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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	8375
Number of Logic Elements/Cells	67000
Total RAM Bits	4642816
Number of I/O	416
Number of Gates	-
Voltage - Supply	1.14V ~ 1.26V
Mounting Type	Surface Mount
Operating Temperature	0°C ~ 85°C (TJ)
Package / Case	900-BBGA
Supplier Device Package	900-FPBGA (31x31)
Purchase URL	https://www.e-xfl.com/product-detail/lattice-semiconductor/lfe2m70e-5fn900c

LatticeECP2M Initialization Supply Current^{1, 2, 3, 4}
Over Recommended Operating Conditions

Symbol	Parameter	Device	Typ. ^{5, 6, 7}	Units
I_{CC}	Core Power Supply Current	ECP2M20	41	mA
		ECP2M35	107	mA
		ECP2M50	169	mA
		ECP2M70	254	mA
		ECP2M100	378	mA
I_{CCAUX}	Auxiliary Power Supply Current	ECP2M20	30	mA
		ECP2M35	30	mA
		ECP2M50	30	mA
		ECP2M70	30	mA
		ECP2M100	30	mA
I_{CCGPLL}	GPLL Power Supply Current (per GPLL)	All Devices	0.5	mA
I_{CCSPLL}	SPLL Power Supply Current (per SPLL)	All Devices	0.5	mA
I_{CCIO}	Bank Power Supply Current (per Bank)	All Devices	3	mA
I_{CCJ}	VCCJ Power Supply Current	All Devices	4	mA

1. Until DONE signal is active.

2. For further information about supply current, please see the list of additional technical documentation at the end of this data sheet.

3. Assumes all outputs are tristated, all inputs are configured as LVCMOS and held at the V_{CCIO} or GND.

4. Frequency 0MHz.

5. $T_J = 25^{\circ}\text{C}$, power supplies at nominal voltage.

6. A specific configuration pattern is used that scales with the size of the device; consists of 75% PFU utilization, 50% EBR, and 25% I/O configuration.

7. Values shown in this column are the typical average DC current during configuration. Use the Power Calculator tool to find the peak startup current.

LVDS25E

The top and bottom sides of LatticeECP2/M devices support LVDS outputs via emulated complementary LVCMOS outputs in conjunction with a parallel resistor across the driver outputs. The scheme shown in Figure 3-1 is one possible solution for point-to-point signals.

Figure 3-1. LVDS25E Output Termination Example

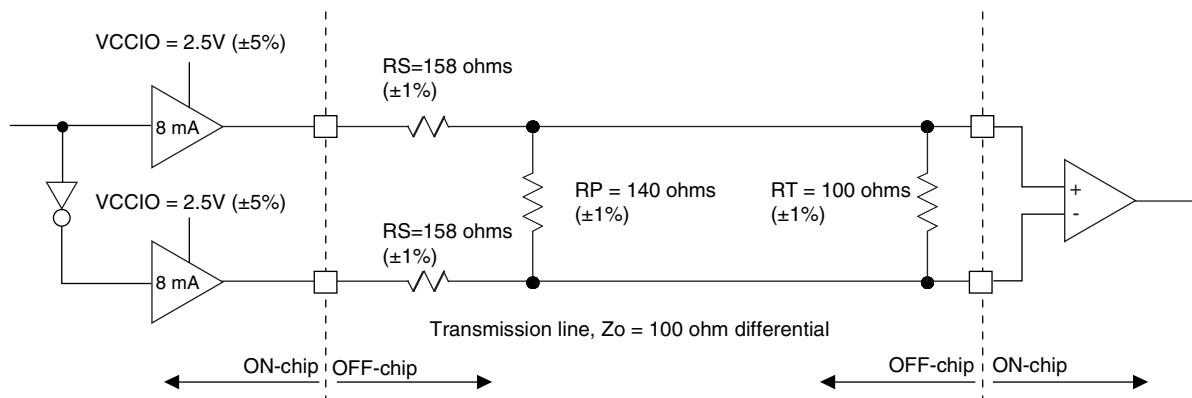


Table 3-2. LVDS25E DC Conditions

Parameter	Description	Typical	Units
V _{CCIO}	Output Driver Supply (+/-5%)	2.50	V
Z _{OUT}	Driver Impedance	20	Ω
R _S	Driver Series Resistor (+/-1%)	158	Ω
R _P	Driver Parallel Resistor (+/-1%)	140	Ω
R _T	Receiver Termination (+/-1%)	100	Ω
V _{OH}	Output High Voltage	1.43	V
V _{OL}	Output Low Voltage	1.07	V
V _{OD}	Output Differential Voltage	0.35	V
V _{CM}	Output Common Mode Voltage	1.25	V
Z _{BACK}	Back Impedance	100.5	Ω
I _{DC}	DC Output Current	6.03	mA

LVCMOS33D

All I/O banks support emulated differential I/O using the LVCMOS33D I/O type. This option, along with the external resistor network, provides the system designer the flexibility to place differential outputs on an I/O bank with 3.3V VCCIO. The default drive current for LVCMOS33D output is 12mA with the option to change the device strength to 4mA, 8mA, 16mA or 20mA. Follow the LVCMOS33 specifications for the DC characteristics of the LVCMOS33D.

