

	VARIATION S	Summary table	E (DIMENSIONS A	are in millimete	RS)
VARIATION			MINAL CKAGE 13 DY SIZE		TRAY MATRIX
АА	3mm X 3mm	3mm X 4mm 4mm X 4mm	3mm X 5mm 4mm X 5mm 5mm X 5mm	3mm X 6mm 4mm X 6mm 5mm X 6mm 6mm X 6mm	14 X 35
АВ	7mm X 7mm	7mm X 8mm 8mm X 8mm	7mm X 9mm 8mm X 9mm 9mm X 9mm		10 X 26
AC	10mm X 10mm	10mm X 11mm 11mm X 11mm	10mm X 12mm 11mm X 12mm 12mm X 12mm		8 X 21
AD	13mm X 13mm	13mm X 14mm 14mm X 14mm	13mm X 15mm 14mm X 15mm 15mm X 15mm		7 X 17
ΑE	13mm X 16mm 14mm X 16mm 15mm X 16mm 16mm X 16mm	13mm X 17mm 14mm X 17mm 15mm X 17mm 16mm X 17mm 17mm X 17mm	13mm X 18mm 14mm X 18mm 15mm X 18mm 16mm X 18mm 17mm X 18mm 18mm X 18mm		6 X 14
AF	18mm X 19mm 19mm X 19mm	18mm X 20mm 19mm X 20mm 20mm X 20mm	18mm X 21mm 19mm X 21mm 20mm X 21mm 21mm X 21mm	18mm X 22mm 19mm X 22mm 20mm X 22mm 21mm X 22mm 22mm X 22mm	5 X 12
AG	4mm X 7mm 5mm X 7mm 6mm X 7mm	4mm X 8mm 5mm X 8mm 6mm X 8mm	4mm X 9mm 5mm X 9mm 6mm X 9mm		14 X 26
АН	4mm X 10mm 5mm X 10mm 6mm X 10mm	4mm X 11mm 5mm X 11mm 6mm X 11mm	4mm X 12mm 5mm X 12mm 6mm X 12mm		14 X 21

VARIATION SUMMARY TABLE (DIMENSIONS ARE IN MILLIMETERS) NOMINAL TRAY BODY SIZE VARIATION MATRIX 7mm X 10mm 7mm X 11mm 7mm X 12mm 8mm X 10mm ΑJ 8mm X 11mm 8mm X 12mm 10 X 21 9mm X 10mm 9mm X 11mm 9mm X 12mm 10mm X 13mm 10mm X 14mm 10mm X 15mm 11mm X 13mm 11mm X 14mm 11mm X 15mm ΑK 8 X 17 12mm X 13mm 12mm X 14mm 12mm X 15mm

JEDEC SOLID STATE PRODUCT OUTLINE TITLE:

LOW PROFILE MATRIX TRAY FOR HANDLING AND SHIPPING THIN GRID ARRAY DEVICES ISSUE D

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SHEET
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S _{YMBOL}		Ŋ
M _B	AA	
	MIN NOM MAX	'E
М	8.15 BSC	14
M1	7.90 BSC	14
M2	8.80 BSC	14
М3	9.20 BSC	14
N1	14 COLUMNS	
N2	35 ROWS	
N3	490	7
N4	3mm X 3mm	13
	3mm X 4mm / 4mm X 4mm	
	3mm X 5mm / 4mm X 5mm / 5mm X 5mm	
	3mm X 6mm / 4mm X 6mm /	
	5mm X 6mm / 6mm X 6mm	
N5	ROW/COLUMN [2/7,8][34/7,8]	4
N6	[16/6,7,8,9][17/6,7,8,9][18/6,7,8,9][19/6,7,8,9][20/6,7,8,9]	3
NOTES	10, 11	
REF	11.5-538/11.5-625	
ISSUE	A/C	

	N
AB	
MIN NOM MAX	'E
10.35 BSC	14
10.00 BSC	14
11.80 BSC	14
12.80 BSC	14
10 COLUMNS	
26 ROWS	
260	7
7mm X 7mm	13
7mm X 8mm / 8mm X 8mm	
7mm X 9mm / 8mm X 9mm / 9mm X 9mm	
ROW/COLUMN [2/5,6] [25/5,6]	4
[12/4,5,6,7][13/4,5,6,7][14/4,5,6,7][15/4,5,6,7]	3
10, 11	
11.5-538	
А	

