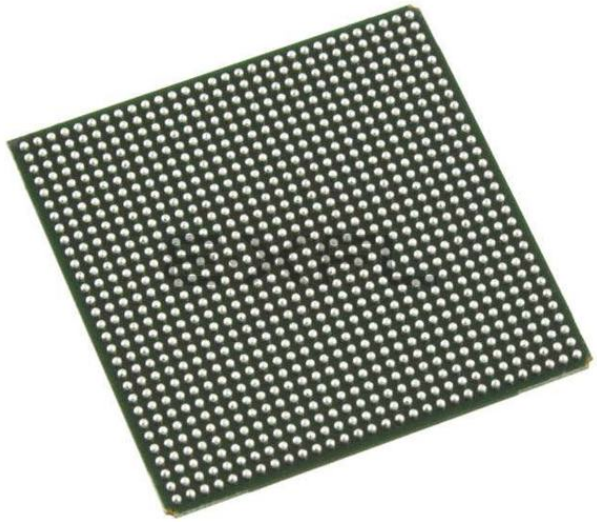
Lattice Semiconductor Corporation - LFE2M50SE-5F900C Datasheet



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Applications of Embedded - FPGAs

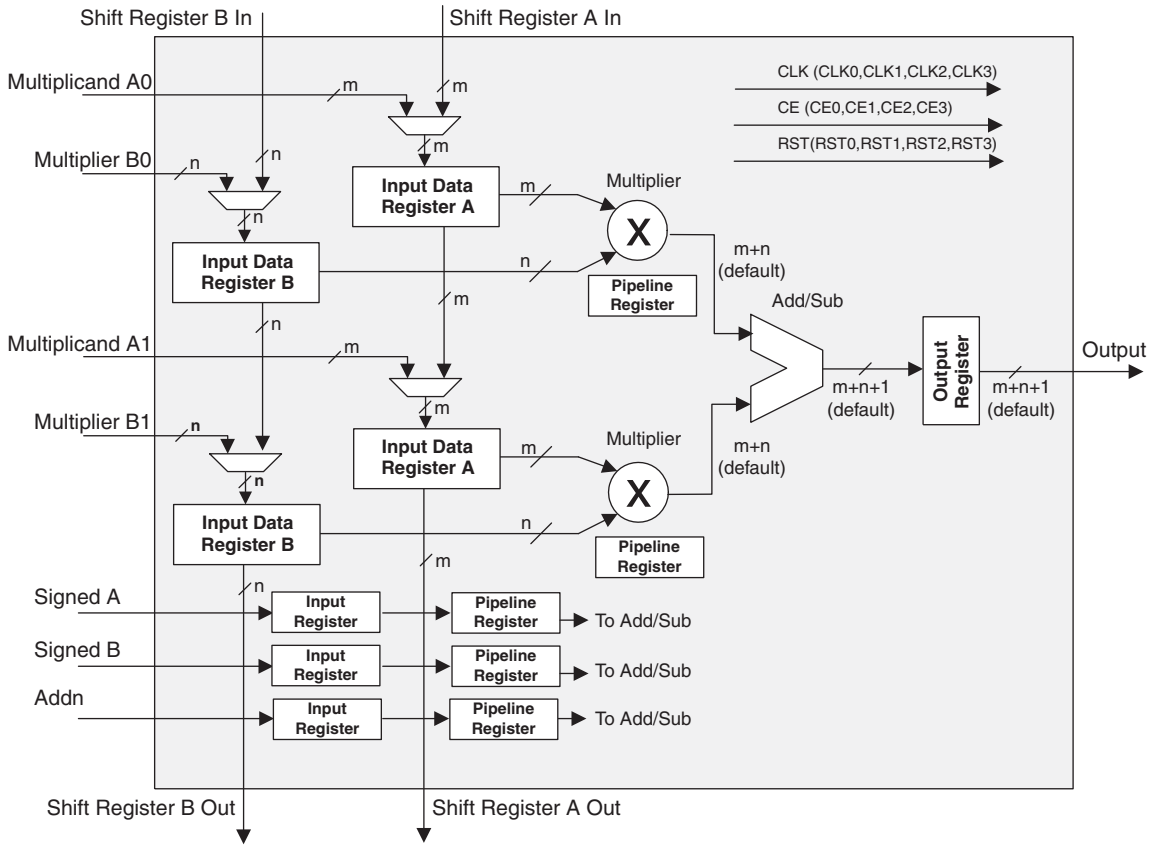
The versatility of Embedded - FPGAs makes them indispensable in numerous fields. In telecommunications.

Details	
Product Status	Obsolete
Number of LABs/CLBs	6000
Number of Logic Elements/Cells	48000
Total RAM Bits	4246528
Number of I/O	410
Number of Gates	-
Voltage - Supply	1.14V ~ 1.26V
Mounting Type	Surface Mount
Operating Temperature	0°C ~ 85°C (TJ)
Package / Case	900-BBGA
Supplier Device Package	900-FPBGA (31x31)
Purchase URL	https://www.e-xfl.com/product-detail/lattice-semiconductor/lfe2m50se-5f900c

MULTADDSUB sysDSP Element

In this case, the operands A0 and B0 are multiplied and the result is added/subtracted with the result of the multiplier operation of operands A1 and A2. The user can enable the input, output and pipeline registers. Figure 2-25 shows the MULTADDSUB sysDSP element.

Figure 2-25. MULTADDSUB



one clock is selected for each input register, pipeline register and output register. Similarly Clock enable (CE) and Reset (RST) are selected from their four respective sources (CE0, CE1, CE2, CE3 and RST0, RST1, RST2, RST3) at each input register, pipeline register and output register.

Signed and Unsigned with Different Widths

The DSP block supports different widths of signed and unsigned multipliers besides x9, x18 and x36 widths. For unsigned operands, unused upper data bits should be filled to create a valid x9, x18 or x36 operand. For signed two's complement operands, sign extension of the most significant bit should be performed until x9, x18 or x36 width is reached. Table 2-8 provides an example of this.

Table 2-8. Sign Extension Example

Number	Unsigned	Unsigned 9-bit	Unsigned 18-bit	Signed	Two's Complement Signed 9 Bits	Two's Complement Signed 18 Bits
+5	0101	000000101	000000000000000101	0101	000000101	000000000000000101
-6	N/A	N/A	N/A	1010	111111010	111111111111111010

OVERFLOW Flag from MAC

The sysDSP block provides an overflow output to indicate that the accumulator has overflowed. When two unsigned numbers are added and the result is a smaller number than the accumulator, "roll-over" is said to have occurred and an overflow signal is indicated. When two positive numbers are added with a negative sum and when two negative numbers are added with a positive sum, then the accumulator "roll-over" is said to have occurred and an overflow signal is indicated. Note that when overflow occurs the overflow flag is present for only one cycle. By counting these overflow pulses in FPGA logic, larger accumulators can be constructed. The conditions overflow signals for signed and unsigned operands are listed in Figure 2-27.

