |               |              |

## LFE2-50E/SE and LFE2-70E/SE Logic Signal Connections: 672 fpBGA (Cont.)

| LFE2-50E/SE |                   |      |                         |              | LFE2-70E/SE       |      |                         |              |  |
|-------------|-------------------|------|-------------------------|--------------|-------------------|------|-------------------------|--------------|--|
| Ball Number | Ball/Pad Function | Bank | Dual Function           | Differential | Ball/Pad Function | Bank | Dual Function           | Differential |  |
| U1          | PL53A             | 6    | LDQ50                   | T            | PL66A             | 6    | LDQ63                   | T            |  |
| V1          | PL53B             | 6    | LDQ50                   | C            | PL66B             | 6    | LDQ63                   | C            |  |
| GND         | GNDIO6            | -    |                         |              | GNDIO6            | -    |                         |              |  |
| P3          | PL54A             | 6    | LDQ58                   | T (LVDS)*    | PL67A             | 6    | LDQ71                   | T (LVDS)*    |  |
| R3          | PL54B             | 6    | LDQ58                   | C (LVDS)*    | PL67B             | 6    | LDQ71                   | C (LVDS)*    |  |
| R4          | PL55A             | 6    | LDQ58                   | T            | PL68A             | 6    | LDQ71                   | T            |  |
| U2          | PL55B             | 6    | LDQ58                   | C            | PL68B             | 6    | LDQ71                   | C            |  |
| VCCIO       | VCCIO6            | 6    |                         |              | VCCIO6            | 6    |                         |              |  |
| V2          | PL56A             | 6    | LDQ58                   | T (LVDS)*    | PL69A             | 6    | LDQ71                   | T (LVDS)*    |  |
| W2          | PL56B             | 6    | LDQ58                   | C (LVDS)*    | PL69B             | 6    | LDQ71                   | C (LVDS)*    |  |
| T6          | PL57A             | 6    | LDQ58                   | T            | PL70A             | 6    | LDQ71                   | T            |  |
| R5          | PL57B             | 6    | LDQ58                   | C            | PL70B             | 6    | LDQ71                   | C            |  |
| GND         | GNDIO6            | -    |                         |              | GNDIO6            | -    |                         |              |  |
| R6          | PL58A             | 6    | LDQS58                  | T (LVDS)*    | PL71A             | 6    | LDQS71                  | T (LVDS)*    |  |
| R7          | PL58B             | 6    | LDQ58                   | C (LVDS)*    | PL71B             | 6    | LDQ71                   | C (LVDS)*    |  |
| W1          | PL59A             | 6    | LDQ58                   | T            | PL72A             | 6    | LDQ71                   | T            |  |
| VCCIO       | VCCIO6            | 6    |                         |              | VCCIO6            | 6    |                         |              |  |
| Y2          | PL59B             | 6    | LDQ58                   | C            | PL72B             | 6    | LDQ71                   | C            |  |
| Y1          | PL60A             | 6    | LLM0_GDLLT_IN_A**/LDQ58 | T (LVDS)*    | PL73A             | 6    | LLM0_GDLLT_IN_A**/LDQ71 | T (LVDS)*    |  |
| AA2         | PL60B             | 6    | LLM0_GDLLC_IN_A**/LDQ58 | C (LVDS)*    | PL73B             | 6    | LLM0_GDLLC_IN_A**/LDQ71 | C (LVDS)*    |  |
| T5          | PL61A             | 6    | LLM0_GDLLT_FB_A/LDQ58   | T            | PL74A             | 6    | LLM0_GDLLT_FB_A/LDQ71   | T            |  |
| GND         | GNDIO6            | -    |                         |              | GNDIO6            | -    |                         |              |  |
| T7          | PL61B             | 6    | LLM0_GDLLC_FB_D/LDQ58   | C            | PL74B             | 6    | LLM0_GDLLC_FB_D/LDQ71   | C            |  |
| R8          | VCCPLL            | 6    |                         |              | VCCPLL            | -    |                         |              |  |
| T8          | LLM0_PLLCAP       | 6    |                         |              | LLM0_PLLCAP       | 6    |                         |              |  |
| U3          | PL63A             | 6    | LLM0_GPLLT_IN_A**/LDQ67 | T (LVDS)*    | PL76A             | 6    | LLM0_GPLLT_IN_A**/LDQ80 | T (LVDS)*    |  |
| U4          | PL63B             | 6    | LLM0_GPLLC_IN_A**/LDQ67 | C (LVDS)*    | PL76B             | 6    | LLM0_GPLLC_IN_A**/LDQ80 | C (LVDS)*    |  |
| V3          | PL64A             | 6    | LLM0_GPLLT_FB_A/LDQ67   | T            | PL77A             | 6    | LLM0_GPLLT_FB_A/LDQ80   | T            |  |
| U5          | PL64B             | 6    | LLM0_GPLLC_FB_A/LDQ67   | C            | PL77B             | 6    | LLM0_GPLLC_FB_A/LDQ80   | C            |  |
| V4          | PL65A             | 6    | LDQ67                   | T (LVDS)*    | PL78A             | 6    | LDQ80                   | T (LVDS)*    |  |
| VCCIO       | VCCIO6            | 6    |                         |              | VCCIO6            | 6    |                         |              |  |
| V5          | PL65B             | 6    | LDQ67                   | C (LVDS)*    | PL78B             | 6    | LDQ80                   | C (LVDS)*    |  |
| Y3          | PL66A             | 6    | LDQ67                   | T            | PL79A             | 6    | LDQ80                   | T            |  |
| Y4          | PL66B             | 6    | LDQ67                   | C            | PL79B             | 6    | LDQ80                   | C            |  |
| W3          | PL67A             | 6    | LDQS67                  | T (LVDS)*    | PL80A             | 6    | LDQS80                  | T (LVDS)*    |  |
| GND         | GNDIO6            | -    |                         |              | GNDIO6            | -    |                         |              |  |
| W4          | PL67B             | 6    | LDQ67                   | C (LVDS)*    | PL80B             | 6    | LDQ80                   | C (LVDS)*    |  |
| AA1         | PL68A             | 6    | LDQ67                   | T            | PL81A             | 6    | LDQ80                   | T            |  |
| AB1         | PL68B             | 6    | LDQ67                   | C            | PL81B             | 6    | LDQ80                   | C            |  |
| VCCIO       | VCCIO6            | 6    |                         |              | VCCIO6            | 6    |                         |              |  |
| U8          | PL69A             | 6    | LDQ67                   | T (LVDS)*    | PL82A             | 6    | LDQ80                   | T (LVDS)*    |  |
| U7          | PL69B             | 6    | LDQ67                   | C (LVDS)*    | PL82B             | 6    | LDQ80                   | C (LVDS)*    |  |
| V8          | PL70A             | 6    | LDQ67                   | T            | PL83A             | 6    | LDQ80                   | T            |  |
| U6          | PL70B             | 6    | LDQ67                   | C            | PL83B             | 6    | LDQ80                   | C            |  |
| GND         | GNDIO6            | -    |                         |              | GNDIO6            | -    |                         |              |  |
| W6          | PL71A             | 6    | LDQ75                   | T (LVDS)*    | PL84A             | 6    | LDQ88                   | T (LVDS)*    |  |

