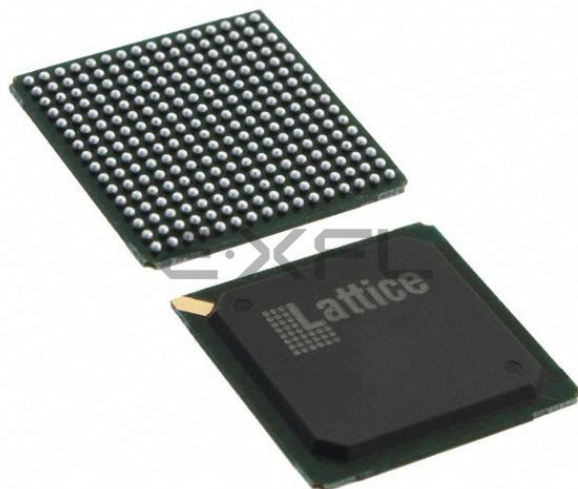




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Understanding [Embedded - FPGAs \(Field Programmable Gate Array\)](#)

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	1500
Number of Logic Elements/Cells	12000
Total RAM Bits	226304
Number of I/O	193
Number of Gates	-
Voltage - Supply	1.14V ~ 1.26V
Mounting Type	Surface Mount
Operating Temperature	-40°C ~ 100°C (TJ)
Package / Case	256-BGA
Supplier Device Package	256-FPBGA (17x17)
Purchase URL	https://www.e-xfl.com/product-detail/lattice-semiconductor/lfe2-12e-5f256i

LatticeECP2/M External Switching Characteristics⁹

Over Recommended Operating Conditions

Parameter	Description	Device	-7		-6		-5		Units
			Min.	Max.	Min.	Max.	Min.	Max.	
General I/O Pin Parameters (using Primary Clock without PLL) ¹									
t _{CO}	Clock to Output - PIO Output Register	LFE2-6	—	3.50	—	3.90	—	4.20	ns
		LFE2-12	—	3.50	—	3.90	—	4.20	ns
		LFE2-20	—	3.50	—	3.90	—	4.20	ns
		LFE2-35	—	3.50	—	3.90	—	4.20	ns
		LFE2-50	—	3.50	—	3.90	—	4.20	ns
		LFE2-70	—	3.70	—	4.10	—	4.40	ns
		LFE2M20	—	3.90	—	4.30	—	4.70	ns
		LFE2M35	—	3.90	—	4.30	—	4.70	ns
		LFE2M50	—	4.50	—	5.00	—	5.40	ns
		LFE2M70	—	4.50	—	5.00	—	5.40	ns
		LFE2M100	—	4.50	—	5.00	—	5.40	ns
t _{SU}	Clock to Data Setup - PIO Input Register	LFE2-6	0.00	—	0.00	—	0.00	—	ns
		LFE2-12	0.00	—	0.00	—	0.00	—	ns
		LFE2-20	0.00	—	0.00	—	0.00	—	ns
		LFE2-35	0.00	—	0.00	—	0.00	—	ns
		LFE2-50	0.00	—	0.00	—	0.00	—	ns
		LFE2-70	0.00	—	0.00	—	0.00	—	ns
		LFE2M20	0.00	—	0.00	—	0.00	—	ns
		LFE2M35	0.00	—	0.00	—	0.00	—	ns
		LFE2M50	0.00	—	0.00	—	0.00	—	ns
		LFE2M70	0.00	—	0.00	—	0.00	—	ns
		LFE2M100	0.00	—	0.00	—	0.00	—	ns
t _H	Clock to Data Hold - PIO Input Register	LFE2-6	1.40	—	1.70	—	1.90	—	ns
		LFE2-12	1.40	—	1.70	—	1.90	—	ns
		LFE2-20	1.40	—	1.70	—	1.90	—	ns
		LFE2-35	1.40	—	1.70	—	1.90	—	ns
		LFE2-50	1.40	—	1.70	—	1.90	—	ns
		LFE2-70	1.40	—	1.70	—	1.90	—	ns
		LFE2M20	1.40	—	1.70	—	1.90	—	ns
		LFE2M35	1.40	—	1.70	—	1.90	—	ns
		LFE2M50	1.80	—	2.10	—	2.30	—	ns
		LFE2M70	1.80	—	2.10	—	2.30	—	ns
		LFE2M100	1.80	—	2.10	—	2.30	—	ns

LatticeECP2/M External Switching Characteristics⁹ (Continued)

Over Recommended Operating Conditions

Parameter	Description	Device	-7		-6		-5		Units
			Min.	Max.	Min.	Max.	Min.	Max.	
t _{SU_DEL}	Clock to Data Setup - PIO Input Register with Data Input Delay	LFE2-6	1.40	—	1.70	—	1.90	—	ns
		LFE2-12	1.40	—	1.70	—	1.90	—	ns
		LFE2-20	1.40	—	1.70	—	1.90	—	ns
		LFE2-35	1.40	—	1.70	—	1.90	—	ns
		LFE2-50	1.40	—	1.70	—	1.90	—	ns
		LFE2-70	1.40	—	1.70	—	1.90	—	ns
		LFE2M20	1.40	—	1.70	—	1.90	—	ns
		LFE2M35	1.40	—	1.70	—	1.90	—	ns
		LFE2M50	1.40	—	1.70	—	1.90	—	ns
		LFE2M70	1.40	—	1.70	—	1.90	—	ns
		LFE2M100	1.40	—	1.70	—	1.90	—	ns
t _{H_DEL}	Clock to Data Hold - PIO Input Register with Input Data Delay	LFE2-6	0.00	—	0.00	—	0.00	—	ns
		LFE2-12	0.00	—	0.00	—	0.00	—	ns
		LFE2-20	0.00	—	0.00	—	0.00	—	ns
		LFE2-35	0.00	—	0.00	—	0.00	—	ns
		LFE2-50	0.00	—	0.00	—	0.00	—	ns
		LFE2-70	0.00	—	0.00	—	0.00	—	ns
		LFE2M20	0.00	—	0.00	—	0.00	—	ns
		LFE2M35	0.00	—	0.00	—	0.00	—	ns
		LFE2M50	0.00	—	0.00	—	0.00	—	ns
		LFE2M70	0.00	—	0.00	—	0.00	—	ns
		LFE2M100	0.00	—	0.00	—	0.00	—	ns
f _{MAX_IO}	Clock Frequency of I/O Register and PFU Register	ECP2/M	—	420	—	357	—	311	MHz
General I/O Pin Parameters (using Edge Clock without PLL)¹									
t _{COE}	Clock to Output - PIO Output Register	LFE2-6	—	2.60	—	2.90	—	3.20	ns
		LFE2-12	—	2.60	—	2.90	—	3.20	ns
		LFE2-20	—	2.60	—	2.90	—	3.20	ns
		LFE2-35	—	2.60	—	2.90	—	3.20	ns
		LFE2-50	—	2.60	—	2.90	—	3.20	ns
		LFE2-70	—	2.60	—	2.90	—	3.20	ns
		LFE2M20	—	2.60	—	2.90	—	3.20	ns
		LFE2M35	—	2.60	—	2.90	—	3.20	ns
		LFE2M50	—	3.10	—	3.40	—	3.70	ns
		LFE2M70	—	3.10	—	3.40	—	3.70	ns
		LFE2M100	—	3.10	—	3.40	—	3.70	ns

