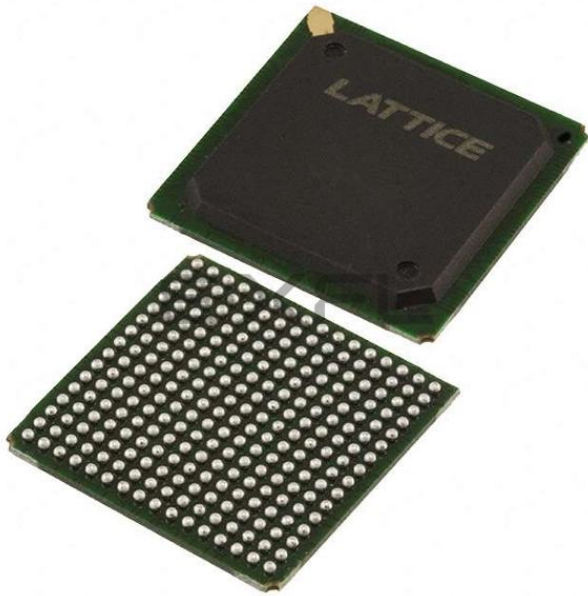




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Understanding [Embedded - FPGAs \(Field Programmable Gate Array\)](#)

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	Active
Number of LABs/CLBs	2375
Number of Logic Elements/Cells	19000
Total RAM Bits	1246208
Number of I/O	140
Number of Gates	-
Voltage - Supply	1.14V ~ 1.26V
Mounting Type	Surface Mount
Operating Temperature	0°C ~ 85°C (TJ)
Package / Case	256-BGA
Supplier Device Package	256-FPBGA (17x17)
Purchase URL	https://www.e-xfl.com/product-detail/lattice-semiconductor/lfe2m20se-5fn256c

LatticeECP2/M External Switching Characteristics⁹ (Continued)

Over Recommended Operating Conditions

Parameter	Description	Device	-7		-6		-5		Units
			Min.	Max.	Min.	Max.	Min.	Max.	
t _{H_DELE}	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_IOE}	Clock Frequency of I/O and PFU Register	ECP2/M	—	420	—	357	—	311	MHz
General I/O Pin Parameters (using Primary Clock with PLL)¹									
t _{COPLL} ¹⁰	Clock to Output - PIO Output Register	LFE2-6	—	2.30	—	2.60	—	2.80	ns
		LFE2-12	—	2.30	—	2.60	—	2.80	ns
		LFE2-20	—	2.30	—	2.60	—	2.80	ns
		LFE2-35	—	2.30	—	2.60	—	2.80	ns
		LFE2-50	—	2.30	—	2.60	—	2.80	ns
		LFE2-70	—	2.30	—	2.60	—	2.80	ns
		LFE2M20	—	2.30	—	2.60	—	2.80	ns
		LFE2M35	—	2.30	—	2.60	—	2.80	ns
		LFE2M50	—	2.60	—	2.90	—	3.10	ns
		LFE2M70	—	2.60	—	2.90	—	3.10	ns
		LFE2M100	—	2.70	—	3.00	—	3.20	ns
t _{SUPLL}	Clock to Data Setup - PIO Input Register	LFE2-6	0.70	—	0.80	—	0.90	—	ns
		LFE2-12	0.70	—	0.80	—	0.90	—	ns
		LFE2-20	0.70	—	0.80	—	0.90	—	ns
		LFE2-35	0.70	—	0.80	—	0.90	—	ns
		LFE2-50	0.70	—	0.80	—	0.90	—	ns
		LFE2-70	0.70	—	0.80	—	0.90	—	ns
		LFE2M20	0.70	—	0.80	—	0.90	—	ns
		LFE2M35	0.70	—	0.80	—	0.90	—	ns
		LFE2M50	0.70	—	0.80	—	0.90	—	ns
		LFE2M70	0.70	—	0.80	—	0.90	—	ns
		LFE2M100	0.80	—	0.90	—	1.00	—	ns

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	
138	PR15A	3	PCLKT3_0	T (LVDS)*	PR21A	3	PCLKT3_0/RDQ25	T (LVDS)*	
139	GND	-			GND	-			
140	VCC	-			VCC	-			
141	PR13B	2	PCLKC2_0/RDQ10	C	PR19B	2	PCLKC2_0/RDQ16	C	
142	PR13A	2	PCLKT2_0/RDQ10	T	PR19A	2	PCLKT2_0/RDQ16	T	
143	VCCIO2	2			VCCIO2	2			
144	PR12A	2	RDQ10		PR16A	2	RDQS16		
145	GND	-			GND	-			
146	VCC	-			VCC	-			
147	PR8B	2	RDQ10	C (LVDS)*	PR14B	2	RDQ16	C (LVDS)*	
148	VCCIO2	2			VCCIO2	2			
149	PR8A	2	RDQ10	T (LVDS)*	PR14A	2	RDQ16	T (LVDS)*	
150	PR6B	2	RDQ10	C (LVDS)*	PR12B	2	RDQ16	C (LVDS)*	
151	VCCAUX	-			VCCAUX	-			
152	PR6A	2	RDQ10	T (LVDS)*	PR12A	2	RDQ16	T (LVDS)*	
153	PR4B	2		C (LVDS)*	PR6B	2	RDQ8	C (LVDS)*	
154	PR4A	2		T (LVDS)*	PR6A	2	RDQ8	T (LVDS)*	
155	PR2B	2	VREF2_2	C (LVDS)*	PR2B	2	VREF2_2	C (LVDS)*	
156	PR2A	2	VREF1_2	T (LVDS)*	PR2A	2	VREF1_2	T (LVDS)*	
157	PT55B	1	VREF2_1	C	PT64B	1	VREF2_1	C	
158	PT55A	1	VREF1_1	T	PT64A	1	VREF1_1	T	
159	GND	-			GND	-			
160	PT54B	1		C	PT62B	1		C	
161	PT54A	1		T	PT62A	1		T	
162	VCCIO1	1			VCCIO1	1			
163	PT52B	1		C	PT60B	1		C	
164	PT52A	1		T	PT60A	1		T	
165	PT50B	1		C	PT58B	1		C	
166	PT50A	1		T	PT58A	1		T	
167	PT48B	1		C	PT56B	1		C	
168	PT48A	1		T	PT56A	1		T	
169	GND	-			GND	-			
170	VCCIO1	1			VCCIO1	1			
171	VCC	-			VCC	-			
172	PT40B	1		C	PT50B	1		C	
173	PT40A	1		T	PT50A	1		T	
174	VCCAUX	-			VCCAUX	-			
175	GND	-			GND	-			
176	PT36B	1		C	PT44B	1		C	
177	PT36A	1		T	PT44A	1		T	
178	PT34B	1		C	PT42B	1		C	
179	PT34A	1		T	PT42A	1		T	
180	PT30B	1	PCLKC1_0	C	PT39B	1	PCLKC1_0	C	
181	PT30A	1	PCLKT1_0	T	PT39A	1	PCLKT1_0	T	
182	XRES	1			XRES	1			
183	PT28B	0	PCLKC0_0	C	PT37B	0	PCLKC0_0	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		

