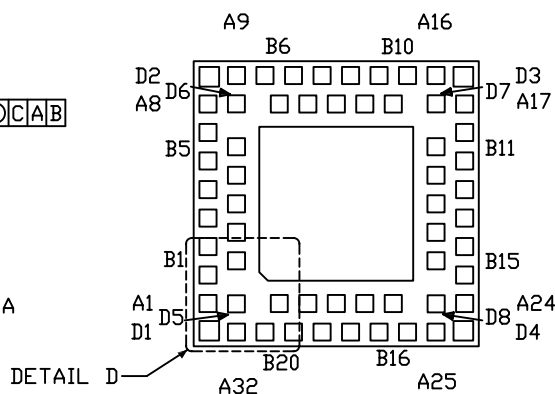
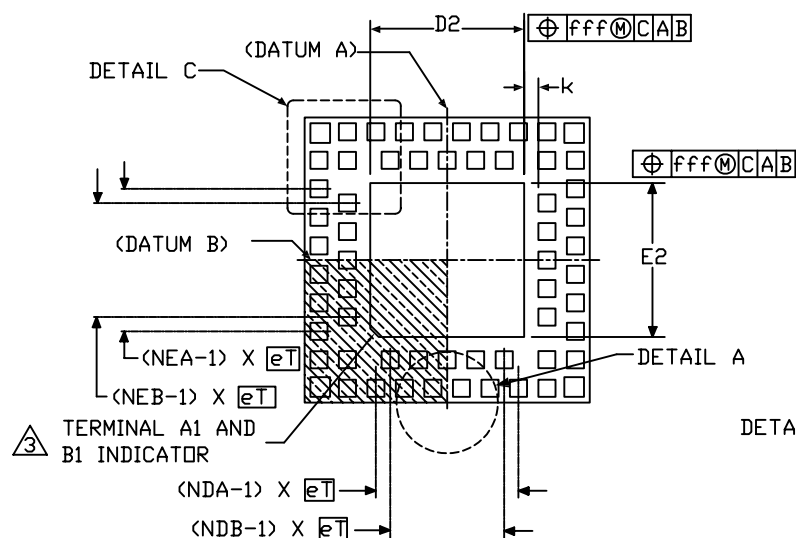


ALSO APPLIES TO FEATURE
DEFINED BY D2 & E2



PATENT CLAIMS 8

2-ROW WITHOUT RING
BOTTOM VIEW

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

PLASTIC QUAD
NO-LEAD STAGGERED
MULTI-ROW PACKAGES

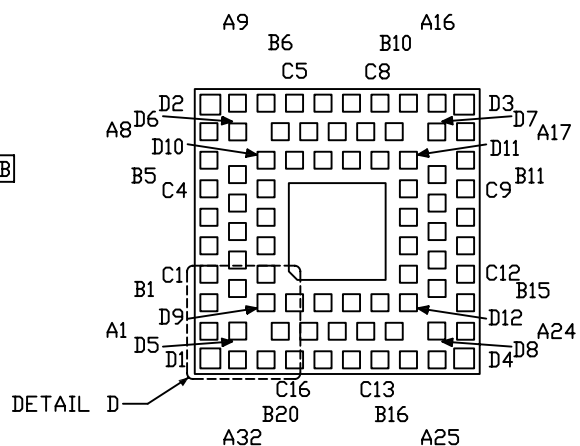
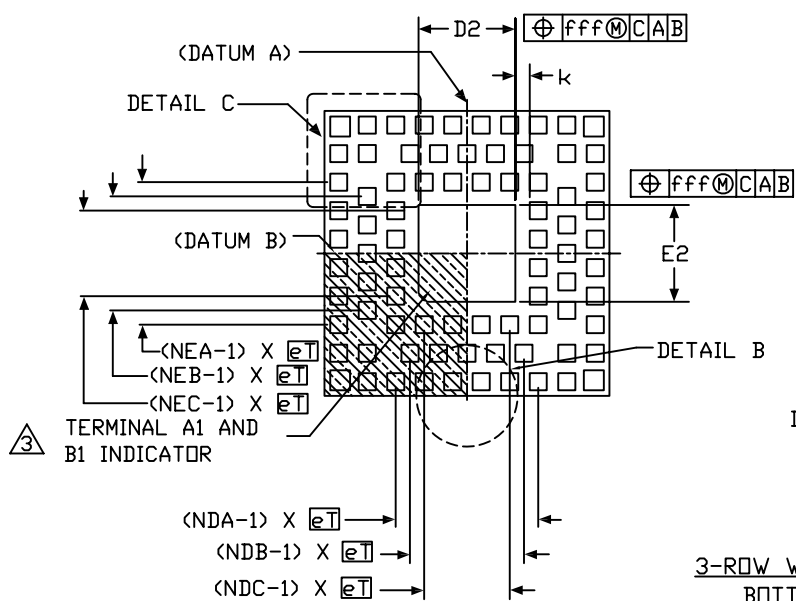
JESD-30
DESIGNATOR
H(V,W,U)F-PQFN

