E. Lattice Semiconductor Corporation - <u>LFE2-12SE-6Q208C Datasheet</u>



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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	131
Number of Gates	-
Voltage - Supply	1.14V ~ 1.26V
Mounting Type	Surface Mount
Operating Temperature	0°C ~ 85°C (TJ)
Package / Case	208-BFQFP
Supplier Device Package	208-PQFP (28x28)
Purchase URL	https://www.e-xfl.com/product-detail/lattice-semiconductor/lfe2-12se-6q208c

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LatticeECP2/M Family Data Sheet Architecture

September 2013

Data Sheet DS1006

Architecture Overview

Each LatticeECP2/M device contains an array of logic blocks surrounded by Programmable I/O Cells (PIC). Interspersed between the rows of logic blocks are rows of sysMEM[™] Embedded Block RAM (EBR) and rows of sys-DSP[™] Digital Signal Processing blocks, as shown in Figure 2-1. In addition, the LatticeECP2M family contains SERDES Quads in one or more of the corners. Figure 2-2 shows the block diagram of ECP2M20 with one quad.

There are two kinds of logic blocks, the Programmable Functional Unit (PFU) and Programmable Functional Unit without RAM (PFF). The PFU contains the building blocks for logic, arithmetic, RAM and ROM functions. The PFF block contains building blocks for logic, arithmetic and ROM functions. Both PFU and PFF blocks are optimized for flexibility, allowing complex designs to be implemented quickly and efficiently. Logic Blocks are arranged in a two-dimensional array. Only one type of block is used per row.

The LatticeECP2/M devices contain one or more rows of sysMEM EBR blocks. sysMEM EBRs are large dedicated 18K fast memory blocks. Each sysMEM block can be configured in a variety of depths and widths of RAM or ROM. In addition, LatticeECP2/M devices contain up to two rows of DSP Blocks. Each DSP block has multipliers and adder/accumulators, which are the building blocks for complex signal processing capabilities.

The LatticeECP2M devices feature up to 16 embedded 3.125Gbps SERDES (Serializer / Deserializer) channels. Each SERDES channel contains independent 8b/10b encoding / decoding, polarity adjust and elastic buffer logic. Each group of four SERDES channels along with its Physical Coding Sub-layer (PCS) block, creates a quad. The functionality of the SERDES/PCS Quads can be controlled by memory cells set during device configuration or by registers that are addressable during device operation. The registers in every quad can be programmed by a soft IP interface, referred to as the SERDES Client Interface (SCI). These quads (up to four) are located at the corners of the devices.

Each PIC block encompasses two PIOs (PIO pairs) with their respective sysl/O buffers. The sysl/O buffers of the LatticeECP2/M devices are arranged in eight banks, allowing the implementation of a wide variety of I/O standards. In addition, a separate I/O bank is provided for the programming interfaces. PIO pairs on the left and right edges of the device can be configured as LVDS transmit/receive pairs. The PIC logic also includes pre-engineered support to aid in the implementation of high speed source synchronous standards such as SPI4.2, along with memory interfaces including DDR2.

The LatticeECP2/M registers in PFU and sysI/O can be configured to be SET or RESET. After power up and the device is configured, it enters into user mode with these registers SET/RESET according to the configuration setting, allowing the device entering to a known state for predictable system function.

Other blocks provided include PLLs, DLLs and configuration functions. The LatticeECP2/M architecture provides two General PLLs (GPLL) and up to six Standard PLLs (SPLL) per device. In addition, each LatticeECP2/M family member provides two DLLs per device. The GPLLs and DLLs blocks are located in pairs at the end of the bottommost EBR row; the DLL block is located towards the edge of the device. The SPLL blocks are located at the end of the other EBR/DSP rows.

The configuration block that supports features such as configuration bit-stream decryption, transparent updates and dual boot support is located toward the center of this EBR row. The Ball Grid Array (BGA) package devices in the LatticeECP2/M family supports a sysCONFIG[™] port located in the corner between banks four and five, which allows for serial or parallel device configuration.

In addition, every device in the family has a JTAG port. This family also provides an on-chip oscillator. The LatticeECP2/M devices use 1.2V as their core voltage.

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Figure 2-4. Slice Diagram



WCK is CLK

DI[3:2] for Slice 2 and DI[1:0] for Slice 0 data

WAD [A:D] is a 4bit address from slice 1 LUT input

Table 2-2. Slice Signal Descriptions

Function	Туре	Signal Names	Description
Input	Data signal	A0, B0, C0, D0	Inputs to LUT4
Input	Data signal	A1, B1, C1, D1	Inputs to LUT4
Input	Multi-purpose	MO	Multipurpose Input
Input	Multi-purpose	M1	Multipurpose Input
Input	Control signal	CE	Clock Enable
Input	Control signal	LSR	Local Set/Reset
Input	Control signal	CLK	System Clock
Input	Inter-PFU signal	FC	Fast Carry-in ¹
Input	Inter-slice signal	FXA	Intermediate signal to generate LUT6 and LUT7
Input	Inter-slice signal	FXB	Intermediate signal to generate LUT6 and LUT7
Output	Data signals	F0, F1	LUT4 output register bypass signals
Output	Data signals	Q0, Q1	Register outputs
Output	Data signals	OFX0	Output of a LUT5 MUX
Output	Data signals	OFX1	Output of a LUT6, LUT7, LUT8 ² MUX depending on the slice
Output	Inter-PFU signal	FCO	Slice 2 of each PFU is the fast carry chain output ¹

1. See Figure 2-4 for connection details.

2. Requires two PFUs.

WRE is from LSR



Figure 2-5. General Purpose PLL (GPLL) Diagram



Standard PLL (SPLL)

Some of the larger devices have two to six Standard PLLs (SPLLs). SPLLs have the same features as GPLLs but without delay adjustment capability. SPLLs also provide different parametric specifications. For more information, please see the list of additional technical documentation at the end of this data sheet.

Table 2-4 provides a description of the signals in the GPLL and SPLL blocks.

Table 2-4. GPLL and SPLL Blocks Signal Descriptions

Signal	I/O	Description
CLKI	I	Clock input from external pin or routing
CLKFB	I	PLL feedback input from CLKOP (PLL internal), from clock net (CLKOP) or from a user clock (PIN or logic)
RST	I	"1" to reset PLL counters, VCO, charge pumps and M-dividers
RSTK	I	"1" to reset K-divider
CLKOS	0	PLL output clock to clock tree (phase shifted/duty cycle changed)
CLKOP	0	PLL output clock to clock tree (no phase shift)
CLKOK	0	PLL output to clock tree through secondary clock divider
LOCK	0	"1" indicates PLL LOCK to CLKI
DDAMODE ¹	I	Dynamic Delay Enable. "1": Pin control (dynamic), "0": Fuse Control (static)
DDAIZR ¹	I	Dynamic Delay Zero. "1": delay = 0, "0": delay = on
DDAILAG ¹	I	Dynamic Delay Lag/Lead. "1": Lead, "0": Lag
DDAIDEL[2:0]1	I	Dynamic Delay Input
DPA MODES	I	DPA (Dynamic Phase Adjust/Duty Cycle Select) mode
DPHASE [3:0]	I	DPA Phase Adjust inputs
DDDUTY [3:0]	—	DPA Duty Cycle Select inputs

1. These signals are not available in SPLL.



Figure 2-16. Secondary Clock Selection



Slice Clock Selection

Figure 2-17 shows the clock selections and Figure 2-18 shows the control selections for Slice0 through Slice2. All the primary clocks and the four secondary clocks are routed to this clock selection mux. Other signals can be used as a clock input to the slices via routing. Slice controls are generated from the secondary clocks or other signals connected via routing.

If none of the signals are selected for both clock and control then the default value of the mux output is 1. Slice 3 does not have any registers; therefore it does not have the clock or control muxes.

Figure 2-17. Slice0 through Slice2 Clock Selection





Figure 2	-34. DQS	Input R	outing f	for the	Bottom	Edge of	the	Device



DLL Calibrated DQS Delay Block

Source synchronous interfaces generally require the input clock to be adjusted in order to correctly capture data at the input register. For most interfaces a PLL is used for this adjustment. However, in DDR memories the clock (referred to as DQS) is not free-running so this approach cannot be used. The DQS Delay block provides the required clock alignment for DDR memory interfaces.

The DQS signal (selected PIOs only, as shown in Figure 2-35) feeds from the PAD through a DQS delay element to a dedicated DQS routing resource. The DQS signal also feeds polarity control logic, which controls the polarity of the clock to the sync registers in the input register blocks. Figure 2-35 and Figure 2-36 show how the DQS transition signals are routed to the PIOs.

The temperature, voltage and process variations of the DQS delay block are compensated by a set of calibration (6-bit bus) signals from two dedicated DLLs (DDR_DLL) on opposite sides of the device. Each DLL compensates DQS delays in its half of the device as shown in Figure 2-35. The DLL loop is compensated for temperature, voltage and process variations by the system clock and feedback loop.



Figure 2-37. LatticeECP2 Banks



тор

BOTTOM



O standards (together with their supply and reference voltages) supported by LatticeECP2/M devices. For further information about utilizing the sysl/O buffer to support a variety of standards please see the the list of additional technical information at the end of this data sheet.

Table 2-13. Supported Input Standards

Input Standard	V _{REF} (Nom.)	V _{CCIO} ¹ (Nom.)					
Single Ended Interfaces	Single Ended Interfaces						
LVTTL							
LVCMOS33	_	_					
LVCMOS25		_					
LVCMOS18	_	1.8					
LVCMOS15	_	1.5					
LVCMOS12		_					
PCI 33		3.3					
HSTL18 Class I, II	0.9	_					
HSTL15 Class I	0.75	_					
SSTL3 Class I, II	1.5	_					
SSTL2 Class I, II	1.25	—					
SSTL18 Class I, II	0.9						
Differential Interfaces							
Differential SSTL18 Class I, II	_	_					
Differential SSTL2 Class I, II		_					
Differential SSTL3 Class I, II		_					
Differential HSTL15 Class I	_	_					
Differential HSTL18 Class I, II		—					
LVDS, MLVDS, LVPECL, BLVDS, RSDS		_					

1 When not specified, V_{CCIO} can be set anywhere in the valid operating range (page 3-1).



LatticeECP2/M Family Data Sheet DC and Switching Characteristics

September 2013

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Absolute Maximum Ratings^{1, 2, 3}

Supply Voltage V _{CC} 0.5 to 1.32
Supply Voltage V _{CCAUX}
Supply Voltage V _{CCJ}
Output Supply Voltage V _{CCIO} 0.5 to 3.75
Input or I/O Tristate Voltage Applied ⁴ 0.5 to 3.75
Storage Temperature (Ambient)
Junction Temperature (Tj) +125°C

1. Stress above those listed under the "Absolute Maximum Ratings" may cause permanent damage to the device. Functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied.

2. Compliance with the Lattice <u>Thermal Management</u> document is required.

3. All voltages referenced to GND.

4. Overshoot and undershoot of -2V to (V_{IHMAX} + 2) volts is permitted for a duration of <20ns.

Recommended Operating Conditions⁷

Symbol	Parameter	Min.	Max.	Units
V _{CC} ^{1, 4, 5}	Core Supply Voltage	1.14	1.26	V
V _{CCAUX} ^{1, 3, 4, 5}	Auxiliary Supply Voltage	3.135	3.465	V
V _{CCPLL}	PLL Supply Voltage	1.14	1.26	V
V _{CCIO} ^{1, 2, 4}	I/O Driver Supply Voltage	1.14	3.465	V
V _{CCJ} ¹	Supply Voltage for IEEE 1149.1 Test Access Port	1.14	3.465	V
t _{JCOM}	Junction Temperature, Commercial Operation	0	85	°C
t _{JIND}	Junction Temperature, Industrial Operation	-40	100	°C
SERDES External Pow	ver Supply (For LatticeECP2M Family Only)			
V	Input Buffer Power Supply (1.2V)	1.14	1.26	V
V CCIB	Input Buffer Power Supply (1.5V)	1.425	1.575	V
V	Output Buffer Power Supply (1.2V)	1.14	1.26	V
V CCOB	Output Buffer Power Supply (1.5V)	1.425	1.575	V
V _{CCAUX33}	Termination Resistor Switching Power Supply	3.135	3.465	V
V _{CCRX} ⁶	Receive Power Supply	1.14	1.26	V
V _{CCTX} ⁶	Transmit Power Supply	1.14	1.26	V

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LatticeECP2M Supply Current (Standby)^{1, 2, 3, 4}

Over Recommended Operating Conditions

Symbol	Parameter	Device	Typ.⁵	Units
		ECP2M20	25	mA
		ECP2M35	50	mA
I _{CC}	Core Power Supply Current	ECP2M50	85	mA
		ECP2M70	100	mA
		ECP2M100	100	mA
		ECP2M20	24	mA
		ECP2M35	24	mA
I _{CCAUX}	Auxiliary Power Supply Current	ECP2M50	24	mA
		ECP2M70	24	mA
		ECP2M100	24	mA
I _{CCGPLL}	GPLL Power Supply Current (per GPLL)	All Devices	0.5	mA
I _{CCSPLL}	GPLL Power Supply Current (per SPLL)	All Devices	0.5	mA
		ECP2M20	2	mA
		ECP2M35	2	mA
I _{CCIO}	Bank Power Supply Current (Per Bank)	ECP2M50	2	mA
		ECP2M70	2	mA
		ECP2M100	2	mA
I _{CCJ}	V _{CCJ} Power Supply Current	All Devices	3	mA