Figure 2-27. Accumulator Overflow/Underflow

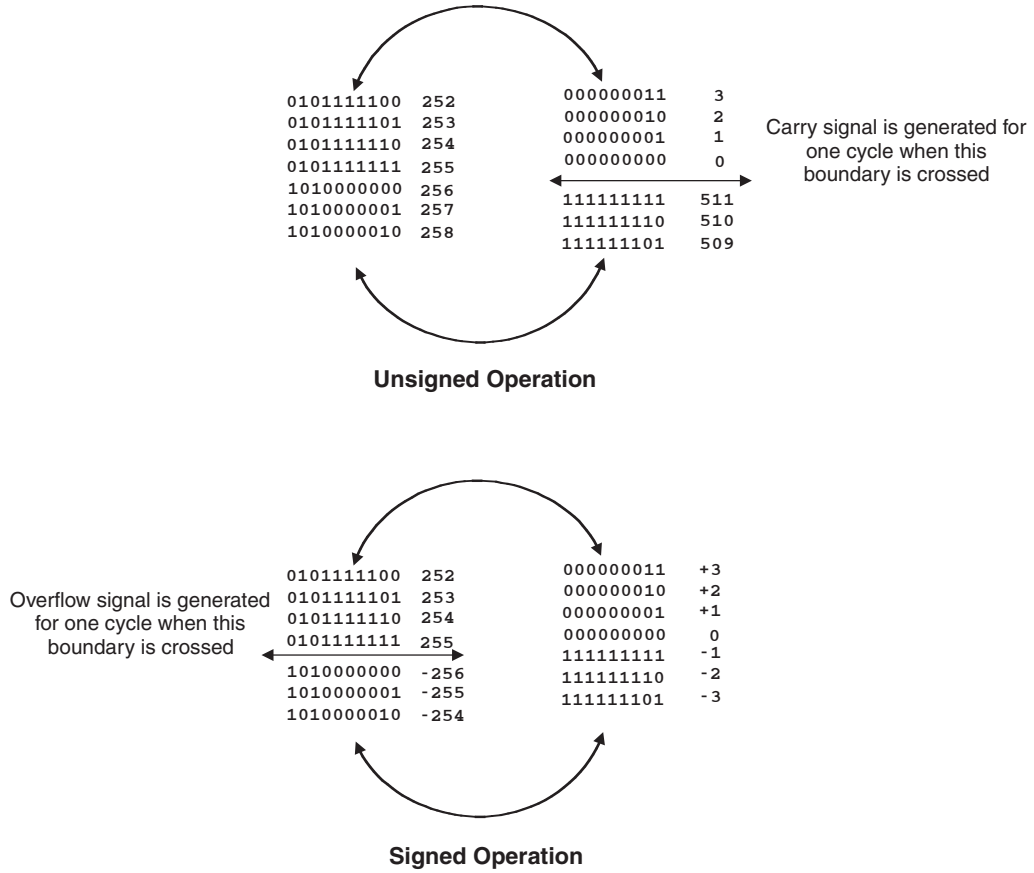


Figure 2-37. LatticeECP2 Banks

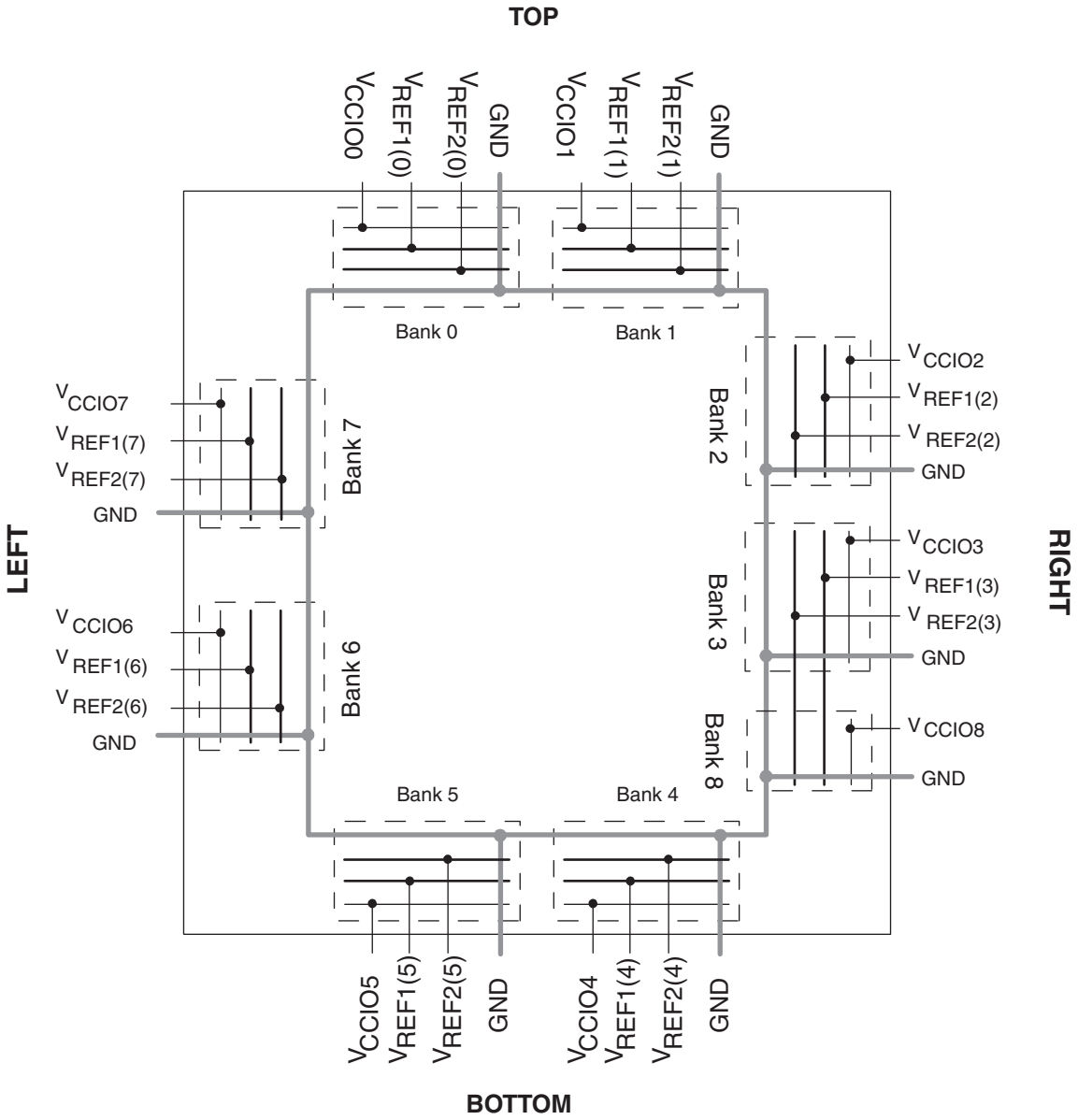


Table 2-14. Supported Output Standards

Output Standard	Drive	V_{CCIO} (Nom.)
Single-ended Interfaces		
LVTTL	4mA, 8mA, 12mA, 16mA, 20mA	3.3
LVCMOS33	4mA, 8mA, 12mA 16mA, 20mA	3.3
LVCMOS25	4mA, 8mA, 12mA, 16mA, 20mA	2.5
LVCMOS18	4mA, 8mA, 12mA, 16mA	1.8
LVCMOS15	4mA, 8mA	1.5
LVCMOS12	2mA, 6mA	1.2
LVCMOS33, Open Drain	4mA, 8mA, 12mA 16mA, 20mA	—
LVCMOS25, Open Drain	4mA, 8mA, 12mA 16mA, 20mA	—
LVCMOS18, Open Drain	4mA, 8mA, 12mA 16mA	—
LVCMOS15, Open Drain	4mA, 8mA	—
LVCMOS12, Open Drain	2mA, 6mA	—
PCI33	N/A	3.3
HSTL18 Class I, II	N/A	1.8
HSTL15 Class I	N/A	1.5
SSTL3 Class I, II	N/A	3.3
SSTL2 Class I, II	N/A	2.5
SSTL18 Class I, II	N/A	1.8
Differential Interfaces		
Differential SSTL3, Class I, II	N/A	3.3
Differential SSTL2, Class I, II	N/A	2.5
Differential SSTL18, Class I, II	N/A	1.8
Differential HSTL18, Class I, II	N/A	1.8
Differential HSTL15, Class I	N/A	1.5
LVDS	N/A	2.5
MLVDS[1]	N/A	2.5
BLVDS[1]	N/A	2.5
LVPECL[1]	N/A	3.3
RSDS[1]	N/A	2.5
LVCMOS33D[1]	4mA, 8mA, 12mA, 16mA, 20mA	3.3

1. Emulated with external resistors. For more detail, please see information regarding additional technical documentation at the end of this data sheet.