LFE2-20E/SE Logic Signal Connections: 256 fpBGA (Cont.)

LFE2-20E/SE					
Ball Number	Ball Number	Ball/Pad Function	Bank	Dual Function	Differential
J1	J1	PL31A	6	LLM0_GPLLT_FB_A/LDQ34	T
K3	K3	PL30B	6	LLM0_GPLLC_IN_A**/LDQ34	C (LVDS)*
VCCIO	VCCIO	VCCIO6	6		
J2	J2	PL31B	6	LLM0_GPLLC_FB_A/LDQ34	C
GND	GND	GNDIO6	-		
L2	L2	PL38A	6	LDQ42	T (LVDS)*
K2	K2	PL39A	6	LDQ42	T
L3	L3	PL38B	6	LDQ42	C (LVDS)*
K1	K1	PL39B	6	LDQ42	C
VCCIO	VCCIO	VCCIO6	6		
L4	L4	PL40A	6	LDQ42	T (LVDS)*
L1	L1	PL41A	6	LDQ42	T
L5	L5	PL40B	6	LDQ42	C (LVDS)*
M1	M1	PL41B	6	LDQ42	C
GND	GND	GNDIO6	-		
N1	N1	PL43A	6	LDQ42	T
N2	N2	PL42A	6	LDQS42	T (LVDS)*
P1	P1	PL43B	6	LDQ42	C
VCCIO	VCCIO	VCCIO6	6		
P2	P2	PL42B	6	LDQ42	C (LVDS)*
R1	R1	PL44A	6	LDQ42	T (LVDS)*
GND	GND	GNDIO6	-		
R2	R2	PL44B	6	LDQ42	C (LVDS)*
N4	N4	TDI	-		
M4	M4	TCK	-		
P3	P3	TDO	-		
N3	N3	TMS	-		
K7	K7	VCCJ	-		
M5	M5	PB2A	5	VREF2_5/BDQ6	T
K6	K6	PB3A	5	BDQ6	
M6	M6	PB2B	5	VREF1_5/BDQ6	C
R3	R3	PB5A	5	BDQ6	T
P4	P4	PB5B	5	BDQ6	C
-	VCC	VCCIO	5		
-	GND	GNDIO5	5		
N5	N5	PB30A	5	BDQ33	T
N6	N6	PB30B	5	BDQ33	C
T2	T2	PB31A	5	BDQ33	T
P6	P6	PB32A	5	BDQ33	T
VCCIO	VCCIO	VCCIO5	5		
T3	T3	PB31B	5	BDQ33	C
R6	R6	PB32B	5	BDQ33	C