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
M8	PB8B	5	PCLKC5_0/BDQ6	C	PB26B	5	PCLKC5_0/BDQ24	C
GND	GNDIO5	-			GNDIO5	-		
P7	PB13A	4	PCLKT4_0/BDQ15	T	PB31A	4	PCLKT4_0/BDQ33	T
R8	PB13B	4	PCLKC4_0/BDQ15	C	PB31B	4	PCLKC4_0/BDQ33	C
VCCIO	VCCIO4	4			VCCIO4	4		
T5	PB14A	4	BDQ15	T	PB32A	4	BDQ33	T
T6	PB14B	4	BDQ15	C	PB32B	4	BDQ33	C
T8	PB15A	4	BDQS15	T	PB33A	4	BDQS33	T
GND	GNDIO4	-			GNDIO4	-		
R7	PB16A	4	BDQ15	T	PB34A	4	BDQ33	T
T9	PB15B	4	BDQ15	C	PB33B	4	BDQ33	C
T7	PB16B	4	BDQ15	C	PB34B	4	BDQ33	C
L8	PB17A	4	BDQ15	T	PB35A	4	BDQ33	T
VCCIO	VCCIO4	4			VCCIO4	4		
P8	PB18A	4	BDQ15	T	PB36A	4	BDQ33	T
L9	PB17B	4	BDQ15	C	PB35B	4	BDQ33	C
N8	PB18B	4	BDQ15	C	PB36B	4	BDQ33	C
R9	PB19A	4	BDQ15	T	PB37A	4	BDQ33	T
GND	GNDIO4	-			GNDIO4	-		
R10	PB19B	4	BDQ15	C	PB37B	4	BDQ33	C
-	-	-			VCCIO	4		
-	-	-			GNDIO4	4		
N9	PB20A	4	BDQ24	T	PB47A	4	BDQ51	T
T10	PB21A	4	BDQ24	T	PB48A	4	BDQ51	T
M9	PB20B	4	BDQ24	C	PB47B	4	BDQ51	C
R11	PB21B	4	BDQ24	C	PB48B	4	BDQ51	C
P10	PB22A	4	BDQ24	T	PB49A	4	BDQ51	T
N11	PB23A	4	BDQ24	T	PB50A	4	BDQ51	T
VCCIO	VCCIO4	4			VCCIO4	4		
N10	PB22B	4	BDQ24	C	PB49B	4	BDQ51	C
P11	PB23B	4	BDQ24	C	PB50B	4	BDQ51	C
T11	PB24A	4	BDQS24	T	PB51A	4	BDQS51	T
GND	GNDIO4	-			GNDIO4	-		
M11	PB25A	4	BDQ24	T	PB52A	4	BDQ51	T
T12	PB24B	4	BDQ24	C	PB51B	4	BDQ51	C
L11	PB25B	4	BDQ24	C	PB52B	4	BDQ51	C
T13	PB26A	4	BDQ24	T	PB53A	4	BDQ51	T
R13	PB27A	4	BDQ24	T	PB54A	4	BDQ51	T
VCCIO	VCCIO4	4			VCCIO4	4		
T14	PB26B	4	BDQ24	C	PB53B	4	BDQ51	C
P13	PB27B	4	BDQ24	C	PB54B	4	BDQ51	C
GND	GNDIO4	-			GNDIO4	-		
N12	PB28A	4	VREF2_4/BDQ24	T	PB55A	4	VREF2_4/BDQ51	T
M12	PB28B	4	VREF1_4/BDQ24	C	PB55B	4	VREF1_4/BDQ51	C
R15	CFG2	8			CFG2	8		

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
R12	GND	-			GND	-		
R5	GND	-			GND	-		
T1	GND	-			GND	-		
T16	GND	-			GND	-		

* Supports true LVDS. Other differential signals must be emulated with external resistors.

** These dedicated input pins can be used for GPLLs or GDLLs within the respective quadrant.

Note: VCCIO and GND pads are used to determine the average DC current drawn by I/Os between GND/VCCIO connections, or between the last GND/VCCIO in an I/O bank and the end of an I/O bank. The substrate pads listed in the Pin Table do not necessarily have a one to one connection with a package ball or pin.

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

LFE2-20E/SE					
Ball Number	Ball Number	Ball/Pad Function	Bank	Dual Function	Differential
L11	L11	PB61B	4	BDQ60	C
T13	T13	PB62A	4	BDQ60	T
R13	R13	PB63A	4	BDQ60	T
VCCIO	VCCIO	VCCIO4	4		
T14	T14	PB62B	4	BDQ60	C
P13	P13	PB63B	4	BDQ60	C
GND	GND	GNDIO4	-		
N12	N12	PB64A	4	VREF2_4/BDQ60	T
M12	M12	PB64B	4	VREF1_4/BDQ60	C
R15	R15	CFG2	8		
N14	N14	CFG1	8		
N13	N13	PROGRAMN	8		
N15	N15	CFG0	8		
P15	P15	PR44B	8	WRITEN	C
L12	L12	INITN	8		
N16	N16	PR43B	8	CSN	C
GND	GND	GNDIO8	-		
R14	R14	CCLK	8		
P14	P14	PR44A	8	CS1N	T
M13	M13	DONE	8		
R16	R16	PR42B	8	D1	C
VCCIO	VCCIO	VCCIO8	8		
M16	M16	PR43A	8	D0/SPIFASTN	T
P16	P16	PR42A	8	D2	T
L15	L15	PR41B	8	D3	C
GND	GND	GNDIO8	-		
L14	L14	PR40A	8	D6	T
L16	L16	PR41A	8	D4	T
L10	L10	PR39B	8	D7/SPID0	C
L13	L13	PR40B	8	D5	C
VCCIO	VCCIO	VCCIO8	8		
K11	K11	PR39A	8	DI/CSSPI0N	T
K14	K14	PR38B	8	DOU/CSON	C
K13	K13	PR38A	8	BUSY/SISPI	T
GND	GND	GNDIO8	-		
K15	K15	PR31B	3	RLM0_GPLL_C_FB_A/RDQ34	C
VCCIO	VCCIO	VCCIO3	3		
K16	K16	PR31A	3	RLM0_GPLL_T_FB_A/RDQ34	T
GND	GND	GNDIO3	-		
J16	J16	PR30B	3	RLM0_GPLL_C_IN_A**/RDQ34	C (LVDS)*
J15	J15	PR30A	3	RLM0_GPLL_T_IN_A**/RDQ34	T (LVDS)*
J14	J14	RLM0_PLLCAP	3		