Hot Socketing

LatticeECP2/M devices have been carefully designed to ensure predictable behavior during power-up and power-down. During power-up and power-down sequences, the I/Os remain in tri-state until the power supply voltage is high enough to ensure reliable operation. In addition, leakage into I/O pins is controlled within specified limits. This allows for easy integration with the rest of the system. These capabilities make the LatticeECP2/M ideal for many multiple power supply and hot-swap applications.

LFE2-12E/SE and LFE2-20E/SE Logic Signal Connections: 208 PQFP (Cont.)

LFE2-12E/SE					LFE2-20E/SE			
Pin Number	Pin/Pad Function	Bank	Dual Function	Differential	Pin/Pad Function	Bank	Dual Function	Differential
184	GND	-			GND	-		
185	PT28A	0	PCLKT0_0	T	PT37A	0	PCLKT0_0	T
186	PT26B	0		C	PT36B	0		C
187	PT26A	0		T	PT36A	0		T
188	VCC	-			VCC	-		
189	PT20B	0		C	PT30B	0		C
190	VCCAUX	-			VCCAUX	-		
191	PT20A	0		T	PT30A	0		T
192	GND	-			GND	-		
193	PT18B	0		C	PT26B	0		C
194	PT18A	0		T	PT26A	0		T
195	VCCIO0	0			VCCIO0	0		
196	PT16B	0		C	PT20B	0		C
197	PT16A	0		T	PT20A	0		T
198	VCC	-			VCC	-		
199	PT12B	0		C	PT12B	0		C
200	PT12A	0		T	PT12A	0		T
201	GND	-			GND	-		
202	PT8B	0		C	PT8B	0		C
203	PT8A	0		T	PT8A	0		T
204	PT6B	0		C	PT6B	0		C
205	PT6A	0		T	PT6A	0		T
206	VCCIO0	0			VCCIO0	0		
207	PT2B	0	VREF2_0	C	PT2B	0	VREF2_0	C
208	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.

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

LFE2-12E/12SE					LFE2-20E/20SE			
Ball Number	Ball/Pad Function	Bank	Dual Function	Differential	Ball/Pad Function	Bank	Dual Function	Differential
T7	PL29B	6	LDQ28	C	PL43B	6	LDQ42	C
T6	PL26B	6	LDQ28	C (LVDS)*	PL40B	6	LDQ42	C (LVDS)*
AA2	PL31A	6	LDQ28	T	PL45A	6	LDQ42	T
VCCIO	VCCIO6	6			VCCIO6	6		
Y1	PL28A	6	LDQS28	T (LVDS)*	PL42A	6	LDQS42	T (LVDS)*
AA1	PL31B	6	LDQ28	C	PL45B	6	LDQ42	C
W1	PL28B	6	LDQ28	C (LVDS)*	PL42B	6	LDQ42	C (LVDS)*
V3	PL30B	6	LDQ28	C (LVDS)*	PL44B	6	LDQ42	C (LVDS)*
GNDIO	GNDIO6	-			GNDIO	-		
V4	PL30A	6	LDQ28	T (LVDS)*	PL44A	6	LDQ42	T (LVDS)*
U5	TDI	-			TDI	-		
U7	TCK	-			TCK	-		
V6	TDO	-			TDO	-		
V5	TMS	-			TMS	-		
T8	VCCJ	-			VCCJ	-		
W4	PB3A	5	BDQ6	T	PB3A	5	BDQ6	T
Y3	PB2A	5	VREF2_5/BDQ6	T	PB2A	5	VREF2_5/BDQ6	T
W3	PB3B	5	BDQ6	C	PB3B	5	BDQ6	C
Y2	PB2B	5	VREF1_5/BDQ6	C	PB2B	5	VREF1_5/BDQ6	C
AB3	PB5A	5	BDQ6	T	PB5A	5	BDQ6	T
VCCIO	VCCIO5	5			VCCIO5	5		
W5	PB4A	5	BDQ6	T	PB4A	5	BDQ6	T
AB2	PB5B	5	BDQ6	C	PB5B	5	BDQ6	C
W6	PB4B	5	BDQ6	C	PB4B	5	BDQ6	C
AB5	PB7A	5	BDQ6	T	PB7A	5	BDQ6	T
GNDIO	GNDIO5	-			GNDIO	-		
Y4	PB6A	5	BDQS6	T	PB6A	5	BDQS6	T
AB4	PB7B	5	BDQ6	C	PB7B	5	BDQ6	C
AA3	PB6B	5	BDQ6	C	PB6B	5	BDQ6	C
AB6	PB9A	5	BDQ6	T	PB9A	5	BDQ6	T
VCCIO	VCCIO5	5			VCCIO5	5		
AA5	PB8A	5	BDQ6	T	PB8A	5	BDQ6	T
AA6	PB9B	5	BDQ6	C	PB9B	5	BDQ6	C
Y5	PB8B	5	BDQ6	C	PB8B	5	BDQ6	C
GNDIO	GNDIO5	-			GNDIO	-		
-	-	-			VCCIO5	5		
Y6	PB12A	5	BDQ15	T	PB21A	5	BDQ24	T
W7	PB11A	5	BDQ15	T	PB20A	5	BDQ24	T
Y7	PB12B	5	BDQ15	C	PB21B	5	BDQ24	C
W8	PB11B	5	BDQ15	C	PB20B	5	BDQ24	C
U8	PB14A	5	BDQ15	T	PB23A	5	BDQ24	T
VCCIO	VCCIO5	5			VCCIO5	5		
AA7	PB13A	5	BDQ15	T	PB22A	5	BDQ24	T
U9	PB14B	5	BDQ15	C	PB23B	5	BDQ24	C

