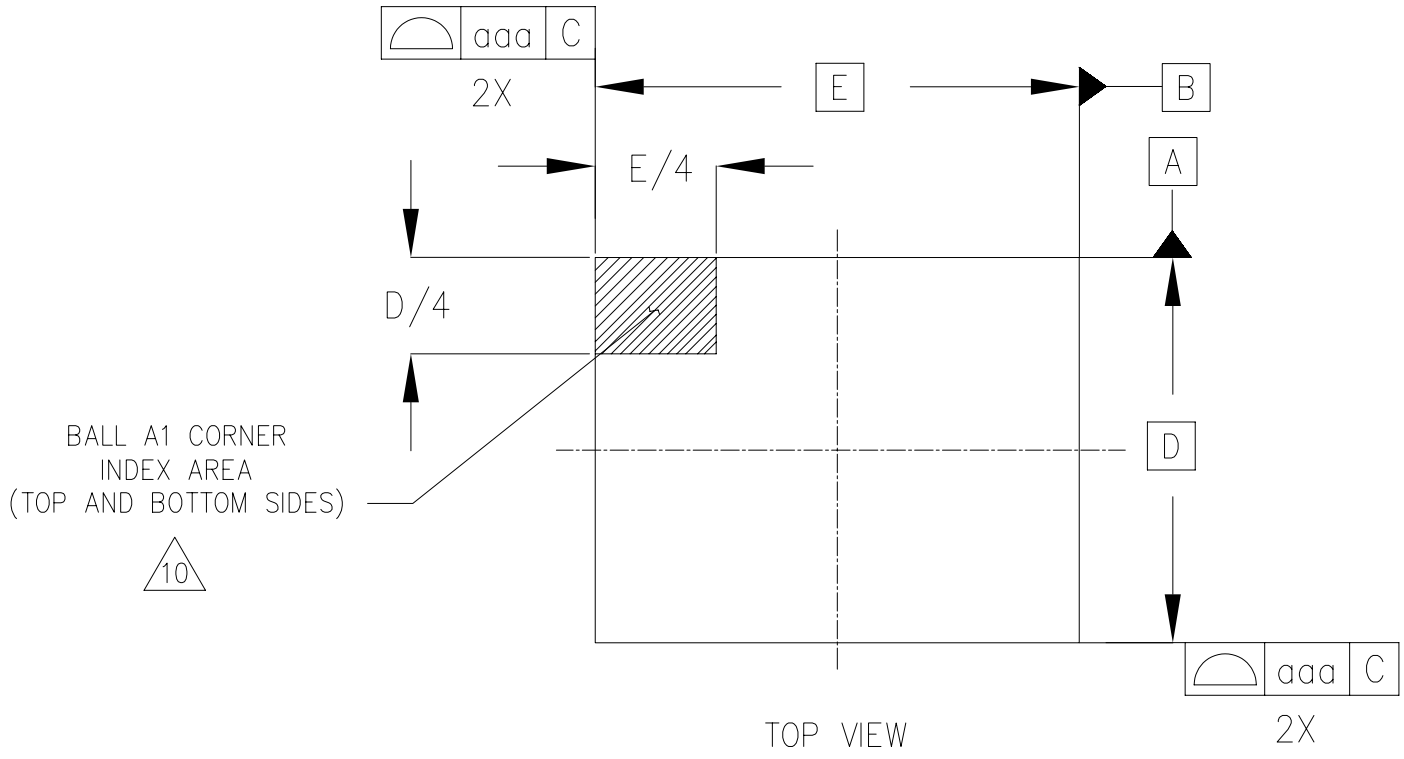
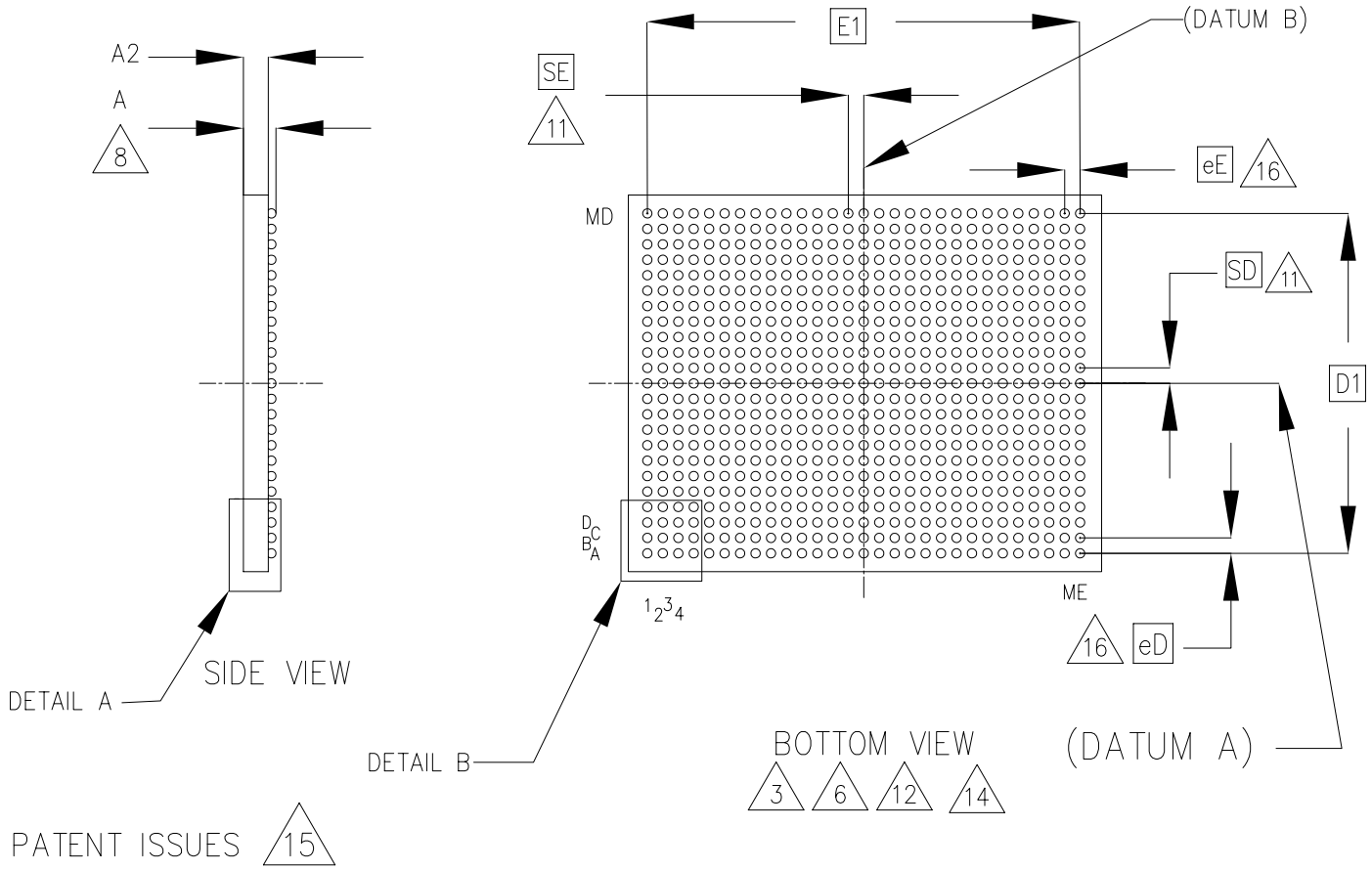