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
AB7	PB13B	5	BDQ15	C	PB22B	5	BDQ24	C
Y8	PB16A	5	BDQ15	T	PB25A	5	BDQ24	T
GNDIO	GNDIO5	-			GNDIO	-		
W9	PB15A	5	BDQS15	T	PB24A	5	BDQS24	T
AA8	PB16B	5	BDQ15	C	PB25B	5	BDQ24	C
V9	PB15B	5	BDQ15	C	PB24B	5	BDQ24	C
AB8	PB18A	5	BDQ15	T	PB27A	5	BDQ24	T
VCCIO	VCCIO5	5			VCCIO5	5		
W10	PB17A	5	BDQ15	T	PB26A	5	BDQ24	T
AA9	PB18B	5	BDQ15	C	PB27B	5	BDQ24	C
V10	PB17B	5	BDQ15	C	PB26B	5	BDQ24	C
GNDIO	GNDIO5	-			GNDIO	-		
Y10	PB21A	5	BDQ24	T	PB30A	5	BDQ33	T
AB9	PB20A	5	BDQ24	T	PB29A	5	BDQ33	T
AA10	PB21B	5	BDQ24	C	PB30B	5	BDQ33	C
AB10	PB20B	5	BDQ24	C	PB29B	5	BDQ33	C
AB11	PB23A	5	BDQ24	T	PB32A	5	BDQ33	T
U10	PB22A	5	BDQ24	T	PB31A	5	BDQ33	T
VCCIO	VCCIO5	5			VCCIO5	5		
AA11	PB23B	5	BDQ24	C	PB32B	5	BDQ33	C
U11	PB22B	5	BDQ24	C	PB31B	5	BDQ33	C
GNDIO	GNDIO5	-			GNDIO5	-		
AB12	PB25A	5	BDQ24	T	PB34A	5	BDQ33	T
Y11	PB24A	5	BDQS24	T	PB33A	5	BDQS33	T
AA12	PB25B	5	BDQ24	C	PB34B	5	BDQ33	C
W11	PB24B	5	BDQ24	C	PB33B	5	BDQ33	C
AB13	PB26A	5	PCLKT5_0/BDQ24	T	PB35A	5	PCLKT5_0/BDQ33	T
VCCIO	VCCIO5	5			VCCIO5	5		
AB14	PB26B	5	PCLKC5_0/BDQ24	C	PB35B	5	PCLKC5_0/BDQ33	C
GNDIO	GNDIO5	-			GNDIO5	-		
Y12	PB32A	4	BDQ33	T	PB41A	4	BDQ42	T
W12	PB32B	4	BDQ33	C	PB41B	4	BDQ42	C
VCCIO	VCCIO4	4			VCCIO4	4		
U12	PB31A	4	PCLKT4_0/BDQ33	T	PB40A	4	PCLKT4_0/BDQ42	T
V12	PB31B	4	PCLKC4_0/BDQ33	C	PB40B	4	PCLKC4_0/BDQ42	C
U13	PB34A	4	BDQ33	T	PB43A	4	BDQ42	T
GNDIO	GNDIO4	-			GNDIO4	-		
AA13	PB33A	4	BDQS33	T	PB42A	4	BDQS42	T
U14	PB34B	4	BDQ33	C	PB43B	4	BDQ42	C
Y13	PB33B	4	BDQ33	C	PB42B	4	BDQ42	C
AB16	PB36A	4	BDQ33	T	PB45A	4	BDQ42	T
VCCIO	VCCIO4	4			VCCIO4	4		
AB15	PB35A	4	BDQ33	T	PB44A	4	BDQ42	T
AB17	PB36B	4	BDQ33	C	PB45B	4	BDQ42	C