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

LFE2-12E/12SE					LFE2-20E/20SE			
Ball Number	Ball/Pad Function	Bank	Dual Function	Differential	Ball/Pad Function	Bank	Dual Function	Differential
M19	NC	-			PR26A	3	RDQ25	T
J22	NC	-			PR23B	3	RDQ25	C (LVDS)*
-	-	-			GNDIO	-		
L22	NC	-			PR24B	3	RDQ25	C
H22	NC	-			PR23A	3	RDQ25	T (LVDS)*
K22	NC	-			PR24A	3	RDQ25	T
M20	PR16B	3	VREF2_3	C	PR22B	3	VREF2_3/RDQ25	C
VCCIO	VCCIO3	3			VCCIO3	3		
L21	PR16A	3	VREF1_3	T	PR22A	3	VREF1_3/RDQ25	T
K21	PR15B	3	PCLKC3_0	C (LVDS)*	PR21B	3	PCLKC3_0/RDQ25	C (LVDS)*
J21	PR15A	3	PCLKT3_0	T (LVDS)*	PR21A	3	PCLKT3_0/RDQ25	T (LVDS)*
M18	PR13B	2	PCLKC2_0/RDQ10	C	PR19B	2	PCLKC2_0/RDQ16	C
GNDIO	GNDIO2	-			GNDIO2	-		
L17	PR13A	2	PCLKT2_0/RDQ10	T	PR19A	2	PCLKT2_0/RDQ16	T
L19	PR12B	2	RDQ10	C (LVDS)*	PR18B	2	RDQ16	C (LVDS)*
K18	PR10B	2	RDQ10	C (LVDS)*	PR16B	2	RDQ16	C (LVDS)*
L20	PR12A	2	RDQ10	T (LVDS)*	PR18A	2	RDQ16	T (LVDS)*
VCCIO	VCCIO2	2			VCCIO2	2		
K19	PR10A	2	RDQS10	T (LVDS)*	PR16A	2	RDQS16	T (LVDS)*
L18	PR11B	2	RDQ10	C	PR17B	2	RDQ16	C
K17	PR11A	2	RDQ10	T	PR17A	2	RDQ16	T
GNDIO	GNDIO2	-			GNDIO2	-		
J17	PR8B	2	RDQ10	C (LVDS)*	PR14B	2	RDQ16	C (LVDS)*
G22	PR9B	2	RDQ10	C	PR15B	2	RDQ16	C
J18	PR8A	2	RDQ10	T (LVDS)*	PR14A	2	RDQ16	T (LVDS)*
F22	PR9A	2	RDQ10	T	PR15A	2	RDQ16	T
VCCIO	VCCIO2	2			VCCIO2	2		
H21	PR6B	2	RDQ10	C (LVDS)*	PR12B	2	RDQ16	C (LVDS)*
K20	PR7B	2	RDQ10	C	PR13B	2	RDQ16	C
G21	PR6A	2	RDQ10	T (LVDS)*	PR12A	2	RDQ16	T (LVDS)*
J19	PR7A	2	RDQ10	T	PR13A	2	RDQ16	T
D22	NC	-			PR10B	2	RDQ8	C (LVDS)*
F21	NC	-			PR11B	2	RDQ8	C
-	-	-			GNDIO	-		
E21	NC	-			PR10A	2	RDQ8	T (LVDS)*
E22	NC	-			PR11A	2	RDQ8	T
H19	NC	-			PR8B	2	RDQ8	C (LVDS)*
G20	NC	-			PR9B	2	RDQ8	C
-	-	-			VCCIO2	2		
G19	NC	-			PR8A	2	RDQS8	T (LVDS)*
F20	NC	-			PR9A	2	RDQ8	T
G17	PR5B	2		C	PR7B	2	RDQ8	C
GNDIO	GNDIO2	-			GNDIO2	-		
E20	PR4B	2		C (LVDS)*	PR6B	2	RDQ8	C (LVDS)*

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

LFE2-12E/12SE					LFE2-20E/20SE			
Ball Number	Ball/Pad Function	Bank	Dual Function	Differential	Ball/Pad Function	Bank	Dual Function	Differential
R8	VCCIO6	6			VCCIO6	6		
J8	VCCIO7	7			VCCIO7	7		
K7	VCCIO7	7			VCCIO7	7		
L7	VCCIO7	7			VCCIO7	7		
M7	VCCIO7	7			VCCIO7	7		
P15	VCCIO8	8			VCCIO8	8		
R15	VCCIO8	8			VCCIO8	8		
C5	VCCAUX	-			VCCAUX	-		
D11	VCCAUX	-			VCCAUX	-		
E17	VCCAUX	-			VCCAUX	-		
E6	VCCAUX	-			VCCAUX	-		
F13	VCCAUX	-			VCCAUX	-		
G18	VCCAUX	-			VCCAUX	-		
G5	VCCAUX	-			VCCAUX	-		
K5	VCCAUX	-			VCCAUX	-		
M17	VCCAUX	-			VCCAUX	-		
P17	VCCAUX	-			VCCAUX	-		
R5	VCCAUX	-			VCCAUX	-		
V11	VCCAUX	-			VCCAUX	-		
V13	VCCAUX	-			VCCAUX	-		
V15	VCCAUX	-			VCCAUX	-		
V7	VCCAUX	-			VCCAUX	-		
V8	VCCAUX	-			VCCAUX	-		
A1	GND	-			GND	-		
A22	GND	-			GND	-		
AA19	GND	-			GND	-		
AA4	GND	-			GND	-		
AB1	GND	-			GND	-		
AB22	GND	-			GND	-		
B19	GND	-			GND	-		
B4	GND	-			GND	-		
C14	GND	-			GND	-		
C9	GND	-			GND	-		
D2	GND	-			GND	-		
D21	GND	-			GND	-		
F17	GND	-			GND	-		
F6	GND	-			GND	-		
H10	GND	-			GND	-		
H11	GND	-			GND	-		
H12	GND	-			GND	-		
H13	GND	-			GND	-		
J14	GND	-			GND	-		
J20	GND	-			GND	-		
J3	GND	-			GND	-		

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
U3	PL55A	6	LDQ56	T	PL74A	6	LDQ75	T
U4	PL55B	6	LDQ56	C	PL74B	6	LDQ75	C
GNDIO	GNDIO6	-			GNDIO6	-		
Y1	PL56A	6	LDQS56	T (LVDS)*	PL75A	6	LDQS75	T (LVDS)*
W1	PL56B	6	LDQ56	C (LVDS)*	PL75B	6	LDQ75	C (LVDS)*
R7	PL57A	6	LDQ56	T	PL76A	6	LDQ75	T
VCCIO	VCCIO6	6			VCCIO	6		
T7	PL57B	6	LDQ56	C	PL76B	6	LDQ75	C
V4	PL58A	6	LDQ56	T (LVDS)*	PL77A	6	LDQ75	T (LVDS)*
V3	PL58B	6	LDQ56	C (LVDS)*	PL77B	6	LDQ75	C (LVDS)*
AA2	PL59A	6	LDQ56	T	PL78A	6	LDQ75	T
GNDIO	GNDIO6	-			GNDIO6	-		
AA1	PL59B	6	LDQ56	C	PL78B	6	LDQ75	C
U7	TCK	-			TCK	-		
U5	TDI	-			TDI	-		
V5	TMS	-			TMS	-		
V6	TDO	-			TDO	-		
T8	VCCJ	-			VCCJ	-		
Y3	PB2A	5	VREF2_5/BDQ6	T	PB2A	5	VREF2_5/BDQ6	T
Y2	PB2B	5	VREF1_5/BDQ6	C	PB2B	5	VREF1_5/BDQ6	C
W4	PB3A	5	BDQ6	T	PB3A	5	BDQ6	T
W3	PB3B	5	BDQ6	C	PB3B	5	BDQ6	C
W5	PB4A	5	BDQ6	T	PB4A	5	BDQ6	T
W6	PB4B	5	BDQ6	C	PB4B	5	BDQ6	C
VCCIO	VCCIO5	5			VCCIO	5		
AB3	PB5A	5	BDQ6	T	PB5A	5	BDQ6	T
AB2	PB5B	5	BDQ6	C	PB5B	5	BDQ6	C
GNDIO	GNDIO5	-			GNDIO5	-		
Y4	PB6A	5	BDQS6	T	PB6A	5	BDQS6	T
AA3	PB6B	5	BDQ6	C	PB6B	5	BDQ6	C
AB5	PB7A	5	BDQ6	T	PB7A	5	BDQ6	T
AB4	PB7B	5	BDQ6	C	PB7B	5	BDQ6	C
AA5	PB8A	5	BDQ6	T	PB8A	5	BDQ6	T
Y5	PB8B	5	BDQ6	C	PB8B	5	BDQ6	C
VCCIO	VCCIO5	5			VCCIO	5		
AB6	PB9A	5	BDQ6	T	PB9A	5	BDQ6	T
AA6	PB9B	5	BDQ6	C	PB9B	5	BDQ6	C
GNDIO	GNDIO5	-			GNDIO5	-		
VCCIO	VCCIO5	5			VCCIO	5		
W7	PB20A	5	BDQ24	T	PB29A	5	BDQ33	T
W8	PB20B	5	BDQ24	C	PB29B	5	BDQ33	C
Y6	PB21A	5	BDQ24	T	PB30A	5	BDQ33	T
Y7	PB21B	5	BDQ24	C	PB30B	5	BDQ33	C
AA7	PB22A	5	BDQ24	T	PB31A	5	BDQ33	T
VCCIO	VCCIO5	5			VCCIO	5		
AB7	PB22B	5	BDQ24	C	PB31B	5	BDQ33	C

