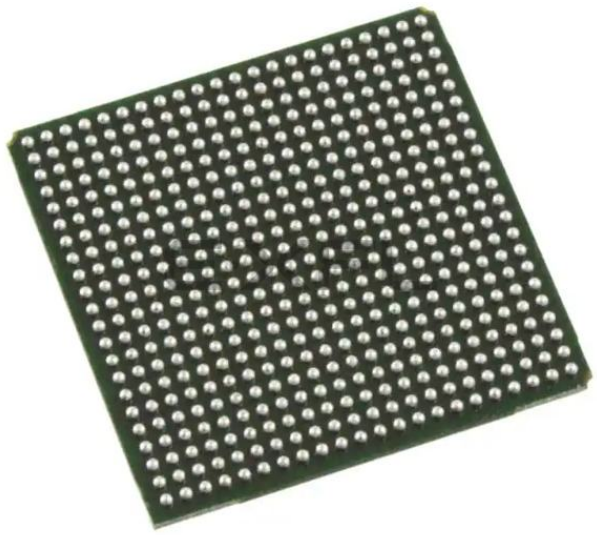
# Lattice Semiconductor Corporation - LFE2-20E-7F484C Datasheet



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

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

## Applications of Embedded - FPGAs

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

| Details | |
|---|---|
| Product Status | Obsolete |
| Number of LABs/CLBs | 2625 |
| Number of Logic Elements/Cells | 21000 |
| Total RAM Bits | 282624 |
| Number of I/O | 331 |
| Number of Gates | - |
| Voltage - Supply | 1.14V ~ 1.26V |
| Mounting Type | Surface Mount |
| Operating Temperature | 0°C ~ 85°C (TJ) |
| Package / Case | 484-BBGA |
| Supplier Device Package | 484-FPBGA (23x23) |
| Purchase URL | https://www.e-xfl.com/product-detail/lattice-semiconductor/lfe2-20e-7f484c |

## LatticeECP2/M Family Timing Adders[1, 2, 3] (Continued)

**Over Recommended Operating Conditions**

| Buffer Type | Description | -7 | -6 | -5 | Units |
|---|---|---|---|---|---|
| HSTL15_I | HSTL_15 class I 4mA drive | -0.22 | -0.25 | -0.27 | ns |
| HSTL15D_I | Differential HSTL 15 class I 4mA drive | -0.22 | -0.25 | -0.27 | ns |
| SSTL33_I | SSTL_3 class I | -0.12 | -0.15 | -0.18 | ns |
| SSTL33_II | SSTL_3 class II | -0.20 | -0.23 | -0.27 | ns |
| SSTL33D_I | Differential SSTL_3 class I | -0.12 | -0.15 | -0.18 | ns |
| SSTL33D_II | Differential SSTL_3 class II | -0.20 | -0.23 | -0.27 | ns |
| SSTL25_I | SSTL_2 class I 8mA drive | -0.16 | -0.19 | -0.22 | ns |
| SSTL25_II | SSTL_2 class II 16mA drive | -0.19 | -0.22 | -0.25 | ns |
| SSTL25D_I | Differential SSTL_2 class I 8mA drive | -0.16 | -0.19 | -0.22 | ns |
| SSTL25D_II | Differential SSTL_2 class II 16mA drive | -0.19 | -0.22 | -0.25 | ns |
| SSTL18_I | SSTL_1.8 class I | -0.14 | -0.17 | -0.20 | ns |
| SSTL18_II | SSTL_1.8 class II 8mA drive | -0.20 | -0.23 | -0.25 | ns |
| SSTL18D_I | Differential SSTL_1.8 class I | -0.14 | -0.17 | -0.20 | ns |
| SSTL18D_II | Differential SSTL_1.8 class II 8mA drive | -0.20 | -0.23 | -0.25 | ns |
| LVTTL33_4mA | LVTTL 4mA drive | 0.52 | 0.60 | 0.68 | ns |
| LVTTL33_8mA | LVTTL 8mA drive | 0.06 | 0.08 | 0.09 | ns |
| LVTTL33_12mA | LVTTL 12mA drive | 0.04 | 0.04 | 0.05 | ns |
| LVTTL33_16mA | LVTTL 16mA drive | 0.03 | 0.02 | 0.02 | ns |
| LVTTL33_20mA | LVTTL 20mA drive | -0.09 | -0.09 | -0.10 | ns |
| LVCMOS33_4mA | LVCMOS 3.3 4mA drive, fast slew rate | 0.52 | 0.60 | 0.68 | ns |
| LVCMOS33_8mA | LVCMOS 3.3 8mA drive, fast slew rate | 0.06 | 0.08 | 0.09 | ns |
| LVCMOS33_12mA | LVCMOS 3.3 12mA drive, fast slew rate | 0.04 | 0.04 | 0.05 | ns |
| LVCMOS33_16mA | LVCMOS 3.3 16mA drive, fast slew rate | 0.03 | 0.02 | 0.02 | ns |
| LVCMOS33_20mA | LVCMOS 3.3 20mA drive, fast slew rate | -0.09 | -0.09 | -0.10 | ns |
| LVCMOS25_4mA | LVCMOS 2.5 4mA drive, fast slew rate | 0.41 | 0.47 | 0.53 | ns |
| LVCMOS25_8mA | LVCMOS 2.5 8mA drive, fast slew rate | 0.01 | 0.01 | 0.00 | ns |
| LVCMOS25_12mA | LVCMOS 2.5 12mA drive, fast slew rate | 0.00 | 0.00 | 0.00 | ns |
| LVCMOS25_16mA | LVCMOS 2.5 16mA drive, fast slew rate | 0.04 | 0.04 | 0.04 | ns |
| LVCMOS25_20mA | LVCMOS 2.5 20mA drive, fast slew rate | -0.09 | -0.10 | -0.11 | ns |
| LVCMOS18_4mA | LVCMOS 1.8 4mA drive, fast slew rate | 0.37 | 0.40 | 0.43 | ns |
| LVCMOS18_8mA | LVCMOS 1.8 8mA drive, fast slew rate | 0.10 | 0.12 | 0.13 | ns |
| LVCMOS18_12mA | LVCMOS 1.8 12mA drive, fast slew rate | -0.02 | -0.02 | -0.02 | ns |
| LVCMOS18_16mA | LVCMOS 1.8 16mA drive, fast slew rate | -0.02 | -0.03 | -0.03 | ns |
| LVCMOS15_4mA | LVCMOS 1.5 4mA drive, fast slew rate | 0.29 | 0.31 | 0.32 | ns |
| LVCMOS15_8mA | LVCMOS 1.5 8mA drive, fast slew rate | 0.05 | 0.05 | 0.06 | ns |
| LVCMOS12_2mA | LVCMOS 1.2 2mA drive, fast slew rate | 0.58 | 0.69 | 0.79 | ns |
| LVCMOS12_6mA | LVCMOS 1.2 6mA drive, fast slew rate | 0.13 | 0.19 | 0.26 | ns |
| LVCMOS33_4mA | LVCMOS 3.3 4mA drive, slow slew rate | 2.17 | 2.44 | 2.71 | ns |
| LVCMOS33_8mA | LVCMOS 3.3 8mA drive, slow slew rate | 2.50 | 2.67 | 2.83 | ns |
| LVCMOS33_12mA | LVCMOS 3.3 12mA drive, slow slew rate | 1.72 | 1.88 | 2.05 | ns |
| LVCMOS33_16mA | LVCMOS 3.3 16mA drive, slow slew rate | 1.64 | 1.63 | 1.62 | ns |
| LVCMOS33_20mA | LVCMOS 3.3 20mA drive, slow slew rate | 1.33 | 1.36 | 1.39 | ns |

## Signal Descriptions (Cont.)

| Signal Name | I/O | Description |
|---|---|---|
| [LOC]DQS[num] | I/O | DQ input/output pads: T (top), R (right), B (bottom), L (left), DQS, num = ball function number. |
| [LOC]DQ[num] | I/O | DQ input/output pads: T (top), R (right), B (bottom), L (left), DQ, associated DQS number. |
| **Test and Programming (Dedicated Pins)** | | |
| TMS | I | Test Mode Select input, used to control the 1149.1 state machine. Pull-up is enabled during configuration. |
| TCK | I | Test Clock input pin, used to clock the 1149.1 state machine. No pull-up enabled. |
| TDI | I | Test Data in pin. Used to load data into device using 1149.1 state machine. After power-up, this TAP port can be activated for configuration by sending appropriate command. (Note: once a configuration port is selected it is locked. Another configuration port cannot be selected until the power-up sequence). Pull-up is enabled during configuration. |
| TDO | O | Output pin. Test Data Out pin used to shift data out of a device using 1149.1. |
| VCCJ | — | Power supply pin for JTAG Test Access Port. |
| **Configuration Pads** (Used During sysCONFIG) | | |
| CFG[2:0] | I | Mode pins used to specify configuration mode values latched on rising edge of INITN. During configuration, a pull-up is enabled. These are dedicated pins. |
| INITN | I/O | Open Drain pin. Indicates the FPGA is ready to be configured. During configuration, a pull-up is enabled. It is a dedicated pin. |
| PROGRAMN | I | Initiates configuration sequence when asserted low. This pin always has an active pull-up. This is a dedicated pin. |
| DONE | I/O | Open Drain pin. Indicates that the configuration sequence is complete, and the startup sequence is in progress. This is a dedicated pin. |
| CCLK | I/O | Configuration Clock for configuring an FPGA in sysCONFIG mode. |
| BUSY/SISPI | I/O | Read control command in SPI or SPIm mode. |
| CSN | I | sysCONFIG chip select (active low). During configuration, a pull-up is enabled. |
| CS1N | I | sysCONFIG chip select (active low). During configuration, a pull-up is enabled. |
| WRITEN | I | Write Data on Parallel port (active low). |
| D[0]/SPIFASTN | I/O | sysCONFIG Port Data I/O for Parallel mode.<br>sysCONFIG Port Data I/O for SPI or SPIm. When using the SPI or SPIm mode, this pin should either be tied high or low, must not be left floating. |
| D[1:6] | I/O | sysCONFIG Port Data I/O for Parallel |
| D[7]/SPID0 | I/O | sysCONFIG Port Data I/O for Parallel, SPI, SPIm |
| DOUT/CSON | O | Output for serial configuration data (rising edge of CCLK) when using sysCONFIG port. |
| DI/CSSPI0N | I/O | Input for serial configuration data (clocked with CCLK) when using sysCONFIG port. During configuration, a pull-up is enabled. Output when used in SPI/SPIm modes. |
| **Dedicated SERDES Signals**[1, 2, 3] | | |
| [LOC]_SQ_VCCAUX33 | — | Termination resistor switching power (3.3V). This pin must be tied to 3.3V even if the quad is unused. |
| [LOC]_SQ_REFCLKN | I | Negative Reference Clock Input |
| [LOC]_SQ_REFCLKP | I | Positive Reference Clock Input |
| [LOC]_SQ_VCCP | — | PLL and Reference clock buffer power (1.2V). This pin must be tied to 1.2V even if the quad is unused. |