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

LFE2-12E/12SE					LFE2-20E/20SE			
Ball Number	Ball/Pad Function	Bank	Dual Function	Differential	Ball/Pad Function	Bank	Dual Function	Differential
AA14	PB35B	4	BDQ33	C	PB44B	4	BDQ42	C
W13	PB37A	4	BDQ33	T	PB46A	4	BDQ42	T
GNDIO	GNDIO4	-			GNDIO4	-		
W14	PB37B	4	BDQ33	C	PB46B	4	BDQ42	C
AB18	PB39A	4	BDQ42	T	PB48A	4	BDQ51	T
AB19	PB39B	4	BDQ42	C	PB48B	4	BDQ51	C
Y15	PB41A	4	BDQ42	T	PB50A	4	BDQ51	T
V14	PB40A	4	BDQ42	T	PB49A	4	BDQ51	T
VCCIO	VCCIO4	4			VCCIO4	4		
AA15	PB41B	4	BDQ42	C	PB50B	4	BDQ51	C
W15	PB40B	4	BDQ42	C	PB49B	4	BDQ51	C
GNDIO	GNDIO4	-			GNDIO	-		
AB20	PB43A	4	BDQ42	T	PB52A	4	BDQ51	T
AA16	PB42A	4	BDQS42	T	PB51A	4	BDQS51	T
AB21	PB43B	4	BDQ42	C	PB52B	4	BDQ51	C
AA17	PB42B	4	BDQ42	C	PB51B	4	BDQ51	C
Y16	PB45A	4	BDQ42	T	PB54A	4	BDQ51	T
U15	PB44A	4	BDQ42	T	PB53A	4	BDQ51	T
VCCIO	VCCIO4	4			VCCIO4	4		
W16	PB45B	4	BDQ42	C	PB54B	4	BDQ51	C
U16	PB44B	4	BDQ42	C	PB53B	4	BDQ51	C
AA18	PB46A	4	BDQ42	T	PB55A	4	BDQ51	T
AA20	PB46B	4	BDQ42	C	PB55B	4	BDQ51	C
GNDIO	GNDIO4	-			GNDIO	-		
V16	PB49A	4	BDQ51	T	PB58A	4	BDQ60	T
V17	PB49B	4	BDQ51	C	PB58B	4	BDQ60	C
AA21	PB48A	4	BDQ51	T	PB57A	4	BDQ60	T
VCCIO	VCCIO4	4			VCCIO4	4		
Y19	PB51A	4	BDQS51	T	PB60A	4	BDQS60	T
AA22	PB48B	4	BDQ51	C	PB57B	4	BDQ60	C
Y20	PB51B	4	BDQ51	C	PB60B	4	BDQ60	C
Y18	PB50A	4	BDQ51	T	PB59A	4	BDQ60	T
GNDIO	GNDIO4	-			GNDIO4	-		
Y21	PB53A	4	BDQ51	T	PB62A	4	BDQ60	T
Y17	PB50B	4	BDQ51	C	PB59B	4	BDQ60	C
Y22	PB53B	4	BDQ51	C	PB62B	4	BDQ60	C
W17	PB52A	4	BDQ51	T	PB61A	4	BDQ60	T
VCCIO	VCCIO4	4			VCCIO4	4		
U18	PB54A	4	BDQ51	T	PB63A	4	BDQ60	T
W18	PB52B	4	BDQ51	C	PB61B	4	BDQ60	C
V18	PB54B	4	BDQ51	C	PB63B	4	BDQ60	C
GNDIO	GNDIO4	-			GNDIO4	-		
T15	PB55A	4	VREF2_4/BDQ51	T	PB64A	4	VREF2_4/BDQ60	T
T16	PB55B	4	VREF1_4/BDQ51	C	PB64B	4	VREF1_4/BDQ60	C

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

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

LFE2-35E/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	-		

LFE2-20E/SE and LFE2-35E/SE Logic Signal Connections: 672 fpBGA (Cont.)

LFE2-20E/20SE					LFE2-35E/35SE			
Ball Number	Ball/Pad Function	Bank	Dual Function	Differential	Ball/Pad Function	Bank	Dual Function	Differential
L2	NC	-			NC	-		
L1	NC	-			NC	-		
VCCIO	VCCIO7	7			VCCIO7	7		
M2	NC	-			NC	-		
M1	NC	-			NC	-		
N2	NC	-			NC	-		
GND	GNDIO7	-			GNDIO7	-		
M8	VCC	-			NC	-		
VCCIO	VCCIO7	7			VCCIO7	7		
GND	GNDIO7	-			GNDIO7	-		
N1	PL12A	7	LDQ16		PL18A	7	LDQ22	
L8	PL13A	7	LDQ16	T	PL19A	7	LDQ22	T
K8	PL13B	7	LDQ16	C	PL19B	7	LDQ22	C
VCCIO	VCCIO7	7			VCCIO7	7		
L6	PL14A	7	LDQ16	T (LVDS)*	PL20A	7	LDQ22	T (LVDS)*
K5	PL14B	7	LDQ16	C (LVDS)*	PL20B	7	LDQ22	C (LVDS)*
L7	PL15A	7	LDQ16	T	PL21A	7	LDQ22	T
L5	PL15B	7	LDQ16	C	PL21B	7	LDQ22	C
GND	GNDIO7	-			GNDIO7	-		
P1	PL16A	7	LDQS16	T (LVDS)*	PL22A	7	LDQS22	T (LVDS)*
P2	PL16B	7	LDQ16	C (LVDS)*	PL22B	7	LDQ22	C (LVDS)*
M6	PL17A	7	LDQ16	T	PL23A	7	LDQ22	T
VCCIO	VCCIO7	7			VCCIO7	7		
N8	PL17B	7	LDQ16	C	PL23B	7	LDQ22	C
R1	PL18A	7	LDQ16	T (LVDS)*	PL24A	7	LDQ22	T (LVDS)*
R2	PL18B	7	LDQ16	C (LVDS)*	PL24B	7	LDQ22	C (LVDS)*
M7	PL19A	7	PCLKT7_0/LDQ16	T	PL25A	7	PCLKT7_0/LDQ22	T
GND	GNDIO7	-			GNDIO7	-		
N9	PL19B	7	PCLKC7_0/LDQ16	C	PL25B	7	PCLKC7_0/LDQ22	C
M4	PL21A	6	PCLKT6_0/LDQ25	T (LVDS)*	PL27A	6	PCLKT6_0/LDQ31	T (LVDS)*
M5	PL21B	6	PCLKC6_0/LDQ25	C (LVDS)*	PL27B	6	PCLKC6_0/LDQ31	C (LVDS)*
N7	PL22A	6	VREF2_6/LDQ25	T	PL28A	6	VREF2_6/LDQ31	T
P9	PL22B	6	VREF1_6/LDQ25	C	PL28B	6	VREF1_6/LDQ31	C
N3	PL23A	6	LDQ25	T (LVDS)*	PL29A	6	LDQ31	T (LVDS)*
VCCIO	VCCIO6	6			VCCIO6	6		
N4	PL23B	6	LDQ25	C (LVDS)*	PL29B	6	LDQ31	C (LVDS)*
N5	PL24A	6	LDQ25	T	PL30A	6	LDQ31	T
P7	PL24B	6	LDQ25	C	PL30B	6	LDQ31	C
T1	NC	-			PL31A	6	LDQS31	T (LVDS)*
GND	GNDIO6	-			GNDIO6	-		
T2	NC	-			PL31B	6	LDQ31	C (LVDS)*
P8	NC	-			PL32A	6	LDQ31	T
P6	NC	-			PL32B	6	LDQ31	C
VCCIO	VCCIO6	6			VCCIO6	6		
P5	NC	-			PL33A	6	LDQ31	T (LVDS)*
P4	NC	-			PL33B	6	LDQ31	C (LVDS)*

