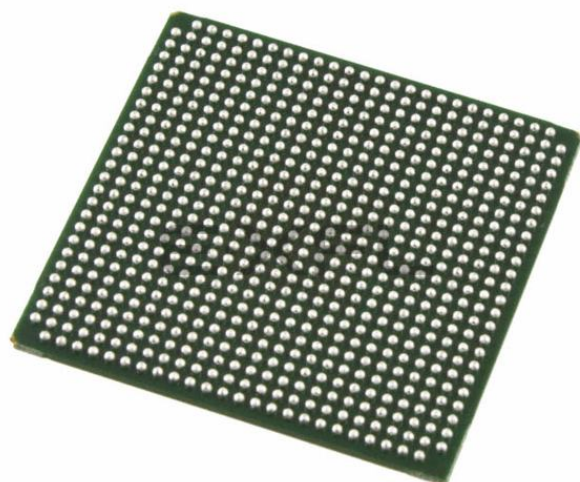




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Understanding [Embedded - FPGAs \(Field Programmable Gate Array\)](#)

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.

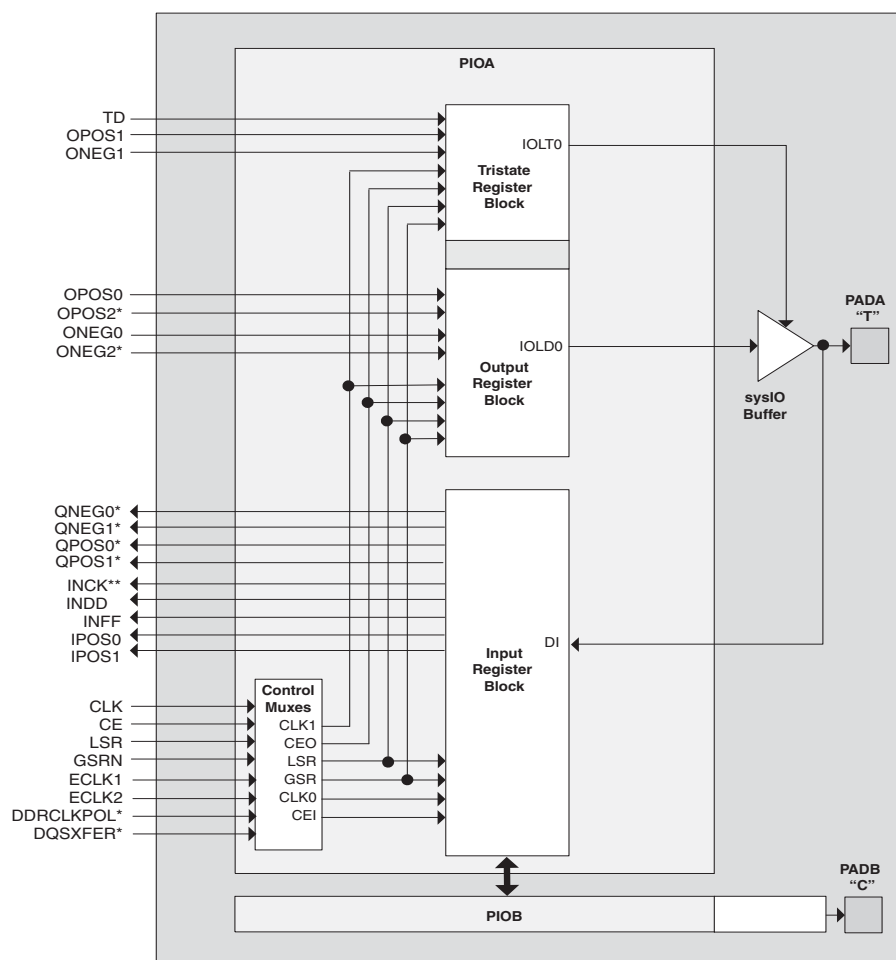
Applications of Embedded - FPGAs

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

Details

Product Status	Obsolete
Number of LABs/CLBs	6000
Number of Logic Elements/Cells	48000
Total RAM Bits	396288
Number of I/O	500
Number of Gates	-
Voltage - Supply	1.14V ~ 1.26V
Mounting Type	Surface Mount
Operating Temperature	0°C ~ 85°C (TJ)
Package / Case	672-BBGA
Supplier Device Package	672-FPBGA (27x27)
Purchase URL	https://www.e-xfl.com/product-detail/lattice-semiconductor/lfe2-50e-5f672c

Figure 2-28. PIC Diagram



*Signals are available on left/right/bottom edges only.
** Selected blocks.

Two adjacent PIOs can be joined to provide a differential I/O pair (labeled as "T" and "C") as shown in Figure 2-28. The PAD Labels "T" and "C" distinguish the two PIOs. Approximately 50% of the PIO pairs on the left and right edges of the device can be configured as true LVDS outputs. All I/O pairs can operate as inputs.

LatticeECP2 Pin Information Summary, LFE2-20 and LFE2-35

Pin Type		LFE2-20				LFE2-35	
		208 PQFP	256 fpBGA	484 fpBGA	672 fpBGA	484 fpBGA	672 fpBGA
Single Ended User I/O		131	193	331	402	331	450
Differential Pair User I/O		62	96	165	200	165	224
Configuration	TAP Pins	5	5	5	5	5	5
	Muxed Pins	14	14	14	14	14	14
	Dedicated Pins (Non TAP)	7	7	7	7	7	7
Non Configuration	Muxed Pins	42	54	60	64	60	68
	Dedicated Pins	3	3	3	3	3	3
VCC		14	7	18	24	16	22
VCCAUX		8	4	16	16	16	16
VCCPLL		0	0	0	0	2	2
VCCIO	Bank0	2	2	4	5	4	5
	Bank1	2	2	4	5	4	5
	Bank2	2	2	4	5	4	5
	Bank3	2	2	4	5	4	5
	Bank4	2	2	4	5	4	5
	Bank5	2	2	4	5	4	5
	Bank6	2	2	4	5	4	5
	Bank7	2	2	4	5	4	5
	Bank8	2	1	2	2	2	2
GND, GND0 to GND7		22	20	60	72	60	72
NC		0	1	8	101	8	102
Single Ended/ Differential I/O Pairs per Bank (including emulated with resistors)	Bank0	18/9	18/9	50/25	67/33	50/25	67/33
	Bank1	18/9	34/17	46/23	52/26	46/23	52/26
	Bank2	11/5	20/10	34/17	36/18	34/17	48/24
	Bank3	11/5	12/6	22/11	32/16	22/11	42/21
	Bank4	19/9	32/16	46/23	50/25	46/23	54/27
	Bank5	18/9	17/8	46/23	68/34	46/23	68/34
	Bank6	18/8	26/13	40/20	48/24	40/20	58/29
	Bank7	12/6	20/10	33/16	35/17	33/16	47/23
	Bank8	6/2	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	0
	Bank1 (Top Edge)	0	0	0	0	0	0
	Bank2 (Right Edge)	4	5	9	9	9	12
	Bank3 (Right Edge)	3	3	5	8	5	9
	Bank4 (Bottom Edge)	0	0	0	0	0	0
	Bank5 (Bottom Edge)	0	0	0	0	0	0
	Bank6 (Left Edge)	6	7	10	12	10	13
	Bank7 (Left Edge)	5	5	8	8	8	11
	Bank8 (Right Edge)	0	0	0	0	0	0

