



JEDEC
SOLID STATE
PRODUCT OUTLINE

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

TITLE	PACKAGE DESIGNATOR	ISSUE	DATE		SHEET
LOW PROFILE, FINE PITCH BALL GRID ARRAY FAMILY, 0.80 MM PITCH (RECT.)	LFR-XBGA	G	July 06	MO-205	1 OF 7



JEDEC SOLID STATE PRODUCT OUTLINE	TITLE LOW PROFILE, FINE PITCH, BALL GRID ARRAY FAMILY 0.80MM PITCH (RECT.)	ISSUE G	DATE July 06	MO-205	SHEET 2 OF 7
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TABLE 1

S Y M B O L	COMMON DIMENSIONS			N O T E S	S Y M B O L	TOLERANCES OF FORM AND POSITION	N O T E S
	MINIMUM	NOMINAL	MAXIMUM				
A	—	—	1.70	7	aaa	0.15	
A1	0.25	—	—	7	bbb	0.20	
A2	0.65	—	—		ddd	0.20	12
b	0.45	0.50	0.55	8	eee	0.15	
b1	0.35	—	—	15	fff	0.08	
e	0.80 BSC						
NOTES	1,2, 14						
REF	11–653 11–752						
ISSUE	G						

TABLE 2

SQUARE VARIATIONS			
VARIATION	D/E BSC	N	THESE SQUARE VARIATIONS HAVE BEEN REMOVED FROM THIS OUTLINE SEE SHEET 5 FOR CROSS REFERENCE TABLE
AA	8.00	81	
AB	9.00	100	
AC	10.00	144	
AD	11.00	169	
AE	12.00	196	
AF	13.00	225	
AG	15.00	324	
AH	16.00	361	
AJ	18.00	484	
AK	20.00	576	
AL	22.00	729	
AM	17.00	400	
AN	7.00	64	
NOTES			
REF	11–651 11–752		
ISSUE	G		

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TABLE 3

SQUARE VARIATIONS

VARIATION	D/E BSC	N	THESE SQUARE VARIATIONS HAVE BEEN REMOVED FROM THIS OUTLINE SEE SHEET 5 FOR CROSS REFERENCE TABLE
BA	8.00	64	
BB	9.00	81	
BC	10.00	121	
BD	11.00	144	
BE	12.00	169	
BF	13.00	196	
BG	15.00	289	
BH	16.00	324	
BJ	18.00	441	
BK	20.00	529	
BL	22.00	676	
BM	17.00	361	
BN	7.00	49	
NOTES			
REF	11–651 11–752		
ISSUE	G		

TABLE 4

RECTANGULAR VARIATIONS (SD=SE)									
VARIATION	D BSC	E BSC	D1 BSC	E1 BSC	MD	ME	SD BSC	SE BSC	N
CA	13.00	9.00	10.40	7.20	14	10	0.40	0.40	140
CB	13.00	9.00	11.20	6.40	15	9	0	0	135
CC	13.50	5.50	12.00	4.00	16	6	0.40	0.40	96
NOTES					4	4	10	10	5

TABLE 5

RECTANGULAR VARIATIONS (SD≠SE)									
VARIATION	D BSC	E BSC	D1 BSC	E1 BSC	MD	ME	SD BSC	SE BSC	N
DA	13.00	9.00	11.20	7.20	15	10	0	0.40	150
DB	13.00	9.00	10.40	6.40	14	9	0.40	0	126
DC	16.00	5.50	14.40	4.00	19	6	0	0.40	114
DD	8.00	5.50	6.40	4.00	9	6	0	0.40	54
NOTES					4	4	10	10	5

VARIATION SUMMARY TABLE

TABLE 6

VARIATION	REF	ISSUE
CA CB CC	11-505 11-505/11-520 11-520	A A/B B
DA DB DC DD	11-505/11-520 11-505/11-520 11-520 11-601	A/B A/B B E

TABLE 7

CROSS REFERENCE TABLE			
MO-205 VARIATION DESIGNATOR	MO-275 VARIATION DESIGNATOR	MO-205 VARIATION DESIGNATOR	MO-275 VARIATION DESIGNATOR
AA	CCAA-1	BA	CCAA-2
AB	DDAA-1	BB	DDAA-2
AC	EEAA-1	BC	EEAA-2
AD	FFAA-1	BD	FFAA-2
AE	GGAA-1	BE	GGAA-2
AF	HHAA-1	BF	HHAA-2
AG	KKAA-1	BG	KKAA-2
AH	LLAA-1	BH	LLAA-2
AJ	NNAA-1	BJ	NNAA-2
AK	RRAA-1	BK	RRAA-2
AL	TTAA-1	BL	TTAA-2
AM	MMAA-1	BM	MMAA-2
AN	BBAA-1	BN	BBAA-2

NOTES:

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

2. DIMENSIONS ARE IN MILLIMETERS.

3. CONTACT BALL DESIGNATION PER JEDEC PUBLICATION 95, SECTION 3, SPP-020.

4. 'MD' AND 'ME' ARE THE MAXIMUM BALL MATRIX SIZE FOR THE 'D' AND 'E' DIMENSIONS RESPECTIVELY.

