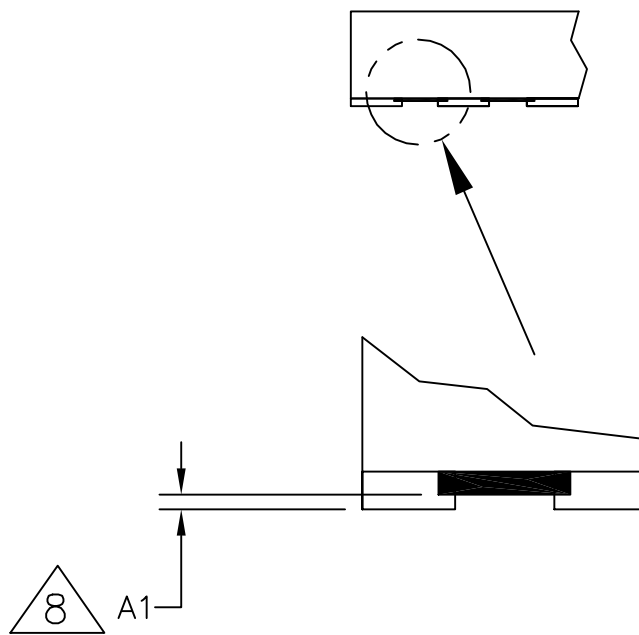
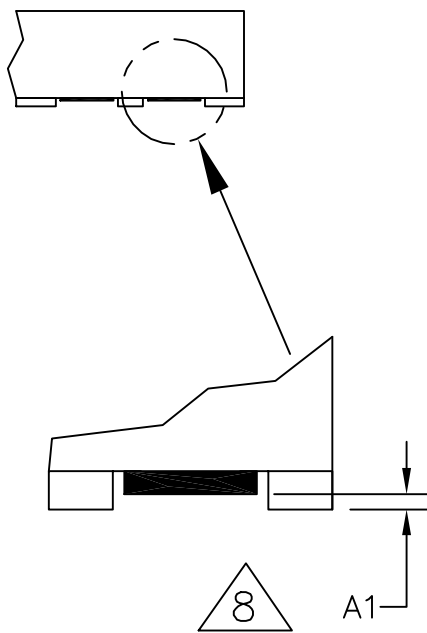