LatticeECP2 Power Supply and NC (Cont.)

Signals	672 fpBGA ³	900 fpBGA ³
VCC	LFE2-20: R8, P18, M8, L20, L12, L13, L14, L15, M11, M12, M15, M16, N11, N16, P11, P16, R11, R12, R15, R16, T12, T13, T14, T15 LFE2-35/LFE2-50: L12, L13, L14, L15, M11, M12, M15, M16, N11, N16, P11, P16, R11, R12, R15, R16, T12, T13, T14, T15 LFE2-70: L12, L13, L14, L15, M11, M12, M15, M16, N11, N16, P11, P16, R11, R12, R15, R16, T12, T13, T14, T15	AA11, AA20, K11, K21, K22, L11, L12, L13, L18, L19, L20, M11, M20, N11, N20, V11, V20, W11, W20, Y10, Y11, Y12, Y13, Y18, Y19, Y20
VCCIO0	D11, D6, G9, J12, K12	J13, J14, K12, K13, K14, K15
VCCIO1	D16, D21, G18, J15, K15	J17, J18, J20, K17, K18, K20
VCCIO2	F23, J20, L23, M17, M18	L21, M21, M22, N21, N22, R21
VCCIO3	AA23, R17, R18, T23, V20	U21, U22, V21, V22, W21, Y22
VCCIO4	AC16, AC21, U15, V15, Y18	AA16, AA17, AA18, AA19, AB17, AB18
VCCIO5	AC11, AC6, U12, V12, Y9	AA12, AA13, AA14, AB12, AB13, AB14
VCCIO6	AA4, R10, R9, T4, V7	U10, U9, V10, W10, W9, Y9
VCCIO7	F4, J7, L4, M10, M9	L10, L9, M10, N10, P10, R10
VCCIO8	AE25, V18	AA21, Y21
VCCJ	AB5	AD3
VCCAUX	J10, J11, J16, J17, K18, L18, T18, U18, V16, V17, V10, V11, T9, U9, K9, L9	AA15, AB11, AB19, AB20, J11, J12, J19, K19, L22, M9, N9, P21, P9, T10, T21, V9, W22
VCCPLL	LFE2-20: None LFE2-35/LFE2-70: R8, P18 LFE2-50: R8, P18, M8, L20	P22, P8, T22, Y7
GND ¹	A2, A25, AA18, AA24, AA3, AA9, AD11, AD16, AD21, AD6, AE1, AE26, AF2, AF25, B1, B26, C11, C16, C21, C6, F18, F24, F3, F9, J13, J14, J21, J6, K10, K11, K13, K14, K16, K17, L10, L11, L16, L17, L24, L3, M13, M14, N10, N12, N13, N14, N15, N17, P10, P12, P13, P14, P15, P17, R13, R14, T10, T11, T16, T17, T24, T3, U10, U11, U13, U14, U16, U17, V13, V14, V21, V6	A1, A30, AC28, AC3, AH13, AH18, AH23, AH28, AH3, AH8, AK1, AK30, C13, C18, C23, C28, C3, C8, H28, H3, L14, L15, L16, L17, M12, M13, M14, M15, M16, M17, M18, M19, N12, N13, N14, N15, N16, N17, N18, N19, N28, N3, P11, P12, P13, P14, P15, P16, P17, P18, P19, P20, R11, R12, R13, R14, R15, R16, R17, R18, R19, R20, T11, T12, T13, T14, T15, T16, T17, T18, T19, T20, U11, U12, U13, U14, U15, U16, U17, U18, U19, U20, V12, V13, V14, V15, V16, V17, V18, V19, V28, V3, W12, W13, W14, W15, W16, W17, W18, W19, Y14, Y15, Y16, Y17
NC ²	LFE2-20: E4, E3, E2, E1, H6, H5, F2, F1, H8, J9, G4, G3, K3, K2, K1, L2, L1, M2, M1, N2, T1, T2, P8, P6, P5, P4, U1, V1, P3, R3, R4, U2, V2, W2, T6, R5, AA19, W17, Y19, Y17, AF20, AE20, AA20, W18, AD20, AE21, AF21, AF22, R22, T21, P26, P25, R24, R23, P20, R19, P21, P19, P23, P22, N22, R21, N26, N25, J26, J25, J23, K23, H26, H25, H24, H23, F22, E24, D25, C25, D24, B25, H21, G22, B24, C24, D23, C23, E19, C19, B21, B20, D19, B19, G17, E18, G19, F17, A20, A19, E17, D18, M3, N6, P24 LFE2-35: K3, K2, K1, L2, L1, M2, M1, N2, M8, P3, R3, R4, U2, V2, W2, AF20, AE20, AA20, W18, AD20, AE21, AF21, AF22, P26, P25, R24, R23, P20, R19, L20, J26, J25, J23, K23, H26, H25, H24, H23, E19, C19, B21, B20, D19, B19, G17, E18, G19, F17, A20, A19, E17, D18, M3, N6, P24 LFE2-50: N6, P24, M3 LFE2-70: M8, L20, M3, P24, N6	A2, A3, A4, A5, AB28, AC4, AD23, AE1, AE2, AE29, AE3, AE30, AE4, AE5, AE6, AF1, AF2, AF23, AF26, AF27, AF28, AF29, AF3, AF30, AF4, AF5, AG1, AG13, AG16, AG18, AG2, AG26, AG27, AG28, AG29, AG3, AG30, AG4, AG8, AH1, AH16, AH2, AH26, AH27, AH29, AH30, AH4, AJ1, AJ2, AJ27, AJ28, AJ29, AJ3, AJ30, AK2, AK27, AK28, AK29, AK3, B1, B2, B3, B30, B4, B5, C1, C2, C29, C30, C4, D13, D18, D23, D28, D29, D3, D30, D4, E25, E26, E27, E28, E29, E3, E30, E4, E5, E6, F25, F5, F6, G6, G7, K10, K9, N27, N4, R1, R2, V27, V4