LatticeECP2M Power Supply and NC

Signal	256 fpBGA	484 fpBGA
V _{CC}	G7, G9, H7, J10, K10, K8	J10, J11, J12, J13, K14, K9, L14, L9, M14, M9, N14, N9, P10, P11, P12, P13
V _{CCIO0}	E7	B5, B9, E7, H9
V _{CCIO1}	E10	D13, E16, H14
V _{CCIO2}	E14, G12	E21, G18, J15, K19
V _{CCIO3}	K12, M14	N19, P15, T18, V21
V _{CCIO4}	M10, P12	AA18, R14, V16, W13
V _{CCIO5}	M7, P5	AA5, R9, V7, W10
V _{CCIO6}	K5, M3	N4, P8, T5, V2
V _{CCIO7}	E3, G5	E2, G5, J8, K4
V _{CCIO8}	T15	AA22, U19
V _{CCJ}	K7	W4
V _{CCAUX}	G8, H10, J7, K9	H11, H12, L15, L8, M15, M8, R11, R12
V _{CCPLL}	G10	R8, H15, H8, R15
SERDES Power ³	C15, B15, C12, A12, C11, C10, C14, C13, B9, C9, C5, C4, C8, C7, A6, C6, B3, C3	C22, B22, C19, A19, C18, C17, C21, C20, B16, C16, C12, C11, C15, C14, A13, C13, B10, C10
GND ¹	A1, A15, A16, A3, A9, B12, B6, E15, E2, H14, H8, H9, J3, J8, J9, M15, M2, P9, R12, R5, T1, T16	A1, A10, A16, A22, AA19, AA4, AB1, AB22, B13, B19, B4, D16, D2, D21, D7, G19, G4, H10, H13, J14, J9, K10, K11, K12, K13, K15, K20, K3, K8, L10, L11, L12, L13, M10, M11, M12, M13, N10, N11, N12, N13, N15, N20, N3, N8, P14, P9, R10, R13, T19, T4, W16, W2, W21, W7, Y10, Y13
NC ²	D10, D11, D12, D13, D14, D4, D5, D6, D7, E11, E6, E8, E9, F10, F7, F8, F9	LFE2M20: D14, D15, E14, E15, F13, F14, F15, G12, G13, G14, G15 LFE2M35: D14, D15, E14, E15, F13, F14, F15, G12, G13, G14, G15, U6 LFE2M50: Y15, W15, AB20, AB21, AA20, AB19, AB18, Y22, Y21, Y17, Y18, Y16, W17, Y19, Y20, W19, W18, V17, V18, D15, G14, G15, D14, E15, E14, F15, F14, F13, G12, G13

