



February 5, 2010

Subject: PCN# 02A-10, Notification of Intent to Convert the 1020-ball Organic Flip Chip BGA to the 1020-ball Organic Flip Chip BGA Revision 2 and the Discontinuance of the Organic Flip Chip BGA for the LatticeSC/SCM Families of FPGAs

Dear Lattice Customers:

In accordance with our Product Change Notification (PCN) policy, Lattice is providing this notification of our intent to convert the 1020-ball Organic Flip Chip Ball Grid Array (fcBGA) package for the LatticeSC™ and LatticeSCM™ families assembled at Fujitsu Japan to the 1020-ball Organic Flip Chip Ball Grid Array Revision 2 assembled at Advanced Semiconductor Engineering (ASE) Kaohsiung, Taiwan. Additionally, we plan to discontinue the Organic fcBGA package for the LatticeSC and LatticeSCM families.

AFFECTED DEVICES

The Ordering Part Numbers (OPNs) affected by this PCN are listed in the Exhibit A.

PACKAGE COMPARISON

The package characteristics comparison between the 1020-ball Organic fcBGA and 1020-ball Organic fcBGA Revision 2 are provided in Exhibit B. Package Outline Drawings of these packages are shown in Exhibit C and material set details are described in Exhibit D.

DATA SHEET SPECIFICATIONS

The new 1020-ball Organic fcBGA Revision 2 devices meet all data sheet performance specifications. New version of the product data sheet will include the new / replacement OPNs; LatticeSC/M Family Data Sheet (DS1004 Version 02.3, January 2010).

QUALIFICATION DATA

The new 1020-ball Organic fcBGA Revision 2 devices have passed all Lattice package qualification requirements. A summary of the qualification data is available [here](#).

CONVERSION / DISCONTINUANCE TIMING

Conversion timing for this PCN is 90 days from the date of this Notice. Should samples be required to complete evaluation of this new package, such sample requests must be received **no later than March 5, 2010** (30 days after the date of this Notice).

Customers will have 4.5 months to place last time buy (LTB) orders for the 1020-ball Organic fcBGA devices (if needed). All LTB orders for the 1020-ball Organic fcBGA devices will be non-cancelable and non-returnable. All LTB orders must be placed no later than June 18, 2010 (4.5 months after the date of this Notice) with all deliveries taken no later than December 18, 2010 (10 months after the date of this Notice). Orders for the 1020-ball Organic fcBGA devices received after June 18, 2010 will only be accepted based upon available inventory.

CONVERSION TIMING – Summary

- **Sample Request Cut-off Date: March 5, 2010**
- **Requested Conversion Date: May 5, 2010**
- **1020-ball Organic fcBGA Last Time Buy Order Date: June 18, 2010**
- **1020-ball Organic fcBGA Last Time Shipment Date: December 18, 2010**

RESPONSE

In accordance with JESD46-C, this change is deemed accepted by the customer if no acknowledgement is received within 30 days from this Notice.

Note: Be sure to sign up for PCN “Web Alerts” (See [PCN#13A-09](#) for details) and receive all future Lattice PCNs via e-mail!

CONTACT

If you have any questions or require additional information, please contact pcn@latticesemi.com.