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. Pin orientation A1 starts from the upper left corner of the top side view with alphabetical order ascending vertically and numerical order ascending horizontally.

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	

LFE2-35E/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
U8	PB23A	5	BDQ24	T	PB32A	5	BDQ33	T
U9	PB23B	5	BDQ24	C	PB32B	5	BDQ33	C
W9	PB24A	5	BDQS24	T	PB33A	5	BDQS33	T
GNDIO	GNDIO5	-			GNDIO5	-		
V9	PB24B	5	BDQ24	C	PB33B	5	BDQ33	C
Y8	PB25A	5	BDQ24	T	PB34A	5	BDQ33	T
AA8	PB25B	5	BDQ24	C	PB34B	5	BDQ33	C
W10	PB26A	5	BDQ24	T	PB35A	5	BDQ33	T
VCCIO	VCCIO5	5			VCCIO	5		
V10	PB26B	5	BDQ24	C	PB35B	5	BDQ33	C
AB8	PB27A	5	BDQ24	T	PB36A	5	BDQ33	T
AA9	PB27B	5	BDQ24	C	PB36B	5	BDQ33	C
GNDIO	GNDIO5	-			GNDIO5	-		
AB9	PB29A	5	BDQ33	T	PB38A	5	BDQ42	T
AB10	PB29B	5	BDQ33	C	PB38B	5	BDQ42	C
Y10	PB30A	5	BDQ33	T	PB39A	5	BDQ42	T
AA10	PB30B	5	BDQ33	C	PB39B	5	BDQ42	C
U10	PB31A	5	BDQ33	T	PB40A	5	BDQ42	T
U11	PB31B	5	BDQ33	C	PB40B	5	BDQ42	C
VCCIO	VCCIO5	5			VCCIO	5		
AB11	PB32A	5	BDQ33	T	PB41A	5	BDQ42	T
AA11	PB32B	5	BDQ33	C	PB41B	5	BDQ42	C
GNDIO	GNDIO5	-			GNDIO5	-		
Y11	PB33A	5	BDQS33	T	PB42A	5	BDQS42	T
W11	PB33B	5	BDQ33	C	PB42B	5	BDQ42	C
AB12	PB34A	5	BDQ33	T	PB43A	5	BDQ42	T
AA12	PB34B	5	BDQ33	C	PB43B	5	BDQ42	C
AB13	PB35A	5	PCLKT5_0/BDQ33	T	PB44A	5	PCLKT5_0/BDQ42	T
AB14	PB35B	5	PCLKC5_0/BDQ33	C	PB44B	5	PCLKC5_0/BDQ42	C
VCCIO	VCCIO5	5			VCCIO	5		
GNDIO	GNDIO5	-			GNDIO5	-		
U12	PB40A	4	PCLKT4_0/BDQ42	T	PB49A	4	PCLKT4_0/BDQ51	T
VCCIO	VCCIO4	4			VCCIO	4		
V12	PB40B	4	PCLKC4_0/BDQ42	C	PB49B	4	PCLKC4_0/BDQ51	C
Y12	PB41A	4	BDQ42	T	PB50A	4	BDQ51	T
W12	PB41B	4	BDQ42	C	PB50B	4	BDQ51	C
AA13	PB42A	4	BDQS42	T	PB51A	4	BDQS51	T
GNDIO	GNDIO4	-			GNDIO4	-		
Y13	PB42B	4	BDQ42	C	PB51B	4	BDQ51	C
U13	PB43A	4	BDQ42	T	PB52A	4	BDQ51	T
U14	PB43B	4	BDQ42	C	PB52B	4	BDQ51	C
AB15	PB44A	4	BDQ42	T	PB53A	4	BDQ51	T
VCCIO	VCCIO4	4			VCCIO	4		
AA14	PB44B	4	BDQ42	C	PB53B	4	BDQ51	C
AB16	PB45A	4	BDQ42	T	PB54A	4	BDQ51	T
AB17	PB45B	4	BDQ42	C	PB54B	4	BDQ51	C

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
C8	PT29B	0		C	PT38B	0		C
D8	PT29A	0		T	PT38A	0		T
GNDIO	GNDIO0	-			GNDIO0	0		
D10	PT27B	0		C	PT36B	0		C
E10	PT27A	0		T	PT36A	0		T
C7	PT26B	0		C	PT35B	0		C
C6	PT26A	0		T	PT35A	0		T
VCCIO	VCCIO0	0			VCCIO	0		
B6	PT25B	0		C	PT34B	0		C
B5	PT25A	0		T	PT34A	0		T
F10	PT24B	0		C	PT33B	0		C
D9	PT24A	0		T	PT33A	0		T
GNDIO	GNDIO0	-			GNDIO0	0		
F9	PT23B	0		C	PT32B	0		C
E9	PT23A	0		T	PT32A	0		T
A5	PT22B	0		C	PT31B	0		C
A4	PT22A	0		T	PT31A	0		T
VCCIO	VCCIO0	0			VCCIO	0		
A3	PT21B	0		C	PT30B	0		C
A2	PT21A	0		T	PT30A	0		T
G8	PT20B	0		C	PT29B	0		C
E8	PT20A	0		T	PT29A	0		T
GNDIO	GNDIO0	-			GNDIO0	0		
VCCIO	VCCIO0	0			VCCIO	0		
C3	PT10B	0		C	PT10B	0		C
B3	PT10A	0		T	PT10A	0		T
GNDIO	GNDIO0	-			GNDIO0	0		
F8	PT9B	0		C	PT9B	0		C
D7	PT9A	0		T	PT9A	0		T
E7	PT8B	0		C	PT8B	0		C
VCCIO	VCCIO0	0			VCCIO	0		
F7	PT8A	0		T	PT8A	0		T
D5	PT7B	0		C	PT7B	0		C
D6	PT7A	0		T	PT7A	0		T
D4	PT6B	0		C	PT6B	0		C
C4	PT6A	0		T	PT6A	0		T
GNDIO	GNDIO0	-			GNDIO0	0		
B2	PT5B	0		C	PT5B	0		C
B1	PT5A	0		T	PT5A	0		T
J7	PT4B	0		C	PT4B	0		C
VCCIO	VCCIO0	0			VCCIO	0		
H7	PT4A	0		T	PT4A	0		T
D3	PT3B	0		C	PT3B	0		C
C2	PT3A	0		T	PT3A	0		T
D1	PT2B	0	VREF2_0	C	PT2B	0	VREF2_0	C
C1	PT2A	0	VREF1_0	T	PT2A	0	VREF1_0	T

