

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.

JEDEC
SOLID STATE
PRODUCT OUTLINES

TITLE
THICK MATRIX TRAY FOR
HANDLING/SHIPPING OF
BALL GRID ARRAY PACKAGES

ISSUE
B

DATE
10/95

CO-028

OF 1
8

XXX°C MAX 12

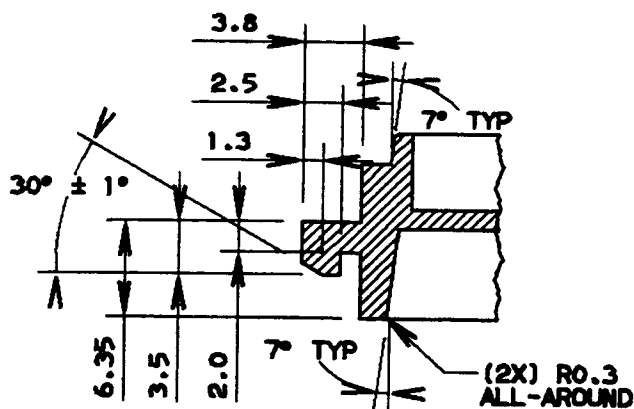
TEMP. RATING

DETAIL B

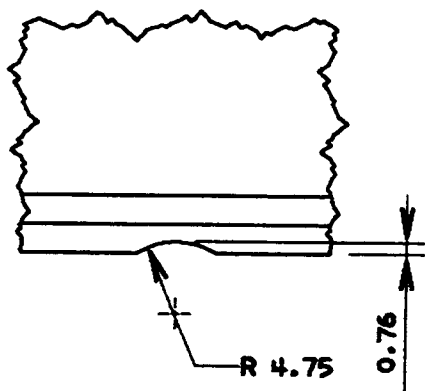
XXXX (N4) 13

TRAY DESIGNATOR

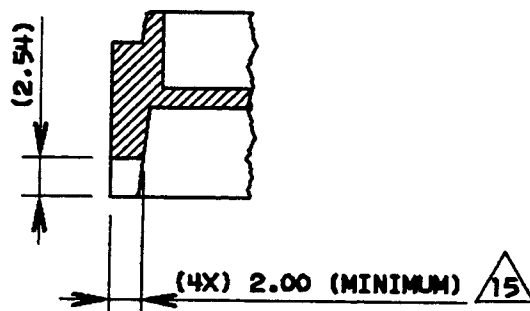
DETAIL K



DETAIL D

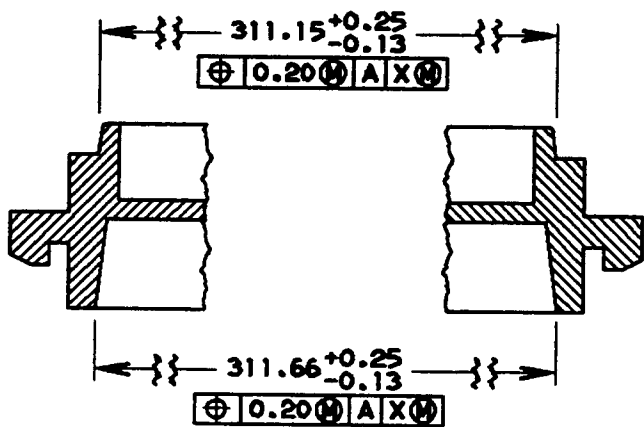


DETAIL C 5



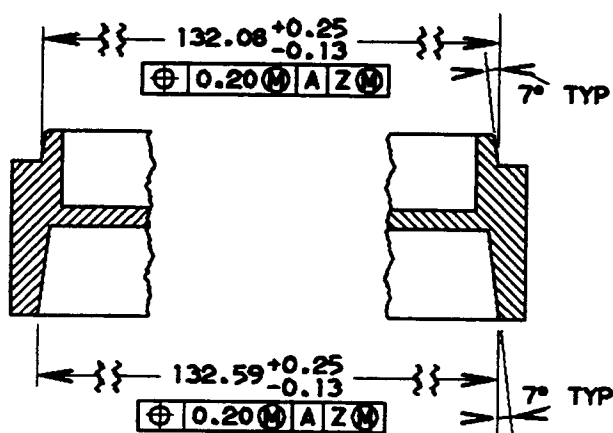
SECTION E-E

ROTATED 90° CCW



SECTION H-H

ROTATED 90° CCW



SECTION J-J

TRAY STACKING DETAIL

JEDEC SOLID STATE PRODUCT OUTLINES	TITLE THICK MATRIX TRAY FOR HANDLING/SHIPPING OF BALL GRID ARRAY PACKAGES	ISSUE B	DATE 10/95	CO-028	OF ² ₈
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NOTES:

- 1 THESE SURFACES TO BE FREE OF SEAMS.
- 2 CHAMFER DENOTES PACKAGE PIN 1 ORIENTATION.
3. TRAY VACUUM PICKUP METHOD ALLOWS TWO SEPARATE PICKUP AREAS, RESULTING IN TWO CLOSED CELLS PER TRAY. OPTIONAL VACUUM PICKUP CELL LOCATIONS ARE N5.
- 4 TRAY VACUUM PICKUP METHOD REQUIRES A 28 mm SQUARE (MINIMUM) WALLED PICKUP AREA, LOCATED AS CLOSE TO THE CENTER OF THE TRAY AS IS PRACTICAL. CENTER VACUUM PICKUP CELL LOCATIONS ARE N6.
- 5 THE SCALLOP IS CENTERED ON THE SIDE OF THE TRAY AND ALLOWS THE USE OF A PIN TO MECHANICALLY BIAS THE TRAY ORIENTATION.
6. N REFERS TO PACKAGE LEADCOUNTS SUPPORTED, FULLY POPULATED ARRAY.
7. TOTAL USABLE CELLS N3 = N1 X N2.
8. PACKAGE INTERFACE CONTROLLED BY PACKAGE DESIGN AND LEAD FORM.
9. NONTABULATED DIMENSIONS HAVE A TOLERANCE OF .X = ± 0.25 , .XX = ± 0.13 , ANGLES $\pm 0.5^\circ$.
10. ALL DIMENSIONS ARE IN MILLIMETERS.
11. INTERPRET DIMENSIONS AND TOLERANCES IN ACCORDANCE WITH ASME Y14.5M-1994.
- 12 XXX IS THE MAXIMUM OPERATING TEMPERATURE THE EMPTY TRAY CAN BE SUBJECTED TO FOR 48 CONTINUOUS HOURS WITHOUT VIOLATING THE DIMENSIONAL TOLERANCE OF THE TRAY.
- 13 N4 INDICATES PACKAGE TYPE ACCOMMODATED.
- 14 DIMENSIONS M, M1, M2, AND M3 DEFINE THE CENTER LINES FOR THE CELL SITES.
- 15 BOTTOM SIDEWALL NOTCHES REQUIRE A 2.00 mm MINIMUM DEPTH TO FACILITATE AUTO HANDLING EQUIPMENT.
- 16 ALL EXTERNAL TRAY SURFACES WHICH MAY COME IN CONTACT WITH THE DRY PACK BAGS SHALL BE FREE OF SHARP EDGES.
- 17 ALL TRAY MEASUREMENTS ARE TO BE MADE WITH THE TRAY UNRESTRICTED.

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<u>VARIATION</u>	<u>PACKAGE BODY SIZE</u>	<u>TRAY MATRIX</u>
AA	25 X 25 mm	4 X 11
AB	27 X 27 mm	4 X 10
AC	29 X 29 mm	4 X 9
AD	31 X 31 mm	3 X 9
AE	32.5X32.5, 33X33 mm	3 X 8
AF	35 X 35 mm	3 X 8
AG	37.5 X 37.5 mm	3 X 7
AH	40 X 40 mm	3 X 7
AJ	42.5 X 42.5 mm	2 X 6
AK	45 X 45 mm	2 X 6
AL	47.5 X 47.5 mm	2 X 6
AM	50 X 50 mm	2 X 5
BA	25 X 21 mm	5 X 11
BB	32.5 X 25 mm	4 X 8

VARIATIONS

DIMENSIONS ARE IN MILLIMETERS

SYMBOL	AA			NOTE	AB			NOTE
	MIN	NOM	MAX		MIN	NOM	MAX	
M		26.70 BSC		14		24.15 BSC		14
M1		20.00 BSC		14		26.10 BSC		14
M2		27.50 BSC		14		29.20 BSC		14
M3		27.50 BSC		14		29.20 BSC		14
N		256-361-576		6		324-441-676		6
N1		4 COLUMNS				4 COLUMNS		
N2		11 ROWS				10 ROWS		
N3		44		7		40		7
N4		25 X 25 mm		13		27 X 27 mm		13
N5		ROW/COLUMN [2/2] [10/3]		3		ROW/COLUMN [2/2] [9/3]		3
N6		ROW/COLUMN [6/2,3]		4		ROW/COLUMN [5/3] [6/2]		4
REF.		11.5-406				11.5-406		
ISSUE		A				A		

SYMBOL	AC			NOTE	AD			NOTE
	MIN	NOM	MAX		MIN	NOM	MAX	
M		20.85 BSC		14		25.05 BSC		14
M1		31.10 BSC		14		21.90 BSC		14
M2		31.60 BSC		14		33.90 BSC		14
M3		31.40 BSC		14		42.90 BSC		14
N		361-484-784		6		400-576-900		6
N1		4 COLUMNS				3 COLUMNS		
N2		9 ROWS				9 ROWS		
N3		36		7		27		7
N4		29 X 29 mm		13		31 X 31 mm		13
N5		ROW/COLUMN [2/2] [8/3]		3		ROW/COLUMN [2/2] [8/2]		3
N6		ROW/COLUMN [5/2,3]		4		ROW/COLUMN [5/2]		4
REF.		11.5-406				11.5-406		
ISSUE		A				A		