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

LFE2-6E/SE and LFE2-12E/SE Logic Signal Connections: 256 fpBGA

LFE2-6E/SE					LFE2-12E/SE				
Ball Number	Ball/Pad Function	Bank	Dual Function	Differential	Ball/Pad Function	Bank	Dual Function	Differential	
C3	PL2A	7	VREF2_7	T (LVDS)*	PL2A	7	VREF2_7	T (LVDS)*	
C2	PL2B	7	VREF1_7	C (LVDS)*	PL2B	7	VREF1_7	C (LVDS)*	
VCCIO	VCCIO7	7			VCCIO7	7			
-	-	-			-	-			
D3	PL5A	7		T	PL5A	7		T	
D4	PL4A	7		T (LVDS)*	PL4A	7		T (LVDS)*	
D2	PL5B	7		C	PL5B	7		C	
GND	GNDIO7	-			GNDIO7	-			
E4	PL4B	7		C (LVDS)*	PL4B	7		C (LVDS)*	
B1	PL7A	7	LDQ10	T	PL7A	7	LDQ10	T	
C1	PL7B	7	LDQ10	C	PL7B	7	LDQ10	C	
F5	PL9A	7	LDQ10	T	PL9A	7	LDQ10	T	
VCCIO	VCCIO7	7			VCCIO7	7			
F4	PL8A	7	LDQ10	T (LVDS)*	PL8A	7	LDQ10	T (LVDS)*	
G6	PL9B	7	LDQ10	C	PL9B	7	LDQ10	C	
G4	PL8B	7	LDQ10	C (LVDS)*	PL8B	7	LDQ10	C (LVDS)*	
D1	PL10A	7	LDQS10	T (LVDS)*	PL10A	7	LDQS10	T (LVDS)*	
GND	GNDIO7	-			GNDIO7	-			
E1	PL10B	7	LDQ10	C (LVDS)*	PL10B	7	LDQ10	C (LVDS)*	
F3	PL11A	7	LDQ10	T	PL11A	7	LDQ10	T	
G3	PL11B	7	LDQ10	C	PL11B	7	LDQ10	C	
VCCIO	VCCIO7	7			VCCIO7	7			
F2	PL12A	7	LDQ10	T (LVDS)*	PL12A	7	LDQ10	T (LVDS)*	
F1	PL12B	7	LDQ10	C (LVDS)*	PL12B	7	LDQ10	C (LVDS)*	
GND	GNDIO7	-			GNDIO7	-			
G2	PL13A	7	PCLKT7_0/LDQ10	T	PL13A	7	PCLKT7_0/LDQ10	T	
G1	PL13B	7	PCLKC7_0/LDQ10	C	PL13B	7	PCLKC7_0/LDQ10	C	
H6	PL15A	6	PCLKT6_0	T (LVDS)*	PL15A	6	PCLKT6_0	T (LVDS)*	
VCCIO	VCCIO6	6			VCCIO6	6			
H5	PL15B	6	PCLKC6_0	C (LVDS)*	PL15B	6	PCLKC6_0	C (LVDS)*	
H4	PL16A	6	VREF2_6	T	PL16A	6	VREF2_6	T	
GND	GNDIO6	-			GNDIO6	-			
H3	PL16B	6	VREF1_6	C	PL16B	6	VREF1_6	C	
H2	PL17A	6	LLM0_GDLLT_IN_A**	T (LVDS)*	PL17A	6	LLM0_GDLLT_IN_A**	T (LVDS)*	
H1	PL17B	6	LLM0_GDLLC_IN_A**	C (LVDS)*	PL17B	6	LLM0_GDLLC_IN_A**	C (LVDS)*	
G10	VCC	-			VCC	-			
J4	PL18A	6	LLM0_GDLLT_FB_A	T	PL18A	6	LLM0_GDLLT_FB_A	T	
J5	PL18B	6	LLM0_GDLLC_FB_A	C	PL18B	6	LLM0_GDLLC_FB_A	C	
J6	LLM0_PLLCAP	6			LLM0_PLLCAP	6			
K4	PL20A	6	LLM0_GPLLT_IN_A**	T (LVDS)*	PL20A	6	LLM0_GPLLT_IN_A**	T (LVDS)*	
GND	GNDIO6	-			GNDIO6	-			
J1	PL21A	6	LLM0_GPLLT_FB_A	T	PL21A	6	LLM0_GPLLT_FB_A	T	
K3	PL20B	6	LLM0_GPLLC_IN_A**	C (LVDS)*	PL20B	6	LLM0_GPLLC_IN_A**	C (LVDS)*	
VCCIO	VCCIO6	6			VCCIO6	6			
J2	PL21B	6	LLM0_GPLLC_FB_A	C	PL21B	6	LLM0_GPLLC_FB_A	C	

LFE2-6E/SE and LFE2-12E/SE Logic Signal Connections: 256 fpBGA (Cont.)

LFE2-6E/SE					LFE2-12E/SE			
Ball Number	Ball/Pad Function	Bank	Dual Function	Differential	Ball/Pad Function	Bank	Dual Function	Differential
GND	GNDIO6	-			GNDIO6	-		
L2	PL24A	6	LDQ28	T (LVDS)*	PL24A	6	LDQ28	T (LVDS)*
K2	PL25A	6	LDQ28	T	PL25A	6	LDQ28	T
L3	PL24B	6	LDQ28	C (LVDS)*	PL24B	6	LDQ28	C (LVDS)*
K1	PL25B	6	LDQ28	C	PL25B	6	LDQ28	C
VCCIO	VCCIO6	6			VCCIO6	6		
L4	PL26A	6	LDQ28	T (LVDS)*	PL26A	6	LDQ28	T (LVDS)*
L1	PL27A	6	LDQ28	T	PL27A	6	LDQ28	T
L5	PL26B	6	LDQ28	C (LVDS)*	PL26B	6	LDQ28	C (LVDS)*
M1	PL27B	6	LDQ28	C	PL27B	6	LDQ28	C
GND	GNDIO6	-			GNDIO6	-		
N1	PL29A	6	LDQ28	T	PL29A	6	LDQ28	T
N2	PL28A	6	LDQS28	T (LVDS)*	PL28A	6	LDQS28	T (LVDS)*
P1	PL29B	6	LDQ28	C	PL29B	6	LDQ28	C
VCCIO	VCCIO6	6			VCCIO6	6		
P2	PL28B	6	LDQ28	C (LVDS)*	PL28B	6	LDQ28	C (LVDS)*
R1	PL30A	6	LDQ28	T (LVDS)*	PL30A	6	LDQ28	T (LVDS)*
GND	GNDIO6	-			GNDIO6	-		
R2	PL30B	6	LDQ28	C (LVDS)*	PL30B	6	LDQ28	C (LVDS)*
N4	TDI	-			TDI	-		
M4	TCK	-			TCK	-		
P3	TDO	-			TDO	-		
N3	TMS	-			TMS	-		
K7	VCCJ	-			VCCJ	-		
M5	PB2A	5	VREF2_5/BDQ6	T	PB2A	5	VREF2_5/BDQ6	T
K6	NC	-			PB3A	5	BDQ6	
M6	PB2B	5	VREF1_5/BDQ6	C	PB2B	5	VREF1_5/BDQ6	C
R3	NC	-			PB5A	5	BDQ6	T
P4	NC	-			PB5B	5	BDQ6	C
-	-	-			VCCIO	5		
-	-	-			GNDIO5	5		
N5	PB3A	5	BDQ6	T	PB21A	5	BDQ24	T
N6	PB3B	5	BDQ6	C	PB21B	5	BDQ24	C
T2	PB4A	5	BDQ6	T	PB22A	5	BDQ24	T
P6	PB5A	5	BDQ6	T	PB23A	5	BDQ24	T
VCCIO	VCCIO5	5			VCCIO5	5		
T3	PB4B	5	BDQ6	C	PB22B	5	BDQ24	C
R6	PB5B	5	BDQ6	C	PB23B	5	BDQ24	C
GND	GNDIO5	-			GNDIO5	-		
R4	PB6A	5	BDQS6	T	PB24A	5	BDQS24	T
L6	PB7A	5	BDQ6	T	PB25A	5	BDQ24	T
T4	PB6B	5	BDQ6	C	PB24B	5	BDQ24	C
L7	PB7B	5	BDQ6	C	PB25B	5	BDQ24	C
N7	PB8A	5	PCLKT5_0/BDQ6	T	PB26A	5	PCLKT5_0/BDQ24	T
VCCIO	VCCIO5	5			VCCIO5	5		

LFE2-6E/SE and LFE2-12E/SE Logic Signal Connections: 256 fpBGA (Cont.)