SY		Ŋ
$M_{\rm B_{\odot}}$	AC	\bigcirc
	MIN NOM MAX	Ē
М	11.95 BSC	14
M1	11.00 BSC	14
M2	14.65 BSC	14
М3	16.00 BSC	14
N1	8 COLUMNS	
N2	21 ROWS	
N3	168	7
N4	10mm X 10mm	13
	10mm X 11mm /11mm X 11mm	
	10mm X 12mm /11mm X 12mm /12mm X 12mm	
N5	ROW/COLUMN [2/4,5] [20/4,5]	4
N6	[10/4,5] [11/4,5] [12/4,5]	3
NOTES	10, 11	
REF	11.5-538	_
ISSUE	A	

			N
	AD		
MIN	NOM	MAX] 'E
	12.90 BSC		14
	12.70 BSC		14
	18.10 BSC		14
	18.35 BSC		14
	7 COLUMNS		
	17 ROWS		
	119		7
13mm X 13mn	า		13
13mm X 14mn	n/14mm X 14mm		
13mm X 15mn	n/14mm X 15mm/1	5mm X 15mm	
RO	W/CDLUMN [2/4][16	5/4]	4
[8/3	3,4,5] [9/3,4,5] [10	/3,4,5]	3
10, 11			
11.5-538			
А			

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	N
AE	
MIN NOM MAX	E.
14.45 BSC	14
14.50 BSC	14
22.00 BSC	14
21.40 BSC	14
6 COLUMNS	
14 ROWS	
84	7
13mm X 16mm/14mm X 16mm/	13
15mm X 16mm/16mm X 16mm	
13mm X 17mm/14mm X 17mm/15mm X 17mm/	
16mm X 17mm/17mm X 17mm	
13mm X 18mm/14mm X 18mm/15mm X 18mm/	
16mm X 18mm/17mm X 18mm/18mm X 18mm	
ROW/COLUMN [2/3,4] [13/3,4]	4
[7/3,4] [8/3,4]	3
10, 11	
11.5-538/11.5-634	
A/D	
	MIN NOM MAX 14.45 BSC 14.50 BSC 22.00 BSC 21.40 BSC 6 COLUMNS 14 ROWS 84 13mm X 16mm/14mm X 16mm/ 15mm X 16mm/16mm X 16mm 13mm X 17mm/16mm X 17mm/15mm X 17mm/ 16mm X 17mm/17mm X 17mm 13mm X 18mm/14mm X 18mm/15mm X 18mm/ 16mm X 18mm/17mm X 18mm/15mm X 18mm/ 16mm X 18mm/17mm X 18mm/15mm X 18mm/ 16mm X 18mm/17mm X 18mm/15mm X 18mm/ 16mm X 18mm/17mm X 18mm/15mm X 18mm/ 10, 11 11.5-538/11.5-634

	JN_
AF	
MIN NOM MAX	'E
16.59 BSC	14
16.59 BSC	14
25.62 BSC	14
25.68 BSC	14
5 COLUMNS	
12 ROWS	
60	7
18mm X 19mm/19mm X 19mm	13
18mm X 20mm/19mm X 20mm/20mm X 20mm	
18mm X 21mm/19mm X 21mm/	
20mm X 21mm/21mm X 21mm	
18mm X 22mm/19mm X 22mm/	
20mm X 22mm/21mm X 22mm/22mm X 22mm	
ROW/COLUMN [2/3] [11/3]	4
[6/2,3,4] [7/2,3,4]	3
10, 11	
11.5-538/11.5-634	
A/D	

$ S_{Y} $		N
I M _B OL	AG	
	MIN NOM MAX	'E
М	8.15 BSC	14
M1	10.00 BSC	14
M2	11.80 BSC	14
М3	9.20 BSC	14
N1	14 COLUMNS	
N2	26 ROWS	
N3	364	7
N4	4mm X 7mm / 5mm X 7mm / 6mm X 7mm	13
	4mm X 8mm / 5mm X 8mm / 6mm X 8mm	
	4mm X 9mm / 5mm X 9mm / 6mm X 9mm	
N5	ROW/COLUMN [2/7,8] [25/7,8]	4
N6	[12/6,7,8,9][13/6,7,8,9][14/6,7,8,9][15/6,7,8,9]	3
NOTES	10, 11	
REF	11.5-561	
ISSUE	В	