Sincerely,

Lattice Semiconductor PCN Administration

EXHIBIT “A” – Affected Device List

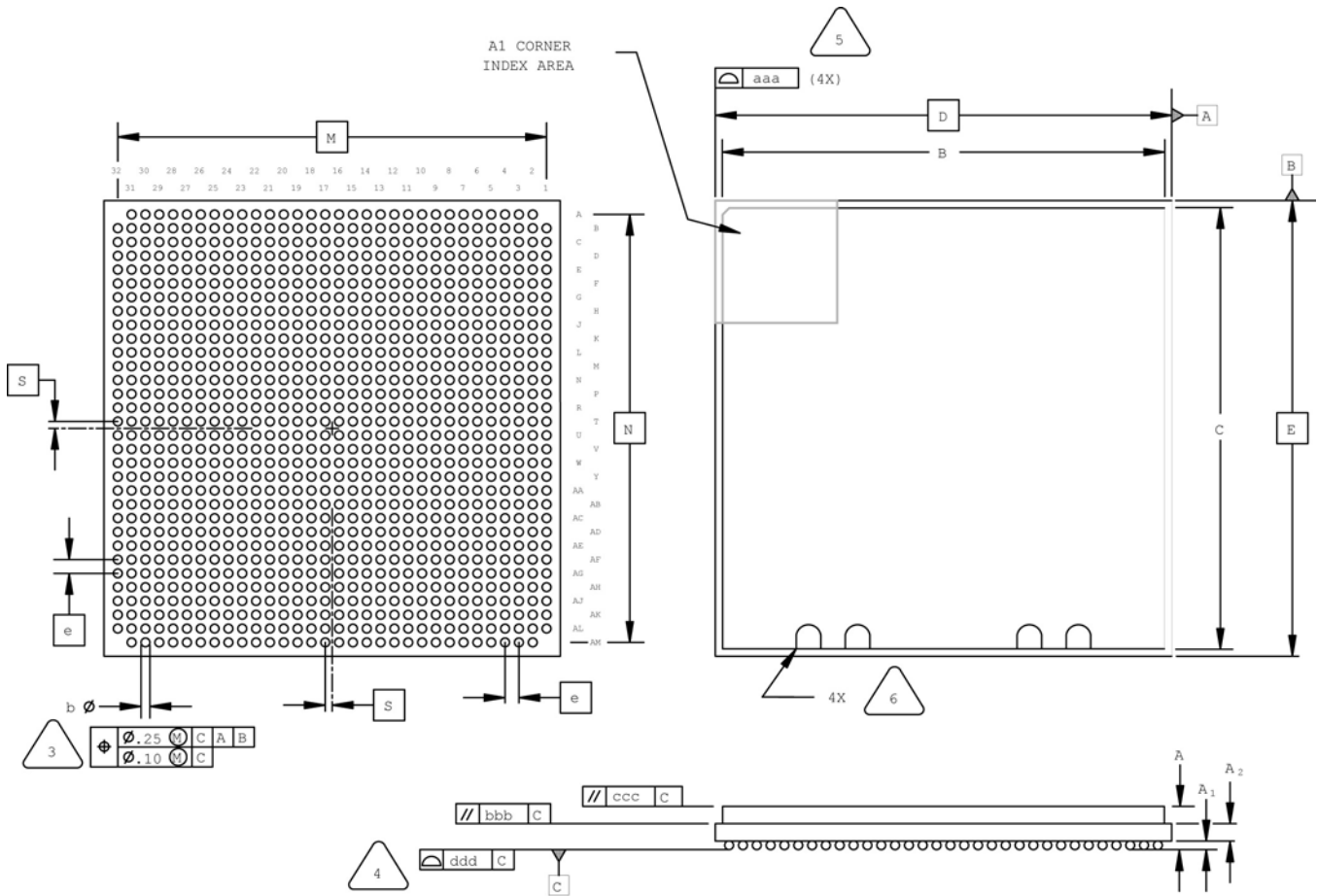
Device	Discontinued Part Number	Discontinued Package	New / Replacement Part Number	New / Replacement Package
SC25	LFSC3GA25E-7FF1020C	Organic 1020-fcBGA	LFSC3GA25E-7FFA1020C	Organic 1020-fcBGA Revision 2
	LFSC3GA25E-6FF1020C		LFSC3GA25E-6FFA1020C	
	LFSC3GA25E-5FF1020C		LFSC3GA25E-5FFA1020C	
	LFSC3GA25E-6FF1020I		LFSC3GA25E-6FFA1020I	
	LFSC3GA25E-5FF1020I		LFSC3GA25E-5FFA1020I	
	LFSC3GA25E-7FFN1020C	Pb-Free Organic 1020-fcBGA	LFSC3GA25E-7FFAN1020C	Pb-Free Organic 1020-fcBGA Revision 2
	LFSC3GA25E-6FFN1020C		LFSC3GA25E-6FFAN1020C	
	LFSC3GA25E-5FFN1020C		LFSC3GA25E-5FFAN1020C	
	LFSC3GA25E-6FFN1020I		LFSC3GA25E-6FFAN1020I	
	LFSC3GA25E-5FFN1020I		LFSC3GA25E-5FFAN1020I	
SCM25	LFSCM3GA25EP1-7FF1020C	Organic 1020-fcBGA	LFSCM3GA25EP1-7FFA1020C	Organic 1020-fcBGA Revision 2
	LFSCM3GA25EP1-6FF1020C		LFSCM3GA25EP1-6FFA1020C	
	LFSCM3GA25EP1-5FF1020C		LFSCM3GA25EP1-5FFA1020C	
	LFSCM3GA25EP1-6FF1020I		LFSCM3GA25EP1-6FFA1020I	
	LFSCM3GA25EP1-5FF1020I	LFSCM3GA25EP1-5FFA1020I	Pb-Free Organic 1020-fcBGA Revision 2	
	LFSCM3GA25EP1-7FFN1020C	LFSCM3GA25EP1-7FFAN1020C		
	LFSCM3GA25EP1-6FFN1020C	LFSCM3GA25EP1-6FFAN1020C		
	LFSCM3GA25EP1-5FFN1020C	LFSCM3GA25EP1-5FFAN1020C		