ISSUE
D

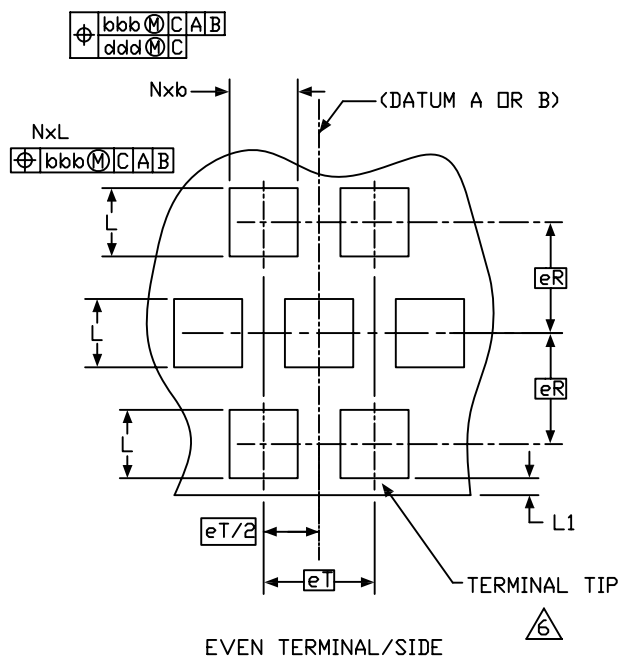
DATE
MAY 2007

MO-247

SHEET
1 OF 12



3-ROW WITHOUT RING
BOTTOM VIEW



DETAIL B

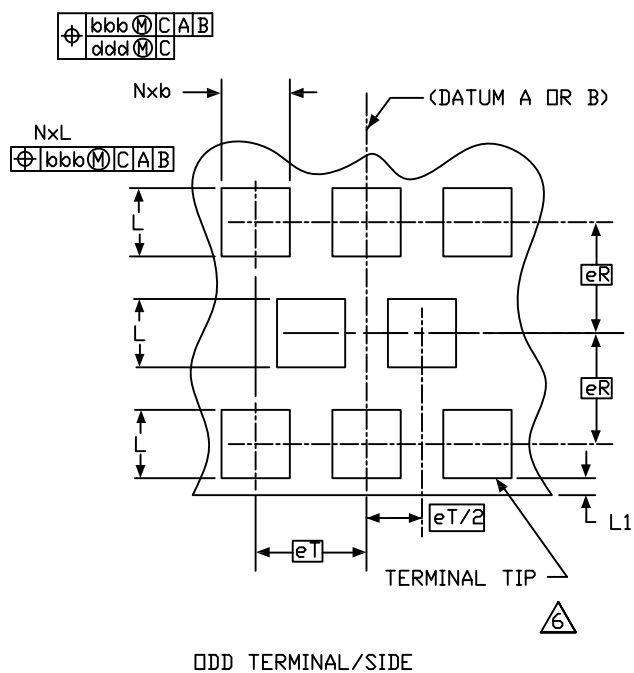


TABLE 1

VARIATION DESIGNATORS									
FIRST DIGIT CODE		SECOND DIGIT CODE		THIRD DIGIT CODE		FOURTH DIGIT CODE		FIFTH DIGIT CODE	
TERMINAL CONFIGURATION		OVERALL HEIGHT		BODY LENGTH		BODY WIDTH		TERMINAL PITCH	
—	LETTER CODE	A	LETTER CODE	D	LETTER CODE	E	LETTER CODE	eT	LETTER CODE
2-ROW	A	1.00 MAX.	V	1.0	A	1.0	A	0.65	A
2-ROW + RING	B	0.80 MAX.	W	1.5	B	1.5	B	0.50	B
3-ROW	C	0.65 MAX.	U	2.0	C	2.0	C	0.40	C
—	—	—	—	2.5	D	2.5	D	—	—
—	—	—	—	3.0	E	3.0	E	—	—
—	—	—	—	3.5	F	3.5	F	—	—
—	—	—	—	4.0	G	4.0	G	—	—
—	—	—	—	4.5	H	4.5	H	—	—
—	—	—	—	5.0	J	5.0	J	—	—
—	—	—	—	6.0	K	6.0	K	—	—
—	—	—	—	7.0	L	7.0	L	—	—
—	—	—	—	8.0	M	8.0	M	—	—
—	—	—	—	9.0	N	9.0	N	—	—
—	—	—	—	10.0	P	10.0	P	—	—
—	—	—	—	11.0	Q	11.0	Q	—	—
—	—	—	—	12.0	R	12.0	R	—	—
—	—	—	—	13.0	S	13.0	S	—	—
—	—	—	—	14.0	T	14.0	T	—	—