АН	O_{-}
	T
MIN NOM MAX	'E
8.15 BSC	14
11.00 BSC	14
14.65 BSC	14
9.20 BSC	14
14 COLUMNS	
21 ROWS	
294	7
4mm X 10mm / 5mm X 10mm / 6mm X 10mm	13
4mm X 11mm / 5mm X 11mm / 6mm X 11mm	
4mm X 12mm / 5mm X 12mm / 6mm X 12mm	
ROW/COLUMN [2/7,8] [20/7,8]	4
[10/6,7,8,9] [11/6,7,8,9] [12/6,7,8,9]	3
10, 11	
11.5-561	
В	

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SYL		N
'M _B	AJ	
	MIN NOM MAX	_ 'E
М	10.35 BSC	14
M1	11.00 BSC	14
M2	14.65 BSC	14
М3	12.80 BSC	14
N1	10 COLUMNS	
N2	21 ROWS	
N3	210	7
N4	7mm X 10mm/8mm X 10mm/9mm X 10mm	13
	7mm X 11mm/8mm X 11mm/9mm X 11mm	
	7mm X 12mm/8mm X 12mm/9mm X 12mm	
N5	ROW/COLUMN [2/5,6] [20/5,6]	4
N6	[10/4,5,6,7] [11/4,5,6,7] [12/4,5,6,7]	3
NOTES	10, 11	
REF	11.5-561	
ISSUE	В	

]N_
AK	
MIN NOM MAX] 'E
11.95 BSC	14
12.70 BSC	14
18.10 BSC	14
16.00 BSC	14
8 COLUMNS	
17 ROWS	
136	7
10mm X 13mm/11mm X 13mm/12mm X 13mm	13
10mm X 14mm/11mm X 14mm/12mm X 14mm	
10mm X 15mm/11mm X 15mm/12mm X 15mm	
ROW/COLUMN [2/4,5] [16/4,5]	4
[8/4,5] [9/4,5] [10/4,5]	3
10, 11	
11.5-625	
С	