## LatticeECP2M Pin Information Summary, LFE2M20 and LFE2M35

| Pin Type | | LFE2M20 | | LFE2M35 | | |
|---|---|---|---|---|---|---|
| | | 256 fpBGA | 484 fpBGA | 256 fpBGA | 484 fpBGA | 672 fpBGA |
| Single Ended User I/O | | 140 | 304 | 140 | 303 | 410 |
| Differential Pair User I/O | | 70 | 152 | 70 | 151 | 199 |
| Configuration | TAP Pins | 5 | 5 | 5 | 5 | 5 |
| | Muxed Pins | 14 | 14 | 14 | 14 | 14 |
| | Dedicated Pins (Non TAP) | 7 | 7 | 7 | 7 | 7 |
| Non Configuration | Muxed Pins | 64 | 84 | 60 | 84 | 89 |
| | Dedicated Pins | 3 | 3 | 3 | 3 | 3 |
| VCC | | 6 | 16 | 6 | 16 | 29 |
| VCCAUX | | 4 | 8 | 4 | 8 | 17 |
| VCCPLL | | 1 | 4 | 1 | 4 | 8 |
| VCCIO | Bank0 | 1 | 4 | 1 | 4 | 5 |
| | Bank1 | 1 | 3 | 1 | 3 | 4 |
| | Bank2 | 2 | 4 | 2 | 4 | 5 |
| | Bank3 | 2 | 4 | 2 | 4 | 5 |
| | Bank4 | 2 | 4 | 2 | 4 | 4 |
| | Bank5 | 2 | 4 | 2 | 4 | 5 |
| | Bank6 | 2 | 4 | 2 | 4 | 5 |
| | Bank7 | 2 | 4 | 2 | 4 | 5 |
| | Bank8 | 1 | 2 | 1 | 2 | 2 |
| GND, GND0 to GND7 | | 22 | 57 | 22 | 57 | 80 |
| NC | | 17 | 11 | 17 | 12 | 37 |
| Single Ended/ Differential I/O Pairs per Bank (including emulated with resistors) | Bank0 | 0/0 | 36/18 | 0/0 | 36/18 | 63/31 |
| | Bank1 | 0/0 | 18/9 | 0/0 | 18/9 | 18/9 |
| | Bank2 | 14/7 | 30/15 | 14/7 | 30/15 | 50/25 |
| | Bank3 | 16/8 | 36/18 | 16/8 | 36/18 | 43/21 |
| | Bank4 | 32/16 | 62/31 | 32/16 | 62/31 | 50/21 |
| | Bank5 | 20/10 | 28/14 | 20/10 | 28/14 | 60/30 |
| | Bank6 | 16/8 | 40/20 | 16/8 | 39/19 | 52/25 |
| | Bank7 | 28/14 | 40/20 | 28/14 | 40/20 | 60/30 |
| | Bank8 | 14/7 | 14/7 | 14/7 | 14/7 | 14/7 |
| True LVDS I/O Pairs per Bank | Bank0 (Top Edge) | 0 | 0 | 0 | 0 | 0 |
| | Bank1 (Top Edge) | 0 | 0 | 0 | 0 | 0 |
| | Bank2 (Right Edge) | 3 | 7 | 3 | 7 | 12 |
| | Bank3 (Right Edge) | 4 | 9 | 4 | 9 | 11 |
| | Bank4 (Bottom Edge) | 0 | 0 | 0 | 0 | 0 |
| | Bank5 (Bottom Edge) | 0 | 0 | 0 | 0 | 0 |
| | Bank6 (Left Edge) | 4 | 10 | 4 | 10 | 14 |
| | Bank7 (Left Edge) | 7 | 10 | 7 | 10 | 15 |
| | Bank8 (Right Edge) | 0 | 0 | 0 | 0 | 0 |

## Available Device Resources by Package, LatticeECP2

| Resource | Device | 256 fpBGA | 484 fpBGA | 672 fpBGA | 900 fpBGA |
|---|---|---|---|---|---|
| PLL/DLL | ECP2-6 | 4 | — | — | — |
| | ECP2-12 | 4 | 4 | — | — |
| | ECP2-20 | 4 | 4 | 4 | — |
| | ECP2-35 | — | 4 | 4 | — |
| | ECP2-50 | — | 6 | 6 | — |
| | ECP2-70 | — | — | 8 | 8 |

## Available Device Resources by Package, LatticeECP2M

| Resource | Device | 256 fpBGA | 484 fpBGA | 672 fpBGA | 900 fpBGA | 1152 fpBGA |
|---|---|---|---|---|---|---|
| PLL/DLL | ECP2M20 | 10 | 10 | — | — | — |
| | ECP2M35 | 10 | 10 | 10 | — | — |
| | ECP2M50 | — | 10 | 10 | 10 | — |
| | ECP2M70 | — | — | — | 10 | 10 |
| | ECP2M100 | — | — | — | 10 | 10 |

# LFE2-6E/SE and LFE2-12E/SE Logic Signal Connections: 144 TQFP (Cont.)

| LFE2-6E/SE | | | | | LFE2-12E/12SE | | | |
|---|---|---|---|---|---|---|---|---|
| Pin Number | Pin/Pad Function | Bank | Dual Function | Differential | Pin/Pad Function | Bank | Dual Function | Differential |
| 46 | NC | 5 | | | PB16B | 5 | BDQ15 | C |
| 47 | GND | - | | | GND | - | | |
| 48 | VCC | | | | VCC | - | | |
| 49 | PB8A | 5 | PCLKT5_0/BDQ6 | T | PB26A | 5 | PCLKT5_0/BDQ24 | T |
| 50 | PB8B | 5 | PCLKC5_0/BDQ6 | C | PB26B | 5 | PCLKC5_0/BDQ24 | C |
| 51 | GND | - | | | GND | - | | |
| 52 | PB13A | 4 | PCLKT4_0/BDQ15 | T | PB31A | 4 | PCLKT4_0/BDQ33 | T |
| 53 | PB13B | 4 | PCLKC4_0/BDQ15 | C | PB31B | 4 | PCLKC4_0/BDQ33 | C |
| 54 | VCC | - | | | VCC | - | | |
| 55 | PB14A | 4 | BDQ15 | T | PB34A | 4 | BDQ33 | T |
| 56 | PB14B | 4 | BDQ15 | C | PB34B | 4 | BDQ33 | C |
| 57 | PB16A | 4 | BDQ15 | T | PB40A | 4 | BDQ42 | T |
| 58 | PB16B | 4 | BDQ15 | C | PB40B | 4 | BDQ42 | C |
| 59 | PB18A | 4 | BDQ15 | T | PB44A | 4 | BDQ42 | T |
| 60 | PB18B | 4 | BDQ15 | C | PB44B | 4 | BDQ42 | C |
| 61 | GND | - | | | GND | - | | |
| 62 | PB20A | 4 | BDQ24 | T | PB48A | 4 | BDQ51 | T |
| 63 | PB20B | 4 | BDQ24 | C | PB48B | 4 | BDQ51 | C |
| 64 | VCCIO4 | 4 | | | VCCIO4 | 4 | | |
| 65 | PB22A | 4 | BDQ24 | T | PB50A | 4 | BDQ51 | T |
| 66 | PB22B | 4 | BDQ24 | C | PB50B | 4 | BDQ51 | C |
| 67 | PB24A | 4 | BDQS24 | T | PB52A | 4 | BDQ51 | T |
| 68 | PB24B | 4 | BDQ24 | C | PB52B | 4 | BDQ51 | C |
| 69 | PB26A | 4 | BDQ24 | T | PB54A | 4 | BDQ51 | T |
| 70 | PB26B | 4 | BDQ24 | C | PB54B | 4 | BDQ51 | C |
| 71 | PB28A | 4 | VREF2_4/BDQ24 | T | PB55A | 4 | VREF2_4/BDQ51 | T |
| 72 | PB28B | 4 | VREF1_4/BDQ24 | C | PB55B | 4 | VREF1_4/BDQ51 | C |
| 73 | CFG1 | 8 | | | CFG1 | 8 | | |
| 74 | CFG2 | 8 | | | CFG2 | 8 | | |
| 75 | PROGRAMN | 8 | | | PROGRAMN | 8 | | |
| 76 | INITN | 8 | | | INITN | 8 | | |
| 77 | CFG0 | 8 | | | CFG0 | 8 | | |
| 78 | CCLK | 8 | | | CCLK | 8 | | |
| 79 | DONE | 8 | | | DONE | 8 | | |
| 80 | PR29A | 8 | D0/SPIFASTN | | PR29A | 8 | D0/SPIFASTN | |
| 81 | GND | - | | | GND | - | | |
| 82 | PR26A | 8 | D6 | | PR26A | 8 | D6 | |
| 83 | VCC | - | | | VCC | - | | |
| 84 | PR25B | 8 | D7/SPID0 | C | PR25B | 8 | D7/SPID0 | C |
| 85 | VCCIO8 | 8 | | | VCCIO8 | 8 | | |
| 86 | PR25A | 8 | DI/CSSPI0N | T | PR25A | 8 | DI/CSSPI0N | T |
| 87 | PR24B | 8 | DOUT/CSON | C | PR24B | 8 | DOUT/CSON | C |
| 88 | PR24A | 8 | BUSY/SISPI | T | PR24A | 8 | BUSY/SISPI | T |
| 89 | VCCIO3 | 3 | | | VCCIO3 | 3 | | |
| 90 | VCCAUX | - | | | VCCAUX | - | | |

## LFE2-6E/SE and LFE2-12E/SE Logic Signal Connections: 144 TQFP (Cont.)

| LFE2-6E/SE | | | | | LFE2-12E/12SE | | | |
|---|---|---|---|---|---|---|---|---|
| Pin Number | Pin/Pad Function | Bank | Dual Function | Differential | Pin/Pad Function | Bank | Dual Function | Differential |
| 136 | PT6B | 0 | | C | PT16B | 0 | | C |
| 137 | PT6A | 0 | | T | PT16A | 0 | | T |
| 138 | GND | - | | | GND | - | | |
| 139 | VCCIO0 | 0 | | | VCCIO0 | 0 | | |
| 140 | PT4B | 0 | | C | PT6B | 0 | | C |
| 141 | PT4A | 0 | | T | PT6A | 0 | | T |
| 142 | VCCAUX | - | | | VCCAUX | - | | |
| 143 | PT2B | 0 | VREF2_0 | C | PT2B | 0 | VREF2_0 | C |
| 144 | PT2A | 0 | VREF1_0 | T | PT2A | 0 | VREF1_0 | T |

* 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.

