

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 VERY THIN PROFILE, FINE PITCH,
LAND GRID ARRAY FAMILY,
0.50/0.65 mm PITCH, SQ/RECT

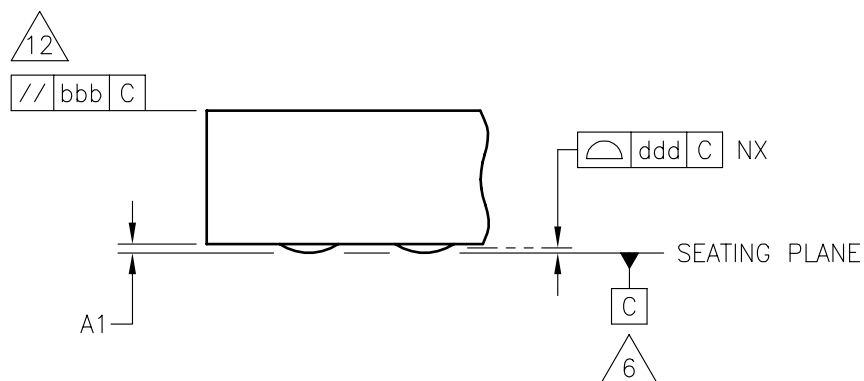
PACKAGE DESIGNATOR
VF-XLGA

ISSUE
A

DATE
2/00

MO-222

SHEET
1 OF 5



VIEW A
SHEET 1
ROTATED 90° CW

TABLE 1: VARIATION SUMMARY

VARIATION	REF	ISSUE
AA	11-560	A
BA	11-560	A
BB	11-560	A
CA	11-560	A
CB	11-560	A
CC	11-560	A
CD	11-560	A
CE	11-560	A
CF	11-560	A
CG	11-560	A
CH	11-560	A
DA	11-560	A
DB	11-560	A
DC	11-560	A

TABLE 2: TOLERANCES OF FORM AND POSITION

<div>VARIATION</div> <div>SYMBOL</div>	A _x AND B _x	C _x AND D _x	NOTES
e	0.65 BSC	0.50 BSC	
aaa	0.10	0.10	
bbb	0.10	0.10	12
ddd	0.08	0.08	
eee	0.15	0.15	
fff	0.08	0.05	
NOTES	1, 2, 11, 14		
REF	11–560		
ISSUE	A		

x = BODY/MATRIX SIZE VARIATION: A, B, C, ETC. (SEE TABLES 4 THROUGH 7)

TABLE 3: COMMON DIMENSIONS

VARIATION SYMBOL	Ax AND Bx			Cx AND Dx			NOTES
	MINIMUM	NOMINAL	MAXIMUM	MINIMUM	NOMINAL	MAXIMUM	
A	—	—	1.00	—	—	1.00	7
A1	—	—	0.10	—	—	0.10	7
A2	0.65	—	—	0.65	—	—	
b	0.28	0.33	0.38	0.23	0.28	0.33	8
e	0.65 BSC			0.50 BSC			
NOTES	1, 2, 11, 14						
REF	11–560						
ISSUE	A						

x = BODY/MATRIX SIZE VARIATION: A, B, C, ETC. (SEE TABLES 4 THROUGH 7)

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TABLE 4: SQUARE VARIATIONS									
e = 0.65 BSC									
VARIATION	D BSC	E BSC	D1 BSC	E1 BSC	MD	ME	SD BSC	SE BSC	N
AA	3.50	3.50	1.95	1.95	4	4	0.325	0.325	16
NOTES					4	4	10	10	5
	1, 2, 11, 14								
TABLE 5: RECTANGULAR VARIATIONS									
e = 0.65 BSC									
VARIATION	D BSC	E BSC	D1 BSC	E1 BSC	MD	ME	SD BSC	SE BSC	N
BA	7.00	4.50	5.85	3.25	10	6	0.325	0.325	60
BB	9.00	6.00	7.80	4.55	13	8	0	0.325	104
NOTES					4	4	10	10	5
	1, 2, 11, 14								
TABLE 6: SQUARE VARIATIONS									
e = 0.50 BSC									
VARIATION	D BSC	E BSC	D1 BSC	E1 BSC	MD	ME	SD BSC	SE BSC	N
CA	4.00	4.00	2.50	2.50	6	6	0.25	0.25	36
CB	4.00	4.00	3.00	3.00	7	7	0	0	49
CC	5.00	5.00	3.50	3.50	8	8	0.25	0.25	64
CD	5.00	5.00	4.00	4.00	9	9	0	0	81
CE	7.00	7.00	5.50	5.50	12	12	0.25	0.25	144
CF	7.00	7.00	6.00	6.00	13	13	0	0	169
CG	9.00	9.00	7.50	7.50	16	16	0.25	0.25	256
CH	9.00	9.00	8.00	8.00	17	17	0	0	289
NOTES					4	4	10	10	5
	1, 2, 11, 14								
TABLE 7: RECTANGULAR VARIATIONS									
e = 0.50 BSC									
VARIATION	D BSC	E BSC	D1 BSC	E1 BSC	MD	ME	SD BSC	SE BSC	N
DA	4.00	3.00	3.00	2.00	7	5	0	0	35
DB	4.00	3.50	2.50	2.50	6	6	0.25	0.25	36
DC	5.00	4.00	3.50	2.50	8	6	0.25	0.25	48
NOTES					4	4	10	10	5
	1, 2, 11, 14								
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NOTES:

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

2. DIMENSIONS ARE IN MILLIMETERS.

3. LAND DESIGNATION PER JESD 95-1, SPP-010.

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

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

6. PRIMARY DATUM C AND SEATING PLANE ARE DEFINED BY THE DOMED CROWNS OF THE LANDS.

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 LAND DIAMETER, 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 LANDS 'N' MAY BE REDUCED. EXACT SHAPE OF EACH CORNER IS OPTIONAL, BUT THE A1 CORNER MUST BE UNIQUE. SOME ORIENTATION FEATURE ON THE LAND ATTACH SIDE IS RECOMMENDED.

10. DIMENSIONS 'SD' AND 'SE' ARE MEASURED WITH RESPECT TO DATUMS A AND B AND DEFINE THE POSITION OF THE CENTER LAND IN THE OUTER ROW. WHEN THERE IS AN ODD NUMBER OF LANDS IN THE OUTER ROW PARALLEL TO DIMENSION 'D' OR 'E' RESPECTIVELY, 'SD' OR 'SE' = 0. WHEN THERE IS AN EVEN NUMBER OF LANDS IN THE OUTER ROW, 'SD' OR 'SE' = $e/2$ BASIC.

11. LAND ARRAY MAY BE DEPOPULATED IN ANY PATTERN. DEPOPULATION IS THE OMISSION OF LANDS FROM A FULL MATRIX.

12. PARALLELISM (bbb) ON THE TOP SURFACE APPLIES ONLY TO THE 2.50 X 2.50 mm MINIMUM FLAT AREA SHOWN ON THE TOP VIEW (SHEET 1). THIS AREA MAY BE USED FOR MARKING OR VACUUM PICKUP.

13. 6 X 10 MATRIX (VARIATION BA) IS SHOWN FOR ILLUSTRATION ONLY.

14. VARIATION CODING FORM IS ZX, WHERE:

Z = A OR B FOR LAND PITCHES OF 0.65 mm AND C OR D FOR LAND PITCHES OF 0.50 mm;

X = A, B, C, ETC. CORRESPONDING TO BODY/MATRIX SIZE VARIATION LISTED IN TABLES 4 THROUGH 7.

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