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	GNDIO1	-			GNDIO1	-		
C15	PT45B	1		C	PT45B	1		C
A15	PT45A	1		T	PT45A	1		T
A13	PT44B	1		C	PT44B	1		C
B13	PT44A	1		T	PT44A	1		T
VCCIO	VCCIO1	1			VCCIO1	1		
H17	PT43B	1		C	PT43B	1		C
H15	PT43A	1		T	PT43A	1		T
D13	PT42B	1		C	PT42B	1		C
C14	PT42A	1		T	PT42A	1		T
GND	GNDIO1	-			GNDIO1	-		
G14	PT41B	1		C	PT41B	1		C
E14	PT41A	1		T	PT41A	1		T
A12	PT40B	1		C	PT40B	1		C
B12	PT40A	1		T	PT40A	1		T
VCCIO	VCCIO1	1			VCCIO1	1		
F14	PT39B	1	PCLKC1_0	C	PT39B	1	PCLKC1_0	C
D14	PT39A	1	PCLKT1_0	T	PT39A	1	PCLKT1_0	T
H16	XRES	1			XRES	1		
H14	PT37B	0	PCLKC0_0	C	PT37B	0	PCLKC0_0	C
GND	GNDIO0	-			GNDIO0	-		
H13	PT37A	0	PCLKT0_0	T	PT37A	0	PCLKT0_0	T
A11	PT36B	0		C	PT36B	0		C
B11	PT36A	0		T	PT36A	0		T
C13	PT35B	0		C	PT35B	0		C
VCCIO	VCCIO0	0			VCCIO0	0		
E13	PT35A	0		T	PT35A	0		T
D12	PT34B	0		C	PT34B	0		C
F13	PT34A	0		T	PT34A	0		T
A10	PT33B	0		C	PT33B	0		C
B10	PT33A	0		T	PT33A	0		T
C12	PT32B	0		C	PT32B	0		C
GND	GNDIO0	-			GNDIO0	-		
C10	PT32A	0		T	PT32A	0		T
G13	PT31B	0		C	PT31B	0		C
VCCIO	VCCIO0	0			VCCIO0	0		
H12	PT31A	0		T	PT31A	0		T
A9	PT30B	0		C	PT30B	0		C
B9	PT30A	0		T	PT30A	0		T
E12	PT29B	0		C	PT29B	0		C
G12	PT29A	0		T	PT29A	0		T
A8	PT28B	0		C	PT28B	0		C
B8	PT28A	0		T	PT28A	0		T
GND	GNDIO0	-			GNDIO0	-		
E11	PT27B	0		C	PT27B	0		C
C9	PT27A	0		T	PT27A	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
A2	GND	-			GND	-		
A25	GND	-			GND	-		
AA18	GND	-			GND	-		
AA24	GND	-			GND	-		
AA3	GND	-			GND	-		
AA9	GND	-			GND	-		
AD11	GND	-			GND	-		
AD16	GND	-			GND	-		
AD21	GND	-			GND	-		
AD6	GND	-			GND	-		
AE1	GND	-			GND	-		
AE26	GND	-			GND	-		
AF2	GND	-			GND	-		
AF25	GND	-			GND	-		
B1	GND	-			GND	-		
B26	GND	-			GND	-		
C11	GND	-			GND	-		
C16	GND	-			GND	-		
C21	GND	-			GND	-		
C6	GND	-			GND	-		
F18	GND	-			GND	-		
F24	GND	-			GND	-		
F3	GND	-			GND	-		
F9	GND	-			GND	-		
J13	GND	-			GND	-		
J14	GND	-			GND	-		
J21	GND	-			GND	-		
J6	GND	-			GND	-		
K10	GND	-			GND	-		
K11	GND	-			GND	-		
K13	GND	-			GND	-		
K14	GND	-			GND	-		
K16	GND	-			GND	-		
K17	GND	-			GND	-		
L10	GND	-			GND	-		
L11	GND	-			GND	-		
L16	GND	-			GND	-		
L17	GND	-			GND	-		
L24	GND	-			GND	-		
L3	GND	-			GND	-		
M13	GND	-			GND	-		
M14	GND	-			GND	-		
N10	GND	-			GND	-		
N12	GND	-			GND	-		
N13	GND	-			GND	-		
N14	GND	-			GND	-		