SYMBOL	N O _T E		N O _T E
		-	
NOTES			
REF			
ISSUE			

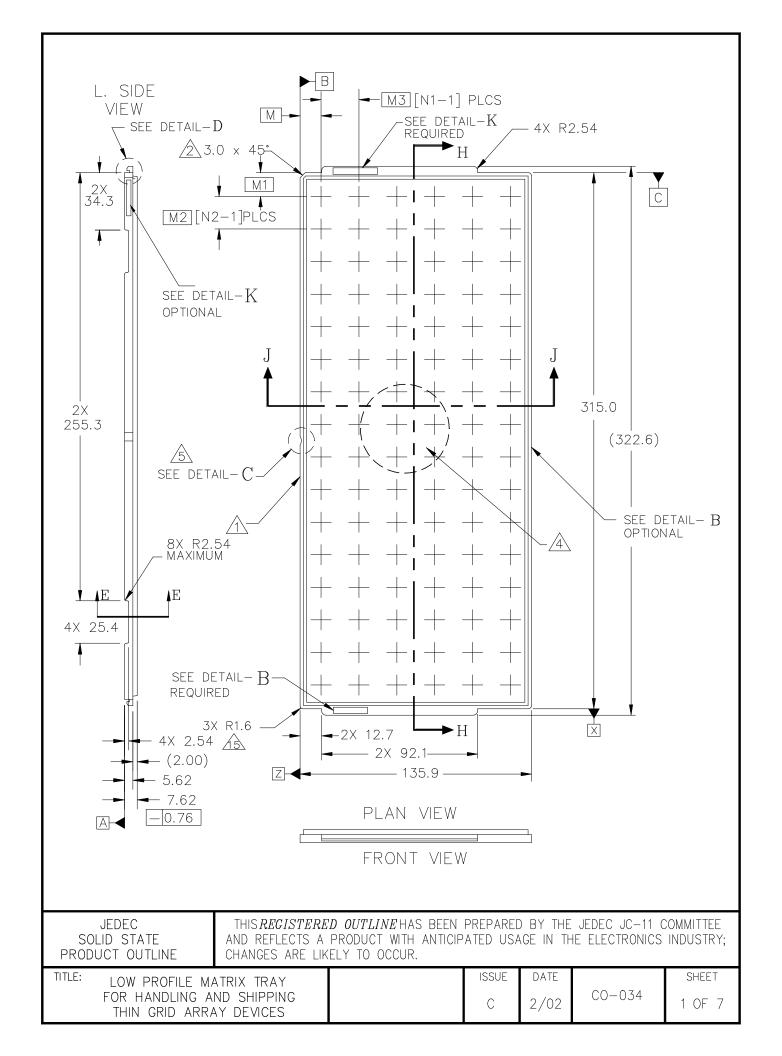
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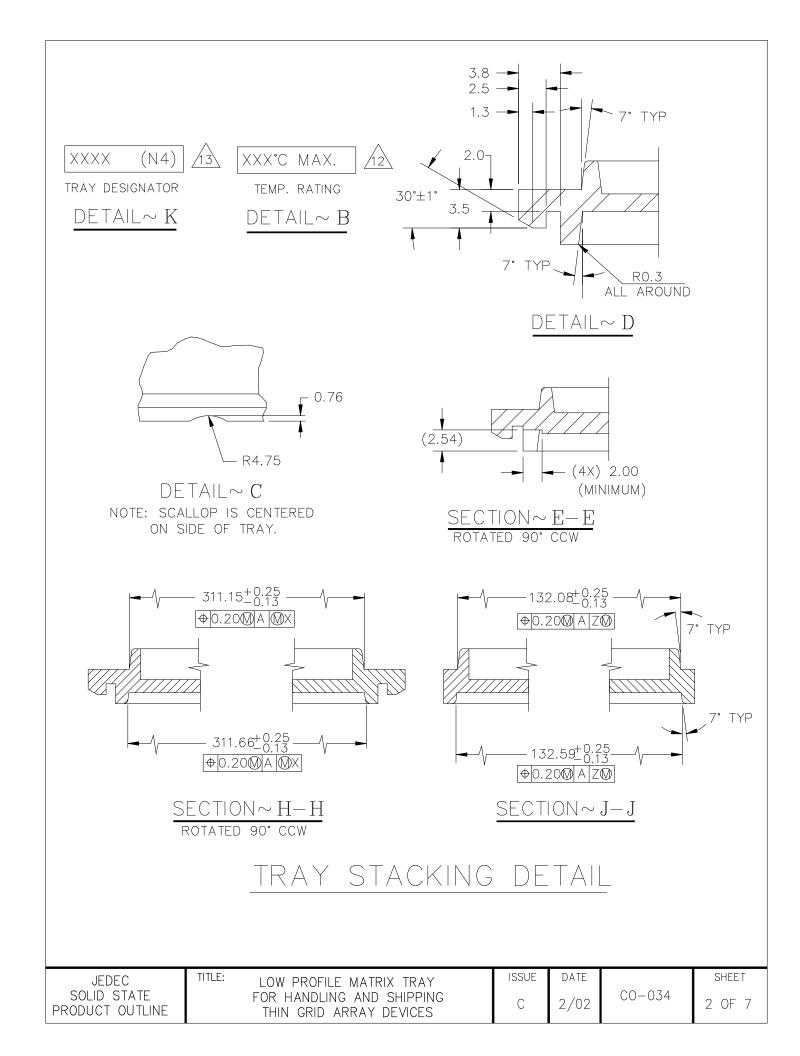
NOTES:

Λ							
<u>/1</u> \	THESE	SURFACES	TO	ΒE	FREE	OF	SEAMS.