LFE2-12E/SE and LFE2-20E/SE Logic Signal Connections: 484 fpBGA

LFE2-12E/12SE					LFE2-20E/20SE				
Ball Number	Ball/Pad Function	Bank	Dual Function	Differential	Ball/Pad Function	Bank	Dual Function	Differential	
E4	PL2A	7	VREF2_7	T (LVDS)*	PL2A	7	VREF2_7	T (LVDS)*	
E5	PL2B	7	VREF1_7	C (LVDS)*	PL2B	7	VREF1_7	C (LVDS)*	
-	-	-			GNDIO7	-			
E3	NC	-			PL4A	7	LDQ8	T (LVDS)*	
F4	PL3A	7		T	PL5A	7	LDQ8	T	
F3	NC	-			PL4B	7	LDQ8	C (LVDS)*	
F5	PL3B	7		C	PL5B	7	LDQ8	C	
VCCIO	VCCIO7	7			VCCIO7	7			
E2	PL4A	7		T (LVDS)*	PL6A	7	LDQ8	T (LVDS)*	
G6	PL5A	7		T	PL7A	7	LDQ8	T	
E1	PL4B	7		C (LVDS)*	PL6B	7	LDQ8	C (LVDS)*	
G7	PL5B	7		C	PL7B	7	LDQ8	C	
GNDIO	GNDIO7	-			GNDIO7	-			
F1	NC	-			PL9A	7	LDQ8	T	
H4	NC	-			PL8A	7	LDQS8	T (LVDS)*	
F2	NC	-			PL9B	7	LDQ8	C	
-	-	-			VCCIO7	7			
H5	NC	-			PL8B	7	LDQ8	C (LVDS)*	
G1	NC	-			PL11A	7	LDQ8	T	
G3	NC	-			PL10A	7	LDQ8	T (LVDS)*	
G2	NC	-			PL11B	7	LDQ8	C	
-	-	-			GNDIO	-			
G4	NC	-			PL10B	7	LDQ8	C (LVDS)*	
J4	PL7A	7	LDQ10	T	PL13A	7	LDQ16	T	
H1	PL6A	7	LDQ10		PL12A	7	LDQ16	T (LVDS)*	
J5	PL7B	7	LDQ10	C	PL13B	7	LDQ16	C	
L6	PL9A	7	LDQ10	T	PL15A	7	LDQ16	T	
VCCIO	VCCIO7	7			VCCIO7	7			
J2	PL8A	7	LDQ10	T (LVDS)*	PL14A	7	LDQ16	T (LVDS)*	
L5	PL9B	7	LDQ10	C	PL15B	7	LDQ16	C	
J1	PL8B	7	LDQ10	C (LVDS)*	PL14B	7	LDQ16	C (LVDS)*	
K3	PL10A	7	LDQS10	T (LVDS)*	PL16A	7	LDQS16	T (LVDS)*	
GNDIO	GNDIO7	-			GNDIO	-			
K4	PL10B	7	LDQ10	C (LVDS)*	PL16B	7	LDQ16	C (LVDS)*	
K2	PL11A	7	LDQ10	T	PL17A	7	LDQ16	T	
VCCIO	VCCIO7	7			VCCIO7	7			
K1	PL11B	7	LDQ10	C	PL17B	7	LDQ16	C	
L4	PL12A	7	LDQ10	T (LVDS)*	PL18A	7	LDQ16	T (LVDS)*	
GNDIO	GNDIO7	-			GNDIO	-			
L3	PL12B	7	LDQ10	C (LVDS)*	PL18B	7	LDQ16	C (LVDS)*	
L2	PL13A	7	PCLKT7_0/LDQ10	T	PL19A	7	PCLKT7_0/LDQ16	T	
L1	PL13B	7	PCLKC7_0/LDQ10	C	PL19B	7	PCLKC7_0/LDQ16	C	
M5	PL15A	6	PCLKT6_0	T (LVDS)*	PL21A	6	PCLKT6_0/LDQ25	T (LVDS)*	
VCCIO	VCCIO6	6			-	-			

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
A6	PT21A	0		T	PT30A	0		T
GNDIO	GNDIO0	-			GNDIO0	-		
C7	PT17B	0		C	PT26B	0		C
D10	PT18B	0		C	PT27B	0		C
C6	PT17A	0		T	PT26A	0		T
E10	PT18A	0		T	PT27A	0		T
VCCIO	VCCIO0	0			VCCIO0	0		
F10	PT15B	0		C	PT24B	0		C
B6	PT16B	0		C	PT25B	0		C
D9	PT15A	0		T	PT24A	0		T
B5	PT16A	0		T	PT25A	0		T
GNDIO	GNDIO0	-			GNDIO0	-		
A5	PT13B	0		C	PT22B	0		C
F9	PT14B	0		C	PT23B	0		C
A4	PT13A	0		T	PT22A	0		T
E9	PT14A	0		T	PT23A	0		T
VCCIO	VCCIO0	0			VCCIO0	0		
G8	PT11B	0		C	PT20B	0		C
A3	PT12B	0		C	PT21B	0		C
E8	PT11A	0		T	PT20A	0		T
A2	PT12A	0		T	PT21A	0		T
GNDIO	GNDIO0	-			GNDIO0	-		
-	-	-			VCCIO0	0		
C3	PT10B	0		C	PT10B	0		C
B3	PT10A	0		T	PT10A	0		T
-	-	-			GNDIO0	-		
E7	PT8B	0		C	PT8B	0		C
F8	PT9B	0		C	PT9B	0		C
F7	PT8A	0		T	PT8A	0		T
D7	PT9A	0		T	PT9A	0		T
VCCIO	VCCIO0	0			VCCIO0	0		
D4	PT6B	0		C	PT6B	0		C
D5	PT7B	0		C	PT7B	0		C
C4	PT6A	0		T	PT6A	0		T
D6	PT7A	0		T	PT7A	0		T
GNDIO	GNDIO0	-			GNDIO	-		
J7	PT4B	0		C	PT4B	0		C
B2	PT5B	0		C	PT5B	0		C
H7	PT4A	0		T	PT4A	0		T
B1	PT5A	0		T	PT5A	0		T
VCCIO	VCCIO0	0			VCCIO0	0		
D1	PT2B	0	VREF2_0	C	PT2B	0	VREF2_0	C
D3	PT3B	0		C	PT3B	0		C
C1	PT2A	0	VREF1_0	T	PT2A	0	VREF1_0	T