5. 'N' IS THE MAXIMUM NUMBER OF BALLS FOR A SPECIFIED MATRIX SIZE.

6. PRIMARY DATUM C (SEATING PLANE) IS DEFINED BY THE SPHERICAL CROWNS OF THE CONTACT BALLS.

7. DIMENSION 'A' INCLUDES STANDOFF HEIGHT 'A1', PACKAGE BODY THICKNESS AND LID HEIGHT, BUT DOES NOT INCLUDE ATTACHED FEATURES, e.g. EXTERNAL HEAT SINK OR CHIP CAPACITORS. AN INTEGRAL HEAT SLUG IS NOT CONSIDERED AN ATTACHED FEATURE.

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

9. THE A1 CORNER MUST BE IDENTIFIED ON THE TOP SURFACE OF THE PACKAGE BY USING A CORNER CHAMFER, INK OR METALIZED MARKINGS, INDENTATION, OR OTHER FEATURE OF PACKAGE BODY, LID, OR INTEGRAL HEAT SLUG. IF THE OPTIONAL CHAMFERED CORNER IS USED, THE MAXIMUM NUMBER OF SOLDER BALLS 'N' MAY BE REDUCED. EXACT SHAPE OF EACH CORNER IS OPTIONAL, BUT PIN 1 CORNER MUST BE UNIQUE. SOME ORIENTATION FEATURE ON THE BALL ATTACH SIDE IS RECOMMENDED.

10. DIMENSION 'SD/SE' IS MEASURED WITH RESPECT TO DATUMS A AND B AND DEFINES THE POSITION OF THE CENTER CONTACT BALL IN THE OUTER ROW. WHEN THERE IS AN ODD NUMBER OF CONTACT BALLS IN THE OUTER ROW OF A FULL MATRIX, SD/SE=0; WHEN THERE IS AN EVEN NUMBER OF CONTACT BALLS IN THE OUTER ROW, SD/SE=e/2.

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

12. FOR GLOB TOP AND FLIP CHIP CONFIGURATIONS, PARALLELISM (bbb) MUST BE ENSURED ON THE TOP SURFACE IN A CENTERED MINIMUM AREA OF 2.50 X 2.50 mm. THE PARALLELISM SPECIFICATION WILL NOT APPLY TO THE FILLET OR SLOPED REGION OF THE ENCAPSULANT.

13. 10 X 14 MATRIX PATTERN (VARIATION CA) IS SHOWN FOR ILLUSTRATION ONLY.

14. SEE JEDEC PUBLICATION 95, SECTION 4.6 FOR DETAILED DEFINITION OF SYMBOLS.

APPLICATION NOTES:

15. THE SOLDERABLE SURFACE MAY BE DEFINED BY AN OPENING IN THE SOLDER RESIST LAYER (TYPE 1) OR BY THE SIZE OF A 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, EXPOSED COPPER TRACES ARE PERMITTED OUTSIDE THE b1 PAD AREA.

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Change Record

If the changes involves any words added or deleted (excluding deletion of accidentally repeated words), the change is included. Punctuation changes may or may not be included.

Initial Issue:	Date:	Item:
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Revision History:

Issue: G	Date: July 06	Item: 11-752
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Location	Change from:	Change to:
ALL SHEETS	TITLE: (SQ. & RECT.)	(RECT.)
SHEET 3	DELETED VARIATIONS: AA - AN aaa 0.10 bbb 0.10 ddd (ccc) 0.12 eee (ddd) 0.15 fff (eee) 0.08	ADDED NOTE SEE SEE CROSS-REF aaa 0.15 ccc 0.20 ddd 0.20 eee 0.15 fff 0.08
SHEET 4	DELETED VARIATIONS: BA - BN	ADDED NOTE SEE CROSS-REF
SHEET 5	DELETED VARIATIONS: AA - AN & BA - BN	ADDED CROSS REFERENCE TABLE
SHEET 6 NOTE 3 SHEET 6 NOTE 6 SHEET 6 NOTE 14	SECTION 4.3, SPP-010 DATUM C AND SEATING PLANE ARE SYMBOLS SHOWN IN	SECTION 3, SPP-020 DATUM C (SEATING PLANE) IS SEE JEDEC PUBLICATION.....

Issue:	Date:	Item:
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