- riangle 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.
- TRAY VACUUM PICKUP METHOD REQUIRES A 28mm SQUARE (MINIMUM)
 WALLED PICKUP AREA, LOCATED AS CLOSE TO THE CENTER OF THE
 TRAY AS IS PRACTICAL. CENTER VACUUM PICKUP CELL LOCATIONS ARE N6.
- THE SCALLOP ALLOWS THE USE OF A PIN TO MECHANICALLY BIAS THE TRAY ORIENTATION.
- 6 ALL TRAY MEASUREMENTS ARE TO BE MADE WITH THE TRAY UN-RESTRICTED.
- 7 TOTAL USABLE CELLS $N3 = N1 \times N2$
- 8 PACKAGE INTERFACE CONTROLLED BY PACKAGE DESIGN AND LEAD FORM.
- 9 NON-TABULATED DIMENSIONS HAVE A TOLERANCE OF $.X=\pm0.25$ $.XX=\pm0.13$, ANGLES $\pm0.5^{\circ}$
- 10 ALL DIMENSIONS ARE IN MILLIMETERS.
- 11 INTERPRET DIMENSIONING AND TOLERANCING IN ACCORDANCE WITH ASME Y14.5M-1994.
- 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.
- BOTTOM SIDEWALL NOTCHES REQUIRE A 2.00mm (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 RECOMMENDED FOR PACKAGES WITH OVERALL THICKNESS OF 1.20mm OR LESS. MAY ACCOMMODATE UP TO A MAXIMUM THICKNESS OF 4.02mm.
- 18 ALL VARIATIONS COMPLY WITH DESIGN GUIDE, PUB 95, SECTION 4.9, REVISION A.

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	VARIATION S	UMMARY TABLE	(DIMENSIONS A	ARE IN MILLIMETE	RS)
VARIATION		NO PAC BOD	MINAL CKAGE 13 IY SIZE		TRAY MATRIX
АА	3mm X 3mm	3mm X 4mm 4mm X 4mm	3mm X 5mm 4mm X 5mm 5mm X 5mm	3mm X 6mm 4mm X 6mm 5mm X 6mm 6mm X 6mm	14 X 35
АВ	7mm X 7mm	7mm X 8mm 8mm X 8mm	7mm X 9mm 8mm X 9mm 9mm X 9mm		10 X 26
AC	10mm X 10mm	10mm X 11mm 11mm X 11mm	10mm X 12mm 11mm X 12mm 12mm X 12mm		8 X 21
AD	13mm X 13mm	13mm X 14mm 14mm X 14mm	13mm X 15mm 14mm X 15mm 15mm X 15mm		7 X 17
ΑE	16mm X 16mm	16mm X 17mm 17mm X 17mm	16mm X 18mm 17mm X 18mm 18mm X 18mm		6 X 14
AF	19mm X 19mm		19mm X 21mm 20mm X 21mm 21mm X 21mm	19mm X 22mm 20mm X 22mm 21mm X 22mm 22mm X 22mm	5 X 12
AG	4mm X 7mm 5mm X 7mm 6mm X 7mm	4mm X 8mm 5mm X 8mm 6mm X 8mm	4mm X 9mm 5mm X 9mm 6mm X 9mm		14 X 26
АН	4mm X 10mm 5mm X 10mm 6mm X 10mm	4mm X 11mm 5mm X 11mm 6mm X 11mm	4mm X 12mm 5mm X 12mm 6mm X 12mm		14 X 21
AJ	7mm X 10mm 7mm X 11mm 7mm X 12mm	8mm X 10mm 8mm X 11mm 8mm X 12mm	9mm X 10mm 9mm X 11mm 9mm X 12mm		10 X 21
AK	10mm X 13mm 10mm X 14mm 10mm X 15mm	11mm X 13mm 11mm X 14mm 11mm X 15mm	12mm X 13mm 12mm X 14mm 12mm X 15mm		8 X 17

S _{YMBOL}		N
I M _B	AA	$\mid \cup_{\top} \mid$
	MIN NOM MAX	E
М	8.15 BSC	14
M1	7.90 BSC	14
M2	8.80 BSC	14
М3	9.20 BSC	14
N1	14 COLUMNS	
N2	35 ROWS	
N3	490	7
N4	3mm X 3mm	13
	3mm X 4mm / 4mm X 4mm	
	3mm X 5mm / 4mm X 5mm / 5mm X 5mm	
	3mm X 6mm / 4mm X 6mm / 5mm X 6mm / 6mm X 6mm	
N5	ROW/COLUMN [2/7,8][34/7,8]	4
N6	[16/6,7,8,9][17/6,7,8,9][18/6,7,8,9][19/6,7,8,9][20/6,7,8,9]	3
NOTES	10, 11	
REF	11.5-538/11.5-625	
ISSUE	Α/	
		•