LFE2-6E/SE					LFE2-12E/SE			
Ball Number	Ball/Pad Function	Bank	Dual Function	Differential	Ball/Pad Function	Bank	Dual Function	Differential
D5	PT2B	0	VREF2_0	C	PT2B	0	VREF2_0	C
E5	PT2A	0	VREF1_0	T	PT2A	0	VREF1_0	T
G7	VCC	-			VCC	-		
G9	VCC	-			VCC	-		
H7	VCC	-			VCC	-		
J10	VCC	-			VCC	-		
K10	VCC	-			VCC	-		
K8	VCC	-			VCC	-		
G8	VCCAUX	-			VCCAUX	-		
H10	VCCAUX	-			VCCAUX	-		
J7	VCCAUX	-			VCCAUX	-		
K9	VCCAUX	-			VCCAUX	-		
C5	VCCIO0	0			VCCIO0	0		
E7	VCCIO0	0			VCCIO0	0		
C12	VCCIO1	1			VCCIO1	1		
E10	VCCIO1	1			VCCIO1	1		
E14	VCCIO2	2			VCCIO2	2		
G12	VCCIO2	2			VCCIO2	2		
K12	VCCIO3	3			VCCIO3	3		
M14	VCCIO3	3			VCCIO3	3		
M10	VCCIO4	4			VCCIO4	4		
P12	VCCIO4	4			VCCIO4	4		
M7	VCCIO5	5			VCCIO5	5		
P5	VCCIO5	5			VCCIO5	5		
K5	VCCIO6	6			VCCIO6	6		
M3	VCCIO6	6			VCCIO6	6		
E3	VCCIO7	7			VCCIO7	7		
G5	VCCIO7	7			VCCIO7	7		
T15	VCCIO8	8			VCCIO8	8		
A1	GND	-			GND	-		
A16	GND	-			GND	-		
B12	GND	-			GND	-		
B5	GND	-			GND	-		
C8	GND	-			GND	-		
E15	GND	-			GND	-		
E2	GND	-			GND	-		
H14	GND	-			GND	-		
H8	GND	-			GND	-		
H9	GND	-			GND	-		
J3	GND	-			GND	-		
J8	GND	-			GND	-		
J9	GND	-			GND	-		
M15	GND	-			GND	-		
M2	GND	-			GND	-		
P9	GND	-			GND	-		

**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	
J9	GND	-			GND	-			
K10	GND	-			GND	-			
K11	GND	-			GND	-			
K12	GND	-			GND	-			
K13	GND	-			GND	-			
K15	GND	-			GND	-			
K8	GND	-			GND	-			
L10	GND	-			GND	-			
L11	GND	-			GND	-			
L12	GND	-			GND	-			
L13	GND	-			GND	-			
L15	GND	-			GND	-			
L8	GND	-			GND	-			
M10	GND	-			GND	-			
M11	GND	-			GND	-			
M12	GND	-			GND	-			
M13	GND	-			GND	-			
M15	GND	-			GND	-			
M8	GND	-			GND	-			
N10	GND	-			GND	-			
N11	GND	-			GND	-			
N12	GND	-			GND	-			
N13	GND	-			GND	-			
N15	GND	-			GND	-			
N8	GND	-			GND	-			
P14	GND	-			GND	-			
P20	GND	-			GND	-			
P3	GND	-			GND	-			
P9	GND	-			GND	-			
R10	GND	-			GND	-			
R11	GND	-			GND	-			
R12	GND	-			GND	-			
R13	GND	-			GND	-			
U17	GND	-			GND	-			
U6	GND	-			GND	-			
W2	GND	-			GND	-			
W21	GND	-			GND	-			
Y14	GND	-			GND	-			
Y9	GND	-			GND	-			
H6	NC	-			NC	-			
J6	NC	-			NC	-			
H3	NC	-			NC	-			
H2	NC	-			NC	-			
H17	NC	-			NC	-			

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	
G24	PR14B	2	RDQ16	C (LVDS)*	PR27B	2	RDQ29	C (LVDS)*	
G23	PR14A	2	RDQ16	T (LVDS)*	PR27A	2	RDQ29	T (LVDS)*	
VCCIO	VCCIO2	2			VCCIO2	2			
K19	PR13B	2	RDQ16	C	PR26B	2	RDQ29	C	
J19	PR13A	2	RDQ16	T	PR26A	2	RDQ29	T	
D26	PR12B	2	RDQ16	C (LVDS)*	PR25B	2	RDQ29	C (LVDS)*	
C26	PR12A	2	RDQ16	T (LVDS)*	PR25A	2	RDQ29	T (LVDS)*	
F22	PR11B	2	RDQ8	C	PR24B	2	RDQ21	C	
E24	PR11A	2	RDQ8	T	PR24A	2	RDQ21	T	
GND	GNDIO2	-			GNDIO2	-			
D25	PR10B	2	RDQ8	C (LVDS)*	PR23B	2	RDQ21	C (LVDS)*	
C25	PR10A	2	RDQ8	T (LVDS)*	PR23A	2	RDQ21	T (LVDS)*	
D24	PR9B	2	RDQ8	C	PR22B	2	RDQ21	C	
B25	PR9A	2	RDQ8	T	PR22A	2	RDQ21	T	
VCCIO	VCCIO2	2			VCCIO2	2			
H21	PR8B	2	RDQ8	C (LVDS)*	PR21B	2	RDQ21	C (LVDS)*	
G22	PR8A	2	RDQS8	T (LVDS)*	PR21A	2	RDQS21	T (LVDS)*	
B24	PR7B	2	RDQ8	C	PR20B	2	RDQ21	C	
GND	GNDIO2	-			GNDIO2	-			
C24	PR7A	2	RDQ8	T	PR20A	2	RDQ21	T	
D23	PR6B	2	RDQ8	C (LVDS)*	PR19B	2	RDQ21	C (LVDS)*	
C23	PR6A	2	RDQ8	T (LVDS)*	PR19A	2	RDQ21	T (LVDS)*	
G21	PR5B	2	RDQ8	C	PR18B	2	RDQ21	C	
VCCIO	VCCIO2	2			VCCIO2	2			
H20	PR5A	2	RDQ8	T	PR18A	2	RDQ21	T	
GND	GNDIO2	-			GNDIO2	-			
E22	PR2B	2	VREF2_2	C (LVDS)*	PR2B	2	VREF2_2	C (LVDS)*	
F21	PR2A	2	VREF1_2	T (LVDS)*	PR2A	2	VREF1_2	T (LVDS)*	
E23	PT82B	1	VREF2_1	C	PT100B	1	VREF2_1	C	
GND	GNDIO1	-			GNDIO1	-			
D22	PT82A	1	VREF1_1	T	PT100A	1	VREF1_1	T	
G20	PT81B	1		C	PT99B	1		C	
J18	PT81A	1		T	PT99A	1		T	
F20	PT80B	1		C	PT98B	1		C	
VCCIO	VCCIO1	1			VCCIO1	1			
H19	PT80A	1		T	PT98A	1		T	
A24	PT79B	1		C	PT97B	1		C	
A23	PT79A	1		T	PT97A	1		T	
E21	PT78B	1		C	PT96B	1		C	
F19	PT78A	1		T	PT96A	1		T	
C22	PT77B	1		C	PT95B	1		C	
GND	GNDIO1	-			GNDIO1	-			
E20	PT77A	1		T	PT95A	1		T	
B22	PT76B	1		C	PT94B	1		C	
VCCIO	VCCIO1	1			VCCIO1	1			
B23	PT76A	1		T	PT94A	1		T	