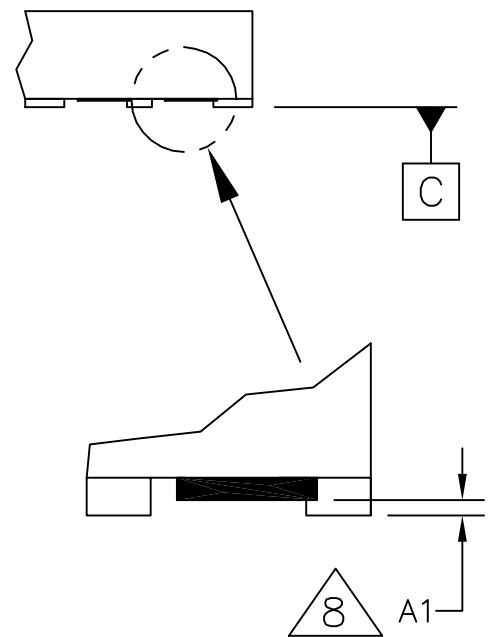
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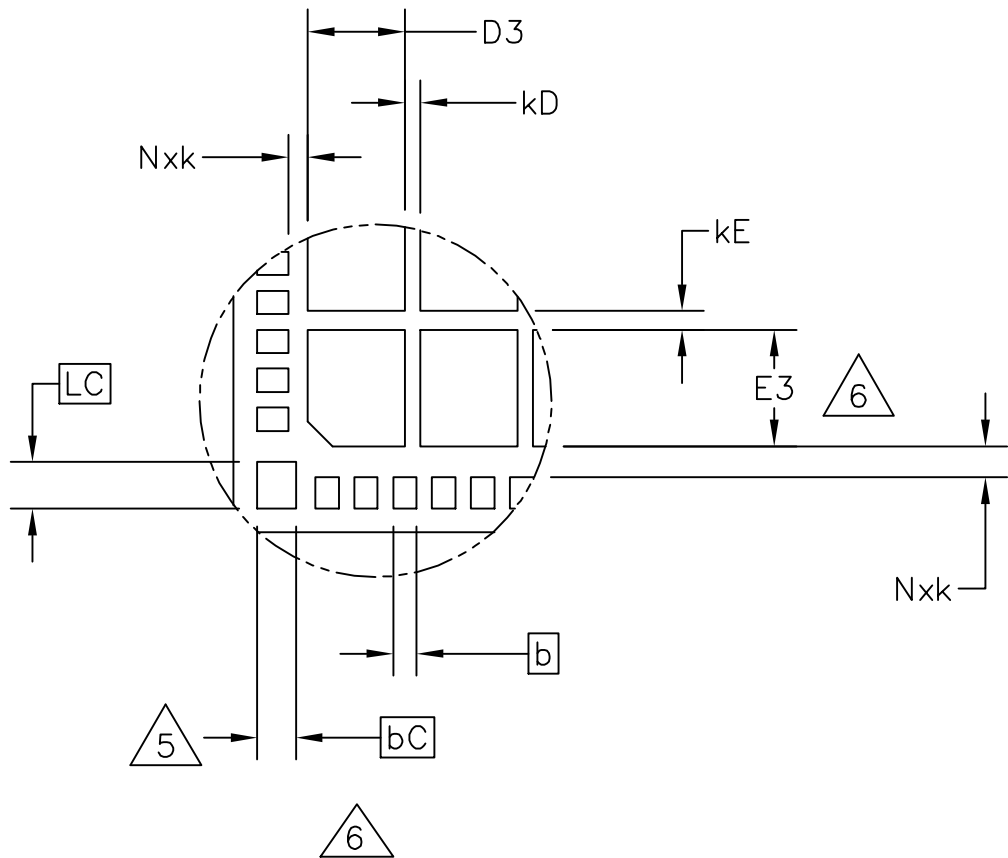
TYPE 2