LFE2-35E/SE and LFE2-50E/SE Logic Signal Connections: 484 fpBGA

LFE2-35E/SE					LFE2-50E/SE			
Ball Number	Ball/Pad Function	Bank	Dual Function	Differential	Ball/Pad Function	Bank	Dual Function	Differential
E4	PL2A	7	VREF2_7/LDQ6	T (LVDS)*	PL2A	7	VREF2_7	T (LVDS)*
E5	PL2B	7	VREF1_7/LDQ6	C (LVDS)*	PL2B	7	VREF1_7	C (LVDS)*
VCCIO	VCCIO7	-			GNDIO7	-		
GNDIO	GNDIO7	-			VCCIO	7		
E3	PL10A	7	LDQ14	T (LVDS)*	PL12A	7	LDQ16	T (LVDS)*
F3	PL10B	7	LDQ14	C (LVDS)*	PL12B	7	LDQ16	C (LVDS)*
F4	PL11A	7	LDQ14	T	PL13A	7	LDQ16	T
F5	PL11B	7	LDQ14	C	PL13B	7	LDQ16	C
E2	PL12A	7	LDQ14	T (LVDS)*	PL14A	7	LDQ16	T (LVDS)*
VCCIO	VCCIO7	7			VCCIO	7		
E1	PL12B	7	LDQ14	C (LVDS)*	PL14B	7	LDQ16	C (LVDS)*
G6	PL13A	7	LDQ14	T	PL15A	7	LDQ16	T
G7	PL13B	7	LDQ14	C	PL15B	7	LDQ16	C
H4	PL14A	7	LDQS14	T (LVDS)*	PL16A	7	LDQS16	T (LVDS)*
GNDIO	GNDIO7	-			GNDIO7	-		
H5	PL14B	7	LDQ14	C (LVDS)*	PL16B	7	LDQ16	C (LVDS)*
F1	PL15A	7	LDQ14	T	PL17A	7	LDQ16	T
F2	PL15B	7	LDQ14	C	PL17B	7	LDQ16	C
VCCIO	VCCIO7	7			VCCIO	7		
G3	PL16A	7	LDQ14	T (LVDS)*	PL18A	7	LDQ16	T (LVDS)*
G4	PL16B	7	LDQ14	C (LVDS)*	PL18B	7	LDQ16	C (LVDS)*
G1	PL17A	7	LDQ14	T	PL19A	7	LDQ16	T
G2	PL17B	7	LDQ14	C	PL19B	7	LDQ16	C
GNDIO	GNDIO7	-			GNDIO7	-		
-	-	-			VCCIO	7		
H6	NC	-			PL25A	7	LUM0_SPLLT_IN_A/LDQ24	T
-	-	-			VCCIO	7		
J6	NC	-			PL25B	7	LUM0_SPLLC_IN_A/LDQ24	C
H3	NC	-			PL26A	7	LUM0_SPLLT_FB_A/LDQ24	T
H2	NC	-			PL26B	7	LUM0_SPLLC_FB_A/LDQ24	C
-	-	-			GNDIO7	-		
-	-	-			VCCIO	7		
H1	PL18A	7	LDQ22		PL37A	7	LDQ41	
J4	PL19A	7	LDQ22	T	PL38A	7	LDQ41	T
J5	PL19B	7	LDQ22	C	PL38B	7	LDQ41	C
VCCIO	VCCIO7	7			VCCIO	7		
J2	PL20A	7	LDQ22	T (LVDS)*	PL39A	7	LDQ41	T (LVDS)*
J1	PL20B	7	LDQ22	C (LVDS)*	PL39B	7	LDQ41	C (LVDS)*
L6	PL21A	7	LDQ22	T	PL40A	7	LDQ41	T
L5	PL21B	7	LDQ22	C	PL40B	7	LDQ41	C
GNDIO	GNDIO7	-			GNDIO7	-		
K3	PL22A	7	LDQS22	T (LVDS)*	PL41A	7	LDQS41	T (LVDS)*
K4	PL22B	7	LDQ22	C (LVDS)*	PL41B	7	LDQ41	C (LVDS)*
K2	PL23A	7	LDQ22	T	PL42A	7	LDQ41	T
VCCIO	VCCIO7	7			VCCIO	7		

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
N16	VCCIO3	3			VCCIO3	3		
P16	VCCIO3	3			VCCIO3	3		
R14	VCCIO4	4			VCCIO4	4		
T12	VCCIO4	4			VCCIO4	4		
T13	VCCIO4	4			VCCIO4	4		
T14	VCCIO4	4			VCCIO4	4		
R9	VCCIO5	5			VCCIO5	5		
T10	VCCIO5	5			VCCIO5	5		
T11	VCCIO5	5			VCCIO5	5		
T9	VCCIO5	5			VCCIO5	5		
N7	VCCIO6	6			VCCIO6	6		
P7	VCCIO6	6			VCCIO6	6		
P8	VCCIO6	6			VCCIO6	6		
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		
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	-		
J9	GND	-			GND	-		
K10	GND	-			GND	-		
K11	GND	-			GND	-		
K12	GND	-			GND	-		
K13	GND	-			GND	-		
K15	GND	-			GND	-		