LFSCM3GA25EP1-6FFN1020I	LFSCM3GA25EP1-6FFAN1020I			
LFSCM3GA25EP1-5FFN1020I	LFSCM3GA25EP1-5FFAN1020I			
SC40	LFSC3GA40E-7FF1020C	Organic 1020-fcBGA	LFSC3GA40E-7FFA1020C	Organic 1020-fcBGA Revision 2
	LFSC3GA40E-6FF1020C		LFSC3GA40E-6FFA1020C	
	LFSC3GA40E-5FF1020C		LFSC3GA40E-5FFA1020C	
	LFSC3GA40E-6FF1020I		LFSC3GA40E-6FFA1020I	
	LFSC3GA40E-5FF1020I		LFSC3GA40E-5FFA1020I	
	LFSC3GA40E-7FFN1020C	Pb-Free Organic 1020-fcBGA	LFSC3GA40E-7FFAN1020C	Pb-Free Organic 1020-fcBGA Revision 2
	LFSC3GA40E-6FFN1020C		LFSC3GA40E-6FFAN1020C	
	LFSC3GA40E-5FFN1020C		LFSC3GA40E-5FFAN1020C	
	LFSC3GA40E-6FFN1020I		LFSC3GA40E-6FFAN1020I	
	LFSC3GA40E-5FFN1020I		LFSC3GA40E-5FFAN1020I	
SCM40	LFSCM3GA40EP1-7FF1020C	Organic 1020-fcBGA	LFSCM3GA40EP1-7FFA1020C	Organic 1020-fcBGA Revision 2
	LFSCM3GA40EP1-6FF1020C		LFSCM3GA40EP1-6FFA1020C	
	LFSCM3GA40EP1-5FF1020C		LFSCM3GA40EP1-5FFA1020C	
	LFSCM3GA40EP1-6FF1020I		LFSCM3GA40EP1-6FFA1020I	
	LFSCM3GA40EP1-5FF1020I		LFSCM3GA40EP1-5FFA1020I	
	LFSCM3GA40EP1-7FFN1020C	Pb-Free Organic 1020-fcBGA	LFSCM3GA40EP1-7FFAN1020C	Pb-Free Organic 1020-fcBGA Revision 2
	LFSCM3GA40EP1-6FFN1020C		LFSCM3GA40EP1-6FFAN1020C	
	LFSCM3GA40EP1-5FFN1020C		LFSCM3GA40EP1-5FFAN1020C	
	LFSCM3GA40EP1-6FFN1020I		LFSCM3GA40EP1-6FFAN1020I	
LFSCM3GA40EP1-5FFN1020I	LFSCM3GA40EP1-5FFAN1020I			