## LFE2M-20E/SE and LFE2M-35E/SE Logic Signal Connections: 256 fpBGA (Cont.)

| LFE2M20E/SE |                   |      |                 |              | LFE2M35E/SE       |      |                       |              |  |
|-------------|-------------------|------|-----------------|--------------|-------------------|------|-----------------------|--------------|--|
| Ball Number | Ball/Pad Function | Bank | Dual Function   | Differential | Ball/Pad Function | Bank | Dual Function         | Differential |  |
| F14         | PR24B             | 2    | RDQ22           | C (LVDS)*    | PR34B             | 2    | RDQ32                 | C(LVDS)*     |  |
| F13         | PR24A             | 2    | RDQ22           | T (LVDS)*    | PR34A             | 2    | RDQ32                 | T (LVDS)*    |  |
| VCCIO       | VCCIO2            | 2    |                 |              | VCCIO2            | 2    |                       |              |  |
| GNDIO       | GNDIO2            | -    |                 |              | GNDIO2            | -    |                       |              |  |
| H11         | PR14B             | 2    |                 | C            | PR14B             | 2    | RDQ15                 | C            |  |
| G11         | PR14A             | 2    |                 | T            | PR14A             | 2    | RDQ15                 | T            |  |
| E13         | PR13B             | 2    |                 | C (LVDS)*    | PR13B             | 2    | RDQ15                 | C(LVDS)*     |  |
| F12         | PR13A             | 2    |                 | T (LVDS)*    | PR13A             | 2    | RDQ15                 | T (LVDS)*    |  |
| VCCIO       | VCCIO2            | 2    |                 |              | VCCIO2            | 2    |                       |              |  |
| F11         | PR12B             | 2    | RUM0_SPLLC_FB_A | C            | PR12B             | 2    | RUM0_SPLLC_FB_A/RDQ15 | C            |  |
| E12         | PR12A             | 2    | RUM0_SPLLT_FB_A | T            | PR12A             | 2    | RUM0_SPLLT_FB_A/RDQ15 | T            |  |
| D16         | PR11B             | 2    | RUM0_SPLLC_IN_A | C (LVDS)*    | PR11B             | 2    | RUM0_SPLLC_IN_A/RDQ15 | C(LVDS)*     |  |
| D15         | PR11A             | 2    | RUM0_SPLLT_IN_A | T (LVDS)*    | PR11A             | 2    | RUM0_SPLLT_IN_A/RDQ15 | T (LVDS)*    |  |
| C16         | PR9B              | 2    | VREF2_2         | C            | PR9B              | 2    | VREF2_2               | C            |  |
| GNDIO       | GNDIO2            | -    |                 |              | GNDIO2            | -    |                       |              |  |
| B16         | PR9A              | 2    | VREF1_2         | T            | PR9A              | 2    | VREF1_2               | T            |  |
| VCCIO       | VCCIO2            | 2    |                 |              | VCCIO2            | 2    |                       |              |  |
| F4          | XRES              | -    |                 |              | XRES              | -    |                       |              |  |
| C15         | URC_SQ_VCCRX0     | 12   |                 |              | URC_SQ_VCCRX0     | 12   |                       |              |  |
| A14         | URC_SQ_HDINP0     | 12   |                 | T            | URC_SQ_HDINP0     | 12   |                       | T            |  |
| B15         | URC_SQ_VCCIB0     | 12   |                 |              | URC_SQ_VCCIB0     | 12   |                       |              |  |
| B14         | URC_SQ_HDINN0     | 12   |                 | C            | URC_SQ_HDINN0     | 12   |                       | C            |  |
| C12         | URC_SQ_VCCTX0     | 12   |                 |              | URC_SQ_VCCTX0     | 12   |                       |              |  |
| A11         | URC_SQ_HDOUTP0    | 12   |                 | T            | URC_SQ_HDOUTP0    | 12   |                       | T            |  |
| A12         | URC_SQ_VCCOB0     | 12   |                 |              | URC_SQ_VCCOB0     | 12   |                       |              |  |
| B11         | URC_SQ_HDOUTN0    | 12   |                 | C            | URC_SQ_HDOUTN0    | 12   |                       | C            |  |
| C11         | URC_SQ_VCCTX1     | 12   |                 |              | URC_SQ_VCCTX1     | 12   |                       |              |  |
| B10         | URC_SQ_HDOUTN1    | 12   |                 | C            | URC_SQ_HDOUTN1    | 12   |                       | C            |  |
| C10         | URC_SQ_VCCOB1     | 12   |                 |              | URC_SQ_VCCOB1     | 12   |                       |              |  |
| A10         | URC_SQ_HDOUTP1    | 12   |                 | T            | URC_SQ_HDOUTP1    | 12   |                       | T            |  |
| C14         | URC_SQ_VCCRX1     | 12   |                 |              | URC_SQ_VCCRX1     | 12   |                       |              |  |
| B13         | URC_SQ_HDINN1     | 12   |                 | C            | URC_SQ_HDINN1     | 12   |                       | C            |  |
| C13         | URC_SQ_VCCIB1     | 12   |                 |              | URC_SQ_VCCIB1     | 12   |                       |              |  |
| A13         | URC_SQ_HDINP1     | 12   |                 | T            | URC_SQ_HDINP1     | 12   |                       | T            |  |
| B9          | URC_SQ_VCCAUX33   | 12   |                 |              | URC_SQ_VCCAUX33   | 12   |                       |              |  |
| D8          | URC_SQ_REFCLKN    | 12   |                 | C            | URC_SQ_REFCLKN    | 12   |                       | C            |  |
| D9          | URC_SQ_REFCLKP    | 12   |                 | T            | URC_SQ_REFCLKP    | 12   |                       | T            |  |
| C9          | URC_SQ_VCCP       | 12   |                 |              | URC_SQ_VCCP       | 12   |                       |              |  |
| A5          | URC_SQ_HDINP2     | 12   |                 | T            | URC_SQ_HDINP2     | 12   |                       | T            |  |
| C5          | URC_SQ_VCCIB2     | 12   |                 |              | URC_SQ_VCCIB2     | 12   |                       |              |  |
| B5          | URC_SQ_HDINN2     | 12   |                 | C            | URC_SQ_HDINN2     | 12   |                       | C            |  |
| C4          | URC_SQ_VCCRX2     | 12   |                 |              | URC_SQ_VCCRX2     | 12   |                       |              |  |
| A8          | URC_SQ_HDOUTP2    | 12   |                 | T            | URC_SQ_HDOUTP2    | 12   |                       | T            |  |
| C8          | URC_SQ_VCCOB2     | 12   |                 |              | URC_SQ_VCCOB2     | 12   |                       |              |  |
| B8          | URC_SQ_HDOUTN2    | 12   |                 | C            | URC_SQ_HDOUTN2    | 12   |                       | C            |  |
| C7          | URC_SQ_VCCTX2     | 12   |                 |              | URC_SQ_VCCTX2     | 12   |                       |              |  |
| B7          | URC_SQ_HDOUTN3    | 12   |                 | C            | URC_SQ_HDOUTN3    | 12   |                       | C            |  |
| A6          | URC_SQ_VCCOB3     | 12   |                 |              | URC_SQ_VCCOB3     | 12   |                       |              |  |