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

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

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

LFE2M50E/SE				
Ball Number	Ball/Pad Function	Bank	Dual Function	Differential
T1	PL65A	6	LLM0_GDLLT_FB_A	T
T2	PL65B	6	LLM0_GDLLC_FB_A	C
GNDIO	GNDIO6	-		
R7	LLM0_PLLCAP	6		
T6	PL67A	6	LDQ71	T (LVDS)*
T7	PL67B	6	LDQ71	C (LVDS)*
U1	PL68A	6	LDQ71	T
U2	PL68B	6	LDQ71	C
VCCIO	VCCIO6	6		
T3	PL69A	6	LDQ71	T (LVDS)*
U3	PL69B	6	LDQ71	C (LVDS)*
U6	PL70A	6	LDQ71	T
U5	PL70B	6	LDQ71	C
GNDIO	GNDIO6	-		
V5	PL71A	6	LDQS71	T (LVDS)*
U4	PL71B	6	LDQ71	C (LVDS)*
V1	PL72A	6	LDQ71	T
VCCIO	VCCIO6	6		
V3	PL72B	6	LDQ71	C
W1	PL73A	6	LDQ71	T (LVDS)*
Y1	PL73B	6	LDQ71	C (LVDS)*
AA1	PL74A	6	LDQ71	T
GNDIO	GNDIO6	-		
AA2	PL74B	6	LDQ71	C
V4	TCK	-		
Y2	TDI	-		
Y3	TMS	-		
W3	TDO	-		
W4	VCCJ	-		
W5	PB2A	5	BDQ6	T
Y4	PB2B	5	BDQ6	C
W6	PB3A	5	BDQ6	T
V6	PB3B	5	BDQ6	C
AA3	PB4A	5	BDQ6	T
AB2	PB4B	5	BDQ6	C
VCCIO	VCCIO5	5		
T8	PB5A	5	BDQ6	T
U7	PB5B	5	BDQ6	C
GNDIO	GNDIO5	-		
U8	PB6A	5	BDQS6	T
T9	PB6B	5	BDQ6	C
V8	PB7A	5	BDQ6	T
W8	PB7B	5	BDQ6	C