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

LFE2M20E/SE and LFE2M35E/SE Logic Signal Connections: 484 fpBGA

LFE2M20E/SE					LFE2M35E/SE				
Ball Number	Ball/Pad Function	Bank	Dual Function	Differential	Ball/Pad Function	Bank	Dual Function	Differential	
D1	PL2A	7	LDQ6	T (LVDS)*	PL2A	7	LDQ6	T (LVDS)*	
E1	PL2B	7	LDQ6	C (LVDS)*	PL2B	7	LDQ6	C (LVDS)*	
F1	PL3A	7	LDQ6	T	PL3A	7	LDQ6	T	
F2	PL3B	7	LDQ6	C	PL3B	7	LDQ6	C	
F5	PL4A	7	LDQ6	T (LVDS)*	PL4A	7	LDQ6	T (LVDS)*	
VCCIO	VCCIO7	7			VCCIO7	7			
G6	PL4B	7	LDQ6	C (LVDS)*	PL4B	7	LDQ6	C (LVDS)*	
F4	PL5A	7	LDQ6	T	PL5A	7	LDQ6	T	
F3	PL5B	7	LDQ6	C	PL5B	7	LDQ6	C	
G1	PL6A	7	LDQS6	T (LVDS)*	PL6A	7	LDQS6	T (LVDS)*	
GNDIO	GNDIO7	-			GNDIO7	-			
G2	PL6B	7	LDQ6	C (LVDS)*	PL6B	7	LDQ6	C (LVDS)*	
H1	PL7A	7	LDQ6	T	PL7A	7	LDQ6	T	
H2	PL7B	7	LDQ6	C	PL7B	7	LDQ6	C	
VCCIO	VCCIO7	7			VCCIO7	7			
H7	PL8A	7	LDQ6	T (LVDS)*	PL8A	7	LDQ6	T (LVDS)*	
H6	PL8B	7	LDQ6	C (LVDS)*	PL8B	7	LDQ6	C (LVDS)*	
G3	PL9A	7	VREF2_7/LDQ6	T	PL9A	7	VREF2_7/LDQ6	T	
H3	PL9B	7	VREF1_7/LDQ6	C	PL9B	7	VREF1_7/LDQ6	C	
GNDIO	GNDIO7	-			GNDIO7	-			
H5	PL11A	7	LUM0_SPLLT_IN_A	T (LVDS)*	PL11A	7	LUM0_SPLLT_IN_A/LDQ15	T (LVDS)*	
H4	PL11B	7	LUM0_SPLLC_IN_A	C (LVDS)*	PL11B	7	LUM0_SPLLC_IN_A/LDQ15	C (LVDS)*	
J1	PL12A	7	LUM0_SPLLT_FB_A	T	PL12A	7	LUM0_SPLLT_FB_A/LDQ15	T	
J2	PL12B	7	LUM0_SPLLC_FB_A	C	PL12B	7	LUM0_SPLLC_FB_A/LDQ15	C	
J3	PL13A	7		T (LVDS)*	PL13A	7	LDQ15	T (LVDS)*	
VCCIO	VCCIO7	7			VCCIO7	7			
J4	PL13B	7		C (LVDS)*	PL13B	7	LDQ15	C (LVDS)*	
J7	PL14A	7		T	PL14A	7	LDQ15	T	
J6	PL14B	7		C	PL14B	7	LDQ15	C	
GNDIO	GNDIO7	-			GNDIO7	-			
VCCIO	VCCIO7	7			VCCIO7	7			
K1	PL18A	7	LUM1_SPLLT_IN_A/LDQ22	T (LVDS)*	PL28A	7	LUM1_SPLLT_IN_A/LDQ32	T (LVDS)*	
K2	PL18B	7	LUM1_SPLLC_IN_A/LDQ22	C (LVDS)*	PL28B	7	LUM1_SPLLC_IN_A/LDQ32	C (LVDS)*	
J5	PL19A	7	LUM1_SPLLT_FB_A/LDQ22	T	PL29A	7	LUM1_SPLLT_FB_A/LDQ32	T	
K5	PL19B	7	LUM1_SPLLC_FB_A/LDQ22	C	PL29B	7	LUM1_SPLLC_FB_A/LDQ32	C	
VCCIO	VCCIO7	7			VCCIO7	7			
K7	PL20A	7	LDQ22	T (LVDS)*	PL30A	7	LDQ32	T (LVDS)*	
K6	PL20B	7	LDQ22	C (LVDS)*	PL30B	7	LDQ32	C (LVDS)*	
L6	PL21A	7	LDQ22	T	PL31A	7	LDQ32	T	
L7	PL21B	7	LDQ22	C	PL31B	7	LDQ32	C	
GNDIO	GNDIO7	-			GNDIO7	-			
L1	PL22A	7	LDQS22	T (LVDS)*	PL32A	7	LDQS32	T (LVDS)*	
L2	PL22B	7	LDQ22	C (LVDS)*	PL32B	7	LDQ32	C (LVDS)*	
M7	PL23A	7	LDQ22	T	PL33A	7	LDQ32	T	
VCCIO	VCCIO7	7			VCCIO7	7			
L5	PL23B	7	LDQ22	C	PL33B	7	LDQ32	C	
L3	PL24A	7	LDQ22	T (LVDS)*	PL34A	7	LDQ32	T (LVDS)*	