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

LFE2M20E/SE					LFE2M35E/SE			
Ball Number	Ball/Pad Function	Bank	Dual Function	Differential	Ball/Pad Function	Bank	Dual Function	Differential
AB6	PB17A	5	PCLKT5_0/BDQ15	T	PB35A	5	PCLKT5_0/BDQ33	T
AB7	PB17B	5	PCLKC5_0/BDQ15	C	PB35B	5	PCLKC5_0/BDQ33	C
VCCIO	VCCIO5	5			VCCIO5	5		
GNDIO	GNDIO5	-			GNDIO5	-		
AA8	PB22A	4	PCLKT4_0/BDQ24	T	PB40A	4	PCLKT4_0/BDQ42	T
VCCIO	VCCIO4	4			VCCIO4	4		
AB8	PB22B	4	PCLKC4_0/BDQ24	C	PB40B	4	PCLKC4_0/BDQ42	C
AA9	PB23A	4	VREF2_4/BDQ24	T	PB41A	4	VREF2_4/BDQ42	T
Y9	PB23B	4	VREF1_4/BDQ24	C	PB41B	4	VREF1_4/BDQ42	C
AB9	PB24A	4	BDQS24****	T	PB42A	4	BDQS42****	T
GNDIO	GNDIO4	-			GNDIO4	-		
AB10	PB24B	4	BDQ24	C	PB42B	4	BDQ42	C
AA10	PB25A	4	BDQ24	T	PB43A	4	BDQ42	T
Y11	PB25B	4	BDQ24	C	PB43B	4	BDQ42	C
VCCIO	VCCIO4	4			VCCIO4	4		
GNDIO	GNDIO4	-			GNDIO4	-		
V10	PB29A	4	BDQ33	T	PB47A	4	BDQ51	T
U11	PB29B	4	BDQ33	C	PB47B	4	BDQ51	C
V11	PB30A	4	BDQ33	T	PB48A	4	BDQ51	T
W11	PB30B	4	BDQ33	C	PB48B	4	BDQ51	C
AA11	PB31A	4	BDQ33	T	PB49A	4	BDQ51	T
AB11	PB31B	4	BDQ33	C	PB49B	4	BDQ51	C
VCCIO	VCCIO4	4			VCCIO4	4		
T11	PB32A	4	BDQ33	T	PB50A	4	BDQ51	T
U12	PB32B	4	BDQ33	C	PB50B	4	BDQ51	C
GNDIO	GNDIO4	-			GNDIO4	-		
AA12	PB33A	4	BDQS33	T	PB51A	4	BDQS51	T
Y12	PB33B	4	BDQ33	C	PB51B	4	BDQ51	C
V12	PB34A	4	BDQ33	T	PB52A	4	BDQ51	T
W12	PB34B	4	BDQ33	C	PB52B	4	BDQ51	C
AB12	PB35A	4	BDQ33	T	PB53A	4	BDQ51	T
AA13	PB35B	4	BDQ33	C	PB53B	4	BDQ51	C
VCCIO	VCCIO4	4			VCCIO4	4		
T12	PB36A	4	BDQ33	T	PB54A	4	BDQ51	T
U13	PB36B	4	BDQ33	C	PB54B	4	BDQ51	C
V13	PB37A	4	BDQ33	T	PB55A	4	BDQ51	T
T13	PB37B	4	BDQ33	C	PB55B	4	BDQ51	C
GNDIO	GNDIO4	-			GNDIO4	-		
AB13	PB38A	4	BDQ42	T	PB56A	4	BDQ60	T
AB14	PB38B	4	BDQ42	C	PB56B	4	BDQ60	C
U14	PB39A	4	BDQ42	T	PB57A	4	BDQ60	T
T14	PB39B	4	BDQ42	C	PB57B	4	BDQ60	C
AA14	PB40A	4	BDQ42	T	PB58A	4	BDQ60	T
VCCIO	VCCIO4	4			VCCIO4	4		
Y14	PB40B	4	BDQ42	C	PB58B	4	BDQ60	C
W14	PB41A	4	BDQ42	T	PB59A	4	BDQ60	T
V14	PB41B	4	BDQ42	C	PB59B	4	BDQ60	C
AB15	PB42A	4	BDQS42	T	PB60A	4	BDQS60	T

LFE2M50E/SE Logic Signal Connections: 484 fpBGA (Cont.)

LFE2M50E/SE				
Ball Number	**Ball/Pad Function**	**Bank**	**Dual Function**	**Differential**
Y6	PB8A	5	BDQ6	T
Y5	PB8B	5	BDQ6	C
VCCIO	VCCIO5	5		
AB3	PB9A	5	BDQ6	T
AB4	PB9B	5	BDQ6	C
AB5	PB10A	5	BDQ6	T
AA6	PB10B	5	BDQ6	C
GNDIO	GNDIO5	-		
VCCIO	VCCIO5	5		
V9	PB40A	5	BDQ42	T
U9	PB40B	5	BDQ42	C
VCCIO	VCCIO5	5		
U10	PB41A	5	BDQ42	T
T10	PB41B	5	BDQ42	C
GNDIO	GNDIO5	-		
W9	PB42A	5	BDQS42****	T
Y8	PB42B	5	BDQ42	C
AA7	PB43A	5	VREF2_5/BDQ42	T
Y7	PB43B	5	VREF1_5/BDQ42	C
AB6	PB44A	5	PCLKT5_0/BDQ42	T
AB7	PB44B	5	PCLKC5_0/BDQ42	C
VCCIO	VCCIO5	5		
GNDIO	GNDIO5	-		
AA8	PB49A	4	PCLKT4_0/BDQ51	T
VCCIO	VCCIO4	4		
AB8	PB49B	4	PCLKC4_0/BDQ51	C
AA9	PB50A	4	VREF2_4/BDQ51	T
Y9	PB50B	4	VREF1_4/BDQ51	C
AB9	PB51A	4	BDQS51****	T
GNDIO	GNDIO4	-		
AB10	PB51B	4	BDQ51	C
AA10	PB52A	4	BDQ51	T
Y11	PB52B	4	BDQ51	C
VCCIO	VCCIO4	4		
GNDIO	GNDIO4	-		
V10	PB56A	4	BDQ60	T
U11	PB56B	4	BDQ60	C
V11	PB57A	4	BDQ60	T
W11	PB57B	4	BDQ60	C
AA11	PB58A	4	BDQ60	T
AB11	PB58B	4	BDQ60	C
VCCIO	VCCIO4	4		
T11	PB59A	4	BDQ60	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
N23	PR37A	3	PCLKT3_0	T (LVDS)*	PR41A	3	PCLKT3_0	T*
N24	PR35B	2	PCLKC2_0/RDQ32	C	PR39B	2	PCLKC2_0/RDQ36	C
N25	PR35A	2	PCLKT2_0/RDQ32	T	PR39A	2	PCLKT2_0/RDQ36	T
GNDIO	GNDIO2	-			GNDIO2	-		
M22	PR34B	2	RDQ32	C (LVDS)*	PR38B	2	RDQ36	C*
M24	PR34A	2	RDQ32	T (LVDS)*	PR38A	2	RDQ36	T*
M23	PR33B	2	RDQ32	C	PR37B	2	RDQ36	C
N26	PR33A	2	RDQ32	T	PR37A	2	RDQ36	T
VCCIO	VCCIO2	2			VCCIO2	2		
L22	PR32B	2	RDQ32	C (LVDS)*	PR36B	2	RDQ36	C*
L24	PR32A	2	RDQS32	T (LVDS)*	PR36A	2	RDQS36	T*
L23	PR31B	2	RDQ32	C	PR35B	2	RDQ36	C
GNDIO	GNDIO2	-			GNDIO2	-		
M20	PR31A	2	RDQ32	T	PR35A	2	RDQ36	T
M26	PR30B	2	RDQ32	C (LVDS)*	PR34B	2	RDQ36	C*
L26	PR30A	2	RDQ32	T (LVDS)*	PR34A	2	RDQ36	T*
K22	PR29B	2	RUM1_SPLLC_FB_A/RDQ32	C	PR33B	2	RUM3_SPLLC_FB_A/RDQ36	C
VCCIO	VCCIO2	2			VCCIO2	2		
M19	PR29A	2	RUM1_SPLLT_FB_A/RDQ32	T	PR33A	2	RUM3_SPLLT_FB_A/RDQ36	T
K25	PR28B	2	RUM1_SPLLC_IN_A/RDQ32	C (LVDS)*	PR32B	2	RUM3_SPLLC_IN_A/RDQ36	C*
K26	PR28A	2	RUM1_SPLLT_IN_A/RDQ32	T (LVDS)*	PR32A	2	RUM3_SPLLT_IN_A/RDQ36	T*
K24	PR26B	2	RDQ23	C	PR30B	2	RDQ27	C
K23	PR26A	2	RDQ23	T	PR30A	2	RDQ27	T
GNDIO	GNDIO2	-			GNDIO2	-		
L19	PR25B	2	RDQ23	C (LVDS)*	PR29B	2	RDQ27	C*
K21	PR25A	2	RDQ23	T (LVDS)*	PR29A	2	RDQ27	T*
J23	PR24B	2	RDQ23	C	PR28B	2	RDQ27	C
J24	PR24A	2	RDQ23	T	PR28A	2	RDQ27	T
VCCIO	VCCIO2	2			VCCIO2	2		
K20	PR23B	2	RDQ23	C (LVDS)*	PR27B	2	RDQ27	C*
J21	PR23A	2	RDQS23	T (LVDS)*	PR27A	2	RDQS27	T*
H21	PR22B	2	RDQ23	C	PR26B	2	RDQ27	C
GNDIO	GNDIO2	-			GNDIO2	-		
K18	PR22A	2	RDQ23	T	PR26A	2	RDQ27	T
H22	PR21B	2	RDQ23	C (LVDS)*	PR25B	2	RDQ27	C*
J20	PR21A	2	RDQ23	T (LVDS)*	PR25A	2	RDQ27	T*
J25	PR20B	2	RDQ23	C	PR24B	2	RDQ27	C
VCCIO	VCCIO2	2			VCCIO2	2		
J26	PR20A	2	RDQ23	T	PR24A	2	RDQ27	T
G21	PR19B	2	RDQ23	C (LVDS)*	PR23B	2	RDQ27	C*
J19	PR19A	2	RDQ23	T (LVDS)*	PR23A	2	RDQ27	T*
GNDIO	GNDIO2	-			GNDIO2	-		
H23	PR18B	2	RDQ15	C	PR21B	2		C
H24	PR18A	2	RDQ15	T	PR21A	2		T
H25	PR17B	2	RDQ15	C (LVDS)*	PR20B	2		C*
H26	PR17A	2	RDQ15	T (LVDS)*	PR20A	2		T*
VCCIO	VCCIO2	2			VCCIO2	2		
G22	PR16B	2	RDQ15	C	PR19B	2		C