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

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

3. Frequency 0MHz.

4. Pattern represents a "blank" configuration data file.

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



LatticeECP2 Power Supply and NC

Signals	144 TQFP ³	208 PQFP ³	256 fpBGA⁴	484 fpBGA⁴
VCC	16, 22, 29, 48, 54, 83, 94, 102, 128, 135	12, 19, 28, 40, 74, 80, 97, 116, 129, 140, 146, 171, 188, 198	LFE2-6: G7, G9, G10, H7, J10, K10, K8 LFE2-12/LFE2-20: G7, G9, G10, H7, J10, K10,	LFE2-12/LFE2-20: N6, N18, J10, J11, J12, J13, K14, K9, L14, L9, M14, M9, N14, N9, P10, P11, P12, P13
			К8	LFE2-35/LFE2-50: J10, J11, J12, J13, K14, K9, L14, L9, M14, M9, N14, N9, P10, P11, P12, P13
VCCIO0	139	195, 206	C5, E7	G10, G9, H8, H9
VCCIO1	117	162, 170	C12, E10	G11, G12, G13, G14
VCCIO2	106	143, 148	E14, G12	H14, H15, J15, K16
VCCIO3	89	123, 135	K12, M14	L16, M16, N16, P16
VCCIO4	64	93, 100	M10, P12	R14, T12, T13, T14
VCCIO5	42	55, 63	M7, P5	R9, T10, T11, T9
VCCIO6	31	38, 44	K5, M3	N7, P7, P8, R8
VCCIO7	9	10, 14	E3, G5	J8, K7, L7, M7
VCCIO8	85	113, 118	T15	P15, R15
VCCJ	35	51	K7	Т8
VCCAUX	6, 39, 90, 142	7, 30, 70, 86, 125, 151, 174, 190	G8, H10, J7, K9	G5, K5, R5, V7, V11, V8, V13, V15, M17, P17, E17, G18, D11, F13, C5, E6
VCCPLL	None	None	None	LFE2-12/LFE2-20: None
				LFE2-35: N6, N18
				LFE2-50: N6, N18, K6, J16
GND ¹	11, 21, 30, 47, 51, 61, 81, 95, 105, 120, 133, 138	5, 13, 17, 25, 32, 42, 60, 68, 77, 81, 89, 102, 115, 122, 139, 145, 159, 169, 175, 184, 192, 201	A1, A16, B12, B5, C8, E15, E2, H14, H8, H9, J3, J8, J9, M15, M2, P9, R12, R5, T1, T16	A22, AA19, AA4, AB1, AB22, B19, B4, C14, C9, D2, D21, F17, F6, H10, H11, H12, H13, J14, J20, J3, J9, K10, K11, K12, K13, K15, K8, L10, L11, L12, L13, L15, L8, M10, M11, M12, M13, M15, M8, N10, N11, N12, N13, N15, N8, P14, P20, P3, P9, R10, R11, R12, R13, U17, U6, W2, W21, Y14, Y9, A1
NC ²	LFE2-6: 45, 46, 124, 127 LFE2-12: 127	None	LFE2-6: K6, R3, P4 LFE2-12/LFE2-20: None	LFE2-12: E3, F3, F1, H4, F2, H5, G1, G3, G2, G4, K6, N1, M2, N2, M1, N3, N5, N4, P5, N19, M19, J22, L22, H22, K22, J16, D22, F21, E21, E22, H19, G20, G19, F20, C21, C22, H6, J6, H3, H2, H17, H16, H20, H18 LFE2-20/LFE2-35: K6, J16, H6, J6, H3, H2, H17, H16, H20, H18 LFE2-50: None

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 follows the conventional order from the pin 1 marking of the top side view and counter-clockwise.

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



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

LFE2-70E/SE					
Ball Number	Ball/Pad Function	Bank	Dual Function	Differential	
C17	PT58B	1		С	
A18	PT58A	1		Т	
VCCIO	VCCIO1	1			
H16	PT57B	1	PCLKC1_0	С	
F16	PT57A	1	PCLKT1_0	Т	
K16	XRES	1			
E16	PT55B	0	PCLKC0_0	С	
GND	GNDIO0	-			
G16	PT55A	0	PCLKT0_0	Т	
B17	PT54B	0		С	
A17	PT54A	0		Т	
J15	PT53B	0		С	
VCCIO	VCCI00	0			
J16	PT53A	0		Т	
C16	PT52B	0		С	
D16	PT52A	0		Т	
F15	PT51B	0		С	
H15	PT51A	0		Т	
E15	PT50B	0		С	
GND	GNDIO0	-			
G15	PT50A	0		Т	
C15	PT49B	0		С	
VCCIO	VCCI00	0			
D15	PT49A	0		Т	
B16	PT48B	0		С	
A16	PT48A	0		Т	
E14	PT47B	0		С	
G14	PT47A	0		Т	
B15	PT46B	0		С	
A15	PT46A	0		Т	
GND	GNDIO0	-			
H14	PT45B	0		С	
F14	PT45A	0		Т	
D14	PT44B	0		С	
C14	PT44A	0		Т	
VCCIO	VCCIO0	0			
G13	PT43B	0		С	
E13	PT43A	0		Т	
B14	PT42B	0		С	
A14	PT42A	0		Т	
GND	GNDIO0	-			
H13	PT41B	0		С	
F13	PT41A	0		Т	



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

Ball Number Ball/Pad Function Bank Dual Function Differential C13 GND -	LFE2-70E/SE					
C13 GND - C18 GND - C23 GND - C3 GND - C3 GND - H28 GND - H28 GND - H14 GND - L14 GND - L15 GND - L16 GND - M12 GND - M13 GND - M14 GND - M15 GND - M16 GND - M17 GND - M18 GND - M19 GND - M11 GND - M12 GND - M13 GND - M14 GND - N13 GND - N14 GND - N15 GND - N18 GND - N19	Ball Number	Ball/Pad Function	Bank	Dual Function	Differential	
C18 GND - C23 GND - C23 GND - C3 GND - C3 GND - C48 GND - C48 GND - C48 GND - H28 GND - L14 GND - L15 GND - L16 GND - M12 GND - M13 GND - M14 GND - M15 GND - M16 GND - M17 GND - M18 GND - M19 GND - M13 GND - M14 GND - M13 GND - N13 GND - N14 GND - N15 GND - N16 GND - N17	C13	GND	-			
C23 GND - C28 GND - C3 GND - C8 GND - H28 GND - L14 GND - L15 GND - L16 GND - L17 GND - M12 GND - M13 GND - M14 GND - M15 GND - M16 GND - M17 GND - M18 GND - M18 GND - M18 GND - M19 GND - N112 GND - N13 GND - N14 GND - N13 GND - N14 GND - N15 GND - N16 GND	C18	GND	-			
C28 GND - C3 GND - C3 GND - H28 GND - H3 GND - L14 GND - L15 GND - L16 GND - L17 GND - M12 GND - M13 GND - M14 GND - M15 GND - M16 GND - M17 GND - M18 GND - M19 GND - N12 GND - N13 GND - N14 GND - N13 GND - N14 GND - N15 GND - N16 GND - N17 GND - N18 GND - N19 GND - N18 G	C23	GND	-			
C3 GND - C8 GND - H28 GND - H3 GND - L14 GND - L15 GND - L16 GND - L17 GND - M13 GND - M14 GND - M15 GND - M16 GND - M17 GND - M18 GND - M18 GND - M19 GND - N112 GND - N12 GND - N13 GND - N14 GND - N15 GND - N16 GND - N17 GND - N18 GND - N19 GND - N18 GND<	C28	GND	-			
C8 GND . H28 GND . H3 GND . L14 GND . L15 GND . L16 GND . L17 GND . M12 GND . M13 GND . M14 GND . M15 GND . M16 GND . M17 GND . M18 GND . M19 GND . M113 GND . M14 GND . M17 GND . M13 GND . N13 GND . N14 GND . N15 GND . N16 GND . N17 GND . N18 GND . N19 GND	C3	GND	-			
H28 GND - H3 GND - L14 GND - L15 GND - L16 GND - L17 GND - M12 GND - M13 GND - M14 GND - M15 GND - M16 GND - M17 GND - M18 GND - M19 GND - M114 GND - M15 GND - M17 GND - M18 GND - N13 GND - N14 GND - N15 GND - N16 GND - N17 GND - N18 GND - N19 GND - N28 GND - P11 GND - P13 <t< td=""><td>C8</td><td>GND</td><td>-</td><td></td><td></td></t<>	C8	GND	-			
H3 GND - L14 GND - L15 GND - L16 GND - L17 GND - M12 GND - M13 GND - M14 GND - M15 GND - M16 GND - M17 GND - M18 GND - M19 GND - M18 GND - N112 GND - N13 GND - N14 GND - N13 GND - N14 GND - N15 GND - N16 GND - N17 GND - N18 GND - N19 GND - N18 GND - N19 GND - P11 GND - P13 <t< td=""><td>H28</td><td>GND</td><td>-</td><td></td><td></td></t<>	H28	GND	-			
L14 GND - L15 GND - L16 GND - M12 GND - M13 GND - M14 GND - M13 GND - M14 GND - M15 GND - M16 GND - M17 GND - M18 GND - M19 GND - N112 GND - N13 GND - N14 GND - N13 GND - N14 GND - N13 GND - N14 GND - N15 GND - N16 GND - N17 GND - N18 GND - N19 GND - N12 GND - P11 GND - P13 <	H3	GND	-			
L15 GND - L16 GND - L17 GND - M12 GND - M13 GND - M14 GND - M15 GND - M16 GND - M16 GND - M17 GND - M18 GND - M19 GND - M114 GND - M17 GND - M18 GND - M19 GND - N112 GND - N13 GND - N14 GND - N15 GND - N16 GND - N17 GND - N18 GND - N19 GND - N19 GND - P11 GND - P12 GND - P13	L14	GND	-			
L16 GND - M12 GND - M12 GND - M13 GND - M14 GND - M13 GND - M14 GND - M15 GND - M16 GND - M17 GND - M18 GND - M19 GND - N117 GND - N113 GND - N14 GND - N15 GND - N14 GND - N15 GND - N16 GND - N17 GND - N18 GND - N19 GND - N18 GND - N19 GND - P11 GND - P13 GND - P14 GND - P15	L15	GND	-			
L17 GND - M12 GND - M13 GND - M14 GND - M15 GND - M16 GND - M16 GND - M16 GND - M18 GND - M19 GND - M13 GND - M18 GND - M13 GND - N12 GND - N13 GND - N14 GND - N15 GND - N16 GND - N17 GND - N18 GND - N19 GND - N18 GND - N19 GND - P11 GND - P12 GND - P13 GN	L16	GND	-			
M12 GND . M13 GND . M14 GND . M15 GND . M16 GND . M17 GND . M18 GND . M17 GND . M18 GND . M19 GND . N112 GND . N13 GND . N14 GND . N15 GND . N14 GND . N15 GND . N16 GND . N17 GND . N18 GND . N19 GND . N11 GND . N12 GND . N13 GND . P11 GND . P12 GND . P13 G	L17	GND	-			
M13 GND . M14 GND . M15 GND . M16 GND . M16 GND . M17 GND . M18 GND . M18 GND . M19 GND . M13 GND . N12 GND . N13 GND . N14 GND . N15 GND . N16 GND . N17 GND . N18 GND . P11 GND . P11 GND . P11 GND . P13 GND . P14 GN	M12	GND	-			
M14 GND - M15 GND - M16 GND - M17 GND - M18 GND - M18 GND - M19 GND - M12 GND - N13 GND - N14 GND - N15 GND - N16 GND - N16 GND - N17 GND - N18 GND - N19 GND - N18 GND - N19 GND - N18 GND - N19 GND - N28 GND - P11 GND - P12 GND - P13 GND - P14 GND - P15 GN	M13	GND	-			
M15 GND - M16 GND - M17 GND - M18 GND - M19 GND - N12 GND - N13 GND - N14 GND - N15 GND - N14 GND - N15 GND - N16 GND - N17 GND - N18 GND - N18 GND - N18 GND - N18 GND - N19 GND - N28 GND - P11 GND - P12 GND - P13 GND - P14 GND - P15 GND - P16 GND - P18 GN	M14	GND	-			
M16 GND - M17 GND - M18 GND - M19 GND - M12 GND - N13 GND - N14 GND - N15 GND - N16 GND - N17 GND - N18 GND - N17 GND - N18 GND - N19 GND - N13 GND - N16 GND - N17 GND - N18 GND - N28 GND - P11 GND - P12 GND - P13 GND - P14 GND - P15 GND - P16 GND - P17 GN	M15	GND	-			
M17 GND - M18 GND - M19 GND - M12 GND - N12 GND - N113 GND - N14 GND - N15 GND - N16 GND - N17 GND - N18 GND - N28 GND - N3 GND - P11 GND - P13 GND - P14 GND - P15 GND - P16 GND - P17 GND - P18 GND - P19 GND - P19 GN	M16	GND	-			
M18 GND - M19 GND - N12 GND - N13 GND - N13 GND - N14 GND - N15 GND - N16 GND - N17 GND - N18 GND - N19 GND - P11 GND - P11 GND - P11 GND - P13 GND - P14 GND - P15 GND - P16 GND - P18 GN	M17	GND	-			
M19 GND - N12 GND - N13 GND - N14 GND - N15 GND - N16 GND - N17 GND - N18 GND - N19 GND - N18 GND - N19 GND - P11 GND - P12 GND - P13 GND - P14 GND - P15 GND - P16 GND - P18 GND - P19 GN	M18	GND	-			
N12 GND . N13 GND . N14 GND . N15 GND . N16 GND . N17 GND . N18 GND . N19 GND . N13 GND . N16 GND . N17 GND . N18 GND . N19 GND . N28 GND . P11 GND . P11 GND . P12 GND . P13 GND . P14 GND . P15 GND . P16 GND . P17 GND . P18 GND . P19 GND . P19 GND . P19 GN	M19	GND	-			
N13 GND - N14 GND - N15 GND - N16 GND - N17 GND - N18 GND - N19 GND - N28 GND - N3 GND - P11 GND - P12 GND - P13 GND - P14 GND - P15 GND - P16 GND - P17 GND - P18 GND - P19 GND - P11 GND - P15 GND - P15 GND - P16 GND - P18 GND - P19 GND - R11 GND - R12 GND	N12	GND	-			
N14 GND - N15 GND - N16 GND - N17 GND - N18 GND - N19 GND - N28 GND - N3 GND - P11 GND - P12 GND - P13 GND - P14 GND - P15 GND - P16 GND - P17 GND - P18 GND - P19 GND - P13 GND - P14 GND - P15 GND - P16 GND - P17 GND - P18 GND - P19 GND - R11 GND - R13 GND	N13	GND	-			
N15 GND - N16 GND - N17 GND - N18 GND - N18 GND - N19 GND - N28 GND - N3 GND - P11 GND - P12 GND - P13 GND - P14 GND - P15 GND - P16 GND - P17 GND - P18 GND - P19 GND - P11 GND - P13 GND - P14 GND - P15 GND - P16 GND - P17 GND - P18 GND - P19 GND - R11 GND	N14	GND	-			
N16 GND - N17 GND - N18 GND - N19 GND - N28 GND - N3 GND - P11 GND - P12 GND - P13 GND - P14 GND - P15 GND - P16 GND - P17 GND - P18 GND - P19 GND - P11 GND - P13 GND - P14 GND - P15 GND - P16 GND - P17 GND - P18 GND - P19 GND - R11 GND - R11 GND - R13 GND	N15	GND	-			
N17 GND - N18 GND - N19 GND - N28 GND - N3 GND - P11 GND - P12 GND - P13 GND - P14 GND - P15 GND - P16 GND - P18 GND - P19 GND - P11 GND - P13 GND - P14 GND - P15 GND - P16 GND - P17 GND - P18 GND - P19 GND - R11 GND - R11 GND - R13 GND -	N16	GND	-			
N18 GND - N19 GND - N28 GND - N3 GND - P11 GND - P12 GND - P13 GND - P14 GND - P15 GND - P16 GND - P17 GND - P18 GND - P19 GND - P11 GND - P13 GND - P15 GND - P16 GND - P17 GND - P18 GND - P19 GND - P12 GND - R11 GND - R12 GND - R13 GND -	N17	GND	-			
N19 GND - N28 GND - N3 GND - P11 GND - P12 GND - P13 GND - P14 GND - P15 GND - P16 GND - P17 GND - P18 GND - P19 GND - P11 GND - P13 GND - P14 GND - P15 GND - P16 GND - P17 GND - P18 GND - P19 GND - R11 GND - R12 GND - R13 GND -	N18	GND	-			
N28 GND - Image: constraint of the system N3 GND - Image: constraint of the system Image: constraint of the system P11 GND - Image: constraint of the system Image: constraint of the system P12 GND - Image: constraint of the system Image: constraint of the system P13 GND - Image: constraint of the system Image: constraint of the system P13 GND - Image: constraint of the system Image: constraint of the system P14 GND - Image: constraint of the system Image: constraint of the system P14 GND - Image: constraint of the system Image: constraint of the system P16 GND - Image: constraint of the system Image: constraint of the system P17 GND - Image: constraint of the system Image: constraint of the system P18 GND - Image: constraint of the system Image: constraint of the system P20 GND - Image: constraint of the system Image	N19	GND	-			
N3 GND - P11 GND - P12 GND - P13 GND - P14 GND - P15 GND - P16 GND - P17 GND - P18 GND - P19 GND - P11 GND - P18 GND - P19 GND - R11 GND - R12 GND - R13 GND -	N28	GND	-			
P11 GND - P12 GND - P13 GND - P14 GND - P15 GND - P16 GND - P17 GND - P18 GND - P19 GND - P11 GND - R11 GND - R12 GND - R13 GND -	N3	GND	-			
P12 GND -	P11	GND	-			
P13 GND - P14 GND - P15 GND - P16 GND - P17 GND - P18 GND - P19 GND - P11 GND - P13 GND - P14 GND - P15 GND - P18 GND - P19 GND - P20 GND - R11 GND - R12 GND - R13 GND -	P12	GND	-			
P14 GND - P15 GND - P16 GND - P17 GND - P18 GND - P19 GND - P20 GND - R11 GND - R12 GND - R13 GND -	P13	GND	-			
P15 GND - P16 GND - P17 GND - P18 GND - P19 GND - P20 GND - R11 GND - R12 GND - R13 GND -	P14	GND	-			
P16 GND - Image: Constraint of the state of th	P15	GND	-			
P17 GND - P18 GND - P19 GND - P20 GND - R11 GND - R12 GND - R13 GND -	P16	GND	-			
P18 GND - P19 GND - P20 GND - R11 GND - R12 GND - R13 GND -	P17	GND	-			
P19 GND - P20 GND - R11 GND - R12 GND - R13 GND -	P18	GND	-			
P20 GND - R11 GND - R12 GND - R13 GND -	P19	GND	-			
R11 GND - R12 GND - R13 GND -	P20	GND	-			
R12 GND - R13 GND -	R11	GND	-			
R13 GND -	R12	GND	-			
	R13	GND	-			



