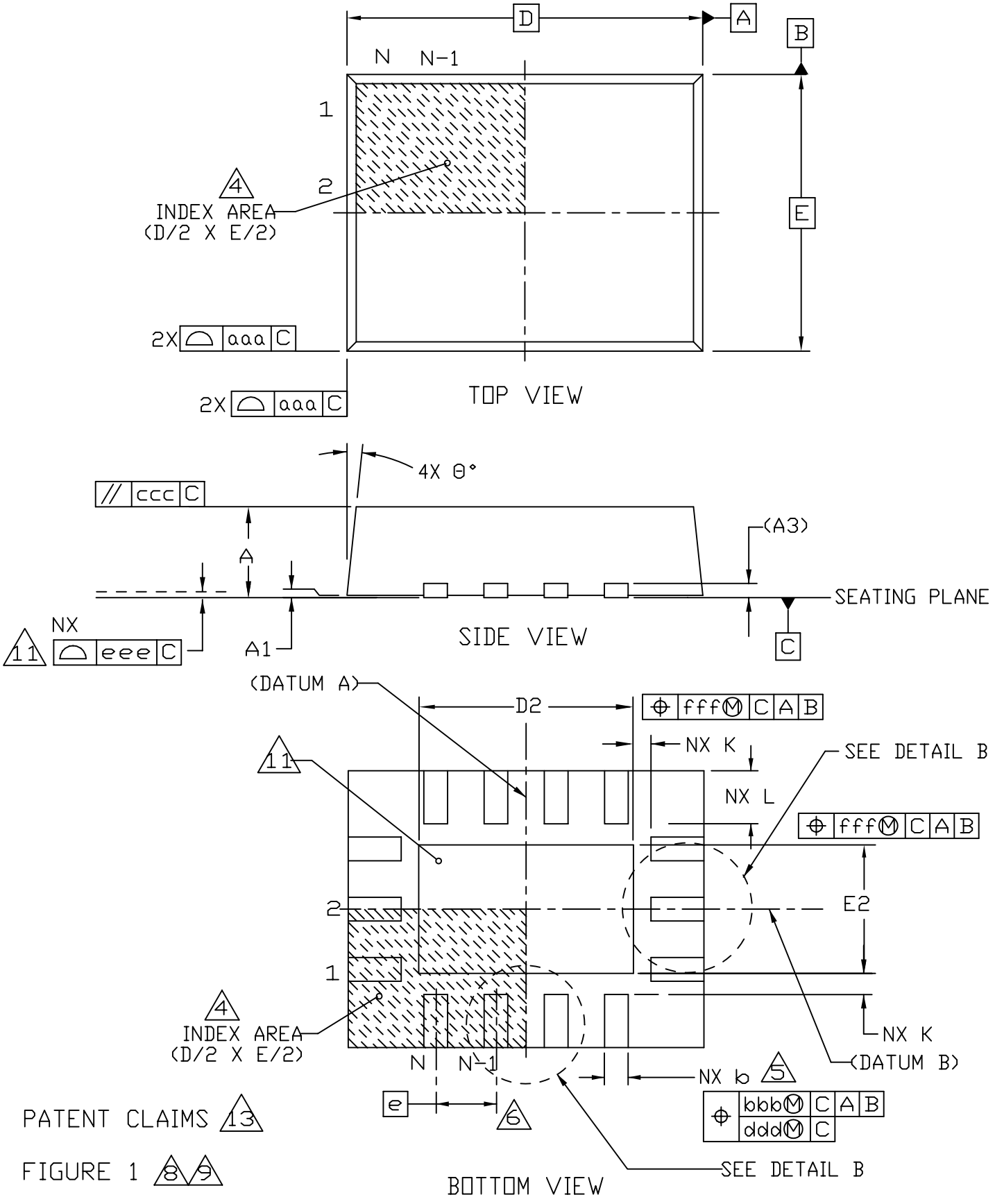


PATENT CLAIMS 13

FIGURE 1 8 9

JEDEC SOLID STATE PRODUCT OUTLINE Copyright ©2011 JEDEC	*THIS REGISTERED OUTLINE HAS BEEN PREPARED BY THE JEDEC JC-II COMMITEE 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.01	DATE AUG 2011	**MO- 220**	PAGE 1 OF 20

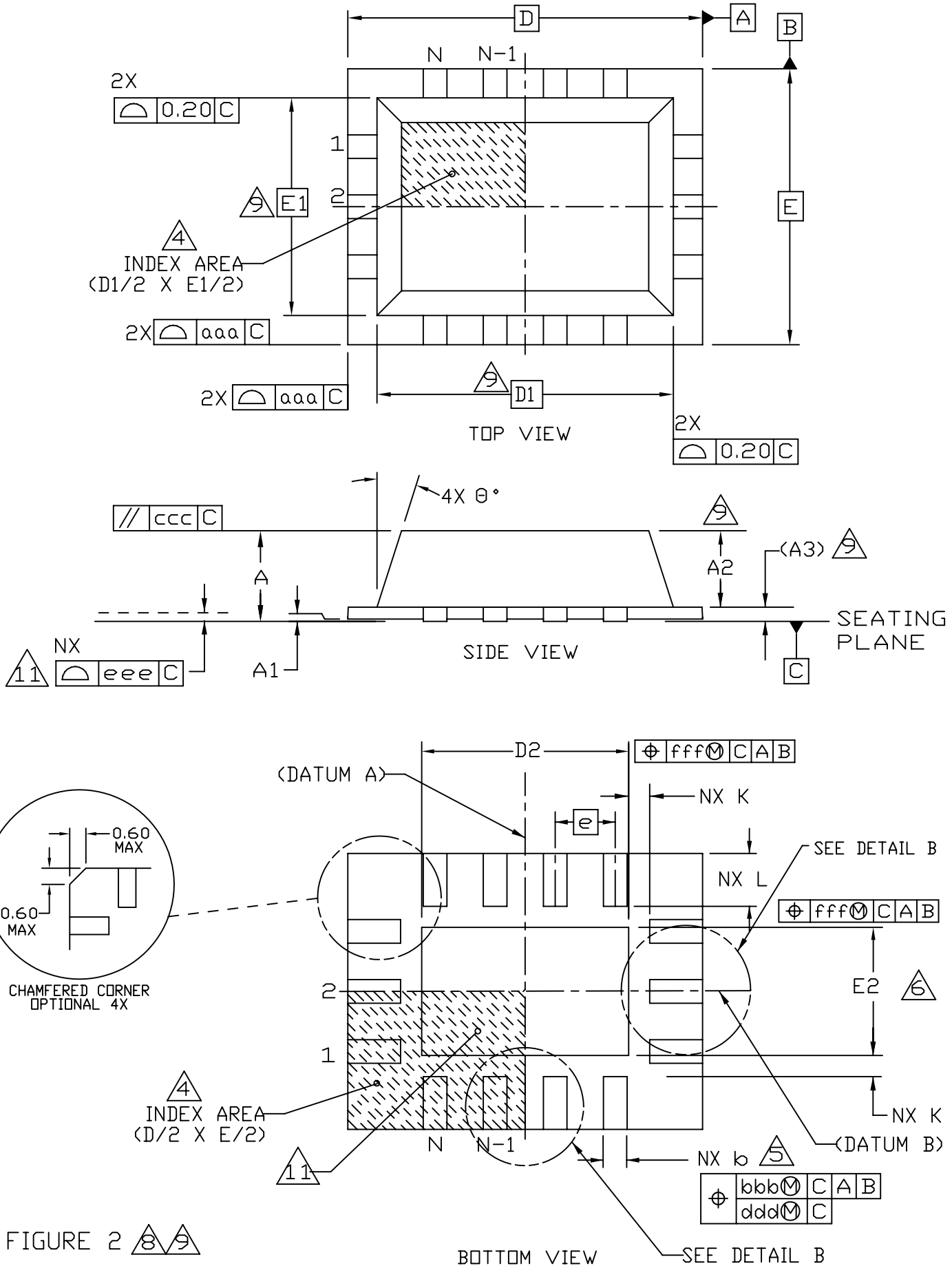
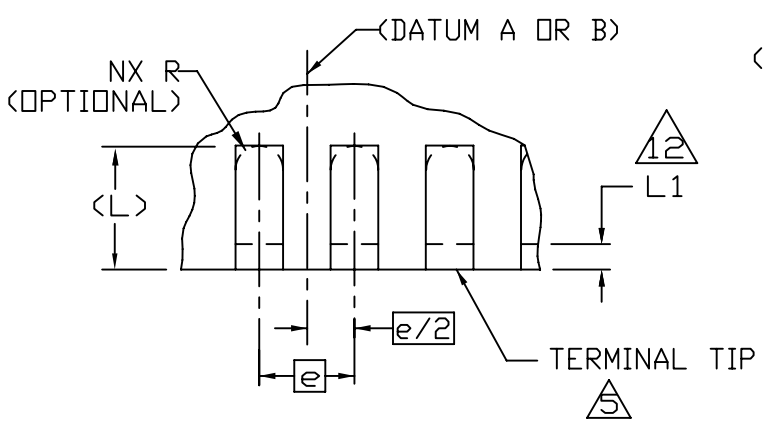
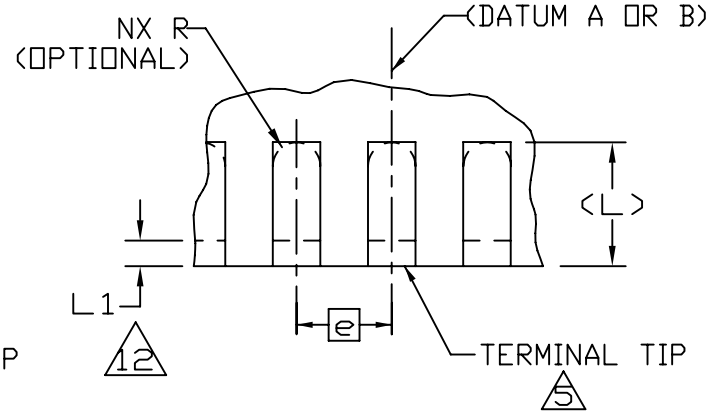

D
A
B
N
N-1
2X
0.20 C
1
2
9
E1
E
4
INDEX AREA
(D1/2 X E1/2)
2X aaa C
2X aaa C
9
D1
TOP VIEW
2X
0.20 C
4X θ°
ccc C
9
A
A2
(A3)
9
SEATING
PLANE
NX
11
eee C
A1
SIDE VIEW
C
0.60
MAX
0.60
MAX
CHAMFERED CORNER
OPTIONAL 4X
D2
fff M C A B
(DATUM A)
e
NX K
SEE DETAIL B
NX L
fff M C A B
E2
6
2
1
4
INDEX AREA
(D/2 X E/2)
11
N
N-1
NX K
(DATUM B)
NX b
5
bbb M C A B
ddd M C
SEE DETAIL B
BOTTOM VIEW

FIGURE 2 8 9



EVEN TERMINAL/SIDE



ODD TERMINAL/SIDE

DETAIL B

TABLE 1

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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	9
A3	–	0.20 REF	–	–	0.20 REF	–	
L1	0.00	–	0.15	0.00	–	0.15	12
θ	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

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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)

10

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

10

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
	0.40	76	VMME-1	WMME-1
10.00 X 10.00	0.50	64	VNND-1	WNND-1
	0.50	68	VNND-2	WNND-2
	0.50	72	VNND-3,4	WNND-3,4
	0.40	88	VNNE,VNNE-1	WNNE,WNNE-1
12.00 X 12.00	0.50	80	VRRD	WRRD
	0.40	100	VRRE,VRRE-1	WRRE,WRRE-1
	0.40	108	VRRE-2	WRRE-2

TABLE 6A

e=0.80 PITCH									
VARIATION / SYMBOL		VEEB / WEEB	VGEB / WGEB	VGGB / WGGB	VGGB-1 / WGGB-1	VGHB / WGHB	VHGB / WHGB	VHGB-1 / WHGB-1	VHHB / WHHB	NOTE
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 / WHHB-1	VJHB / WJHB	VJHB-1 / WJHB-1	VJJB / WJJB	VJJB-1 / WJJB-1	VJJB-2 / WJJB-2	VKKB / WKKB	VLLB / WLLB	NOTE
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 / WLLB-1	VMMB / WMMB							NOTE
D BSC	8.00	9.00							
E BSC	8.00	9.00							
D1 BSC	–	–							9
E1 BSC	–	–							9
D2 MIN	6.10	6.90							
D2 NOM	6.20	7.00							
D2 MAX	6.30	7.10							
E2 MIN	6.10	6.90							
E2 NOM	6.20	7.00							
E2 MAX	6.30	7.10							
L MIN	0.35	0.35							
L NOM	0.55	0.55							
L 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											
VARIATION / SYMBOL		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	1.50	0.75	0.75	2.50	2.50	2.40	
	NOM	0.70	1.65	1.65	1.65	1.70	1.70	2.65	2.65	-	
	MAX	1.25	1.80	1.80	1.80	2.25	2.25	2.80	2.80	2.80	
E2	MIN	0.25	1.50	1.50	1.50	0.25	0.75	2.50	2.50	2.40	
	NOM	0.70	1.65	1.65	1.65	0.70	1.70	2.65	2.65	-	
	MAX	1.25	1.80	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	0.35	0.30	
	NOM	0.55	0.40	0.40	0.40	0.55	0.55	0.40	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											
VARIATION / SYMBOL		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	0.35	
	NOM	0.55	0.55	0.40	0.55	0.40	0.40	0.40	0.55	0.55	
	MAX	0.65	0.75	0.50	0.75	0.45	0.45	0.45	0.75	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 / WJJC-1	VJJC-2 / WJJC-2	VJJC-3 / WJJC-3	VJJC-4 / WJJC-4	VKKC / WKKC	VKKC-1 / WKKC-1	VKKC-2 / WKKC-2	VKMC / WKMC		NOTE
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		
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 / WLLC	VLLC-1 / WLLC-1	VLLC-2 / WLLC-2	VLLC-3 / WLLC-3	VLLC-4 / WLLC-4	VMMC / WMMC	VMMC-1 / WMMC-1	VMMC-2 / WMMC-2	VMMC-3 / WMMC-3	NOTE
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	1.60	0.75	0.75	0.75	2.10	2.10	
	NOM	1.70	2.00	1.70	–	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 / WGGD-5	VGGD-6 / WGGD-6	VGGD-7 / WGGD-7	VGGD-8 / WGGD-8	VGGD-9 / WGGD-9	VGGD-10 / WGGD-10	VGGD-11 / WGGD-11	VGHD / WGHD	VGHD-1 / WGHD-1	VGHD-2 / WGHD-2	NOTE
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 / WGHD-3	VSTD / WSTD	VSTD-1 / WSTD-1	VSUD / WSUD	VSUD-1 / WSUD-1	VHGD / WHGD	VHHD-1 / WHHD-1	VHHD-2 / WHHD-2	VHHD-3 / WHHD-3	VHHD-4 / WHHD-4	NOTE
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	0.35	0.45	0.30	0.35	0.35	
	NOM	0.40	0.55	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	0.75	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 / WHHD-5	VHHD-6 / WHHD-6	VHJD / WHJD	VHKD / WHKD	VHKD-1 / WHKD-1	VHKD-2 / WHKD-2	VTUD / WTUD	VTUD-1 / WTUD-1	VJHD / WJHD	NOTE
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 / WJJD-1	VJJD-2 / WJJD-2	VJJD-3 / WJJD-3	VJJD-4 / WJJD-4	VJJD-5 / WJJD-5	VJJD-6 / WJJD-6	VJJD-7 / WJJD-7	VJJD-8 / WJJD-8	VKHD / WKHD	NOTE
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		VKKD	VKKD-1	VKKD-2	VKKD-3	VKKD-4	VKKD-5	VKKD-6	VKKD-7	VKKD-8	NOTE
SYMBOL		WKKD	WKKD-1	WKKD-2	WKKD-3	WKKD-4	WKKD-5	WKKD-6	WKKD-7	WKKD-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		VLLD	VLLD-1	VLLD-2	VLLD-3	VLLD-4	VLLD-5	VLLD-6	VMMD	VMMD-1	NOTE
SYMBOL		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 / WMMD-2	VMMD-3 / WMMD-3	VMMD-4 / WMMD-4	VNND-1 / WNND-1	VNND-2 / WNND-2	VNND-3 / WNND-3	VNND-4 / WNND-4	VRRD / WRRD		NOTE
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		
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 / WEEE	VEEE-1 / WEEE-1	VGGE / WGGE	VHHE / WHHE	VHHE-1 / WHHE-1	VJJE / WJJE	VJJE-1 / WJJE-1	VGHE / WGHE	VGHE-1 / WGHE-1	NOTE
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	0.30	
	NOM	0.40	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	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		VLLE-1	VLLE-2	VMME	VMME-1	VNNE	VNNE-1	VKKE	VLLE		NOTE
SYMBOL		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		
REF		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		

TABLE 9C

e=0.40 PITCH											
VARIATION		VRRE	VRRE-1	VRRE-2							NOTE
SYMBOL		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, θ 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. ND AND NE 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 A2, D1,&E1 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. BILATERAL 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 (L1) MAYBE PRESENT. L MINUS L1 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;
NATIONAL SEMICONDUCTOR	6,545,347B2; 6,585,905B1
	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

Revision History:

(Issues b thru I exact Revision History not available)

Issue: J	Date: MAY 2005	Item: 11-705

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

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: K.01	Date: Aug. 2011	Item: 11.743(E)

Location	Change from:	Change to:
ALL PAGES	NON-EXISTENT	ADDED JEDEC COPYRIGHT STATEMENT
SHEET 7 TABLE 5C (LEAD COUNTS FOR 12X12 0.4MM PITCH MODIFIED TO MATCH TABLE 9C)	VRRE, VRRE-2 = 100L WRRE, WRRE-2 = 100L VRRE-1, WRRE-1 = 108L	VRRE, VRRE-1 = 100L WRRE, WRRE-1 = 100L VRRE-2, WRRE-2 = 108L