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	
AA14	PB38B	5	BDQ42	C	PB47B	5	BDQ51	C	
AE10	PB39A	5	BDQ42	T	PB48A	5	BDQ51	T	
AF10	PB39B	5	BDQ42	C	PB48B	5	BDQ51	C	
W14	PB40A	5	BDQ42	T	PB49A	5	BDQ51	T	
AB13	PB40B	5	BDQ42	C	PB49B	5	BDQ51	C	
VCCIO	VCCIO5	5			VCCIO5	5			
Y14	PB41A	5	BDQ42	T	PB50A	5	BDQ51	T	
AB14	PB41B	5	BDQ42	C	PB50B	5	BDQ51	C	
GND	GNDIO5	-			GNDIO5	-			
AE11	PB42A	5	BDQS42	T	PB51A	5	BDQS51	T	
AF11	PB42B	5	BDQ42	C	PB51B	5	BDQ51	C	
AD14	PB43A	5	BDQ42	T	PB52A	5	BDQ51	T	
AA15	PB43B	5	BDQ42	C	PB52B	5	BDQ51	C	
AE12	PB44A	5	PCLKT5_0/BDQ42	T	PB53A	5	PCLKT5_0/BDQ51	T	
AF12	PB44B	5	PCLKC5_0/BDQ42	C	PB53B	5	PCLKC5_0/BDQ51	C	
VCCIO	VCCIO5	5			VCCIO5	5			
GND	GNDIO5	-			GNDIO5	-			
AD15	PB49A	4	PCLKT4_0/BDQ51	T	PB58A	4	PCLKT4_0/BDQ60	T	
VCCIO	VCCIO4	4			VCCIO4	4			
AC15	PB49B	4	PCLKC4_0/BDQ51	C	PB58B	4	PCLKC4_0/BDQ60	C	
AE13	PB50A	4	BDQ51	T	PB59A	4	BDQ60	T	
AF13	PB50B	4	BDQ51	C	PB59B	4	BDQ60	C	
AB17	PB51A	4	BDQS51	T	PB60A	4	BDQS60	T	
GND	GNDIO4	-			GNDIO4	-			
Y15	PB51B	4	BDQ51	C	PB60B	4	BDQ60	C	
AE14	PB52A	4	BDQ51	T	PB61A	4	BDQ60	T	
AF14	PB52B	4	BDQ51	C	PB61B	4	BDQ60	C	
AA16	PB53A	4	BDQ51	T	PB62A	4	BDQ60	T	
VCCIO	VCCIO4	4			VCCIO4	4			
W15	PB53B	4	BDQ51	C	PB62B	4	BDQ60	C	
AC17	PB54A	4	BDQ51	T	PB63A	4	BDQ60	T	
AB16	PB54B	4	BDQ51	C	PB63B	4	BDQ60	C	
AE15	PB55A	4	BDQ51	T	PB64A	4	BDQ60	T	
GND	GNDIO4	-			GNDIO4	-			
AF15	PB55B	4	BDQ51	C	PB64B	4	BDQ60	C	
AE16	PB56A	4	BDQ60	T	PB65A	4	BDQ69	T	
AF16	PB56B	4	BDQ60	C	PB65B	4	BDQ69	C	
Y16	PB57A	4	BDQ60	T	PB66A	4	BDQ69	T	
AB18	PB57B	4	BDQ60	C	PB66B	4	BDQ69	C	
AD17	PB58A	4	BDQ60	T	PB67A	4	BDQ69	T	
AD18	PB58B	4	BDQ60	C	PB67B	4	BDQ69	C	
VCCIO	VCCIO4	4			VCCIO4	4			
AC18	PB59A	4	BDQ60	T	PB68A	4	BDQ69	T	
AD19	PB59B	4	BDQ60	C	PB68B	4	BDQ69	C	
GND	GNDIO4	-			GNDIO4	-			
AC19	PB60A	4	BDQS60	T	PB69A	4	BDQS69	T	

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

LFE2-50E/SE					LFE2-70E/SE			
Ball Number	Ball/Pad Function	Bank	Dual Function	Differential	Ball/Pad Function	Bank	Dual Function	Differential
GND	GNDIO1	-			GNDIO1	-		
C15	PT54B	1		C	PT63B	1		C
A15	PT54A	1		T	PT63A	1		T
A13	PT53B	1		C	PT62B	1		C
B13	PT53A	1		T	PT62A	1		T
VCCIO	VCCIO1	1			VCCIO1	1		
H17	PT52B	1		C	PT61B	1		C
H15	PT52A	1		T	PT61A	1		T
D13	PT51B	1		C	PT60B	1		C
C14	PT51A	1		T	PT60A	1		T
GND	GNDIO1	-			GNDIO1	-		
G14	PT50B	1		C	PT59B	1		C
E14	PT50A	1		T	PT59A	1		T
A12	PT49B	1		C	PT58B	1		C
B12	PT49A	1		T	PT58A	1		T
VCCIO	VCCIO1	1			VCCIO1	1		
F14	PT48B	1	PCLKC1_0	C	PT57B	1	PCLKC1_0	C
D14	PT48A	1	PCLKT1_0	T	PT57A	1	PCLKT1_0	T
H16	XRES	1			XRES	1		
H14	PT46B	0	PCLKC0_0	C	PT55B	0	PCLKC0_0	C
GND	GNDIO0	-			GNDIO0	-		
H13	PT46A	0	PCLKT0_0	T	PT55A	0	PCLKT0_0	T
A11	PT45B	0		C	PT54B	0		C
B11	PT45A	0		T	PT54A	0		T
C13	PT44B	0		C	PT53B	0		C
VCCIO	VCCIO0	0			VCCIO0	0		
E13	PT44A	0		T	PT53A	0		T
D12	PT43B	0		C	PT52B	0		C
F13	PT43A	0		T	PT52A	0		T
A10	PT42B	0		C	PT51B	0		C
B10	PT42A	0		T	PT51A	0		T
C12	PT41B	0		C	PT50B	0		C
GND	GNDIO0	-			GNDIO0	-		
C10	PT41A	0		T	PT50A	0		T
G13	PT40B	0		C	PT49B	0		C
VCCIO	VCCIO0	0			VCCIO0	0		
H12	PT40A	0		T	PT49A	0		T
A9	PT39B	0		C	PT48B	0		C
B9	PT39A	0		T	PT48A	0		T
E12	PT38B	0		C	PT47B	0		C
G12	PT38A	0		T	PT47A	0		T
A8	PT37B	0		C	PT46B	0		C
B8	PT37A	0		T	PT46A	0		T
GND	GNDIO0	-			GNDIO0	-		
E11	PT36B	0		C	PT45B	0		C
C9	PT36A	0		T	PT45A	0		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

