

JEDEC  
SOLID STATE  
PRODUCT OUTLINE

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

THERMALLY ENHANCED PLASTIC VERY THIN  
AND VERY VERY THIN FINE PITCH  
QUAD FLAT NO LEAD PACKAGE

JESD-30  
DESIGNATOR  
H(V,W)F-PQFN

ISSUE  
K

DATE  
JUNE 2006

**MO-220**

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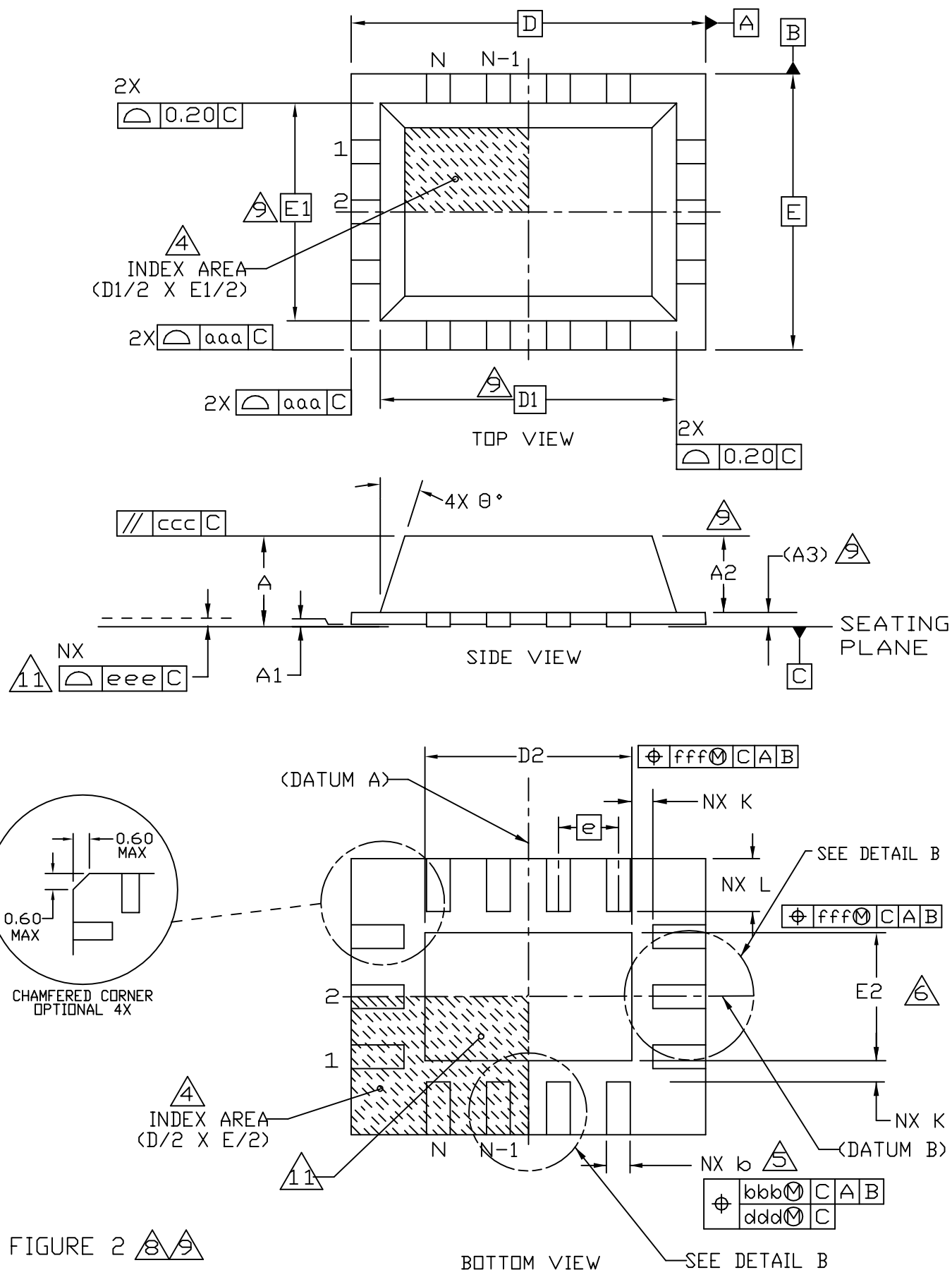
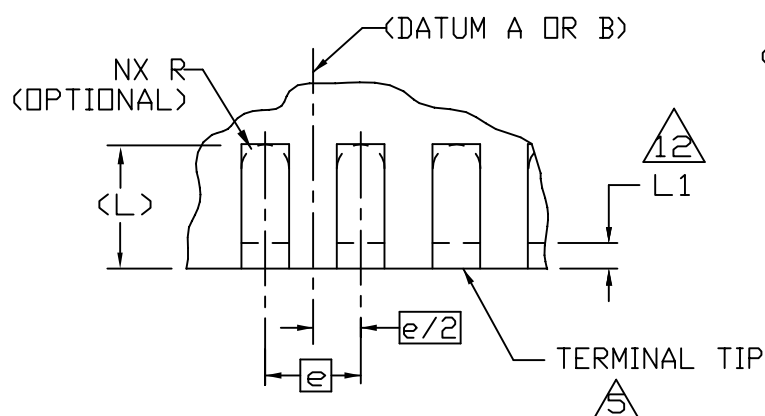
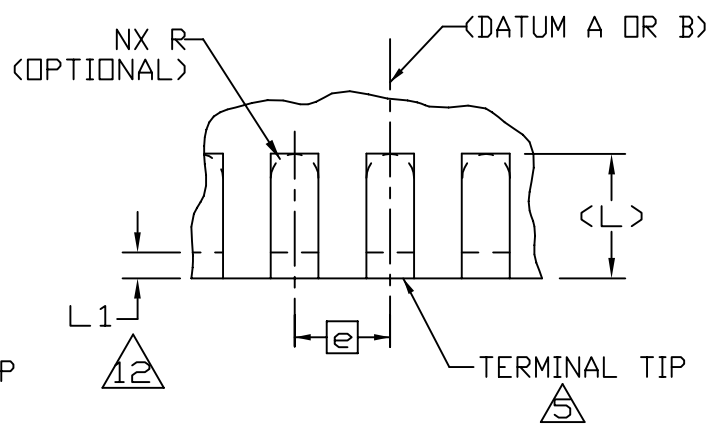