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

LFE2M50E/SE				
Ball Number	Ball/Pad Function	Bank	Dual Function	Differential
U21	CS1N***	8		
U17	CSN***	8		
U16	D0/SPIFASTN***	8		
VCCIO	VCCIO8	8		
T16	D1***	8		
T17	D2***	8		
T22	D3***	8		
GNDIO	GNDIO8	-		
R22	D4***	8		
T15	D5***	8		
R17	D6***	8		
T20	D7/SPID0***	8		
VCCIO	VCCIO8	8		
T21	DI/CSSPI0N***	8		
R21	DOUT/CSON/CSSPI1N***	8		
R20	BUSY/SISPI***	8		
R16	RLM0_PLLCAP	3		
R18	PR65B	3	RLM0_GDLLC_FB_A	C
GNDIO	GNDIO3	-		
R19	PR65A	3	RLM0_GDLLT_FB_A	T
P22	PR64B	3	RLM0_GDLLC_IN_A**	C (LVDS)*
P21	PR64A	3	RLM0_GDLLT_IN_A**	T (LVDS)*
P16	PR63B	3	RLM0_GPLL_C_IN_A**	C
VCCIO	VCCIO3	3		
P17	PR63A	3	RLM0_GPLLT_IN_A**	T
P20	PR62B	3	RLM0_GPLL_C_FB_A	C (LVDS)*
P19	PR62A	3	RLM0_GPLLT_FB_A	T (LVDS)*
GNDIO	GNDIO3	-		
VCCIO	VCCIO3	3		
P18	PR55B	3	RDQ52	C
N16	PR55A	3	RDQ52	T
GNDIO	GNDIO3	-		
N22	PR54B	3	RDQ52	C (LVDS)*
N21	PR54A	3	RDQ52	T (LVDS)*
N17	PR53B	3	RDQ52	C
N18	PR53A	3	RDQ52	T
VCCIO	VCCIO3	3		
M22	PR52B	3	RDQ52	C (LVDS)*
M21	PR52A	3	RDQS52	T (LVDS)*
M16	PR51B	3	RDQ52	C
GNDIO	GNDIO3	-		
M17	PR51A	3	RDQ52	T
M20	PR50B	3	RDQ52	C (LVDS)*

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

LFE2M50E/SE				
Ball Number	Ball/Pad Function	Bank	Dual Function	Differential
G5	VCCIO7	7		
J8	VCCIO7	7		
K4	VCCIO7	7		
AA22	VCCIO8	8		
U19	VCCIO8	8		
H11	VCCAUX	-		
H12	VCCAUX	-		
L15	VCCAUX	-		
L8	VCCAUX	-		
M15	VCCAUX	-		
M8	VCCAUX	-		
R11	VCCAUX	-		
R12	VCCAUX	-		
A1	GND	-		
A10	GND	-		
A16	GND	-		
A22	GND	-		
AA19	GND	-		
AA4	GND	-		
AB1	GND	-		
AB22	GND	-		
B13	GND	-		
B19	GND	-		
B4	GND	-		
D16	GND	-		
D2	GND	-		
D21	GND	-		
D7	GND	-		
G19	GND	-		
G4	GND	-		
H10	GND	-		
H13	GND	-		
J14	GND	-		
J9	GND	-		
K10	GND	-		
K11	GND	-		
K12	GND	-		
K13	GND	-		
K15	GND	-		
K20	GND	-		
K3	GND	-		
K8	GND	-		
L10	GND	-		