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	
GNDIO	GNDIO7	-			GNDIO7	-			
K5	PL23A	7	LDQS23	T (LVDS)*	PL27A	7	LDQS27	T*	
L5	PL23B	7	LDQ23	C (LVDS)*	PL27B	7	LDQ27	C*	
K4	PL24A	7	LDQ23	T	PL28A	7	LDQ27	T	
VCCIO	VCCIO7	7			VCCIO7	7			
L4	PL24B	7	LDQ23	C	PL28B	7	LDQ27	C	
K3	PL25A	7	LDQ23	T (LVDS)*	PL29A	7	LDQ27	T*	
L3	PL25B	7	LDQ23	C (LVDS)*	PL29B	7	LDQ27	C*	
J1	PL26A	7	LDQ23	T	PL30A	7	LDQ27	T	
GNDIO	GNDIO7	-			GNDIO7	-			
K2	PL26B	7	LDQ23	C	PL30B	7	LDQ27	C	
K1	PL28A	7	LUM1_SPLLT_IN_A/LDQ32	T (LVDS)*	PL32A	7	LUM3_SPLLT_IN_A/LDQ36	T*	
L1	PL28B	7	LUM1_SPLLC_IN_A/LDQ32	C (LVDS)*	PL32B	7	LUM3_SPLLC_IN_A/LDQ36	C*	
K8	PL29A	7	LUM1_SPLLT_FB_A/LDQ32	T	PL33A	7	LUM3_SPLLT_FB_A/LDQ36	T	
M5	PL29B	7	LUM1_SPLLC_FB_A/LDQ32	C	PL33B	7	LUM3_SPLLC_FB_A/LDQ36	C	
VCCIO	VCCIO7	7			VCCIO7	7			
M4	PL30A	7	LDQ32	T (LVDS)*	PL34A	7	LDQ36	T*	
M3	PL30B	7	LDQ32	C (LVDS)*	PL34B	7	LDQ36	C*	
L8	PL31A	7	LDQ32	T	PL35A	7	LDQ36	T	
M6	PL31B	7	LDQ32	C	PL35B	7	LDQ36	C	
GNDIO	GNDIO7	-			GNDIO7	-			
M1	PL32A	7	LDQS32	T (LVDS)*	PL36A	7	LDQS36	T*	
N1	PL32B	7	LDQ32	C (LVDS)*	PL36B	7	LDQ36	C*	
N3	PL33A	7	LDQ32	T	PL37A	7	LDQ36	T	
VCCIO	VCCIO7	7			VCCIO7	7			
N2	PL33B	7	LDQ32	C	PL37B	7	LDQ36	C	
N5	PL34A	7	LDQ32	T (LVDS)*	PL38A	7	LDQ36	T*	
N4	PL34B	7	LDQ32	C (LVDS)*	PL38B	7	LDQ36	C*	
M7	PL35A	7	PCLKT7_0/LDQ32	T	PL39A	7	PCLKT7_0/LDQ36	T	
GNDIO	GNDIO7	-			GNDIO7	-			
M8	PL35B	7	PCLKC7_0/LDQ32	C	PL39B	7	PCLKC7_0/LDQ36	C	
P3	PL37A	6	PCLKT6_0	T (LVDS)*	PL41A	6	PCLKT6_0	T*	
P2	PL37B	6	PCLKC6_0	C (LVDS)*	PL41B	6	PCLKC6_0	C*	
P5	PL38A	6	VREF2_6	T	PL42A	6	VREF2_6	T	
N6	PL38B	6	VREF1_6	C	PL42B	6	VREF1_6	C	
P4	PL39A	6		T (LVDS)*	PL43A	6		T*	
VCCIO	VCCIO6	6			VCCIO6	6			
R3	PL39B	6		C (LVDS)*	PL43B	6		C*	
P6	PL40A	6		T	PL44A	6		T	
N7	NC	-			PL44B	6		C	
P1	PL41A	6	LLM2_SPLLT_IN_A	T (LVDS)*	PL45A	6	LLM3_SPLLT_IN_A	T*	
GNDIO	GNDIO6	-			GNDIO6	-			
R1	PL41B	6	LLM2_SPLLC_IN_A	C (LVDS)*	PL45B	6	LLM3_SPLLC_IN_A	C*	
N8	PL42A	6	LLM2_SPLLT_FB_A	T	PL46A	6	LLM3_SPLLT_FB_A	T	
R5	PL42B	6	LLM2_SPLLC_FB_A	C	PL46B	6	LLM3_SPLLC_FB_A	C	
VCCIO	VCCIO6	6			VCCIO6	6			
T3	PL44A	6	LDQ48	T (LVDS)*	PL48A	6	LDQ52	T*	
T4	PL44B	6	LDQ48	C (LVDS)*	PL48B	6	LDQ52	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	
T29	PR48B	3	RDQ52	C (LVDS)*	PR60B	3	RDQ64	C (LVDS)*	
T28	PR48A	3	RDQ52	T (LVDS)*	PR60A	3	RDQ64	T (LVDS)*	
R23	PR46B	3	RLM3_SPLLC_FB_A	C	PR58B	3	RLM3_SPLLC_FB_A/RDQ55	C	
GNDIO	GNDIO3	-			GNDIO3	-			
VCCIO	VCCIO3	3			-	-			
R22	PR46A	3	RLM3_SPLLT_FB_A	T	PR58A	3	RLM3_SPLLT_FB_A/RDQ55	T	
P30	PR45B	3	RLM3_SPLLC_IN_A	C (LVDS)*	PR57B	3	RLM3_SPLLC_IN_A/RDQ55	C (LVDS)*	
R29	PR45A	3	RLM3_SPLLT_IN_A	T (LVDS)*	PR57A	3	RLM3_SPLLT_IN_A/RDQ55	T (LVDS)*	
T27	PR44B	3		C	PR56B	3	RDQ55	C	
-	-	-			VCCIO3	3			
T26	PR44A	3		T	PR56A	3	RDQ55	T	
GNDIO	GNDIO3	-			GNDIO3	-			
N30	PR43B	3		C (LVDS)*	PR53B	3	RDQ55	C (LVDS)*	
N29	PR43A	3		T (LVDS)*	PR53A	3	RDQ55	T (LVDS)*	
VCCIO	VCCIO3	3			VCCIO3	3			
R27	PR42B	3	VREF2_3	C	PR52B	3	VREF2_3/RDQ55	C	
R28	PR42A	3	VREF1_3	T	PR52A	3	VREF1_3/RDQ55	T	
P29	PR41B	3	PCLKC3_0	C (LVDS)*	PR51B	3	PCLKC3_0/RDQ55	C (LVDS)*	
P28	PR41A	3	PCLKT3_0	T (LVDS)*	PR51A	3	PCLKT3_0/RDQ55	T (LVDS)*	
M30	PR39B	2	PCLKC2_0/RDQ36	C	PR49B	2	PCLKC2_0/RDQ46	C	
M29	PR39A	2	PCLKT2_0/RDQ36	T	PR49A	2	PCLKT2_0/RDQ46	T	
GNDIO	GNDIO2	-			GNDIO2	-			
P23	PR38B	2	RDQ36	C (LVDS)*	PR48B	2	RDQ46	C (LVDS)*	
P24	PR38A	2	RDQ36	T (LVDS)*	PR48A	2	RDQ46	T (LVDS)*	
R26	PR37B	2	RDQ36	C	PR47B	2	RDQ46	C	
P27	PR37A	2	RDQ36	T	PR47A	2	RDQ46	T	
VCCIO	VCCIO2	2			VCCIO2	2			
P25	PR36B	2	RDQ36	C (LVDS)*	PR46B	2	RDQ46	C (LVDS)*	
P26	PR36A	2	RDQS36	T (LVDS)*	PR46A	2	RDQS46	T (LVDS)*	
K30	PR35B	2	RDQ36	C	PR45B	2	RDQ46	C	
GNDIO	GNDIO2	-			GNDIO2	-			
K29	PR35A	2	RDQ36	T	PR45A	2	RDQ46	T	
N22	PR34B	2	RDQ36	C (LVDS)*	PR44B	2	RDQ46	C (LVDS)*	
P22	PR34A	2	RDQ36	T (LVDS)*	PR44A	2	RDQ46	T (LVDS)*	
J30	PR33B	2	RUM3_SPLLC_FB_A/RDQ36	C	PR43B	2	RUM3_SPLLC_FB_A/RDQ46	C	
VCCIO	VCCIO2	2			VCCIO2	2			
J29	PR33A	2	RUM3_SPLLT_FB_A/RDQ36	T	PR43A	2	RUM3_SPLLT_FB_A/RDQ46	T	
N24	PR32B	2	RUM3_SPLLC_IN_A/RDQ36	C (LVDS)*	PR42B	2	RUM3_SPLLC_IN_A/RDQ46	C (LVDS)*	
N23	PR32A	2	RUM3_SPLLT_IN_A/RDQ36	T (LVDS)*	PR42A	2	RUM3_SPLLT_IN_A/RDQ46	T (LVDS)*	
N25	PR30B	2	RDQ27	C	PR40B	2	RDQ37	C	
N26	PR30A	2	RDQ27	T	PR40A	2	RDQ37	T	
GNDIO	GNDIO2	-			GNDIO2	-			
M27	PR29B	2	RDQ27	C (LVDS)*	PR39B	2	RDQ37	C (LVDS)*	
M28	PR29A	2	RDQ27	T (LVDS)*	PR39A	2	RDQ37	T (LVDS)*	
H30	PR28B	2	RDQ27	C	PR38B	2	RDQ37	C	
G30	PR28A	2	RDQ27	T	PR38A	2	RDQ37	T	
VCCIO	VCCIO2	2			VCCIO2	2			
M25	PR27B	2	RDQ27	C (LVDS)*	PR37B	2	RDQ37	C (LVDS)*	