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

LFE2-50E/SE					LFE2-70E/SE			
Ball Number	Ball/Pad Function	Bank	Dual Function	Differential	Ball/Pad Function	Bank	Dual Function	Differential
Y21	PB82A	4	VREF2_4/BDQ78	T	PB100A	4	VREF2_4/BDQ96	T
AB23	PB82B	4	VREF1_4/BDQ78	C	PB100B	4	VREF1_4/BDQ96	C
GND	GNDIO4	-			GNDIO4	-		
AD24	CFG2	8			CFG2	8		
W20	CFG1	8			CFG1	8		
AC24	CFG0	8			CFG0	8		
V19	PROGRAMN	8			PROGRAMN	8		
AA22	CCLK	8			CCLK	8		
AB24	INITN	8			INITN	8		
AD25	DONE	8			DONE	8		
GND	GNDIO8	-			GNDIO8	-		
W21	PR77B	8	WRITEN	C	PR90B	8	WRITEN	C
Y22	PR77A	8	CS1N	T	PR90A	8	CS1N	T
AC25	PR76B	8	CSN	C	PR89B	8	CSN	C
AB25	PR76A	8	D0/SPIFASTN	T	PR89A	8	D0/SPIFASTN	T
VCCIO	VCCIO8	8			VCCIO8	8		
AD26	PR75B	8	D1	C	PR88B	8	D1	C
AC26	PR75A	8	D2	T	PR88A	8	D2	T
Y23	PR74B	8	D3	C	PR87B	8	D3	C
GND	GNDIO8	-			GNDIO8	-		
W22	PR74A	8	D4	T	PR87A	8	D4	T
AA25	PR73B	8	D5	C	PR86B	8	D5	C
AB26	PR73A	8	D6	T	PR86A	8	D6	T
W23	PR72B	8	D7/SPID0	C	PR85B	8	D7/SPID0	C
VCCIO	VCCIO8	8			VCCIO8	8		
V22	PR72A	8	DI/CSSPI0N	T	PR85A	8	DI/CSSPI0N	T
Y24	PR71B	8	DOUT/CSON	C	PR84B	8	DOUT/CSON	C
Y25	PR71A	8	BUSY/SISPI	T	PR84A	8	BUSY/SISPI	T
W24	PR70B	3	RDQ67	C	PR83B	3	RDQ80	C
GND	GNDIO3	-			GNDIO3	-		
V23	PR70A	3	RDQ67	T	PR83A	3	RDQ80	T
AA26	PR69B	3	RDQ67	C (LVDS)*	PR82B	3	RDQ80	C (LVDS)*
Y26	PR69A	3	RDQ67	T (LVDS)*	PR82A	3	RDQ80	T (LVDS)*
U21	PR68B	3	RDQ67	C	PR81B	3	RDQ80	C
VCCIO	VCCIO3	3			VCCIO3	3		
U19	PR68A	3	RDQ67	T	PR81A	3	RDQ80	T
W25	PR67B	3	RDQ67	C (LVDS)*	PR80B	3	RDQ80	C (LVDS)*
W26	PR67A	3	RDQS67	T (LVDS)*	PR80A	3	RDQS80	T (LVDS)*
GND	GNDIO3	-			GNDIO3	-		
V24	PR66B	3	RDQ67	C	PR79B	3	RDQ80	C
V25	PR66A	3	RDQ67	T	PR79A	3	RDQ80	T
V26	PR65B	3	RDQ67	C (LVDS)*	PR78B	3	RDQ80	C (LVDS)*
U26	PR65A	3	RDQ67	T (LVDS)*	PR78A	3	RDQ80	T (LVDS)*
VCCIO	VCCIO3	3			VCCIO3	3		
U22	PR64B	3	RLM0_GPLL_C_FB_A/RDQ67	C	PR77B	3	RLM0_GPLL_C_FB_A/RDQ80	C
U23	PR64A	3	RLM0_GPLL_T_FB_A/RDQ67	T	PR77A	3	RLM0_GPLL_T_FB_A/RDQ80	T

LFE2-70E/SE Logic Signal Connections: 900 fpBGA (Cont.)