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	
L16	GND	-			GND	-			
L17	GND	-			GND	-			
L2	GND	-			GND	-			
L20	GND	-			GND	-			
L25	GND	-			GND	-			
L7	GND	-			GND	-			
M13	GND	-			GND	-			
M14	GND	-			GND	-			
N10	GND	-			GND	-			
N12	GND	-			GND	-			
N13	GND	-			GND	-			
N14	GND	-			GND	-			
N15	GND	-			GND	-			
N17	GND	-			GND	-			
P10	GND	-			GND	-			
P12	GND	-			GND	-			
P13	GND	-			GND	-			
P14	GND	-			GND	-			
P15	GND	-			GND	-			
P17	GND	-			GND	-			
R13	GND	-			GND	-			
R14	GND	-			GND	-			
T10	GND	-			GND	-			
T11	GND	-			GND	-			
T16	GND	-			GND	-			
T17	GND	-			GND	-			
T2	GND	-			GND	-			
T20	GND	-			GND	-			
T25	GND	-			GND	-			
T7	GND	-			GND	-			
U11	GND	-			GND	-			
U13	GND	-			GND	-			
U14	GND	-			GND	-			
U16	GND	-			GND	-			
V22	GND	-			GND	-			
V5	GND	-			GND	-			
Y11	GND	-			GND	-			
Y16	GND	-			GND	-			
AB3	NC	-			NC	-			
AB4	NC	-			NC	-			
AC1	NC	-			NC	-			
AC2	NC	-			NC	-			
B4	NC	-			NC	-			
B5	NC	-			NC	-			
C26	NC	-			NC	-			
D20	NC	-			NC	-			
D21	NC	-			NC	-			
D22	NC	-			NC	-			

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	
A21	URC_SQ_VCCOB3	12			URC_SQ_VCCOB3	12			
A22	URC_SQ_HDOUTP3	12		T	URC_SQ_HDOUTP3	12		T	
C21	URC_SQ_VCCTX3	12			URC_SQ_VCCTX3	12			
B19	URC_SQ_HDINN3	12		C	URC_SQ_HDINN3	12		C	
B18	URC_SQ_VCCIB3	12			URC_SQ_VCCIB3	12			
A19	URC_SQ_HDINP3	12		T	URC_SQ_HDINP3	12		T	
C18	URC_SQ_VCCRX3	12			URC_SQ_VCCRX3	12			
D23	PT73B	1		C	PT82B	1		C	
GNDIO	GNDIO1	-			GNDIO1	-			
E21	PT73A	1		T	PT82A	1		T	
D26	PT72B	1		C	PT81B	1		C	
E26	PT72A	1		T	PT81A	1		T	
E23	PT71B	1		C	PT80B	1		C	
-	-	-			VCCIO1	1			
G22	PT71A	1		T	PT80A	1		T	
VCCIO	VCCIO1	1			-	-			
D22	PT70B	1		C	PT79B	1		C	
F21	PT70A	1		T	PT79A	1		T	
G18	PT69B	1		C	PT78B	1		C	
H18	PT69A	1		T	PT78A	1		T	
D20	PT68B	1		C	PT77B	1		C	
GNDIO	GNDIO1	-			GNDIO1	-			
D21	PT68A	1		T	PT77A	1		T	
E20	PT67B	1		C	PT76B	1		C	
E19	PT67A	1		T	PT76A	1		T	
D19	PT66B	1		C	PT75B	1		C	
VCCIO	VCCIO1	1			VCCIO1	1			
E18	PT66A	1		T	PT75A	1		T	
D18	PT65B	1		C	PT74B	1		C	
C17	PT65A	1		T	PT74A	1		T	
A17	PT64B	1		C	PT73B	1		C	
B17	PT64A	1		T	PT73A	1		T	
GNDIO	GNDIO1	-			GNDIO1	-			
VCCIO	VCCIO1	1			VCCIO1	1			
J18	NC	-			PT66B	1		C	
J19	NC	-			PT66A	1		T	
H17	NC	-			PT65B	1		C	
J17	NC	-			PT65A	1		T	
F18	NC	-			PT64B	1		C	
F17	NC	-			PT64A	1		T	
-	-	-			GNDIO1	-			
A16	PT54B	1		C	PT63B	1		C	
B16	PT54A	1		T	PT63A	1		T	
G17	PT53B	1		C	PT62B	1		C	
G16	PT53A	1		T	PT62A	1		T	
VCCIO	VCCIO1	1			VCCIO1	1			
H16	PT52B	1		C	PT61B	1		C	
F16	PT52A	1		T	PT61A	1		T	

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	
K3	VCCIO7	7			VCCIO7	7			
M10	VCCIO7	7			VCCIO7	7			
M7	VCCIO7	7			VCCIO7	7			
N10	VCCIO7	7			VCCIO7	7			
N3	VCCIO7	7			VCCIO7	7			
P10	VCCIO7	7			VCCIO7	7			
R6	VCCIO7	7			VCCIO7	7			
AA25	VCCIO8	8			VCCIO8	8			
AD28	VCCIO8	8			VCCIO8	8			
AA10	VCCAUX	-			VCCAUX	-			
AA11	VCCAUX	-			VCCAUX	-			
AA20	VCCAUX	-			VCCAUX	-			
AA21	VCCAUX	-			VCCAUX	-			
K10	VCCAUX	-			VCCAUX	-			
K11	VCCAUX	-			VCCAUX	-			
K20	VCCAUX	-			VCCAUX	-			
K21	VCCAUX	-			VCCAUX	-			
L10	VCCAUX	-			VCCAUX	-			
L11	VCCAUX	-			VCCAUX	-			
L20	VCCAUX	-			VCCAUX	-			
L21	VCCAUX	-			VCCAUX	-			
Y10	VCCAUX	-			VCCAUX	-			
Y11	VCCAUX	-			VCCAUX	-			
Y20	VCCAUX	-			VCCAUX	-			
Y21	VCCAUX	-			VCCAUX	-			
A1	GND	-			GND	-			
A13	GND	-			GND	-			
A18	GND	-			GND	-			
A24	GND	-			GND	-			
A30	GND	-			GND	-			
A7	GND	-			GND	-			
AA14	GND	-			GND	-			
AA15	GND	-			GND	-			
AA16	GND	-			GND	-			
AA17	GND	-			GND	-			
AA24	GND	-			GND	-			
AA27	GND	-			GND	-			
AA4	GND	-			GND	-			
AB24	GND	-			GND	-			
AB7	GND	-			GND	-			
AD12	GND	-			GND	-			
AD19	GND	-			GND	-			
AD27	GND	-			GND	-			
AE22	GND	-			GND	-			
AE27	GND	-			GND	-			
AE4	GND	-			GND	-			
AE9	GND	-			GND	-			
AF14	GND	-			GND	-			

