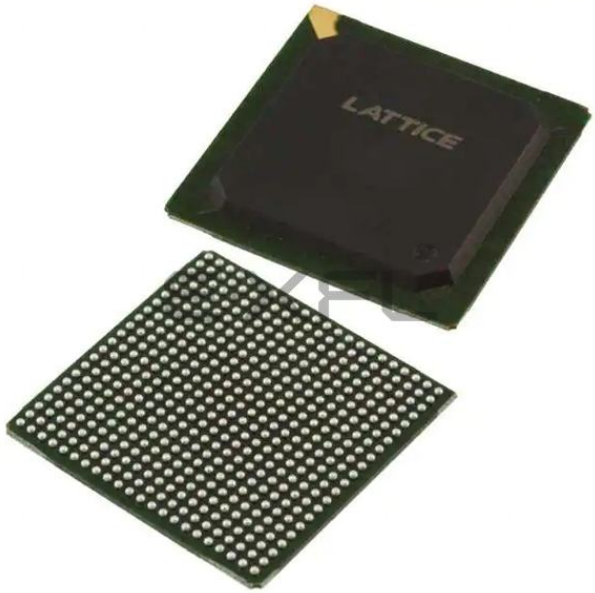
# Lattice Semiconductor Corporation - LFEC6E-3FN484I Datasheet

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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 | - |
| Number of Logic Elements/Cells | 6100 |
| Total RAM Bits | 94208 |
| Number of I/O | 224 |
| Number of Gates | - |
| Voltage - Supply | 1.14V ~ 1.26V |
| Mounting Type | Surface Mount |
| Operating Temperature | -40°C ~ 100°C (TJ) |
| Package / Case | 484-BBGA |
| Supplier Device Package | 484-FPBGA (23x23) |
| Purchase URL | https://www.e-xfl.com/product-detail/lattice-semiconductor/lfec6e-3fn484i |

*Table 2-7. Maximum Number of Elements in a Block*

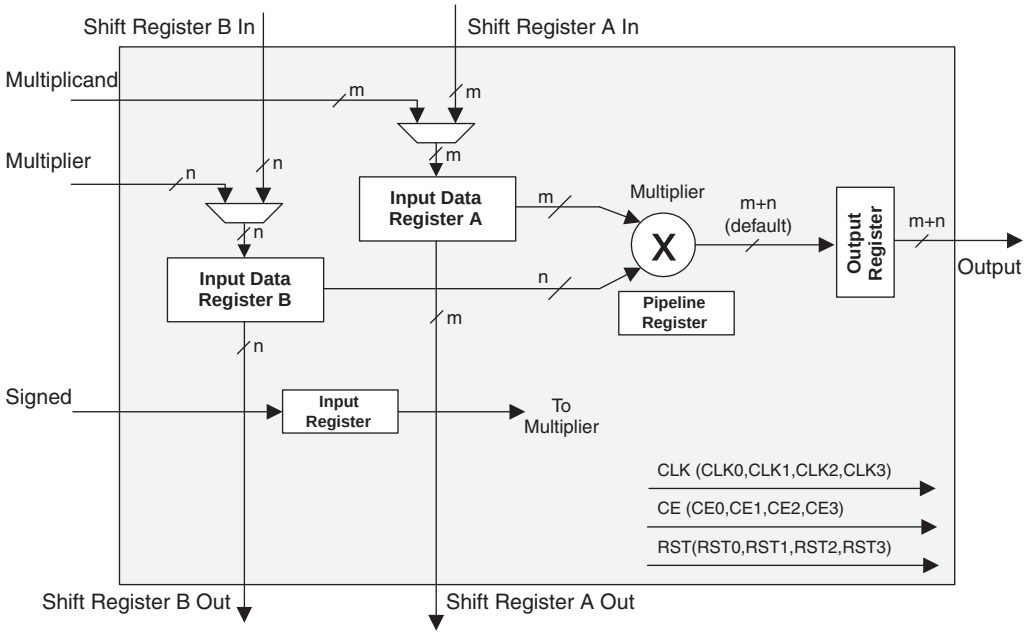
| Width of Multiply | x9 | x18 | x36 |
|---|---|---|---|
| MULT | 8 | 4 | 1 |
| MAC | 2 | 2 | — |
| MULTADD | 4 | 2 | — |
| MULTADDSUM | 2 | 1 | — |

Some options are available in four elements. The input register in all the elements can be directly loaded or can be loaded as shift registers from previous operand registers. In addition by selecting “dynamic operation” in the ‘Signed/Unsigned’ options the operands can be switched between signed and unsigned on every cycle. Similarly by selecting ‘Dynamic operation’ in the ‘Add/Sub’ option the Accumulator can be switched between addition and subtraction on every cycle.

## MULT sysDSP Element

This multiplier element implements a multiply with no addition or accumulator nodes. The two operands, A and B, are multiplied and the result is available at the output. The user can enable the input/output and pipeline registers. Figure 2-19 shows the MULT sysDSP element.

*Figure 2-19. MULT sysDSP Element*




## MAC sysDSP Element

In this case the two operands, A and B, are multiplied and the result is added with the previous accumulated value. This accumulated value is available at the output. The user can enable the input and pipeline registers but the output register is always enabled. The output register is used to store the accumulated value. A registered overflow signal is also available. The overflow conditions are provided later in this document. Figure 2-20 shows the MAC sysDSP element.

# LatticeECP/EC sysCONFIG Port Timing Specifications (Continued)

**Over Recommended Operating Conditions**

| Parameter | Description | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|
| $t_{SOE}$ | CSSPIN Active Setup Time | 300 | | — | ns |
| $t_{CSPID}$ | CSSPIN Low to First Clock Edge Setup Time | 300+3cyc | | 600+6cyc | ns |
| $f_{MAXSPI}$ | Max Frequency for SPI | — | | 25 | MHz |
| $t_{SUSPI}$ | SOSPI Data Setup Time Before CCLK | 7 | | — | ns |
| $t_{HSPI}$ | SOSPI Data Hold Time After CCLK | 1 | | — | ns |

Timing v.G 0.30

## Master Clock

| Clock Mode | Min. | Typ. | Max. | Units |
|---|---|---|---|---|
| 2.5MHz | 1.75 | 2.5 | 3.25 | MHz |
| 5 MHz | 3.78 | 5.4 | 7.02 | MHz |
| 10 MHz | 7 | 10 | 13 | MHz |
| 15 MHz | 10.5 | 15 | 19.5 | MHz |
| 20 MHz | 14 | 20 | 26 | MHz |
| 25 MHz | 18.2 | 26 | 33.8 | MHz |
| 30 MHz | 21 | 30 | 39 | MHz |
| 35 MHz | 23.8 | 34 | 44.2 | MHz |
| 40 MHz | 28.7 | 41 | 53.3 | MHz |
| 45 MHz | 31.5 | 45 | 58.5 | MHz |
| 50 MHz | 35.7 | 51 | 66.3 | MHz |
| 55 MHz | 38.5 | 55 | 71.5 | MHz |
| 60 MHz | 42 | 60 | 78 | MHz |
| Duty Cycle | 40 | — | 60 | % |

Timing v.G 0.30

*Figure 3-14. sysCONFIG Master Serial Port Timing*

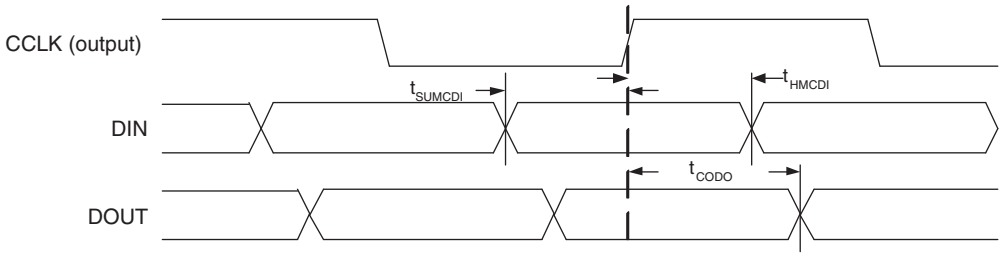



*Figure 3-15. sysCONFIG Slave Serial Port Timing*

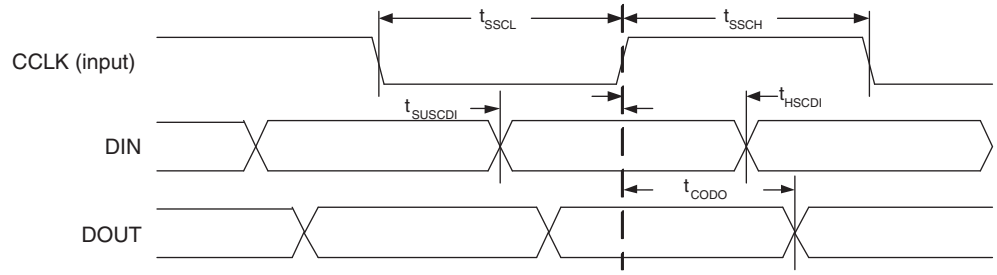
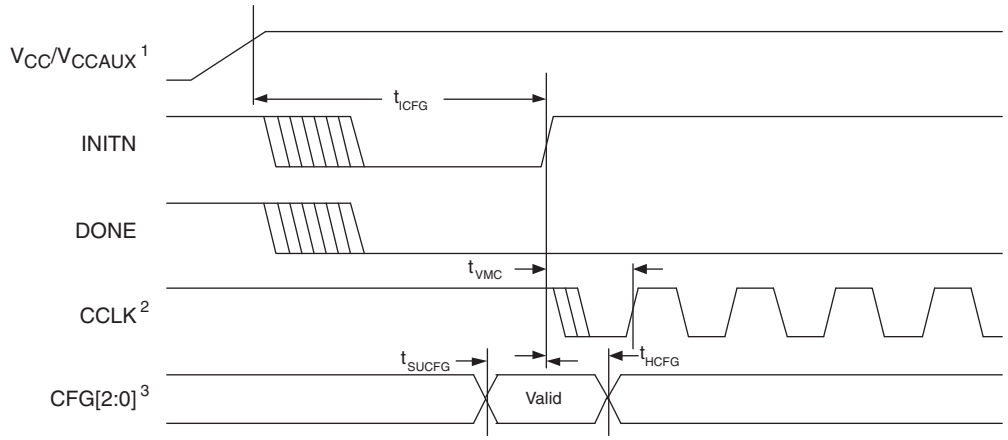



*Figure 3-16. Power-On-Reset (POR) Timing*




1. Time taken from $V_{CC}$ or $V_{CCAUX}$, whichever is the last to reach its $V_{MIN}$.
2. Device is in a Master Mode.
3. The CFG pins are normally static (hard wired).