LFE2-70E/SE				
Ball Number	Ball/Pad Function	Bank	Dual Function	Differential
AH24	PB89A	4	BDQ87	T
AH25	PB89B	4	BDQ87	C
VCCIO	VCCIO4	4		
AJ26	PB90A	4	BDQ87	T
AK26	PB90B	4	BDQ87	C
AF25	PB91A	4	BDQ87	T
AG25	PB91B	4	BDQ87	C
GND	GNDIO4	-		
AK22	PB92A	4	BDQ96	T
AJ22	PB92B	4	BDQ96	C
AE22	PB93A	4	BDQ96	T
AF22	PB93B	4	BDQ96	C
AG22	PB94A	4	BDQ96	T
VCCIO	VCCIO4	4		
AH22	PB94B	4	BDQ96	C
AG24	PB95A	4	BDQ96	T
AG23	PB95B	4	BDQ96	C
AE23	PB96A	4	BDQS96	
GND	GNDIO4	-		
AC22	PB97A	4	BDQ96	
AJ23	PB98A	4	BDQ96	T
VCCIO	VCCIO4	4		
AK23	PB98B	4	BDQ96	C
AD24	PB99A	4	BDQ96	T
AF24	PB99B	4	BDQ96	C
AC23	PB100A	4	VREF2_4/BDQ96	T
GND	GNDIO4	-		
AE24	PB100B	4	VREF1_4/BDQ96	C
AE25	CFG2	8		
AB22	CFG1	8		
AE26	CFG0	8		
AA22	PROGRAMN	8		
AD25	CCLK	8		
AD26	INITN	8		
AC24	DONE	8		
GND	GNDIO4	-		
AC25	PR90B	8	WRITEN	C
AE27	PR90A	8	CS1N	T
AC26	PR89B	8	CSN	C
AE28	PR89A	8	D0/SPIFASTN	T
VCCIO	VCCIO8	8		
AD27	PR88B	8	D1	C
AD28	PR88A	8	D2	T

LFE2-70E/SE Logic Signal Connections: 900 fpBGA (Cont.)

LFE2-70E/SE				
Ball Number	Ball/Pad Function	Bank	Dual Function	Differential
AB24	PR87B	8	D3	C
GND	GNDIO4	-		
AB23	PR87A	8	D4	T
AB25	PR86B	8	D5	C
AB26	PR86A	8	D6	T
AC27	PR85B	8	D7/SPID0	C
VCCIO	VCCIO8	8		
AB27	PR85A	8	DI/CSSPION	T
AD29	PR84B	8	DOUT/CSON	C
AD30	PR84A	8	BUSY/SISPI	T
AA25	PR83B	3	RDQ80	C
GND	GNDIO3	-		
AA23	PR83A	3	RDQ80	T
AC29	PR82B	3	RDQ80	C (LVDS)*
AC30	PR82A	3	RDQ80	T (LVDS)*
AA26	PR81B	3	RDQ80	C
VCCIO	VCCIO3	3		
AA24	PR81A	3	RDQ80	T
AB29	PR80B	3	RDQ80	C (LVDS)*
AB30	PR80A	3	RDQS80	T (LVDS)*
GND	GNDIO3	-		
Y23	PR79B	3	RDQ80	C
Y25	PR79A	3	RDQ80	T
AA27	PR78B	3	RDQ80	C (LVDS)*
AA28	PR78A	3	RDQ80	T (LVDS)*
VCCIO	VCCIO3	3		
Y24	PR77B	3	RLM0_GPLL_C_FB_A/RDQ80	C
Y26	PR77A	3	RLM0_GPLLT_FB_A/RDQ80	T
AA29	PR76B	3	RLM0_GPLL_C_IN_A**/RDQ80	C (LVDS)*
AA30	PR76A	3	RLM0_GPLLT_IN_A**/RDQ80	T (LVDS)*
R22	RLM0_PLLCAP	3		
W23	PR74B	3	RLM0_GDLL_C_FB_A/RDQ71	C
W25	PR74A	3	RLM0_GDLLT_FB_A/RDQ71	T
GND	GNDIO3	-		
Y27	PR73B	3	RLM0_GDLL_C_IN_A**/RDQ71	C (LVDS)*
Y28	PR73A	3	RLM0_GDLLT_IN_A**/RDQ71	T (LVDS)*
W24	PR72B	3	RDQ71	C
W26	PR72A	3	RDQ71	T
VCCIO	VCCIO3	3		
Y29	PR71B	3	RDQ71	C (LVDS)*
Y30	PR71A	3	RDQS71	T (LVDS)*
V25	PR70B	3	RDQ71	C
GND	GNDIO3	-		

LFE2-70E/SE Logic Signal Connections: 900 fpBGA (Cont.)

LFE2-70E/SE				
Ball Number	Ball/Pad Function	Bank	Dual Function	Differential
P25	PR51B	2	RDQ54	C
VCCIO	VCCIO2	2		
P23	PR51A	2	RDQ54	T
P27	PR50B	2	RDQ54	C (LVDS)*
P28	PR50A	2	RDQ54	T (LVDS)*
GND	GNDIO2	-		
VCCIO	VCCIO2	2		
N24	PR39B	2	RUM0_SPLLC_FB_A/RDQ37	C
N26	PR39A	2	RUM0_SPLLT_FB_A/RDQ37	T
N23	PR38B	2	RUM0_SPLLC_IN_A/RDQ37	C
N25	PR38A	2	RUM0_SPLLT_IN_A/RDQ37	T
VCCIO	VCCIO2	2		
P29	PR37B	2	RDQ37	C (LVDS)*
P30	PR37A	2	RDQS37	T (LVDS)*
M26	PR36B	2	RDQ37	C
GND	GNDIO2	-		
M24	PR36A	2	RDQ37	T
N29	PR35B	2	RDQ37	C (LVDS)*
N30	PR35A	2	RDQ37	T (LVDS)*
M25	PR34B	2	RDQ37	C
VCCIO	VCCIO2	2		
M23	PR34A	2	RDQ37	T
M27	PR33B	2	RDQ37	C (LVDS)*
M28	PR33A	2	RDQ37	T (LVDS)*
L26	PR32B	2	RDQ29	C
GND	GNDIO2	-		
L24	PR32A	2	RDQ29	T
M29	PR31B	2	RDQ29	C (LVDS)*
M30	PR31A	2	RDQ29	T (LVDS)*
L25	PR30B	2	RDQ29	C
VCCIO	VCCIO2	2		
L23	PR30A	2	RDQ29	T
L27	PR29B	2	RDQ29	C (LVDS)*
L28	PR29A	2	RDQS29	T (LVDS)*
GND	GNDIO2	-		
K24	PR28B	2	RDQ29	C
K26	PR28A	2	RDQ29	T
L29	PR27B	2	RDQ29	C (LVDS)*
L30	PR27A	2	RDQ29	T (LVDS)*
VCCIO	VCCIO2	2		
K23	PR26B	2	RDQ29	C
K25	PR26A	2	RDQ29	T
K27	PR25B	2	RDQ29	C (LVDS)*

LFE2-70E/SE Logic Signal Connections: 900 fpBGA (Cont.)