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	Т		
F2	PL3B	7	LDQ6	С		
F5	PL4A	7	LDQ6	T (LVDS)*		
VCCIO	VCCIO7	7				
G6	PL4B	7	LDQ6	C (LVDS)*		
F4	PL5A	7	LDQ6	Т		
F3	PL5B	7	LDQ6	С		
G1	PL6A	7	LDQS6	T (LVDS)*		
GNDIO	GNDIO7	-				
G2	PL6B	7	LDQ6	C (LVDS)*		
H1	PL7A	7	LDQ6	Т		
H2	PL7B	7	LDQ6	С		
VCCIO	VCCIO7	7				
H7	PL8A	7	LDQ6	T (LVDS)*		
H6	PL8B	7	LDQ6	C (LVDS)*		
G3	PL9A	7	VREF2_7/LDQ6	Т		
H3	PL9B	7	VREF1_7/LDQ6	С		
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	Т		
J2	PL12B	7	LUM0_SPLLC_FB_A	С		
GNDIO	GNDIO7	-				
J3	PL13A	7		T (LVDS)*		
J4	PL13B	7		C (LVDS)*		
J7	PL14A	7		Т		
VCCIO	VCCIO7	7				
J6	PL14B	7		С		
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	Т		
K5	PL33B	7	LUM3_SPLLC_FB_A/LDQ36	С		
VCCIO	VCCIO7	7				
K7	PL34A	7	LDQ36	T (LVDS)*		
K6	PL34B	7	LDQ36	C (LVDS)*		
L6	PL35A	7	LDQ36	T		
L7	PL35B	7	LDQ36	С		
L		1				



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

	LFE2M50E/SE										
Ball Number	Ball/Pad Function	Bank	Dual Function	Differential							
L11	GND	-									
L12	GND	-									
L13	GND	-									
M10	GND	-									
M11	GND	-									
M12	GND	-									
M13	GND	-									
N10	GND	-									
N11	GND	-									
N12	GND	-									
N13	GND	-									
N15	GND	-									
N20	GND	-									
N3	GND	-									
N8	GND	-									
P14	GND	-									
P9	GND	-									
R10	GND	-									
R13	GND	-									
T19	GND	-									
T4	GND	-									
W16	GND	-									
W2	GND	-									
W21	GND	-									
W7	GND	-									
Y10	GND	-									
Y13	GND	-									
Y15	NC	-									
W15	NC	-									
AB20	NC	-									
AB21	NC	-									
AA21	NC	-									
AA20	NC	-									
AB19	NC	-									
AB18	NC	-									
Y22	NC	-									
Y21	NC	-									
Y17	NC	-									
Y18	NC	-									
Y16	NC	-									
W17	NC	-									
Y19	NC	-									
Y20	NC	-									



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

LFE2M50E/SE										
Ball Number	Ball/Pad Function	Bank	Dual Function	Differential						
W19	NC	-								
W18	NC	-								
V17	NC	-								
V18	NC	-								
D15	NC	-								
G14	NC	-								
G15	NC	-								
D14	NC	-								
E15	NC	-								
E14	NC	-								
F15	NC	-								
F14	NC	-								
F13	NC	-								
G12	NC	-								
G13	NC	-								
H8	VCCPLL	-								
H15	VCCPLL	-								
R8	VCCPLL	-								
R15	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.

***For density migration, board design must take into account that these sysCONFIG pins are dual function for the lower density devices (ECP2M20 and ECP2M35). They can be either sysCONFIG pins or general purpose I/Os. These pins are dedicated pins for the higher density devices (ECP2M50, ECP2M70 and ECP2M100).

****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.



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
AA14	PB42B	4	BDQ42	С	PB51B	4	BDQ51	С
VCCIO	VCCIO4	4			VCCIO4	4		
GNDIO	GNDIO4	-			GNDIO4	-		
W17	PB65A	4	BDQ69	Т	PB56A	4	BDQ60	Т
AA19	PB65B	4	BDQ69	С	PB56B	4	BDQ60	С
AC15	PB48A	4	BDQ51	Т	PB57A	4	BDQ60	Т
Y18	PB68B	4	BDQ69	С	PB57B	4	BDQ60	С
AB15	PB49A	4	BDQ51	Т	PB58A	4	BDQ60	Т
AC16	PB49B	4	BDQ51	С	PB58B	4	BDQ60	С
VCCIO	VCCIO4	4			VCCIO4	4		
AA17	PB60A	4	BDQS60****	Т	PB59A	4	BDQ60	Т
AB16	PB50B	4	BDQ51	С	PB59B	4	BDQ60	С
GNDIO	GNDIO4	-			GNDIO4	-		
AA15	PB51A	4	BDQS51****	Т	PB60A	4	BDQS60	Т
W16	PB59B	4	BDQ60	С	PB60B	4	BDQ60	С
Y15	PB52A	4	BDQ51	Т	PB61A	4	BDQ60	Т
AC17	PB52B	4	BDQ51	С	PB61B	4	BDQ60	С
AA18	PB61A	4	BDQ60	Т	PB62A	4	BDQ60	Т
Y17	PB61B	4	BDQ60	С	PB62B	4	BDQ60	С
-	-	-			VCCIO4	4		
GNDIO	GNDIO4	-			-	-		
W15	PB54A	4	BDQ51	Т	PB63A	4	BDQ60	Т
AB17	PB54B	4	BDQ51	С	PB63B	4	BDQ60	С
GNDIO	GNDIO4	-			GNDIO4	-		
VCCIO	VCCIO4	4			VCCIO4	4		
V17	PB73A	4	BDQ69	Т	PB72A	4	BDQ69	Т
AA20	PB73B	4	BDQ69	С	PB72B	4	BDQ69	С
GNDIO	GNDIO4	-			GNDIO4	-		
AD13	VCC	-			LRC_SQ_VCCRX3	13		
AF14	PB47A	4	BDQ51	Т	LRC_SQ_HDINP3	13		Т
AE13	NC	-			LRC_SQ_VCCIB3	13		
AE14	PB41A	4	VREF2_4/BDQ42	Т	LRC_SQ_HDINN3	13		С
AD16	VCC	-			LRC_SQ_VCCTX3	13		
AF17	PB51B	4	BDQ51	С	LRC_SQ_HDOUTP3	13		Т
AF16	NC	-			LRC_SQ_VCCOB3	13		
AE17	PB50A	4	BDQ51	Т	LRC_SQ_HDOUTN3	13		С
AD17	VCC	-			LRC_SQ_VCCTX2	13		
AE18	PB53B	4	BDQ51	С	LRC_SQ_HDOUTN2	13		С
AD18	NC	-			LRC_SQ_VCCOB2	13		
AF18	PB53A	4	BDQ51	Т	LRC_SQ_HDOUTP2	13		Т
AD14	VCC	-			LRC_SQ_VCCRX2	13		
AE15	PB48B	4	BDQ51	С	LRC_SQ_HDINN2	13		С
AD15	NC	-			LRC_SQ_VCCIB2	13		
AF15	PB47B	4	BDQ51	С	LRC_SQ_HDINP2	13		Т
AD19	VCC	-			LRC_SQ_VCCP	13		
AC19	PB57B	4	BDQ60	С	LRC_SQ_REFCLKP	13		Т
AB19	PB59A	4	BDQ60	Т	LRC_SQ_REFCLKN	13		С
AE19	VCCAUX	-			LRC_SQ_VCCAUX33	13		