## LFE2M20E/SE and LFE2M35E/SE Logic Signal Connections: 484 fpBGA (Cont.)

| LFE2M20E/SE |                   |      |                     |              | LFE2M35E/SE       |      |                            |              |  |
|-------------|-------------------|------|---------------------|--------------|-------------------|------|----------------------------|--------------|--|
| Ball Number | Ball/Pad Function | Bank | Dual Function       | Differential | Ball/Pad Function | Bank | Dual Function              | Differential |  |
| T17         | PR51A             | 8    | D2***               | T            | PR66A             | 8    | D2***                      | T            |  |
| T22         | PR50B             | 8    | D3***               | C            | PR65B             | 8    | D3***                      | C            |  |
| GNDIO       | GNDIO8            | -    |                     |              | GNDIO8            | -    |                            |              |  |
| R22         | PR50A             | 8    | D4***               | T            | PR65A             | 8    | D4***                      | T            |  |
| T15         | PR49B             | 8    | D5***               | C            | PR64B             | 8    | D5***                      | C            |  |
| R17         | PR49A             | 8    | D6***               | T            | PR64A             | 8    | D6***                      | T            |  |
| T20         | PR48B             | 8    | D7/SPID0***         | C            | PR63B             | 8    | D7/SPID0***                | C            |  |
| VCCIO       | VCCIO8            | 8    |                     |              | VCCIO8            | 8    |                            |              |  |
| T21         | PR48A             | 8    | DI/CSSPI0N***       | T            | PR63A             | 8    | DI/CSSPI0N***              | T            |  |
| R21         | PR47B             | 8    | DOU/CSON/CSSPI1N*** | C            | PR62B             | 8    | DOU/CSON/CSSPI1N***        | C            |  |
| R20         | PR47A             | 8    | BUSY/SISPI***       | T            | PR62A             | 8    | BUSY/SISPI***              | T            |  |
| R16         | RLM0_PLLCAP       | 3    |                     |              | RLM0_PLLCAP       | 3    |                            |              |  |
| R18         | PR45B             | 3    | RLM0_GDLLC_FB_A     | C            | PR60B             | 3    | RLM0_GDLLC_FB_A/RDQ57      | C            |  |
| GNDIO       | GNDIO3            | -    |                     |              | GNDIO3            | -    |                            |              |  |
| R19         | PR45A             | 3    | RLM0_GDLLT_FB_A     | T            | PR60A             | 3    | RLM0_GDLLT_FB_A/RDQ57      | T            |  |
| P22         | PR44B             | 3    | RLM0_GDLLC_IN_A**   | C (LVDS)*    | PR59B             | 3    | RLM0_GDLLC_IN_A**/RDQ57    | C (LVDS)*    |  |
| P21         | PR44A             | 3    | RLM0_GDLLT_IN_A**   | T (LVDS)*    | PR59A             | 3    | RLM0_GDLLT_IN_A**/RDQ57    | T (LVDS)*    |  |
| P16         | PR43B             | 3    | RLM0_GPLLC_IN_A**   | C            | PR58B             | 3    | RLM0_GPLLC_IN_A**/RDQ57    | C            |  |
| VCCIO       | VCCIO3            | 3    |                     |              | VCCIO3            | 3    |                            |              |  |
| P17         | PR43A             | 3    | RLM0_GPLLT_IN_A**   | T            | PR58A             | 3    | RLM0_GPLLT_IN_A**/RDQ57    | T            |  |
| P20         | PR42B             | 3    | RLM0_GPLLC_FB_A     | C (LVDS)*    | PR57B             | 3    | RLM0_GPLLC_FB_A/RDQ57      | C (LVDS)*    |  |
| P19         | PR42A             | 3    | RLM0_GPLLT_FB_A     | T (LVDS)*    | PR57A             | 3    | RLM0_GPLLT_FB_A/RDQS57**** | T (LVDS)*    |  |
| GNDIO       | GNDIO3            | -    |                     |              | GNDIO3            | -    |                            |              |  |
| -           | -                 | -    |                     |              | VCCIO3            | 3    |                            |              |  |
| P18         | PR41B             | 3    | RDQ38               | C            | PR51B             | 3    | RDQ48                      | C            |  |
| N16         | PR41A             | 3    | RDQ38               | T            | PR51A             | 3    | RDQ48                      | T            |  |
| GNDIO       | GNDIO3            | -    |                     |              | GNDIO3            | -    |                            |              |  |
| N22         | PR40B             | 3    | RDQ38               | C (LVDS)*    | PR50B             | 3    | RDQ48                      | C (LVDS)*    |  |
| N21         | PR40A             | 3    | RDQ38               | T (LVDS)*    | PR50A             | 3    | RDQ48                      | T (LVDS)*    |  |
| N17         | PR39B             | 3    | RDQ38               | C            | PR49B             | 3    | RDQ48                      | C            |  |
| N18         | PR39A             | 3    | RDQ38               | T            | PR49A             | 3    | RDQ48                      | T            |  |
| VCCIO       | VCCIO3            | 3    |                     |              | VCCIO3            | 3    |                            |              |  |
| M22         | PR38B             | 3    | RDQ38               | C (LVDS)*    | PR48B             | 3    | RDQ48                      | C (LVDS)*    |  |
| M21         | PR38A             | 3    | RDQS38              | T (LVDS)*    | PR48A             | 3    | RDQS48                     | T (LVDS)*    |  |
| M16         | PR37B             | 3    | RDQ38               | C            | PR47B             | 3    | RDQ48                      | C            |  |
| GNDIO       | GNDIO3            | -    |                     |              | GNDIO3            | -    |                            |              |  |
| M17         | PR37A             | 3    | RDQ38               | T            | PR47A             | 3    | RDQ48                      | T            |  |
| M20         | PR36B             | 3    | RDQ38               | C (LVDS)*    | PR46B             | 3    | RDQ48                      | C (LVDS)*    |  |
| M19         | PR36A             | 3    | RDQ38               | T (LVDS)*    | PR46A             | 3    | RDQ48                      | T (LVDS)*    |  |
| M18         | PR35B             | 3    | RDQ38               | C            | PR45B             | 3    | RDQ48                      | C            |  |
| VCCIO       | VCCIO3            | 3    |                     |              | VCCIO3            | 3    |                            |              |  |
| L16         | PR35A             | 3    | RDQ38               | T            | PR45A             | 3    | RDQ48                      | T            |  |
| L22         | PR34B             | 3    | RDQ38               | C (LVDS)*    | PR44B             | 3    | RDQ48                      | C (LVDS)*    |  |
| L21         | PR34A             | 3    | RDQ38               | T (LVDS)*    | PR44A             | 3    | RDQ48                      | T (LVDS)*    |  |
| K22         | PR32B             | 3    | RLM1_SPLLC_FB_A     | C            | PR42B             | 3    | RLM2_SPLLC_FB_A            | C            |  |
| VCCIO       | VCCIO3            | 3    |                     |              | VCCIO3            | 3    |                            |              |  |
| K21         | PR32A             | 3    | RLM1_SPLLT_FB_A     | T            | PR42A             | 3    | RLM2_SPLLT_FB_A            | T            |  |
| L17         | PR31B             | 3    | RLM1_SPLLC_IN_A     | C (LVDS)*    | PR41B             | 3    | RLM2_SPLLC_IN_A            | C (LVDS)*    |  |