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

LFE2M50E/SE					LFE2M70E/SE				
Ball Number	Ball/Pad Function	Bank	Dual Function	Differential	Ball/Pad Function	Bank	Dual Function	Differential	
L13	VCC	-			VCC	-			
L18	VCC	-			VCC	-			
L19	VCC	-			VCC	-			
M11	VCC	-			VCC	-			
M12	VCC	-			VCC	-			
M13	VCC	-			VCC	-			
M14	VCC	-			VCC	-			
M15	VCC	-			VCC	-			
M16	VCC	-			VCC	-			
M17	VCC	-			VCC	-			
M18	VCC	-			VCC	-			
M19	VCC	-			VCC	-			
M20	VCC	-			VCC	-			
N11	VCC	-			VCC	-			
N12	VCC	-			VCC	-			
N19	VCC	-			VCC	-			
N20	VCC	-			VCC	-			
P12	VCC	-			VCC	-			
P19	VCC	-			VCC	-			
R12	VCC	-			VCC	-			
R19	VCC	-			VCC	-			
T12	VCC	-			VCC	-			
T19	VCC	-			VCC	-			
U12	VCC	-			VCC	-			
U19	VCC	-			VCC	-			
V11	VCC	-			VCC	-			
V12	VCC	-			VCC	-			
V19	VCC	-			VCC	-			
V20	VCC	-			VCC	-			
W11	VCC	-			VCC	-			
W12	VCC	-			VCC	-			
W13	VCC	-			VCC	-			
W14	VCC	-			VCC	-			
W15	VCC	-			VCC	-			
W16	VCC	-			VCC	-			
W17	VCC	-			VCC	-			
W18	VCC	-			VCC	-			
W19	VCC	-			VCC	-			
W20	VCC	-			VCC	-			
Y12	VCC	-			VCC	-			
Y13	VCC	-			VCC	-			
Y18	VCC	-			VCC	-			
Y19	VCC	-			VCC	-			
D14	VCCIO0	0			VCCIO0	0			
E6	VCCIO0	0			VCCIO0	0			
E9	VCCIO0	0			VCCIO0	0			
F12	VCCIO0	0			VCCIO0	0			
K12	VCCIO0	0			VCCIO0	0			

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

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

LFE2M70E/SE and LFE2M100E/SE Logic Signal Connections: 1152 fpBGA

LFE2M70E/SE				LFE2M100E/SE				
Ball Number	Ball/Pad Function	Bank	Dual Function	Differential	Ball/Pad Function	Bank	Dual Function	Differential
VCCIO	VCCIO7	7			VCCIO7	7		
F4	PL9A	7	VREF2_7	T	PL9A	7	VREF2_7	T
F3	PL9B	7	VREF1_7	C	PL9B	7	VREF1_7	C
GNDIO	GNDIO7	-			GNDIO7	-		
E1	PL11A	7	LUM0_SPLLT_IN_A/LDQ15	T (LVDS)*	PL11A	7	LUM0_SPLLT_IN_A/LDQ15	T (LVDS)*
E2	PL11B	7	LUM0_SPLLC_IN_A/LDQ15	C (LVDS)*	PL11B	7	LUM0_SPLLC_IN_A/LDQ15	C (LVDS)*
K9	PL12A	7	LUM0_SPLLT_FB_A/LDQ15	T	PL12A	7	LUM0_SPLLT_FB_A/LDQ15	T
H7	PL12B	7	LUM0_SPLLC_FB_A/LDQ15	C	PL12B	7	LUM0_SPLLC_FB_A/LDQ15	C
VCCIO	VCCIO7	7			VCCIO7	7		
F1	PL13A	7	LDQ15	T (LVDS)*	PL13A	7	LDQ15	T (LVDS)*
F2	PL13B	7	LDQ15	C (LVDS)*	PL13B	7	LDQ15	C (LVDS)*
J8	PL14A	7	LDQ15	T	PL14A	7	LDQ15	T
H6	PL14B	7	LDQ15	C	PL14B	7	LDQ15	C
GNDIO	GNDIO7	-			GNDIO7	-		
G2	PL15A	7	LDQS15	T (LVDS)*	PL15A	7	LDQS15	T (LVDS)*
G1	PL15B	7	LDQ15	C (LVDS)*	PL15B	7	LDQ15	C (LVDS)*
J7	PL16A	7	LDQ15	T	PL16A	7	LDQ15	T
VCCIO	VCCIO7	7			VCCIO7	7		
L8	PL16B	7	LDQ15	C	PL16B	7	LDQ15	C
L9	PL17A	7	LDQ15	T (LVDS)*	PL17A	7	LDQ15	T (LVDS)*
L10	PL17B	7	LDQ15	C (LVDS)*	PL17B	7	LDQ15	C (LVDS)*
H5	PL18A	7	LDQ15	T	PL18A	7	LDQ15	T
GNDIO	GNDIO7	-			GNDIO7	-		
J6	PL18B	7	LDQ15	C	PL18B	7	LDQ15	C
H2	NC	-			PL19A	7	LDQ23	T (LVDS)*
H1	NC	-			PL19B	7	LDQ23	C (LVDS)*
G5	NC	-			PL20A	7	LDQ23	T
G6	NC	-			PL20B	7	LDQ23	C
M9	NC	-			PL21A	7	LDQ23	T (LVDS)*
-	-	-			VCCIO7	7		
M10	NC	-			PL21B	7	LDQ23	C (LVDS)*
H3	NC	-			PL22A	7	LDQ23	T
H4	NC	-			PL22B	7	LDQ23	C
J2	PL19A	7		T (LVDS)*	PL23A	7	LDQS23	T (LVDS)*
-	-	-			GNDIO7	-		
J1	PL19B	7		C (LVDS)*	PL23B	7	LDQ23	C (LVDS)*
K2	PL20A	7		T	PL24A	7	LDQ23	T
K1	PL20B	7		C	PL24B	7	LDQ23	C
VCCIO	VCCIO7	7			VCCIO7	7		
J4	PL21A	7		T (LVDS)*	PL25A	7	LDQ23	T (LVDS)*
J3	PL21B	7		C (LVDS)*	PL25B	7	LDQ23	C (LVDS)*
J5	PL22A	7		T	PL26A	7	LDQ23	T
K5	PL22B	7		C	PL26B	7	LDQ23	C
GNDIO	GNDIO7	-			GNDIO7	-		
L2	PL24A	7	LDQ28	T (LVDS)*	PL28A	7	LDQ32	T (LVDS)*
L1	PL24B	7	LDQ28	C (LVDS)*	PL28B	7	LDQ32	C (LVDS)*
L7	PL25A	7	LDQ28	T	PL29A	7	LDQ32	T
K6	PL25B	7	LDQ28	C	PL29B	7	LDQ32	C
VCCIO	VCCIO7	7			VCCIO7	7		