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

Ball/Pad AtticeBall/Pad Padd Padd Padd Padd PaddBall/Padd 			LFE2N	I50E/SE			LFE2M70E/SE		
AH12 VCC · ILL SQ. VCCRN 14 C AH8 PR18A S BD015 T LLC SQ. VCCRN 14 C AH8 NC - BD015 C LLC SQ. VCCN1 14 C C AH8 NC - BD015 C LLC SQ. VCCN1 14 C C AH9 PB17B 5 BD015 C LLC SQ. VCCN0 14 C C AH0 NC - LLC SQ. VCCN0 14 C C AH10 VCC 1 BD015 C LLC SQ. VCCN0 14 C AH10 VCC 5 BD015 C LLC SQ. VCCN0 14 C C AH12 PB19A 5 BD015 C LLC SQ. VCCN0 14 C C AH11 VCC - TD10 LLS SQ. VCCN0 14 C C AH11 VCC S BD03	Ball Number	Ball/Pad Function	Bank	Dual Function	Differential	Ball/Pad Function	Bank	Dual Function	Differential
AK8 PB16A 5 BD015 T LLC_S0_HOUTPI 14 COM T AH8 PB16B 5 BD015 C LLC_S0_VCC078 14 C AH8 VCC - C LLC_S0_VCC071 14 C AH8 VCC - C LLC_S0_VCC070 14 C AK10 NC - ED015 C LLC_S0_VCC170 14 C AH12 PB19B 5 BD015 C LLC_S0_VCC170 14 C C AH12 PB19B 5 BD015 C LLC_S0_VCC170 14 C C AH12 PB19A 5 BD015 C LLC_S0_VCC170 14 C C AH13 VCC0 - C LLC_S0_VCC170 14 C C AH13 VCC10 5 BD026 C PB30A 5 BD023 T AE1 PB4A	AH12	VCC	-			LLC_SQ_VCCRX1	14		
AH8NC···ILC_SQ_VCC0814··AJ8P819BSBDO15CLLC_SQ_VCC7X14CCAJ9P817BSBDO15CLLC_SQ_VCC7N14CCAJ8P817ASBDO15CLLC_SQ_VCC7N14CCAK9P817ASBDO15CLLC_SQ_VCC7N14CCAK10VCC-LLC_SQ_VCC7N14CCCAL12P819ASBDO15CLLC_SQ_VCCN014CCAL13NC-CLLC_SQ_VCCN014CCAL13VCCSBDO35TLLC_SQ_VCCN014CCAL13VCCSBDO36TLLC_SQ_VCCN014CCAL13VCCSBDO36TP193ASBDO33TAL14PB4ASBDO66CP193BSBDO33TAL14PB4ASBDO66CP193BSBDO33TVCC0VCC105SBDO3TP193ASBDO33TAL14PB4BSBDO66CP193BSBDO33TVC10VCC105SBDO3TP193ASBDO33TAL14PB4BSBDO66CP193ASBDO33TAL15P194ASBD	AK8	PB16A	5	BDQ15	Т	LLC_SQ_HDOUTP1	14		Т
AJB PB16B 5 BOD15 C LLC_SQ_VCCTN1 14 C AJB PB17B 5 BD015 C LLC_SQ_VCCD0 14 C AK10 NC - C LLC_SQ_VCCD0 14 C C AK10 NC - C LLC_SQ_VCCD0 14 C C AK10 VCC - BD015 C LLC_SQ_VCCD0 14 C C AH13 VCC - C LLC_SQ_VCD10 14 C T AH13 VCC - C LLC_SQ_VCD10 14 C C AH13 VCC - C LLC_SQ_VCD10 14 C C AH13 VCC - BD06 C PB30 5 BD033 C AF10 PB48 5 BD06 C PB31A 5 BD033 C AF10 PB48 5 BD06	AH8	NC	-			LLC_SQ_VCCOB1	14		
AHB VCC - ILC.SQ.VCCTNI 14 AJP PP17B 5 BD015 C ILC.SQ.VCCOB0 14 C AK10 NC - BD015 T ILC.SQ.VCCOB0 14 T AK9 PP17A 5 BD015 T ILC.SQ.VCCOB 14 T AK12 PP19B 5 BD015 T ILC.SQ.VCCN0 14 C AK12 PP19A 5 BD015 T ILC.SQ.VCCRN0 14 T AH13 VCC - C ILC.SQ.VCCRN0 14 T AH13 VCC - ILC.SQ.VCCRN0 14 T T AH14 VCCIO - ILC.SQ.VCCRN0 14 T T AH10 PB3A 5 BD033 T T BD033 C AE11 PB4A 5 BD06 T PB3A 5 BD033 C AE13 <td< td=""><td>AJ8</td><td>PB16B</td><td>5</td><td>BDQ15</td><td>С</td><td>LLC_SQ_HDOUTN1</td><td>14</td><td></td><td>С</td></td<>	AJ8	PB16B	5	BDQ15	С	LLC_SQ_HDOUTN1	14		С
AJB PB17B S BOD15 C LLC, SQ, HODUTNO 14 C AK10 NC - LLC, SQ, VCC000 14 T AH10 VCC - LLC, SQ, VCC000 14 C AH10 VCC - LLC, SQ, VCC100 14 C AH12 PB198 S BBO15 C LLC, SQ, VCC100 14 T AK12 PB19A S BBO15 T LLC, SQ, VCC100 14 T AK12 PB1A S BD06 T PB3A S BD033 T AK11 PB4A S BD06 C PB3B S BD033 T AE11 PB4A S BD06 C PB31A S BD033 C AE10 PB4B S BD06 C PB31B S BD033 C AE10	AH9	VCC	-			LLC_SQ_VCCTX1	14		
AK10 NC - ILC_SQ_VCC080 14 Image: Constraint of the state of the s	AJ9	PB17B	5	BDQ15	С	LLC_SQ_HDOUTN0	14		С
AK9 PB17A 5 BDQ15 T LLC, SQ, MCDWP 14 T AH10 VCC - LLC, SQ, MCDW 14 C AH12 PB19B 5 BDQ15 C LLC, SQ, MCDW 14 C AH13 NC - LLC, SQ, MCDW 14 T AH13 VCC - LLC, SQ, MCDW 14 T AH13 VCC - LLC, SQ, MCDW 14 T AH13 VCC - CCS, MCDWD 14 T AF10 PB3A 5 BDQ6 C PB3A 5 BDQ33 C AE11 PB4A 5 BDQ6 C PB3A 5 BDQ33 C AE10 PB4B 5 BDQ6 C PB3A 5 BDQ33 C AE10 PB6A 5 BDQ6 C PB3A 5 BDQ33 C	AK10	NC	-			LLC_SQ_VCCOB0	14		
AH10 VCC · ILC_SO_VCCTX0 14 Image: constraint of the symbolic of t	AK9	PB17A	5	BDQ15	Т	LLC_SQ_HDOUTP0	14		Т
Al12 PB19B 5 BD015 C LLC_SQ_HOINNO 14 C AH13 NC - LLC_SQ_VCCRNO 14 T AH13 VCC - LLC_SQ_VCCRNO 14 T AH14 VCCIOS 5 BD033 T VCCIOS 5 BD033 C AD10 PB8A 5 BD06 C PB32A 5 BD033 C AE10 PB8A 5 BD06 C PB33A 5 BD033 C AE13 PB8A 5 BD06 C PB33A 5 BD033 C AC12 PB7B 5 BD06 C PB34A 5 BD033<	AH10	VCC	-			LLC_SQ_VCCTX0	14		
AJI3 NC - LLC_SQ_VCCI80 14 C AK12 PB19A 5 BDQ15 T LLC_SQ_VCCR0 14 T AH13 VCC - LLC_SQ_VCCR0 14 T T AF10 PB3A 5 BDC6 T PB30A 5 BDC33 T AE8 PB3B 5 BDC6 C PB30A 5 BDC33 T AE8 PB3A 5 BDC6 C PB30B 5 BDC33 T VCCIO VCCIO5 5 VCCIO5 5 VCCIO VCCIO5 5 BDC6 C PB31B 5 BDC33 T AD10 PB5A 5 BDC6 C PB32B 5 BDC33 T AL13 PB5A 5 BDC6 C PB32B 5 BDC33 T AC12 PB7A 5 BDC6 C PB33B 5 BDC33	AJ12	PB19B	5	BDQ15	С	LLC_SQ_HDINN0	14		С
AKI2 PB19A 5 BD015 T LLC_SO_VCCRN0 14 T AH13 VCC - LLC_SO_VCCRN0 14 T AF10 PB3A 5 BD06 T PB30A 5 BD033 T AE8 PB3B 5 BD06 C PB30A 5 BD033 T AE11 PB4A 5 BD06 C PB30A 5 BD033 T VCCIO VCCIOS 5 VCCIOS 5 T AD9 PB4A 5 BD06 C PB31A 5 BD033 C AE10 PB58 5 BD06 C PB32A 5 BD033 C AE13 PB6A 5 BD06 C PB33A 5 BD033 C AC12 PB6B 5 BD06 C PB34A 5 BD033 C AG3 PB7A 5 <td>AJ13</td> <td>NC</td> <td>-</td> <td></td> <td></td> <td>LLC_SQ_VCCIB0</td> <td>14</td> <td></td> <td></td>	AJ13	NC	-			LLC_SQ_VCCIB0	14		
AH13 VCC - LLC_SQ_VCCRX0 14 - AF10 PB3A 5 BD06 T PB30A 5 BD033 T AF8 PB3B 5 BD06 C PB30A 5 BD033 C AE11 PB4A 5 BD06 C PB31A 5 BD033 C AD9 PB4B 5 BD06 C PB32A 5 BD033 C AD10 PB5A 5 BD06 C PB32B 5 BD033 T AD10 PB5A 5 BD06 C PB32B 5 BD033 T AD10 PB5A 5 BD06 T PB32B 5 BD033 T AC12 PB8A 5 BD06 T PB33A 5 BD033 T AG2 PB7A 5 BD06 T PB34A 5 BD033 T AG2	AK12	PB19A	5	BDQ15	Т	LLC_SQ_HDINP0	14		Т
AF10 PB3A 5 BD06 T PB30A 5 BD033 T AE8 PB3B 5 BD06 C PB30A 5 BD033 C AE11 PB4A 5 BD06 T PB31A 5 BD033 T VCCIO VCCIO5 5 VCCIO5 5 AD9 PB4A 5 BD06 C PB31A 5 BD033 T AD10 PB5A 5 BD06 C PB32B 5 BD033 T AD10 PB5B 5 BD06 C PB32B 5 BD033 T AC12 PB6B 5 BD06 C PB33B 5 BD033 T AC2 PB7A 5 BD06 C PB34A 5 BD033 C AC3 PB7B 6 BD06 C PB34A 5 BD033 T	AH13	VCC	-			LLC_SQ_VCCRX0	14		
AEB PB3B S BD06 C PB30A S BD033 C AE11 PB4A S BD06 T PB31A S BD033 T VCCIO VCCIOS S VCCIOS S VCCIOS S VCCIOS S AD9 PB4B S BD06 C PB31B S BD033 C AE10 PB5A S BD06 C PB32B S BD033 T AE13 PB6A S BD066 C PB33A S BD033 T AC12 PB6A S BD066 T PB34A S BD033 T AG2 PB7A S BD06 T PB34A S BD033 C AC12 PB68 S BD06 T PB34A S BD033 T AC2 PB7A S BD06 T PB34B S BD033 <td>AF10</td> <td>PB3A</td> <td>5</td> <td>BDQ6</td> <td>Т</td> <td>PB30A</td> <td>5</td> <td>BDQ33</td> <td>Т</td>	AF10	PB3A	5	BDQ6	Т	PB30A	5	BDQ33	Т
AE11 PB4A 5 BDQ6 T PB31A 5 BDQ33 T VCCIO VCCIOS 5 BDQ33 C AP10 PB5A 5 BDQ6 C PB32A 5 BDQ33 C AD10 PB5B 5 BDQ6 C PB32A 5 BDQ33 T GND10 GND105 - GND105 5 BDQ33 T AC12 PB8B 5 BDQ6 C PB33B 5 BDQ33 T AG2 PB7A 5 BDQ6 C PB34B 5 BDQ33 T AG2 PB7A 5 BDQ6 C PB34B 5 BDQ33 C AG3 PB7B 5 BDQ6 C PB35B 5 BDQ33 <td< td=""><td>AE8</td><td>PB3B</td><td>5</td><td>BDQ6</td><td>С</td><td>PB30B</td><td>5</td><td>BDQ33</td><td>С</td></td<>	AE8	PB3B	5	BDQ6	С	PB30B	5	BDQ33	С
VCCIO VCCIOS 5 VCCIOS 6 VCCIOS 6 AP9 PB4B 5 BDQ6 C PB31B 5 BDQ33 T AE10 PB5A 5 BDQ6 C PB32A 5 BDQ33 T AD10 PB5B 5 BDQ6 C PB32A 5 BDQ33 T AE13 PB6A 5 BDQ6 C PB33B 5 BDQ33 T GNDIO GNDIOS - GNDIOS - GNDIOS - - A62 PB7A 5 BDQ6 C PB33B 5 BDQ33 T AG2 PB7A 5 BDQ6 C PB44B 5 BDQ33 T AG2 PB7A 5 BDQ6 C PB34A 5 BDQ33 C AC13 PB8A 5 BDQ6 T PB35B 5 BDQ33 T AC14	AE11	PB4A	5	BDQ6	Т	PB31A	5	BDQ33	Т
AD9 PB4B 5 BD06 C PB31B 5 BD033 C AE10 PB5A 5 BD06 T PB32B 5 BD033 T AD10 PB5B 5 BD026 C PB32B 5 BD033 C AE13 PB6A 5 BD026 T PB33A 5 BD033 C AC12 PB6B 5 BD06 C PB33B 5 BD033 C AC12 PB6B 5 BD06 C PB34A 5 BD033 C AC2 PB7A 5 BD06 C PB34B 5 BD033 C AG3 PB7B 5 BD06 C PB34B 5 BD033 C AC13 PB8A 5 BD06 C PB35B 5 BD033 C AE14 PB9B 5 BD06 C PB36A 5 BD033	VCCIO	VCCIO5	5			VCCIO5	5		
AE10 PBSA 5 BDO6 T PB32A 5 BDO33 T AD10 PB6B 5 BDQ6 C PB32B 5 BDQ33 C AD10 PB6A 5 BDQ66 T PB33A 5 BDQ33 T GNDIO GNDIOS - GNDIOS -	AD9	PB4B	5	BDQ6	С	PB31B	5	BDQ33	С