FIGURE 2  $\triangle 8 \triangle 9$



EVEN TERMINAL/SIDE



ODD TERMINAL/SIDE

## DETAIL B

TABLE 1

VARIATION DESIGNATORS							
FIRST DIGIT CODE		SECOND DIGIT CODE		THIRD DIGIT CODE		FOURTH DIGIT CODE	
OVERALL HEIGHT		BODY LENGTH		BODY WIDTH		TERMINAL PITCH	
A	LETTER CODE	D	LETTER CODE	E	LETTER CODE	e	LETTER CODE
1.00 MAX	V	1.0	A	1.0	A	1.00	A
0.80 MAX	W	1.5	B	1.5	B	0.80	B
—	—	2.0	C	2.0	C	0.65	C
—	—	2.5	D	2.5	D	0.50	D
—	—	3.0	E	3.0	E	0.40	E
—	—	3.5	F	3.5	F	—	—
—	—	4.0	G	4.0	G	—	—
—	—	5.0	H	5.0	H	—	—
—	—	6.0	J	6.0	J	—	—
—	—	7.0	K	7.0	K	—	—
—	—	8.0	L	8.0	L	—	—
—	—	9.0	M	9.0	M	—	—
—	—	10.0	N	10.0	N	—	—
—	—	11.0	P	11.0	P	—	—
—	—	12.0	R	12.0	R	—	—
—	—	4.5	S	4.5	S	—	—
—	—	5.5	T	5.5	T	—	—
—	—	6.5	U	6.5	U	—	—



TABLE 2

COMMON DIMENSIONS						
	V: VERY THIN			W: VERY VERY THIN		
SYMBOL	MIN	NOM	MAX	MIN	NOM	MAX
A	0.80	0.90	1.00	0.70	0.75	0.80
A1	0	0.02	0.05	0	0.02	0.05
A2	0	0.65	1.00	0	0.55	0.80
A3	—	0.20 REF	—	—	0.20 REF	—
L1	0.00	—	0.15	0.00	—	0.15
$\theta$	0°	—	14°	0°	—	14°
K	0.20	—	—	0.20	—	—
R	b MIN/2	—	—	b MIN/2	—	—
NOTES	1,2					
REF	11-684					
ISSUE	I					



TABLE 3

LEAD WIDTH			
b			
PITCH	MIN	NOM	MAX
1.00	0.30	0.40	0.45
0.80	0.25	0.30	0.35
0.65	0.25	0.30	0.35
0.50	0.18	0.25	0.30
0.40	0.15	0.20	0.25
NOTES	5,14		
REF	11-534		
ISSUE	A		

TABLE 4

TOLERANCE OF FORM & POSITION		
symbol \ pitch	0.40mm	>0.40mm
aaa	0.10	0.15
bbb	0.07	0.10
ccc	0.10	0.10
ddd	0.05	0.05
eee	0.08	0.08
fff	0.10	0.10
NOTES	1,2	
REF	11-743	
ISSUE	K	

EXAMPLE: A 20-TERMINAL PQFN WHICH IS 5 mm LONG (DIMENSION D) BY 5 mm WIDE (DIMENSION E) AND 0.65 mm PITCH WILL BE VARIATION HHC.

TABLE 5A



SUMMARY TABLE				
BODY SIZE	LEAD PITCH	LEAD COUNT	VERY THIN FQFP-N	VERY VERY THIN FQFP-N
2.00 X 2.00	0.50	8	VCCD	WCCD
3.00 X 3.00	0.80	4	VEEB	WEEB
	0.65	8	VEEC	WEEC
	0.65	12	VEEC-1	WEEC-1
	0.65	8	VEEC-2,3	WEEC-2,3
	0.50	12	VEED-1,3,5	WEED-1,3,5
	0.50	16	VEED-2,4,6,7	WEED-2,4,6,7
	0.40	16	VEEE-1	WEEE-1
	0.40	20	VEEE	WEEE
3.50 X 3.50	0.50	20	VFFD/VFFD-1	WFFD/WFFD-1
3.50 X 4.50	0.50	24	VFSD/VFSD-1,2	WFSD/WFSD-1,2
4.00 X 3.00	0.80	8	VGEB	WGEB
	0.65	12	VGEC	WGEC
	0.50	16	VGED	WGED
4.00 X 4.00	0.80	12	VGGB	WGGB
	0.80	14	VGGB-1	WGGB-1
	0.65	16	VGGC	WGGC
	0.65	12	VGGC-1	WGGC-1
	0.65	16	VGGC-2,3	WGGC-2,3
	0.65	16	VGGC-4	WGGC-4
	0.50	14	VGGD-3	WGGD-3
	0.50	16	VGGD-4,10	WGGD-4,10
	0.50	20	VGGD-1,5,11	WGGD-1,5,11
	0.50	24	VGGD-2,6,8,9	WGGD-2,6,8,9
	0.50	28	VGGD-7	WGGD-7
	0.40	28	VGGE	VGGE
4.00 X 5.00	0.80	10	VGHB	WGHB
	0.50	28	VGHD/VGHD-3	WGHD/WGHD-3
	0.50	24	VGHD-1,2	WGHD-1,2
	0.40	32	VGHE	WGHE
	0.40	34	VGHE-1	WGHE-1
4.50 X 5.50	0.50	32	VSTD/VSTD-1	WSTD/WSTD-1
4.50 X 6.50	0.50	36	VSUD/VSUD-1	WSUD/WSUD-1
5.00 X 4.00	0.80	14	VHGB	WHGB
	0.80	16	VHGB-1	WHGB-1
	0.65	18	VHGC/VHGC-1	WHGC/WHGC-1
	0.50	24	VHGD	WHGD

TABLE 5B

SUMMARY TABLE (CONTINUED)				
BODY SIZE	LEAD PITCH	LEAD COUNT	VERY THIN FQFP-N	VERY VERY THIN FQFP-N
5.00 X 5.00	0.80	16	VHHB	WHHB
	0.80	20	VHHB-1	WHHB-1
	0.65	20	VHHC	WHHC
	0.65	24	VHHC-1	WHHC-1
	0.65	20	VHHC-2	WHHC-2
	0.50	28	VHHD-1,3	WHHD-1,3
	0.50	32	VHHD-2,4,5,6	WHHD-2,4,5,6
	0.40	36	VHHE	WHHE
	0.40	40	VHHE-1	WHHE-1
5.00 X 6.00	0.65	22	VHJC	WHJC
	0.50	32	VHJD	WHJD
5.00 X 7.00	0.50	38	VHKD/VHKD-1	WHKD/WHKD-1
	0.50	40	VHKD-2	WHKD-2
5.50 X 6.50	0.50	40	VTUD/VTUD-1	WTUD/WTUD-1
6.00 X 5.00	0.80	18	VJHB	WJHB
	0.80	20	VJHB-1	WJHB-1
	0.65	22	VJHC	WJHC
	0.50	32	VJHD	WJHD
6.00 X 6.00	0.80	20	VJJB	WJJB
	0.80	24	VJJB-1,2	WJJB-1,2
	0.65	28	VJJC	WJJC
	0.65	24	VJJC-1	WJJC-1
	0.65	32	VJJC-2	WJJC-2
	0.65	28	VJJC-3,4	WJJC-3,4
	0.50	36	VJJD-1,4,8	WJJD-1,4,8
	0.50	38	VJJD-3	WJJD-3
	0.50	40	VJJD-2,5,6	WJJD-2,5,6
	0.50	32	VJJD-7	WJJD-7
	0.40	48	VJJE/VJJE-1	WJJE/WJJE-1
7.00 X 5.00	0.50	38	VKHD	WKHD
7.00 X 7.00	0.80	28	VKKB	WKKB
	0.65	32	VKKC	WKKC
	0.65	36	VKKC-1	WKKC-1
	0.65	32	VKKC-2	WKKC-2
	0.50	40	VKKD	WKKD
	0.50	44	VKKD-1	WKKD-1
	0.50	48	VKKD-2	WKKD-2
	0.50	44	VKKD-3	WKKD-3
	0.50	48	VKKD-4,6,8	WKKD-4,6,8
	0.50	44	VKKD-5,7	WKKD-5,7
	0.40	56	VKKE	WKKE
7.00 X 9.00	0.50	38	VKMC	WKMC