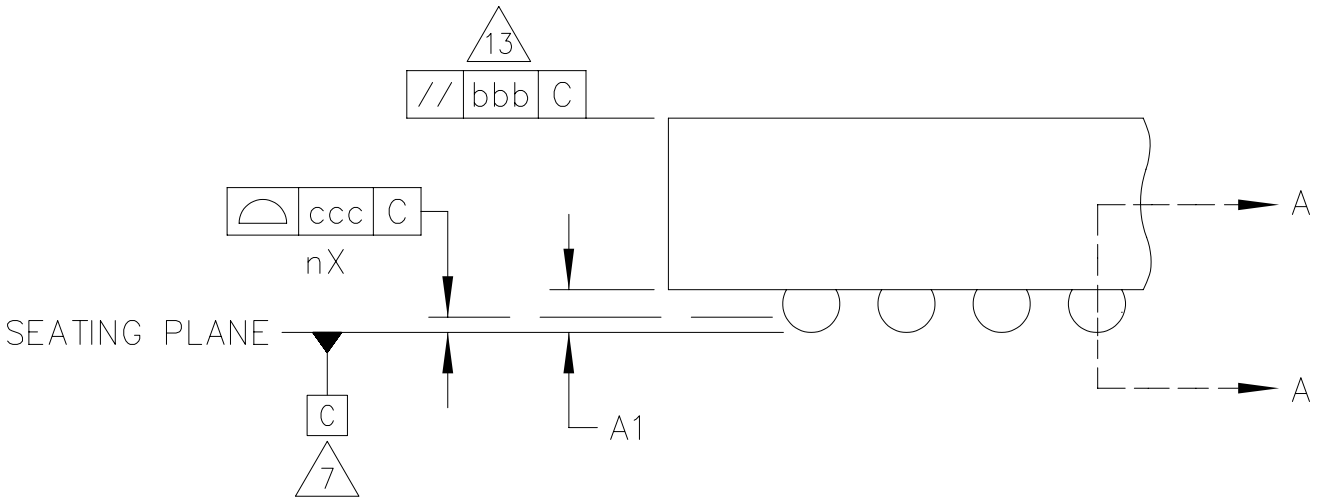