## LFE2M50E/SE and LFE2M70E/SE Logic Signal Connections: 900 fpBGA (Cont.)

| LFE2M50E/SE |                   |      |               |              | LFE2M70E/SE       |      |               |              |  |
|-------------|-------------------|------|---------------|--------------|-------------------|------|---------------|--------------|--|
| Ball Number | Ball/Pad Function | Bank | Dual Function | Differential | Ball/Pad Function | Bank | Dual Function | Differential |  |
| AH12        | VCC               | -    |               |              | LLC_SQ_VCCR1      | 14   |               |              |  |
| AK8         | PB16A             | 5    | BDQ15         | T            | LLC_SQ_HDOUTP1    | 14   |               | T            |  |
| AH8         | NC                | -    |               |              | LLC_SQ_VCCOB1     | 14   |               |              |  |
| AJ8         | PB16B             | 5    | BDQ15         | C            | LLC_SQ_HDOUTN1    | 14   |               | C            |  |
| AH9         | VCC               | -    |               |              | LLC_SQ_VCCTX1     | 14   |               |              |  |
| AJ9         | PB17B             | 5    | BDQ15         | C            | LLC_SQ_HDOUTN0    | 14   |               | C            |  |
| AK10        | NC                | -    |               |              | LLC_SQ_VCCOB0     | 14   |               |              |  |
| AK9         | PB17A             | 5    | BDQ15         | T            | LLC_SQ_HDOUTP0    | 14   |               | T            |  |
| AH10        | VCC               | -    |               |              | LLC_SQ_VCCTX0     | 14   |               |              |  |
| AJ12        | PB19B             | 5    | BDQ15         | C            | LLC_SQ_HDINN0     | 14   |               | C            |  |
| AJ13        | NC                | -    |               |              | LLC_SQ_VCCIB0     | 14   |               |              |  |
| AK12        | PB19A             | 5    | BDQ15         | T            | LLC_SQ_HDINP0     | 14   |               | T            |  |
| AH13        | VCC               | -    |               |              | LLC_SQ_VCCR0      | 14   |               |              |  |
| AF10        | PB3A              | 5    | BDQ6          | T            | PB30A             | 5    | BDQ33         | T            |  |
| AE8         | PB3B              | 5    | BDQ6          | C            | PB30B             | 5    | BDQ33         | C            |  |
| AE11        | PB4A              | 5    | BDQ6          | T            | PB31A             | 5    | BDQ33         | T            |  |
| VCCIO       | VCCIO5            | 5    |               |              | VCCIO5            | 5    |               |              |  |
| AD9         | PB4B              | 5    | BDQ6          | C            | PB31B             | 5    | BDQ33         | C            |  |
| AE10        | PB5A              | 5    | BDQ6          | T            | PB32A             | 5    | BDQ33         | T            |  |
| AD10        | PB5B              | 5    | BDQ6          | C            | PB32B             | 5    | BDQ33         | C            |  |
| AE13        | PB6A              | 5    | BDQS6         | T            | PB33A             | 5    | BDQS33        | T            |  |
| GNDIO       | GNDIO5            | -    |               |              | GNDIO5            | -    |               |              |  |
| AC12        | PB6B              | 5    | BDQ6          | C            | PB33B             | 5    | BDQ33         | C            |  |
| AG2         | PB7A              | 5    | BDQ6          | T            | PB34A             | 5    | BDQ33         | T            |  |
| AG3         | PB7B              | 5    | BDQ6          | C            | PB34B             | 5    | BDQ33         | C            |  |
| AD13        | PB8A              | 5    | BDQ6          | T            | PB35A             | 5    | BDQ33         | T            |  |
| VCCIO       | VCCIO5            | 5    |               |              | VCCIO5            | 5    |               |              |  |
| AC13        | PB8B              | 5    | BDQ6          | C            | PB35B             | 5    | BDQ33         | C            |  |
| AE14        | PB9A              | 5    | BDQ6          | T            | PB36A             | 5    | BDQ33         | T            |  |
| AC14        | PB9B              | 5    | BDQ6          | C            | PB36B             | 5    | BDQ33         | C            |  |
| AF3         | PB10A             | 5    | BDQ6          | T            | PB37A             | 5    | BDQ33         | T            |  |
| GNDIO       | GNDIO5            | -    |               |              | GNDIO5            | -    |               |              |  |
| AF4         | PB10B             | 5    | BDQ6          | C            | PB37B             | 5    | BDQ33         | C            |  |
| VCCIO       | VCCIO5            | 5    |               |              | -                 | -    |               |              |  |
| AG4         | PB20A             | 5    | BDQ24         | T            | PB38A             | 5    | BDQ42         | T            |  |
| AG5         | PB20B             | 5    | BDQ24         | C            | PB38B             | 5    | BDQ42         | C            |  |
| GNDIO       | GNDIO5            | -    |               |              | -                 | -    |               |              |  |
| VCCIO       | VCCIO5            | 5    |               |              | -                 | -    |               |              |  |
| AD11        | PB24A             | 5    | BDQS24****    | T            | PB39A             | 5    | BDQ42         | T            |  |
| AF13        | PB24B             | 5    | BDQ24         | C            | PB39B             | 5    | BDQ42         | C            |  |
| AF12        | PB25A             | 5    | BDQ24         | T            | PB40A             | 5    | BDQ42         | T            |  |
| -           | -                 | -    |               |              | VCCIO5            | 5    |               |              |  |
| AD14        | PB25B             | 5    | BDQ24         | C            | PB40B             | 5    | BDQ42         | C            |  |
| AG8         | PB26A             | 5    | BDQ24         | T            | PB41A             | 5    | BDQ42         | T            |  |
| AF8         | PB26B             | 5    | BDQ24         | C            | PB41B             | 5    | BDQ42         | C            |  |
| AE15        | PB27A             | 5    | BDQ24         | T            | PB42A             | 5    | BDQS42****    | T            |  |
| -           | -                 | -    |               |              | GNDIO5            | -    |               |              |  |
| VCCIO       | VCCIO5            | 5    |               |              | -                 | -    |               |              |  |

**LFE2M100E/SE Logic Signal Connections: 900 fpBGA (Cont.)**

| LFE2M100E/SE |                   |      |                |              |
|--------------|-------------------|------|----------------|--------------|
| Ball Number  | Ball/Pad Function | Bank | Dual Function  | Differential |
| AG2          | PB34A             | 5    | BDQ33          | T            |
| AG3          | PB34B             | 5    | BDQ33          | C            |
| AD13         | PB35A             | 5    | BDQ33          | T            |
| VCCIO        | VCCIO5            | 5    |                |              |
| AC13         | PB35B             | 5    | BDQ33          | C            |
| AE14         | PB36A             | 5    | BDQ33          | T            |
| AC14         | PB36B             | 5    | BDQ33          | C            |
| AF3          | PB37A             | 5    | BDQ33          | T            |
| GNDIO        | GNDIO5            | -    |                |              |
| AF4          | PB37B             | 5    | BDQ33          | C            |
| -            | -                 | -    |                |              |
| AG4          | PB38A             | 5    | BDQ42          | T            |
| AG5          | PB38B             | 5    | BDQ42          | C            |
| GNDIO        | GNDIO5            | -    |                |              |
| -            | -                 | -    |                |              |
| AD11         | PB48A             | 5    | BDQ51          | T            |
| AF13         | PB48B             | 5    | BDQ51          | C            |
| AF12         | PB49A             | 5    | BDQ51          | T            |
| VCCIO        | VCCIO5            | 5    |                |              |
| AD14         | PB49B             | 5    | BDQ51          | C            |
| AG8          | PB50A             | 5    | BDQ51          | T            |
| AF8          | PB50B             | 5    | BDQ51          | C            |
| AE15         | PB51A             | 5    | BDQS51****     | T            |
| GNDIO        | GNDIO5            | -    |                |              |
| -            | -                 | -    |                |              |
| AC15         | PB51B             | 5    | BDQ51          | C            |
| VCCIO        | VCCIO5            | 5    |                |              |
| GNDIO        | GNDIO5            | -    |                |              |
| AD15         | PB56A             | 5    | BDQ60          | T            |
| AF15         | PB56B             | 5    | BDQ60          | C            |
| AG10         | PB57A             | 5    | BDQ60          | T            |
| AG9          | PB57B             | 5    | BDQ60          | C            |
| AH14         | PB58A             | 5    | BDQ60          | T            |
| AG12         | PB58B             | 5    | BDQ60          | C            |
| VCCIO        | VCCIO5            | 5    |                |              |
| AG15         | PB59A             | 5    | BDQ60          | T            |
| AG13         | PB59B             | 5    | BDQ60          | C            |
| GNDIO        | GNDIO5            | -    |                |              |
| AF16         | PB60A             | 5    | BDQS60         | T            |
| AH15         | PB60B             | 5    | BDQ60          | C            |
| AC16         | PB61A             | 5    | VREF2_5/BDQ60  | T            |
| AE16         | PB61B             | 5    | VREF1_5/BDQ60  | C            |
| AG11         | PB62A             | 5    | PCLKT5_0/BDQ60 | T            |