LFE2-70E/SE				
Ball Number	Ball/Pad Function	Bank	Dual Function	Differential
K28	PR25A	2	RDQ29	T (LVDS)*
J24	PR24B	2	RDQ21	C
J26	PR24A	2	RDQ21	T
GND	GNDIO2	-		
K29	PR23B	2	RDQ21	C (LVDS)*
K30	PR23A	2	RDQ21	T (LVDS)*
J23	PR22B	2	RDQ21	C
J25	PR22A	2	RDQ21	T
VCCIO	VCCIO2	99		
J27	PR21B	2	RDQ21	C (LVDS)*
J28	PR21A	2	RDQS21	T (LVDS)*
H26	PR20B	2	RDQ21	C
GND	GNDIO2	-		
H24	PR20A	2	RDQ21	T
J29	PR19B	2	RDQ21	C (LVDS)*
J30	PR19A	2	RDQ21	T (LVDS)*
H25	PR18B	2	RDQ21	C
VCCIO	VCCIO2	2		
H23	PR18A	2	RDQ21	T
G27	PR15B	2	RUM1_SPLLC_FB_A/RDQ12	C
GND	GNDIO2	-		
H27	PR15A	2	RUM1_SPLLT_FB_A/RDQ12	T
G29	PR14B	2	RUM1_SPLLC_IN_A/RDQ12	C (LVDS)*
G28	PR14A	2	RUM1_SPLLT_IN_A/RDQ12	T (LVDS)*
VCCIO	VCCIO2	2		
GND	GNDIO2	-		
G26	PR6B	2		C (LVDS)*
G25	PR6A	2		T (LVDS)*
G30	PR5B	2		C
F30	PR5A	2		T
VCCIO	VCCIO2	2		
F26	PR4B	2		C (LVDS)*
F27	PR4A	2		T (LVDS)*
F29	PR3B	2		C
GND	GNDIO2	-		
F28	PR3A	2		T
H29	PR2B	2	VREF2_2	C (LVDS)*
H30	PR2A	2	VREF1_2	T (LVDS)*
VCCIO	VCCIO2	2		
B26	PT100B	1	VREF2_1	C
A26	PT100A	1	VREF1_1	T
GND	GNDIO1	-		
C25	PT99B	1		C