LFE2M50E/SE Logic Signal Connections: 484 fpBGA

LFE2M50E/SE				
Ball Number	Ball/Pad Function	Bank	Dual Function	Differential
D1	PL2A	7	LDQ6	T (LVDS)*
E1	PL2B	7	LDQ6	C (LVDS)*
F1	PL3A	7	LDQ6	T
F2	PL3B	7	LDQ6	C
F5	PL4A	7	LDQ6	T (LVDS)*
VCCIO	VCCIO7	7		
G6	PL4B	7	LDQ6	C (LVDS)*
F4	PL5A	7	LDQ6	T
F3	PL5B	7	LDQ6	C
G1	PL6A	7	LDQS6	T (LVDS)*
GNDIO	GNDIO7	-		
G2	PL6B	7	LDQ6	C (LVDS)*
H1	PL7A	7	LDQ6	T
H2	PL7B	7	LDQ6	C
VCCIO	VCCIO7	7		
H7	PL8A	7	LDQ6	T (LVDS)*
H6	PL8B	7	LDQ6	C (LVDS)*
G3	PL9A	7	VREF2_7/LDQ6	T
H3	PL9B	7	VREF1_7/LDQ6	C
GNDIO	GNDIO7	-		
VCCIO	VCCIO7	7		
H5	PL11A	7	LUM0_SPLLT_IN_A	T (LVDS)*
H4	PL11B	7	LUM0_SPLLC_IN_A	C (LVDS)*
J1	PL12A	7	LUM0_SPLLT_FB_A	T
J2	PL12B	7	LUM0_SPLLC_FB_A	C
GNDIO	GNDIO7	-		
J3	PL13A	7		T (LVDS)*
J4	PL13B	7		C (LVDS)*
J7	PL14A	7		T
VCCIO	VCCIO7	7		
J6	PL14B	7		C
GNDIO	GNDIO7	-		
VCCIO	VCCIO7	7		
K1	PL32A	7	LUM3_SPLLT_IN_A/LDQ36	T (LVDS)*
K2	PL32B	7	LUM3_SPLLC_IN_A/LDQ36	C (LVDS)*
J5	PL33A	7	LUM3_SPLLT_FB_A/LDQ36	T
K5	PL33B	7	LUM3_SPLLC_FB_A/LDQ36	C
VCCIO	VCCIO7	7		
K7	PL34A	7	LDQ36	T (LVDS)*
K6	PL34B	7	LDQ36	C (LVDS)*
L6	PL35A	7	LDQ36	T
L7	PL35B	7	LDQ36	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	
AF4	PB17B	5	BDQ15	C	PB17B	5	BDQ15	C	
VCCIO	VCCIO5	5			VCCIO5	5			
AF5	PB18A	5	BDQ15	T	PB18A	5	BDQ15	T	
AF6	PB18B	5	BDQ15	C	PB18B	5	BDQ15	C	
Y12	PB19A	5	BDQ15	T	PB19A	5	BDQ15	T	
GNDIO	GNDIO5	-			GNDIO5	-			
AB11	PB19B	5	BDQ15	C	PB19B	5	BDQ15	C	
-	-	-			VCCIO5	5			
-	-	-			GNDIO5	-			
AD7	PB20A	5	BDQ24	T	PB29A	5	BDQ33	T	
AF7	PB20B	5	BDQ24	C	PB29B	5	BDQ33	C	
AD8	PB21A	5	BDQ24	T	PB30A	5	BDQ33	T	
AA12	PB21B	5	BDQ24	C	PB30B	5	BDQ33	C	
AE8	PB22A	5	BDQ24	T	PB31A	5	BDQ33	T	
VCCIO	VCCIO5	5			VCCIO5	5			
AF8	PB22B	5	BDQ24	C	PB31B	5	BDQ33	C	
AD9	PB23A	5	BDQ24	T	PB32A	5	BDQ33	T	
AC10	PB23B	5	BDQ24	C	PB32B	5	BDQ33	C	
AC11	PB24A	5	BDQS24	T	PB33A	5	BDQS33	T	
GNDIO	GNDIO5	-			GNDIO5	-			
AB12	PB24B	5	BDQ24	C	PB33B	5	BDQ33	C	
AD10	PB25A	5	BDQ24	T	PB34A	5	BDQ33	T	
Y13	PB25B	5	BDQ24	C	PB34B	5	BDQ33	C	
AF9	PB26A	5	BDQ24	T	PB35A	5	BDQ33	T	
VCCIO	VCCIO5	5			VCCIO5	5			
AE9	PB26B	5	BDQ24	C	PB35B	5	BDQ33	C	
AF10	PB27A	5	BDQ24	T	PB36A	5	BDQ33	T	
AE10	PB27B	5	BDQ24	C	PB36B	5	BDQ33	C	
AD11	PB28A	5	BDQ24	T	PB37A	5	BDQ33	T	
GNDIO	GNDIO5	-			GNDIO5	-			
AF11	PB28B	5	BDQ24	C	PB37B	5	BDQ33	C	
VCCIO	VCCIO5	5			VCCIO5	5			
GNDIO	GNDIO5	-			GNDIO5	-			
AA13	PB33A	5	BDQS33****	T	PB42A	5	BDQS42****	T	
AB13	PB33B	5	BDQ33	C	PB42B	5	BDQ42	C	
W14	PB34A	5	VREF2_5/BDQ33	T	PB43A	5	VREF2_5/BDQ42	T	
AC12	PB34B	5	VREF1_5/BDQ33	C	PB43B	5	VREF1_5/BDQ42	C	
AF12	PB35A	5	PCLKT5_0/BDQ33	T	PB44A	5	PCLKT5_0/BDQ42	T	
AD12	PB35B	5	PCLKC5_0/BDQ33	C	PB44B	5	PCLKC5_0/BDQ42	C	
VCCIO	VCCIO5	5			VCCIO5	5			
GNDIO	GNDIO5	-			GNDIO5	-			
AC13	PB40A	4	PCLKT4_0/BDQ42	T	PB49A	4	PCLKT4_0/BDQ51	T	
VCCIO	VCCIO4	4			VCCIO4	4			
Y14	PB40B	4	PCLKC4_0/BDQ42	C	PB49B	4	PCLKC4_0/BDQ51	C	
AB20	PB57A	4	BDQ60	T	PB50A	4	VREF2_4/BDQ51	T	
AC14	PB41B	4	VREF1_4/BDQ42	C	PB50B	4	VREF1_4/BDQ51	C	
AB14	PB42A	4	BDQS42****	T	PB51A	4	BDQS51****	T	
GNDIO	GNDIO4	-			GNDIO4	-			