Note: This PCN also affects any custom devices (i.e. factory programmed, special test, etc.), which are derived from any of the devices listed above.

EXHIBIT “B” – Package Characteristics Comparison

Package Characteristics		1020-ball Organic fcBGA	1020-ball Organic fcBGA Revision 2
θ_{JA} 0 LFM	(°C/W)	Same (9.5)	
θ_{JA} 200 LFM	(°C/W)	Same (7.3)	
θ_{JC}	(°C/W)	Same (0.6)	
Body Size	(mm)	Same (33 x 33)	
Height	(mm)	Same (3.12) (nom)	
Weight	(gram)	12.3	9.4
Foot Print	See Exhibit C	Same	
Ball Assignment	See Exhibit C	Same	
Die Bump		Pb	Pb - Free

EXHIBIT "C" – 1020-Ball Organic fcBGA Outline Drawing



NOTES: UNLESS OTHERWISE SPECIFIED

1. DIMENSIONS AND TOLERANCES PER ANSI Y14.5M.
2. ALL DIMENSIONS ARE IN MILLIMETERS.



DIMENSION "b" IS MEASURED AT THE MAXIMUM SOLDER BALL DIAMETER, PARALLEL TO PRIMARY DATUM $\square C$



PRIMARY DATUM $\square C$ AND SEATING PLANE ARE DEFINED BY THE SPHERICAL CROWNS OF THE SOLDER BALLS.



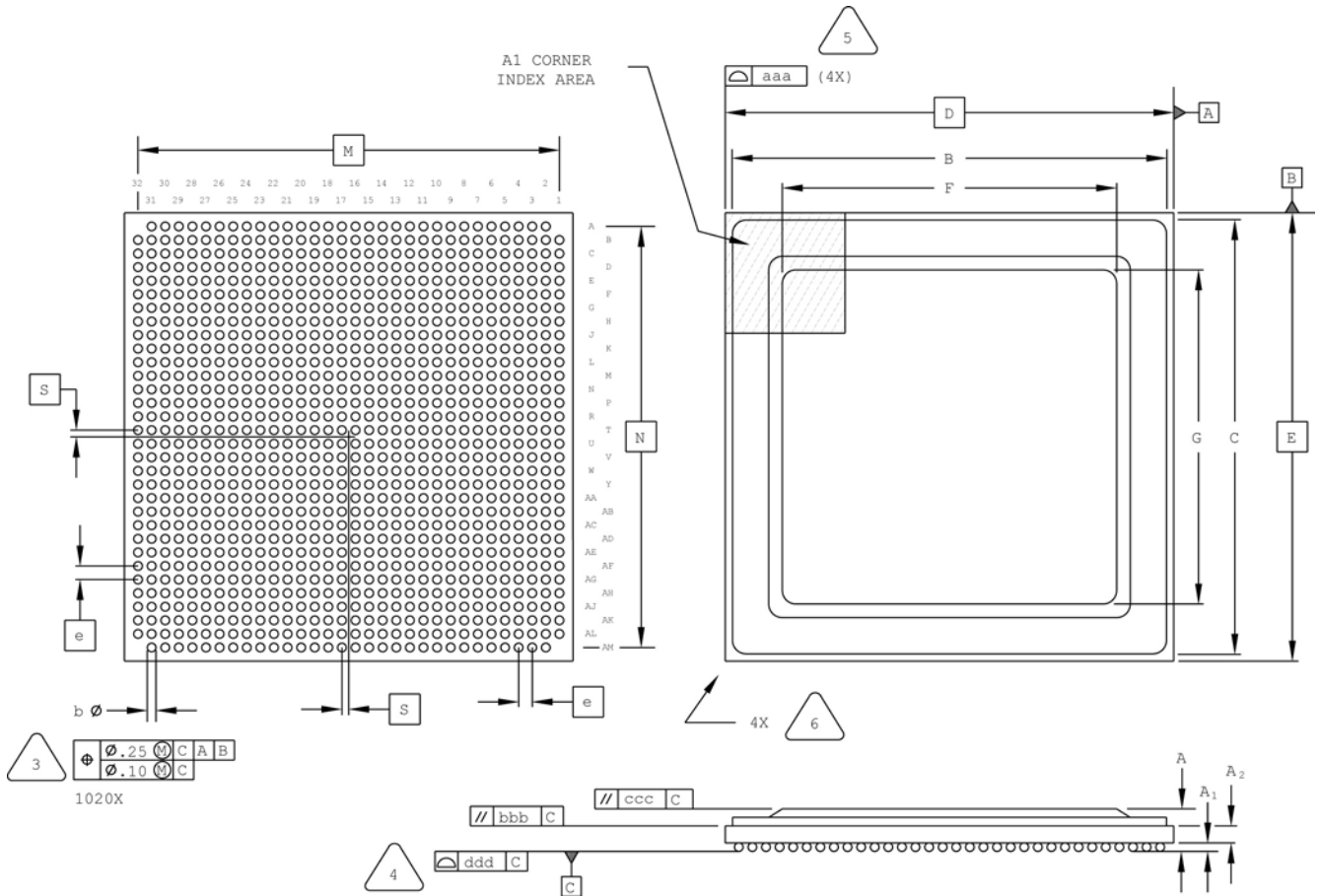
BILATERAL TOLERANCE ZONE IS APPLIED TO EACH SIDE OF THE PACKAGE BODY.