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
A7	URC_SQ_HDOUTP3	12		T	URC_SQ_HDOUTP3	12		T
C6	URC_SQ_VCCTX3	12			URC_SQ_VCCTX3	12		
B4	URC_SQ_HDINN3	12		C	URC_SQ_HDINN3	12		C
B3	URC_SQ_VCCIB3	12			URC_SQ_VCCIB3	12		
A4	URC_SQ_HDINP3	12		T	URC_SQ_HDINP3	12		T
C3	URC_SQ_VCCRX3	12			URC_SQ_VCCRX3	12		
GNDIO	GNDIO1	-			GNDIO1	-		
VCCIO	VCCIO1	1			VCCIO1	1		
GNDIO	GNDIO0	-			GNDIO0	-		
VCCIO	VCCIO0	0			VCCIO0	0		
G10	VCCPLL	-			VCCPLL	-		
G7	VCC	-			VCC	-		
G9	VCC	-			VCC	-		
H7	VCC	-			VCC	-		
J10	VCC	-			VCC	-		
K10	VCC	-			VCC	-		
K8	VCC	-			VCC	-		
E7	VCCIO0	0			VCCIO0	0		
VCCIO	VCCIO0	0			VCCIO0	0		
E10	VCCIO1	1			VCCIO1	1		
VCCIO	VCCIO1	1			VCCIO1	1		
E14	VCCIO2	2			VCCIO2	2		
G12	VCCIO2	2			VCCIO2	2		
VCCIO	VCCIO2	2			VCCIO2	2		
K12	VCCIO3	3			VCCIO3	3		
M14	VCCIO3	3			VCCIO3	3		
VCCIO	VCCIO3	3			VCCIO3	3		
M10	VCCIO4	4			VCCIO4	4		
P12	VCCIO4	4			VCCIO4	4		
VCCIO	VCCIO4	4			VCCIO4	4		
M7	VCCIO5	5			VCCIO5	5		
P5	VCCIO5	5			VCCIO5	5		
VCCIO	VCCIO5	5			VCCIO5	5		
K5	VCCIO6	6			VCCIO6	6		
M3	VCCIO6	6			VCCIO6	6		
VCCIO	VCCIO6	6			VCCIO6	6		
E3	VCCIO7	7			VCCIO7	7		
G5	VCCIO7	7			VCCIO7	7		
VCCIO	VCCIO7	7			VCCIO7	7		
T15	VCCIO8	8			VCCIO8	8		
VCCIO	VCCIO8	8			VCCIO8	8		
G8	VCCAUX	-			VCCAUX	-		
H10	VCCAUX	-			VCCAUX	-		
J7	VCCAUX	-			VCCAUX	-		
K9	VCCAUX	-			VCCAUX	-		
A1	GND	-			GND	-		
A15	GND	-			GND	-		
A16	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	
E13	PT28B	1		C	PT46B	1		C	
D12	PT28A	1		T	PT46A	1		T	
GNDIO	GNDIO1	-			GNDIO1	-			
A9	PT27B	1		C	PT45B	1		C	
A8	PT27A	1		T	PT45A	1		T	
A7	PT26B	1		C	PT44B	1		C	
A6	PT26A	1		T	PT44A	1		T	
VCCIO	VCCIO1	1			VCCIO1	1			
E12	PT25B	1		C	PT43B	1		C	
F12	PT25A	1		T	PT43A	1		T	
A5	PT24B	1		C	PT42B	1		C	
A4	PT24A	1		T	PT42A	1		T	
GNDIO	GNDIO1	-			GNDIO1	-			
B7	PT23B	1		C	PT41B	1		C	
B8	PT23A	1		T	PT41A	1		T	
G11	PT22B	1		C	PT40B	1		C	
E11	PT22A	1		T	PT40A	1		T	
VCCIO	VCCIO1	1			VCCIO1	1			
D11	PT21B	1	VREF2_1	C	PT39B	1	VREF2_1	C	
D10	PT21A	1	VREF1_1	T	PT39A	1	VREF1_1	T	
F11	PT20A	1	PCLKT1_0	T	PT38A	1	PCLKT1_0	T	
G10	PT20B	1	PCLKC1_0	C	PT38B	1	PCLKC1_0	C	
G9	PT19B	0	PCLKC0_0	C	PT37B	0	PCLKC0_0	C	
GNDIO	GNDIO0	-			GNDIO0	-			
F9	PT19A	0	PCLKT0_0	T	PT37A	0	PCLKT0_0	T	
C9	PT18B	0	VREF2_0	C	PT36B	0	VREF2_0	C	
D9	PT18A	0	VREF1_0	T	PT36A	0	VREF1_0	T	
A2	PT17B	0		C	PT35B	0		C	
VCCIO	VCCIO0	0			VCCIO0	0			
A3	PT17A	0		T	PT35A	0		T	
B3	PT16B	0		C	PT34B	0		C	
C4	PT16A	0		T	PT34A	0		T	
E10	PT15B	0		C	PT33B	0		C	
F10	PT15A	0		T	PT33A	0		T	
C7	PT14B	0		C	PT32B	0		C	
GNDIO	GNDIO0	-			GNDIO0	-			
B6	PT14A	0		T	PT32A	0		T	
C6	PT13B	0		C	PT31B	0		C	
VCCIO	VCCIO0	0			VCCIO0	0			
C5	PT13A	0		T	PT31A	0		T	
C8	PT12B	0		C	PT30B	0		C	
D8	PT12A	0		T	PT30A	0		T	
E8	PT11B	0		C	PT29B	0		C	
E9	PT11A	0		T	PT29A	0		T	
-	-	-			GNDIO0	-			
-	-	-			VCCIO0	0			
F8	PT10B	0		C	PT10B	0		C	
G8	PT10A	0		T	PT10A	0		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	
F11	VCCIO0	0			VCCIO0	0			
J13	VCCIO0	0			VCCIO0	0			
K12	VCCIO0	0			VCCIO0	1			
D18	VCCIO1	1			VCCIO1	1			
F16	VCCIO1	1			VCCIO1	1			
J14	VCCIO1	1			VCCIO1	1			
K15	VCCIO1	1			VCCIO1	1			
G25	VCCIO2	2			VCCIO2	2			
L21	VCCIO2	2			VCCIO2	2			
M17	VCCIO2	2			VCCIO2	2			
M25	VCCIO2	2			VCCIO2	2			
N18	VCCIO2	2			VCCIO2	2			
P18	VCCIO3	3			VCCIO3	3			
R17	VCCIO3	3			VCCIO3	3			
R25	VCCIO3	3			VCCIO3	3			
T21	VCCIO3	3			VCCIO3	3			
Y25	VCCIO3	3			VCCIO3	3			
AA16	VCCIO4	4			VCCIO4	4			
AC18	VCCIO4	4			VCCIO4	4			
U15	VCCIO4	4			VCCIO4	4			
V14	VCCIO4	4			VCCIO4	4			
AA11	VCCIO5	5			VCCIO5	5			
V13	VCCIO5	5			VCCIO5	5			
AE12	VCCIO5	5			VCCIO5	5			
AE7	VCCIO5	5			VCCIO5	5			
U12	VCCIO5	5			VCCIO5	5			
P9	VCCIO6	6			VCCIO6	6			
R10	VCCIO6	6			VCCIO6	6			
R2	VCCIO6	6			VCCIO6	6			
T6	VCCIO6	6			VCCIO6	6			
Y2	VCCIO6	6			VCCIO6	6			
G2	VCCIO7	7			VCCIO7	7			
L6	VCCIO7	7			VCCIO7	7			
M10	VCCIO7	7			VCCIO7	7			
M2	VCCIO7	7			VCCIO7	7			
N9	VCCIO7	7			VCCIO7	7			
AC24	VCCIO8	8			VCCIO8	8			
U17	VCCIO8	8			VCCIO8	8			
J11	VCCAUX	-			VCCAUX	-			
J12	VCCAUX	-			VCCAUX	-			
J15	VCCAUX	-			VCCAUX	-			
J16	VCCAUX	-			VCCAUX	-			
L18	VCCAUX	-			VCCAUX	-			
L9	VCCAUX	-			VCCAUX	-			
M18	VCCAUX	-			VCCAUX	-			
M9	VCCAUX	-			VCCAUX	-			
R18	VCCAUX	-			VCCAUX	-			
R9	VCCAUX	-			VCCAUX	-			

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

LFE2M100E/SE				
Ball Number	Ball/Pad Function	Bank	Dual Function	Differential
M19	VCC	-		
M20	VCC	-		
N11	VCC	-		
N12	VCC	-		
N19	VCC	-		
N20	VCC	-		
P12	VCC	-		
P19	VCC	-		
R12	VCC	-		
R19	VCC	-		
T12	VCC	-		
T19	VCC	-		
U12	VCC	-		
U19	VCC	-		
V11	VCC	-		
V12	VCC	-		
V19	VCC	-		
V20	VCC	-		
W11	VCC	-		
W12	VCC	-		
W13	VCC	-		
W14	VCC	-		
W15	VCC	-		
W16	VCC	-		
W17	VCC	-		
W18	VCC	-		
W19	VCC	-		
W20	VCC	-		
Y12	VCC	-		
Y13	VCC	-		
Y18	VCC	-		
Y19	VCC	-		
D14	VCCIO0	0		
E6	VCCIO0	0		
E9	VCCIO0	0		
F12	VCCIO0	0		
K12	VCCIO0	0		
K13	VCCIO0	0		
D17	VCCIO1	1		
E22	VCCIO1	1		
E25	VCCIO1	1		
F19	VCCIO1	1		
K18	VCCIO1	1		