**LFE2M100E/SE Logic Signal Connections: 900 fpBGA (Cont.)**

| LFE2M100E/SE |                   |      |               |              |
|--------------|-------------------|------|---------------|--------------|
| Ball Number  | Ball/Pad Function | Bank | Dual Function | Differential |
| D19          | PT93B             | 1    |               | C            |
| E18          | PT93A             | 1    |               | T            |
| D18          | PT92B             | 1    |               | C            |
| C17          | PT92A             | 1    |               | T            |
| A17          | PT91B             | 1    |               | C            |
| B17          | PT91A             | 1    |               | T            |
| GNDIO        | GNDIO1            | -    |               |              |
| VCCIO        | VCCIO1            | 1    |               |              |
| J18          | PT75B             | 1    |               | C            |
| J19          | PT75A             | 1    |               | T            |
| H17          | PT74B             | 1    |               | C            |
| J17          | PT74A             | 1    |               | T            |
| F18          | PT73B             | 1    |               | C            |
| F17          | PT73A             | 1    |               | T            |
| GNDIO        | GNDIO1            | -    |               |              |
| A16          | PT72B             | 1    |               | C            |
| B16          | PT72A             | 1    |               | T            |
| G17          | PT71B             | 1    |               | C            |
| G16          | PT71A             | 1    |               | T            |
| VCCIO        | VCCIO1            | 1    |               |              |
| H16          | PT70B             | 1    |               | C            |
| F16          | PT70A             | 1    |               | T            |
| J16          | PT69B             | 1    |               | C            |
| G15          | PT69A             | 1    |               | T            |
| GNDIO        | GNDIO1            | -    |               |              |
| C16          | PT68B             | 1    |               | C            |
| D16          | PT68A             | 1    |               | T            |
| J15          | PT67B             | 1    |               | C            |
| H15          | PT67A             | 1    |               | T            |
| VCCIO        | VCCIO1            | 1    |               |              |
| A15          | PT66B             | 1    | VREF2_1       | C            |
| B15          | PT66A             | 1    | VREF1_1       | T            |
| F15          | PT65B             | 1    | PCLKC1_0      | C            |
| E16          | PT65A             | 1    | PCLKT1_0      | T            |
| C15          | PT64B             | 0    | PCLKC0_0      | C            |
| GNDIO        | GNDIO0            | -    |               |              |
| D15          | PT64A             | 0    | PCLKT0_0      | T            |
| C14          | PT63B             | 0    | VREF2_0       | C            |
| E15          | PT63A             | 0    | VREF1_0       | T            |
| G14          | PT62B             | 0    |               | C            |
| VCCIO        | VCCIO0            | 0    |               |              |
| J14          | PT62A             | 0    |               | T            |
| F14          | PT61B             | 0    |               | C            |

**LFE2M100E/SE Logic Signal Connections: 900 fpBGA (Cont.)**

| LFE2M100E/SE |                   |      |               |              |
|--------------|-------------------|------|---------------|--------------|
| Ball Number  | Ball/Pad Function | Bank | Dual Function | Differential |
| H14          | PT61A             | 0    |               | T            |
| A14          | PT60B             | 0    |               | C            |
| B14          | PT60A             | 0    |               | T            |
| D13          | PT59B             | 0    |               | C            |
| GNDIO        | GNDIO0            | -    |               |              |
| F13          | PT59A             | 0    |               | T            |
| G13          | PT58B             | 0    |               | C            |
| VCCIO        | VCCIO0            | 0    |               |              |
| J11          | PT58A             | 0    |               | T            |
| D4           | PT57B             | 0    |               |              |
| D5           | PT56A             | 0    |               |              |
| E5           | PT55B             | 0    |               | C            |
| F6           | PT55A             | 0    |               | T            |
| GNDIO        | GNDIO0            | -    |               |              |
| VCCIO        | VCCIO0            | 0    |               |              |
| F7           | PT52B             | 0    |               | C            |
| D8           | PT52A             | 0    |               | T            |
| GNDIO        | GNDIO0            | -    |               |              |
| J13          | PT50B             | 0    |               | C            |
| G11          | PT50A             | 0    |               | T            |
| H13          | PT49B             | 0    |               | C            |
| H12          | PT49A             | 0    |               | T            |
| VCCIO        | VCCIO0            | 0    |               |              |
| E8           | PT48B             | 0    |               | C            |
| D9           | PT48A             | 0    |               | T            |
| D12          | PT46B             | 0    |               | C            |
| GNDIO        | GNDIO0            | -    |               |              |
| E13          | PT46A             | 0    |               | T            |
| VCCIO        | VCCIO0            | 0    |               |              |
| GNDIO        | GNDIO0            | -    |               |              |
| J12          | PT31B             | 0    |               | C            |
| -            | -                 | -    |               |              |
| VCCIO        | VCCIO0            | 0    |               |              |
| H10          | PT31A             | 0    |               | T            |
| E12          | PT30B             | 0    |               | C            |
| D11          | PT30A             | 0    |               | T            |
| H11          | PT29B             | 0    |               | C            |
| F11          | PT29A             | 0    |               | T            |
| C13          | ULC_SQ_VCCR0      | 11   |               |              |
| A12          | ULC_SQ_HDINP0     | 11   |               | T            |
| B13          | ULC_SQ_VCCIB0     | 11   |               |              |
| B12          | ULC_SQ_HDINN0     | 11   |               | C            |
| C10          | ULC_SQ_VCCTX0     | 11   |               |              |