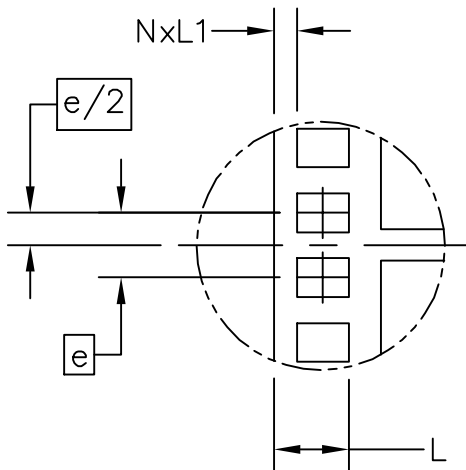
TYPE 3



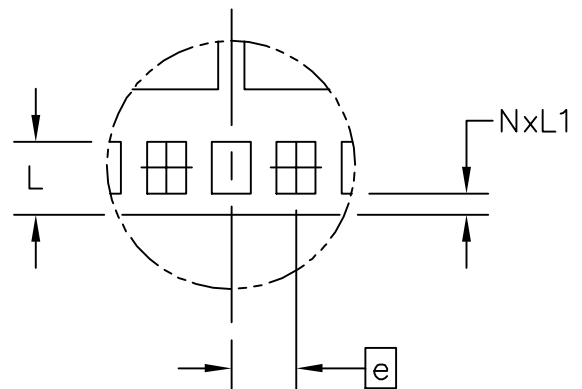
SECTION A-A
ROTATED 90° CW



DETAIL A: THERMAL LAND PATTERN DIMENSIONS



DETAIL B: EVEN TERMINALS/SIDE



DETAIL C: ODD TERMINALS/SIDE

TABLE 1

VARIATION DESIGNATORS							
FIRST DIGIT CODE		SECOND DIGIT CODE		THIRD DIGIT CODE		FOURTH DIGIT CODE	
OVERALL HEIGHT		BODY WIDTH		BODY LENGTH		TERMINAL PITCH	
A	LETTER CODE	D	LETTER CODE	E	LETTER CODE	e	LETTER CODE
2.45 MAX	—	10.00	A	10.00	A	0.50	A
1.70 MAX	L	11.00	B	11.00	B	0.55	B
—	—	12.00	C	12.00	C	0.60	C
—	—	13.00	D	13.00	D	0.65	D
—	—	14.00	E	14.00	E	0.70	E
—	—	15.00	F	15.00	F	0.75	F
—	—	16.00	G	16.00	G	0.80	G
—	—	17.00	H	17.00	H	0.85	H
—	—	18.00	J	18.00	J	0.90	J
—	—	19.00	K	19.00	K	0.95	K
—	—	20.00	L	20.00	L	1.00	L
—	—	21.00	M	21.00	M	1.05	M
—	—	22.00	N	22.00	N	1.10	N
—	—	23.00	P	23.00	P	1.15	P
—	—	24.00	R	24.00	R	1.20	R
—	—	25.00	T	25.00	T	1.25	T
—	—	—	—	26.00	U	—	—
—	—	—	—	27.00	V	—	—
—	—	—	—	28.00	W	—	—
—	—	—	—	30.00	Y	—	—

TABLE 2

COMMON DIMENSIONS						
SYMBOL	H-PQFN			HL-PQFN		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.70	—	2.45	1.20	—	1.70
A1	0.010	0.020	0.035	0.010	0.020	0.035
D3	0.30	—	3.50	0.30	—	3.50
E3	0.30	—	4.20	0.30	—	4.20
kD	0.50	—	—	0.50	—	—
kE	0.50	—	—	0.50	—	—
k	0.20	—	—	0.20	—	—
L1	0.22	—	—	0.22	—	—
NOTES	1, 2					
REF	11-811, 11-849					
ISSUE	A, B					

TABLE 3

TOLERANCES OF FORM AND POSITION	
SYMBOL	VALUE
aaa	0.10
ccc	0.10
ddd	0.10
eee	0.15
fff	0.08
ggg	0.08
NOTES	1, 2
REF	11-811
ISSUE	A

TABLE 4

SUMMARY TABLE			
BODY SIZE	TERMINAL PITCH	TERMINAL COUNT	DESIGNATOR
10.00 X 10.00	0.50	68	LAAA
11.00 X 11.00	0.55	68	LB BB
10.00 X 12.00	0.50	74	LACA
12.00 X 12.00	0.60	68	LCCC
11.00 X 13.00	0.55	74	LBDB
13.00 X 13.00	0.65	68	LDDD
12.00 X 14.00	0.60	74	LCEC
14.00 X 14.00	0.70	68	LEEE
13.00 X 15.00	0.65	74	LDFD
15.00 X 15.00	0.75	68	LFFF
14.00 X 16.00	0.70	74	LEGE
16.00 X 16.00	0.80	68	LG GG
17.00 X 17.00	0.85	68	LHHH
15.00 X 18.00	0.75	74	LFJF
18.00 X 18.00	0.90	68	LJJJ
16.00 X 19.00	0.80	74	LGKG
19.00 X 19.00	0.95	68	LKKK
17.00 X 20.00	0.85	74	LHLH
18.00 X 21.00	0.90	74	LJMJ
19.00 X 22.00	0.95	74	LKNK
20.00 X 20.00	1.00	68	LLLL
21.00 X 21.00	1.05	68	MMM
22.00 X 22.00	1.10	68	NNN
23.00 X 23.00	1.15	68	PPP
20.00 X 24.00	1.00	74	LRL
24.00 X 24.00	1.20	68	RRR
21.00 X 25.00	1.05	74	MTM
25.00 X 25.00	1.25	68	TTT
22.00 X 26.00	1.10	74	NUN
23.00 X 27.00	1.15	74	PVP
24.00 X 28.00	1.20	74	RWR
25.00 X 30.00	1.25	74	TYT