TABLE 5C



SUMMARY TABLE (CONTINUED)				
BODY SIZE	LEAD PITCH	LEAD COUNT	VERY THIN FQFP-N	VERY VERY THIN FQFP-N
8.00 X 8.00	0.80	28	VLLB-1	WLLB-1
	0.80	32	VLLB	WLLB
	0.65	40	VLLC	WLLC
	0.65	36	VLLC-1	WLLC-1
	0.65	44	VLLC-2,4	WLLC-2,4
	0.65	40	VLLC-3	WLLC-3
	0.50	48	VLLD	WLLD
	0.50	48	VLLD-3	WLLD-3
	0.50	52	VLLD-1	WLLD-1
	0.50	56	VLLD-2	WLLD-2
	0.50	52	VLLD-4	WLLD-4
	0.50	56	VLLD-5,6	WLLD-5,6
	0.40	64	VLLE,VLLE-2	WLLE,WLLE-2
	0.40	68	VLLE-1	WLLE-1
9.00 X 9.00	0.80	36	VMMB	WMMB
	0.65	48	VMMC	WMMC
	0.65	44	VMMC-1,2,3	WMMC-1,2,3
	0.50	64	VMMD/VMMD-3,4	WMMD/WMMD-3,4
	0.50	60	VMMD-1	WMMD-1
	0.50	56	VMMD-2	WMMD-2
	0.40	72	VMME	WMME
10.00 X 10.00	0.40	76	VMME-1	WMME-1
	0.50	64	VNND-1	WNND-1
	0.50	68	VNND-2	WNND-2
	0.50	72	VNND-3,4	WNND-3,4
12.00 X 12.00	0.40	88	VNNE,VNNE-1	WNNE,WNNE-1
	0.50	80	VRRD	WRRD
	0.40	100	VRRE,VRRE-2	WRRE,WRRE-2
	0.40	108	VRRE-1	WRRE-1

TABLE 6A

e=0.80 PITCH										
VARIATION		VEEB	VGEB	VGGB	VGGB-1	VGHB	VHGB	VHGB-1	VHHB	NOTE
SYMBOL		WEEB	WGEB	WGGB	WGGB-1	WGHB	WHGB	WHGB-1	WHHB	
D BSC		3.00	4.00	4.00	4.00	4.00	5.00	5.00	5.00	
E BSC		3.00	3.00	4.00	4.00	5.00	4.00	4.00	5.00	
D1 BSC		2.75	3.75	3.75	—	—	4.75	—	4.75	9
E1 BSC		2.75	2.75	3.75	—	—	3.75	—	4.75	9
D2	MIN	0.25	0.75	0.75	2.10	2.10	1.25	3.10	1.25	
	NOM	0.70	1.70	1.70	2.20	2.20	2.70	3.20	2.70	
	MAX	1.25	2.25	2.25	2.30	2.30	3.25	3.30	3.25	
E2	MIN	0.25	0.25	0.75	2.10	3.10	0.75	2.10	1.25	
	NOM	0.70	0.70	1.70	2.20	3.20	1.70	2.20	2.70	
	MAX	1.25	1.25	2.25	2.30	3.30	2.25	2.30	3.25	
L	MIN	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	
	NOM	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	
	MAX	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	
N		4	8	12	14	10	14	16	16	7.3
ND		1	3	3	4	2	4	5	4	6
NE		1	1	3	3	3	3	3	4	6
NOTES		1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	
REF		11-534	11-534	11-534	11-684	11-684	11-534	11-684	11-534	
ISSUE		A	A	A	I	I	A	I	A	

TABLE 6B

e=0.80 PITCH										
VARIATION  SYMBOL		VHHB-1	VJHB	VJHB-1	VJJB	VJJB-1	VJJB-2	VKKB	VLLB	NOTE
		WHHB-1	WJHB	WJHB-1	WJJB	WJJB-1	WJJB-2	WKKB	WLLB	
D BSC		5.00	6.00	6.00	6.00	6.00	6.00	7.00	8.00	
E BSC		5.00	5.00	5.00	6.00	6.00	6.00	7.00	8.00	
D1 BSC		—	5.75	—	5.75	—	—	6.75	7.75	9
E1 BSC		—	4.75	—	5.75	—	—	6.75	7.75	9
D2	MIN	3.10	1.75	4.10	1.75	4.10	4.10	2.25	2.75	
	NOM	3.20	3.70	4.20	3.70	4.20	4.20	4.70	5.70	
	MAX	3.30	4.25	4.30	4.25	4.30	4.30	5.25	6.25	
E2	MIN	3.10	1.25	3.10	1.75	4.10	4.10	2.25	2.75	
	NOM	3.20	2.70	3.20	3.70	4.20	4.20	4.70	5.70	
	MAX	3.25	3.25	3.30	4.25	4.30	4.30	5.25	6.25	
L	MIN	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	
	NOM	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	
	MAX	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	
N		20	18	20	20	24	24	28	32	7.3
ND		6	5	6	5	7	5	7	8	6
NE		4	4	4	5	5	7	7	8	6
NOTES		1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	
REF		11-684	11-534	11-684	11-534	11-684	11-684	11-534	11-534	
ISSUE		I	A	I	A	I	I	A	A	



TABLE 6C

e=0.80 PITCH									
VARIATION SYMBOL	VLLB-1	VMMB							NOTE
	WLLB-1	WMMB							
D BSC	8.00	9.00							
E BSC	8.00	9.00							
D1 BSC	—	—							9
E1 BSC	—	—							9
D2	MIN	6.10	6.90						
	NOM	6.20	7.00						
	MAX	6.30	7.10						
E2	MIN	6.10	6.90						
	NOM	6.20	7.00						
	MAX	6.30	7.10						
L	MIN	0.35	0.35						
	NOM	0.55	0.55						
	MAX	0.75	0.75						
N	28	36							7.3
ND	8	9							6
NE	6	9							6
NOTES	1,2,10	1,2,10							
REF	11-684	11-684							
ISSUE	I	I							