## LFE2M70E/SE and LFE2M100E/SE Logic Signal Connections: 1152 fpBGA (Cont.)

| LFE2M70E/SE |                   |      |                       | LFE2M100E/SE |                   |      |                       |              |
|-------------|-------------------|------|-----------------------|--------------|-------------------|------|-----------------------|--------------|
| Ball Number | Ball/Pad Function | Bank | Dual Function         | Differential | Ball/Pad Function | Bank | Dual Function         | Differential |
| U8          | PL43B             | 7    | LUM3_SPLLC_FB_A/LDQ46 | C            | PL51B             | 7    | LUM3_SPLLC_FB_A/LDQ54 | C            |
| VCCIO       | VCCIO7            | 7    |                       |              | VCCIO7            | 7    |                       |              |
| T6          | PL44A             | 7    | LDQ46                 | T (LVDS)*    | PL52A             | 7    | LDQ54                 | T (LVDS)*    |
| R6          | PL44B             | 7    | LDQ46                 | C (LVDS)*    | PL52B             | 7    | LDQ54                 | C (LVDS)*    |
| U9          | PL45A             | 7    | LDQ46                 | T            | PL53A             | 7    | LDQ54                 | T            |
| T7          | PL45B             | 7    | LDQ46                 | C            | PL53B             | 7    | LDQ54                 | C            |
| GNDIO       | GNDIO7            | -    |                       |              | GNDIO7            | -    |                       |              |
| U5          | PL46A             | 7    | LDQS46                | T (LVDS)*    | PL54A             | 7    | LDQS54                | T (LVDS)*    |
| U6          | PL46B             | 7    | LDQ46                 | C (LVDS)*    | PL54B             | 7    | LDQ54                 | C (LVDS)*    |
| U7          | PL47A             | 7    | LDQ46                 | T            | PL55A             | 7    | LDQ54                 | T            |
| VCCIO       | VCCIO7            | 7    |                       |              | VCCIO7            | 7    |                       |              |
| V9          | PL47B             | 7    | LDQ46                 | C            | PL55B             | 7    | LDQ54                 | C            |
| V11         | PL48A             | 7    | LDQ46                 | T (LVDS)*    | PL56A             | 7    | LDQ54                 | T (LVDS)*    |
| V10         | PL48B             | 7    | LDQ46                 | C (LVDS)*    | PL56B             | 7    | LDQ54                 | C (LVDS)*    |
| U4          | PL49A             | 7    | PCLKT7_0/LDQ46        | T            | PL57A             | 7    | PCLKT7_0/LDQ54        | T            |
| GNDIO       | GNDIO7            | -    |                       |              | GNDIO7            | -    |                       |              |
| U3          | PL49B             | 7    | PCLKC7_0/LDQ46        | C            | PL57B             | 7    | PCLKC7_0/LDQ54        | C            |
| U2          | PL51A             | 6    | PCLKT6_0/LDQ55        | T (LVDS)*    | PL59A             | 6    | PCLKT6_0/LDQ63        | T (LVDS)*    |
| U1          | PL51B             | 6    | PCLKC6_0/LDQ55        | C (LVDS)*    | PL59B             | 6    | PCLKC6_0/LDQ63        | C (LVDS)*    |
| V5          | PL52A             | 6    | VREF2_6/LDQ55         | T            | PL60A             | 6    | VREF2_6/LDQ63         | T            |
| V6          | PL52B             | 6    | VREF1_6/LDQ55         | C            | PL60B             | 6    | VREF1_6/LDQ63         | C            |
| V7          | PL53A             | 6    | LDQ55                 | T (LVDS)*    | PL61A             | 6    | LDQ63                 | T (LVDS)*    |
| VCCIO       | VCCIO6            | 6    |                       |              | VCCIO6            | 6    |                       |              |
| V8          | PL53B             | 6    | LDQ55                 | C (LVDS)*    | PL61B             | 6    | LDQ63                 | C (LVDS)*    |
| V4          | PL54A             | 6    | LDQ55                 | T            | PL62A             | 6    | LDQ63                 | T            |
| V3          | PL54B             | 6    | LDQ55                 | C            | PL62B             | 6    | LDQ63                 | C            |
| V2          | PL55A             | 6    | LDQS55                | T (LVDS)*    | PL63A             | 6    | LDQS63                | T (LVDS)*    |
| GNDIO       | GNDIO6            | -    |                       |              | GNDIO6            | -    |                       |              |
| V1          | PL55B             | 6    | LDQ55                 | C (LVDS)*    | PL63B             | 6    | LDQ63                 | C (LVDS)*    |
| W7          | PL56A             | 6    | LDQ55                 | T            | PL64A             | 6    | LDQ63                 | T            |
| W5          | PL56B             | 6    | LDQ55                 | C            | PL64B             | 6    | LDQ63                 | C            |
| VCCIO       | VCCIO6            | 6    |                       |              | VCCIO6            | 6    |                       |              |
| W2          | PL57A             | 6    | LLM3_SPLLT_IN_A/LDQ55 | T (LVDS)*    | PL65A             | 6    | LLM4_SPLLT_IN_A/LDQ63 | T (LVDS)*    |
| W1          | PL57B             | 6    | LLM3_SPLLC_IN_A/LDQ55 | C (LVDS)*    | PL65B             | 6    | LLM4_SPLLC_IN_A/LDQ63 | C (LVDS)*    |
| Y6          | PL58A             | 6    | LLM3_SPLLT_FB_A/LDQ55 | T            | PL66A             | 6    | LLM4_SPLLT_FB_A/LDQ63 | T            |
| W6          | PL58B             | 6    | LLM3_SPLLC_FB_A/LDQ55 | C            | PL66B             | 6    | LLM4_SPLLC_FB_A/LDQ63 | C            |
| GNDIO       | GNDIO6            | -    |                       |              | GNDIO6            | -    |                       |              |
| Y1          | PL60A             | 6    | LDQ64                 | T (LVDS)*    | PL68A             | 6    | LDQ72                 | T (LVDS)*    |
| Y2          | PL60B             | 6    | LDQ64                 | C (LVDS)*    | PL68B             | 6    | LDQ72                 | C (LVDS)*    |
| Y7          | PL61A             | 6    | LDQ64                 | T            | PL69A             | 6    | LDQ72                 | T            |
| Y5          | PL61B             | 6    | LDQ64                 | C            | PL69B             | 6    | LDQ72                 | C            |
| VCCIO       | VCCIO6            | 6    |                       |              | VCCIO6            | 6    |                       |              |
| W10         | PL62A             | 6    | LDQ64                 | T (LVDS)*    | PL70A             | 6    | LDQ72                 | T (LVDS)*    |
| Y8          | PL62B             | 6    | LDQ64                 | C (LVDS)*    | PL70B             | 6    | LDQ72                 | C (LVDS)*    |
| Y4          | PL63A             | 6    | LDQ64                 | T            | PL71A             | 6    | LDQ72                 | T            |
| Y3          | PL63B             | 6    | LDQ64                 | C            | PL71B             | 6    | LDQ72                 | C            |
| GNDIO       | GNDIO6            | -    |                       |              | GNDIO6            | -    |                       |              |
| AA1         | PL64A             | 6    | LDQS64                | T (LVDS)*    | PL72A             | 6    | LDQS72                | T (LVDS)*    |
| AA2         | PL64B             | 6    | LDQ64                 | C (LVDS)*    | PL72B             | 6    | LDQ72                 | C (LVDS)*    |

## LFE2M70E/SE and LFE2M100E/SE Logic Signal Connections: 1152 fpBGA (Cont.)

| LFE2M70E/SE |                   |      |               | LFE2M100E/SE |                   |      |               |              |
|-------------|-------------------|------|---------------|--------------|-------------------|------|---------------|--------------|
| Ball Number | Ball/Pad Function | Bank | Dual Function | Differential | Ball/Pad Function | Bank | Dual Function | Differential |
| AE12        | NC                | -    |               |              | NC                | -    |               |              |
| AE13        | NC                | -    |               |              | NC                | -    |               |              |
| AE19        | NC                | -    |               |              | NC                | -    |               |              |
| AE21        | NC                | -    |               |              | NC                | -    |               |              |
| AE22        | NC                | -    |               |              | NC                | -    |               |              |
| AE23        | NC                | -    |               |              | NC                | -    |               |              |
| AF11        | NC                | -    |               |              | NC                | -    |               |              |
| AF21        | NC                | -    |               |              | NC                | -    |               |              |
| AF22        | NC                | -    |               |              | NC                | -    |               |              |
| AF24        | NC                | -    |               |              | NC                | -    |               |              |
| AF8         | NC                | -    |               |              | NC                | -    |               |              |
| AF9         | NC                | -    |               |              | NC                | -    |               |              |
| AG10        | NC                | -    |               |              | NC                | -    |               |              |
| AG11        | NC                | -    |               |              | NC                | -    |               |              |
| AG24        | NC                | -    |               |              | NC                | -    |               |              |
| AG25        | NC                | -    |               |              | NC                | -    |               |              |
| AG26        | NC                | -    |               |              | NC                | -    |               |              |
| AG3         | NC                | -    |               |              | NC                | -    |               |              |
| AG7         | NC                | -    |               |              | NC                | -    |               |              |
| AG8         | NC                | -    |               |              | NC                | -    |               |              |
| AG9         | NC                | -    |               |              | NC                | -    |               |              |
| AH10        | NC                | -    |               |              | NC                | -    |               |              |
| AH11        | NC                | -    |               |              | NC                | -    |               |              |
| AH13        | NC                | -    |               |              | NC                | -    |               |              |
| AH24        | NC                | -    |               |              | NC                | -    |               |              |
| AH25        | NC                | -    |               |              | NC                | -    |               |              |
| AH26        | NC                | -    |               |              | NC                | -    |               |              |
| AH27        | NC                | -    |               |              | NC                | -    |               |              |
| AH5         | NC                | -    |               |              | NC                | -    |               |              |
| AH6         | NC                | -    |               |              | NC                | -    |               |              |
| AH7         | NC                | -    |               |              | NC                | -    |               |              |
| AH8         | NC                | -    |               |              | NC                | -    |               |              |
| AH9         | NC                | -    |               |              | NC                | -    |               |              |
| AJ10        | NC                | -    |               |              | NC                | -    |               |              |
| AJ11        | NC                | -    |               |              | NC                | -    |               |              |
| AJ13        | NC                | -    |               |              | NC                | -    |               |              |
| AJ24        | NC                | -    |               |              | NC                | -    |               |              |
| AJ25        | NC                | -    |               |              | NC                | -    |               |              |
| AJ26        | NC                | -    |               |              | NC                | -    |               |              |
| AJ27        | NC                | -    |               |              | NC                | -    |               |              |
| AJ3         | NC                | -    |               |              | NC                | -    |               |              |
| AJ4         | NC                | -    |               |              | NC                | -    |               |              |
| AJ5         | NC                | -    |               |              | NC                | -    |               |              |
| AJ6         | NC                | -    |               |              | NC                | -    |               |              |
| AJ7         | NC                | -    |               |              | NC                | -    |               |              |
| AJ8         | NC                | -    |               |              | NC                | -    |               |              |
| AJ9         | NC                | -    |               |              | NC                | -    |               |              |
| AK10        | NC                | -    |               |              | NC                | -    |               |              |
| AK11        | NC                | -    |               |              | NC                | -    |               |              |

## LFE2M70E/SE and LFE2M100E/SE Logic Signal Connections: 1152 fpBGA (Cont.)

| LFE2M70E/SE |                   |      |               | LFE2M100E/SE |                   |      |               |              |
|-------------|-------------------|------|---------------|--------------|-------------------|------|---------------|--------------|
| Ball Number | Ball/Pad Function | Bank | Dual Function | Differential | Ball/Pad Function | Bank | Dual Function | Differential |
| E4          | NC                | -    |               |              | NC                | -    |               |              |
| E9          | NC                | -    |               |              | NC                | -    |               |              |
| F10         | NC                | -    |               |              | NC                | -    |               |              |
| F25         | NC                | -    |               |              | NC                | -    |               |              |
| F26         | NC                | -    |               |              | NC                | -    |               |              |
| F27         | NC                | -    |               |              | NC                | -    |               |              |
| F28         | NC                | -    |               |              | NC                | -    |               |              |
| F29         | NC                | -    |               |              | NC                | -    |               |              |
| F30         | NC                | -    |               |              | NC                | -    |               |              |
| F31         | NC                | -    |               |              | NC                | -    |               |              |
| F32         | NC                | -    |               |              | NC                | -    |               |              |
| F33         | NC                | -    |               |              | NC                | -    |               |              |
| F34         | NC                | -    |               |              | NC                | -    |               |              |
| F5          | NC                | -    |               |              | NC                | -    |               |              |
| F6          | NC                | -    |               |              | NC                | -    |               |              |
| F7          | NC                | -    |               |              | NC                | -    |               |              |
| F8          | NC                | -    |               |              | NC                | -    |               |              |
| F9          | NC                | -    |               |              | NC                | -    |               |              |
| G10         | NC                | -    |               |              | NC                | -    |               |              |
| G11         | NC                | -    |               |              | NC                | -    |               |              |
| G24         | NC                | -    |               |              | NC                | -    |               |              |
| G25         | NC                | -    |               |              | NC                | -    |               |              |
| G26         | NC                | -    |               |              | NC                | -    |               |              |
| G27         | NC                | -    |               |              | NC                | -    |               |              |
| G28         | NC                | -    |               |              | NC                | -    |               |              |
| G29         | NC                | -    |               |              | NC                | -    |               |              |
| G30         | NC                | -    |               |              | NC                | -    |               |              |
| G33         | NC                | -    |               |              | NC                | -    |               |              |
| G34         | NC                | -    |               |              | NC                | -    |               |              |
| G7          | NC                | -    |               |              | NC                | -    |               |              |
| G8          | NC                | -    |               |              | NC                | -    |               |              |
| G9          | NC                | -    |               |              | NC                | -    |               |              |
| H10         | NC                | -    |               |              | NC                | -    |               |              |
| H11         | NC                | -    |               |              | NC                | -    |               |              |
| H24         | NC                | -    |               |              | NC                | -    |               |              |
| H25         | NC                | -    |               |              | NC                | -    |               |              |
| H26         | NC                | -    |               |              | NC                | -    |               |              |
| H27         | NC                | -    |               |              | NC                | -    |               |              |
| H28         | NC                | -    |               |              | NC                | -    |               |              |
| H29         | NC                | -    |               |              | NC                | -    |               |              |
| H8          | NC                | -    |               |              | NC                | -    |               |              |
| H9          | NC                | -    |               |              | NC                | -    |               |              |
| J10         | NC                | -    |               |              | NC                | -    |               |              |
| J11         | NC                | -    |               |              | NC                | -    |               |              |
| J24         | NC                | -    |               |              | NC                | -    |               |              |
| J25         | NC                | -    |               |              | NC                | -    |               |              |
| J26         | NC                | -    |               |              | NC                | -    |               |              |
| J9          | NC                | -    |               |              | NC                | -    |               |              |
| K10         | NC                | -    |               |              | NC                | -    |               |              |

**LatticeECP2M Standard Series Devices, Lead-Free Packaging**
**Commercial**

| Part Number      | I/Os | Voltage | Grade | Package         | Pins | Temp. | LUTs (K) |
|------------------|------|---------|-------|-----------------|------|-------|----------|
| LFE2M20E-5FN484C | 304  | 1.2V    | -5    | Lead-Free fpBGA | 484  | COM   | 20       |
| LFE2M20E-6FN484C | 304  | 1.2V    | -6    | Lead-Free fpBGA | 484  | COM   | 20       |
| LFE2M20E-7FN484C | 304  | 1.2V    | -7    | Lead-Free fpBGA | 484  | COM   | 20       |
| LFE2M20E-5FN256C | 140  | 1.2V    | -5    | Lead-Free fpBGA | 256  | COM   | 20       |
| LFE2M20E-6FN256C | 140  | 1.2V    | -6    | Lead-Free fpBGA | 256  | COM   | 20       |
| LFE2M20E-7FN256C | 140  | 1.2V    | -7    | Lead-Free fpBGA | 256  | COM   | 20       |