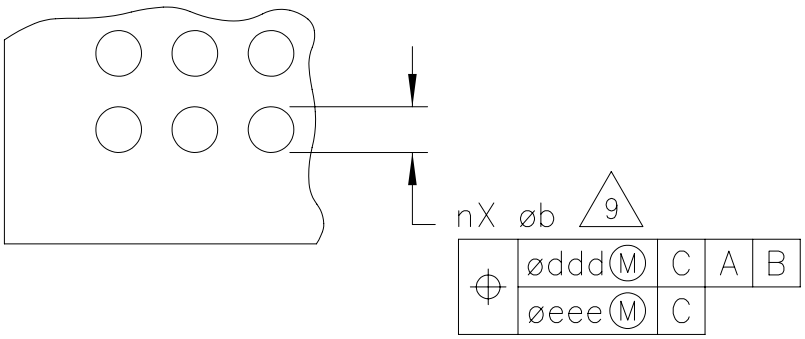
PATENT ISSUES 15

JEDEC SOLID STATE PRODUCT OUTLINE	THIS REGISTERED OUTLINE HAS BEEN PREPARED AND PUBLISHED BY THE JEDEC JC-11 COMMITTEE AND REFLECTS A PRODUCT WITH ANTICIPATED USE IN THE ELECTRONICS INDUSTRY. CHANGES ARE LIKELY TO OCCUR.

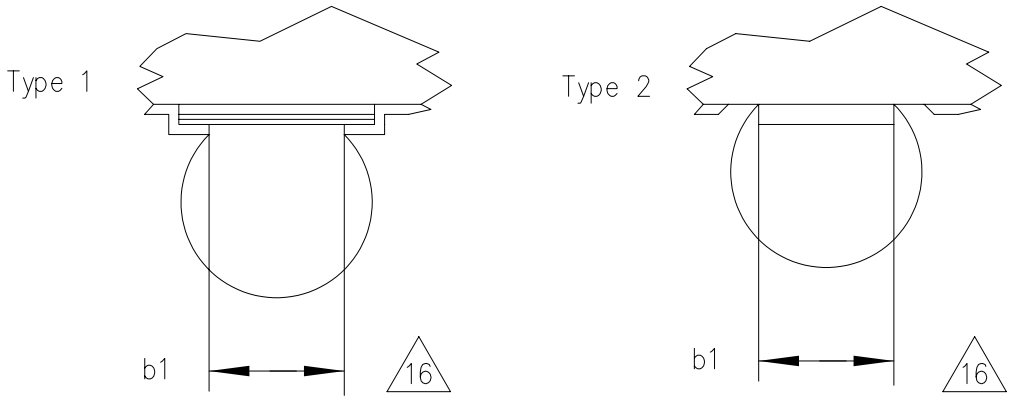
TITLE:	PACKAGE DESIGNATOR:	ISSUE:	DATE:		PAGE:
THICK & VERY THICK, FINE-PITCH, RECTANGULAR BALL GRID ARRAY FAMILY 0.80 mm PITCH	B1FR-XBGA BFR-XBGA	A	06/05	MO-261	1 OF 6