TABLE 7A

$e=0.65$ PITCH										
SYMBOL \ VARIATION	VEEC	VEEC-1	VEEC-2	VEEC-3	VGEC	VGGC	VGGC-1	VGGC-2	VGGC-3	NOTE
	WEEC	WEEC-1	WEEC-2	WEEC-3	WGEC	WGGC	WGGC-1	WGGC-2	WGGC-3	
D BSC	3.00	3.00	3.00	3.00	4.00	4.00	4.00	4.00	4.00	
E BSC	3.00	3.00	3.00	3.00	3.00	4.00	4.00	4.00	4.00	
D1 BSC	2.75	—	—	—	3.75	3.75	—	—	3.75	9
E1 BSC	2.75	—	—	—	2.75	3.75	—	—	3.75	9
D2	MIN	0.25	1.50	1.50	0.75	0.75	2.50	2.50	2.40	
	NOM	0.70	1.65	1.65	1.70	1.70	2.65	2.65	—	
	MAX	1.25	1.80	1.80	2.25	2.25	2.80	2.80	2.80	
E2	MIN	0.25	1.50	1.50	0.25	0.75	2.50	2.50	2.40	
	NOM	0.70	1.65	1.65	0.70	1.70	2.65	2.65	—	
	MAX	1.25	1.80	1.80	1.25	2.25	2.80	2.80	2.80	
L	MIN	0.35	0.35	0.35	0.30	0.35	0.35	0.35	0.30	
	NOM	0.55	0.40	0.40	0.40	0.55	0.55	0.40	0.40	
	MAX	0.75	0.45	0.45	0.50	0.75	0.75	0.45	0.45	0.50
N	8	12	8	8	12	16	12	16	16	7.3
ND	2	3	2	2	4	4	3	4	4	6
NE	2	3	2	2	2	4	3	4	4	6
NOTES	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	
REF	11-534	11-640	11-640	11-629	11-534	11-534	11-640	11-640	11-743	
ISSUE	A	F	F	E	A	A	F	F	K	

TABLE 7B

$e=0.65$ PITCH										
SYMBOL \ VARIATION	VGGC-4	VHGC	VHGC-1	VHHC	VHHC-1	VHHC-2	VHJC	VJHC	VJJC	NOTE
	WGGC-4	WHGC	WHGC-1	WHHC	WHHC-1	WHHC-2	WHJC	WJHC	WJJC	
D BSC	4.00	5.00	5.00	5.00	5.00	5.00	5.00	6.00	6.00	
E BSC	4.00	4.00	4.00	5.00	5.00	5.00	6.00	5.00	6.00	
D1 BSC	—	4.75	4.75	4.75	—	—	—	5.75	5.75	9
E1 BSC	—	3.75	3.75	4.75	—	—	—	4.75	5.75	9
D2	MIN	2.20	1.25	3.00	1.25	3.50	3.50	3.50	1.75	1.75
	NOM	2.40	2.70	—	2.70	3.65	3.65	3.65	3.70	3.70
	MAX	2.60	3.25	3.70	3.25	3.80	3.80	3.80	4.25	4.25
E2	MIN	2.20	0.75	2.20	1.25	3.50	3.50	4.50	1.25	1.75
	NOM	2.40	1.70	—	2.70	3.65	3.65	4.65	2.70	3.70
	MAX	2.60	2.25	2.70	3.25	3.80	3.80	4.80	3.25	4.25
L	MIN	0.45	0.35	0.30	0.35	0.35	0.35	0.35	0.35	
	NOM	0.55	0.55	0.40	0.55	0.40	0.40	0.40	0.55	
	MAX	0.65	0.75	0.50	0.75	0.45	0.45	0.45	0.75	
N	16	18	18	20	24	20	22	22	28	7.3
ND	4	5	5	5	6	5	5	6	7	6
NE	4	4	4	5	6	5	6	5	7	6
NOTES	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	
REF	11-684	11-534	11-684	11-620	11-640	11-640	11-640	11-534	11-620	
ISSUE	I	A	I	D	F	F	F	A	D	

TABLE 7C

$e=0.65$ PITCH										
VARIATION SYMBOL	VJJC-1	VJJC-2	VJJC-3	VJJC-4	VKKC	VKKC-1	VKKC-2	VKMC		NOTE
	WJJC-1	WJJC-2	WJJC-3	WJJC-4	WKCC	WKCC-1	WKCC-2	WKMC		
D BSC	6.00	6.00	6.00	6.00	7.00	7.00	7.00	7.00		
E BSC	6.00	6.00	6.00	6.00	7.00	7.00	7.00	9.00		
D1 BSC	—	—	—	5.75	6.75	—	—	—		9
E1 BSC	—	—	—	5.75	6.75	—	—	—		9
D2	MIN	4.50	4.50	4.50	4.00	2.25	5.50	5.50	4.95	
	NOM	4.65	4.65	4.65	—	4.70	5.65	5.65	5.10	
	MAX	4.80	4.80	4.80	4.55	5.25	5.80	5.80	5.25	
E2	MIN	4.50	4.50	4.50	4.00	2.25	5.50	5.50	6.95	
	NOM	4.65	4.65	4.65	—	4.70	5.65	5.65	7.10	
	MAX	4.80	4.80	4.80	4.55	5.25	5.80	5.80	7.25	
L	MIN	0.35	0.35	0.35	0.30	0.35	0.35	0.35	0.45	
	NOM	0.40	0.40	0.40	0.40	0.55	0.40	0.40	0.55	
	MAX	0.45	0.45	0.45	0.50	0.75	0.45	0.45	0.65	
N	24	32	28	28	32	36	32	38		7.3
ND	6	8	7	7	8	9	8	8		6
NE	6	8	7	7	8	9	8	11		6
NOTES	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	
REF	11-640	11-640	11-640	11-684	11-534	11-640	11-640	11-743		
ISSUE	F	F	F	I	A	F	F	K		

TABLE 7D

$e=0.65$ PITCH										
VARIATION SYMBOL	VLLC	VLLC-1	VLLC-2	VLLC-3	VLLC-4	VMMC	VMMC-1	VMMC-2	VMMC-3	NOTE
	WLLC	WLLC-1	WLLC-2	WLLC-3	WLLC-4	WMMC	WMMC-1	WMMC-2	WMMC-3	
D BSC	8.00	8.00	8.00	8.00	8.00	9.00	9.00	9.00	9.00	
E BSC	8.00	8.00	8.00	8.00	8.00	9.00	9.00	9.00	9.00	
D1 BSC	7.75	—	—	—	—	—	—	8.75	8.75	9
E1 BSC	7.75	—	—	—	—	—	—	8.75	8.75	9
D2	MIN	2.75	6.50	6.50	6.50	6.30	7.50	7.50	6.00	7.20
	NOM	5.70	6.65	6.65	6.65	6.45	7.65	7.65	—	7.35
	MAX	6.25	6.80	6.80	6.80	6.60	7.80	7.80	6.75	7.50
E2	MIN	2.75	6.50	6.50	6.50	6.30	7.50	7.50	6.00	7.20
	NOM	5.70	6.65	6.65	6.65	6.45	7.65	7.65	—	7.35
	MAX	6.25	6.80	6.80	6.80	6.60	7.80	7.80	6.75	7.50
L	MIN	0.35	0.35	0.35	0.35	0.30	0.35	0.35	0.30	0.30
	NOM	0.55	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
	MAX	0.75	0.45	0.45	0.45	0.50	0.45	0.45	0.50	0.50
N	40	36	44	40	44	48	44	44	44	7.3
ND	10	9	11	10	11	12	11	11	11	6
NE	10	9	11	10	11	12	11	11	11	6
NOTES	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	
REF	11-534	11-640	11-640	11-640	11-743	11-640	11-640	11-684	11-743	
ISSUE	A	F	F	F	K	F	F	I	K	