## Pin Information Summary (Cont.)

| Pin Type | | LFECP/EC15 | | LFECP20/EC20 | | LFECP/EC33 | |
|---|---|---|---|---|---|---|---|
| | | 256-fpBGA | 484-fpBGA | 484-fpBGA | 672-fpBGA | 484-fpBGA | 672-fpBGA |
| Single Ended User I/O | | 195 | 352 | 360 | 400 | 360 | 496 |
| Differential Pair User I/O | | 97 | 176 | 180 | 200 | 180 | 248 |
| Configuration | Dedicated | 13 | 13 | 13 | 13 | 13 | 13 |
| | Muxed | 56 | 56 | 56 | 56 | 56 | 56 |
| TAP | | 5 | 5 | 5 | 5 | 5 | 5 |
| Dedicated (total without supplies) | | 208 | 373 | 373 | 509 | 373 | 509 |
| $V_{CC}$ | | 10 | 20 | 20 | 32 | 16 | 28 |
| $V_{CCAUX}$ | | 2 | 12 | 12 | 20 | 12 | 20 |
| $V_{CCPLL}$ | | 0 | 0 | 0 | 0 | 4 | 4 |
| $V_{CCIO}$ | Bank0 | 2 | 4 | 4 | 6 | 4 | 6 |
| | Bank1 | 2 | 4 | 4 | 6 | 4 | 6 |
| | Bank2 | 2 | 4 | 4 | 6 | 4 | 6 |
| | Bank3 | 2 | 4 | 4 | 6 | 4 | 6 |
| | Bank4 | 2 | 4 | 4 | 6 | 4 | 6 |
| | Bank5 | 2 | 4 | 4 | 6 | 4 | 6 |
| | Bank6 | 2 | 4 | 4 | 6 | 4 | 6 |
| | Bank7 | 2 | 4 | 4 | 6 | 4 | 6 |
| GND, GND0-GND7 | | 20 | 44 | 44 | 63 | 44 | 63 |
| NC | | 0 | 11 | 3 | 96 | 3 | 0 |
| Single Ended/ Differential I/O Pair per Bank | Bank0 | 32/16 | 48/24 | 48/24 | 64/32 | 48/24 | 64/32 |
| | Bank1 | 18/9 | 48/24 | 48/24 | 48/24 | 48/24 | 64/32 |
| | Bank2 | 16/8 | 40/20 | 40/20 | 40/20 | 40/20 | 56/28 |
| | Bank3 | 32/16 | 40/20 | 44/22 | 48/24 | 44/22 | 64/32 |
| | Bank4 | 17/8 | 48/24 | 48/24 | 48/24 | 48/24 | 64/32 |
| | Bank5 | 32/16 | 48/24 | 48/24 | 64/32 | 48/24 | 64/32 |
| | Bank6 | 32/16 | 40/20 | 44/22 | 48/24 | 44/22 | 64/32 |
| | Bank7 | 16/8 | 40/20 | 40/20 | 40/20 | 40/20 | 56/28 |
| $V_{CCJ}$ | | 1 | 1 | 1 | 1 | 1 | 1 |

Note: During configuration the user-programmable I/Os are tri-stated with an internal pull-up resistor enabled. If any pin is not used (or not bonded to a package pin), it is also tri-stated with an internal pull-up resistor enabled after configuration.

## Power Supply and NC Connections (Cont.)

| Signals | 484 fpBGA | 672 fpBGA |
|---|---|---|
| VCC | J16, J7, K16, K17, K6, K7, L17, L6, M17, M6, N16, N17, N6, N7, P16, P7, J6, J17, P6, P17 | H10, H11, H16, H17, H18, H19, H8, H9, J18, J9, K8, L19, M19, N7, R20, R7, T19, V18, V8, V9, W10, W11, W16, W17, W18, W19, W8, W9, K19, L8, U19, U8 |
| VCCIO0 | G11, H10, H11, H9 | H12, H13, J10, J11, J12, J13 |
| VCCIO1 | G12, H12, H13, H14 | H14, H15, J14, J15, J16, J17 |
| VCCIO2 | J15, K15, L15, L16 | K17, K18, L18, M18, N18, N19 |
| VCCIO3 | M15, M16, N15, P15 | P18, P19, R18, R19, T18, U18 |
| VCCIO4 | R12, R13, R14, T12 | V14, V15, V16, V17, W14, W15 |
| VCCIO5 | R10, R11, R9, T11 | V10, V11, V12, V13, W12, W13 |
| VCCIO6 | M7, M8, N8, P8 | P8, P9, R8, R9, T9, U9 |
| VCCIO7 | J8, K8, L7, L8 | K9, L9, M8, M9, N8, N9 |
| VCCJ | U2 | U6 |
| VCCAUX | G15, G16, G7, G8, H16, H7, R16, R7, T15, T16, T7, T8 | G13, H20, H7, J19, J8, K7, L20, M20, M7, N20, P20, P7, T20, T7, T8, V19, V7, W20, Y13, Y7 |
| VCCPLL | **ECP/EC20:** None<br>**ECP/EC33:** J6, J17, P6, P17 | **ECP/EC20**: None<br>**ECP/EC33**: K19, L8, U19, U8 |
| GND, GND0-GND7 | A1, A22, AB1, AB22, H15, H8, J10, J11, J12, J13, J14, J9, K10, K11, K12, K13, K14, K9, L10, L11, L12, L13, L14, L9, M10, M11, M12, M13, M14, M9, N10, N11, N12, N13, N14, N9, P10, P11, P12, P13, P14, P9, R15, R8 | K10, K11, K12, K13, K14, K15, K16, L10, L11, L12, L13, L14, L15, L16, L17, M10, M11, M12, M13, M14, M15, M16, M17, N10, N11, N12, N13, N14, N15, N16, N17, P10, P11, P12, P13, P14, P15, P16, P17, R10, R11, R12, R13, R14, R15, R16, R17, T10, T11, T12, T13, T14, T15, T16, T17, U10, U11, U12, U13, U14, U15, U16, U17 |
| NC | **ECP/EC6:** C3, B2, E5, F5, D3, C2, F4, G4, E3, D2, B1, C1, F3, E2, G5, H6, G3, H4, J5, H5, F2, F1, E1, D1, R6, P5, P3, P4, R1, R2, R5, R4, T1, T2, R3, T3, V7, T6, V8, U7, W5, U6, AA3, AB3, Y6, V6, AA5, W6, Y5, Y4, AA4, AB4, W16, U15, V16, U16, Y17, V17, AB20, AA19, Y16, W17, AA20, Y19, Y18, W18, T17, U17, T18, R17, R19, R18, U22, T22, R21, R22, P20, N20, P19, P18, E21, D22, G21, G20, J18, H19, J19, H20, H17, H18, D21, C22, G19, G18, F20, F19, E20, D20, C21, C20, F18, E18, B22, B21, G17, F17, D18, C18, C19, B20, D17, C16, B19, A20, E17, C17, F16, E16, F15, D16, A4, B4, C4, C5, D6, B5, E6, C6, A3, B3, F6, D5, F7, E8, G6, E7, A2, AB2, A21<br>**ECP/EC10:** G5, H6, G3, H4, J5, H5, F2, F1, R6, P5, P3, P4, R2, R1, R5, R4, T1, T2, R3, T3, W16, U15, V16, U16, Y17, V17, AB20, AA19, Y16, W17, AA20, Y19, Y18, W18, T17, U17, T18, R17, R19, R18, U22, T22, R21, R22, P20, N20, P19, P18, G21, G20, J18, H19, J19, H20, H17, H18, G17, F17, D18, C18, C19, B20, D17, C16, B19, A20, E17, C17, F16, E16, F15, D16, A2, AB2, A21<br>**ECP/EC15:** T1, T2, R3, T3, T18, R17, R19, R18, A2, AB2, A21<br>**ECP/EC20:** A2, AB2, A21<br>**ECP/EC33:** A2, AB2, A21 | **ECP/EC20:** E5, D5, F4, F5, C3, D3, C2, B2, H6, J7, G5, H5, H3, J3, H2, J2, AA2, AA3, W5, Y5, Y6, W7, AA4, AB3, AC2, AC3, AA5, AB5, AD3, AD2, AE1, AD1, AD19, AD20, AC19, AB19, AD21, AC20, AF25, AE25, AB21, AB20, AE24, AD23, AD22, AC21, AC22, AB22, AD24, AD25, AE26, AD26, Y20, Y19, AA23, AA22, AB23, AB24, Y21, AA21, Y23, Y22, AA24, Y24, J21, J22, J23, H22, G26, F26, E26, E25, F24, F23, E24, D24, E22, F22, E21, D22, G20, F20, D21, C21, C23, C22, B23, C24, D20, E19, B25, B24, B26, A25, C20, C19<br>**ECP/EC33:** None |

## LFEC1, LFEC3 Logic Signal Connections: 100 TQFP (Cont.)

| Pin Number | LFEC1 | | | | LFEC3 | | | |
|---|---|---|---|---|---|---|---|---|
| | Pin Function | Bank | LVDS | Dual Function | Pin Function | Bank | LVDS | Dual Function |
| 41 | PB11A | 4 | T | VREF1_4 | PB19A | 4 | T | VREF1_4 |
| 42 | PB11B | 4 | C | CSN | PB19B | 4 | C | CSN |
| 43 | PB12B | 4 | | D0/SPID7 | PB20B | 4 | | D0/SPID7 |
| 44 | PB13A | 4 | T | D2/SPID5 | PB21A | 4 | T | D2/SPID5 |
| 45 | PB13B | 4 | C | D1/SPID6 | PB21B | 4 | C | D1/SPID6 |
| 46 | PB14A | 4 | T | BDQS14 | PB22A | 4 | T | BDQS22 |
| 47 | PB14B | 4 | C | D3/SPID4 | PB22B | 4 | C | D3/SPID4 |
| 48 | PB15B | 4 | | D4/SPID3 | PB23B | 4 | | D4/SPID3 |
| 49 | PB16B | 4 | | D5/SPID2 | PB24B | 4 | | D5/SPID2 |
| 50 | PB17B | 4 | | D6/SPID1 | PB25B | 4 | | D6/SPID1 |
| 51* | GND3 GND4 | - | | | GND3 GND4 | - | | |
| 52 | PR10B | 3 | C | RLM0_PLLC_FB_A | PR14B | 3 | C | RLM0_PLLC_FB_A |
| 53 | PR10A | 3 | T | RLM0_PLLT_FB_A | PR14A | 3 | T | RLM0_PLLT_FB_A |
| 54 | PR9B | 3 | C | RLM0_PLLC_IN_A | PR13B | 3 | C | RLM0_PLLC_IN_A |
| 55 | PR9A | 3 | T | RLM0_PLLT_IN_A | PR13A | 3 | T | RLM0_PLLT_IN_A |
| 56 | VCCIO3 | 3 | | | VCCIO3 | 3 | | |
| 57 | PR8B | 3 | C | DI/CSSPIN | PR12B | 3 | C | DI/CSSPIN |
| 58 | PR8A | 3 | T | DOUT/CSON | PR12A | 3 | T | DOUT/CSON |
| 59 | PR7B | 3 | C | BUSY/SISPI | PR11B | 3 | C | BUSY/SISPI |
| 60 | PR7A | 3 | T | D7/SPID0 | PR11A | 3 | T | D7/SPID0 |
| 61 | CFG2 | 3 | | | CFG2 | 3 | | |
| 62 | CFG1 | 3 | | | CFG1 | 3 | | |
| 63 | CFG0 | 3 | | | CFG0 | 3 | | |
| 64 | VCC | - | | | VCC | - | | |
| 65 | PROGRAMN | 3 | | | PROGRAMN | 3 | | |
| 66 | CCLK | 3 | | | CCLK | 3 | | |
| 67 | INITN | 3 | | | INITN | 3 | | |
| 68 | GND | - | | | GND | - | | |
| 69 | DONE | 3 | | | DONE | 3 | | |
| 70 | PR5B | 2 | C | PCLKC2_0 | PR9B | 2 | C | PCLKC2_0 |
| 71 | PR5A | 2 | T | PCLKT2_0 | PR9A | 2 | T | PCLKT2_0 |
| 72 | PR2B | 2 | | VREF1_2 | PR2B | 2 | | VREF1_2 |
| 73 | VCCIO2 | 2 | | | VCCIO2 | 2 | | |
| 74 | GND2 | 2 | | | GND2 | 2 | | |
| 75 | PT17B | 1 | C | | PT25B | 1 | C | |
| 76 | PT17A | 1 | T | | PT25A | 1 | T | |
| 77 | PT14B | 1 | C | | PT22B | 1 | C | |
| 78 | PT14A | 1 | T | TDQS14 | PT22A | 1 | T | TDQS22 |
| 79 | PT13A | 1 | | | PT21A | 1 | | |
| 80 | PT12B | 1 | C | | PT20B | 1 | C | |
| 81 | PT12A | 1 | T | | PT20A | 1 | T | |

## LFEC1, LFEC3 Logic Signal Connections: 208 PQFP (Cont.)

| Pin Number | LFEC1 | | | | LFEC3 | | | |
|---|---|---|---|---|---|---|---|---|
| | Pin Function | Bank | LVDS | Dual Function | Pin Function | Bank | LVDS | Dual Function |
| 85 | VCCIO4 | 4 | | | VCCIO4 | 4 | | |
| 86 | PB10A | 4 | T | WRITEN | PB18A | 4 | T | WRITEN |
| 87 | PB10B | 4 | C | CS1N | PB18B | 4 | C | CS1N |
| 88 | PB11A | 4 | T | VREF1_4 | PB19A | 4 | T | VREF1_4 |
| 89 | PB11B | 4 | C | CSN | PB19B | 4 | C | CSN |
| 90 | PB12A | 4 | T | VREF2_4 | PB20A | 4 | T | VREF2_4 |
| 91 | PB12B | 4 | C | D0/SPID7 | PB20B | 4 | C | D0/SPID7 |
| 92 | PB13A | 4 | T | D2/SPID5 | PB21A | 4 | T | D2/SPID5 |
| 93 | GND4 | 4 | | | GND4 | 4 | | |
| 94 | PB13B | 4 | C | D1/SPID6 | PB21B | 4 | C | D1/SPID6 |
| 95 | PB14A | 4 | T | BDQS14 | PB22A | 4 | T | BDQS22 |
| 96 | PB14B | 4 | C | D3/SPID4 | PB22B | 4 | C | D3/SPID4 |
| 97 | PB15A | 4 | T | | PB23A | 4 | T | |
| 98 | PB15B | 4 | C | D4/SPID3 | PB23B | 4 | C | D4/SPID3 |
| 99 | PB16A | 4 | T | | PB24A | 4 | T | |
| 100 | PB16B | 4 | C | D5/SPID2 | PB24B | 4 | C | D5/SPID2 |
| 101 | PB17A | 4 | T | | PB25A | 4 | T | |
| 102 | PB17B | 4 | C | D6/SPID1 | PB25B | 4 | C | D6/SPID1 |
| 103 | NC | - | | | NC | - | | |
| 104 | VCCIO4 | 4 | | | VCCIO4 | 4 | | |
| 105* | GND3<br>GND4 | - | | | GND3<br>GND4 | - | | |
| 106 | VCCIO3 | 3 | | | VCCIO3 | 3 | | |
| 107 | PR14B | 3 | C | VREF2_3 | PR18B | 3 | C | VREF2_3 |
| 108 | PR14A | 3 | T | VREF1_3 | PR18A | 3 | T | VREF1_3 |
| 109 | PR13B | 3 | C | | PR17B | 3 | C | |
| 110 | PR13A | 3 | T | | PR17A | 3 | T | |
| 111 | PR12B | 3 | C | | PR16B | 3 | C | |
| 112 | PR12A | 3 | T | | PR16A | 3 | T | |
| 113 | PR11B | 3 | C | | PR15B | 3 | C | |
| 114 | PR11A | 3 | T | RDQS11 | PR15A | 3 | T | RDQS15 |
| 115 | PR10B | 3 | C | RLM0_PLLC_FB_A | PR14B | 3 | C | RLM0_PLLC_FB_A |
| 116 | GND3 | 3 | | | GND3 | 3 | | |
| 117 | PR10A | 3 | T | RLM0_PLLT_FB_A | PR14A | 3 | T | RLM0_PLLT_FB_A |
| 118 | PR9B | 3 | C | RLM0_PLLC_IN_A | PR13B | 3 | C | RLM0_PLLC_IN_A |
| 119 | PR9A | 3 | T | RLM0_PLLT_IN_A | PR13A | 3 | T | RLM0_PLLT_IN_A |
| 120 | VCCIO3 | 3 | | | VCCIO3 | 3 | | |
| 121 | PR8B | 3 | C | DI/CSSPIN | PR12B | 3 | C | DI/CSSPIN |
| 122 | PR8A | 3 | T | DOUT/CSON | PR12A | 3 | T | DOUT/CSON |
| 123 | PR7B | 3 | C | BUSY/SISPI | PR11B | 3 | C | BUSY/SISPI |
| 124 | PR7A | 3 | T | D7/SPID0 | PR11A | 3 | T | D7/SPID0 |
| 125 | CFG2 | 3 | | | CFG2 | 3 | | |
| 126 | CFG1 | 3 | | | CFG1 | 3 | | |

## LFEC3 and LFECP/EC6 Logic Signal Connections: 256 fpBGA (Cont.)

| Ball Number | LFEC3 | | | | LFECP6/LFEC6 | | | |
|---|---|---|---|---|---|---|---|---|
| | Ball Function | Bank | LVDS | Dual Function | Ball Function | Bank | LVDS | Dual Function |
| C16 | PR4B | 2 | C | | PR4B | 2 | C | |
| B16 | PR4A | 2 | T | | PR4A | 2 | T | |
| C15 | PR3B | 2 | C | | PR3B | 2 | C | |
| C14 | PR3A | 2 | T | | PR3A | 2 | T | |
| D14 | PR2B | 2 | C | VREF1_2 | PR2B | 2 | C | VREF1_2 |
| D13 | PR2A | 2 | T | VREF2_2 | PR2A | 2 | T | VREF2_2 |
| GND | GND2 | 2 | | | GND2 | 2 | | |
| GND | GND1 | 1 | | | GND1 | 1 | | |
| - | - | - | | | GND1 | 1 | | |
| B13 | NC | - | | | PT26B | 1 | C | |
| C13 | NC | - | | | PT26A | 1 | T | |
| C12 | PT25B | 1 | C | | PT25B | 1 | C | |
| - | - | - | | | GND1 | 1 | | |
| D12 | PT25A | 1 | T | | PT25A | 1 | T | |
| A15 | PT24B | 1 | C | | PT24B | 1 | C | |
| B14 | PT24A | 1 | T | | PT24A | 1 | T | |
| D11 | PT23B | 1 | C | | PT23B | 1 | C | |
| C11 | PT23A | 1 | T | | PT23A | 1 | T | |
| E10 | PT22B | 1 | C | | PT22B | 1 | C | |
| E11 | PT22A | 1 | T | TDQS22 | PT22A | 1 | T | TDQS22 |
| A14 | PT21B | 1 | C | | PT21B | 1 | C | |
| GND | GND1 | 1 | | | GND1 | 1 | | |
| A13 | PT21A | 1 | T | | PT21A | 1 | T | |
| D10 | PT20B | 1 | C | | PT20B | 1 | C | |
| C10 | PT20A | 1 | T | | PT20A | 1 | T | |
| A12 | PT19B | 1 | C | VREF2_1 | PT19B | 1 | C | VREF2_1 |
| B12 | PT19A | 1 | T | VREF1_1 | PT19A | 1 | T | VREF1_1 |
| A11 | PT18B | 1 | C | | PT18B | 1 | C | |
| B11 | PT18A | 1 | T | | PT18A | 1 | T | |
| A10 | PT17B | 0 | C | PCLKC0_0 | PT17B | 0 | C | PCLKC0_0 |
| GND | GND0 | 0 | | | GND0 | 0 | | |
| B10 | PT17A | 0 | T | PCLKT0_0 | PT17A | 0 | T | PCLKT0_0 |
| C9 | PT16B | 0 | C | VREF1_0 | PT16B | 0 | C | VREF1_0 |
| B9 | PT16A | 0 | T | VREF2_0 | PT16A | 0 | T | VREF2_0 |
| E9 | PT15B | 0 | C | | PT15B | 0 | C | |
| D9 | PT15A | 0 | T | | PT15A | 0 | T | |
| D8 | PT14B | 0 | C | | PT14B | 0 | C | |
| C8 | PT14A | 0 | T | TDQS14 | PT14A | 0 | T | TDQS14 |
| A9 | PT13B | 0 | C | | PT13B | 0 | C | |
| GND | GND0 | 0 | | | GND0 | 0 | | |
| A8 | PT13A | 0 | T | | PT13A | 0 | T | |
| B8 | PT12B | 0 | C | | PT12B | 0 | C | |
| B7 | PT12A | 0 | T | | PT12A | 0 | T | |

## LFECP/EC10 and LFECP/EC15 Logic Signal Connections: 256 fpBGA (Cont.)

| Ball Number | LFECP10/LFEC10 | | | | LFECP15/LFEC15 | | | |
|---|---|---|---|---|---|---|---|---|
| | Ball Function | Bank | LVDS | Dual Function | Ball Function | Bank | LVDS | Dual Function |
| G9 | GND | - | | | GND | - | | |
| H10 | GND | - | | | GND | - | | |
| H7 | GND | - | | | GND | - | | |
| H8 | GND | - | | | GND | - | | |
| H9 | GND | - | | | GND | - | | |
| J10 | GND | - | | | GND | - | | |
| J7 | GND | - | | | GND | - | | |
| J8 | GND | - | | | GND | - | | |
| J9 | GND | - | | | GND | - | | |
| K10 | GND | - | | | GND | - | | |
| K7 | GND | - | | | GND | - | | |
| K8 | GND | - | | | GND | - | | |
| K9 | GND | - | | | GND | - | | |
| T1 | GND | - | | | GND | - | | |
| T16 | GND | - | | | GND | - | | |
| E12 | VCC | - | | | VCC | - | | |
| E5 | VCC | - | | | VCC | - | | |
| E8 | VCC | - | | | VCC | - | | |
| M12 | VCC | - | | | VCC | - | | |
| M5 | VCC | - | | | VCC | - | | |
| M9 | VCC | - | | | VCC | - | | |
| B15 | VCCAUX | - | | | VCCAUX | - | | |
| R2 | VCCAUX | - | | | VCCAUX | - | | |
| F7 | VCCIO0 | 0 | | | VCCIO0 | 0 | | |
| F8 | VCCIO0 | 0 | | | VCCIO0 | 0 | | |
| F10 | VCCIO1 | 1 | | | VCCIO1 | 1 | | |
| F9 | VCCIO1 | 1 | | | VCCIO1 | 1 | | |
| G11 | VCCIO2 | 2 | | | VCCIO2 | 2 | | |
| H11 | VCCIO2 | 2 | | | VCCIO2 | 2 | | |
| J11 | VCCIO3 | 3 | | | VCCIO3 | 3 | | |
| K11 | VCCIO3 | 3 | | | VCCIO3 | 3 | | |
| L10 | VCCIO4 | 4 | | | VCCIO4 | 4 | | |
| L9 | VCCIO4 | 4 | | | VCCIO4 | 4 | | |
| L7 | VCCIO5 | 5 | | | VCCIO5 | 5 | | |
| L8 | VCCIO5 | 5 | | | VCCIO5 | 5 | | |
| J6 | VCCIO6 | 6 | | | VCCIO6 | 6 | | |
| K6 | VCCIO6 | 6 | | | VCCIO6 | 6 | | |
| G6 | VCCIO7 | 7 | | | VCCIO7 | 7 | | |
| H6 | VCCIO7 | 7 | | | VCCIO7 | 7 | | |
| F6 | VCC | - | | | VCC | - | | |
| F11 | VCC | - | | | VCC | - | | |
| L11 | VCC | - | | | VCC | - | | |
| L6 | VCC | - | | | VCC | - | | |

# LFECP/EC6, LFECP/EC10, LFECP/EC15 Logic Signal Connections: 484 fpBGA (Cont.)

| LFECP6/LFEC6 | | | | | LFECP10/LFEC10 | | | | | LFECP/LFEC15 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ball Number | Ball Function | Bank | LVDS | Dual Function | Ball Number | Ball Function | Bank | LVDS | Dual Function | Ball Number | Ball Function | Bank | LVDS | Dual Function |
| V12 | PB16B | 5 | C | VREF1_5 | V12 | PB24B | 5 | C | VREF1_5 | V12 | PB24B | 5 | C | VREF1_5 |
| AB10 | PB17A | 5 | T | PCLKT5_0 | AB10 | PB25A | 5 | T | PCLKT5_0 | AB10 | PB25A | 5 | T | PCLKT5_0 |
| GND | GND5 | 5 | | | GND | GND5 | 5 | | | GND | GND5 | 5 | | |
| AB11 | PB17B | 5 | C | PCLKC5_0 | AB11 | PB25B | 5 | C | PCLKC5_0 | AB11 | PB25B | 5 | C | PCLKC5_0 |
| Y12 | PB18A | 4 | T | WRITEN | Y12 | PB26A | 4 | T | WRITEN | Y12 | PB26A | 4 | T | WRITEN |
| U11 | PB18B | 4 | C | CS1N | U11 | PB26B | 4 | C | CS1N | U11 | PB26B | 4 | C | CS1N |
| W12 | PB19A | 4 | T | VREF1_4 | W12 | PB27A | 4 | T | VREF1_4 | W12 | PB27A | 4 | T | VREF1_4 |
| U12 | PB19B | 4 | C | CSN | U12 | PB27B | 4 | C | CSN | U12 | PB27B | 4 | C | CSN |
| W13 | PB20A | 4 | T | VREF2_4 | W13 | PB28A | 4 | T | VREF2_4 | W13 | PB28A | 4 | T | VREF2_4 |
| U13 | PB20B | 4 | C | D0/SPID7 | U13 | PB28B | 4 | C | D0/SPID7 | U13 | PB28B | 4 | C | D0/SPID7 |
| AA12 | PB21A | 4 | T | D2/SPID5 | AA12 | PB29A | 4 | T | D2/SPID5 | AA12 | PB29A | 4 | T | D2/SPID5 |
| GND | GND4 | 4 | | | GND | GND4 | 4 | | | GND | GND4 | 4 | | |
| AB12 | PB21B | 4 | C | D1/SPID6 | AB12 | PB29B | 4 | C | D1/SPID6 | AB12 | PB29B | 4 | C | D1/SPID6 |
| T13 | PB22A | 4 | T | BDQS22 | T13 | PB30A | 4 | T | BDQS30 | T13 | PB30A | 4 | T | BDQS30 |
| V13 | PB22B | 4 | C | D3/SPID4 | V13 | PB30B | 4 | C | D3/SPID4 | V13 | PB30B | 4 | C | D3/SPID4 |
| W14 | PB23A | 4 | T | | W14 | PB31A | 4 | T | | W14 | PB31A | 4 | T | |
| U14 | PB23B | 4 | C | D4/SPID3 | U14 | PB31B | 4 | C | D4/SPID3 | U14 | PB31B | 4 | C | D4/SPID3 |
| Y13 | PB24A | 4 | T | | Y13 | PB32A | 4 | T | | Y13 | PB32A | 4 | T | |
| V14 | PB24B | 4 | C | D5/SPID2 | V14 | PB32B | 4 | C | D5/SPID2 | V14 | PB32B | 4 | C | D5/SPID2 |
| AA13 | PB25A | 4 | T | | AA13 | PB33A | 4 | T | | AA13 | PB33A | 4 | T | |
| GND | GND4 | 4 | | | GND | GND4 | 4 | | | GND | GND4 | 4 | | |
| AB13 | PB25B | 4 | C | D6/SPID1 | AB13 | PB33B | 4 | C | D6/SPID1 | AB13 | PB33B | 4 | C | D6/SPID1 |
| AA14 | PB26A | 4 | T | | AA14 | PB34A | 4 | T | | AA14 | PB34A | 4 | T | |
| Y14 | PB26B | 4 | C | | Y14 | PB34B | 4 | C | | Y14 | PB34B | 4 | C | |
| Y15 | PB27A | 4 | T | | Y15 | PB35A | 4 | T | | Y15 | PB35A | 4 | T | |
| W15 | PB27B | 4 | C | | W15 | PB35B | 4 | C | | W15 | PB35B | 4 | C | |
| V15 | PB28A | 4 | T | | V15 | PB36A | 4 | T | | V15 | PB36A | 4 | T | |
| T14 | PB28B | 4 | C | | T14 | PB36B | 4 | C | | T14 | PB36B | 4 | C | |
| AB14 | PB29A | 4 | T | | AB14 | PB37A | 4 | T | | AB14 | PB37A | 4 | T | |
| GND | GND4 | 4 | | | GND | GND4 | 4 | | | GND | GND4 | 4 | | |
| AB15 | PB29B | 4 | C | | AB15 | PB37B | 4 | C | | AB15 | PB37B | 4 | C | |
| AB16 | PB30A | 4 | T | BDQS30 | AB16 | PB38A | 4 | T | BDQS38 | AB16 | PB38A | 4 | T | BDQS38 |
| AA15 | PB30B | 4 | C | | AA15 | PB38B | 4 | C | | AA15 | PB38B | 4 | C | |
| AB17 | PB31A | 4 | T | | AB17 | PB39A | 4 | T | | AB17 | PB39A | 4 | T | |
| AA16 | PB31B | 4 | C | | AA16 | PB39B | 4 | C | | AA16 | PB39B | 4 | C | |
| AB18 | PB32A | 4 | T | | AB18 | PB40A | 4 | T | | AB18 | PB40A | 4 | T | |
| AA17 | PB32B | 4 | C | | AA17 | PB40B | 4 | C | | AA17 | PB40B | 4 | C | |
| AB19 | PB33A | 4 | T | | AB19 | PB41A | 4 | T | | AB19 | PB41A | 4 | T | |
| GND | - | - | | | GND | - | - | | | GND | GND4 | 4 | | |
| AA18 | PB33B | 4 | C | | AA18 | PB41B | 4 | C | | AA18 | PB41B | 4 | C | |
| W16 | NC | - | | | W16 | NC | - | | | W16 | PB42A | 4 | T | |
| U15 | NC | - | | | U15 | NC | - | | | U15 | PB42B | 4 | C | |
| V16 | NC | - | | | V16 | NC | - | | | V16 | PB43A | 4 | T | |
| U16 | NC | - | | | U16 | NC | - | | | U16 | PB43B | 4 | C | |
| Y17 | NC | - | | | Y17 | NC | - | | | Y17 | PB44A | 4 | T | |
| V17 | NC | - | | | V17 | NC | - | | | V17 | PB44B | 4 | C | |
| AB20 | NC | - | | | AB20 | NC | - | | | AB20 | PB45A | 4 | T | |
| GND | - | - | | | GND | - | - | | | GND | GND4 | 4 | | |
| AA19 | NC | - | | | AA19 | NC | - | | | AA19 | PB45B | 4 | C | |
| Y16 | NC | - | | | Y16 | NC | - | | | Y16 | PB46A | 4 | T | BDQS46 |

# LFECP/EC6, LFECP/EC10, LFECP/EC15 Logic Signal Connections: 484 fpBGA (Cont.)

| LFECP6/LFEC6 | | | | | LFECP10/LFEC10 | | | | | LFECP/LFEC15 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ball Number | Ball Function | Bank | LVDS | Dual Function | Ball Number | Ball Function | Bank | LVDS | Dual Function | Ball Number | Ball Function | Bank | LVDS | Dual Function |
| T11 | VCCIO5 | 5 | | | T11 | VCCIO5 | 5 | | | T11 | VCCIO5 | 5 | | |
| M7 | VCCIO6 | 6 | | | M7 | VCCIO6 | 6 | | | M7 | VCCIO6 | 6 | | |
| M8 | VCCIO6 | 6 | | | M8 | VCCIO6 | 6 | | | M8 | VCCIO6 | 6 | | |
| N8 | VCCIO6 | 6 | | | N8 | VCCIO6 | 6 | | | N8 | VCCIO6 | 6 | | |
| P8 | VCCIO6 | 6 | | | P8 | VCCIO6 | 6 | | | P8 | VCCIO6 | 6 | | |
| J8 | VCCIO7 | 7 | | | J8 | VCCIO7 | 7 | | | J8 | VCCIO7 | 7 | | |
| K8 | VCCIO7 | 7 | | | K8 | VCCIO7 | 7 | | | K8 | VCCIO7 | 7 | | |
| L7 | VCCIO7 | 7 | | | L7 | VCCIO7 | 7 | | | L7 | VCCIO7 | 7 | | |
| L8 | VCCIO7 | 7 | | | L8 | VCCIO7 | 7 | | | L8 | VCCIO7 | 7 | | |
| G15 | VCCAUX | - | | | G15 | VCCAUX | - | | | G15 | VCCAUX | - | | |
| G16 | VCCAUX | - | | | G16 | VCCAUX | - | | | G16 | VCCAUX | - | | |
| G7 | VCCAUX | - | | | G7 | VCCAUX | - | | | G7 | VCCAUX | - | | |
| G8 | VCCAUX | - | | | G8 | VCCAUX | - | | | G8 | VCCAUX | - | | |
| H16 | VCCAUX | - | | | H16 | VCCAUX | - | | | H16 | VCCAUX | - | | |
| H7 | VCCAUX | - | | | H7 | VCCAUX | - | | | H7 | VCCAUX | - | | |
| R16 | VCCAUX | - | | | R16 | VCCAUX | - | | | R16 | VCCAUX | - | | |
| R7 | VCCAUX | - | | | R7 | VCCAUX | - | | | R7 | VCCAUX | - | | |
| T15 | VCCAUX | - | | | T15 | VCCAUX | - | | | T15 | VCCAUX | - | | |
| T16 | VCCAUX | - | | | T16 | VCCAUX | - | | | T16 | VCCAUX | - | | |
| T7 | VCCAUX | - | | | T7 | VCCAUX | - | | | T7 | VCCAUX | - | | |
| T8 | VCCAUX | - | | | T8 | VCCAUX | - | | | T8 | VCCAUX | - | | |
| J6 | VCC | - | | | J6 | VCC | - | | | J6 | VCC | - | | |
| J17 | VCC | - | | | J17 | VCC | - | | | J17 | VCC | - | | |
| P6 | VCC | - | | | P6 | VCC | - | | | P6 | VCC | - | | |
| P17 | VCC | - | | | P17 | VCC | - | | | P17 | VCC | - | | |
| A2 | NC | - | | | A2 | NC | - | | | A2 | NC | - | | |
| AB2 | NC | - | | | AB2 | NC | - | | | AB2 | NC | - | | |
| A21 | NC | - | | | A21 | NC | - | | | A21 | NC | - | | |

# LFECP/EC20 and LFECP/EC33 Logic Signal Connections: 484 fpBGA (Cont.)

| LFECP20/LFEC20 | | | | | LFECP/LFEC33 | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Ball Number | Ball Function | Bank | LVDS | Dual Function | Ball Number | Ball Function | Bank | LVDS | Dual Function |
| U9 | PB20B | 5 | C | | U9 | PB20B | 5 | C | |
| Y8 | PB21A | 5 | T | | Y8 | PB21A | 5 | T | |
| GND | GND5 | 5 | | | GND | GND5 | 5 | | |
| Y9 | PB21B | 5 | C | | Y9 | PB21B | 5 | C | |
| V9 | PB22A | 5 | T | BDQS22 | V9 | PB22A | 5 | T | BDQS22 |
| T9 | PB22B | 5 | C | | T9 | PB22B | 5 | C | |
| W10 | PB23A | 5 | T | | W10 | PB23A | 5 | T | |
| U10 | PB23B | 5 | C | | U10 | PB23B | 5 | C | |
| V10 | PB24A | 5 | T | | V10 | PB24A | 5 | T | |
| T10 | PB24B | 5 | C | | T10 | PB24B | 5 | C | |
| AA6 | PB25A | 5 | T | | AA6 | PB25A | 5 | T | |
| GND | GND5 | 5 | | | GND | GND5 | 5 | | |
| AB5 | PB25B | 5 | C | | AB5 | PB25B | 5 | C | |
| AA8 | PB26A | 5 | T | | AA8 | PB26A | 5 | T | |
| AA7 | PB26B | 5 | C | | AA7 | PB26B | 5 | C | |
| AB6 | PB27A | 5 | T | | AB6 | PB27A | 5 | T | |
| AB7 | PB27B | 5 | C | | AB7 | PB27B | 5 | C | |
| Y10 | PB28A | 5 | T | | Y10 | PB28A | 5 | T | |
| W11 | PB28B | 5 | C | | W11 | PB28B | 5 | C | |
| AB8 | PB29A | 5 | T | | AB8 | PB29A | 5 | T | |
| GND | GND5 | 5 | | | GND | GND5 | 5 | | |
| AB9 | PB29B | 5 | C | | AB9 | PB29B | 5 | C | |
| AA10 | PB30A | 5 | T | BDQS30 | AA10 | PB30A | 5 | T | BDQS30 |
| AA9 | PB30B | 5 | C | | AA9 | PB30B | 5 | C | |
| Y11 | PB31A | 5 | T | | Y11 | PB31A | 5 | T | |
| AA11 | PB31B | 5 | C | | AA11 | PB31B | 5 | C | |
| V11 | PB32A | 5 | T | VREF2_5 | V11 | PB32A | 5 | T | VREF2_5 |
| V12 | PB32B | 5 | C | VREF1_5 | V12 | PB32B | 5 | C | VREF1_5 |
| AB10 | PB33A | 5 | T | PCLKT5_0 | AB10 | PB33A | 5 | T | PCLKT5_0 |
| GND | GND5 | 5 | | | GND | GND5 | 5 | | |
| AB11 | PB33B | 5 | C | PCLKC5_0 | AB11 | PB33B | 5 | C | PCLKC5_0 |
| Y12 | PB34A | 4 | T | WRITEN | Y12 | PB34A | 4 | T | WRITEN |
| U11 | PB34B | 4 | C | CS1N | U11 | PB34B | 4 | C | CS1N |
| W12 | PB35A | 4 | T | VREF1_4 | W12 | PB35A | 4 | T | VREF1_4 |
| U12 | PB35B | 4 | C | CSN | U12 | PB35B | 4 | C | CSN |
| W13 | PB36A | 4 | T | VREF2_4 | W13 | PB36A | 4 | T | VREF2_4 |
| U13 | PB36B | 4 | C | D0/SPID7 | U13 | PB36B | 4 | C | D0/SPID7 |
| AA12 | PB37A | 4 | T | D2/SPID5 | AA12 | PB37A | 4 | T | D2/SPID5 |
| GND | GND4 | 4 | | | GND | GND4 | 4 | | |
| AB12 | PB37B | 4 | C | D1/SPID6 | AB12 | PB37B | 4 | C | D1/SPID6 |
| T13 | PB38A | 4 | T | BDQS38 | T13 | PB38A | 4 | T | BDQS38 |
| V13 | PB38B | 4 | C | D3/SPID4 | V13 | PB38B | 4 | C | D3/SPID4 |
| W14 | PB39A | 4 | T | | W14 | PB39A | 4 | T | |
| U14 | PB39B | 4 | C | D4/SPID3 | U14 | PB39B | 4 | C | D4/SPID3 |

# LFECP/EC20 and LFECP/EC33 Logic Signal Connections: 484 fpBGA (Cont.)

| LFECP20/LFEC20 | | | | | LFECP/LFEC33 | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Ball Number | Ball Function | Bank | LVDS | Dual Function | Ball Number | Ball Function | Bank | LVDS | Dual Function |
| W20 | PR48B | 3 | C | VREF2_3 | W20 | PR68B | 3 | C | VREF2_3 |
| Y20 | PR48A | 3 | T | VREF1_3 | Y20 | PR68A | 3 | T | VREF1_3 |
| GND | - | - | | | GND | GND3 | 3 | | |
| GND | - | - | | | GND | GND3 | 3 | | |
| AA21 | PR47B | 3 | C | | AA21 | PR59B | 3 | C | |
| AB21 | PR47A | 3 | T | | AB21 | PR59A | 3 | T | |
| W19 | PR46B | 3 | C | | W19 | PR58B | 3 | C | |
| V19 | PR46A | 3 | T | | V19 | PR58A | 3 | T | |
| Y21 | PR45B | 3 | C | | Y21 | PR57B | 3 | C | |
| AA22 | PR45A | 3 | T | RDQS45 | AA22 | PR57A | 3 | T | RDQS57 |
| V20 | PR44B | 3 | C | RLM0_PLLC_IN_A | V20 | PR56B | 3 | C | RLM0_PLLC_IN_A |
| GND | GND3 | 3 | | | GND | GND3 | 3 | | |
| U20 | PR44A | 3 | T | RLM0_PLLT_IN_A | U20 | PR56A | 3 | T | RLM0_PLLT_IN_A |
| W21 | PR43B | 3 | C | RLM0_PLLC_FB_A | W21 | PR55B | 3 | C | RLM0_PLLC_FB_A |
| Y22 | PR43A | 3 | T | RLM0_PLLT_FB_A | Y22 | PR55A | 3 | T | RLM0_PLLT_FB_A |
| V21 | PR42B | 3 | C | DI/CSSPIN | V21 | PR54B | 3 | C | DI/CSSPIN |
| W22 | PR42A | 3 | T | DOUT/CSON | W22 | PR54A | 3 | T | DOUT/CSON |
| U21 | PR41B | 3 | C | BUSY/SISPI | U21 | PR53B | 3 | C | BUSY/SISPI |
| V22 | PR41A | 3 | T | D7/SPID0 | V22 | PR53A | 3 | T | D7/SPID0 |
| T19 | CFG2 | 3 | | | T19 | CFG2 | 3 | | |
| U19 | CFG1 | 3 | | | U19 | CFG1 | 3 | | |
| U18 | CFG0 | 3 | | | U18 | CFG0 | 3 | | |
| V18 | PROGRAMN | 3 | | | V18 | PROGRAMN | 3 | | |
| T20 | CCLK | 3 | | | T20 | CCLK | 3 | | |
| T21 | INITN | 3 | | | T21 | INITN | 3 | | |
| R20 | DONE | 3 | | | R20 | DONE | 3 | | |
| GND | GND3 | 3 | | | GND | GND3 | 3 | | |
| T18 | PR37B | 3 | C | | T18 | PR49B | 3 | C | |
| R17 | PR37A | 3 | T | | R17 | PR49A | 3 | T | |
| R19 | PR36B | 3 | C | | R19 | PR48B | 3 | C | |
| R18 | PR36A | 3 | T | RDQS36 | R18 | PR48A | 3 | T | RDQS48 |
| U22 | PR35B | 3 | C | | U22 | PR47B | 3 | C | |
| GND | GND3 | 3 | | | GND | GND3 | 3 | | |
| T22 | PR35A | 3 | T | | T22 | PR47A | 3 | T | |
| R21 | PR34B | 3 | C | | R21 | PR46B | 3 | C | |
| R22 | PR34A | 3 | T | | R22 | PR46A | 3 | T | |
| P20 | PR33B | 3 | C | | P20 | PR45B | 3 | C | |
| N20 | PR33A | 3 | T | | N20 | PR45A | 3 | T | |
| P19 | PR32B | 3 | C | | P19 | PR44B | 3 | C | |
| P18 | PR32A | 3 | T | | P18 | PR44A | 3 | T | |
| P21 | PR31B | 3 | C | | P21 | PR43B | 3 | C | |
| GND | GND3 | 3 | | | GND | GND3 | 3 | | |
| P22 | PR31A | 3 | T | | P22 | PR43A | 3 | T | |
| N21 | PR30B | 3 | C | | N21 | PR42B | 3 | C | |

# LFECP/EC20, LFECP/EC33 Logic Signal Connections: 672 fpBGA

| LFEC20/LFECP20 | | | | | LFECP/EC33 | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Ball Number | Ball Function | Bank | LVDS | Dual Function | Ball Number | Ball Function | Bank | LVDS | Dual Function |
| GND | GND7 | 7 | | | GND | GND7 | 7 | | |
| E3 | PL2A | 7 | T | VREF2_7 | E3 | PL2A | 7 | T | VREF2_7 |
| E4 | PL2B | 7 | C | VREF1_7 | E4 | PL2B | 7 | C | VREF1_7 |
| E5 | NC | - | | | E5 | PL6A | 7 | T | LDQS6 |
| D5 | NC | - | | | D5 | PL6B | 7 | C | |
| F4 | NC | - | | | F4 | PL7A | 7 | T | |
| F5 | NC | - | | | F5 | PL7B | 7 | C | |
| C3 | NC | - | | | C3 | PL8A | 7 | T | |
| D3 | NC | - | | | D3 | PL8B | 7 | C | |
| C2 | NC | - | | | C2 | PL9A | 7 | T | |
| - | - | - | | | GND | GND7 | 7 | | |
| B2 | NC | - | | | B2 | PL9B | 7 | C | |
| B1 | PL3A | 7 | T | | B1 | PL10A | 7 | T | |
| C1 | PL3B | 7 | C | | C1 | PL10B | 7 | C | |
| F3 | PL4A | 7 | T | | F3 | PL11A | 7 | T | |
| G3 | PL4B | 7 | C | | G3 | PL11B | 7 | C | |
| D2 | PL5A | 7 | T | | D2 | PL12A | 7 | T | |
| E2 | PL5B | 7 | C | | E2 | PL12B | 7 | C | |
| - | - | - | | | GND | GND7 | 7 | | |
| D1 | PL6A | 7 | T | LDQS6 | D1 | PL14A | 7 | T | LDQS14 |
| E1 | PL6B | 7 | C | | E1 | PL14B | 7 | C | |
| F2 | PL7A | 7 | T | | F2 | PL15A | 7 | T | |
| G2 | PL7B | 7 | C | | G2 | PL15B | 7 | C | |
| F6 | PL8A | 7 | T | LUM0_PLLT_IN_A | F6 | PL16A | 7 | T | LUM0_PLLT_IN_A |
| G6 | PL8B | 7 | C | LUM0_PLLC_IN_A | G6 | PL16B | 7 | C | LUM0_PLLC_IN_A |
| H4 | PL9A | 7 | T | LUM0_PLLT_FB_A | H4 | PL17A | 7 | T | LUM0_PLLT_FB_A |
| GND | GND7 | 7 | | | GND | GND7 | 7 | | |
| G4 | PL9B | 7 | C | LUM0_PLLC_FB_A | G4 | PL17B | 7 | C | LUM0_PLLC_FB_A |
| H6 | NC | - | | | H6 | PL19A | 7 | T | |
| J7 | NC | - | | | J7 | PL19B | 7 | C | |
| G5 | NC | - | | | G5 | PL20A | 7 | T | |
| H5 | NC | - | | | H5 | PL20B | 7 | C | |
| H3 | NC | - | | | H3 | PL21A | 7 | T | |
| J3 | NC | - | | | J3 | PL21B | 7 | C | |
| H2 | NC | - | | | H2 | PL22A | 7 | T | |
| - | - | - | | | GND | GND7 | 7 | | |
| J2 | NC | - | | | J2 | PL22B | 7 | C | |
| J4 | PL11A | 7 | T | | J4 | PL23A | 7 | T | LDQS23 |
| J5 | PL11B | 7 | C | | J5 | PL23B | 7 | C | |
| K4 | PL12A | 7 | T | | K4 | PL24A | 7 | T | |
| K5 | PL12B | 7 | C | | K5 | PL24B | 7 | C | |
| J6 | PL13A | 7 | T | | J6 | PL25A | 7 | T | |

## LFECP/EC20, LFECP/EC33 Logic Signal Connections: 672 fpBGA (Cont.)

| LFEC20/LFECP20 | | | | | LFECP/EC33 | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Ball Number | Ball Function | Bank | LVDS | Dual Function | Ball Number | Ball Function | Bank | LVDS | Dual Function |
| K6 | PL13B | 7 | C | | K6 | PL25B | 7 | C | |
| F1 | PL14A | 7 | T | | F1 | PL26A | 7 | T | |
| GND | GND7 | 7 | | | GND | GND7 | 7 | | |
| G1 | PL14B | 7 | C | | G1 | PL26B | 7 | C | |
| H1 | PL15A | 7 | T | | H1 | PL27A | 7 | T | |
| J1 | PL15B | 7 | C | | J1 | PL27B | 7 | C | |
| K2 | PL16A | 7 | T | | K2 | PL28A | 7 | T | |
| K1 | PL16B | 7 | C | | K1 | PL28B | 7 | C | |
| K3 | PL17A | 7 | T | | K3 | PL29A | 7 | T | |
| L3 | PL17B | 7 | C | | L3 | PL29B | 7 | C | |
| L2 | PL18A | 7 | T | | L2 | PL30A | 7 | T | |
| GND | GND7 | 7 | | | GND | GND7 | 7 | | |
| L1 | PL18B | 7 | C | | L1 | PL30B | 7 | C | |
| M3 | PL19A | 7 | T | LDQS19 | M3 | PL31A | 7 | T | LDQS31 |
| M4 | PL19B | 7 | C | | M4 | PL31B | 7 | C | |
| M1 | PL20A | 7 | T | | M1 | PL32A | 7 | T | |
| M2 | PL20B | 7 | C | | M2 | PL32B | 7 | C | |
| L4 | PL21A | 7 | T | | L4 | PL33A | 7 | T | |
| L5 | PL21B | 7 | C | | L5 | PL33B | 7 | C | |
| N2 | PL22A | 7 | T | PCLKT7_0 | N2 | PL34A | 7 | T | PCLKT7_0 |
| GND | GND7 | 7 | | | GND | GND7 | 7 | | |
| N1 | PL22B | 7 | C | PCLKC7_0 | N1 | PL34B | 7 | C | PCLKC7_0 |
| N3 | XRES | 6 | | | N3 | XRES | 6 | | |
| P1 | PL24A | 6 | T | | P1 | PL36A | 6 | T | |
| P2 | PL24B | 6 | C | | P2 | PL36B | 6 | C | |
| L7 | PL25A | 6 | T | | L7 | PL37A | 6 | T | |
| L6 | PL25B | 6 | C | | L6 | PL37B | 6 | C | |
| N4 | PL26A | 6 | T | | N4 | PL38A | 6 | T | |
| N5 | PL26B | 6 | C | | N5 | PL38B | 6 | C | |
| R1 | PL27A | 6 | T | | R1 | PL39A | 6 | T | |
| GND | GND6 | 6 | | | GND | GND6 | 6 | | |
| R2 | PL27B | 6 | C | | R2 | PL39B | 6 | C | |
| P4 | PL28A | 6 | T | LDQS28 | P4 | PL40A | 6 | T | LDQS40 |
| P3 | PL28B | 6 | C | | P3 | PL40B | 6 | C | |
| M5 | PL29A | 6 | T | | M5 | PL41A | 6 | T | |
| M6 | PL29B | 6 | C | | M6 | PL41B | 6 | C | |
| T1 | PL30A | 6 | T | | T1 | PL42A | 6 | T | |
| T2 | PL30B | 6 | C | | T2 | PL42B | 6 | C | |
| R4 | PL31A | 6 | T | | R4 | PL43A | 6 | T | |
| GND | GND6 | 6 | | | GND | GND6 | 6 | | |
| R3 | PL31B | 6 | C | | R3 | PL43B | 6 | C | |
| N6 | PL32A | 6 | T | | N6 | PL44A | 6 | T | |

## LFECP/EC20, LFECP/EC33 Logic Signal Connections: 672 fpBGA (Cont.)

| LFEC20/LFECP20 | | | | | LFECP/EC33 | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Ball Number | Ball Function | Bank | LVDS | Dual Function | Ball Number | Ball Function | Bank | LVDS | Dual Function |
| Y6 | NC | - | | | Y6 | PL62A | 6 | T | |
| W7 | NC | - | | | W7 | PL62B | 6 | C | |
| AA4 | NC | - | | | AA4 | PL63A | 6 | T | |
| AB3 | NC | - | | | AB3 | PL63B | 6 | C | |
| AC2 | NC | - | | | AC2 | PL64A | 6 | T | |
| - | - | - | | | GND | GND6 | 6 | | |
| AC3 | NC | - | | | AC3 | PL64B | 6 | C | |
| AA5 | NC | - | | | AA5 | PL65A | 6 | T | LDQS65 |
| AB5 | NC | - | | | AB5 | PL65B | 6 | C | |
| AD3 | NC | - | | | AD3 | PL66A | 6 | T | |
| AD2 | NC | - | | | AD2 | PL66B | 6 | C | |
| AE1 | NC | - | | | AE1 | PL67A | 6 | T | |
| AD1 | NC | - | | | AD1 | PL67B | 6 | C | |
| AB4 | PL48A | 6 | T | VREF1_6 | AB4 | PL68A | 6 | T | VREF1_6 |
| AC4 | PL48B | 6 | C | VREF2_6 | AC4 | PL68B | 6 | C | VREF2_6 |
| GND | GND6 | 6 | | | GND | GND6 | 6 | | |
| GND | GND5 | 5 | | | GND | GND5 | 5 | | |
| AB6 | PB2A | 5 | T | | AB6 | PB2A | 5 | T | |
| AA6 | PB2B | 5 | C | | AA6 | PB2B | 5 | C | |
| AC7 | PB3A | 5 | T | | AC7 | PB3A | 5 | T | |
| Y8 | PB3B | 5 | C | | Y8 | PB3B | 5 | C | |
| AB7 | PB4A | 5 | T | | AB7 | PB4A | 5 | T | |
| AA7 | PB4B | 5 | C | | AA7 | PB4B | 5 | C | |
| AC6 | PB5A | 5 | T | | AC6 | PB5A | 5 | T | |
| AC5 | PB5B | 5 | C | | AC5 | PB5B | 5 | C | |
| AB8 | PB6A | 5 | T | BDQS6 | AB8 | PB6A | 5 | T | BDQS6 |
| AC8 | PB6B | 5 | C | | AC8 | PB6B | 5 | C | |
| AE2 | PB7A | 5 | T | | AE2 | PB7A | 5 | T | |
| AA8 | PB7B | 5 | C | | AA8 | PB7B | 5 | C | |
| AF2 | PB8A | 5 | T | | AF2 | PB8A | 5 | T | |
| Y9 | PB8B | 5 | C | | Y9 | PB8B | 5 | C | |
| AD5 | PB9A | 5 | T | | AD5 | PB9A | 5 | T | |
| GND | GND5 | 5 | | | GND | GND5 | 5 | | |
| AD4 | PB9B | 5 | C | | AD4 | PB9B | 5 | C | |
| AD8 | PB10A | 5 | T | | AD8 | PB10A | 5 | T | |
| AC9 | PB10B | 5 | C | | AC9 | PB10B | 5 | C | |
| AE3 | PB11A | 5 | T | | AE3 | PB11A | 5 | T | |
| AB9 | PB11B | 5 | C | | AB9 | PB11B | 5 | C | |
| AF3 | PB12A | 5 | T | | AF3 | PB12A | 5 | T | |
| AD9 | PB12B | 5 | C | | AD9 | PB12B | 5 | C | |
| AE4 | PB13A | 5 | T | | AE4 | PB13A | 5 | T | |
| GND | GND5 | 5 | | | GND | GND5 | 5 | | |

## LFECP/EC20, LFECP/EC33 Logic Signal Connections: 672 fpBGA (Cont.)

| LFEC20/LFECP20 | | | | | LFECP/EC33 | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Ball Number | Ball Function | Bank | LVDS | Dual Function | Ball Number | Ball Function | Bank | LVDS | Dual Function |
| AC13 | PB32B | 5 | C | VREF1_5 | AC13 | PB32B | 5 | C | VREF1_5 |
| AF14 | PB33A | 5 | T | PCLKT5_0 | AF14 | PB33A | 5 | T | PCLKT5_0 |
| GND | GND5 | 5 | | | GND | GND5 | 5 | | |
| AE14 | PB33B | 5 | C | PCLKC5_0 | AE14 | PB33B | 5 | C | PCLKC5_0 |
| AA13 | PB34A | 4 | T | WRITEN | AA13 | PB34A | 4 | T | WRITEN |
| AB13 | PB34B | 4 | C | CS1N | AB13 | PB34B | 4 | C | CS1N |
| AD14 | PB35A | 4 | T | VREF1_4 | AD14 | PB35A | 4 | T | VREF1_4 |
| AA14 | PB35B | 4 | C | CSN | AA14 | PB35B | 4 | C | CSN |
| AC14 | PB36A | 4 | T | VREF2_4 | AC14 | PB36A | 4 | T | VREF2_4 |
| AB14 | PB36B | 4 | C | D0/SPID7 | AB14 | PB36B | 4 | C | D0/SPID7 |
| AF15 | PB37A | 4 | T | D2/SPID5 | AF15 | PB37A | 4 | T | D2/SPID5 |
| GND | GND4 | 4 | | | GND | GND4 | 4 | | |
| AE15 | PB37B | 4 | C | D1/SPID6 | AE15 | PB37B | 4 | C | D1/SPID6 |
| AD15 | PB38A | 4 | T | BDQS38 | AD15 | PB38A | 4 | T | BDQS38 |
| AC15 | PB38B | 4 | C | D3/SPID4 | AC15 | PB38B | 4 | C | D3/SPID4 |
| AF16 | PB39A | 4 | T | | AF16 | PB39A | 4 | T | |
| Y14 | PB39B | 4 | C | D4/SPID3 | Y14 | PB39B | 4 | C | D4/SPID3 |
| AE16 | PB40A | 4 | T | | AE16 | PB40A | 4 | T | |
| AB15 | PB40B | 4 | C | D5/SPID2 | AB15 | PB40B | 4 | C | D5/SPID2 |
| AF17 | PB41A | 4 | T | | AF17 | PB41A | 4 | T | |
| GND | GND4 | 4 | | | GND | GND4 | 4 | | |
| AE17 | PB41B | 4 | C | D6/SPID1 | AE17 | PB41B | 4 | C | D6/SPID1 |
| Y15 | PB42A | 4 | T | | Y15 | PB42A | 4 | T | |
| AA15 | PB42B | 4 | C | | AA15 | PB42B | 4 | C | |
| AD17 | PB43A | 4 | T | | AD17 | PB43A | 4 | T | |
| Y16 | PB43B | 4 | C | | Y16 | PB43B | 4 | C | |
| AD18 | PB44A | 4 | T | | AD18 | PB44A | 4 | T | |
| AC16 | PB44B | 4 | C | | AC16 | PB44B | 4 | C | |
| AE18 | PB45A | 4 | T | | AE18 | PB45A | 4 | T | |
| GND | GND4 | 4 | | | GND | GND4 | 4 | | |
| AF18 | PB45B | 4 | C | | AF18 | PB45B | 4 | C | |
| AD16 | PB46A | 4 | T | BDQS46 | AD16 | PB46A | 4 | T | BDQS46 |
| AB16 | PB46B | 4 | C | | AB16 | PB46B | 4 | C | |
| AF19 | PB47A | 4 | T | | AF19 | PB47A | 4 | T | |
| AA16 | PB47B | 4 | C | | AA16 | PB47B | 4 | C | |
| AA17 | PB48A | 4 | T | | AA17 | PB48A | 4 | T | |
| Y17 | PB48B | 4 | C | | Y17 | PB48B | 4 | C | |
| AF21 | PB49A | 4 | T | | AF21 | PB49A | 4 | T | |
| GND | GND4 | 4 | | | GND | GND4 | 4 | | |
| AF20 | PB49B | 4 | C | | AF20 | PB49B | 4 | C | |
| AE21 | PB50A | 4 | T | | AE21 | PB50A | 4 | T | |
| AC17 | PB50B | 4 | C | | AC17 | PB50B | 4 | C | |

## LFECP/EC20, LFECP/EC33 Logic Signal Connections: 672 fpBGA (Cont.)

| LFEC20/LFECP20 | | | | | LFECP/EC33 | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Ball Number | Ball Function | Bank | LVDS | Dual Function | Ball Number | Ball Function | Bank | LVDS | Dual Function |
| U21 | PR36B | 3 | C | | U21 | PR48B | 3 | C | |
| T21 | PR36A | 3 | T | RDQS36 | T21 | PR48A | 3 | T | RDQS48 |
| T25 | PR35B | 3 | C | | T25 | PR47B | 3 | C | |
| GND | GND3 | 3 | | | GND | GND3 | 3 | | |
| T26 | PR35A | 3 | T | | T26 | PR47A | 3 | T | |
| T22 | PR34B | 3 | C | | T22 | PR46B | 3 | C | |
| T23 | PR34A | 3 | T | | T23 | PR46A | 3 | T | |
| T24 | PR33B | 3 | C | | T24 | PR45B | 3 | C | |
| R23 | PR33A | 3 | T | | R23 | PR45A | 3 | T | |
| R25 | PR32B | 3 | C | | R25 | PR44B | 3 | C | |
| R24 | PR32A | 3 | T | | R24 | PR44A | 3 | T | |
| R26 | PR31B | 3 | C | | R26 | PR43B | 3 | C | |
| GND | GND3 | 3 | | | GND | GND3 | 3 | | |
| P26 | PR31A | 3 | T | | P26 | PR43A | 3 | T | |
| R21 | PR30B | 3 | C | | R21 | PR42B | 3 | C | |
| R22 | PR30A | 3 | T | | R22 | PR42A | 3 | T | |
| P25 | PR29B | 3 | C | | P25 | PR41B | 3 | C | |
| P24 | PR29A | 3 | T | | P24 | PR41A | 3 | T | |
| P23 | PR28B | 3 | C | | P23 | PR40B | 3 | C | |
| P22 | PR28A | 3 | T | RDQS28 | P22 | PR40A | 3 | T | RDQS40 |
| N26 | PR27B | 3 | C | | N26 | PR39B | 3 | C | |
| GND | GND3 | 3 | | | GND | GND3 | 3 | | |
| M26 | PR27A | 3 | T | | M26 | PR39A | 3 | T | |
| N21 | PR26B | 3 | C | | N21 | PR38B | 3 | C | |
| P21 | PR26A | 3 | T | | P21 | PR38A | 3 | T | |
| N23 | PR25B | 3 | C | | N23 | PR37B | 3 | C | |
| N22 | PR25A | 3 | T | | N22 | PR37A | 3 | T | |
| N25 | PR24B | 3 | C | | N25 | PR36B | 3 | C | |
| N24 | PR24A | 3 | T | | N24 | PR36A | 3 | T | |
| L26 | PR22B | 2 | C | PCLKC2_0 | L26 | PR34B | 2 | C | PCLKC2_0 |
| GND | GND2 | 2 | | | GND | GND2 | 2 | | |
| K26 | PR22A | 2 | T | PCLKT2_0 | K26 | PR34A | 2 | T | PCLKT2_0 |
| M22 | PR21B | 2 | C | | M22 | PR33B | 2 | C | |
| M23 | PR21A | 2 | T | | M23 | PR33A | 2 | T | |
| M25 | PR20B | 2 | C | | M25 | PR32B | 2 | C | |
| M24 | PR20A | 2 | T | | M24 | PR32A | 2 | T | |
| M21 | PR19B | 2 | C | | M21 | PR31B | 2 | C | |
| L21 | PR19A | 2 | T | RDQS19 | L21 | PR31A | 2 | T | RDQS31 |
| L22 | PR18B | 2 | C | | L22 | PR30B | 2 | C | |
| GND | GND2 | 2 | | | GND | GND2 | 2 | | |
| L23 | PR18A | 2 | T | | L23 | PR30A | 2 | T | |
| L25 | PR17B | 2 | C | | L25 | PR29B | 2 | C | |

# LFECP/EC20, LFECP/EC33 Logic Signal Connections: 672 fpBGA (Cont.)

| LFEC20/LFECP20 | | | | | LFECP/EC33 | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Ball Number | Ball Function | Bank | LVDS | Dual Function | Ball Number | Ball Function | Bank | LVDS | Dual Function |
| J14 | VCCIO1 | 1 | | | J14 | VCCIO1 | 1 | | |
| J15 | VCCIO1 | 1 | | | J15 | VCCIO1 | 1 | | |
| J16 | VCCIO1 | 1 | | | J16 | VCCIO1 | 1 | | |
| J17 | VCCIO1 | 1 | | | J17 | VCCIO1 | 1 | | |
| K17 | VCCIO2 | 2 | | | K17 | VCCIO2 | 2 | | |
| K18 | VCCIO2 | 2 | | | K18 | VCCIO2 | 2 | | |
| L18 | VCCIO2 | 2 | | | L18 | VCCIO2 | 2 | | |
| M18 | VCCIO2 | 2 | | | M18 | VCCIO2 | 2 | | |
| N18 | VCCIO2 | 2 | | | N18 | VCCIO2 | 2 | | |
| N19 | VCCIO2 | 2 | | | N19 | VCCIO2 | 2 | | |
| P18 | VCCIO3 | 3 | | | P18 | VCCIO3 | 3 | | |
| P19 | VCCIO3 | 3 | | | P19 | VCCIO3 | 3 | | |
| R18 | VCCIO3 | 3 | | | R18 | VCCIO3 | 3 | | |
| R19 | VCCIO3 | 3 | | | R19 | VCCIO3 | 3 | | |
| T18 | VCCIO3 | 3 | | | T18 | VCCIO3 | 3 | | |
| U18 | VCCIO3 | 3 | | | U18 | VCCIO3 | 3 | | |
| V14 | VCCIO4 | 4 | | | V14 | VCCIO4 | 4 | | |
| V15 | VCCIO4 | 4 | | | V15 | VCCIO4 | 4 | | |
| V16 | VCCIO4 | 4 | | | V16 | VCCIO4 | 4 | | |
| V17 | VCCIO4 | 4 | | | V17 | VCCIO4 | 4 | | |
| W14 | VCCIO4 | 4 | | | W14 | VCCIO4 | 4 | | |
| W15 | VCCIO4 | 4 | | | W15 | VCCIO4 | 4 | | |
| V10 | VCCIO5 | 5 | | | V10 | VCCIO5 | 5 | | |
| V11 | VCCIO5 | 5 | | | V11 | VCCIO5 | 5 | | |
| V12 | VCCIO5 | 5 | | | V12 | VCCIO5 | 5 | | |
| V13 | VCCIO5 | 5 | | | V13 | VCCIO5 | 5 | | |
| W12 | VCCIO5 | 5 | | | W12 | VCCIO5 | 5 | | |
| W13 | VCCIO5 | 5 | | | W13 | VCCIO5 | 5 | | |
| P8 | VCCIO6 | 6 | | | P8 | VCCIO6 | 6 | | |
| P9 | VCCIO6 | 6 | | | P9 | VCCIO6 | 6 | | |
| R8 | VCCIO6 | 6 | | | R8 | VCCIO6 | 6 | | |
| R9 | VCCIO6 | 6 | | | R9 | VCCIO6 | 6 | | |
| T9 | VCCIO6 | 6 | | | T9 | VCCIO6 | 6 | | |
| U9 | VCCIO6 | 6 | | | U9 | VCCIO6 | 6 | | |
| K9 | VCCIO7 | 7 | | | K9 | VCCIO7 | 7 | | |
| L9 | VCCIO7 | 7 | | | L9 | VCCIO7 | 7 | | |
| M8 | VCCIO7 | 7 | | | M8 | VCCIO7 | 7 | | |
| M9 | VCCIO7 | 7 | | | M9 | VCCIO7 | 7 | | |
| N8 | VCCIO7 | 7 | | | N8 | VCCIO7 | 7 | | |
| N9 | VCCIO7 | 7 | | | N9 | VCCIO7 | 7 | | |
| G13 | VCCAUX | - | | | G13 | VCCAUX | - | | |
| H20 | VCCAUX | - | | | H20 | VCCAUX | - | | |

**LatticeEC Commercial (Continued)**

| Part Number | I/Os | Grade | Package | Pins/Balls | Temp. | LUTs |
|---|---|---|---|---|---|---|
| LFEC10E-4FN256C | 195 | -4 | Lead-Free fpBGA | 256 | COM | 10.2K |
| LFEC10E-5FN256C | 195 | -5 | Lead-Free fpBGA | 256 | COM | 10.2K |
| LFEC10E-3QN208C | 147 | -3 | Lead-Free PQFP | 208 | COM | 10.2K |
| LFEC10E-4QN208C | 147 | -4 | Lead-Free PQFP | 208 | COM | 10.2K |
| LFEC10E-5QN208C | 147 | -5 | Lead-Free PQFP | 208 | COM | 10.2K |

| Part Number | I/Os | Grade | Package | Pins/Balls | Temp. | LUTs |
|---|---|---|---|---|---|---|
| LFEC15E-3FN484C | 352 | -3 | Lead-Free fpBGA | 484 | COM | 15.3K |
| LFEC15E-4FN484C | 352 | -4 | Lead-Free fpBGA | 484 | COM | 15.3K |
| LFEC15E-5FN484C | 352 | -5 | Lead-Free fpBGA | 484 | COM | 15.3K |
| LFEC15E-3FN256C | 195 | -3 | Lead-Free fpBGA | 256 | COM | 15.3K |
| LFEC15E-4FN256C | 195 | -4 | Lead-Free fpBGA | 256 | COM | 15.3K |
| LFEC15E-5FN256C | 195 | -5 | Lead-Free fpBGA | 256 | COM | 15.3K |

| Part Number | I/Os | Grade | Package | Pins/Balls | Temp. | LUTs |
|---|---|---|---|---|---|---|
| LFEC20E-3FN672C | 400 | -3 | Lead-Free fpBGA | 672 | COM | 19.7K |
| LFEC20E-4FN672C | 400 | -4 | Lead-Free fpBGA | 672 | COM | 19.7K |
| LFEC20E-5FN672C | 400 | -5 | Lead-Free fpBGA | 672 | COM | 19.7K |
| LFEC20E-3FN484C | 360 | -3 | Lead-Free fpBGA | 484 | COM | 19.7K |
| LFEC20E-4FN484C | 360 | -4 | Lead-Free fpBGA | 484 | COM | 19.7K |
| LFEC20E-5FN484C | 360 | -5 | Lead-Free fpBGA | 484 | COM | 19.7K |

| Part Number | I/Os | Grade | Package | Pins/Balls | Temp. | LUTs |
|---|---|---|---|---|---|---|
| LFEC33E-3FN672C | 496 | -3 | Lead-Free fpBGA | 672 | COM | 32.8K |
| LFEC33E-4FN672C | 496 | -4 | Lead-Free fpBGA | 672 | COM | 32.8K |
| LFEC33E-5FN672C | 496 | -5 | Lead-Free fpBGA | 672 | COM | 32.8K |
| LFEC33E-3FN484C | 360 | -3 | Lead-Free fpBGA | 484 | COM | 32.8K |
| LFEC33E-4FN484C | 360 | -4 | Lead-Free fpBGA | 484 | COM | 32.8K |
| LFEC33E-5FN484C | 360 | -5 | Lead-Free fpBGA | 484 | COM | 32.8K |