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

LFE2M50E/SE					LFE2M70E/SE				
Ball Number	Ball/Pad Function	Bank	Dual Function	Differential	Ball/Pad Function	Bank	Dual Function	Differential	
AA6	NC	-			PL79B	6	LDQ82	C	
AB4	NC	-			PL80A	6	LDQ82	T (LVDS)*	
-	-	-			VCCIO6	6			
AB5	NC	-			PL80B	6	LDQ82	C (LVDS)*	
AA8	NC	-			PL81A	6	LDQ82	T	
AA9	NC	-			PL81B	6	LDQ82	C	
AC1	PL62A	6	LLM0_GPLLT_IN_A**	T (LVDS)*	PL82A	6	LLM0_GPLLT_IN_A**/LDQS82	T (LVDS)*	
GNDIO	GNDIO6	-			GNDIO6	-			
AC2	PL62B	6	LLM0_GPLLC_IN_A**	C (LVDS)*	PL82B	6	LLM0_GPLLC_IN_A**/LDQ82	C (LVDS)*	
AC4	PL63A	6	LLM0_GPLLT_FB_A	T	PL83A	6	LLM0_GPLLT_FB_A/LDQ82	T	
AC3	PL63B	6	LLM0_GPLLC_FB_A	C	PL83B	6	LLM0_GPLLC_FB_A/LDQ82	C	
VCCIO	VCCIO6	6			VCCIO6	6			
AC7	PL64A	6	LLM0_GDLLT_IN_A**	T (LVDS)*	PL84A	6	LLM0_GDLLT_IN_A**/LDQ82	T (LVDS)*	
AC6	PL64B	6	LLM0_GDLLC_IN_A**	C (LVDS)*	PL84B	6	LLM0_GDLLC_IN_A**/LDQ82	C (LVDS)*	
AC5	PL65A	6	LLM0_GDLLT_FB_A	T	PL85A	6	LLM0_GDLLT_FB_A/LDQ82	T	
AD3	PL65B	6	LLM0_GDLLC_FB_A	C	PL85B	6	LLM0_GDLLC_FB_A/LDQ82	C	
GNDIO	GNDIO6	-			GNDIO6	-			
AB8	LLM0_PLLCAP	6			LLM0_PLLCAP	6			
AD2	PL67A	6	LDQ71	T (LVDS)*	PL87A	6		T	
AD1	PL67B	6	LDQ71	C (LVDS)*	PL87B	6		C	
AE2	TCK	-			TCK	-			
AE1	TDI	-			TDI	-			
AF2	TMS	-			TMS	-			
AF1	TDO	-			TDO	-			
AG1	VCCJ	-			VCCJ	-			
AH1	VCC	-			LLC_SQ_VCCR3	14			
AK2	PB11A	5	BDQ15	T	LLC_SQ_HDINP3	14		T	
AJ1	NC	-			LLC_SQ_VCCIB3	14			
AJ2	PB11B	5	BDQ15	C	LLC_SQ_HDINN3	14		C	
AH4	VCC	-			LLC_SQ_VCCTX3	14			
AK5	PB13A	5	BDQ15	T	LLC_SQ_HDOUTP3	14		T	
AK4	NC	-			LLC_SQ_VCCOB3	14			
AJ5	PB13B	5	BDQ15	C	LLC_SQ_HDOUTN3	14		C	
AH5	VCC	-			LLC_SQ_VCCTX2	14			
AJ6	PB14B	5	BDQ15	C	LLC_SQ_HDOUTN2	14		C	
AH6	NC	-			LLC_SQ_VCCOB2	14			
AK6	PB14A	5	BDQ15	T	LLC_SQ_HDOUTP2	14		T	
AH2	VCC	-			LLC_SQ_VCCR2	14			
AJ3	PB12B	5	BDQ15	C	LLC_SQ_HDINN2	14		C	
AH3	NC	-			LLC_SQ_VCCIB2	14			
AK3	PB12A	5	BDQ15	T	LLC_SQ_HDINP2	14		T	
AH7	VCC	-			LLC_SQ_VCCP	14			
AG7	PB15A	5	BDQS15	T	LLC_SQ_REFCLKP	14		T	
AF7	PB15B	5	BDQ15	C	LLC_SQ_REFCLKN	14		C	
AJ7	VCCAUX	-			LLC_SQ_VCCAUX33	14			
AK11	PB18A	5	BDQ15	T	LLC_SQ_HDINP1	14		T	
AH11	NC	-			LLC_SQ_VCCIB1	14			
AJ11	PB18B	5	BDQ15	C	LLC_SQ_HDINN1	14		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)*	