TABLE 5A

SQUARE VARIATIONS										
VARIATION SYMBOL		LAAA	LBBB	LCCC	LDDD	LEEE	LFFF	LGGG	LHHH	NOTE
D BSC		10.00	11.00	12.00	13.00	14.00	15.00	16.00	17.00	
D1	MIN	7.95	8.95	9.95	10.95	11.95	12.45	13.45	14.45	
	NOM	8.00	9.00	10.00	11.00	12.00	12.50	13.50	14.50	—
	MAX	8.05	9.05	10.05	11.05	12.05	12.55	13.55	14.55	—
E BSC		10.00	11.00	12.00	13.00	14.00	15.00	16.00	17.00	—
E1	MIN	7.95	8.95	9.95	10.95	11.95	12.45	13.45	14.45	—
	NOM	8.00	9.00	10.00	11.00	12.00	12.50	13.50	14.50	—
	MAX	8.05	9.05	10.05	11.05	12.05	12.55	13.55	14.55	—
e		0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	—
b	MIN	0.25	0.28	0.31	0.34	0.37	0.40	0.43	0.46	—
	NOM	0.30	0.33	0.36	0.39	0.42	0.45	0.48	0.51	—
	MAX	0.35	0.38	0.41	0.44	0.47	0.50	0.53	0.56	—
bC		0.40	0.50	0.60	0.65	0.70	0.75	0.80	0.85	—
L	MIN	0.47	0.51	0.55	0.59	0.63	0.67	0.71	0.75	—
	NOM	0.62	0.66	0.70	0.74	0.78	0.82	0.86	0.90	—
	MAX	0.77	0.81	0.85	0.89	0.93	0.97	1.01	1.05	—
LC		0.60	0.65	0.70	0.75	0.80	0.90	0.95	1.00	—
n		68								—
nD		17								—
nE		17								—
NOTES		1, 2								—
REF		11–811								—
ISSUE		A								—

TABLE 5B

SQUARE VARIATIONS										
VARIATION SYMBOL		LJJJ	LKKK	LLLL	MMM	NNN	PPP	RRR	TTT	NOTE
D BSC		18.00	19.00	20.00	21.00	22.00	23.00	24.00	25.00	—
D1	MIN	15.45	16.45	16.95	17.95	18.95	19.95	20.95	21.45	—
	NOM	15.50	16.50	17.00	18.00	19.00	20.00	21.00	21.50	—
	MAX	15.55	16.55	17.05	18.05	19.05	20.05	21.05	21.55	—
E BSC		18.00	19.00	20.00	21.00	22.00	23.00	24.00	25.00	—
E1	MIN	15.45	16.45	16.95	17.95	18.95	19.95	20.95	21.45	—
	NOM	15.50	16.50	17.00	18.00	19.00	20.00	21.00	21.50	—
	MAX	15.55	16.50	17.05	18.05	19.05	20.05	21.05	21.55	—
e		0.90	0.95	1.00	1.05	1.10	1.15	1.20	1.25	—
b	MIN	0.49	0.52	0.55	0.58	0.61	0.64	0.67	0.70	—
	NOM	0.54	0.57	0.60	0.63	0.66	0.69	0.72	0.75	—
	MAX	0.59	0.62	0.65	0.68	0.71	0.74	0.77	0.80	—
bC		0.90	0.95	1.00	1.05	1.10	1.15	1.20	1.25	—
L	MIN	0.79	0.83	0.87	0.91	0.95	0.99	1.03	1.07	—
	NOM	0.94	0.98	1.02	1.06	1.10	1.14	1.18	1.22	—
	MAX	1.09	1.13	1.30	1.21	1.25	1.29	1.33	1.37	—
LC		1.05	1.10	1.20	1.25	1.30	1.35	1.40	1.50	—
n		68								—
nD		17								—
nE		17								—
NOTES		1, 2								—
REF		11–811								—
ISSUE		A								—