AD10 PB5B 5 BDQ6 C PB32B 5 BDQ33 C AE13 PB6A 5 BDQS6 T PB33B 5 BDQS33 T GNDIO GNDIO5 - GNDIO5 - C GNDIO5 - C AC12 PB6B 5 BDQ6 C PB33B 5 BDQ33 C AG2 PB7A 5 BDQ6 C PB34B 5 BDQ33 C AG3 PB7B 5 BDQ6 C PB34B 5 BDQ33 C AD13 PB8A 5 BDQ6 T PB34B 5 BDQ33 T VCCI0 VCClo5 5 VCClO5 5 AF14 PB9A 5 BDQ6 T PB36A 5 BDQ33 C AF3 PB10A 5 BDQ6 T PB37A 5 BDQ33	AE10	PB5A	5	BDQ6	Т	PB32A	5	BDQ33	Т
AE13 PB6A 5 BDQS6 T PB33A 5 BDQS33 T GNDIO GNDIO5 - GNDIO55 -	AD10	PB5B	5	BDQ6	С	PB32B	5	BDQ33	С
GNDIO GNDIO5 - GNDIO5 - GNDIO5 - AC12 PB6B 5 BDQ6 C PB33B 5 BDQ33 C AG2 PB7A 5 BDQ6 T PB34A 5 BDQ33 T AG3 PB7B 5 BDQ6 C PB34B 5 BDQ33 C AD13 PB8A 5 BDQ6 T PB34A 5 BDQ33 T VCCIO VCCIO5 5 VCCIO5 5 C AC13 PB8B 5 BDQ6 C PB36A 5 BDQ33 T AC14 PB9A 5 BDQ6 C PB36B 5 BDQ33 T AC14 PB9BA 5 BDQ6 C PB36B 5 BDQ33 C AF3 PB10A 5 BDQ6 C PB37A 5 BDQ33 C	AE13	PB6A	5	BDQS6	Т	PB33A	5	BDQS33	Т
AC12 PB6B 5 BDQ6 C PB33B 5 BDQ33 C AG2 PB7A 5 BDQ6 T PB34A 5 BDQ33 T AG3 PB7B 5 BDQ6 C PB34A 5 BDQ33 T AG13 PB8A 5 BDQ6 T PB35A 5 BDQ33 T VCCIO VCCiO5 5 VCCiO5 5 AC13 PB8B 5 BDQ6 C PB35B 5 BDQ33 C AC14 PB9A 5 BDQ6 C PB36A 5 BDQ33 T AC14 PB9B 5 BDQ6 C PB37A 5 BDQ33 T AC14 PB9B 5 BDQ6 C PB37A 5 BDQ33 C AF3 PB10A 5 BDQ6 C PB37B 5 BDQ33 C	GNDIO	GNDIO5	-			GNDIO5	-		
AG2 PB7A 5 BDQ6 T PB34A 5 BDQ33 T AG3 PB7B 5 BDQ6 C PB34B 5 BDQ33 C AD13 PB8A 5 BDQ6 T PB35A 5 BDQ33 T VCCIO VCCIOS 5 VCCIOS 5 AC13 PB8B 5 BDQ6 C PB35B 5 BDQ33 C AC14 PB9A 5 BDQ6 C PB36B 5 BDQ33 C AC14 PB9B 5 BDQ6 C PB37A 5 BDQ33 C AF3 PB10A 5 BDQ6 C PB37A 5 BDQ33 C AF4 PB10B 5 BDQ6 C PB37B 5 BDQ33 C VCCIO VCCIO5 5 - - - - - -	AC12	PB6B	5	BDQ6	С	PB33B	5	BDQ33	С
AG3 PB7B 5 BDQ6 C PB34B 5 BDQ33 C AD13 PB8A 5 BDQ6 T PB35A 5 BDQ33 T VCCIO VCCIO5 5 VCCIO5 5 VCCIO5 5 VCCIO5 5 AC13 PB8B 5 BDQ6 C PB35B 5 BDQ33 C AE14 PB9A 5 BDQ6 C PB36B 5 BDQ33 C AF3 PB10A 5 BDQ6 C PB37A 5 BDQ33 T AF4 PB10B 5 BDQ6 C PB37B 5 BDQ33 C AF4 PB10B 5 BDQ6 C PB37B 5 BDQ33 C VCCIO VCCIO5 5 - - - - AG4 PB20A 5 BDQ24 T PB38A 5 BDQ42 C <	AG2	PB7A	5	BDQ6	Т	PB34A	5	BDQ33	Т
AD13 PB8A 5 BDQ6 T PB35A 5 BDQ33 T VCCIO VCCIO5 5 BDQ33 T PB37A 5 BDQ33 T BDQ6 T PB37A 5 BDQ33 T GNDI05 - VCCIO5 5 BDQ33 T GNDI05 - VCCIO5 5 BDQ33 C VCCIO VCCIO5 5 BDQ42 T PB37A 5 BDQ33 C VCCIO VCCIO5 5 BDQ42 T A64 PB20A 5 BDQ42 T PB38A 5 BDQ42 <td< td=""><td>AG3</td><td>PB7B</td><td>5</td><td>BDQ6</td><td>С</td><td>PB34B</td><td>5</td><td>BDQ33</td><td>С</td></td<>	AG3	PB7B	5	BDQ6	С	PB34B	5	BDQ33	С
VCCIO VCCIO5 5 VCCIO5 5 VCCIO5 5 AC13 PB8B 5 BDQ6 C PB35B 5 BDQ33 C AE14 PB9A 5 BDQ6 T PB36A 5 BDQ33 T AC14 PB9B 5 BDQ6 C PB36B 5 BDQ33 T AC14 PB9B 5 BDQ6 C PB36B 5 BDQ33 T AC14 PB9B 5 BDQ6 C PB37A 5 BDQ33 T GNDIO GNDIO5 -	AD13	PB8A	5	BDQ6	Т	PB35A	5	BDQ33	Т
AC13 PB8B 5 BD06 C PB35B 5 BD033 C AE14 PB9A 5 BD06 T PB36A 5 BD033 T AC14 PB9B 5 BD06 C PB36B 5 BD033 C AF3 PB10A 5 BD06 T PB37A 5 BD033 T GND0 GND105 - GND105 - GND105 - - AF4 PB10B 5 BD06 C PB37B 5 BD033 C VCCI0 VCCI05 5 BD06 C PB37B 5 BD033 C AG5 PB20A 5 BD024 C PB37B 5 BD042 T AG5 PB20A 5 BD024 C PB38B 5 BD042 T AG5 PB20B 5 BD024 C PB39B 5 BD042 T </td <td>VCCIO</td> <td>VCCIO5</td> <td>5</td> <td></td> <td></td> <td>VCCIO5</td> <td>5</td> <td></td> <td></td>	VCCIO	VCCIO5	5			VCCIO5	5		
AE14 PB9A 5 BDQ6 T PB36A 5 BDQ33 T AC14 PB9B 5 BDQ6 C PB36B 5 BDQ33 C AF3 PB10A 5 BDQ6 T PB37A 5 BDQ33 T GNDIO GNDIO5 - GNDIO5 - GNDIO5 - - AF4 PB10B 5 BDQ6 C PB37B 5 BDQ33 C VCCIO VCCIO5 5 BDQ6 C PB37B 5 BDQ33 C VCCIO VCCIO5 5 BDQ6 C PB37B 5 BDQ33 C VCCIO VCCIO5 5 BDQ24 T PB38A 5 BDQ42 T AG5 PB20B 5 BDQ24 C PB39B 5 BDQ42 C AG10 GNDIO5 - - - - - - -	AC13	PB8B	5	BDQ6	С	PB35B	5	BDQ33	С
AC14 PB9B 5 BDQ6 C PB36B 5 BDQ33 C AF3 PB10A 5 BDQ6 T PB37A 5 BDQ33 T GNDIO GNDIO5 - GNDIO5 - GNDIO5 - - - AF4 PB10B 5 BDQ6 C PB37B 5 BDQ33 C VCCIO VCCIO5 5 -	AE14	PB9A	5	BDQ6	Т	PB36A	5	BDQ33	Т
AF3 PB10A 5 BDQ6 T PB37A 5 BDQ33 T GNDIO GNDIO5 - GNDIO5 - GNDIO5 -	AC14	PB9B	5	BDQ6	С	PB36B	5	BDQ33	С
GNDIO GNDIO5 - GNDIO5 - GNDIO5 - AF4 PB10B 5 BDQ6 C PB37B 5 BDQ33 C VCCIO VCCIO5 5 - - - - - AG4 PB20A 5 BDQ24 T PB38A 5 BDQ42 T AG5 PB20B 5 BDQ24 C PB38B 5 BDQ42 C GNDIO GNDIO5 - - - - - - C VCCIO VCCIO5 5 - - - - - - C AD11 PB24A 5 BDQ24***** T PB39A 5 BDQ42 T AF13 PB24B 5 BDQ24 C PB39B 5 BDQ42 T - - - - - - C AF12 PB25A 5 BDQ24	AF3	PB10A	5	BDQ6	Т	PB37A	5	BDQ33	Т
AF4 PB10B 5 BDQ6 C PB37B 5 BDQ33 C VCCIO VCCIO5 5 -<	GNDIO	GNDIO5	-			GNDIO5	-		
VCCIO VCCIO5 5 Image: constraint of the system Image: constrais of the system <t< td=""><td>AF4</td><td>PB10B</td><td>5</td><td>BDQ6</td><td>С</td><td>PB37B</td><td>5</td><td>BDQ33</td><td>С</td></t<>	AF4	PB10B	5	BDQ6	С	PB37B	5	BDQ33	С
AG4 PB20A 5 BDQ24 T PB38A 5 BDQ42 T AG5 PB20B 5 BDQ24 C PB38B 5 BDQ42 C GNDIO GNDIO5 - - - - - - - - VCCIO VCCIO5 5 -	VCCIO	VCCIO5	5			-	-		
AG5 PB20B 5 BDQ24 C PB38B 5 BDQ42 C GNDIO GNDIO5 -	AG4	PB20A	5	BDQ24	Т	PB38A	5	BDQ42	Т
GNDIO GNDIO5 - - - - - - VCCIO VCCIO5 5 5 -	AG5	PB20B	5	BDQ24	С	PB38B	5	BDQ42	С
VCCIO VCCIO5 5 - - - - AD11 PB24A 5 BDQS24**** T PB39A 5 BDQ42 T AF13 PB24B 5 BDQ24 C PB39B 5 BDQ42 C AF12 PB25A 5 BDQ24 T PB40A 5 BDQ42 T - - - - VCCIO5 5 - - AD14 PB25B 5 BDQ24 C PB40B 5 BDQ42 C AG8 PB26B 5 BDQ24 C PB40B 5 BDQ42 C AF8 PB26B 5 BDQ24 C PB41A 5 BDQ42 C AE15 PB27A 5 BDQ24 C PB41B 5 BDQ42***** T - - - GNDI05 - - - -	GNDIO	GNDIO5	-			-	-		
AD11 PB24A 5 BDQS24**** T PB39A 5 BDQ42 T AF13 PB24B 5 BDQ24 C PB39B 5 BDQ42 C AF12 PB25A 5 BDQ24 T PB40A 5 BDQ42 T - - - VCCIO5 5 - - AD14 PB25B 5 BDQ24 C PB40B 5 BDQ42 C AG8 PB26A 5 BDQ24 C PB40B 5 BDQ42 C AF8 PB26B 5 BDQ24 C PB41A 5 BDQ42 T AF8 PB26B 5 BDQ24 C PB41B 5 BDQ42 C AE15 PB27A 5 BDQ24 T PB42A 5 BDQ342***** T - - - GNDI05 - - - -	VCCIO	VCCIO5	5			-	-		
AF13 PB24B 5 BDQ24 C PB39B 5 BDQ42 C AF12 PB25A 5 BDQ24 T PB40A 5 BDQ42 T - - - VCCIO5 5 - - - AD14 PB25B 5 BDQ24 C PB40B 5 BDQ42 C AG8 PB26A 5 BDQ24 C PB41A 5 BDQ42 T AF8 PB26B 5 BDQ24 C PB41B 5 BDQ42 C AF8 PB26B 5 BDQ24 T PB42A 5 BDQ42 C AE15 PB27A 5 BDQ24 T PB42A 5 BDQ42**** T - - - GNDI05 - - - - - VCCIO VCCIO5 5 - - - - - -	AD11	PB24A	5	BDQS24****	Т	PB39A	5	BDQ42	Т
AF12 PB25A 5 BDQ24 T PB40A 5 BDQ42 T · · · · VCCIO5 5 · · AD14 PB25B 5 BDQ24 C PB40B 5 BDQ42 C AG8 PB26A 5 BDQ24 T PB41A 5 BDQ42 T AF8 PB26B 5 BDQ24 C PB41B 5 BDQ42 C AF15 PB27A 5 BDQ24 T PB42A 5 BDQ342**** T · · · · GNDI05 · · · VCCIO VCCIO5 5 · · · · · ·	AF13	PB24B	5	BDQ24	С	PB39B	5	BDQ42	С
VCCIO55-AD14PB25B5BDQ24CPB40B5BDQ42CAG8PB26A5BDQ24TPB41A5BDQ42TAF8PB26B5BDQ24CPB41B5BDQ42CAE15PB27A5BDQ24TPB42A5BDQ342****TGNDIO5VCCI0VCCI055	AF12	PB25A	5	BDQ24	Т	PB40A	5	BDQ42	Т
AD14 PB25B 5 BDQ24 C PB40B 5 BDQ42 C AG8 PB26A 5 BDQ24 T PB41A 5 BDQ42 T AF8 PB26B 5 BDQ24 C PB41B 5 BDQ42 C AF8 PB26B 5 BDQ24 C PB41B 5 BDQ42 C AE15 PB27A 5 BDQ24 T PB42A 5 BDQ542**** T - - - GNDIO5 - - - - VCCI0 VCCI05 5 - - - - - -	-	-	-			VCCIO5	5		
AG8 PB26A 5 BDQ24 T PB41A 5 BDQ42 T AF8 PB26B 5 BDQ24 C PB41B 5 BDQ42 C AE15 PB27A 5 BDQ24 T PB42A 5 BDQ342**** T - - - GNDIO5 - - - - VCCIO VCCIO5 5 - - - - - -	AD14	PB25B	5	BDQ24	С	PB40B	5	BDQ42	С
AF8 PB26B 5 BDQ24 C PB41B 5 BDQ42 C AE15 PB27A 5 BDQ24 T PB42A 5 BDQ342**** T - - - GNDIO5 - - - - VCCIO VCCIO5 5 - - - - -	AG8	PB26A	5	BDQ24	Т	PB41A	5	BDQ42	Т
AE15 PB27A 5 BDQ24 T PB42A 5 BDQS42**** T - - - GNDIO5 - <td< td=""><td>AF8</td><td>PB26B</td><td>5</td><td>BDQ24</td><td>С</td><td>PB41B</td><td>5</td><td>BDQ42</td><td>С</td></td<>	AF8	PB26B	5	BDQ24	С	PB41B	5	BDQ42	С
- - - GNDIO5 - VCCIO VCCIO5 5 - - -	AE15	PB27A	5	BDQ24	Т	PB42A	5	BDQS42****	Т
VCCIO VCCIO5 5	-	-	-			GNDIO5	-		
	VCCIO	VCCIO5	5			-	-		



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

	LFE2M100E/SE										
Ball Number	Ball/Pad Function	Bank	Dual Function	Differential							
D19	PT93B	1		С							
E18	PT93A	1		Т							
D18	PT92B	1		С							
C17	PT92A	1		Т							
A17	PT91B	1		С							
B17	PT91A	1		Т							
GNDIO	GNDIO1	-									
VCCIO	VCCIO1	1									
J18	PT75B	1		С							
J19	PT75A	1		Т							
H17	PT74B	1		С							
J17	PT74A	1		Т							
F18	PT73B	1		С							
F17	PT73A	1		Т							
GNDIO	GNDIO1	-									
A16	PT72B	1		С							
B16	PT72A	1		Т							
G17	PT71B	1		С							
G16	PT71A	1		Т							
VCCIO	VCCIO1	1									
H16	PT70B	1		С							
F16	PT70A	1		Т							
J16	PT69B	1		С							
G15	PT69A	1		Т							
GNDIO	GNDIO1	-									
C16	PT68B	1		С							
D16	PT68A	1		Т							
J15	PT67B	1		С							
H15	PT67A	1		Т							
VCCIO	VCCIO1	1									
A15	PT66B	1	VREF2_1	С							
B15	PT66A	1	VREF1_1	Т							
F15	PT65B	1	PCLKC1_0	С							
E16	PT65A	1	PCLKT1_0	Т							
C15	PT64B	0	PCLKC0_0	С							
GNDIO	GNDIO0	-									
D15	PT64A	0	PCLKT0_0	Т							
C14	PT63B	0	VREF2_0	С							
E15	PT63A	0	VREF1_0	Т							
G14	PT62B	0		С							
VCCIO	VCCIO0	0									
J14	PT62A	0		Т							
F14	PT61B	0		С							



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

Ball/Pad Ball/Pad Dual Function Differential Part/Pad Dual Function Differential AA8 P.65A 6 LD064 T PL7AA 6 LD072 T VCID0 VCCIO6 6 LD084 T PL7AA 6 LD072 C Y8 PL68B 6 LD084 C PL7B 6 LD072 C AA8 PL68B 6 LD084 T PL7B 6 LD072 C AA8 PL68B 6 LD064 T PL7B 6 LD072 C AA8 PL68B 6 LD073 T PL7B 6 LD072 C AA10 PL68B 6 LD073 T PL7B 6 LD071 C C(MD01 AA10 PL68B 6 LD073 T PL7B 6 LD081 T (LM05) AA10 PL7B4 6 LD073 T PL7B<			LFE2M70E/SE	E		LFE2M100E/SE			
AA8 PLSA 6 LD024 T PLSA 6 LD022 T VSCIO VCOIO 6 VCOIO C PL3B 6 LD022 C YS PL68 6 LD064 C (VDS)' PL7A 6 LD022 T (VDS)' AA7 PL68B 6 LD064 T (VDS)' PL7A 6 LD022 T (VDS)' AA4 PL57A 6 LD072 T (VDS)' PL7B 6 LD021 C (VDS)' AA8 PL57B 6 LD021 T (VDS)' PL7B 6 LD021 T (VDS)' AA8 PL57B 6 LD021 T (VDS)' PL7B 6 LD021 T (VDS)' AA8 PL7B 6 LD073 T (VDS)' PL7B 6 LD021 T (VDS)' AA8 PL7B 6 LD073 C (VDS)' PL7B 6 LD081 T (VDS)' AA8 PL7B 6 <th>Ball Number</th> <th>Ball/Pad Function</th> <th>Bank</th> <th>Dual Function</th> <th>Differential</th> <th>Ball/Pad Function</th> <th>Bank</th> <th>Dual Function</th> <th>Differential</th>	Ball Number	Ball/Pad Function	Bank	Dual Function	Differential	Ball/Pad Function	Bank	Dual Function	Differential
VCCIO VCCIO 6 VCCIO 6 VCCIO 6 Y9 PL68B 6 LD064 C PL78B 6 LD072 T(LVDS)' AA7 PL68B 6 LD064 T LVTSA 6 LD072 T(LVDS)' AA4 PL67A 6 LD064 T PL78A 6 LD072 C(LVDS)' AA4 PL67A 6 LD064 C PL78A 6 LD072 C AA8 PL67B 6 LD073 T LVDS)' PL77A 6 LD081 T AA8 PL70A 6 LD073 T LVDS1' PL78A 6 LD081 C C LVDS1' PL78A 6 LD081 T C LD081 T	AA8	PL65A	6	LDQ64	Т	PL73A	6	LDQ72	Т
Y9 PLSB 6 LD024 T PL7A 6 LD072 C AA6 PL6AA 6 LD044 T PL7A 6 LD072 T T AA7 PL6BA 6 LD064 T PL7A 6 LD072 C (LVDS) AA4 PL67A 6 LD072 C (LVDS) PL7A 6 LD072 C (LVDS) AA3 PL67B 6 LD073 T PL7B 6 LD081 T (LVDS) AA4 PL68B 6 LD073 T PL7B 6 LD081 T (LVDS) AA5 PL70B 6 LD073 T PL7B 6 LD081 T C AB5 PL7AB 6 LD073 T PL7B 6 LD081 T C AB5 AB6 LD081 T C AB6 LD081 T C AB6 LD081	VCCIO	VCCIO6	6			VCCIO6	6		
AA6 PL6AB 6 LDQ44 T(LVDS)' PL7AB 6 LDQ2 T(LVDS)' AA4 PL6BB 6 LDQ64 C(LVDS)' PL7AB 6 LDQ72 T AA4 PL67B 6 LDQ64 T PL7AB 6 LDQ72 T AA3 PL67B 6 LDQ73 T(LVDS)' PL77A 6 LDQ81 T(LVDS)' AA3 PL68A 6 LDQ73 T(LVDS)' PL77A 6 LDQ81 T(LVDS)' AA6 PL68B 6 LDQ73 C PL7BA 6 LDQ81 T(LVDS)' AA6 PL70B 6 LDQ73 T PL7BA 6 LDQ81 T(LVDS)' AB6 PL7A 8 LDQ73 T PL7BA 6 LDQ81 T(LVDS)' AB70 PL7B 6 LDQ73 T PL8A 6 LDQ81 T(LVDS)' AB70 PL72A 6 LDQ73	Y9	PL65B	6	LDQ64	С	PL73B	6	LDQ72	С
AA7 PL68B 6 LD064 C (LD03)* PL78A 6 LD072 C (LD03)* GMDIO GMDIO6 - <td>AA6</td> <td>PL66A</td> <td>6</td> <td>LDQ64</td> <td>T (LVDS)*</td> <td>PL74A</td> <td>6</td> <td>LDQ72</td> <td>T (LVDS)*</td>	AA6	PL66A	6	LDQ64	T (LVDS)*	PL74A	6	LDQ72	T (LVDS)*
AAA PL67A 6 LD024 T PL75A 6 LD072 T AN3 PL67B 6 LD064 C PL75B 6 LD072 C AN3 PL67B 6 LD073 T(LVD5)' PL77A 6 LD061 T(LVD5)' AN10 PL68A 6 LD073 T(LVD5)' PL77A 6 LD061 C AN10 PL68B 6 LD073 C PL78A 6 LD061 C AB6 PL70B 6 LD073 C PL78A 6 LD061 C C AB2 PL71B 6 LD073 C PL89B 6 LD061 C C D061 C D061 C D061 C D061 C D061 C D061 <t< td=""><td>AA7</td><td>PL66B</td><td>6</td><td>LDQ64</td><td>C (LVDS)*</td><td>PL74B</td><td>6</td><td>LDQ72</td><td>C (LVDS)*</td></t<>	AA7	PL66B	6	LDQ64	C (LVDS)*	PL74B	6	LDQ72	C (LVDS)*
GNDIO GNDIOS · C GNDIOS · C AA3 PL69A 6 LDO24 C PL7B 6 LDO22 C AA9 PL69A 6 LDO73 T (LVDS)' PL77A 6 LDO21 T (LVDS)' AA10 PL69B 6 LDO73 T PL7A 6 LDO21 T AA5 PL7DA 6 LDO73 T PL7BA 6 LDO21 T AA5 PL7DA 6 LDO73 T PL7BA 6 LDO21 T AB2 PL71A 6 LDO73 C PL7BA 6 LDO21 T AB2 PL71A 6 LDO73 T PL80A 6 LDO21 T AB2 PL7BA 6 LDO73 T PL80A 6 LDO21 T AB3 PL7BA 6 LDO73 T PL80B 6 LDO21 T	AA4	PL67A	6	LDQ64	Т	PL75A	6	LDQ72	Т
AA3 PL678 6 LD072 C A9 PL69A 6 LD073 T (UVD5)' PL77A 6 LD028 T (UVD5)' AA5 PL70A 6 LD073 T PL78A 6 LD081 T (UVD5)' AA5 PL70B 6 LD073 T PL78A 6 LD081 T (UVD5)' AB6 PL70B 6 LD073 T PL78A 6 LD081 C AB2 PL71B 6 LD073 T (UVD5)' PL78A 6 LD081 T (UVD5)' AB2 PL72B 6 LD073 T PL90A 6 LD081 T (UVD5)' AB10 PL72B 6 LD073 T (UVD5)' PL71B 6 LD0281 T (UVD5)' AC1 PL73A 6 LD073 T (UVD5)' PL81A 6 LD0281 T (UVD5)' AC2 PL73B 6 LD073 T (UVD5)' PL81A 6	GNDIO	GNDIO6	-			GNDIO6	-		
AA9 PL69A 6 LD073 T (LVDS)* PL77A 6 LD081 T (LVDS)* AA10 PL69B 6 LD073 C (LVDS)* PL77B 6 LD081 T C (LVDS)* AA5 PL70A 6 LD073 T PL7BA 6 LD081 T AB6 PL70A 6 LD073 C PL7BA 6 LD081 T AB1 PL7A 6 LD073 C (LVDS)* PL70A 6 LD081 T VCCIO VCCIO6 6 LD073 T (LVDS)* PL7B 6 LD081 T A82 PL73A 6 LD073 T (LVDS)* PL8A 6 LD081 T A63 PL72A 6 LD073 T (LVDS)* PL8A 6 LD081 T A61 LD073 T (LVDS)* PL8A 6 LD081 T (LVDS)* A61 LD073 T (LVDS)* PL8A 6<	AA3	PL67B	6	LDQ64	С	PL75B	6	LDQ72	С
AA10 PL68B 6 LD073 C (LVDS)* PL77B 8 LD081 C (LVDS)* AA5 PL70A 6 LD073 T PL78A 6 LD081 T AB6 PL70B 6 LD073 C PL78A 6 LD081 C AB1 PL71A 6 LD073 T (LVDS)* PL78A 6 LD081 C (LVDS)* VCCIO 6 LD073 T PL80A 6 LD081 C (LVDS)* AB2 PL71B 6 LD073 T PL80A 6 LD081 C (LVDS)* AB3 PL72B 6 LD073 T PL80A 6 LD081 C (LVDS)* AC1 PL73B 6 LD073 T PL80A 6 LD081 C (LVDS)* GND106 - - GND106 - - - - - - - - - - - - -	AA9	PL69A	6	LDQ73	T (LVDS)*	PL77A	6	LDQ81	T (LVDS)*
AAS PL70A 6 LD073 T PL78A 6 LD08I T AB6 PL70B 6 LD073 C PL78A 6 LD08I T AB1 PL71A 6 LD073 T (LVDS)* PL78A 6 LD08I T VCCIO VCCIO8 6 LD073 T (LVDS)* PL78B 6 LD08I T AC8 PL72A 6 LD073 C (VDS)* PL78B 6 LD08I T AC8 PL72A 6 LD073 C (VDS)* PL80B 6 LD08I C (VDS)* GNDIO GNDIO6 - - C GNDIO6 - - C C(VDS)* PL81B 6 LD08I T (VDS)* GNDIO GNDIO8 - - C PL78A 6 LD073 T PL83B 6 LD08I T (VDS)* AC1 PL74A 6 LD073 T (VDS)* PL83A	AA10	PL69B	6	LDQ73	C (LVDS)*	PL77B	6	LDQ81	C (LVDS)*
AB6 PL708 6 LD073 C PL78B 6 LD081 C AB1 PL71A 6 LD073 T (LDDS)* PL78A 6 LD081 T (LDS)* VCCIO VCCIO6 6 C (LDS)* PL78B 6 LD081 T (LDS)* AB2 PL71B 6 LD073 T PL80A 6 LD081 T AB3 PL72B 6 LD073 T PL80A 6 LD081 T AB10 PL72B 6 LD073 T PL80A 6 LD081 T GND10 GND106 - GRND106 - GRND106 - GRND106 - GRND106 GRND106 GRND106 <td>AA5</td> <td>PL70A</td> <td>6</td> <td>LDQ73</td> <td>Т</td> <td>PL78A</td> <td>6</td> <td>LDQ81</td> <td>Т</td>	AA5	PL70A	6	LDQ73	Т	PL78A	6	LDQ81	Т
AB1 PL7A 6 LDQ3 T (LVDS)' PL7BA 6 LDQ81 T (LVDS)' VCCIO VCCIO6 6 VCCIO6 6 AB2 PL71B 6 LDQ73 C (LVDS)' PL7BB 6 LDQ81 C (LVDS)' AB3 PL72A 6 LDQ73 C PL80A 6 LDQ81 T AB10 PL72B 6 LDQ73 C PL80B 6 LDQ81 T AC1 PL73A 6 LDQ73 T (LVDS)' PL81A 6 LDQ81 T (LVDS)' GNDIO6 - GNDIO6 - C (LVDS)' PL84A 6 LDQ81 T (LVDS)' AS7 PL74B 6 LDQ73 C PL82B 6 LDQ81 T (LVDS)' AC3 PL74B 6 LDQ73 T PL82A 6 LDQ81 T (LVDS)' AC4 PL75B 6 <td< td=""><td>AB6</td><td>PL70B</td><td>6</td><td>LDQ73</td><td>С</td><td>PL78B</td><td>6</td><td>LDQ81</td><td>С</td></td<>	AB6	PL70B	6	LDQ73	С	PL78B	6	LDQ81	С
VCCIO VCCIO6 6 VCCIO6 6 AB2 PL71B 6 LDQ73 C (LVDS)' PL79B 6 LDQ81 T AC8 PL72A 6 LDQ73 T PL80A 6 LDQ81 T AB10 PL72A 6 LDQ73 C PL80B 6 LDQ81 T AB10 PL73A 6 LDQ73 C PL80B 6 LDQ81 T GNIOI GNIOI66 - - GNIOI66 - - - AC2 PL73B 6 LDQ73 T PL82A 6 LDQ81 T (LVDS)' AB5 PL74B 6 LDQ73 T PL82B 6 LDQ81 T (LVDS)' AC1 PL75B 6 LDQ73 T (LVDS)' PL83B 6 LDQ81 C (LVDS)' AC2 PL76A 6 LDQ73 T PL84A 6 LDQ81 C (LVDS)'	AB1	PL71A	6	LDQ73	T (LVDS)*	PL79A	6	LDQ81	T (LVDS)*
AB2 PL71B 6 LD073 C (LVDS)* PL79B 6 LD0R1 C (LVDS)* AC8 PL72A 6 LD073 T PL80A 6 LD0R1 T AB10 PL72B 6 LD073 C PL80B 6 LD0R1 T AC1 PL73A 6 LD073 T PL80B 6 LD0811 T AC2 PL73B 6 LD073 T PL82A 6 LD0811 T AS2 PL74A 6 LD073 C PL82A 6 LD0811 C C AS3 PL74A 6 LD073 C PL82B 6 LD0811 C C C PL76A 6 LD073 C PL82B 6 LD0811 C C C PL82B 6 LD0811 C C C LD081 C C LD081 C C LD081 C C	VCCIO	VCCIO6	6			VCCIO6	6		
A68 PL72A 6 LD073 T PL80A 6 LD081 T AB10 PL72B 6 LD073 C PL80B 6 LD081 C AC1 PL73A 6 LD0273 T (IVDS)* PL81A 6 LD081 T (IVDS)* GNDIO GNDIO6 - GNDIO6 - C C (VDS)* A62 PL73B 6 LD073 T PL82A 6 LD081 T A87 PL74A 6 LD073 T PL82A 6 LD081 T A85 PL74A 6 LD073 T PL82A 6 LD081 T AC3 PL75B 6 LD073 T PL83A 6 LD081 T (VDS)* AC4 PL75B 6 LD073 T PL83A 6 LD081 C (VDS)* AC5 PL76A 6 LD073 C PL84A 6 LD081 </td <td>AB2</td> <td>PL71B</td> <td>6</td> <td>LDQ73</td> <td>C (LVDS)*</td> <td>PL79B</td> <td>6</td> <td>LDQ81</td> <td>C (LVDS)*</td>	AB2	PL71B	6	LDQ73	C (LVDS)*	PL79B	6	LDQ81	C (LVDS)*
AB10 PL2B 6 LDQ73 C PL80A 6 LDQ81 C AC1 PL73A 6 LDQ73 T (UDS)' PL81A 6 LDQ81 T (UDS)' GNDIO GNDIO6 - GNDIO6 - - - AC2 PL73B 6 LDQ73 C (LVDS)' PL81B 6 LDQ81 T (UDS)' AB7 PL74A 6 LDQ73 T PL82B 6 LDQ81 C (VDS)' AB5 PL74B 6 LDQ73 T PL82B 6 LDQ81 C (VDS)' AC3 PL75A 6 LDQ73 T (VLDS)' PL83A 6 LDQ81 T (UDS)' AC4 PL75A 6 LDQ73 C PL84A 6 LDQ81 T AC2 PL76B 6 LDQ73 C PL84A 6 LDQ81 T AC3 NC - PL84A 6 LDQ80	AC8	PL72A	6	LDQ73	Т	PL80A	6	LDQ81	Т
AC1 PL73A 6 LDQS73 T (LVDS)* PL81A 6 LDQS81 T (LVDS)* GNDIO GNDIOS - GNDIOS - <	AB10	PL72B	6	LDQ73	С	PL80B	6	LDQ81	С
GNDIO GNDIO6 - GNDIO6 - C AC2 PL73B 6 LDQ73 C (LVDS)' PL87B 6 LDQ81 C (LVDS)' AB7 PL74A 6 LDQ73 T PL82A 6 LDQ81 T AB5 PL74B 6 LDQ73 C PL82B 6 LDQ81 T AB5 PL74B 6 LDQ73 C PL82B 6 LDQ81 T AC3 PL75A 6 LDQ73 T (LVDS)' PL83B 6 LDQ81 T (LVDS)' AC10 PL75B 6 LDQ73 T PL84A 6 LDQ81 C (LVDS)' AC10 PL76B 6 LDQ73 C PL84A 6 LDQ81 C (LVDS)' AC5 NC - GNDIO6 - - - - - - - - - - - - - - -<	AC1	PL73A	6	LDQS73	T (LVDS)*	PL81A	6	LDQS81	T (LVDS)*
AC2 PL73B 6 LDQ73 C (LVDS)' PL81B 6 LDQ81 C (LVDS)' AB7 PL74A 6 LDQ73 T PL82A 6 LDQ81 T AB5 PL74B 6 LDQ73 C PL82B 6 LDQ81 T AC3 PL74B 6 LDQ73 C PL82B 6 LDQ81 C AC4 PL75A 6 LDQ73 T (LVDS)' PL83A 6 LDQ81 T (LVDS)' AC4 PL75A 6 LDQ73 C (LVDS)' PL83B 6 LDQ81 C (LVDS)' AC6 PL76A 6 LDQ73 C PL84B 6 LDQ81 C AC7 NC - PL84A 6 LDQ90 T (LVDS)' AC5 NC - PL84B 6 LDQ90 T (LVDS)' AC6 NC - PL87B 6 LDQ90 <t< td=""><td>GNDIO</td><td>GNDIO6</td><td>-</td><td></td><td></td><td>GNDIO6</td><td>-</td><td></td><td></td></t<>	GNDIO	GNDIO6	-			GNDIO6	-		
AB7 PL74A 6 LDQ73 T PL82A 6 LDQ81 T AB5 PL74B 6 LDQ73 C PL82B 6 LDQ81 C VCCIO VCCIO6 6 VCCIO6 6 LDQ81 C AC3 PL75A 6 LDQ73 T (LVDS)' PL83A 6 LDQ81 T (LVDS)' AC4 PL75B 6 LDQ73 T PL83A 6 LDQ81 T (LVDS)' AC10 PL76A 6 LDQ73 C PL84B 6 LDQ81 T AC3 PL76B 6 LDQ73 C PL84B 6 LDQ81 C AC5 NC - O GMDIO - O C O O AC5 NC - O PL86B 6 LDQ90 C (LVDS)' AC5 NC - O PL87B 6 LDQ90 C (LVDS)' <	AC2	PL73B	6	LDQ73	C (LVDS)*	PL81B	6	LDQ81	C (LVDS)*
AB5 PL74B 6 LDQ73 C PL82B 6 LDQ81 C AC3 PL75A 6 LDQ73 T VCCIO6 6	AB7	PL74A	6	LDQ73	т	PL82A	6	LDQ81	Т
VCCIO VCCIO6 6 VCCIO6 6 VCCIO6 6 AC3 PL75A 6 LDQ73 T (LVDS)' PL83A 6 LDQ81 T (LVDS)' AC4 PL75B 6 LDQ73 C (LVDS)' PL83B 6 LDQ81 T AC10 PL76A 6 LDQ73 T PL84A 6 LDQ81 T AC9 PL76B 6 LDQ73 C PL84A 6 LDQ81 T AC7 NC - GNDI06 - C IVDS)' AC5 NC - PL86A 6 LDQ90 T (LVDS)' AC5 NC - PL87A 6 LDQ90 T (LVDS)' AC5 NC - PL87A 6 LDQ90 T (LVDS)' AC5 NC - PL87A 6 LDQ90 C (LVDS)' AC5 NC - AC6 LDQ90 C (LVDS)' </td <td>AB5</td> <td>PL74B</td> <td>6</td> <td>LDQ73</td> <td>С</td> <td>PL82B</td> <td>6</td> <td>LDQ81</td> <td>С</td>	AB5	PL74B	6	LDQ73	С	PL82B	6	LDQ81	С
AC3 PL75A 6 LDQ73 T (LVDS)' PL83A 6 LDQ81 T (LVDS)' AC4 PL75B 6 LDQ73 C (LVDS)' PL83B 6 LDQ81 C (LVDS)' AC10 PL76B 6 LDQ73 T PL84A 6 LDQ81 T AC9 PL76B 6 LDQ73 C PL84A 6 LDQ81 T AC9 PL76B 6 LDQ73 C PL84A 6 LDQ81 C AC9 PL76B 6 LDQ73 C PL84B 6 LDQ81 C AC7 NC - GNDIO6 - C (LVDS)' AC5 NC - PL86B 6 LDQ90 T (LVDS)' AC6 NC - PL86B 6 LDQ90 C AC5 NC - PL87B 6 <thldq90< th=""> <thc< th=""></thc<></thldq90<>	VCCIO	VCCIO6	6			VCCIO6	6		
AC4 PL75B 6 LDQ73 C (LVDS)* PL83B 6 LDQ81 C (LVDS)* AC10 PL76A 6 LDQ73 T PL84A 6 LDQ81 T AC3 PL76B 6 LDQ73 C PL84B 6 LDQ81 T AC3 PL76B 6 LDQ73 C PL84B 6 LDQ81 C GNDIO GNDIO6 - GNDIO6 - - - - AC7 NC - PL86A 6 LDQ90 T (LVDS)* AC6 NC - PL87A 6 LDQ90 T AC6 NC - PL87B 6 LDQ90 C (LVDS)* AC6 NC - VCCIO6 6 - - AD3 NC - PL88A 6 LDQ90 C (LVDS)* AD8 NC - PL98B <t< td=""><td>AC3</td><td>PL75A</td><td>6</td><td>LDQ73</td><td>T (LVDS)*</td><td>PL83A</td><td>6</td><td>LDQ81</td><td>T (LVDS)*</td></t<>	AC3	PL75A	6	LDQ73	T (LVDS)*	PL83A	6	LDQ81	T (LVDS)*
AC10 PL76A 6 LDQ73 T PL84A 6 LDQ81 T AC9 PL76B 6 LDQ73 C PL84B 6 LDQ81 C GNDIO GNDIO6 - GNDIO6 - GNDIO6 - C AC7 NC - PL86A 6 LDQ80 T (LVDS)' AC5 NC - PL86B 6 LDQ90 C (LVDS)' AC6 NC - PL87A 6 LDQ90 C AC5 NC - PL87B 6 LDQ90 C - - - VCCIO6 6 - AD4 NC - PL88A 6 LDQ90 C AD3 NC - PL88B 6 LDQ90 C AD8 NC - GNDIO6 - - AD2 NC - GNDIO6 - - AD	AC4	PL75B	6	LDQ73	C (LVDS)*	PL83B	6	LDQ81	C (LVDS)*
AC9 PL76B 6 LDQ73 C PL84B 6 LDQ81 C GNDIO GNDIO6 - GNDIO6 -	AC10	PL76A	6	LDQ73	Т	PL84A	6	LDQ81	Т
GNDIO GNDIO6 - GNDIO6 - AC7 NC - PL86A 6 LDQ90 T (LVDS)* AC5 NC - PL86B 6 LDQ90 C (LVDS)* AC6 NC - PL87A 6 LDQ90 T AD5 NC - PL87B 6 LDQ90 C - - - VCCIO6 6 - - AD4 NC - PL87B 6 LDQ90 T (LVDS)* AD3 NC - PL88A 6 LDQ90 T (LVDS)* AD10 NC - PL89B 6 LDQ90 T AD8 NC - PL89B 6 LDQ90 C AD1 NC - GNDIO6 - - - AD2 NC - PL91B 6 LDQ90	AC9	PL76B	6	LDQ73	С	PL84B	6	LDQ81	С
AC7 NC - PL86A 6 LDQ90 T (LVDS)* AC5 NC - PL86B 6 LDQ90 C (LVDS)* AC6 NC - PL87A 6 LDQ90 T AD5 NC - PL87B 6 LDQ90 C - - - PL87B 6 LDQ90 C - - - PL87B 6 LDQ90 C - - - VCCIO6 6 - - AD4 NC - PL88B 6 LDQ90 T (LVDS)* AD3 NC - PL88B 6 LDQ90 T AD4 NC - PL89A 6 LDQ90 T AD10 NC - PL89B 6 LDQ90 C AD2 NC - PL90A 6 LDQ90 C (LVDS)* AD1	GNDIO	GNDIO6	-			GNDIO6	-		
AC5 NC - PL86B 6 LDQ90 C (LVDS)* AC6 NC - PL87A 6 LDQ90 T AD5 NC - PL87B 6 LDQ90 C - - - - VCCIO6 6 - - AD4 NC - PL88A 6 LDQ90 T (LVDS)* AD3 NC - PL88B 6 LDQ90 C (LVDS)* AD10 NC - PL89B 6 LDQ90 T AD8 NC - PL89B 6 LDQ90 C - - - GNDI06 - - - - - - PL90A 6 LDQ90 T (LVDS)* AD1 NC - PL90B 6 LDQ90 T - - PL90B	AC7	NC	-			PL86A	6	LDQ90	T (LVDS)*
AC6 NC - PL87A 6 LD090 T AD5 NC - PL87B 6 LD090 C · · · VCCIO6 6 · · AD4 NC · PL88A 6 LD090 T (LVDS)* AD3 NC · PL88A 6 LD090 T (LVDS)* AD10 NC · PL89A 6 LD090 T AD8 NC · PL89B 6 LD090 C · · · · GNDI06 · · · · · · · · · AD2 NC · · · · · · AD1 NC · · · · · · AD9 NC · · · · · · · · ·<	AC5	NC	-			PL86B	6	LDQ90	C (LVDS)*
AD5 NC - PL87B 6 LDQ90 C · · · · VCCIO6 6 · · AD4 NC · PL88A 6 LDQ90 T (LVDS)* AD3 NC · PL88B 6 LDQ90 C (LVDS)* AD3 NC · PL88B 6 LDQ90 T (LVDS)* AD10 NC · PL89A 6 LDQ90 T AD8 NC · PL89B 6 LDQ90 C · · · · GNDI06 · · · · · · · · · AD2 NC · PL90A 6 LDQS90 T (LVDS)* AD1 NC · · · · · · · · · · · · · · · <td< td=""><td>AC6</td><td>NC</td><td>-</td><td></td><td></td><td>PL87A</td><td>6</td><td>LDQ90</td><td>Т</td></td<>	AC6	NC	-			PL87A	6	LDQ90	Т
· ·	AD5	NC	-			PL87B	6	LDQ90	С
AD4 NC - PL88A 6 LDQ90 T (LVDS)* AD3 NC - PL88B 6 LDQ90 C (LVDS)* AD10 NC - PL89A 6 LDQ90 T AD8 NC - PL89B 6 LDQ90 T AD8 NC - PL89B 6 LDQ90 C · - GNDI06 - - - - AD2 NC - PL90A 6 LDQ90 C (LVDS)* AD1 NC - PL90A 6 LDQ90 C (LVDS)* AD9 NC - PL90B 6 LDQ90 T (LVDS)* AD9 NC - PL91A 6 LDQ90 T (LVDS)* AD4 NC - - VCCIO6 6 - - AD6 NC - PL91B 6 LDQ90 C (LVDS)* AD6 NC - PL92A 6 LDQ90 C (LVDS)* AE1 </td <td>-</td> <td>-</td> <td>-</td> <td></td> <td></td> <td>VCCIO6</td> <td>6</td> <td></td> <td></td>	-	-	-			VCCIO6	6		
AD3 NC - PL88B 6 LDQ90 C (LVDS)* AD10 NC - PL89A 6 LDQ90 T AD8 NC - PL89B 6 LDQ90 C AD8 NC - GNDIO6 - - - AD2 NC - GNDIO6 - - - AD1 NC - PL90A 6 LDQ90 C (LVDS)* AD1 NC - PL90B 6 LDQ90 C (LVDS)* AD9 NC - PL91A 6 LDQ90 T . - - VCCIO6 6 - - . - - VCCIO6 6 - - AD6 NC - PL91B 6 LDQ90 C (LVDS)* AD7 NC - PL92B 6 LDQ90 T (LVDS)* AE1 NC - PL93A 6 LDQ90 T . - - GNDI	AD4	NC	-			PL88A	6	LDQ90	T (LVDS)*
AD10 NC - PL89A 6 LDQ90 T AD8 NC - PL89B 6 LDQ90 C - - - GNDIO6 - - - AD2 NC - PL90A 6 LDQ90 T (LVDS)* AD1 NC - PL90A 6 LDQ90 C (LVDS)* AD9 NC - PL90B 6 LDQ90 T - - - PL91A 6 LDQ90 T - - - VCCIO6 6 - - AD6 NC - PL91B 6 LDQ90 C AD6 NC - PL92A 6 LDQ90 T (LVDS)* AD7 NC - PL92B 6 LDQ90 T - - - GNDIO6 - - - - - - GNDIO6 - - - AE1 NC - PL93B 6 <td>AD3</td> <td>NC</td> <td>-</td> <td></td> <td></td> <td>PL88B</td> <td>6</td> <td>LDQ90</td> <td>C (LVDS)*</td>	AD3	NC	-			PL88B	6	LDQ90	C (LVDS)*
AD8 NC - PL89B 6 LDQ90 C - - - GNDIO6 - - - AD2 NC - PL90A 6 LDQ90 T (LVDS)* AD1 NC - PL90B 6 LDQ90 C (LVDS)* AD9 NC - PL90B 6 LDQ90 T - - PL91A 6 LDQ90 T - - PL91B 6 LDQ90 C AC11 NC - PL91B 6 LDQ90 C AA6 NC - PL91B 6 LDQ90 C AD6 NC - PL92A 6 LDQ90 T (LVDS)* AD7 NC - PL92B 6 LDQ90 T (LVDS)* AE1 NC - PL93A 6 LDQ90 T AE2 NC - PL93B 6 LDQ90 C AE2 NC - PL93B 6 <th< td=""><td>AD10</td><td>NC</td><td>-</td><td></td><td></td><td>PL89A</td><td>6</td><td>LDQ90</td><td>Т</td></th<>	AD10	NC	-			PL89A	6	LDQ90	Т
- - - GNDIO6 - - AD2 NC - PL90A 6 LDQS90 T (LVDS)* AD1 NC - PL90B 6 LDQ90 C (LVDS)* AD9 NC - PL91A 6 LDQ90 T - - VCCIO6 6 - - AC11 NC - VCCIO6 6 - - AC11 NC - PL91B 6 LDQ90 C AD6 NC - PL92A 6 LDQ90 C (LVDS)* AD7 NC - PL92B 6 LDQ90 T (LVDS)* AE1 NC - PL93A 6 LDQ90 T - - - GNDIO6 - - - AE2 NC - PL93B 6 LDQ90 C	AD8	NC	-			PL89B	6	LDQ90	С
AD2 NC - PL90A 6 LDQ\$90 T (LVD\$)* AD1 NC - PL90B 6 LDQ\$0 C (LVD\$)* AD9 NC - PL91A 6 LDQ\$0 T · - - VCCIO6 6 - - AC11 NC - PL91B 6 LDQ\$0 C AD6 NC - PL92A 6 LDQ\$0 C AD7 NC - PL92B 6 LDQ\$0 T AE1 NC - PL93B 6 LDQ\$0 T AE2 NC - PL93B 6 LDQ\$0 C AE2 NC - PL93B 6 LDQ\$0 C	-	-	-			GNDIO6	-		
AD1 NC - PL90B 6 LDQ90 C (LVDS)* AD9 NC - PL91A 6 LDQ90 T · - - VCCIO6 6 C C AC11 NC - PL91B 6 LDQ90 C AD6 NC - PL92A 6 LDQ90 C AD7 NC - PL92B 6 LDQ90 C (LVDS)* AE1 NC - PL93B 6 LDQ90 T AE2 NC - PL93B 6 LDQ90 C AE2 NC - PL93B 6 LDQ90 C	AD2	NC	-			PL90A	6	LDQS90	T (LVDS)*
AD9 NC - PL91A 6 LDQ90 T - - - VCCIO6 6 -	AD1	NC	-			PL90B	6	LDQ90	C (LVDS)*
- - - VCCIO6 6 AC11 NC - PL91B 6 LDQ90 C AD6 NC - PL92A 6 LDQ90 T (LVDS)* AD7 NC - PL92B 6 LDQ90 C (LVDS)* AE1 NC - PL93A 6 LDQ90 T - - GNDIO6 - - - - AE2 NC - PL93B 6 LDQ90 C AE2 NC - PL93B 6 LDQ90 C	AD9	NC	-			PL91A	6	LDQ90	Т
AC11 NC - PL91B 6 LDQ90 C AD6 NC - PL92A 6 LDQ90 T (LVDS)* AD7 NC - PL92B 6 LDQ90 C (LVDS)* AE1 NC - PL93A 6 LDQ90 T - - QNDIO6 - - - - AE2 NC - PL93B 6 LDQ90 C AE2 NC - PL93B 6 LDQ90 C	-	-	-			VCCIO6	6		
AD6 NC - PL92A 6 LDQ90 T (LVDS)* AD7 NC - PL92B 6 LDQ90 C (LVDS)* AE1 NC - PL93A 6 LDQ90 T - - - GNDIO6 - - AE2 NC - PL93B 6 LDQ90 C AE2 NC - PL93B 6 LDQ90 C	AC11	NC				PL91B	6	LDQ90	С
AD7 NC - PL92B 6 LDQ90 C (LVDS)* AE1 NC - PL93A 6 LDQ90 T - - - GNDIO6 - - - - - - PL93B 6 LDQ90 T AE2 NC - PL93B 6 LDQ90 C AE2 NC - PL93B 6 LDQ90 C	AD6	NC				PL92A	6	LDQ90	T (LVDS)*
AE1 NC - PL93A 6 LDQ90 T - - - GNDIO6 -	AD7	NC				PL92B	6	LDQ90	C (LVDS)*
· · · GNDIO6 · AE2 NC · PL93B 6 LDQ90 C AE2 PL79A 6 LDQ92 T (LVDS)* PL95A 6 LDQ90 C	AE1	NC				PL93A	6	LDQ90	Т
AE2 NC - PL93B 6 LDQ90 C AE2 PL79A 6 LDQ92 T (LVDS)* PL95A 6 LDQ90 C	- 1	-				GNDIO6			
	AE2	NC				PL93B	6	LDQ90	С
AFZ FL/0A 0 LDQ0Z I(LVDS) PL95A 0 LDQ99 I(LVDS)"	AF2	PL78A	6	LDQ82	T (LVDS)*	PL95A	6	LDQ99	T (LVDS)*



Part Number	l/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