—	—	—	—	15.0	U	15.0	U	—	—
—	—	—	—	16.0	V	16.0	V	—	—
—	—	—	—	17.0	W	17.0	W	—	—
—	—	—	—	18.0	Y	18.0	Y	—	—
—	—	—	—	19.0	Z	19.0	Z	—	—

TABLE 2

TERMINAL PITCH eT									
SYMBOL	0.65 BSC			0.50 BSC			0.40 BSC		
	MIN	NOM	MAX	MIN	NOM	MAX	MIN	NOM	MAX
b	0.35	–	0.45	0.25	–	0.35	0.15	–	0.25
L	0.35	–	0.45	0.25	–	0.35	0.20	–	0.30
eR	0.65 BSC			0.50 BSC			0.50 BSC		
NOTES	1,2,10								
REF	11–767								
ISSUE	D								

TABLE 3

COMMON DIMENSIONS									
SYMBOL	V: VERY THIN			W: VERY VERY THIN			U: ULTRA THIN		
	MIN	NOM	MAX	MIN	NOM	MAX	MIN	NOM	MAX
A	0.80	0.90	1.00	0.70	0.75	0.80	0.55	0.60	0.65
A1	0.00	–	0.13	0.00	–	0.13	0.00	–	0.13
d	0.25	–	0.35	0.25	–	0.35	0.25	–	0.35
k	0.20	–	–	0.20	–	–	0.20	–	–
L1	0.05	–	0.15	0.05	–	0.15	0.05	–	0.15
TOLERANCE OF FORM & POSITION									
aaa	0.15								
bbb	0.10 (0.07 for \overline{eT} = 0.40 mm)								
ccc	0.10								
ddd	0.05								
eee	0.08								
fff	0.10								
NOTES	1,2								
REF	11–639, 11–721, 11–767								
ISSUE	D								