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

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

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

LFE2M100E/SE				
Ball Number	Ball/Pad Function	Bank	Dual Function	Differential
V18	VCCPLL	-		

* Supports true LVDS. Other differential signals must be emulated with external resistors.

** These dedicated input pins can be used for GPLLs or GDLLs within the respective quadrant.

*** These sysCONFIG pins are dedicated I/O pins for configuration. The outputs are actively driven during normal device operation.

****Due to packaging bond out option, this DQS does not have all the necessary DQ pins bonded out for a full 8-bit data width.

Note: VCCIO and GND pads are used to determine the average DC current drawn by I/Os between GND/VCCIO connections, or between the last GND/VCCIO in an I/O bank and the end of an I/O bank. The substrate pads listed in the Pin Table do not necessarily have a one to one connection with a package ball or pin.

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
AL8	LLC_SQ_VCCIB1	14			LLC_SQ_VCCIB1	14		
AM7	LLC_SQ_HDINN1	14		C	LLC_SQ_HDINN1	14		C
AN6	LLC_SQ_VCCRX1	14			LLC_SQ_VCCRX1	14		
AP6	LLC_SQ_HDOUTP1	14		T	LLC_SQ_HDOUTP1	14		T
AK7	LLC_SQ_VCCOB1	14			LLC_SQ_VCCOB1	14		
AP7	LLC_SQ_HDOUTN1	14		C	LLC_SQ_HDOUTN1	14		C
AN7	LLC_SQ_VCCTX1	14			LLC_SQ_VCCTX1	14		
AP8	LLC_SQ_HDOUTN0	14		C	LLC_SQ_HDOUTN0	14		C
AL9	LLC_SQ_VCCOB0	14			LLC_SQ_VCCOB0	14		
AP9	LLC_SQ_HDOUTP0	14		T	LLC_SQ_HDOUTP0	14		T
AN8	LLC_SQ_VCCTX0	14			LLC_SQ_VCCTX0	14		
AM8	LLC_SQ_HDINN0	14		C	LLC_SQ_HDINN0	14		C
AN9	LLC_SQ_VCCIB0	14			LLC_SQ_VCCIB0	14		
AM9	LLC_SQ_HDINP0	14		T	LLC_SQ_HDINP0	14		T
AL7	LLC_SQ_VCCRX0	14			LLC_SQ_VCCRX0	14		
-	-	-			VCCIO5	5		
AJ12	NC	-			PB32A	5	BDQ33	T
AH12	NC	-			PB32B	5	BDQ33	C
-	-	-			GNDIO5	-		
-	-	-			VCCIO5	5		
AL13	NC	-			PB36A	5	BDQ33	T
AK13	NC	-			PB36B	5	BDQ33	C
-	-	-			GNDIO5	-		
AE14	NC	-			PB38A	5	BDQ42	T
AG13	NC	-			PB38B	5	BDQ42	C
AN14	PB30A	5	BDQ33	T	PB39A	5	BDQ42	T
AP14	PB30B	5	BDQ33	C	PB39B	5	BDQ42	C
AH14	PB31A	5	BDQ33	T	PB40A	5	BDQ42	T
AJ15	PB31B	5	BDQ33	C	PB40B	5	BDQ42	C
VCCIO	VCCIO5	5			VCCIO5	5		
GNDIO	GNDIO5	-			GNDIO5	-		
AL14	PB33A	5	BDQS33	T	PB42A	5	BDQS42	T
AM14	PB33B	5	BDQ33	C	PB42B	5	BDQ42	C
AF14	PB35A	5	BDQ33	T	PB44A	5	BDQ42	T
AF13	PB35B	5	BDQ33	C	PB44B	5	BDQ42	C
VCCIO	VCCIO5	5			VCCIO5	5		
AE15	PB36A	5	BDQ33	T	PB45A	5	BDQ42	T
AG14	PB36B	5	BDQ33	C	PB45B	5	BDQ42	C
AH15	PB37A	5	BDQ33	T	PB46A	5	BDQ42	T
AK15	PB37B	5	BDQ33	C	PB46B	5	BDQ42	C
GNDIO	GNDIO5	-			GNDIO5	-		
AL15	PB38A	5	BDQ42	T	PB47A	5	BDQ51	T
AM15	PB38B	5	BDQ42	C	PB47B	5	BDQ51	C
AK16	PB39A	5	BDQ42	T	PB48A	5	BDQ51	T
AJ16	PB39B	5	BDQ42	C	PB48B	5	BDQ51	C
AN15	PB40A	5	BDQ42	T	PB49A	5	BDQ51	T
VCCIO	VCCIO5	5			VCCIO5	5		
AP15	PB40B	5	BDQ42	C	PB49B	5	BDQ51	C
AG15	PB42A	5	BDQS42	T	PB51A	5	BDQS51	T