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

LFE2M100E/SE				
Ball Number	Ball/Pad Function	Bank	Dual Function	Differential
H14	PT61A	0		T
A14	PT60B	0		C
B14	PT60A	0		T
D13	PT59B	0		C
GNDIO	GNDIO0	-		
F13	PT59A	0		T
G13	PT58B	0		C
VCCIO	VCCIO0	0		
J11	PT58A	0		T
D4	PT57B	0		
D5	PT56A	0		
E5	PT55B	0		C
F6	PT55A	0		T
GNDIO	GNDIO0	-		
VCCIO	VCCIO0	0		
F7	PT52B	0		C
D8	PT52A	0		T
GNDIO	GNDIO0	-		
J13	PT50B	0		C
G11	PT50A	0		T
H13	PT49B	0		C
H12	PT49A	0		T
VCCIO	VCCIO0	0		
E8	PT48B	0		C
D9	PT48A	0		T
D12	PT46B	0		C
GNDIO	GNDIO0	-		
E13	PT46A	0		T
VCCIO	VCCIO0	0		
GNDIO	GNDIO0	-		
J12	PT31B	0		C
-	-	-		
VCCIO	VCCIO0	0		
H10	PT31A	0		T
E12	PT30B	0		C
D11	PT30A	0		T
H11	PT29B	0		C
F11	PT29A	0		T
C13	ULC_SQ_VCCR0	11		
A12	ULC_SQ_HDINP0	11		T
B13	ULC_SQ_VCCIB0	11		
B12	ULC_SQ_HDINN0	11		C
C10	ULC_SQ_VCCTX0	11		

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

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

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

Industrial

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

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

Part Number	I/Os	Voltage	Grade	Package	Pins	Temp.	LUTs (K)
LFE2M100SE-5FN1152C	520	1.2V	-5	Lead-Free fpBGA	1152	Com	100
LFE2M100SE-6FN1152C	520	1.2V	-6	Lead-Free fpBGA	1152	Com	100
LFE2M100SE-7FN1152C	520	1.2V	-7	Lead-Free fpBGA	1152	Com	100
LFE2M100SE-5FN900C	416	1.2V	-5	Lead-Free fpBGA	900	Com	100
LFE2M100SE-6FN900C	416	1.2V	-6	Lead-Free fpBGA	900	Com	100
LFE2M100SE-7FN900C	416	1.2V	-7	Lead-Free fpBGA	900	Com	100

Industrial

Part Number	I/Os	Voltage	Grade	Package	Pins	Temp.	LUTs (K)
LFE2M20SE-5FN484I	304	1.2V	-5	Lead-Free fpBGA	484	Ind	20
LFE2M20SE-6FN484I	304	1.2V	-6	Lead-Free fpBGA	484	Ind	20
LFE2M20SE-5FN256I	140	1.2V	-5	Lead-Free fpBGA	256	Ind	20
LFE2M20SE-6FN256I	140	1.2V	-6	Lead-Free fpBGA	256	Ind	20

Part Number	I/Os	Voltage	Grade	Package	Pins	Temp.	LUTs (K)
LFE2M35SE-5FN672I	410	1.2V	-5	Lead-Free fpBGA	672	Ind	35
LFE2M35SE-6FN672I	410	1.2V	-6	Lead-Free fpBGA	672	Ind	35
LFE2M35SE-5FN484I	303	1.2V	-5	Lead-Free fpBGA	484	Ind	35
LFE2M35SE-6FN484I	303	1.2V	-6	Lead-Free fpBGA	484	Ind	35
LFE2M35SE-5FN256I	140	1.2V	-5	Lead-Free fpBGA	256	Ind	35
LFE2M35SE-6FN256I	140	1.2V	-6	Lead-Free fpBGA	256	Ind	35

Part Number	I/Os	Voltage	Grade	Package	Pins	Temp.	LUTs (K)
LFE2M50SE-5FN900I	410	1.2V	-5	Lead-Free fpBGA	900	Ind	50
LFE2M50SE-6FN900I	410	1.2V	-6	Lead-Free fpBGA	900	Ind	50
LFE2M50SE-5FN672I	372	1.2V	-5	Lead-Free fpBGA	672	Ind	50
LFE2M50SE-6FN672I	372	1.2V	-6	Lead-Free fpBGA	672	Ind	50
LFE2M50SE-5FN484I	270	1.2V	-5	Lead-Free fpBGA	484	Ind	50
LFE2M50SE-6FN484I	270	1.2V	-6	Lead-Free fpBGA	484	Ind	50

Part Number	I/Os	Voltage	Grade	Package	Pins	Temp.	LUTs (K)
LFE2M70SE-5FN1152I	436	1.2V	-5	Lead-Free fpBGA	1152	Ind	70
LFE2M70SE-6FN1152I	436	1.2V	-6	Lead-Free fpBGA	1152	Ind	70
LFE2M70SE-5FN900I	416	1.2V	-5	Lead-Free fpBGA	900	Ind	70
LFE2M70SE-6FN900I	416	1.2V	-6	Lead-Free fpBGA	900	Ind	70

Part Number	I/Os	Voltage	Grade	Package	Pins	Temp.	LUTs (K)
LFE2M100SE-5FN1152I	520	1.2V	-5	Lead-Free fpBGA	1152	Ind	100
LFE2M100SE-6FN1152I	520	1.2V	-6	Lead-Free fpBGA	1152	Ind	100
LFE2M100SE-5FN900I	416	1.2V	-5	Lead-Free fpBGA	900	Ind	100
LFE2M100SE-6FN900I	416	1.2V	-6	Lead-Free fpBGA	900	Ind	100

Date	Version	Section	Change Summary
June 2013 (cont.)	04.0 (cont.)	DC and Switching Characteristics	sysCLOCK SPLL Timing table – Corrected signal names for t_{RST} parameter.
			LatticeECP2/M sysCONFIG Port Timing Specifications table – added t_{SUMCDI} and t_{HMCDI} parameters.
September 2013	04.1	Architecture	Updated Selectable Master Clock (CCLK) Frequencies during Configuration table.
		DC and Switching Characteristics	Added information on f_{MAXSPI} parameter in LatticeECP2/M sys-CONFIG Port Timing Specifications table.