VARIATIONS

DIMENSIONS ARE IN MILLIMETERS

SYMBOL	AE			NOTE	AF			NOTE
	MIN	NOM	MAX		MIN	NOM	MAX	
M		32.45 BSC		14		29.95 BSC		14
M1		33.25 BSC		14		24.50 BSC		14
M2		35.50 BSC		14		38.00 BSC		14
M3		35.50 BSC		14		38.00 BSC		14
N	441-484-625-676-1024			6	529-729-1156			6
N1	3 COLUMNS				3 COLUMNS			
N2	8 ROWS				8 ROWS			
N3	24			7	24			7
N4	32.5 X 32.5, 33 X 33 mm			13	35 X 35 mm			13
N5	ROW/COLUMN [2/2]		[7/2]	3	ROW/COLUMN [2/2]		[7/2]	3
N6	ROW/COLUMN [4/2]		[5/2]	4	ROW/COLUMN [4/2]		[5/2]	4
REF.	11.5-406				11.5-406			
ISSUE	A				A			

SYMBOL	AG			NOTE	AH			NOTE
	MIN	NOM	MAX		MIN	NOM	MAX	
M		27.95 BSC		14		25.65 BSC		14
M1		37.50 BSC		14		30.60 BSC		14
M2		40.00 BSC		14		42.30 BSC		14
M3		40.00 BSC		14		42.30 BSC		14
N	625-841-1369			6	676-961-1521			6
N1	3 COLUMNS				3 COLUMNS			
N2	7 ROWS				7 ROWS			
N3	21			7	21			7
N4	37.5 X 37.5 mm			13	40 X 40 mm			13
N5	ROW/COLUMN [2/2]		[6/2]	3	ROW/COLUMN [2/2]		[6/2]	3
N6	ROW/COLUMN [4/2]			4	ROW/COLUMN [4/2]			4
REF.	11.5-406				11.5-406			
ISSUE	A				A			

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VARIATIONS

DIMENSIONS ARE IN MILLIMETERS

SYMBOL	AJ			NOTE	AK			NOTE
	MIN	NOM	MAX		MIN	NOM	MAX	
M		26.70 BSC		14		30.00 BSC		14
M1		43.75 BSC		14		30.00 BSC		14
M2		45.50 BSC		14		51.00 BSC		14
M3		82.50 BSC		14		75.90 BSC		14
N		784-1089-1764		6		900-1225-1936		6
N1		2 COLUMNS				2 COLUMNS		
N2		6 ROWS				6 ROWS		
N3		12		7		12		7
N4		42.5 X 42.5 mm		13		45 X 45 mm		13
N5		N/A				ROW/COLUMN [1/1] [6/2]		3
N6		N/A				ROW/COLUMN [3/2] [4/1]		4
REF.		11.5-406				11.5-406		
ISSUE		A				A		

SYMBOL	AL			NOTE	AM			NOTE
	MIN	NOM	MAX		MIN	NOM	MAX	
M		30.00 BSC		14		41.45 BSC		14
M1		31.25 BSC		14		51.50 BSC		14
M2		50.50 BSC		14		53.00 BSC		14
M3		75.90 BSC		14		53.00 BSC		14
N		961-1369-2209		6		1089-1521-2401		6
N1		2 COLUMNS				2 COLUMNS		
N2		6 ROWS				5 ROWS		
N3		12		7		10		7
N4		47.5 X 47.5 mm		13		50 X 50 mm		13
N5		ROW/COLUMN [1/1] [6/2]		3		ROW/COLUMN [1/1] [5/2]		3
N6		ROW/COLUMN [3/2] [4/1]		4		ROW/COLUMN [3/1] [3/2]		4
REF.		11.5-406				11.5-406		
ISSUE		A				A		

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VARIATIONS

DIMENSIONS ARE IN MILLIMETERS

SYMBOL	BA			NOTE	BB			NOTE
	MIN	NOM	MAX		MIN	NOM	MAX	
M		20.95 BSC		14		26.70 BSC		14
M1		20.00 BSC		14		33.25 BSC		14
M2		27.50 BSC		14		35.50 BSC		14
M3		23.50 BSC		14		27.50 BSC		14
N		224-304-480		6		336-475-744		6
N1		5 COLUMNS				4 COLUMNS		
N2		11 ROWS				8 ROWS		
N3		55		7		32		7
N4		25 X 21 mm		13		32.5 X 25 mm		13
N5	ROW/COLUMN	[2/2]	[10/4]	3	ROW/COLUMN	[2/2]	[7/3]	3
N6	ROW/COLUMN	[6/2,3,4]		4	ROW/COLUMN	[4/2,3]	[5/2,3]	4
REF.		11.5-406				11.5-406		
ISSUE		A				A		

SYMBOL				NOTE				NOTE
	MIN	NOM	MAX		MIN	NOM	MAX	
M								
M1								
M2								
M3								
N								
N1								
N2								
N3								
N4								
N5								
N6								
REF.								
ISSUE								