DETAIL A
(ROTATED 90° CW)



10 DETAIL B

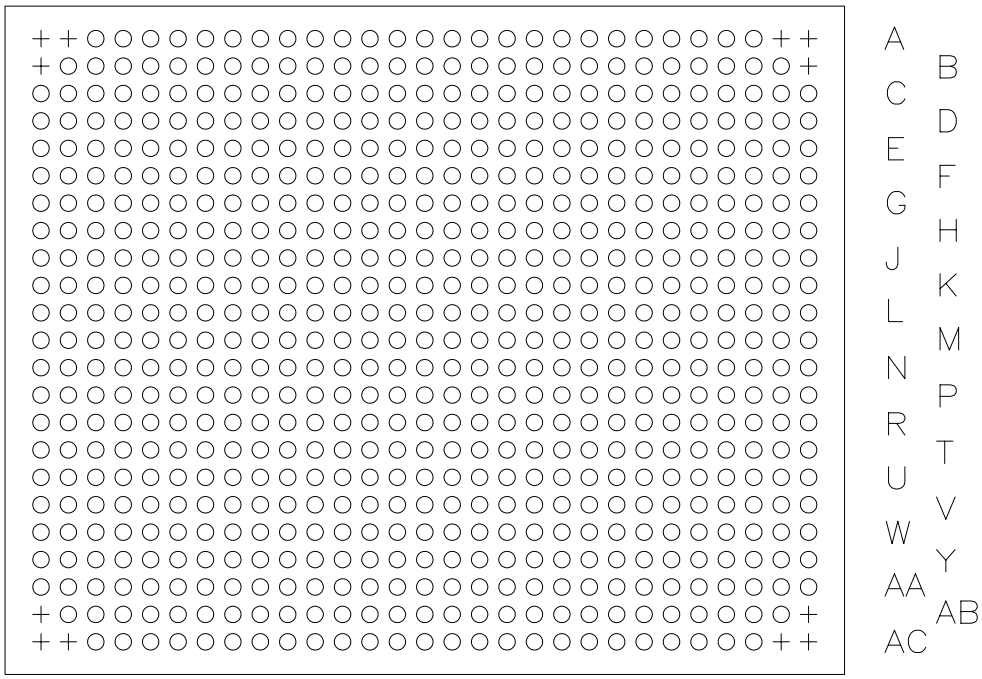


SECTION A–A

JEDEC SOLID STATE PRODUCT OUTLINE	TITLE: THICK & VERY THICK, FINE–PITCH, RECTANGULAR BALL GRID ARRAY FAMILY 0.80 mm PITCH	ISSUE: A	DATE: 06/05	MO–261	PAGE: 2 OF 6

FIGURE 1: SOLDER BALL PATTERNS (3) (6) (12)
(BOTTOM VIEWS)

28 26 24 22 20 18 16 14 12 10 8 6 4 2
29 27 25 23 21 19 17 15 13 11 9 7 5 3 1



FOOT PRINT A

NOTE: FOOTPRINT A IS NOT COMPLIANT WITH THE BALL NUMBERING SCHEME DEFINED IN THE JEDEC STANDARD JEP95,SECTION 4.3,SPP-020 RECTANGULAR GRID ARRAY TERMINAL POSITION NUMBERING.

+ = DEPOPULATED BALL POSITION

JEDEC SOLID STATE PRODUCT OUTLINE	TITLE: THICK & VERY THICK, FINE-PITCH, RECTANGULAR BALL GRID ARRAY FAMILY 0.80 mm PITCH	ISSUE: A	DATE: 06/05	MO-261	PAGE: 3 OF 6

SYMBOL		COMMON DIMENSIONS		
		MIN	NOM	MAX
A1		0.25	---	---
b		0.45	0.50	0.55
b1	Type1	0.35	---	---
	Type2	0.35	---	---
eD/eEBSC		0.80		
NOTES		1,2		
REF		11.11-718		
ISSUE		A		

SYMBOL	TOLERANCES OF FORM & POSITION
aaa	0.15
bbb	0.20
ccc	0.20
ddd	0.15
eee	0.08
NOTES	1, 2
REF	11.11-718
ISSUE	A

VARIATION TABLE

VARIATION ▶ / SYMBOLS ▼		AA	BA	XX	NOTES
A	MIN	2.15	---		1,2
	NOM	---	---		
	MAX	2.45	3.25		
A2	MIN	---	---		1,2
	NOM	---	---		
	MAX	2.20	3.00		
D BSC		19.50	19.50		1,2
E BSC		24.50	24.50		1,2
D1 BSC		17.60	17.60		1,2
E1 BSC		22.40	22.40		1,2
MD		23	23		4
ME		29	29		4
SD BSC		0	0		11
SE BSC		0	0		11
n		655	655		5,14
FOOTPRINT		A	A		14
NOTES		17,18	---		
REF		11.11-718	11.11-718	11.11-XXX	
ISSUE		A	A	---	

NOTES:

1 DIMENSIONING AND TOLERANCING PER ASME Y14.5M–1994.

2 DIMENSIONS ARE IN MILLIMETERS.

3 BALL DESIGNATION PER JESD 95–1, SPP–020.

4 MD AND ME REPRESENT THE MATRIX SIZE CORRESPONDING TO THE D AND E DIRECTIONS RESPECTIVELY.

5 n REPRESENTS THE NUMBER OF BALLS POPULATED FOR EACH VARIATION.

6 BALL DESIGNATION PER JESD 95–1,SPP–020. VARIATION AA AND BA DEFINE FOOT PRINT A WHICH IS NOT COMPLIANT WITH THIS STANDARD BALL NUMBERING SCHEME

7 DATUM C AND THE SEATING PLANE ARE DEFINED BY THE CROWNS OF THE BALLS.

8 DIMENSION A INCLUDES STANDOFF HEIGHT (A1) AND BODY THICKNESS (A2).

9 DIMENSION b IS MEASURED AT THE MAXIMUM BALL DIAMETER IN A PLANE PARALLEL TO DATUM C.

10 THE BALL a1 CORNER MUST BE IDENTIFIED ON THE TOP AND BOTTOM SURFACES OF THE PACKAGE BY USING INK OR METALIZED MARKINGS, INDENTATIONS, OR OTHER FEATURES. THE EXACT SHAPE OF EACH CORNER IS OPTIONAL.

11 DIMENSIONS SD AND SE ARE MEASURED WITH RESPECT TO DATUMS A AND B AND DEFINE THE POSITION OF THE CENTERMOST BALLS IN THE OUTER ROWS FOR A FULLY POPULATED MD X ME MATRIX. WHEN THERE IS AN ODD NUMBER OF BALLS IN THE OUTER ROW, SD OR SE = 0; WHEN THERE IS AN EVEN NUMBER OF BALLS IN THE OUTER ROW, THE VALUE OF SD OR SE = e/2.

12 THE SOLDER BALL ARRAY MAY BE DEPOPULATED IN ANY PATTERN. DEPOPULATION IS THE OMISSION OF BALLS FROM A FULL MD X ME MATRIX.

13 FOR GLOB TOP AND FLIP CHIP CONFIGURATIONS, PARALLELISM (bbb) APPLIES ONLY TO THE SURFACE DIRECTLY ABOVE THE DIE AREA. THE PARALLELISM SPECIFICATION WILL NOT APPLY TO ANY FILLET OR SLOPED REGION OF THE ENCAPSULANT.

14 SEE FIGURE 1 FOR BALL PATTERNS.

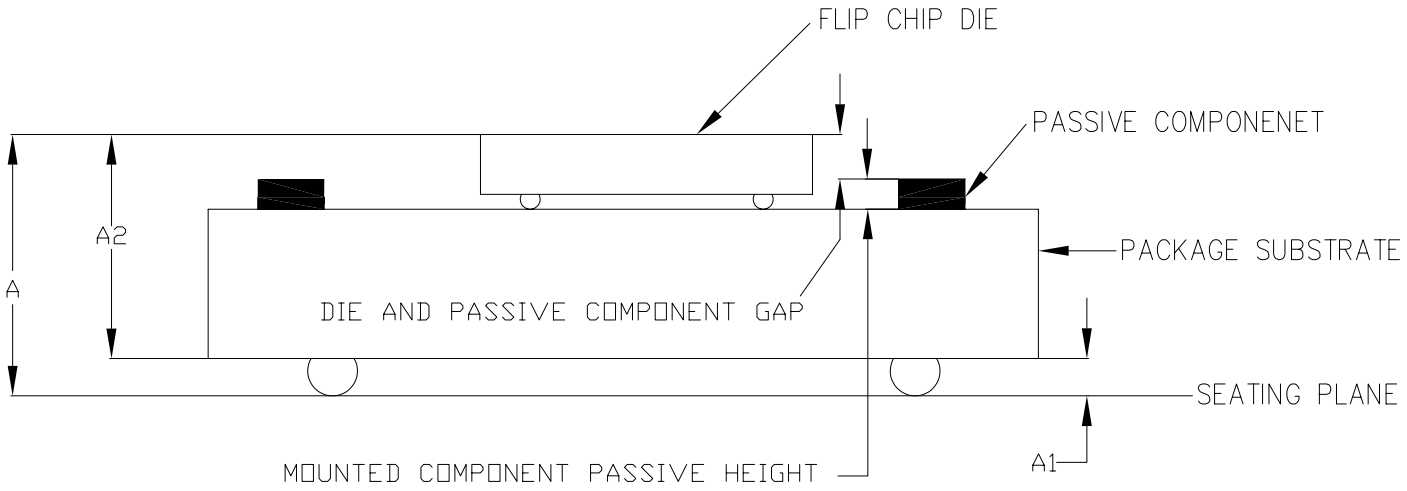
15 MICRON TECHNOLOGY AND TESSERA HAVE STATED THAT CERTAIN U. S. PATENTS MAY APPLY TO CONFIGURATIONS OF THIS PACKAGE. THESE PATENTS INCLUDE 6,048,753 FROM MICRON TECHNOLOGY ALONG WITH 5,950,304 AND 6,133,627 FROM TESSERA. MICRON AND TESSERA INTEND TO COMPLY WITH THE JEDEC PATENT POLICY.

16 THE SOLDERABLE SURFACE MAY BE DEFINED BY AN OPENING IN THE SOLDER RESIST LAYER (Type 1) OR BY THE SIZE OF THE METALLIZED PAD (Type 2). IT MAY BE ELLIPTICAL, PROVIDED THE RATIO OF MAJOR TO MINOR AXES IS NO GREATER THAN 2/1, AND THE SURFACE AREA IS NO LESS THAN THE MINIMUM FOR A CIRCULAR PAD. FOR Type 2 DESIGNS, COPPER TRACES ARE PERMITTED OUTSIDE THE b1 PAD AREA.

APPLICATION NOTES:

17 IF A HEAT SINK IS TO BE ATTACHED TO THE PACKAGE, A SUPPORT AREA (ON ALL FOUR SIDES) FOR THE HEAT SINK NEEDS TO BE FREE OF COMPONENTS AND HAVE FULL COPPER PLATING UNDERNEATH THE SOLDER RESIST AS SHOWN IN THE FIGURE.

18 WHEN PASSIVE COMPONENTS ARE PRESENT ON THE PACKAGE SUBSTRATE, THIER MAXIMUM MOUNTED HEIGHT MUST BE 0.10 MM LESS THAN THE FLIP CHIP MOUNTED MINIMUM HEIGHT. THE FLIP CHIP AND PASSIVE COMPONENT GAP MUST ALWAYS BE EQUAL TO OR GREATER THAN 0.10 MM



JEDEC SOLID STATE PRODUCT OUTLINE	TITLE: THICK & VERY THICK, FINE-PITCH, RECTANGULAR BALL GRID ARRAY FAMILY 0.80 mm PITCH	ISSUE: A	DATE: 06/05	MO-261	PAGE: 6 OF 6