EXACT SHAPE AND SIZE OF THIS FEATURE IS OPTIONAL.

SYMBOL	MIN.	NOM.	MAX.
A	2.52	3.12	3.82
A1	0.30	0.50	0.70
A2	1.24 REF		
B/C	31.10	32.00	32.90
D/E	33.00 BSC		
M/N	31.00 BSC		
S	0.50 BSC		
b	0.50	0.60	0.70
e	1.00 BSC		
aaa	-	-	0.20
bbb	-	-	0.25
ccc	-	-	0.35
ddd	-	-	0.20

EXHIBIT "C" – 1020-Ball Organic fcBGA Revision 2 Outline Drawing



NOTES: UNLESS OTHERWISE SPECIFIED

1. DIMENSIONS AND TOLERANCES PER ANSI Y14.5M.
2. ALL DIMENSIONS ARE IN MILLIMETERS.

- 3. DIMENSION "b" IS MEASURED AT THE MAXIMUM SOLDER BALL DIAMETER, PARALLEL TO PRIMARY DATUM [C]
- 4. PRIMARY DATUM [C] AND SEATING PLANE ARE DEFINED BY THE SPHERICAL CROWNS OF THE SOLDER BALLS.
- 5. BILATERAL TOLERANCE ZONE IS APPLIED TO EACH SIDE OF THE PACKAGE BODY.
- 6. EXACT SHAPE AND SIZE OF THIS FEATURE IS OPTIONAL.

SYMBOL	MIN.	NOM.	MAX.
A	2.55	2.90	3.25
A1	0.40	0.50	0.60
A2	1.20 REF		
B/C	32.40	32.60	32.80
D/E	33.00 BSC		
F/G	24.50	24.60	24.70
M/N	31.00 BSC		
S	0.50 BSC		
b	0.50	0.60	0.70
e	1.00 BSC		
aaa	-	-	0.20
bbb	-	-	0.25
ccc	-	-	0.35
ddd	-	-	0.20

EXHIBIT “D” – ASE Kaohsiung, Taiwan Qualified Material Set

Package Type		1020-ball Organic fcBGA				1020-ball Organic fcBGA Revision 2			
		Assembly Site	Material Set			Assembly Site	Material Set		
			Underfill	Bump	Solder Ball		Underfill	Bump	Solder Ball
1020-fcBGA	Standard	Fujitsu	UF-01	Pb95Sn5	Sn63Pb37	ASE Kaohsiung	UA	Sn97.4Ag2.6	Sn63Pb37
	Pb-Free				Sn96.5Ag3.0Cu0.5				Sn96.5Ag3.0Cu0.5