TABLE 6A

RECTANGULAR VARIATIONS										
VARIATION SYMBOL		LACA	LBDB	LCEC	LDFD	LEGE	LFJF	LGKG	LHLH	NOTE
D BSC		10.00	11.00	12.00	13.00	14.00	15.00	16.00	17.00	—
D1	MIN	7.95	8.95	9.95	10.95	11.95	12.45	13.45	14.45	—
	NOM	8.00	9.00	10.00	11.00	12.00	12.50	13.50	14.50	—
	MAX	8.05	9.05	10.05	11.05	12.05	12.55	13.55	14.55	—
E BSC		12.00	13.00	14.00	15.00	16.00	18.00	19.00	20.00	—
E1	MIN	9.95	10.95	11.95	12.95	13.95	15.45	16.45	17.45	—
	NOM	10.00	11.00	12.00	13.00	14.00	15.50	16.50	17.50	—
	MAX	10.05	11.05	12.05	13.05	14.05	15.55	16.55	17.55	—
e		0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	—
b	MIN	0.25	0.28	0.31	0.34	0.37	0.40	0.43	0.46	—
	NOM	0.30	0.33	0.36	0.39	0.42	0.45	0.48	0.51	—
	MAX	0.35	0.38	0.41	0.44	0.47	0.50	0.53	0.56	—
bC		0.40	0.50	0.60	0.65	0.70	0.75	0.80	0.85	—
L	MIN	0.47	0.51	0.55	0.59	0.63	0.67	0.71	0.75	—
	NOM	0.62	0.66	0.70	0.74	0.78	0.82	0.86	0.90	—
	MAX	0.77	0.81	0.85	0.89	0.93	0.97	1.01	1.05	—
LC		0.60	0.65	0.70	0.75	0.80	0.90	0.95	1.00	—
n		74								—
nD		17								—
nE		20								—
NOTES		1, 2								—
REF		11–811								—
ISSUE		A								—

TABLE 6B

RECTANGULAR VARIATIONS										
VARIATION SYMBOL		JMJ	KNK	LRL	MTM	NUN	PVP	RWR	TYT	NOTE
D BSC		18.00	19.00	20.00	21.00	22.00	23.00	24.00	25.00	—
D1	MIN	15.45	16.45	16.95	17.95	18.95	19.95	20.95	21.45	—
	NOM	15.50	16.50	17.00	18.00	19.00	20.00	21.00	21.50	—
	MAX	15.55	16.55	17.05	18.05	19.05	20.05	21.05	21.55	—
E BSC		21.00	22.00	24.00	25.00	26.00	27.00	28.00	30.00	—
E1	MIN	18.45	19.45	20.95	21.95	22.95	23.95	24.95	25.45	—
	NOM	18.50	19.50	21.00	22.00	23.00	24.00	25.00	25.50	—
	MAX	18.55	19.55	21.05	22.05	23.05	24.05	25.05	25.55	—
e		0.90	0.95	1.00	1.05	1.10	1.15	1.20	1.25	—
b	MIN	0.49	0.52	0.55	0.58	0.61	0.64	0.67	0.70	—
	NOM	0.54	0.57	0.60	0.63	0.66	0.69	0.72	0.75	—
	MAX	0.59	0.62	0.65	0.68	0.71	0.74	0.77	0.80	—
bC		0.90	0.95	1.00	1.05	1.10	1.15	1.20	1.25	—
L	MIN	0.79	0.83	0.87	0.91	0.95	0.99	1.03	1.07	—
	NOM	0.94	0.98	1.02	1.06	1.10	1.14	1.18	1.22	—
	MAX	1.09	1.13	1.30	1.21	1.25	1.29	1.33	1.37	—
LC		1.05	1.10	1.20	1.25	1.30	1.35	1.40	1.50	—
n		74								—
nD		17								—
nE		20								—
NOTES		1, 2								—
REF		11–811								—
ISSUE		A								—

NOTES:

1. DIMENSIONING AND TOLERANCING SCHEMES CONFORM TO ASME Y14.5M-1994.

2. ALL DIMENSIONS ARE IN MILLIMETERS.

③ TERMINAL #1 IDENTIFIER AND TERMINAL NUMBERING CONVENTIONS SHALL CONFORM TO JEP95, SEC.3 SPP-002. TERMINAL #1 IDENTIFIER MUST BE LOCATED WITHIN THE ZONE INDICATED ON THE OUTLINE DRAWING. THE INDICATOR ON THE BOTTOM SURFACE MAY BE A MOLDED, MARKED OR METAL FEATURE.

④ OUTLINES WITH "D" AND "E" INCREMENTS LESS THAN 1.0 MM SHOULD BE REGISTERED AS "STAND-ALONE" OUTLINES. THESE OUTLINES SHOULD USE AS MANY OF THE ALGORITHMS AND DIMENSIONS AS POSSIBLE TO ENSURE PREDICTABILITY IN MANUFACTURING.

⑤ THE INNER EDGE OF CORNER TERMINALS MAY BE CHAMFERED OR ROUNDED IN ORDER TO ACHIEVE THE MINIMUM GAP "K". THIS FEATURE SHOULD NOT AFFECT THE TERMINAL WIDTH "b" WHICH IS MEASURED L/2 FROM THE EDGE OF THE PACKAGE BODY.

⑥ THE EXPOSED HEAT FEATURE IS SEGMENTED AND ARRANGED IN A MATRIX FORMAT. IT MAY HAVE OPTIONAL CORNER RADII ON EACH SEGMENT.

⑦ METAL FEATURES UNDER THE SOLDER MASK OPENING NOT SHOWN SO AS NOT TO OBSCURE THESE TERMINALS AND HEAT FEATURES.

⑧ THE SOLDERABLE SURFACE MAY BE DEFINED BY AN OPENING IN THE SOLDER RESIST LAYER IN (TYPE 1) TERMINALS OR BY THE SIZE OF THE METALLIZED PAD (TYPE 2 AND 3) TERMINALS. THE SMD PAD (TYPE 1) IS RECOMMENDED FOR THE EXPOSED CENTER PAD. THE NSMD PAD (TYPE 2) IS RECOMMENDED FOR SMALL SIZE PACKAGES, LESS THAN 20X20mm. THE MIXTURE OF SMD AND NSMD PAD (TYPE 3) IS RECOMMENDED FOR CORNERS PADS AND LARGE SIZE PACKAGES, EQUAL TO OR GREATER THAN 20X20mm. THE MAXIMUM ALLOWABLE MISALIGNMENT BETWEEN THE EDGE OF THE METALLIZED PAD AND THE EDGE OF THE SOLDER RESIST LAYER OPENING IS 0.10mm.

⑨ VARIOUS COMPANIES HAVE ISSUED PATENTS AND RELATED PATENT APPLICATIONS THAT MAY APPLY TO THIS REGISTRATION. IF THE CURRENT ISSUE PATENTS OR LATER PATENTS RESULTING FROM RELATED APPLICATIONS DO APPLY, THESE COMPANIES INTEND TO COMPLY WITH THE JEDEC PATENT POLICY AND LICENSE UNDER REASONABLE TERMS AND CONDITIONS THAT ARE DEMONSTRABLY FREE OF ANY UNFAIR DISCRIMINATION. REFERENCED PATENTS ARE AS FOLLOWS.

XXXXXX

U.S. PATENT #'S: XXXX

Change Record

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

Initial Issue: A	Date: JANUARY 2009	Item: JC11.11-811
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Revision History:

Issue: B	Date: JANUARY 2012	Item: 11.11-849
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Location	Change from:	Change to:
SHEET 4, TABLE 2	E3 MAX DIMENSION 3.50	E3 MAX DIMENSION 4.20

Issue:	Date:	Item:
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Location	Change from:	Change to:

Issue:	Date:	Item:
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Location	Change from:	Change to: