



September 7, 2010

Subject: PCN# 14A-10 Notification of Co-planarity and Height Specification Changes for the 1152-Ball and 1704-Ball Organic Flip Chip BGA for the LatticeSC/SCM Families of FPGAs

Dear Lattice Customers:

Lattice is providing this notification of the change in the co-planarity specification for 1152-ball and 1704-ball Organic Flip Chip Ball Grid Array (fcBGA) packages for the LatticeSC™80, LatticeSCM™80, LatticeSC115 and LatticeSCM115 devices assembled at Advanced Semiconductor Engineering (ASE) Kaohsiung, Taiwan. Further, a construction change has increased the 1152-ball package height.

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 original and new Organic fcBGA packages is provided in Exhibit B. Package Outline Drawings of these packages are shown in Exhibit C.

DATA SHEET SPECIFICATIONS

The new 1152-ball and 1704-ball Organic fcBGA devices meet the all data sheet performance specifications. There will be no OPN changes. The new version of the package diagram datasheet includes the new co-planarity specification (Version 02.4, September 2010).

QUALIFICATION DATA

No new qualification was required. The original 1152-ball and 1704-ball Organic fcBGA have passed all Lattice package qualification requirements. A summary of that qualification data is available [here](#).

SAMPLE AVAILABILITY

Should samples be required to complete evaluation of those new packages, such sample requests must be received **no later than October 7, 2010** (30 days after the date of this Notice).

No last time buy (LTB) orders for the 1152-ball and 1704-ball Organic fcBGA devices meeting the previously specified 0.20mm co-planarity specification is available.

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” – Organic Flip Chip BGA Co-planarity Specification Change

Device	Part Numbers Affected
SC80	LFSC3GA80E-7FF1152C
	LFSC3GA80E-6FF1152C
	LFSC3GA80E-5FF1152C
	LFSC3GA80E-6FF1152I
	LFSC3GA80E-5FF1152I
	LFSC3GA80E-7FFN1152C
	LFSC3GA80E-6FFN1152C
	LFSC3GA80E-5FFN1152C
	LFSC3GA80E-6FFN1152I
	LFSC3GA80E-5FFN1152I
	LFSC3GA80E-7FF1704C
	LFSC3GA80E-6FF1704C
	LFSC3GA80E-5FF1704C
	LFSC3GA80E-6FF1704I
	LFSC3GA80E-5FF1704I
	LFSC3GA80E-7FFN1704C
	LFSC3GA80E-6FFN1704C
	LFSC3GA80E-5FFN1704C
	LFSC3GA80E-6FFN1704I
	LFSC3GA80E-5FFN1704I
SCM80	LFSCM3GA80EP1-7FF1152C
	LFSCM3GA80EP1-6FF1152C
	LFSCM3GA80EP1-5FF1152C
	LFSCM3GA80EP1-6FF1152I
	LFSCM3GA80EP1-5FF1152I
	LFSCM3GA80EP1-7FFN1152C
	LFSCM3GA80EP1-6FFN1152C
	LFSCM3GA80EP1-5FFN1152C
	LFSCM3GA80EP1-6FFN1152I
	LFSCM3GA80EP1-5FFN1152I
	LFSCM3GA80EP1-7FF1704C
	LFSCM3GA80EP1-6FF1704C
	LFSCM3GA80EP1-5FF1704C
	LFSCM3GA80EP1-6FF1704I
	LFSCM3GA80EP1-5FF1704I
	LFSCM3GA80EP1-7FFN1704C
	LFSCM3GA80EP1-6FFN1704C
	LFSCM3GA80EP1-5FFN1704C
LFSCM3GA80EP1-6FFN1704I	
LFSCM3GA80EP1-5FFN1704I	

Device	Part Numbers Affected
SC115	LFSC3GA115E-6FF1152C
	LFSC3GA115E-5FF1152C
	LFSC3GA115E-6FF1152I
	LFSC3GA115E-5FF1152I
	LFSC3GA115E-6FFN1152C
	LFSC3GA115E-5FFN1152C
	LFSC3GA115E-6FFN1152I
	LFSC3GA115E-5FFN1152I
	LFSC3GA115E-6FF1704C
	LFSC3GA115E-5FF1704C
	LFSC3GA115E-6FF1704I
	LFSC3GA115E-5FF1704I
	LFSC3GA115E-6FFN1704C
	LFSC3GA115E-5FFN1704C
	LFSC3GA115E-6FFN1704I
LFSC3GA115E-5FFN1704I	
SCM115	LFSCM3GA115EP1-6FF1152C
	LFSCM3GA115EP1-5FF1152C
	LFSCM3GA115EP1-6FF1152I
	LFSCM3GA115EP1-5FF1152I
	LFSCM3GA115EP1-6FFN1152C
	LFSCM3GA115EP1-5FFN1152C
	LFSCM3GA115EP1-6FFN1152I
	LFSCM3GA115EP1-5FFN1152I
	LFSCM3GA115EP1-6FF1704C
	LFSCM3GA115EP1-5FF1704C
	LFSCM3GA115EP1-6FF1704I
	LFSCM3GA115EP1-5FF1704I
	LFSCM3GA115EP1-6FFN1704C
	LFSCM3GA115EP1-5FFN1704C
	LFSCM3GA115EP1-6FFN1704I
LFSCM3GA115EP1-5FFN1704I	

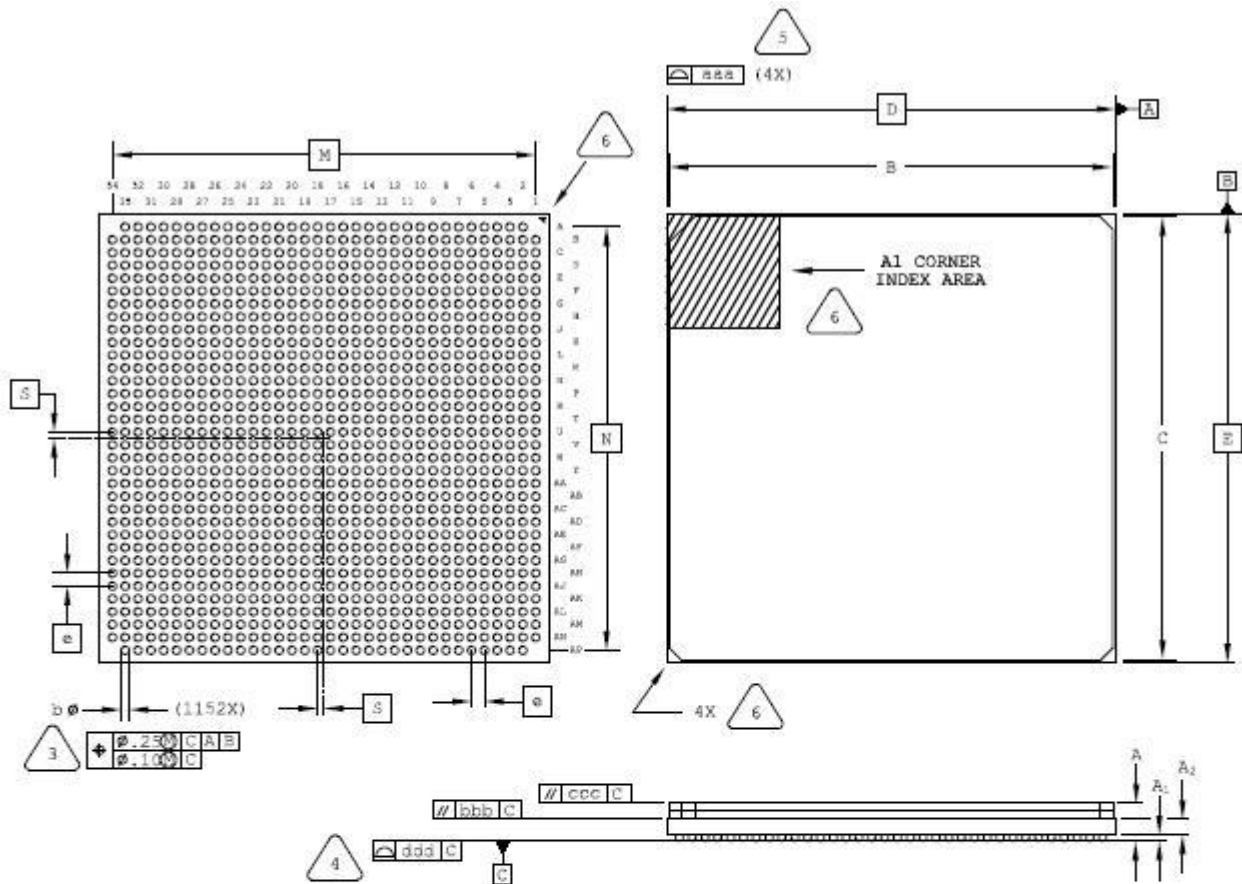
Note: This PCN also affects any custom devices (i.e. factory programmed, special test, etc.), which are derived from any of the devices listed above.

EXHIBIT “B” – Package Characteristics Comparison

Package Characteristics		1152-Ball Organic fcBGA		1704-Ball Organic fcBGA	
		Old	New	Old	New
θ_{JA} 0 LFM	(°C/W)	Same (9.5)		Same (7.7)	
θ_{JA} 200 LFM	(°C/W)	Same (7.3)		Same (5.5)	
θ_{JC}	(°C/W)	Same (0.6)		Same (0.5)	
Body Size	(mm)	Same (35x35)		Same (42.5x42.5)	
Height	(mm)	2.9 ± 0.35 *	3.15 ± 0.35	2.9 ± 0.35 *	2.9 ± 0.35
Weight	(gram)	10.8	13.3	Same (19.2)	
Foot Print	See Exhibit C	Same		Same	
Ball Assignment	See Exhibit C	Same		Same	
Co-planarity	See Exhibit C	0.20mm	0.23mm	0.20mm	0.23mm
Die Bump		Same (Pb-Free)		Same (Pb-Free)	

* Note: PCN 01A-10 erroneously showed package Height as 2.9 ± 0.50. The correct information is shown in this table.

EXHIBIT "C" – Package Outline Drawing (1152-ball Organic fcBGA)



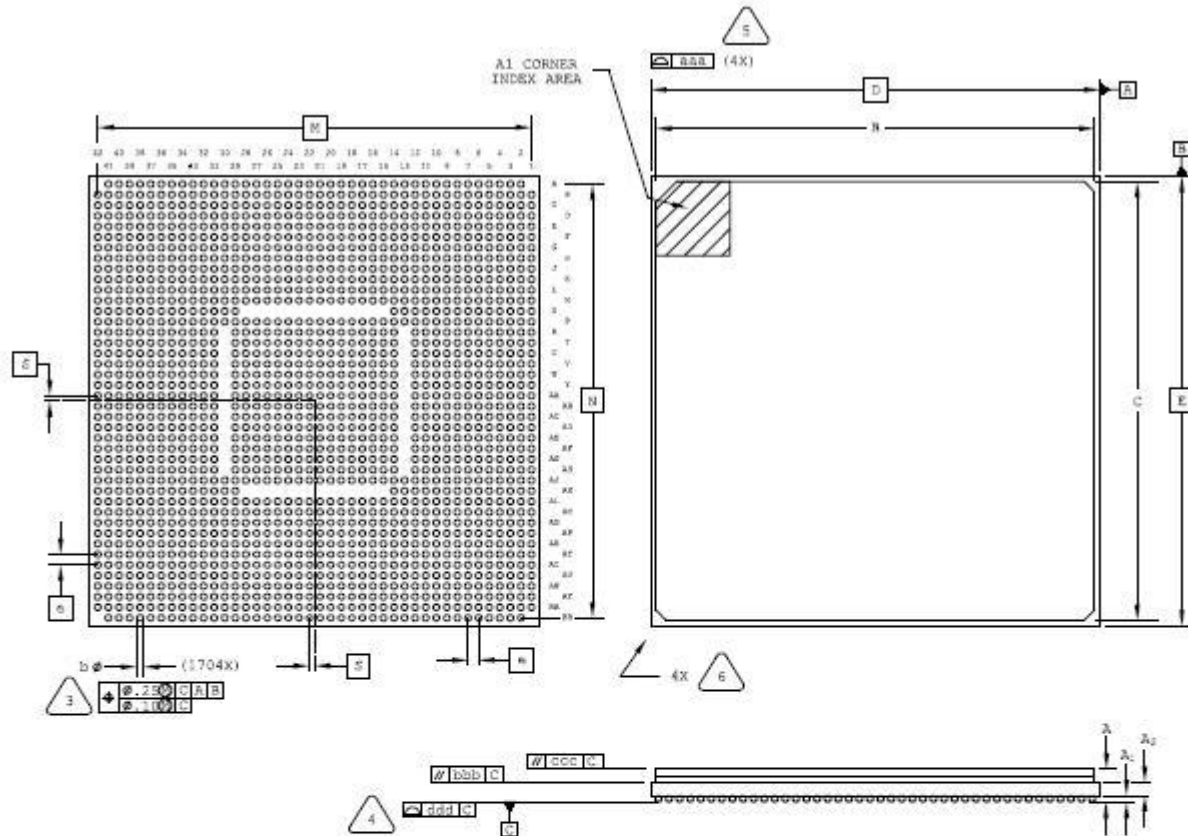
NOTES: UNLESS OTHERWISE SPECIFIED

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	2.80	3.15	3.50
A1	0.35	0.50	0.65
A2	1.20 REF		
B/C	34.30	34.60	34.90
D/E	35.00 BSC		
M/N	33.00 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	-	-	0.23

EXHIBIT "C" – Package Outline Drawing (1704-ball Organic fcBGA)



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	0.35	0.50	0.65
A2	1.20 REF		
B/C	41.70	42.00	42.30
D/E	42.50 BSC		
M/N	42.50 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	-	-	0.23