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

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

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

LFE2M70E/SE				LFE2M100E/SE				
Ball Number	Ball/Pad Function	Bank	Dual Function	Differential	Ball/Pad Function	Bank	Dual Function	Differential
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	-		

LatticeECP2 Standard Series Devices, Conventional Packaging
Commercial

Part Number	I/Os	Voltage	Grade	Package	Pins	Temp.	LUTs (K)
LFE2-6E-5T144C	90	1.2V	-5	TQFP	144	COM	6
LFE2-6E-6T144C	90	1.2V	-6	TQFP	144	COM	6
LFE2-6E-7T144C	90	1.2V	-7	TQFP	144	COM	6
LFE2-6E-5F256C	190	1.2V	-5	fpBGA	256	COM	6
LFE2-6E-6F256C	190	1.2V	-6	fpBGA	256	COM	6
LFE2-6E-7F256C	190	1.2V	-7	fpBGA	256	COM	6

Part Number	I/Os	Voltage	Grade	Package	Pins	Temp.	LUTs (K)
LFE2-12E-5T144C	93	1.2V	-5	TQFP	144	COM	12
LFE2-12E-6T144C	93	1.2V	-6	TQFP	144	COM	12
LFE2-12E-7T144C	93	1.2V	-7	TQFP	144	COM	12
LFE2-12E-5Q208C	131	1.2V	-5	PQFP	208	COM	12
LFE2-12E-6Q208C	131	1.2V	-6	PQFP	208	COM	12
LFE2-12E-7Q208C	131	1.2V	-7	PQFP	208	COM	12
LFE2-12E-5F256C	193	1.2V	-5	fpBGA	256	COM	12
LFE2-12E-6F256C	193	1.2V	-6	fpBGA	256	COM	12
LFE2-12E-7F256C	193	1.2V	-7	fpBGA	256	COM	12
LFE2-12E-5F484C	297	1.2V	-5	fpBGA	484	COM	12
LFE2-12E-6F484C	297	1.2V	-6	fpBGA	484	COM	12
LFE2-12E-7F484C	297	1.2V	-7	fpBGA	484	COM	12

Part Number	I/Os	Voltage	Grade	Package	Pins	Temp.	LUTs (K)
LFE2-20E-5Q208C	131	1.2V	-5	PQFP	208	COM	20
LFE2-20E-6Q208C	131	1.2V	-6	PQFP	208	COM	20
LFE2-20E-7Q208C	131	1.2V	-7	PQFP	208	COM	20
LFE2-20E-5F256C	193	1.2V	-5	fpBGA	256	COM	20
LFE2-20E-6F256C	193	1.2V	-6	fpBGA	256	COM	20
LFE2-20E-7F256C	193	1.2V	-7	fpBGA	256	COM	20
LFE2-20E-5F484C	331	1.2V	-5	fpBGA	484	COM	20
LFE2-20E-6F484C	331	1.2V	-6	fpBGA	484	COM	20
LFE2-20E-7F484C	331	1.2V	-7	fpBGA	484	COM	20
LFE2-20E-5F672C	402	1.2V	-5	fpBGA	672	COM	20
LFE2-20E-6F672C	402	1.2V	-6	fpBGA	672	COM	20
LFE2-20E-7F672C	402	1.2V	-7	fpBGA	672	COM	20

Part Number	I/Os	Voltage	Grade	Package	Pins	Temp.	LUTs (K)
LFE2M70SE-5F1152C	436	1.2V	-5	fpBGA	1152	Com	70
LFE2M70SE-6F1152C	436	1.2V	-6	fpBGA	1152	Com	70
LFE2M70SE-7F1152C	436	1.2V	-7	fpBGA	1152	Com	70
LFE2M70SE-5F900C	416	1.2V	-5	fpBGA	900	Com	70
LFE2M70SE-6F900C	416	1.2V	-6	fpBGA	900	Com	70
LFE2M70SE-7F900C	416	1.2V	-7	fpBGA	900	Com	70

Part Number	I/Os	Voltage	Grade	Package	Pins	Temp.	LUTs (K)
LFE2M100SE-5F1152C	520	1.2V	-5	fpBGA	1152	Com	100
LFE2M100SE-6F1152C	520	1.2V	-6	fpBGA	1152	Com	100
LFE2M100SE-7F1152C	520	1.2V	-7	fpBGA	1152	Com	100
LFE2M100SE-5F900C	416	1.2V	-5	fpBGA	900	Com	100
LFE2M100SE-6F900C	416	1.2V	-6	fpBGA	900	Com	100
LFE2M100SE-7F900C	416	1.2V	-7	fpBGA	900	Com	100