TABLE 4

SUMMARY TABLE FOR TWO ROW					
BODY SIZE	LEAD PITCH	LEAD COUNT	VERY THIN PROFILE	VERY VERY THIN PROFILE	ULTRA THIN PROFILE
7.00 X 7.00	0.40	116	AVLLC	AWLLC	AULLC
	0.50	92	AVLLB	AWLLB	AULLB
	0.65	68	AVLLA	AWLLA	AULLA
8.00 X 8.00	0.40	132	AVMMC	AWMMC	AUMMC
	0.50	108	AVMMB	AWMMB	AUMMB
	0.65	76	AVMMA	AWMMA	AUMMA
9.00 X 9.00	0.40	156	AVNNC	AWNNC	AUNNC
	0.50	124	AVNNB	AWNNB	AUNNB
	0.65	92	AVNNA	AWNNA	AUNNA
10.00 X 10.00	0.40	172	AVPPC	AWPPC	AUPPC
	0.50	140	AVPPB	AWPPB	AUPPB
	0.65	100	AVPPA	AWPPA	AUPPA
11.00 X 11.00	0.40	196	AVQQC	AWQQC	AUQQC
	0.50	156	AVQQB	AWQQB	AUQQB
	0.65	116	AVQQA	AWQQA	AUQQA
12.00 X 12.00	0.40	212	AVRRC	AWRRC	AURRC
	0.50	172	AVRRB	AWRRB	AURRB
	0.65	124	AVRRA	AWRRA	AURRA
13.00 X 13.00	0.40	236	AVSSC	AWSSC	AUSSC
	0.50	188	AVSSB	AWSSB	AUSSB
	0.65	140	AVSSA	AWSSA	AUSSA
14.00 X 14.00	0.40	252	AVTTC	AWTTC	AUTTC
	0.50	204	AVTTB	AWTTB	AUTTB
	0.65	148	AVTTA	AWTTA	AUTTA
15.00 X 15.00	0.40	276	AVUUC	AWUUC	AUUUC
	0.50	220	AVUUB	AWUUB	AUUUB
	0.65	164	AVUUA	AWUUA	AUUUA



TABLE 5

SUMMARY TABLE FOR TWO ROW + RING					
BODY SIZE	LEAD PITCH	LEAD COUNT	VERY THIN PROFILE	VERY VERY THIN PROFILE	ULTRA THIN PROFILE
7.00 X 7.00	0.40	116	BVLLC	BWLLC	BULLC
	0.50	92	BVLLB	BWLLB	BULLB
	0.65	68	BVLLA	BWLLA	BULLA
8.00 X 8.00	0.40	132	BVMMC	BWMMC	BUMMC
	0.50	108	BVMMB	BWMMB	BUMMB
	0.65	76	BVMMA	BWMMA	BUMMA
9.00 X 9.00	0.40	156	BVNNC	BWNNC	BUNNC
	0.50	124	BVNNB	BWNNB	BUNNB
	0.65	92	BVNNA	BWNNA	BUNNA
10.00 X 10.00	0.40	172	BVPPC	BWPPC	BUPPC
	0.50	140	BVPPB	BWPPB	BUPPB
	0.65	100	BVPPA	BWPPA	BUPPA
11.00 X 11.00	0.40	196	BVQQC	BWQQC	BUQQC
	0.50	156	BVQQB	BWQQB	BUQQB
	0.65	116	BVQQA	BWQQA	BUQQA
12.00 X 12.00	0.40	212	BVRRC	BWRRC	BURRC
	0.50	172	BVRRB	BWRRB	BURRB
	0.65	124	BVRRRA	BWRRRA	BURRA
13.00 X 13.00	0.40	236	BVSSC	BWSSC	BUSSC
	0.50	188	BVSSB	BWSSB	BUSSB
	0.65	140	BVSSA	BWSSA	BUSSA
14.00 X 14.00	0.40	252	BVTTC	BWTTC	BUTTC
	0.50	204	BVTTB	BWTTB	BUTTB
	0.65	148	BVTTA	BWTTA	BUTTA
15.00 X 15.00	0.40	276	BVUUC	BWUUC	BUUUC
	0.50	220	BVUUB	BWUUB	BUUUB
	0.65	164	BVUUA	BWUUA	BUUUA



TABLE 6

SUMMARY TABLE FOR THREE ROW					
BODY SIZE	LEAD PITCH	LEAD COUNT	VERY THIN PROFILE	VERY VERY THIN PROFILE	ULTRA THIN PROFILE
7.00 X 7.00	0.40	156	CVLLC	CWLLC	CULLC
	0.50	128	CVLLB	CWLLB	CULLB
8.00 X 8.00	0.40	180	CVMMC	CWMMC	CUMMC
	0.50	152	CVMMB	CWMMB	CUMMB
9.00 X 9.00	0.40	216	CVNNC	CWNNC	CUNNC
	0.50	176	CVNNB	CWNNB	CUNNB
10.00 X 10.00	0.40	240	CVPPC	CWPPC	CUPPC
	0.50	200	CVPPB	CWPPB	CUPPB
11.00 X 11.00	0.40	276	CVQQC	CWQQC	CUQQC
	0.50	224	CVQQB	CWQQB	CUQQB
12.00 X 12.00	0.40	300	CVRRC	CWRRC	CURRC
	0.50	248	CVRRB	CWRRB	CURRB
13.00 X 13.00	0.40	336	CVSSC	CWSSC	CUSSC
	0.50	272	CVSSB	CWSSB	CUSSB
14.00 X 14.00	0.40	360	CVTTC	CWTTC	CUTTC
	0.50	296	CVTTB	CWTTB	CUTTB
15.00 X 15.00	0.40	396	CVUUC	CWUUC	CUUUC
	0.50	320	CVUUB	CWUUB	CUUUB



TABLE 7

$eT = 0.40\text{mm PITCH, (2 ROW)}$										
VARIATION SYMBOL	AVLLC	AVMMC	AVNNC	AVPPC	AVQQC	AVRRC	AVSSC	AVTTC	AVUUC	NOTE
	AWLLC	AWMMC	AWNNC	AWPPC	AWQQC	AWRRC	AWSSC	AWTTC	AWUUC	
D BSC.	7.00	8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00	
E BSC.	7.00	8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00	
D2	MIN	4.75	5.75	6.75	7.75	8.75	9.75	10.75	11.75	12.75
	NOM	4.80	5.80	6.80	7.80	8.80	9.80	10.80	11.80	12.80
	MAX	4.85	5.85	6.85	7.85	8.85	9.85	10.85	11.85	12.85
E2	MIN	4.75	5.75	6.75	7.75	8.75	9.75	10.75	11.75	12.75
	NOM	4.80	5.80	6.80	7.80	8.80	9.80	10.80	11.80	12.80
	MAX	4.85	5.85	6.85	7.85	8.85	9.85	10.85	11.85	12.85
D3	MIN	—	—	—	—	—	—	—	—	
	NOM	—	—	—	—	—	—	—	—	
	MAX	—	—	—	—	—	—	—	—	
E3	MIN	—	—	—	—	—	—	—	—	
	NOM	—	—	—	—	—	—	—	—	
	MAX	—	—	—	—	—	—	—	—	
N	116	132	156	172	196	212	236	252	276	
NDA	15	17	20	22	25	27	30	32	35	
NDB	12	14	17	19	22	24	27	29	32	
NEA	15	17	20	22	25	27	30	32	35	
NEB	12	14	17	19	22	24	27	29	32	
NOTES	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	
REF	11-746									
ISSUE	C									

TABLE 8

$eT = 0.40\text{mm PITCH, (2 ROW + RING)}$										
VARIATION SYMBOL	BVLLC	BVMMC	BVNNC	BVPPC	BVQQC	BVRRC	BVSSC	BVTTC	BVQQC	NOTE
	BWLLC	BWMMC	BWNNC	BWPPC	BWQQC	BWRRC	BWSSC	BWTTC	BWQQC	
	BULLC	BUMMC	BUNNC	BUPPC	BUQQC	BURRC	BUSSC	BUTTC	BUQQC	
D BSC.	7.00	8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00	
E BSC.	7.00	8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00	
D2	MIN	3.65	4.65	5.65	6.65	7.65	8.65	9.65	10.65	11.65
	NOM	3.70	4.70	5.70	6.70	7.70	8.70	9.70	10.70	11.70
	MAX	3.75	4.75	5.75	6.75	7.75	8.75	9.75	10.75	11.75
E2	MIN	3.65	4.65	5.65	6.65	7.65	8.65	9.65	10.65	11.65
	NOM	3.70	4.70	5.70	6.70	7.70	8.70	9.70	10.70	11.70
	MAX	3.75	4.75	5.75	6.75	7.75	8.75	9.75	10.75	11.75
D3	MIN	4.75	5.75	6.75	7.75	8.75	9.75	10.75	11.75	12.75
	NOM	4.80	5.80	6.80	7.80	8.80	9.80	10.80	11.80	12.80
	MAX	4.85	5.85	6.85	7.85	8.85	9.85	10.85	11.85	12.85
E3	MIN	4.75	5.75	6.75	7.75	8.75	9.75	10.75	11.75	12.75
	NOM	4.80	5.80	6.80	7.80	8.80	9.80	10.80	11.80	12.80
	MAX	4.85	5.85	6.85	7.85	8.85	9.85	10.85	11.85	12.85
N	116	132	156	172	196	212	236	252	276	
NDA	15	17	20	22	25	27	30	32	35	
NDB	12	14	17	19	22	24	27	29	32	
NEA	15	17	20	22	25	27	30	32	35	
NEB	12	14	17	19	22	24	27	29	32	
NOTES	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	
REF	11-746									
ISSUE	C									

TABLE 9

$\text{[eT]} = 0.50\text{mm PITCH, (2 ROW)}$										
VARIATION SYMBOL	AVLLB	AVMMB	AVNNB	AVPPB	AVQQB	AVRRB	AVSSB	AVTTB	AVUUB	NOTE
	AWLLB	AWMMB	AWNNB	AWPPB	AWQQB	AWRRB	AWSSB	AWTTB	AWUUB	
	AULLB	AUMMB	AUNNB	AUPPB	AUQQB	AURRB	AUSSB	AUTTB	AUUUB	
D BSC.	7.00	8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00	
E BSC.	7.00	8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00	
D2	MIN	4.65	5.65	6.65	7.65	8.65	9.65	10.65	11.65	12.65
	NOM	4.70	5.70	6.70	7.70	8.70	9.70	10.70	11.70	12.70
	MAX	4.75	5.75	6.75	7.75	8.75	9.75	10.75	11.75	12.75
E2	MIN	4.65	5.65	6.65	7.65	8.65	9.65	10.65	11.65	12.65
	NOM	4.70	5.70	6.70	7.70	8.70	9.70	10.70	11.70	12.70
	MAX	4.75	5.75	6.75	7.75	8.75	9.75	10.75	11.75	12.75
D3	MIN	—	—	—	—	—	—	—	—	—
	NOM	—	—	—	—	—	—	—	—	—
	MAX	—	—	—	—	—	—	—	—	—
E3	MIN	—	—	—	—	—	—	—	—	—
	NOM	—	—	—	—	—	—	—	—	—
	MAX	—	—	—	—	—	—	—	—	—
N	92	108	124	140	156	172	188	204	220	
NDA	12	14	16	18	20	22	24	26	28	
NDB	9	11	13	15	17	19	21	23	25	
NEA	12	14	16	18	20	22	24	26	28	
NEB	9	11	13	15	17	19	21	23	25	
NOTES	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	
REF	11-746									
ISSUE	C									

TABLE 10

$\text{[eT]} = 0.50\text{mm PITCH, (2 ROW + RING)}$										
VARIATION SYMBOL	BVLLB	BVMMB	BVNNB	BVPPB	BVQQB	BVRRB	BVSSB	BVTTB	BVUUB	NOTE
	BWLLB	BWMMB	BWNNB	BWPPB	BWQQB	BWRRB	BWSSB	BWTTB	BWUUB	
	BULLB	BUMMB	BUNNB	BUPPB	BUQQB	BURRB	BUSSB	BUTTB	BUUUB	
D BSC.	7.00	8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00	
E BSC.	7.00	8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00	
D2	MIN	3.55	4.55	5.55	6.55	7.55	8.55	9.55	10.55	11.55
	NOM	3.60	4.60	5.60	6.60	7.60	8.60	9.60	10.60	11.60
	MAX	3.65	4.65	5.65	6.65	7.65	8.65	9.65	10.65	11.65
E2	MIN	3.55	4.55	5.55	6.55	7.55	8.55	9.55	10.55	11.55
	NOM	3.60	4.60	5.60	6.60	7.60	8.60	9.60	10.60	11.60
	MAX	3.65	4.65	5.65	6.65	7.65	8.65	9.65	10.65	11.65
D3	MIN	4.65	5.65	6.65	7.65	8.65	9.65	10.65	11.65	12.65
	NOM	4.70	5.70	6.70	7.70	8.70	9.70	10.70	11.70	12.70
	MAX	4.75	5.75	6.75	7.75	8.75	9.75	10.75	11.75	12.75
E3	MIN	4.65	5.65	6.65	7.65	8.65	9.65	10.65	11.65	12.65
	NOM	4.70	5.70	6.70	7.70	8.70	9.70	10.70	11.70	12.70
	MAX	4.75	5.75	6.75	7.75	8.75	9.75	10.75	11.75	12.75
N	92	108	124	140	156	172	188	204	220	
NDA	12	14	16	18	20	22	24	26	28	
NDB	9	11	13	15	17	19	21	23	25	
NEA	12	14	16	18	20	22	24	26	28	
NEB	9	11	13	15	17	19	21	23	25	
NOTES	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	
REF	11-746									
ISSUE	C									

TABLE 11

eT = 0.65mm PITCH, (2 ROW)										
VARIATION SYMBOL	AVLLA	AVMMA	AVNNA	AVPPA	AVQQA	AVRRA	AVSSA	AVTTA	AVUUA	NOTE
	AWLLA	AWMMA	AWNNA	AWPPA	AWQQA	AWRRA	AWSSA	AWTTA	AWUUA	
D BSC.	7.00	8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00	
E BSC.	7.00	8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00	
D2	MIN	4.15	5.15	6.15	7.15	8.15	9.15	10.15	11.15	12.15
	NOM	4.20	5.20	6.20	7.20	8.20	9.20	10.20	11.20	12.20
	MAX	4.25	5.25	6.25	7.25	8.25	9.25	10.25	11.25	12.25
E2	MIN	4.15	5.15	6.15	7.15	8.15	9.15	10.15	11.15	12.15
	NOM	4.20	5.20	6.20	7.20	8.20	9.20	10.20	11.20	12.20
	MAX	4.25	5.25	6.25	7.25	8.25	9.25	10.25	11.25	12.25
D3	MIN	—	—	—	—	—	—	—	—	—
	NOM	—	—	—	—	—	—	—	—	—
	MAX	—	—	—	—	—	—	—	—	—
E3	MIN	—	—	—	—	—	—	—	—	—
	NOM	—	—	—	—	—	—	—	—	—
	MAX	—	—	—	—	—	—	—	—	—
N	68	76	92	100	116	124	140	148	164	
NDA	9	10	12	13	15	16	18	19	21	
NDB	6	7	9	10	12	13	15	16	18	
NEA	9	10	12	13	15	16	18	19	21	
NEB	6	7	9	10	12	13	15	16	18	
NOTES	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	
REF	11-746									
ISSUE	C									