TABLE 8A

$e=0.50$ PITCH										
VARIATION SYMBOL	VCCD	VEED-1	VEED-2	VEED-3	VEED-4	VEED-5	VEED-6	VEED-7	VFFD	NOTE
	WCCD	WEED-1	WEED-2	WEED-3	WEED-4	WEED-5	WEED-6	WEED-7	WFFD	
D BSC	2.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.50	
E BSC	2.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.50	
D1 BSC	1.75	2.75	2.75	—	—	2.75	2.75	—	3.30	9
E1 BSC	1.75	2.75	2.75	—	—	2.75	2.75	—	3.30	9
D2	MIN	0.25	0.25	0.25	1.50	1.50	1.25	1.25	1.05	0.75
	NOM	0.55	0.70	0.70	1.65	1.65	—	—	—	2.00
	MAX	0.80	1.25	1.25	1.80	1.80	1.65	1.65	1.45	2.10
E2	MIN	0.25	0.25	0.25	1.50	1.50	1.25	1.25	1.05	0.75
	NOM	0.55	0.70	0.70	1.65	1.65	—	—	—	2.00
	MAX	0.80	1.25	1.25	1.80	1.80	1.65	1.65	1.45	2.10
L	MIN	0.30	0.35	0.30	0.35	0.35	0.30	0.30	0.45	0.50
	NOM	0.40	0.55	0.40	0.40	0.40	0.40	0.40	0.50	0.55
	MAX	0.50	0.75	0.50	0.45	0.45	0.50	0.50	0.55	0.60
N	8	12	16	12	16	12	16	16	20	7.3
ND	2	3	4	3	4	3	4	4	5	6
NE	2	3	4	3	4	3	4	4	5	6
NOTES	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	
REF	11-563	11-534	11-534	11-640	11-640	11-743	11-743	11-648	11-684	
ISSUE	B	A	A	F	F	K	K	G	I	

TABLE 8B

$e=0.50$ PITCH										
VARIATION SYMBOL	VFFD-1	VFSD	VFSD-1	VFSD-2	VGED	VGGD-1	VGGD-2	VGGD-3	VGGD-4	NOTE
	WFFD-1	WFSD	WFSD-1	WFSD-2	WGED	WGGD-1	WGGD-2	WGGD-3	WGGD-4	
D BSC	3.50	3.50	3.50	3.50	4.00	4.00	4.00	4.00	4.00	
E BSC	3.50	4.50	4.50	4.50	3.00	4.00	4.00	4.00	4.00	
D1 BSC	—	3.30	—	—	3.75	3.75	3.75	—	—	9
E1 BSC	—	4.30	—	—	2.75	3.75	3.75	—	—	9
D2	MIN	1.60	0.75	1.60	0.75	0.75	0.75	2.10	2.10	
	NOM	1.70	2.00	1.70	—	1.70	1.70	2.20	2.20	
	MAX	1.80	2.10	1.80	2.10	2.25	2.25	2.25	2.30	2.30
E2	MIN	1.60	1.75	2.60	2.60	0.25	0.75	0.75	2.10	2.10
	NOM	1.70	3.00	2.70	—	0.70	1.70	1.70	2.20	2.20
	MAX	1.80	3.10	2.80	3.10	1.25	2.25	2.25	2.30	2.30
L	MIN	0.35	0.50	0.35	0.30	0.35	0.35	0.30	0.35	0.35
	NOM	0.55	0.55	0.55	0.40	0.55	0.55	0.40	0.55	0.55
	MAX	0.75	0.60	0.75	0.50	0.75	0.75	0.50	0.75	0.75
N	20	24	24	24	16	20	24	14	16	7.3
ND	5	4	4	4	5	5	6	4	4	6
NE	5	8	8	8	3	5	6	3	4	6
NOTES	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	
REF	11-684	11-684	11-684	11-684	11-534	11-534	11-534	11-684	11-684	
ISSUE	I	I	I	I	A	A	A	I	I	

TABLE 8C

e=0.50 PITCH											
VARIATION SYMBOL	VGGD-5	VGGD-6	VGGD-7	VGGD-8	VGGD-9	VGGD-10	VGGD-11	VGHD	VGHD-1	VGHD-2	NOTE
	WGGD-5	WGGD-6	WGGD-7	WGGD-8	WGGD-9	WGGD-10	WGGD-11	WGHD	WGHD-1	WGHD-2	
D BSC	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	
E BSC	4.00	4.00	4.00	4.00	4.00	4.00	4.00	5.00	5.00	5.00	
D1 BSC	—	—	—	—	—	3.75	3.75	3.75	—	—	9
E1 BSC	—	—	—	—	—	3.75	3.75	4.75	—	—	9
D2	MIN	2.50	2.50	2.70	2.20	1.05	2.10	2.10	0.75	2.50	2.70
	NOM	2.65	2.65	2.80	—	—	—	—	1.70	2.65	2.80
	MAX	2.80	2.80	2.90	2.60	2.45	2.60	2.60	2.25	2.80	2.90
E2	MIN	2.50	2.50	2.70	2.20	1.05	2.10	2.10	1.75	3.50	3.70
	NOM	2.65	2.65	2.80	—	—	—	—	2.70	3.65	3.80
	MAX	2.80	2.80	2.90	2.60	2.45	2.60	2.60	3.25	3.80	3.90
L	MIN	0.35	0.35	0.35	0.30	0.45	0.30	0.30	0.30	0.35	0.35
	NOM	0.40	0.40	0.40	0.40	0.50	0.40	0.40	0.40	0.40	0.40
	MAX	0.45	0.45	0.45	0.50	0.55	0.50	0.50	0.50	0.45	0.45
N	20	24	28	24	24	16	20	28	24	24	7.3
ND	5	6	6	6	6	4	5	6	5	6	6
NE	5	6	8	6	6	4	5	8	7	6	6
NOTES	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	
REF	11-640	11-640	11-684	11-743	11-648	11-684	11-743	11-563	11-640	11-684	
ISSUE	F	F	I	K	G	I	K	B	F	I	

TABLE 8D

e=0.50 PITCH											
VARIATION SYMBOL	VGHD-3	VSTD	VSTD-1	VSUD	VSUD-1	VHGD	VHHD-1	VHHD-2	VHHD-3	VHHD-4	NOTE
	WGHD-3	WSTD	WSTD-1	WSUD	WSUD-1	WHGD	WHHD-1	WHHD-2	WHHD-3	WHHD-4	
D BSC	4.00	4.50	4.50	4.50	4.50	5.00	5.00	5.00	5.00	5.00	
E BSC	5.00	5.50	5.50	6.50	6.50	4.00	5.00	5.00	5.00	5.00	
D1 BSC	—	4.30	—	4.30	—	4.75	4.75	4.75	—	—	9
E1 BSC	—	5.30	—	6.30	—	3.75	4.75	4.75	—	—	9
D2	MIN	2.50	1.75	2.60	1.75	2.60	1.25	2.35	1.25	3.50	3.50
	NOM	2.65	3.00	2.70	3.00	2.70	2.70	2.70	2.70	3.65	3.65
	MAX	2.80	3.10	2.80	3.10	2.80	3.25	3.35	3.25	3.80	3.80
E2	MIN	3.50	2.75	3.60	2.75	4.60	0.75	2.35	1.25	3.50	3.50
	NOM	3.65	4.00	3.70	5.00	4.70	1.70	2.70	2.70	3.65	3.65
	MAX	3.80	4.10	3.80	5.10	4.80	2.25	3.35	3.25	3.80	3.80
L	MIN	0.35	0.50	0.35	0.50	0.35	0.45	0.30	0.35	0.35	
	NOM	0.40	0.55	0.55	0.55	0.55	0.55	0.40	0.40	0.40	
	MAX	0.45	0.60	0.75	0.60	0.75	0.75	0.50	0.45	0.45	
N	28	32	32	36	36	24	28	32	28	32	7.3
ND	6	6	6	6	6	7	7	8	7	8	6
NE	8	10	10	12	12	5	7	8	7	8	6
NOTES	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	
REF	11-640	11-684	11-684	11-684	11-684	11-534	11-743	11-534	11-640	11-640	
ISSUE	F	I	I	I	I	A	K	A	F	F	

TABLE 8E

$e=0.50$ PITCH										
VARIATION SYMBOL	VHHD-5	VHHD-6	VHJD	VHKD	VHKD-1	VHKD-2	VTUD	VTUD-1	VJHD	NOTE
	WHHD-5	WHHD-6	WHJD	WHKD	WHKD-1	WHKD-2	WTUD	WTUD-1	WJHD	
D BSC	5.00	5.00	5.00	5.00	5.00	5.00	5.50	5.50	6.00	
E BSC	5.00	5.00	6.00	7.00	7.00	7.00	6.50	6.50	5.00	
D1 BSC	4.75	—	—	4.75	—	—	5.30	—	5.75	9
E1 BSC	4.75	—	—	6.75	—	—	6.30	—	4.75	9
D2	MIN	3.20	1.05	2.45	1.25	3.50	3.10	2.75	3.60	1.75
	NOM	—	—	3.20	2.70	3.65	3.30	4.00	3.70	3.70
	MAX	3.70	3.45	3.60	3.25	3.80	3.50	4.10	3.80	4.25
E2	MIN	3.20	1.05	3.40	2.25	5.50	5.10	2.75	4.60	1.25
	NOM	—	—	4.20	4.70	5.65	5.30	5.00	4.70	2.70
	MAX	3.70	3.45	4.60	5.25	5.80	5.50	5.10	4.80	3.25
L	MIN	0.30	0.45	0.35	0.30	0.35	0.30	0.50	0.35	0.35
	NOM	0.40	0.50	0.55	0.40	0.40	0.40	0.55	0.55	0.55
	MAX	0.50	0.55	0.75	0.50	0.45	0.50	0.60	0.75	0.75
N	32	32	32	38	38	40	40	40	32	7.3
ND	8	8	7	7	7	8	8	8	9	6
NE	8	8	9	12	12	12	12	12	7	6
NOTES	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	
REF	11-666	11-648	11-666	11-534	11-640	11-743	11-684	11-684	11-534	
ISSUE	H	G	H	A	F	K	I	I	A	

TABLE 8F

$e=0.50$ PITCH										
VARIATION SYMBOL	VJJD-1	VJJD-2	VJJD-3	VJJD-4	VJJD-5	VJJD-6	VJJD-7	VJJD-8	VKHD	NOTE
	WJJD-1	WJJD-2	WJJD-3	WJJD-4	WJJD-5	WJJD-6	WJJD-7	WJJD-8	WKHD	
D BSC	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	7.00	
E BSC	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	5.00	
D1 BSC	5.75	5.75	—	—	—	—	—	5.75	—	9
E1 BSC	5.75	5.75	—	—	—	—	—	5.75	—	9
D2	MIN	1.75	1.75	4.10	4.50	4.50	1.05	4.10	3.80	2.25
	NOM	3.70	3.70	4.20	4.65	4.65	—	4.20	—	—
	MAX	4.25	4.25	4.30	4.80	4.80	4.45	4.30	4.60	5.25
E2	MIN	1.75	1.75	4.10	4.50	4.50	1.05	4.10	3.80	1.25
	NOM	3.70	3.70	4.20	4.65	4.65	—	4.20	—	—
	MAX	4.25	4.25	4.30	4.80	4.80	4.45	4.30	4.60	3.25
L	MIN	0.35	0.30	0.35	0.35	0.35	0.45	0.35	0.30	0.30
	NOM	0.55	0.40	0.55	0.40	0.40	0.50	0.55	0.40	0.40
	MAX	0.75	0.50	0.75	0.45	0.45	0.55	0.75	0.50	0.50
N	36	40	38	36	40	40	32	36	38	7.3
ND	9	10	10	9	10	10	8	9	12	6
NE	9	10	9	9	10	10	8	9	7	6
NOTES	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	
REF	11-534	11-534	11-684	11-640	11-640	11-648	11-684	11-684	11-629	
ISSUE	A	A	I	F	F	G	I	I	E	

TABLE 8G

$e=0.50$ PITCH										
VARIATION SYMBOL	VKCD	VKCD-1	VKCD-2	VKCD-3	VKCD-4	VKCD-5	VKCD-6	VKCD-7	VKCD-8	NOTE
	WKCD	WKCD-1	WKCD-2	WKCD-3	WKCD-4	WKCD-5	WKCD-6	WKCD-7	WKCD-8	
D BSC	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	
E BSC	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	
D1 BSC	—	6.75	6.75	—	—	—	—	—	—	9
E1 BSC	—	6.75	6.75	—	—	—	—	—	—	9
D2	MIN	5.50	2.25	2.25	5.50	5.50	3.40	1.25	3.40	5.00
	NOM	5.65	4.70	4.70	5.65	5.65	—	—	—	5.10
	MAX	5.80	5.25	5.25	5.80	5.80	5.30	5.45	5.30	5.20
E2	MIN	5.50	2.25	2.25	5.50	5.50	3.40	1.25	3.40	5.00
	NOM	5.65	4.70	4.70	5.65	5.65	—	—	—	5.10
	MAX	5.80	5.25	5.25	5.80	5.80	5.30	5.45	5.30	5.20
L	MIN	0.35	0.35	0.30	0.35	0.35	0.35	0.45	0.35	0.35
	NOM	0.40	0.55	0.40	0.40	0.40	0.55	0.50	0.55	0.55
	MAX	0.45	0.75	0.50	0.45	0.45	0.75	0.55	0.75	0.75
N	40	44	48	44	48	44	48	44	48	7.3
ND	10	11	12	11	12	12	12	10	11	6
NE	10	11	12	11	12	10	12	12	13	6
NOTES	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	
REF	11-640	11-534	11-534	11-640	11-640	11-684	11-648	11-684	11-684	
ISSUE	F	A	A	F	F	I	G	I	I	

TABLE 8H

$e=0.50$ PITCH										
VARIATION SYMBOL	VLLD	VLLD-1	VLLD-2	VLLD-3	VLLD-4	VLLD-5	VLLD-6	VMMD	VMMD-1	NOTE
	WLLD	WLLD-1	WLLD-2	WLLD-3	WLLD-4	WLLD-5	WLLD-6	WMMD	WMMD-1	
D BSC	8.00	8.00	8.00	8.00	8.00	8.00	8.00	9.00	9.00	
E BSC	8.00	8.00	8.00	8.00	8.00	8.00	8.00	9.00	9.00	
D1 BSC	—	7.75	7.75	—	—	—	—	—	—	9
E1 BSC	—	7.75	7.75	—	—	—	—	—	—	9
D2	MIN	6.50	2.75	2.75	6.10	6.50	6.50	2.25	7.50	7.50
	NOM	6.65	5.70	5.70	6.20	6.65	6.65	—	7.65	7.65
	MAX	6.80	6.25	6.25	6.30	6.80	6.80	6.45	7.80	7.80
E2	MIN	6.50	2.75	2.75	6.10	6.50	6.50	2.25	7.50	7.50
	NOM	6.65	5.70	5.70	6.20	6.65	6.65	—	7.65	7.65
	MAX	6.80	6.25	6.25	6.30	6.80	6.80	6.45	7.80	7.80
L	MIN	0.35	0.35	0.30	0.35	0.35	0.35	0.45	0.35	0.35
	NOM	0.40	0.55	0.40	0.55	0.40	0.40	0.50	0.40	0.40
	MAX	0.45	0.75	0.50	0.75	0.45	0.45	0.55	0.45	0.45
N	48	52	56	48	52	56	56	64	60	7.3
ND	12	13	14	13	13	14	14	16	15	6
NE	12	13	14	11	13	14	14	16	15	6
NOTES	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	
REF	11-640	11-534	11-534	11-684	11-640	11-640	11-648	11-640	11-640	
ISSUE	F	A	A	I	F	F	G	F	F	

TABLE 8I

$e=0.50$ PITCH										
VARIATION SYMBOL	VMMD-2	VMMD-3	VMMD-4	VNND-1	VNND-2	VNND-3	VNND-4	VRRD		NOTE
	WMMD-2	WMMD-3	WMMD-4	WNND-1	WNND-2	WNND-3	WNND-4	WRRD		
D BSC	9.00	9.00	9.00	10.00	10.00	10.00	10.00	12.00		
E BSC	9.00	9.00	9.00	10.00	10.00	10.00	10.00	12.00		
D1 BSC	—	—	8.75	9.75	9.75	—	—	11.75		9
E1 BSC	—	—	8.75	9.75	9.75	—	—	11.75		9
D2	MIN	7.50	3.25	6.00	3.75	3.75	4.25	5.50	4.75	
	NOM	7.65	—	—	7.70	7.70	—	6.00	9.70	
	MAX	7.80	7.45	7.50	8.25	8.25	8.45	6.50	10.25	
E2	MIN	7.50	3.25	6.00	3.75	3.75	4.25	5.50	4.75	
	NOM	7.65	—	—	7.70	7.70	—	6.00	9.70	
	MAX	7.80	7.45	7.50	8.25	8.25	8.45	6.50	10.25	
L	MIN	0.35	0.45	0.30	0.45	0.45	0.45	0.30	0.45	
	NOM	0.40	0.50	0.40	0.55	0.55	0.50	0.40	0.55	
	MAX	0.45	0.55	0.50	0.65	0.65	0.55	0.50	0.65	
N	56	64	64	64	68	72	72	80		7.3
ND	14	16	16	16	17	18	18	20		6
NE	14	16	16	16	17	18	18	20		6
NOTES	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	
REF	11-640	11-648	11-684	11-563	11-563	11-648	11-743	11-563		
ISSUE	F	G	I	B	B	G	K	B		

TABLE 9A

$e=0.40$ PITCH										
VARIATION SYMBOL	VEEE	VEEE-1	VGGE	VHHE	VHHE-1	VJJE	VJJE-1	VGHE	VGHE-1	NOTE
	WEEE	WEEE-1	WGGE	WHHE	WHHE-1	WJJE	WJJE-1	WGHE	WGHE-1	
D BSC	3.00	3.00	4.00	5.00	5.00	6.00	6.00	4.00	4.00	
E BSC	3.00	3.00	4.00	5.00	5.00	6.00	6.00	5.00	5.00	
D1 BSC	—	2.75	3.75	4.75	—	5.75	5.75	4.75	4.75	9
E1 BSC	—	2.75	3.75	4.75	—	5.75	5.75	5.75	5.75	9
D2	MIN	0.95	0.95	1.95	2.95	3.45	3.95	4.45	2.30	2.30
	NOM	1.10	1.10	2.10	3.10	3.60	4.10	4.60	2.50	2.50
	MAX	1.25	1.25	2.25	3.25	3.75	4.25	4.75	2.70	2.70
E2	MIN	0.95	0.95	1.95	2.95	3.45	3.95	4.45	3.30	3.30
	NOM	1.10	1.10	2.10	3.10	3.60	4.10	4.60	3.50	3.50
	MAX	1.25	1.25	2.25	3.25	3.75	4.25	4.75	3.70	3.70
L	MIN	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	
	NOM	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	
	MAX	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	
N	20	16	28	36	40	48	48	32	34	7.3
ND	5	4	7	9	10	12	12	7	7	6
NE	5	4	7	9	10	12	12	9	10	6
NOTES	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	
REF	11-743	11-743	11-743	11-743	11-743	11-743	11-743	11-743	11-743	
ISSUE	K	K	K	K	K	K	K	K	K	



TABLE 9B

e=0.40 PITCH										
VARIATION SYMBOL	VLLE-1	VLLE-2	VMME	VMME-1	VNNE	VNNE-1	VKKE	VLLE		NOTE
	WLLE-1	WLLE-2	WMME	WMME-1	WNNE	WNNE-1	WKKE	WLLE		
D BSC	8.00	8.00	9.00	9.00	10.00	10.00	7.00	8.00		
E BSC	8.00	8.00	9.00	9.00	10.00	10.00	7.00	8.00		
D1 BSC	7.75	7.75	8.75	8.75	9.75	9.75	6.75	7.75		9
E1 BSC	7.75	7.75	8.75	8.75	9.75	9.75	6.75	7.75		9
D2	MIN	5.95	6.30	6.95	6.95	7.95	6.60	4.95	5.95	
	NOM	6.10	6.45	7.10	7.10	8.10	6.75	5.10	6.10	
	MAX	6.25	6.60	7.25	7.25	8.25	6.90	5.25	6.25	
E2	MIN	5.95	6.30	6.95	6.95	7.95	6.60	4.95	5.95	
	NOM	6.10	6.45	7.10	7.10	8.10	6.75	5.10	6.10	
	MAX	6.25	6.60	7.25	7.25	8.25	6.90	5.25	6.25	
L	MIN	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	
	NOM	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	
	MAX	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	
N	68	64	72	76	88	88	56	64		7.3
ND	17	16	18	19	22	22	14	16		6
NE	17	16	18	19	22	22	14	16		6
NOTES	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	1,2,10	
REF	11-743	11-743	11-743	11-743	11-743	11-743	11-743	11-743	11-743	
ISSUE	K	K	K	K	K	K	K	K	K	