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

LFE2M100E/SE				
Ball Number	Ball/Pad Function	Bank	Dual Function	Differential
U15	GND	-		
U16	GND	-		
U17	GND	-		
U18	GND	-		
U20	GND	-		
V14	GND	-		
V15	GND	-		
V16	GND	-		
V17	GND	-		
V27	GND	-		
V4	GND	-		
W23	GND	-		
W8	GND	-		
Y14	GND	-		
Y15	GND	-		
Y16	GND	-		
Y17	GND	-		
AA26	NC	-		
AB10	NC	-		
AB11	NC	-		
AB12	NC	-		
AB13	NC	-		
AB14	NC	-		
AB15	NC	-		
AB16	NC	-		
AB17	NC	-		
AB19	NC	-		
AB20	NC	-		
AB21	NC	-		
AB9	NC	-		
AC10	NC	-		
AC11	NC	-		
AC21	NC	-		
AC22	NC	-		
AC8	NC	-		
AC9	NC	-		
AD21	NC	-		
AD22	NC	-		
AD4	NC	-		
AD5	NC	-		
AD6	NC	-		
AD7	NC	-		
AD8	NC	-		

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

LFE2M100E/SE				
Ball Number	Ball/Pad Function	Bank	Dual Function	Differential
AE23	NC	-		
AE5	NC	-		
AE6	NC	-		
AE7	NC	-		
AF20	NC	-		
AF23	NC	-		
AF5	NC	-		
AG23	NC	-		
AG26	NC	-		
D10	NC	-		
E10	NC	-		
E11	NC	-		
F10	NC	-		
F20	NC	-		
F23	NC	-		
F8	NC	-		
G10	NC	-		
G20	NC	-		
G21	NC	-		
G7	NC	-		
G8	NC	-		
G9	NC	-		
H19	NC	-		
H20	NC	-		
H21	NC	-		
H22	NC	-		
H6	NC	-		
H8	NC	-		
H9	NC	-		
J10	NC	-		
J20	NC	-		
J21	NC	-		
J9	NC	-		
K9	NC	-		
R9	NC	-		
U22	NC	-		
W9	NC	-		
N13	VCCPLL	-		
N18	VCCPLL	-		
V13	VCCPLL	-		

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
AB16	GND	-			GND	-		
AB17	GND	-			GND	-		
AB18	GND	-			GND	-		
AB19	GND	-			GND	-		
AB26	GND	-			GND	-		
AB31	GND	-			GND	-		
AB4	GND	-			GND	-		
AB9	GND	-			GND	-		
AC16	GND	-			GND	-		
AC17	GND	-			GND	-		
AC18	GND	-			GND	-		
AC19	GND	-			GND	-		
AD27	GND	-			GND	-		
AE27	GND	-			GND	-		
AE31	GND	-			GND	-		
AE4	GND	-			GND	-		
AE8	GND	-			GND	-		
AF12	GND	-			GND	-		
AF16	GND	-			GND	-		
AF19	GND	-			GND	-		
AF23	GND	-			GND	-		
AG31	GND	-			GND	-		
AH31	GND	-			GND	-		
AH4	GND	-			GND	-		
AJ14	GND	-			GND	-		
AJ21	GND	-			GND	-		
AK27	GND	-			GND	-		
AK8	GND	-			GND	-		
AL10	GND	-			GND	-		
AL16	GND	-			GND	-		
AL19	GND	-			GND	-		
AL2	GND	-			GND	-		
AL25	GND	-			GND	-		
AL33	GND	-			GND	-		
AP1	GND	-			GND	-		
AP10	GND	-			GND	-		
AP13	GND	-			GND	-		
AP22	GND	-			GND	-		
AP25	GND	-			GND	-		
AP34	GND	-			GND	-		
D10	GND	-			GND	-		
D16	GND	-			GND	-		
D19	GND	-			GND	-		
D2	GND	-			GND	-		
D25	GND	-			GND	-		
D33	GND	-			GND	-		
E27	GND	-			GND	-		
E8	GND	-			GND	-		
F14	GND	-			GND	-		

Part Number	I/Os	Voltage	Grade	Package	Pins	Temp.	LUTs (K)
LFE2-20SE-5QN208I	131	1.2V	-5	Lead-Free PQFP	208	Ind	20
LFE2-20SE-6QN208I	131	1.2V	-6	Lead-Free PQFP	208	Ind	20
LFE2-20SE-5FN256I	193	1.2V	-5	Lead-Free fpBGA	256	Ind	20
LFE2-20SE-6FN256I	193	1.2V	-6	Lead-Free fpBGA	256	Ind	20
LFE2-20SE-5FN484I	331	1.2V	-5	Lead-Free fpBGA	484	Ind	20
LFE2-20SE-6FN484I	331	1.2V	-6	Lead-Free fpBGA	484	Ind	20
LFE2-20SE-5FN672I	402	1.2V	-5	Lead-Free fpBGA	672	Ind	20
LFE2-20SE-6FN672I	402	1.2V	-6	Lead-Free fpBGA	672	Ind	20

Part Number	I/Os	Voltage	Grade	Package	Pins	Temp.	LUTs (K)
LFE2-35SE-5FN484I	331	1.2V	-5	Lead-Free fpBGA	484	Ind	35
LFE2-35SE-6FN484I	331	1.2V	-6	Lead-Free fpBGA	484	Ind	35
LFE2-35SE-5FN672I	450	1.2V	-5	Lead-Free fpBGA	672	Ind	35
LFE2-35SE-6FN672I	450	1.2V	-6	Lead-Free fpBGA	672	Ind	35

Part Number	I/Os	Voltage	Grade	Package	Pins	Temp.	LUTs (K)
LFE2-50SE-5FN484I	339	1.2V	-5	Lead-Free fpBGA	484	Ind	50
LFE2-50SE-6FN484I	339	1.2V	-6	Lead-Free fpBGA	484	Ind	50
LFE2-50SE-5FN672I	500	1.2V	-5	Lead-Free fpBGA	672	Ind	50
LFE2-50SE-6FN672I	500	1.2V	-6	Lead-Free fpBGA	672	Ind	50

Part Number	I/Os	Voltage	Grade	Package	Pins	Temp.	LUTs (K)
LFE2-70SE-5FN672I	500	1.2V	-5	Lead-Free fpBGA	672	Ind	70
LFE2-70SE-6FN672I	500	1.2V	-6	Lead-Free fpBGA	672	Ind	70
LFE2-70SE-5FN900I	583	1.2V	-5	Lead-Free fpBGA	900	Ind	70
LFE2-70SE-6FN900I	583	1.2V	-6	Lead-Free fpBGA	900	Ind	70