	N	
AB		J T
MIN NOM	MAX	<u>'E</u>
10.35 BSC	1	14
10.00 BSC	1	14
11.80 BSC	1	14
12.80 BSC	1	14
10 COLUMNS		
26 ROWS		
260		7
7mm X 7mm	1	13
7mm X 8mm / 8mm X 8mm		
7mm X 9mm / 8mm X 9mm / 9mr	n X 9mm	
ROW/COLUMN [2/5,6] [25/5,	6]	4
[12/4,5,6,7][13/4,5,6,7][14/4,5,6,7]	15/4,5,6,7]	3
10, 11		
11.5-538		
А		

SYMBOL		N
'M _B	AC	
	MIN NOM MAX	E
М	11.95 BSC	14
M1	11.00 BSC	14
M2	14.65 BSC	14
М3	16.00 BSC	14
N1	8 COLUMNS	
N2	21 ROWS	
N3	168	7
N4	10mm X 10mm	13
	10mm X 11mm /11mm X 11mm	
	10mm X 12mm /11mm X 12mm /12mm X 12mm	
N5	ROW/COLUMN [2/4,5] [20/4,5]	4
N6	[10/4,5] [11/4,5] [12/4,5]	3
NOTES	10, 11	
REF	11.5-538	
ISSUE	А	

		N
AD		
MIN NOM	MAX	'E
12.90 BSC		14
12.70 BSC		14
18.10 BSC		14
18.35 BSC		14
7 COLUMNS		
17 ROWS		
119		7
13mm X 13mm		13
13mm X 14mm /14mm X 14mm		
13mm X 15mm /14mm X 15mm /15m	ım X 15mm	
ROW/COLUMN [2/4] [16/4]	4
[8/3,4,5] [9/3,4,5] [10/3,	4,5]	3
10, 11		
11.5-538		
А		

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S _V		Ν
N _{BOL}	AE	Ö
	MIN NOM MAX	'E
М	14.45 BSC	14
M1	14.50 BSC	14
M2	22.00 BSC	14
М3	21.40 BSC	14
N1	6 COLUMNS	
N2	14 ROWS	
N3	84	7
N4	16mm X 16mm /	13
	16mm X 17mm /17mm X 17mm	
	16mm X 18mm /17mm X 18mm / 18mm X 18mm	
N5	ROW/COLUMN [2/3,4] [13/3,4]	4
N6	[7/3,4] [8/3,4]	3
NOTES	10, 11	
REF	11.5-538	
ISSUE	A	

			N
	AF		
MIN	NOM	MAX	'E
	16.65 BCC		14
	16.70 BSC		14
	25.65 BSC		14
	25.70 BSC		14
	5 COLUMNS		
	12 ROWS		
	60		7
19mm X 19mm	1/		13
19mm X 20mm	1/20mm X 20mm		
19mm X 21mm	1/20mm X 21mm/2	1mm X 21mm	
19mm X 22mm / 20	0mm X 22mm /21mm X 22	mm/22mm X 22mm	
R	OW/COLUMN [2/3][11/3]	4
	[6/2,3,4] [7/2,3,	4]	3
10, 11			
11.5-538			
А			

SYMBOL		N
MB	AG	
	MIN NOM MAX	E
М	8.15 BSC	14
M1	10.00 BSC	14
M2	11.80 BSC	14
М3	9.20 BSC	14
N1	14 COLUMNS	
N2	26 ROWS	
N3	364	7
N4	4mm X 7mm / 5mm X 7mm / 6mm X 7mm	13
	4mm X 8mm / 5mm X 8mm / 6mm X 8mm	
	4mm X 9mm / 5mm X 9mm / 6mm X 9mm	
N5	ROW/COLUMN [2/7,8] [25/7,8]	4
N6	[12/6,7,8,9][13/6,7,8,9][14/6,7,8,9][15/6,7,8,9]	3
NOTES	10, 11	
REF	11.5-561	
ISSUE	В	