TABLE 9C

e=0.40 PITCH										
VARIATION SYMBOL	VRRE	VRRE-1	VRRE-2							NOTE
	WRRE	WRRE-1	WRRE-2							
D BSC	12.00	12.00	12.00							
E BSC	12.00	12.00	12.00							
D1 BSC	11.75	11.75	11.75							9
E1 BSC	11.75	11.75	11.75							9
D2	MIN	9.95	6.60	9.95						
	NOM	10.10	6.75	10.10						
	MAX	10.25	6.90	10.25						
E2	MIN	9.95	6.60	9.95						
	NOM	10.10	6.75	10.10						
	MAX	10.25	6.90	10.25						
L	MIN	0.30	0.30	0.30						
	NOM	0.40	0.40	0.40						
	MAX	0.50	0.50	0.50						
N	100	100	108							7.3
ND	25	25	27							6
NE	25	25	27							6
NOTES	1,2,10	1,2,10	1,2,10							
REF	11-743	11-743	11-743							
ISSUE	K	K	K							

## NOTES:

1. DIMENSIONING AND TOLERANCING CONFORM TO ASME Y14.5M-1994.
2. ALL DIMENSIONS ARE IN MILLIMETERS,  $\theta$  IS IN DEGREES.
3. N IS THE TOTAL NUMBER OF TERMINALS.

4. THE TERMINAL #1 IDENTIFIER AND TERMINAL NUMBERING CONVENTION SHALL CONFORM TO JEDEC PUBLICATION 95 SPP-002. DETAILS OF TERMINAL #1 IDENTIFIER ARE OPTIONAL, BUT MUST BE LOCATED WITHIN THE ZONE INDICATED. THE TERMINAL #1 IDENTIFIER MAY BE EITHER A MOLD OR MARKED FEATURE.

5. DIMENSION  $b$  APPLIES TO METALLIZED TERMINAL AND IS MEASURED BETWEEN 0.15mm AND 0.30mm FROM THE TERMINAL TIP. IF THE TERMINAL HAS THE OPTIONAL RADIUS ON THE OTHER END OF THE TERMINAL, THE DIMENSION  $b$  SHOULD NOT BE MEASURED IN THAT RADIUS AREA.

6.  $D$  AND  $N_E$  REFER TO THE NUMBER OF TERMINALS ON EACH D AND E SIDE RESPECTIVELY.

7. DEPOPULATION IS POSSIBLE IN A SYMMETRICAL FASHION.

8. VARIATION GED IS SHOWN FOR ILLUSTRATION ONLY.

9. ALL VARIATIONS MAY BE CONSTRUCTED PER FIGURE 1. VARIATIONS MAY ALTERNATELY BE CONSTRUCTED PER FIGURE 2 IF  $A_2$ ,  $D_1$  &  $E_1$  ARE SPECIFIED IN THE DIMENSION TABLES. IN ALL CASES, THE MINIMUM "K" VALUE OF 0.20 MM APPLIES.

10. FOR A COMPLETE SET OF DIMENSIONS FOR EACH VARIATION, SEE THE INDIVIDUAL VARIATION AND THE COMMON DIMENSIONS AND TOLERANCE ON PAGE 4.

11. UNILATERAL COPLANARITY ZONE APPLIES TO THE EXPOSED HEAT SINK SLUG AS WELL AS THE TERMINALS.

12. DEPENDING ON THE METHOD OF LEAD TERMINATION AT THE EDGE OF THE PACKAGE, PULL BACK ( $L_1$ ) MAYBE PRESENT.  $L$  MINUS  $L_1$  TO BE EQUAL TO OR GREATER THAN 0.3 mm.

## NOTES:

13. 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.

AMKOR TECHNOLOGY	U.S. PATENT #s: 5,866,939; 6,143,981; 6,281,568; 6,331,451;
	6,433,277; 6,448,633; 6,455,356; 6,469,369; 6,475,827;
	6,476,478; 6,501,161; 6,521,987; 6,525,406; 6,545,345;
	6,555,899; 6,580,159; 6,597,059; 6,605,865; 6,605,866;
	6,608,366; 6,611,047; 6,616,436; 6,627,976; 6,630,728;
	6,639,308; 6,646,339; 6,677,662; 6,677,663; 6,684,496
	6,759,737; 6,770,961; 6,777,789; 6,798,047; 6,803,645; 6,825,062;
	6,833,609; 6,841,414; 6,847,009; 6,847,103; 6,853,059; 6,853,919
	6,867,071; 6,873,032; 6,885,086; 6,893,900
ASAT	U.S. PATENT #'S: 6,229,200B1; 6,242,281B1; 6,294,100B1;
	6,545,347B2; 6,585,905B1
NATIONAL SEMICONDUCTOR	U.S. PATENT No. 6,130,473; 6,589,814; 6,483,180; 6,452,255;
	6,399,415; 6,372,539; 6,551,048; 6,576,989; 6,488,107;
	6,564,447; 6,629,880;

14. WHEN MORE THAN ONE VARIATION (OPTION) EXISTS FOR THE SAME PROFILE HEIGHT, BODY SIZE (D x E), AND PITCH, THEN THOSE VARIATIONS WILL BE DENOTED BY AN ADDITIONAL DASH NUMBER (ie: -1, -2, etc.) DESIGNATOR TO IDENTIFY THEM. THE NEW VARIATIONS WOULD BE CREATED FROM ALL OR ANY OF THE FOLLOWING REASONS LEAD COUNTS, TERMINAL LENGTHS, AND OR THERMAL PAD SIZES.

# 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: A	Date: January 2000	Item: 11-534
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Revision History:
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(Issues b thru l exact Revision History not available)
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Issue: J	Date: MAY 2005	Item: 11-705
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Location	Change description:
TABLE 3	Added b values for 0.4mm pitch
TABLE 5a,b,c	Added listings for 0.4mm variations
TABLE 9a,b	Added dimensions for new 0.4mm variations

Issue: K	Date: January 2006	Item: 11-743
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Location	Change from:	Change to:
Variations & Summary tables	(add new variations)	(V/W) GGC-2, KMC, LLC-4, MMC-3, EED-5/6, GGD-8/11, HHD-1, HKD-2, NND-4, EEE-1, LLE-1/2, MME-1, NNE-1, RRE-1/2, GHE, GHE-1
TABLES 9 A,B,C	L= 0.35/0.40/0.45	L=0.30/0.40/0.50
PAGES 1 AND 2	BILATERAL COPLANARITY	UNILATERAL COPLANARITY
PAGE 4 - TABLE 2	L1 MIN=0.03	L1 MIN=0.00
PAGE 4 - TABLE 4	NEW VALUES	aaa & bbb for 0.40 PITCH
PAGE 19	ADD ADDITIONAL PATENT NUMBERS	

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