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

LFE2M100E/SE				
Ball Number	**Ball/Pad Function**	**Bank**	**Dual Function**	**Differential**
GNDIO	GNDIO2	-		
M27	PR47B	2	RDQ45	C (LVDS)*
M28	PR47A	2	RDQ45	T (LVDS)*
H30	PR46B	2	RDQ45	C
G30	PR46A	2	RDQ45	T
VCCIO	VCCIO2	2		
M25	PR45B	2	RDQ45	C (LVDS)*
M26	PR45A	2	RDQS45	T (LVDS)*
L30	PR44B	2	RDQ45	C
GNDIO	GNDIO2	-		
L29	PR44A	2	RDQ45	T
L28	PR43B	2	RDQ45	C (LVDS)*
L27	PR43A	2	RDQ45	T (LVDS)*
H29	PR42B	2	RDQ45	C
VCCIO	VCCIO2	2		
G29	PR42A	2	RDQ45	T
L22	PR41B	2	RDQ45	C (LVDS)*
M22	PR41A	2	RDQ45	T (LVDS)*
F30	PR40B	2		C
GNDIO	GNDIO2	-		
F29	PR40A	2		T
VCCIO	VCCIO2	2		
GNDIO	GNDIO2	-		
E30	PR34B	2	RDQ32	C (LVDS)*
E29	PR34A	2	RDQ32	T (LVDS)*
-	-	-		
L25	PR33B	2	RDQ32	C
L26	PR33A	2	RDQ32	T
VCCIO	VCCIO2	2		
H28	PR32B	2	RDQ32	C (LVDS)*
J28	PR32A	2	RDQS32	T (LVDS)*
G28	PR31B	2	RDQ32	C
GNDIO	GNDIO2	-		
G27	PR31A	2	RDQ32	T
L24	PR30B	2	RDQ32	C (LVDS)*
L23	PR30A	2	RDQ32	T (LVDS)*
D30	PR29B	2	RDQ32	C
VCCIO	VCCIO2	2		
D29	PR29A	2	RDQ32	T
K24	PR28B	2	RDQ32	C (LVDS)*
K25	PR28A	2	RDQ32	T (LVDS)*
J27	PR26B	2	RDQ23	C
GNDIO	GNDIO2	-		

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

LFE2M100E/SE				
Ball Number	Ball/Pad Function	Bank	Dual Function	Differential
M10	VCCIO7	7		
M7	VCCIO7	7		
N10	VCCIO7	7		
N3	VCCIO7	7		
P10	VCCIO7	7		
R6	VCCIO7	7		
AA25	VCCIO8	8		
AD28	VCCIO8	8		
AA10	VCCAUX	-		
AA11	VCCAUX	-		
AA20	VCCAUX	-		
AA21	VCCAUX	-		
K10	VCCAUX	-		
K11	VCCAUX	-		
K20	VCCAUX	-		
K21	VCCAUX	-		
L10	VCCAUX	-		
L11	VCCAUX	-		
L20	VCCAUX	-		
L21	VCCAUX	-		
Y10	VCCAUX	-		
Y11	VCCAUX	-		
Y20	VCCAUX	-		
Y21	VCCAUX	-		
A1	GND	-		
A13	GND	-		
A18	GND	-		
A24	GND	-		
A30	GND	-		
A7	GND	-		
AA14	GND	-		
AA15	GND	-		
AA16	GND	-		
AA17	GND	-		
AA24	GND	-		
AA27	GND	-		
AA4	GND	-		
AB24	GND	-		
AB7	GND	-		
AD12	GND	-		
AD19	GND	-		
AD27	GND	-		
AE22	GND	-		

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
AG23	VCCIO4	4			VCCIO4	4		
AK21	VCCIO4	4			VCCIO4	4		
AM19	VCCIO4	4			VCCIO4	4		
AM23	VCCIO4	4			VCCIO4	4		
AC14	VCCIO5	5			VCCIO5	5		
AC15	VCCIO5	5			VCCIO5	5		
AG12	VCCIO5	5			VCCIO5	5		
AG16	VCCIO5	5			VCCIO5	5		
AK14	VCCIO5	5			VCCIO5	5		
AM12	VCCIO5	5			VCCIO5	5		
AM16	VCCIO5	5			VCCIO5	5		
AA12	VCCIO6	6			VCCIO6	6		
AB3	VCCIO6	6			VCCIO6	6		
AB8	VCCIO6	6			VCCIO6	6		
AE3	VCCIO6	6			VCCIO6	6		
AE7	VCCIO6	6			VCCIO6	6		
AH3	VCCIO6	6			VCCIO6	6		
W3	VCCIO6	6			VCCIO6	6		
W8	VCCIO6	6			VCCIO6	6		
Y12	VCCIO6	6			VCCIO6	6		
G3	VCCIO7	7			VCCIO7	7		
K3	VCCIO7	7			VCCIO7	7		
K7	VCCIO7	7			VCCIO7	7		
N3	VCCIO7	7			VCCIO7	7		
N8	VCCIO7	7			VCCIO7	7		
P12	VCCIO7	7			VCCIO7	7		
R12	VCCIO7	7			VCCIO7	7		
T3	VCCIO7	7			VCCIO7	7		
T8	VCCIO7	7			VCCIO7	7		
AD28	VCCIO8	8			VCCIO8	8		
AG32	VCCIO8	8			VCCIO8	8		
AB12	VCCAUX	-			VCCAUX	-		
AB13	VCCAUX	-			VCCAUX	-		
AB22	VCCAUX	-			VCCAUX	-		
AB23	VCCAUX	-			VCCAUX	-		
AC13	VCCAUX	-			VCCAUX	-		
AC22	VCCAUX	-			VCCAUX	-		
M13	VCCAUX	-			VCCAUX	-		
M22	VCCAUX	-			VCCAUX	-		
N12	VCCAUX	-			VCCAUX	-		
N13	VCCAUX	-			VCCAUX	-		
N22	VCCAUX	-			VCCAUX	-		
N23	VCCAUX	-			VCCAUX	-		
A1	GND	-			GND	-		
A10	GND	-			GND	-		
A13	GND	-			GND	-		
A22	GND	-			GND	-		
A25	GND	-			GND	-		
A34	GND	-			GND	-		

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
F21	GND	-			GND	-		
G31	GND	-			GND	-		
G4	GND	-			GND	-		
J12	GND	-			GND	-		
J16	GND	-			GND	-		
J19	GND	-			GND	-		
J23	GND	-			GND	-		
K27	GND	-			GND	-		
K31	GND	-			GND	-		
K4	GND	-			GND	-		
K8	GND	-			GND	-		
M16	GND	-			GND	-		
M17	GND	-			GND	-		
M18	GND	-			GND	-		
M19	GND	-			GND	-		
N16	GND	-			GND	-		
N17	GND	-			GND	-		
N18	GND	-			GND	-		
N19	GND	-			GND	-		
N26	GND	-			GND	-		
N31	GND	-			GND	-		
N4	GND	-			GND	-		
N9	GND	-			GND	-		
R16	GND	-			GND	-		
R17	GND	-			GND	-		
R18	GND	-			GND	-		
R19	GND	-			GND	-		
T12	GND	-			GND	-		
T13	GND	-			GND	-		
T15	GND	-			GND	-		
T16	GND	-			GND	-		
T17	GND	-			GND	-		
T18	GND	-			GND	-		
T19	GND	-			GND	-		
T20	GND	-			GND	-		
T22	GND	-			GND	-		
T23	GND	-			GND	-		
T26	GND	-			GND	-		
T31	GND	-			GND	-		
T4	GND	-			GND	-		
T9	GND	-			GND	-		
U12	GND	-			GND	-		
U13	GND	-			GND	-		
U15	GND	-			GND	-		
U16	GND	-			GND	-		
U17	GND	-			GND	-		
U18	GND	-			GND	-		
U19	GND	-			GND	-		
U20	GND	-			GND	-		

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
AK12	NC	-			NC	-		
AK24	NC	-			NC	-		
AK25	NC	-			NC	-		
AK26	NC	-			NC	-		
AK4	NC	-			NC	-		
AK9	NC	-			NC	-		
AL11	NC	-			NC	-		
AL12	NC	-			NC	-		
AL34	NC	-			NC	-		
AM10	NC	-			NC	-		
AM11	NC	-			NC	-		
AM13	NC	-			NC	-		
AM25	NC	-			NC	-		
AN10	NC	-			NC	-		
AN11	NC	-			NC	-		
AN12	NC	-			NC	-		
AN13	NC	-			NC	-		
AN24	NC	-			NC	-		
AN25	NC	-			NC	-		
AP11	NC	-			NC	-		
AP12	NC	-			NC	-		
AP24	NC	-			NC	-		
B10	NC	-			NC	-		
B11	NC	-			NC	-		
B12	NC	-			NC	-		
B13	NC	-			NC	-		
B22	NC	-			NC	-		
B23	NC	-			NC	-		
B24	NC	-			NC	-		
B25	NC	-			NC	-		
C10	NC	-			NC	-		
C11	NC	-			NC	-		
C13	NC	-			NC	-		
C22	NC	-			NC	-		
C24	NC	-			NC	-		
C25	NC	-			NC	-		
D1	NC	-			NC	-		
D15	NC	-			NC	-		
D24	NC	-			NC	-		
D34	NC	-			NC	-		
E10	NC	-			NC	-		
E24	NC	-			NC	-		
E25	NC	-			NC	-		
E26	NC	-			NC	-		
E3	NC	-			NC	-		
E31	NC	-			NC	-		
E32	NC	-			NC	-		
E33	NC	-			NC	-		
E34	NC	-			NC	-		

Part Number	I/Os	Voltage	Grade	Package	Pins	Temp.	LUTs (K)
LFE2-35SE-5FN484C	331	1.2V	-5	Lead-Free fpBGA	484	Com	35
LFE2-35SE-6FN484C	331	1.2V	-6	Lead-Free fpBGA	484	Com	35
LFE2-35SE-7FN484C	331	1.2V	-7	Lead-Free fpBGA	484	Com	35
LFE2-35SE-5FN672C	450	1.2V	-5	Lead-Free fpBGA	672	Com	35
LFE2-35SE-6FN672C	450	1.2V	-6	Lead-Free fpBGA	672	Com	35
LFE2-35SE-7FN672C	450	1.2V	-7	Lead-Free fpBGA	672	Com	35

Part Number	I/Os	Voltage	Grade	Package	Pins	Temp.	LUTs (K)
LFE2-50SE-5FN484C	339	1.2V	-5	Lead-Free fpBGA	484	Com	50
LFE2-50SE-6FN484C	339	1.2V	-6	Lead-Free fpBGA	484	Com	50
LFE2-50SE-7FN484C	339	1.2V	-7	Lead-Free fpBGA	484	Com	50
LFE2-50SE-5FN672C	500	1.2V	-5	Lead-Free fpBGA	672	Com	50
LFE2-50SE-6FN672C	500	1.2V	-6	Lead-Free fpBGA	672	Com	50
LFE2-50SE-7FN672C	500	1.2V	-7	Lead-Free fpBGA	672	Com	50

Part Number	I/Os	Voltage	Grade	Package	Pins	Temp.	LUTs (K)
LFE2-70SE-5FN672C	500	1.2V	-5	Lead-Free fpBGA	672	Com	70
LFE2-70SE-6FN672C	500	1.2V	-6	Lead-Free fpBGA	672	Com	70
LFE2-70SE-7FN672C	500	1.2V	-7	Lead-Free fpBGA	672	Com	70
LFE2-70SE-5FN900C	583	1.2V	-5	Lead-Free fpBGA	900	Com	70
LFE2-70SE-6FN900C	583	1.2V	-6	Lead-Free fpBGA	900	Com	70
LFE2-70SE-7FN900C	583	1.2V	-7	Lead-Free fpBGA	900	Com	70

Industrial

Part Number	I/Os	Voltage	Grade	Package	Pins	Temp.	LUTs (K)
LFE2-6SE-5TN144I	90	1.2V	-5	Lead-Free TQFP	144	Ind	6
LFE2-6SE-6TN144I	90	1.2V	-6	Lead-Free TQFP	144	Ind	6
LFE2-6SE-5FN256I	190	1.2V	-5	Lead-Free fpBGA	256	Ind	6
LFE2-6SE-6FN256I	190	1.2V	-6	Lead-Free fpBGA	256	Ind	6

Part Number	I/Os	Voltage	Grade	Package	Pins	Temp.	LUTs (K)
LFE2-12SE-5TN144I	93	1.2V	-5	Lead-Free TQFP	144	Ind	12
LFE2-12SE-6TN144I	93	1.2V	-6	Lead-Free TQFP	144	Ind	12
LFE2-12SE-5QN208I	131	1.2V	-5	Lead-Free PQFP	208	Ind	12
LFE2-12SE-6QN208I	131	1.2V	-6	Lead-Free PQFP	208	Ind	12
LFE2-12SE-5FN256I	193	1.2V	-5	Lead-Free fpBGA	256	Ind	12
LFE2-12SE-6FN256I	193	1.2V	-6	Lead-Free fpBGA	256	Ind	12
LFE2-12SE-5FN484I	297	1.2V	-5	Lead-Free fpBGA	484	Ind	12
LFE2-12SE-6FN484I	297	1.2V	-6	Lead-Free fpBGA	484	Ind	12