# LFE2-35E/SE and LFE2-50E/SE Logic Signal Connections: 484 fpBGA (Cont.)

| LFE2-35E/SE | | | | | LFE2-50E/SE | | | |
|---|---|---|---|---|---|---|---|---|
| Ball Number | Ball/Pad Function | Bank | Dual Function | Differential | Ball/Pad Function | Bank | Dual Function | Differential |
| W13 | PB46A | 4 | BDQ42 | T | PB55A | 4 | BDQ51 | T |
| GNDIO | GNDIO4 | - | | | GNDIO4 | - | | |
| W14 | PB46B | 4 | BDQ42 | C | PB55B | 4 | BDQ51 | C |
| AB18 | PB48A | 4 | BDQ51 | T | PB57A | 4 | BDQ60 | T |
| AB19 | PB48B | 4 | BDQ51 | C | PB57B | 4 | BDQ60 | C |
| V14 | PB49A | 4 | BDQ51 | T | PB58A | 4 | BDQ60 | T |
| W15 | PB49B | 4 | BDQ51 | C | PB58B | 4 | BDQ60 | C |
| VCCIO | VCCIO4 | 4 | | | VCCIO | 4 | | |
| Y15 | PB50A | 4 | BDQ51 | T | PB59A | 4 | BDQ60 | T |
| AA15 | PB50B | 4 | BDQ51 | C | PB59B | 4 | BDQ60 | C |
| GNDIO | GNDIO4 | - | | | GNDIO4 | - | | |
| AA16 | PB51A | 4 | BDQS51 | T | PB60A | 4 | BDQS60 | T |
| AA17 | PB51B | 4 | BDQ51 | C | PB60B | 4 | BDQ60 | C |
| AB20 | PB52A | 4 | BDQ51 | T | PB61A | 4 | BDQ60 | T |
| AB21 | PB52B | 4 | BDQ51 | C | PB61B | 4 | BDQ60 | C |
| U15 | PB53A | 4 | BDQ51 | T | PB62A | 4 | BDQ60 | T |
| U16 | PB53B | 4 | BDQ51 | C | PB62B | 4 | BDQ60 | C |
| VCCIO | VCCIO4 | 4 | | | VCCIO | 4 | | |
| Y16 | PB54A | 4 | BDQ51 | T | PB63A | 4 | BDQ60 | T |
| W16 | PB54B | 4 | BDQ51 | C | PB63B | 4 | BDQ60 | C |
| AA18 | PB55A | 4 | BDQ51 | T | PB64A | 4 | BDQ60 | T |
| AA20 | PB55B | 4 | BDQ51 | C | PB64B | 4 | BDQ60 | C |
| GNDIO | GNDIO4 | - | | | GNDIO4 | - | | |
| VCCIO | VCCIO4 | 4 | | | VCCIO | 4 | | |
| AA21 | PB66A | 4 | BDQ69 | T | PB75A | 4 | BDQ78 | T |
| AA22 | PB66B | 4 | BDQ69 | C | PB75B | 4 | BDQ78 | C |
| V16 | PB67A | 4 | BDQ69 | T | PB76A | 4 | BDQ78 | T |
| V17 | PB67B | 4 | BDQ69 | C | PB76B | 4 | BDQ78 | C |
| VCCIO | VCCIO4 | 4 | | | VCCIO | 4 | | |
| Y18 | PB68A | 4 | BDQ69 | T | PB77A | 4 | BDQ78 | T |
| Y17 | PB68B | 4 | BDQ69 | C | PB77B | 4 | BDQ78 | C |
| GNDIO | GNDIO4 | - | | | GNDIO4 | - | | |
| Y19 | PB69A | 4 | BDQS69 | T | PB78A | 4 | BDQS78 | T |
| Y20 | PB69B | 4 | BDQ69 | C | PB78B | 4 | BDQ78 | C |
| W17 | PB70A | 4 | BDQ69 | T | PB79A | 4 | BDQ78 | T |
| W18 | PB70B | 4 | BDQ69 | C | PB79B | 4 | BDQ78 | C |
| Y21 | PB71A | 4 | BDQ69 | T | PB80A | 4 | BDQ78 | T |
| Y22 | PB71B | 4 | BDQ69 | C | PB80B | 4 | BDQ78 | C |
| VCCIO | VCCIO4 | 4 | | | VCCIO | 4 | | |
| U18 | PB72A | 4 | BDQ69 | T | PB81A | 4 | BDQ78 | T |
| V18 | PB72B | 4 | BDQ69 | C | PB81B | 4 | BDQ78 | C |
| T15 | PB73A | 4 | VREF2_4/BDQ69 | T | PB82A | 4 | VREF2_4/BDQ78 | T |
| T16 | PB73B | 4 | VREF1_4/BDQ69 | C | PB82B | 4 | VREF1_4/BDQ78 | C |
| GNDIO | GNDIO4 | - | | | GNDIO4 | - | | |
| W19 | CFG2 | 8 | | | CFG2 | 8 | | |
| V19 | CFG1 | 8 | | | CFG1 | 8 | | |

# LFE2-35E/SE and LFE2-50E/SE Logic Signal Connections: 484 fpBGA (Cont.)

| LFE2-35E/SE | | | | | LFE2-50E/SE | | | |
|---|---|---|---|---|---|---|---|---|
| Ball Number | Ball/Pad Function | Bank | Dual Function | Differential | Ball/Pad Function | Bank | Dual Function | Differential |
| W20 | CFG0 | 8 | | | CFG0 | 8 | | |
| V20 | PROGRAMN | 8 | | | PROGRAMN | 8 | | |
| W22 | CCLK | 8 | | | CCLK | 8 | | |
| V22 | INITN | 8 | | | INITN | 8 | | |
| V21 | DONE | 8 | | | DONE | 8 | | |
| GNDIO | GNDIO8 | - | | | GNDIO8 | - | | |
| R16 | PR58B | 8 | WRITEN | C | PR77B | 8 | WRITEN | C |
| R17 | PR58A | 8 | CS1N | T | PR77A | 8 | CS1N | T |
| U19 | PR57B | 8 | CSN | C | PR76B | 8 | CSN | C |
| U20 | PR57A | 8 | D0/SPIFASTN | T | PR76A | 8 | D0/SPIFASTN | T |
| VCCIO | VCCIO8 | 8 | | | VCCIO | 8 | | |
| U22 | PR56B | 8 | D1 | C | PR75B | 8 | D1 | C |
| U21 | PR56A | 8 | D2 | T | PR75A | 8 | D2 | T |
| T20 | PR55B | 8 | D3 | C | PR74B | 8 | D3 | C |
| GNDIO | GNDIO8 | - | | | GNDIO8 | - | | |
| T19 | PR55A | 8 | D4 | T | PR74A | 8 | D4 | T |
| T17 | PR54B | 8 | D5 | C | PR73B | 8 | D5 | C |
| T18 | PR54A | 8 | D6 | T | PR73A | 8 | D6 | T |
| T21 | PR53B | 8 | D7/SPID0 | C | PR72B | 8 | D7/SPID0 | C |
| VCCIO | VCCIO8 | 8 | | | VCCIO | 8 | | |
| T22 | PR53A | 8 | DI/CSSPI0N | T | PR72A | 8 | DI/CSSPI0N | T |
| R18 | PR52B | 8 | DOUT/CSON | C | PR71B | 8 | DOUT/CSON | C |
| R19 | PR52A | 8 | BUSY/SISPI | T | PR71A | 8 | BUSY/SISPI | T |
| GNDIO | GNDIO3 | - | | | GNDIO3 | - | | |
| VCCIO | VCCIO3 | 3 | | | VCCIO | 3 | | |
| R22 | PR47B | 3 | RDQ48 | C | PR66B | 3 | RDQ67 | C |
| R21 | PR47A | 3 | RDQ48 | T | PR66A | 3 | RDQ67 | T |
| P18 | PR46B | 3 | RDQ48 | C (LVDS)* | PR65B | 3 | RDQ67 | C (LVDS)* |
| P19 | PR46A | 3 | RDQ48 | T (LVDS)* | PR65A | 3 | RDQ67 | T (LVDS)* |
| VCCIO | VCCIO3 | 3 | | | VCCIO | 3 | | |
| R20 | PR45B | 3 | RLM0_GPLLC_FB_A/RDQ48 | C | PR64B | 3 | RLM0_GPLLC_FB_A/RDQ67 | C |
| P22 | PR45A | 3 | RLM0_GPLLT_FB_A/RDQ48 | T | PR64A | 3 | RLM0_GPLLT_FB_A/RDQ67 | T |
| P21 | PR44B | 3 | RLM0_GPLLC_IN_A**/RDQ48 | C (LVDS)* | PR63B | 3 | RLM0_GPLLC_IN_A**/RDQ67 | C (LVDS)* |
| N21 | PR44A | 3 | RLM0_GPLLT_IN_A**/RDQ48 | T (LVDS)* | PR63A | 3 | RLM0_GPLLT_IN_A**/RDQ67 | T (LVDS)* |
| N17 | RLM0_PLLCAP | 3 | | | RLM0_PLLCAP | 3 | | |
| N22 | PR42B | 3 | RLM0_GDLLC_FB_A/RDQ39 | C | PR61B | 3 | RLM0_GDLLC_FB_A/RDQ58 | C |
| N20 | PR42A | 3 | RLM0_GDLLT_FB_A/RDQ39 | T | PR61A | 3 | RLM0_GDLLT_FB_A/RDQ58 | T |
| GNDIO | GNDIO3 | - | | | GNDIO3 | - | | |
| M22 | PR41B | 3 | RLM0_GDLLC_IN_A**/RDQ39 | C (LVDS)* | PR60B | 3 | RLM0_GDLLC_IN_A**/RDQ58 | C (LVDS)* |
| M21 | PR41A | 3 | RLM0_GDLLT_IN_A**/RDQ39 | T (LVDS)* | PR60A | 3 | RLM0_GDLLT_IN_A**/RDQ58 | T (LVDS)* |
| N19 | PR40B | 3 | RDQ39 | C | PR59B | 3 | RDQ58 | C |
| M19 | PR40A | 3 | RDQ39 | T | PR59A | 3 | RDQ58 | T |
| VCCIO | VCCIO3 | 3 | | | VCCIO | 3 | | |
| GNDIO | GNDIO3 | - | | | GNDIO3 | - | | |
| L22 | PR30B | 3 | RDQ31 | C | PR49B | 3 | RDQ50 | C |
| K22 | PR30A | 3 | RDQ31 | T | PR49A | 3 | RDQ50 | T |

# LFE2-35E/SE and LFE2-50E/SE Logic Signal Connections: 484 fpBGA (Cont.)

| LFE2-35E/SE | | | | | LFE2-50E/SE | | | |
|---|---|---|---|---|---|---|---|---|
| Ball Number | Ball/Pad Function | Bank | Dual Function | Differential | Ball/Pad Function | Bank | Dual Function | Differential |
| D15 | PT52A | 1 | | T | PT61A | 1 | | T |
| E15 | PT51B | 1 | | C | PT60B | 1 | | C |
| F15 | PT51A | 1 | | T | PT60A | 1 | | T |
| GNDIO | GNDIO1 | - | | | GNDIO1 | - | | |
| B15 | PT49B | 1 | | C | PT58B | 1 | | C |
| VCCIO | VCCIO1 | 1 | | | VCCIO | 1 | | |
| A15 | PT49A | 1 | | T | PT58A | 1 | | T |
| B14 | PT48B | 1 | | C | PT57B | 1 | | C |
| A14 | PT48A | 1 | | T | PT57A | 1 | | T |
| D14 | PT46B | 1 | | C | PT55B | 1 | | C |
| C13 | PT46A | 1 | | T | PT55A | 1 | | T |
| GNDIO | GNDIO1 | - | | | GNDIO1 | - | | |
| E14 | PT45B | 1 | | C | PT54B | 1 | | C |
| F14 | PT45A | 1 | | T | PT54A | 1 | | T |
| A13 | PT44B | 1 | | C | PT53B | 1 | | C |
| B13 | PT44A | 1 | | T | PT53A | 1 | | T |
| VCCIO | VCCIO1 | 1 | | | VCCIO | 1 | | |
| E13 | PT43B | 1 | | C | PT52B | 1 | | C |
| D13 | PT43A | 1 | | T | PT52A | 1 | | T |
| E12 | PT42B | 1 | | C | PT51B | 1 | | C |
| D12 | PT42A | 1 | | T | PT51A | 1 | | T |
| GNDIO | GNDIO1 | - | | | GNDIO1 | - | | |
| A12 | PT40B | 1 | | C | PT49B | 1 | | C |
| A11 | PT40A | 1 | | T | PT49A | 1 | | T |
| VCCIO | VCCIO1 | 1 | | | VCCIO | 1 | | |
| B12 | PT39B | 1 | PCLKC1_0 | C | PT48B | 1 | PCLKC1_0 | C |
| C12 | PT39A | 1 | PCLKT1_0 | T | PT48A | 1 | PCLKT1_0 | T |
| F12 | XRES | 1 | | | XRES | 1 | | |
| B10 | PT37B | 0 | PCLKC0_0 | C | PT46B | 0 | PCLKC0_0 | C |
| GNDIO | GNDIO0 | - | | | GNDIO0 | 0 | | |
| B11 | PT37A | 0 | PCLKT0_0 | T | PT46A | 0 | PCLKT0_0 | T |
| A10 | PT36B | 0 | | C | PT45B | 0 | | C |
| A9 | PT36A | 0 | | T | PT45A | 0 | | T |
| C11 | PT35B | 0 | | C | PT44B | 0 | | C |
| VCCIO | VCCIO0 | 0 | | | VCCIO | 0 | | |
| C10 | PT35A | 0 | | T | PT44A | 0 | | T |
| E11 | PT34B | 0 | | C | PT43B | 0 | | C |
| F11 | PT34A | 0 | | T | PT43A | 0 | | T |
| A8 | PT33B | 0 | | C | PT42B | 0 | | C |
| A7 | PT33A | 0 | | T | PT42A | 0 | | T |
| B8 | PT32B | 0 | | C | PT41B | 0 | | C |
| GNDIO | GNDIO0 | - | | | GNDIO0 | 0 | | |
| B9 | PT32A | 0 | | T | PT41A | 0 | | T |
| VCCIO | VCCIO0 | 0 | | | VCCIO | 0 | | |
| B7 | PT30B | 0 | | C | PT39B | 0 | | C |
| A6 | PT30A | 0 | | T | PT39A | 0 | | T |

# 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 |
| L2 | NC | - | | | NC | - | | |
| L1 | NC | - | | | NC | - | | |
| VCCIO | VCCIO7 | 7 | | | VCCIO7 | 7 | | |
| M2 | NC | - | | | NC | - | | |
| M1 | NC | - | | | NC | - | | |
| N2 | NC | - | | | NC | - | | |
| GND | GNDIO7 | - | | | GNDIO7 | - | | |
| M8 | VCC | - | | | NC | - | | |
| VCCIO | VCCIO7 | 7 | | | VCCIO7 | 7 | | |
| GND | GNDIO7 | - | | | GNDIO7 | - | | |
| N1 | PL12A | 7 | LDQ16 | | PL18A | 7 | LDQ22 | |
| L8 | PL13A | 7 | LDQ16 | T | PL19A | 7 | LDQ22 | T |
| K8 | PL13B | 7 | LDQ16 | C | PL19B | 7 | LDQ22 | C |
| VCCIO | VCCIO7 | 7 | | | VCCIO7 | 7 | | |
| L6 | PL14A | 7 | LDQ16 | T (LVDS)* | PL20A | 7 | LDQ22 | T (LVDS)* |
| K5 | PL14B | 7 | LDQ16 | C (LVDS)* | PL20B | 7 | LDQ22 | C (LVDS)* |
| L7 | PL15A | 7 | LDQ16 | T | PL21A | 7 | LDQ22 | T |
| L5 | PL15B | 7 | LDQ16 | C | PL21B | 7 | LDQ22 | C |
| GND | GNDIO7 | - | | | GNDIO7 | - | | |
| P1 | PL16A | 7 | LDQS16 | T (LVDS)* | PL22A | 7 | LDQS22 | T (LVDS)* |
| P2 | PL16B | 7 | LDQ16 | C (LVDS)* | PL22B | 7 | LDQ22 | C (LVDS)* |
| M6 | PL17A | 7 | LDQ16 | T | PL23A | 7 | LDQ22 | T |
| VCCIO | VCCIO7 | 7 | | | VCCIO7 | 7 | | |
| N8 | PL17B | 7 | LDQ16 | C | PL23B | 7 | LDQ22 | C |
| R1 | PL18A | 7 | LDQ16 | T (LVDS)* | PL24A | 7 | LDQ22 | T (LVDS)* |
| R2 | PL18B | 7 | LDQ16 | C (LVDS)* | PL24B | 7 | LDQ22 | C (LVDS)* |
| M7 | PL19A | 7 | PCLKT7_0/LDQ16 | T | PL25A | 7 | PCLKT7_0/LDQ22 | T |
| GND | GNDIO7 | - | | | GNDIO7 | - | | |
| N9 | PL19B | 7 | PCLKC7_0/LDQ16 | C | PL25B | 7 | PCLKC7_0/LDQ22 | C |
| M4 | PL21A | 6 | PCLKT6_0/LDQ25 | T (LVDS)* | PL27A | 6 | PCLKT6_0/LDQ31 | T (LVDS)* |
| M5 | PL21B | 6 | PCLKC6_0/LDQ25 | C (LVDS)* | PL27B | 6 | PCLKC6_0/LDQ31 | C (LVDS)* |
| N7 | PL22A | 6 | VREF2_6/LDQ25 | T | PL28A | 6 | VREF2_6/LDQ31 | T |
| P9 | PL22B | 6 | VREF1_6/LDQ25 | C | PL28B | 6 | VREF1_6/LDQ31 | C |
| N3 | PL23A | 6 | LDQ25 | T (LVDS)* | PL29A | 6 | LDQ31 | T (LVDS)* |
| VCCIO | VCCIO6 | 6 | | | VCCIO6 | 6 | | |
| N4 | PL23B | 6 | LDQ25 | C (LVDS)* | PL29B | 6 | LDQ31 | C (LVDS)* |
| N5 | PL24A | 6 | LDQ25 | T | PL30A | 6 | LDQ31 | T |
| P7 | PL24B | 6 | LDQ25 | C | PL30B | 6 | LDQ31 | C |
| T1 | NC | - | | | PL31A | 6 | LDQS31 | T (LVDS)* |
| GND | GNDIO6 | - | | | GNDIO6 | - | | |
| T2 | NC | - | | | PL31B | 6 | LDQ31 | C (LVDS)* |
| P8 | NC | - | | | PL32A | 6 | LDQ31 | T |
| P6 | NC | - | | | PL32B | 6 | LDQ31 | C |
| VCCIO | VCCIO6 | 6 | | | VCCIO6 | 6 | | |
| P5 | NC | - | | | PL33A | 6 | LDQ31 | T (LVDS)* |
| P4 | NC | - | | | PL33B | 6 | LDQ31 | C (LVDS)* |

# 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 |
| GND | GNDIO2 | - | | | GNDIO2 | - | | |
| L21 | PR18B | 2 | RDQ16 | C (LVDS)* | PR24B | 2 | RDQ22 | C (LVDS)* |
| K22 | PR18A | 2 | RDQ16 | T (LVDS)* | PR24A | 2 | RDQ22 | T (LVDS)* |
| M24 | PR17B | 2 | RDQ16 | C | PR23B | 2 | RDQ22 | C |
| N23 | PR17A | 2 | RDQ16 | T | PR23A | 2 | RDQ22 | T |
| VCCIO | VCCIO2 | 2 | | | VCCIO2 | 2 | | |
| K26 | PR16B | 2 | RDQ16 | C (LVDS)* | PR22B | 2 | RDQ22 | C (LVDS)* |
| K25 | PR16A | 2 | RDQS16 | T (LVDS)* | PR22A | 2 | RDQS22 | T (LVDS)* |
| M20 | PR15B | 2 | RDQ16 | C | PR21B | 2 | RDQ22 | C |
| GND | GNDIO2 | - | | | GNDIO2 | - | | |
| M19 | PR15A | 2 | RDQ16 | T | PR21A | 2 | RDQ22 | T |
| L22 | PR14B | 2 | RDQ16 | C (LVDS)* | PR20B | 2 | RDQ22 | C (LVDS)* |
| M22 | PR14A | 2 | RDQ16 | T (LVDS)* | PR20A | 2 | RDQ22 | T (LVDS)* |
| K21 | PR13B | 2 | RDQ16 | C | PR19B | 2 | RDQ22 | C |
| VCCIO | VCCIO2 | 2 | | | VCCIO2 | 2 | | |
| M21 | PR13A | 2 | RDQ16 | T | PR19A | 2 | RDQ22 | T |
| K24 | PR12B | 2 | RDQ16 | C (LVDS)* | PR18B | 2 | RDQ22 | C (LVDS)* |
| J24 | PR12A | 2 | RDQ16 | T (LVDS)* | PR18A | 2 | RDQ22 | T (LVDS)* |
| GND | GNDIO2 | - | | | GNDIO2 | - | | |
| VCCIO | VCCIO2 | 2 | | | VCCIO2 | 2 | | |
| L20 | VCC | - | | | NC | - | | |
| GND | GNDIO2 | - | | | GNDIO2 | - | | |
| J26 | NC | - | | | NC | - | | |
| J25 | NC | - | | | NC | - | | |
| J23 | NC | - | | | NC | - | | |
| K23 | NC | - | | | NC | - | | |
| VCCIO | VCCIO2 | 2 | | | VCCIO2 | 2 | | |
| H26 | NC | - | | | NC | - | | |
| H25 | NC | - | | | NC | - | | |
| H24 | NC | - | | | NC | - | | |
| GND | GNDIO2 | - | | | GNDIO2 | - | | |
| H23 | NC | - | | | NC | - | | |
| VCCIO | VCCIO2 | 2 | | | VCCIO2 | 2 | | |
| G26 | PR11B | 2 | RDQ8 | C | PR17B | 2 | RDQ14 | C |
| GND | GNDIO2 | - | | | GNDIO2 | - | | |
| G25 | PR11A | 2 | RDQ8 | T | PR17A | 2 | RDQ14 | T |
| F26 | PR10B | 2 | RDQ8 | C (LVDS)* | PR16B | 2 | RDQ14 | C (LVDS)* |
| F25 | PR10A | 2 | RDQ8 | T (LVDS)* | PR16A | 2 | RDQ14 | T (LVDS)* |
| K20 | PR9B | 2 | RDQ8 | C | PR15B | 2 | RDQ14 | C |
| VCCIO | VCCIO2 | 2 | | | VCCIO2 | 2 | | |
| L19 | PR9A | 2 | RDQ8 | T | PR15A | 2 | RDQ14 | T |
| E26 | PR8B | 2 | RDQ8 | C (LVDS)* | PR14B | 2 | RDQ14 | C (LVDS)* |
| E25 | PR8A | 2 | RDQS8 | T (LVDS)* | PR14A | 2 | RDQS14 | T (LVDS)* |
| GND | GNDIO2 | - | | | GNDIO2 | - | | |
| J22 | PR7B | 2 | RDQ8 | C | PR13B | 2 | RDQ14 | C |
| H22 | PR7A | 2 | RDQ8 | T | PR13A | 2 | RDQ14 | T |

# 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 |
| GND | GNDIO2 | - | | | GNDIO2 | - | | |
| L21 | PR43B | 2 | RDQ41 | C (LVDS)* | PR56B | 2 | RDQ54 | C (LVDS)* |
| K22 | PR43A | 2 | RDQ41 | T (LVDS)* | PR56A | 2 | RDQ54 | T (LVDS)* |
| M24 | PR42B | 2 | RDQ41 | C | PR55B | 2 | RDQ54 | C |
| N23 | PR42A | 2 | RDQ41 | T | PR55A | 2 | RDQ54 | T |
| VCCIO | VCCIO2 | 2 | | | VCCIO2 | 2 | | |
| K26 | PR41B | 2 | RDQ41 | C (LVDS)* | PR54B | 2 | RDQ54 | C (LVDS)* |
| K25 | PR41A | 2 | RDQS41 | T (LVDS)* | PR54A | 2 | RDQS54 | T (LVDS)* |
| M20 | PR40B | 2 | RDQ41 | C | PR53B | 2 | RDQ54 | C |
| GND | GNDIO2 | - | | | GNDIO2 | - | | |
| M19 | PR40A | 2 | RDQ41 | T | PR53A | 2 | RDQ54 | T |
| L22 | PR39B | 2 | RDQ41 | C (LVDS)* | PR52B | 2 | RDQ54 | C (LVDS)* |
| M22 | PR39A | 2 | RDQ41 | T (LVDS)* | PR52A | 2 | RDQ54 | T (LVDS)* |
| K21 | PR38B | 2 | RDQ41 | C | PR51B | 2 | RDQ54 | C |
| VCCIO | VCCIO2 | 2 | | | VCCIO2 | 2 | | |
| M21 | PR38A | 2 | RDQ41 | T | PR51A | 2 | RDQ54 | T |
| K24 | PR37B | 2 | RDQ41 | C (LVDS)* | PR50B | 2 | RDQ54 | C (LVDS)* |
| J24 | PR37A | 2 | RDQ41 | T (LVDS)* | PR50A | 2 | RDQ54 | T (LVDS)* |
| GND | GNDIO2 | - | | | GNDIO2 | - | | |
| VCCIO | VCCIO2 | 2 | | | VCCIO2 | 2 | | |
| L20 | VCCPLL | 2 | | | NC | - | | |
| GND | GNDIO2 | - | | | GNDIO2 | - | | |
| J26 | PR26B | 2 | RUM0_SPLLC_FB_A/RDQ24 | C | PR39B | 2 | RUM0_SPLLC_FB_A/RDQ37 | C |
| J25 | PR26A | 2 | RUM0_SPLLT_FB_A/RDQ24 | T | PR39A | 2 | RUM0_SPLLT_FB_A/RDQ37 | T |
| J23 | PR25B | 2 | RUM0_SPLLC_IN_A/RDQ24 | C | PR38B | 2 | RUM0_SPLLC_IN_A/RDQ37 | C |
| K23 | PR25A | 2 | RUM0_SPLLT_IN_A/RDQ24 | T | PR38A | 2 | RUM0_SPLLT_IN_A/RDQ37 | T |
| VCCIO | VCCIO2 | 2 | | | VCCIO2 | 2 | | |
| H26 | PR24B | 2 | RDQ24 | C (LVDS)* | PR37B | 2 | RDQ37 | C (LVDS)* |
| H25 | PR24A | 2 | RDQS24*** | T (LVDS)* | PR37A | 2 | RDQS37*** | T (LVDS)* |
| H24 | PR23B | 2 | RDQ24 | C | PR36B | 2 | RDQ37 | C |
| GND | GNDIO2 | - | | | GNDIO2 | - | | |
| H23 | PR23A | 2 | RDQ24 | T | PR36A | 2 | RDQ37 | T |
| VCCIO | VCCIO2 | 2 | | | VCCIO2 | 2 | | |
| G26 | PR19B | 2 | RDQ16 | C | PR32B | 2 | RDQ29 | C |
| GND | GNDIO2 | - | | | GNDIO2 | - | | |
| G25 | PR19A | 2 | RDQ16 | T | PR32A | 2 | RDQ29 | T |
| F26 | PR18B | 2 | RDQ16 | C (LVDS)* | PR31B | 2 | RDQ29 | C (LVDS)* |
| F25 | PR18A | 2 | RDQ16 | T (LVDS)* | PR31A | 2 | RDQ29 | T (LVDS)* |
| K20 | PR17B | 2 | RDQ16 | C | PR30B | 2 | RDQ29 | C |
| VCCIO | VCCIO2 | 2 | | | VCCIO2 | 2 | | |
| L19 | PR17A | 2 | RDQ16 | T | PR30A | 2 | RDQ29 | T |
| E26 | PR16B | 2 | RDQ16 | C (LVDS)* | PR29B | 2 | RDQ29 | C (LVDS)* |
| E25 | PR16A | 2 | RDQS16 | T (LVDS)* | PR29A | 2 | RDQS29 | T (LVDS)* |
| GND | GNDIO2 | - | | | GNDIO2 | - | | |
| J22 | PR15B | 2 | RDQ16 | C | PR28B | 2 | RDQ29 | C |
| H22 | PR15A | 2 | RDQ16 | T | PR28A | 2 | RDQ29 | T |

# LFE2M35E/SE and LFE2M50E/SE Logic Signal Connections: 672 fpBGA (Cont.)

| LFE2M35E/SE | | | | | LFE2M50E/SE | | | |
|---|---|---|---|---|---|---|---|---|
| Ball Number | Ball/Pad Function | Bank | Dual Function | Differential | Ball/Pad Function | Bank | Dual Function | Differential |
| AF4 | PB17B | 5 | BDQ15 | C | PB17B | 5 | BDQ15 | C |
| VCCIO | VCCIO5 | 5 | | | VCCIO5 | 5 | | |
| AF5 | PB18A | 5 | BDQ15 | T | PB18A | 5 | BDQ15 | T |
| AF6 | PB18B | 5 | BDQ15 | C | PB18B | 5 | BDQ15 | C |
| Y12 | PB19A | 5 | BDQ15 | T | PB19A | 5 | BDQ15 | T |
| GNDIO | GNDIO5 | - | | | GNDIO5 | - | | |
| AB11 | PB19B | 5 | BDQ15 | C | PB19B | 5 | BDQ15 | C |
| - | - | - | | | VCCIO5 | 5 | | |
| - | - | - | | | GNDIO5 | - | | |
| AD7 | PB20A | 5 | BDQ24 | T | PB29A | 5 | BDQ33 | T |
| AF7 | PB20B | 5 | BDQ24 | C | PB29B | 5 | BDQ33 | C |
| AD8 | PB21A | 5 | BDQ24 | T | PB30A | 5 | BDQ33 | T |
| AA12 | PB21B | 5 | BDQ24 | C | PB30B | 5 | BDQ33 | C |
| AE8 | PB22A | 5 | BDQ24 | T | PB31A | 5 | BDQ33 | T |
| VCCIO | VCCIO5 | 5 | | | VCCIO5 | 5 | | |
| AF8 | PB22B | 5 | BDQ24 | C | PB31B | 5 | BDQ33 | C |
| AD9 | PB23A | 5 | BDQ24 | T | PB32A | 5 | BDQ33 | T |
| AC10 | PB23B | 5 | BDQ24 | C | PB32B | 5 | BDQ33 | C |
| AC11 | PB24A | 5 | BDQS24 | T | PB33A | 5 | BDQS33 | T |
| GNDIO | GNDIO5 | - | | | GNDIO5 | - | | |
| AB12 | PB24B | 5 | BDQ24 | C | PB33B | 5 | BDQ33 | C |
| AD10 | PB25A | 5 | BDQ24 | T | PB34A | 5 | BDQ33 | T |
| Y13 | PB25B | 5 | BDQ24 | C | PB34B | 5 | BDQ33 | C |
| AF9 | PB26A | 5 | BDQ24 | T | PB35A | 5 | BDQ33 | T |
| VCCIO | VCCIO5 | 5 | | | VCCIO5 | 5 | | |
| AE9 | PB26B | 5 | BDQ24 | C | PB35B | 5 | BDQ33 | C |
| AF10 | PB27A | 5 | BDQ24 | T | PB36A | 5 | BDQ33 | T |
| AE10 | PB27B | 5 | BDQ24 | C | PB36B | 5 | BDQ33 | C |
| AD11 | PB28A | 5 | BDQ24 | T | PB37A | 5 | BDQ33 | T |
| GNDIO | GNDIO5 | - | | | GNDIO5 | - | | |
| AF11 | PB28B | 5 | BDQ24 | C | PB37B | 5 | BDQ33 | C |
| VCCIO | VCCIO5 | 5 | | | VCCIO5 | 5 | | |
| GNDIO | GNDIO5 | - | | | GNDIO5 | - | | |
| AA13 | PB33A | 5 | BDQS33**** | T | PB42A | 5 | BDQS42**** | T |
| AB13 | PB33B | 5 | BDQ33 | C | PB42B | 5 | BDQ42 | C |
| W14 | PB34A | 5 | VREF2_5/BDQ33 | T | PB43A | 5 | VREF2_5/BDQ42 | T |
| AC12 | PB34B | 5 | VREF1_5/BDQ33 | C | PB43B | 5 | VREF1_5/BDQ42 | C |
| AF12 | PB35A | 5 | PCLKT5_0/BDQ33 | T | PB44A | 5 | PCLKT5_0/BDQ42 | T |
| AD12 | PB35B | 5 | PCLKC5_0/BDQ33 | C | PB44B | 5 | PCLKC5_0/BDQ42 | C |
| VCCIO | VCCIO5 | 5 | | | VCCIO5 | 5 | | |
| GNDIO | GNDIO5 | - | | | GNDIO5 | - | | |
| AC13 | PB40A | 4 | PCLKT4_0/BDQ42 | T | PB49A | 4 | PCLKT4_0/BDQ51 | T |
| VCCIO | VCCIO4 | 4 | | | VCCIO4 | 4 | | |
| Y14 | PB40B | 4 | PCLKC4_0/BDQ42 | C | PB49B | 4 | PCLKC4_0/BDQ51 | C |
| AB20 | PB57A | 4 | BDQ60 | T | PB50A | 4 | VREF2_4/BDQ51 | T |
| AC14 | PB41B | 4 | VREF1_4/BDQ42 | C | PB50B | 4 | VREF1_4/BDQ51 | C |
| AB14 | PB42A | 4 | BDQS42**** | T | PB51A | 4 | BDQS51**** | T |
| GNDIO | GNDIO4 | - | | | GNDIO4 | - | | |

# 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 |
| AH25 | LRC_SQ_VCCOB1 | 13 | | | LRC_SQ_VCCOB1 | 13 | | |
| AJ25 | LRC_SQ_HDOUTN1 | 13 | | C | LRC_SQ_HDOUTN1 | 13 | | C |
| AH26 | LRC_SQ_VCCTX1 | 13 | | | LRC_SQ_VCCTX1 | 13 | | |
| AJ26 | LRC_SQ_HDOUTN0 | 13 | | C | LRC_SQ_HDOUTN0 | 13 | | C |
| AK27 | LRC_SQ_VCCOB0 | 13 | | | LRC_SQ_VCCOB0 | 13 | | |
| AK26 | LRC_SQ_HDOUTP0 | 13 | | T | LRC_SQ_HDOUTP0 | 13 | | T |
| AH27 | LRC_SQ_VCCTX0 | 13 | | | LRC_SQ_VCCTX0 | 13 | | |
| AJ29 | LRC_SQ_HDINN0 | 13 | | C | LRC_SQ_HDINN0 | 13 | | C |
| AJ30 | LRC_SQ_VCCIB0 | 13 | | | LRC_SQ_VCCIB0 | 13 | | |
| AK29 | LRC_SQ_HDINP0 | 13 | | T | LRC_SQ_HDINP0 | 13 | | T |
| AH30 | LRC_SQ_VCCRX0 | 13 | | | LRC_SQ_VCCRX0 | 13 | | |
| AG27 | CFG2 | 8 | | | CFG2 | 8 | | |
| AD25 | CFG1 | 8 | | | CFG1 | 8 | | |
| AG28 | CFG0 | 8 | | | CFG0 | 8 | | |
| AG30 | PROGRAMN | 8 | | | PROGRAMN | 8 | | |
| AG29 | CCLK | 8 | | | CCLK | 8 | | |
| AC24 | INITN | 8 | | | INITN | 8 | | |
| AF27 | DONE | 8 | | | DONE | 8 | | |
| GNDIO | GNDIO8 | - | | | GNDIO8 | - | | |
| AF28 | WRITEN*** | 8 | | | WRITEN*** | 8 | | |
| AE26 | CS1N*** | 8 | | | CS1N*** | 8 | | |
| AB23 | CSN*** | 8 | | | CSN*** | 8 | | |
| AF29 | D0/SPIFASTN*** | 8 | | | D0/SPIFASTN*** | 8 | | |
| VCCIO | VCCIO8 | 8 | | | VCCIO8 | 8 | | |
| AF30 | D1*** | 8 | | | D1*** | 8 | | |
| AD26 | D2*** | 8 | | | D2*** | 8 | | |
| AE29 | D3*** | 8 | | | D3*** | 8 | | |
| GNDIO | GNDIO8 | - | | | GNDIO8 | - | | |
| AE30 | D4*** | 8 | | | D4*** | 8 | | |
| AD29 | D5*** | 8 | | | D5*** | 8 | | |
| AC25 | D6*** | 8 | | | D6*** | 8 | | |
| AD30 | D7/SPID0*** | 8 | | | D7/SPID0*** | 8 | | |
| VCCIO | VCCIO8 | 8 | | | VCCIO8 | 8 | | |
| AA22 | DI/CSSPI0N*** | 8 | | | DI/CSSPI0N*** | 8 | | |
| AC26 | DOUT/CSON/ CSSPI1N*** | 8 | | | DOUT/CSON/ CSSPI1N*** | 8 | | |
| AA23 | BUSY/SISPI*** | 8 | | | BUSY/SISPI*** | 8 | | |
| AB22 | RLM0_PLLCAP | 3 | | | RLM0_PLLCAP | 3 | | |
| AC27 | PR65B | 3 | RLM0_GDLLC_FB_A | C | PR85B | 3 | RLM0_GDLLC_FB_A/RDQ82 | C |
| GNDIO | GNDIO3 | - | | | GNDIO3 | - | | |
| AC28 | PR65A | 3 | RLM0_GDLLT_FB_A | T | PR85A | 3 | RLM0_GDLLT_FB_A/RDQ82 | T |
| AC29 | PR64B | 3 | RLM0_GDLLC_IN_A** | C (LVDS)* | PR84B | 3 | RLM0_GDLLC_IN_A**/RDQ82 | C (LVDS)* |
| AC30 | PR64A | 3 | RLM0_GDLLT_IN_A** | T (LVDS)* | PR84A | 3 | RLM0_GDLLT_IN_A**/RDQ82 | T (LVDS)* |
| AB30 | PR63B | 3 | RLM0_GPLLC_IN_A** | C | PR83B | 3 | RLM0_GPLLC_IN_A**/RDQ82 | C |
| VCCIO | VCCIO3 | 3 | | | VCCIO3 | 3 | | |
| AA30 | PR63A | 3 | RLM0_GPLLT_IN_A** | T | PR83A | 3 | RLM0_GPLLT_IN_A**/RDQ82 | T |
| AB29 | PR62B | 3 | RLM0_GPLLC_FB_A | C (LVDS)* | PR82B | 3 | RLM0_GPLLC_FB_A/RDQ82 | C (LVDS)* |
| AB28 | PR62A | 3 | RLM0_GPLLT_FB_A | T (LVDS)* | PR82A | 3 | RLM0_GPLLT_FB_A/RDQS82 | T (LVDS)* |
| GNDIO | GNDIO3 | - | | | GNDIO3 | - | | |

# 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 |
| - | - | - | | | VCCIO2 | 2 | | |
| H23 | NC | - | | | PR15B | 2 | RDQ15 | C (LVDS)* |
| H24 | NC | - | | | PR15A | 2 | RDQS15 | T (LVDS)* |
| D28 | NC | - | | | PR14B | 2 | RDQ15 | C |
| - | - | - | | | GNDIO2 | - | | |
| E28 | NC | - | | | PR14A | 2 | RDQ15 | T |
| G24 | PR13B | 2 | | C (LVDS)* | PR13B | 2 | RDQ15 | C (LVDS)* |
| H25 | PR13A | 2 | | T (LVDS)* | PR13A | 2 | RDQ15 | T (LVDS)* |
| D27 | PR12B | 2 | RUM0_SPLLC_FB_A | C | PR12B | 2 | RUM0_SPLLC_FB_A/RDQ15 | C |
| GNDIO | GNDIO2 | - | | | VCCIO2 | 2 | | |
| E27 | PR12A | 2 | RUM0_SPLLT_FB_A | T | PR12A | 2 | RUM0_SPLLT_FB_A/RDQ15 | T |
| F26 | PR11B | 2 | RUM0_SPLLC_IN_A | C (LVDS)* | PR11B | 2 | RUM0_SPLLC_IN_A/RDQ15 | C (LVDS)* |
| G25 | PR11A | 2 | RUM0_SPLLT_IN_A | T (LVDS)* | PR11A | 2 | RUM0_SPLLT_IN_A/RDQ15 | T (LVDS)* |
| F24 | PR9B | 2 | VREF2_2 | C | PR9B | 2 | VREF2_2 | C |
| VCCIO | VCCIO2 | - | | | - | - | | |
| GNDIO | GNDIO2 | - | | | GNDIO2 | - | | |
| F25 | PR9A | 2 | VREF1_2 | T | PR9A | 2 | VREF1_2 | T |
| VCCIO | VCCIO2 | 2 | | | VCCIO2 | 2 | | |
| G23 | XRES | - | | | XRES | 1 | | |
| C30 | URC_SQ_VCCRX0 | 12 | | | URC_SQ_VCCRX0 | 12 | | |
| A29 | URC_SQ_HDINP0 | 12 | | T | URC_SQ_HDINP0 | 12 | | T |
| B30 | URC_SQ_VCCIB0 | 12 | | | URC_SQ_VCCIB0 | 12 | | |
| B29 | URC_SQ_HDINN0 | 12 | | C | URC_SQ_HDINN0 | 12 | | C |
| C27 | URC_SQ_VCCTX0 | 12 | | | URC_SQ_VCCTX0 | 12 | | |
| A26 | URC_SQ_HDOUTP0 | 12 | | T | URC_SQ_HDOUTP0 | 12 | | T |
| A27 | URC_SQ_VCCOB0 | 12 | | | URC_SQ_VCCOB0 | 12 | | |
| B26 | URC_SQ_HDOUTN0 | 12 | | C | URC_SQ_HDOUTN0 | 12 | | C |
| C26 | URC_SQ_VCCTX1 | 12 | | | URC_SQ_VCCTX1 | 12 | | |
| B25 | URC_SQ_HDOUTN1 | 12 | | C | URC_SQ_HDOUTN1 | 12 | | C |
| C25 | URC_SQ_VCCOB1 | 12 | | | URC_SQ_VCCOB1 | 12 | | |
| A25 | URC_SQ_HDOUTP1 | 12 | | T | URC_SQ_HDOUTP1 | 12 | | T |
| C29 | URC_SQ_VCCRX1 | 12 | | | URC_SQ_VCCRX1 | 12 | | |
| B28 | URC_SQ_HDINN1 | 12 | | C | URC_SQ_HDINN1 | 12 | | C |
| C28 | URC_SQ_VCCIB1 | 12 | | | URC_SQ_VCCIB1 | 12 | | |
| A28 | URC_SQ_HDINP1 | 12 | | T | URC_SQ_HDINP1 | 12 | | T |
| B24 | URC_SQ_VCCAUX33 | 12 | | | URC_SQ_VCCAUX33 | 12 | | |
| E24 | URC_SQ_REFCLKN | 12 | | C | URC_SQ_REFCLKN | 12 | | C |
| D24 | URC_SQ_REFCLKP | 12 | | T | URC_SQ_REFCLKP | 12 | | T |
| C24 | URC_SQ_VCCP | 12 | | | URC_SQ_VCCP | 12 | | |
| A20 | URC_SQ_HDINP2 | 12 | | T | URC_SQ_HDINP2 | 12 | | T |
| C20 | URC_SQ_VCCIB2 | 12 | | | URC_SQ_VCCIB2 | 12 | | |
| B20 | URC_SQ_HDINN2 | 12 | | C | URC_SQ_HDINN2 | 12 | | C |
| C19 | URC_SQ_VCCRX2 | 12 | | | URC_SQ_VCCRX2 | 12 | | |
| A23 | URC_SQ_HDOUTP2 | 12 | | T | URC_SQ_HDOUTP2 | 12 | | T |
| C23 | URC_SQ_VCCOB2 | 12 | | | URC_SQ_VCCOB2 | 12 | | |
| B23 | URC_SQ_HDOUTN2 | 12 | | C | URC_SQ_HDOUTN2 | 12 | | C |
| C22 | URC_SQ_VCCTX2 | 12 | | | URC_SQ_VCCTX2 | 12 | | |
| B22 | URC_SQ_HDOUTN3 | 12 | | C | URC_SQ_HDOUTN3 | 12 | | C |

# 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 |
| K13 | VCCIO0 | 0 | | | VCCIO0 | 0 | | |
| D17 | VCCIO1 | 1 | | | VCCIO1 | 1 | | |
| E22 | VCCIO1 | 1 | | | VCCIO1 | 1 | | |
| E25 | VCCIO1 | 1 | | | VCCIO1 | 1 | | |
| F19 | VCCIO1 | 1 | | | VCCIO1 | 1 | | |
| K18 | VCCIO1 | 1 | | | VCCIO1 | 1 | | |
| K19 | VCCIO1 | 1 | | | VCCIO1 | 1 | | |
| F28 | VCCIO2 | 2 | | | VCCIO2 | 2 | | |
| J25 | VCCIO2 | 2 | | | VCCIO2 | 2 | | |
| K28 | VCCIO2 | 2 | | | VCCIO2 | 2 | | |
| M21 | VCCIO2 | 2 | | | VCCIO2 | 2 | | |
| M24 | VCCIO2 | 2 | | | VCCIO2 | 2 | | |
| N21 | VCCIO2 | 2 | | | VCCIO2 | 2 | | |
| N28 | VCCIO2 | 2 | | | VCCIO2 | 2 | | |
| P21 | VCCIO2 | 2 | | | VCCIO2 | 2 | | |
| R25 | VCCIO2 | 2 | | | VCCIO2 | 2 | | |
| AA28 | VCCIO3 | 3 | | | VCCIO3 | 3 | | |
| AB25 | VCCIO3 | 3 | | | VCCIO3 | 3 | | |
| AE28 | VCCIO3 | 3 | | | VCCIO3 | 3 | | |
| T25 | VCCIO3 | 3 | | | VCCIO3 | 3 | | |
| U21 | VCCIO3 | 3 | | | VCCIO3 | 3 | | |
| V21 | VCCIO3 | 3 | | | VCCIO3 | 3 | | |
| V28 | VCCIO3 | 3 | | | VCCIO3 | 3 | | |
| W21 | VCCIO3 | 3 | | | VCCIO3 | 3 | | |
| W24 | VCCIO3 | 3 | | | VCCIO3 | 3 | | |
| AA18 | VCCIO4 | 4 | | | VCCIO4 | 4 | | |
| AA19 | VCCIO4 | 4 | | | VCCIO4 | 4 | | |
| AE19 | VCCIO4 | 4 | | | VCCIO4 | 4 | | |
| AF22 | VCCIO4 | 4 | | | VCCIO4 | 4 | | |
| AG17 | VCCIO4 | 4 | | | VCCIO4 | 4 | | |
| AG25 | VCCIO4 | 4 | | | VCCIO4 | 4 | | |
| AA12 | VCCIO5 | 5 | | | VCCIO5 | 5 | | |
| AA13 | VCCIO5 | 5 | | | VCCIO5 | 5 | | |
| AE12 | VCCIO5 | 5 | | | VCCIO5 | 5 | | |
| AF9 | VCCIO5 | 5 | | | VCCIO5 | 5 | | |
| AG14 | VCCIO5 | 5 | | | VCCIO5 | 5 | | |
| AG6 | VCCIO5 | 5 | | | VCCIO5 | 5 | | |
| AA3 | VCCIO6 | 6 | | | VCCIO6 | 6 | | |
| AB6 | VCCIO6 | 6 | | | VCCIO6 | 6 | | |
| AE3 | VCCIO6 | 6 | | | VCCIO6 | 6 | | |
| T6 | VCCIO6 | 6 | | | VCCIO6 | 6 | | |
| U10 | VCCIO6 | 6 | | | VCCIO6 | 6 | | |
| V10 | VCCIO6 | 6 | | | VCCIO6 | 6 | | |
| V3 | VCCIO6 | 6 | | | VCCIO6 | 6 | | |
| W10 | VCCIO6 | 6 | | | VCCIO6 | 6 | | |
| W7 | VCCIO6 | 6 | | | VCCIO6 | 6 | | |
| F3 | VCCIO7 | 7 | | | VCCIO7 | 7 | | |
| J6 | VCCIO7 | 7 | | | VCCIO7 | 7 | | |

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

| LFE2M100E/SE | | | | |
|---|---|---|---|---|
| **Ball Number** | **Ball/Pad Function** | **Bank** | **Dual Function** | **Differential** |
| AJ2 | LLC_SQ_HDINN3 | 14 | | C |
| AH4 | LLC_SQ_VCCTX3 | 14 | | |
| AK5 | LLC_SQ_HDOUTP3 | 14 | | T |
| AK4 | LLC_SQ_VCCOB3 | 14 | | |
| AJ5 | LLC_SQ_HDOUTN3 | 14 | | C |
| AH5 | LLC_SQ_VCCTX2 | 14 | | |
| AJ6 | LLC_SQ_HDOUTN2 | 14 | | C |
| AH6 | LLC_SQ_VCCOB2 | 14 | | |
| AK6 | LLC_SQ_HDOUTP2 | 14 | | T |
| AH2 | LLC_SQ_VCCRX2 | 14 | | |
| AJ3 | LLC_SQ_HDINN2 | 14 | | C |
| AH3 | LLC_SQ_VCCIB2 | 14 | | |
| AK3 | LLC_SQ_HDINP2 | 14 | | T |
| AH7 | LLC_SQ_VCCP | 14 | | |
| AG7 | LLC_SQ_REFCLKP | 14 | | T |
| AF7 | LLC_SQ_REFCLKN | 14 | | C |
| AJ7 | LLC_SQ_VCCAUX33 | 14 | | |
| AK11 | LLC_SQ_HDINP1 | 14 | | T |
| AH11 | LLC_SQ_VCCIB1 | 14 | | |
| AJ11 | LLC_SQ_HDINN1 | 14 | | C |
| AH12 | LLC_SQ_VCCRX1 | 14 | | |
| AK8 | LLC_SQ_HDOUTP1 | 14 | | T |
| AH8 | LLC_SQ_VCCOB1 | 14 | | |
| AJ8 | LLC_SQ_HDOUTN1 | 14 | | C |
| AH9 | LLC_SQ_VCCTX1 | 14 | | |
| AJ9 | LLC_SQ_HDOUTN0 | 14 | | C |
| AK10 | LLC_SQ_VCCOB0 | 14 | | |
| AK9 | LLC_SQ_HDOUTP0 | 14 | | T |
| AH10 | LLC_SQ_VCCTX0 | 14 | | |
| AJ12 | LLC_SQ_HDINN0 | 14 | | C |
| AJ13 | LLC_SQ_VCCIB0 | 14 | | |
| AK12 | LLC_SQ_HDINP0 | 14 | | T |
| AH13 | LLC_SQ_VCCRX0 | 14 | | |
| AF10 | PB30A | 5 | BDQ33 | T |
| AE8 | PB30B | 5 | BDQ33 | C |
| AE11 | PB31A | 5 | BDQ33 | T |
| VCCIO | VCCIO5 | 5 | | |
| AD9 | PB31B | 5 | BDQ33 | C |
| AE10 | PB32A | 5 | BDQ33 | T |
| AD10 | PB32B | 5 | BDQ33 | C |
| AE13 | PB33A | 5 | BDQS33 | T |
| GNDIO | GNDIO5 | - | | |
| AC12 | PB33B | 5 | BDQ33 | C |

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

| LFE2M100E/SE | | | | |
|---|---|---|---|---|
| **Ball Number** | **Ball/Pad Function** | **Bank** | **Dual Function** | **Differential** |
| K26 | PR26A | 2 | RDQ23 | T |
| K23 | PR25B | 2 | RDQ23 | C (LVDS)* |
| K22 | PR25A | 2 | RDQ23 | T (LVDS)* |
| J22 | PR24B | 2 | RDQ23 | C |
| VCCIO | VCCIO2 | 2 | | |
| J23 | PR24A | 2 | RDQ23 | T |
| GNDIO | GNDIO2 | - | | |
| VCCIO | VCCIO2 | 2 | | |
| J26 | PR17B | 2 | RDQ15 | C (LVDS)* |
| H26 | PR17A | 2 | RDQ15 | T (LVDS)* |
| H27 | PR16B | 2 | RDQ15 | C |
| G26 | PR16A | 2 | RDQ15 | T |
| VCCIO | VCCIO2 | 2 | | |
| H23 | PR15B | 2 | RDQ15 | C (LVDS)* |
| H24 | PR15A | 2 | RDQS15 | T (LVDS)* |
| D28 | PR14B | 2 | RDQ15 | C |
| GNDIO | GNDIO2 | - | | |
| E28 | PR14A | 2 | RDQ15 | T |
| G24 | PR13B | 2 | RDQ15 | C (LVDS)* |
| H25 | PR13A | 2 | RDQ15 | T (LVDS)* |
| D27 | PR12B | 2 | RUM0_SPLLC_FB_A/RDQ15 | C |
| VCCIO | VCCIO2 | 2 | | |
| E27 | PR12A | 2 | RUM0_SPLLT_FB_A/RDQ15 | T |
| F26 | PR11B | 2 | RUM0_SPLLC_IN_A/RDQ15 | C (LVDS)* |
| G25 | PR11A | 2 | RUM0_SPLLT_IN_A/RDQ15 | T (LVDS)* |
| F24 | PR9B | 2 | VREF2_2 | C |
| - | - | - | | |
| GNDIO | GNDIO2 | - | | |
| F25 | PR9A | 2 | VREF1_2 | T |
| VCCIO | VCCIO2 | 2 | | |
| G23 | XRES | 1 | | |
| C30 | URC_SQ_VCCRX0 | 12 | | |
| A29 | URC_SQ_HDINP0 | 12 | | T |
| B30 | URC_SQ_VCCIB0 | 12 | | |
| B29 | URC_SQ_HDINN0 | 12 | | C |
| C27 | URC_SQ_VCCTX0 | 12 | | |
| A26 | URC_SQ_HDOUTP0 | 12 | | T |
| A27 | URC_SQ_VCCOB0 | 12 | | |
| B26 | URC_SQ_HDOUTN0 | 12 | | C |
| C26 | URC_SQ_VCCTX1 | 12 | | |
| B25 | URC_SQ_HDOUTN1 | 12 | | C |
| C25 | URC_SQ_VCCOB1 | 12 | | |
| A25 | URC_SQ_HDOUTP1 | 12 | | T |

# 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)* |

| Part Number | I/Os | Voltage | Grade | Package | Pins | Temp. | LUTs (K) |
|---|---|---|---|---|---|---|---|
| LFE2-35SE-5F484C | 331 | 1.2V | -5 | fpBGA | 484 | Com | 35 |
| LFE2-35SE-6F484C | 331 | 1.2V | -6 | fpBGA | 484 | Com | 35 |
| LFE2-35SE-7F484C | 331 | 1.2V | -7 | fpBGA | 484 | Com | 35 |
| LFE2-35SE-5F672C | 450 | 1.2V | -5 | fpBGA | 672 | Com | 35 |
| LFE2-35SE-6F672C | 450 | 1.2V | -6 | fpBGA | 672 | Com | 35 |
| LFE2-35SE-7F672C | 450 | 1.2V | -7 | fpBGA | 672 | Com | 35 |

| Part Number | I/Os | Voltage | Grade | Package | Pins | Temp. | LUTs (K) |
|---|---|---|---|---|---|---|---|
| LFE2-50SE-5F484C | 339 | 1.2V | -5 | fpBGA | 484 | Com | 50 |
| LFE2-50SE-6F484C | 339 | 1.2V | -6 | fpBGA | 484 | Com | 50 |
| LFE2-50SE-7F484C | 339 | 1.2V | -7 | fpBGA | 484 | Com | 50 |
| LFE2-50SE-5F672C | 500 | 1.2V | -5 | fpBGA | 672 | Com | 50 |
| LFE2-50SE-6F672C | 500 | 1.2V | -6 | fpBGA | 672 | Com | 50 |
| LFE2-50SE-7F672C | 500 | 1.2V | -7 | fpBGA | 672 | Com | 50 |

| Part Number | I/Os | Voltage | Grade | Package | Pins | Temp. | LUTs (K) |
|---|---|---|---|---|---|---|---|
| LFE2-70SE-5F672C | 500 | 1.2V | -5 | fpBGA | 672 | Com | 70 |
| LFE2-70SE-6F672C | 500 | 1.2V | -6 | fpBGA | 672 | Com | 70 |
| LFE2-70SE-7F672C | 500 | 1.2V | -7 | fpBGA | 672 | Com | 70 |
| LFE2-70SE-5F900C | 583 | 1.2V | -5 | fpBGA | 900 | Com | 70 |
| LFE2-70SE-6F900C | 583 | 1.2V | -6 | fpBGA | 900 | Com | 70 |
| LFE2-70SE-7F900C | 583 | 1.2V | -7 | fpBGA | 900 | Com | 70 |

**Industrial**

| Part Number | I/Os | Voltage | Grade | Package | Pins | Temp. | LUTs (K) |
|---|---|---|---|---|---|---|---|
| LFE2-6SE-5T144I | 90 | 1.2V | -5 | TQFP | 144 | Ind | 6 |
| LFE2-6SE-6T144I | 90 | 1.2V | -6 | TQFP | 144 | Ind | 6 |
| LFE2-6SE-5F256I | 190 | 1.2V | -5 | fpBGA | 256 | Ind | 6 |
| LFE2-6SE-6F256I | 190 | 1.2V | -6 | fpBGA | 256 | Ind | 6 |

| Part Number | I/Os | Voltage | Grade | Package | Pins | Temp. | LUTs (K) |
|---|---|---|---|---|---|---|---|
| LFE2-12SE-5T144I | 93 | 1.2V | -5 | TQFP | 144 | Ind | 12 |
| LFE2-12SE-6T144I | 93 | 1.2V | -6 | TQFP | 144 | Ind | 12 |
| LFE2-12SE-5Q208I | 131 | 1.2V | -5 | PQFP | 208 | Ind | 12 |
| LFE2-12SE-6Q208I | 131 | 1.2V | -6 | PQFP | 208 | Ind | 12 |
| LFE2-12SE-5F256I | 193 | 1.2V | -5 | fpBGA | 256 | Ind | 12 |
| LFE2-12SE-6F256I | 193 | 1.2V | -6 | fpBGA | 256 | Ind | 12 |
| LFE2-12SE-5F484I | 297 | 1.2V | -5 | fpBGA | 484 | Ind | 12 |
| LFE2-12SE-6F484I | 297 | 1.2V | -6 | fpBGA | 484 | Ind | 12 |