			Ŋ
	AH		
MIN	NOM	MAX] 'E
	8.15 BSC		14
	11.00 BSC		14
	14.65 BSC		14
	9.20 BSC		14
1	4 COLUMNS		
	21 ROWS		
	294		7
4mm X 10mm/	5mm X 10mm /	6mm X 10mm	13
4mm X 11mm/	5mm X 11mm /	6mm X 11mm	
4mm X 12mm/	5mm X 12mm /	6mm X 12mm	
ROW/COL	UMN [2/7,8] [20,	/7,8]	4
[10/6,7,8,9]	[11/6,7,8,9] [12	2/6,7,8,9]	3
10, 11			
11.5-561			
В			

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$ S_{Y_{i,j}} $		N
MBOL	AJ	
	MIN NOM MAX	E 'E
М	10.35 BSC	14
M1	11.00 BSC	14
M2	14.65 BSC	14
М3	12.80 BSC	14
N1	10 COLUMNS	
N2	21 ROWS	
N3	210	7
N4	7mm X 10mm / 7mm X 11mm / 7mm X 12mm	13
	8mm X 10mm / 8mm X 11mm / 8mm X 12mm	
	9mm X 10mm / 9mm X 11mm / 9mm X 12mm	
N5	ROW/COLUMN [2/5,6] [20/5,6]	4
N6	[10/4,5,6,7] [11/4,5,6,7] [12/4,5,6,7]	3
NOTES	10, 11	
REF	11.5-561	
ISSUE	В	
		-

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	AK		T
MIN	NOM	MAX	'E
	11.95 BSC		14
	12.70 BSC		14
	18.10 BSC		14
	16.00 BSC		14
	8 COLUMNS		
	17 ROWS		
	136		7
10mm X 13	mm /10mm X 14mm	/10mm X 15mm	13
11mm X 13	mm /11mm X 14mm	/11mm X 15mm	
12mm X 13	mm /12mm X 14mm	/12mm X 15mm	
RO	W/COLUMN [2/4,5][1	6/4,5]	4
	[8/4,5] [9/4,5] [10	/4,5]	3
10, 11			
11.5-625			
С			

SYMBOL	N O T E		N O T E
NOTES			
REF ISSUE			

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NOTES:



THESE SURFACES TO BE FREE OF SEAMS.



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.



TRAY VACUUM PICKUP METHOD REQUIRES A 28mm SQUARE (MINIMUM) WALLED PICKUP AREA, LOCATED AS CLOSE TO THE CENTER OF THE TRAY AS IS PRACTICAL. CENTER VACUUM PICKUP CELL LOCATIONS ARE N6.



THE SCALLOP ALLOWS THE USE OF A PIN TO MECHANICALLY BIAS THE TRAY ORIENTATION.

- ALL TRAY MEASUREMENTS ARE TO BE MADE WITH THE TRAY UN-RESTRICTED.
- TOTAL USABLE CELLS N3 = N1 x N2
- 8 PACKAGE INTERFACE CONTROLLED BY PACKAGE DESIGN AND LEAD FORM.
- NON-TABULATED DIMENSIONS HAVE A TOLERANCE OF $.X=\pm 0.25$ $.XX=\pm 0.13$, ANGLES $\pm 0.5^{\circ}$
- 10 ALL DIMENSIONS ARE IN MILLIMETERS.
- 11 INTERPRET DIMENSIONING AND TOLERANCING IN ACCORDANCE WITH ASME Y14.5M-1994.



 $\cancel{1}$ $\cancel{2}$ 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.



√3\ N4 INDICATES PACKAGE TYPE ACCOMMODATED.

14 DIMENSIONS M, M1, M2, AND M3 DEFINE THE CENTER LINES FOR THE CELL SITES.



/is\ Bottom sidewall notches require a 2.00mm (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 RECOMMENDED FOR PACKAGES 1.20mm OR LESS.
- 18 ALL VARIATIONS COMPLY WITH DESIGN GUIDE, PUB 95, SECTION 4.9, REVISION A.

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