| Part Number      | I/Os | Voltage | Grade | Package         | Pins | Temp. | LUTs (K) |
|------------------|------|---------|-------|-----------------|------|-------|----------|
| LFE2M35E-5FN672C | 410  | 1.2V    | -5    | Lead-Free fpBGA | 672  | COM   | 35       |
| LFE2M35E-6FN672C | 410  | 1.2V    | -6    | Lead-Free fpBGA | 672  | COM   | 35       |
| LFE2M35E-7FN672C | 410  | 1.2V    | -7    | Lead-Free fpBGA | 672  | COM   | 35       |
| LFE2M35E-5FN484C | 303  | 1.2V    | -5    | Lead-Free fpBGA | 484  | COM   | 35       |
| LFE2M35E-6FN484C | 303  | 1.2V    | -6    | Lead-Free fpBGA | 484  | COM   | 35       |
| LFE2M35E-7FN484C | 303  | 1.2V    | -7    | Lead-Free fpBGA | 484  | COM   | 35       |
| LFE2M35E-5FN256C | 140  | 1.2V    | -5    | Lead-Free fpBGA | 256  | COM   | 35       |
| LFE2M35E-6FN256C | 140  | 1.2V    | -6    | Lead-Free fpBGA | 256  | COM   | 35       |
| LFE2M35E-7FN256C | 140  | 1.2V    | -7    | Lead-Free fpBGA | 256  | COM   | 35       |

| Part Number      | I/Os | Voltage | Grade | Package         | Pins | Temp. | LUTs (K) |
|------------------|------|---------|-------|-----------------|------|-------|----------|
| LFE2M50E-5FN900C | 410  | 1.2V    | -5    | Lead-Free fpBGA | 900  | COM   | 50       |
| LFE2M50E-6FN900C | 410  | 1.2V    | -6    | Lead-Free fpBGA | 900  | COM   | 50       |
| LFE2M50E-7FN900C | 410  | 1.2V    | -7    | Lead-Free fpBGA | 900  | COM   | 50       |
| LFE2M50E-5FN672C | 372  | 1.2V    | -5    | Lead-Free fpBGA | 672  | COM   | 50       |
| LFE2M50E-6FN672C | 372  | 1.2V    | -6    | Lead-Free fpBGA | 672  | COM   | 50       |
| LFE2M50E-7FN672C | 372  | 1.2V    | -7    | Lead-Free fpBGA | 672  | COM   | 50       |
| LFE2M50E-5FN484C | 270  | 1.2V    | -5    | Lead-Free fpBGA | 484  | COM   | 50       |
| LFE2M50E-6FN484C | 270  | 1.2V    | -6    | Lead-Free fpBGA | 484  | COM   | 50       |
| LFE2M50E-7FN484C | 270  | 1.2V    | -7    | Lead-Free fpBGA | 484  | COM   | 50       |

| Part Number       | I/Os | Voltage | Grade | Package         | Pins | Temp. | LUTs (K) |
|-------------------|------|---------|-------|-----------------|------|-------|----------|
| LFE2M70E-5FN1152C | 436  | 1.2V    | -5    | Lead-Free fpBGA | 1152 | COM   | 70       |
| LFE2M70E-6FN1152C | 436  | 1.2V    | -6    | Lead-Free fpBGA | 1152 | COM   | 70       |
| LFE2M70E-7FN1152C | 436  | 1.2V    | -7    | Lead-Free fpBGA | 1152 | COM   | 70       |
| LFE2M70E-5FN900C  | 416  | 1.2V    | -5    | Lead-Free fpBGA | 900  | COM   | 70       |
| LFE2M70E-6FN900C  | 416  | 1.2V    | -6    | Lead-Free fpBGA | 900  | COM   | 70       |
| LFE2M70E-7FN900C  | 416  | 1.2V    | -7    | Lead-Free fpBGA | 900  | COM   | 70       |

| Part Number        | I/Os | Voltage | Grade | Package         | Pins | Temp. | LUTs (K) |
|--------------------|------|---------|-------|-----------------|------|-------|----------|
| LFE2M100E-5FN1152I | 520  | 1.2V    | -5    | Lead-Free fpBGA | 1152 | Ind   | 100      |
| LFE2M100E-6FN1152I | 520  | 1.2V    | -6    | Lead-Free fpBGA | 1152 | Ind   | 100      |
| LFE2M100E-5FN900I  | 416  | 1.2V    | -5    | Lead-Free fpBGA | 900  | Ind   | 100      |
| LFE2M100E-6FN900I  | 416  | 1.2V    | -6    | Lead-Free fpBGA | 900  | Ind   | 100      |

## LatticeECP2M S-Series Devices, Conventional Packaging

### Commercial

| Part Number      | I/Os | Voltage | Grade | Package | Pins | Temp. | LUTs (K) |
|------------------|------|---------|-------|---------|------|-------|----------|
| LFE2M20SE-5F484C | 304  | 1.2V    | -5    | fpBGA   | 484  | Com   | 20       |
| LFE2M20SE-6F484C | 304  | 1.2V    | -6    | fpBGA   | 484  | Com   | 20       |
| LFE2M20SE-7F484C | 304  | 1.2V    | -7    | fpBGA   | 484  | Com   | 20       |
| LFE2M20SE-5F256C | 140  | 1.2V    | -5    | fpBGA   | 256  | Com   | 20       |
| LFE2M20SE-6F256C | 140  | 1.2V    | -6    | fpBGA   | 256  | Com   | 20       |
| LFE2M20SE-7F256C | 140  | 1.2V    | -7    | fpBGA   | 256  | Com   | 20       |

| Part Number      | I/Os | Voltage | Grade | Package | Pins | Temp. | LUTs (K) |
|------------------|------|---------|-------|---------|------|-------|----------|
| LFE2M35SE-5F672C | 410  | 1.2V    | -5    | fpBGA   | 672  | Com   | 35       |
| LFE2M35SE-6F672C | 410  | 1.2V    | -6    | fpBGA   | 672  | Com   | 35       |
| LFE2M35SE-7F672C | 410  | 1.2V    | -7    | fpBGA   | 672  | Com   | 35       |
| LFE2M35SE-5F484C | 303  | 1.2V    | -5    | fpBGA   | 484  | Com   | 35       |
| LFE2M35SE-6F484C | 303  | 1.2V    | -6    | fpBGA   | 484  | Com   | 35       |
| LFE2M35SE-7F484C | 303  | 1.2V    | -7    | fpBGA   | 484  | Com   | 35       |
| LFE2M35SE-5F256C | 140  | 1.2V    | -5    | fpBGA   | 256  | Com   | 35       |
| LFE2M35SE-6F256C | 140  | 1.2V    | -6    | fpBGA   | 256  | Com   | 35       |
| LFE2M35SE-7F256C | 140  | 1.2V    | -7    | fpBGA   | 256  | Com   | 35       |

| Part Number      | I/Os | Voltage | Grade | Package | Pins | Temp. | LUTs (K) |
|------------------|------|---------|-------|---------|------|-------|----------|
| LFE2M50SE-5F900C | 410  | 1.2V    | -5    | fpBGA   | 900  | Com   | 50       |
| LFE2M50SE-6F900C | 410  | 1.2V    | -6    | fpBGA   | 900  | Com   | 50       |
| LFE2M50SE-7F900C | 410  | 1.2V    | -7    | fpBGA   | 900  | Com   | 50       |
| LFE2M50SE-5F672C | 372  | 1.2V    | -5    | fpBGA   | 672  | Com   | 50       |
| LFE2M50SE-6F672C | 372  | 1.2V    | -6    | fpBGA   | 672  | Com   | 50       |
| LFE2M50SE-7F672C | 372  | 1.2V    | -7    | fpBGA   | 672  | Com   | 50       |
| LFE2M50SE-5F484C | 270  | 1.2V    | -5    | fpBGA   | 484  | Com   | 50       |
| LFE2M50SE-6F484C | 270  | 1.2V    | -6    | fpBGA   | 484  | Com   | 50       |
| LFE2M50SE-7F484C | 270  | 1.2V    | -7    | fpBGA   | 484  | Com   | 50       |