TABLE 12

eT = 0.65mm PITCH, (2 ROW + RING)										
VARIATION SYMBOL	BVLLA	BVMMA	BVNNA	BVPPA	BVQQA	BVRRA	BVSSA	BVTTA	BVUUA	NOTE
	BWLLA	BWMMA	BWNNA	BWPPA	BWQQA	BWRRA	BWSSA	BWTTA	BWUUA	
D BSC.	7.00	8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00	
E BSC.	7.00	8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00	
D2	MIN	3.05	4.05	5.05	6.05	7.05	8.05	9.05	10.05	11.05
	NOM	3.10	4.10	5.10	6.10	7.10	8.10	9.10	10.10	11.10
	MAX	3.15	4.15	5.15	6.15	7.15	8.15	9.15	10.15	11.15
E2	MIN	3.05	4.05	5.05	6.05	7.05	8.05	9.05	10.05	11.05
	NOM	3.10	4.10	5.10	6.10	7.10	8.10	9.10	10.10	11.10
	MAX	3.15	4.15	5.15	6.15	7.15	8.15	9.15	10.15	11.15
D3	MIN	4.15	5.15	6.15	7.15	8.15	9.15	10.15	11.15	12.15
	NOM	4.20	5.20	6.20	7.20	8.20	9.20	10.20	11.20	12.20
	MAX	4.25	5.25	6.25	7.25	8.25	9.25	10.25	11.25	12.25
E3	MIN	4.15	5.15	6.15	7.15	8.15	9.15	10.15	11.15	12.15
	NOM	4.20	5.20	6.20	7.20	8.20	9.20	10.20	11.20	12.20
	MAX	4.25	5.25	6.25	7.25	8.25	9.25	10.25	11.25	12.25
N	68	76	92	100	116	124	140	148	164	
NDA	9	10	12	13	15	16	18	19	21	
NDB	6	7	9	10	12	13	15	16	18	
NEA	9	10	12	13	15	16	18	19	21	
NEB	6	7	9	10	12	13	15	16	18	
NOTES	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	
REF	11-746									
ISSUE	C									

TABLE 13

$eT = 0.40\text{mm PITCH, (3 ROW)}$										
SYMBOL \ VARIATION	CVLLC	CVMMC	CVNNC	CVPPC	CVQQC	CVRRC	CVSSC	CVTTC	CVUUC	NOTE
	CWLLC	CWMMC	CWNNC	CWPPC	CWQQC	CWRRC	CWSSC	CWTTC	CWUUC	
	CULLC	CUMMC	CUNNC	CUPPC	CUQQC	CURRC	CUSSC	CUTTC	CUUUC	
D BSC.	7.00	8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00	
E BSC.	7.00	8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00	
D2	MIN	3.75	4.75	5.75	6.75	7.75	8.75	9.75	10.75	11.75
	NOM	3.80	4.80	5.80	6.80	7.80	8.80	9.80	10.80	11.80
	MAX	3.85	4.85	5.85	6.85	7.85	8.85	9.85	10.85	11.85
E2	MIN	3.75	4.75	5.75	6.75	7.75	8.75	9.75	10.75	11.75
	NOM	3.80	4.80	5.80	6.80	7.80	8.80	9.80	10.80	11.80
	MAX	3.85	4.85	5.85	6.85	7.85	8.85	9.85	10.85	11.85
D3	MIN	—	—	—	—	—	—	—	—	—
	NOM	—	—	—	—	—	—	—	—	—
	MAX	—	—	—	—	—	—	—	—	—
E3	MIN	—	—	—	—	—	—	—	—	—
	NOM	—	—	—	—	—	—	—	—	—
	MAX	—	—	—	—	—	—	—	—	—
N	156	180	216	240	276	300	336	360	396	
NDA	15	17	20	22	25	27	30	32	35	
NDB	12	14	17	19	22	24	27	29	32	
NDC	9	11	14	16	19	21	24	26	29	
NEA	15	17	20	22	25	27	30	32	35	
NEB	12	14	17	19	22	24	27	29	32	
NEC	9	11	14	16	19	21	24	26	29	
NOTES	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	
REF	11-746									
ISSUE	C									

TABLE 14

$eT = 0.50\text{mm PITCH, (3 ROW)}$										
SYMBOL \ VARIATION	CVLLB	CVMMB	CVNNB	CVPPB	CVQQB	CVRRB	CVSSB	CVTTB	CVUUB	NOTE
	CWLLB	CWMMB	CWNNB	CWPPB	CWQQB	CWRRB	CWSSB	CWTTB	CWUUB	
	CULLB	CUMMB	CUNNB	CUPPB	CUQQB	CURRB	CUSSB	CUTTB	CUUUB	
D BSC.	7.00	8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00	
E BSC.	7.00	8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00	
D2	MIN	3.65	4.65	5.65	6.65	7.65	8.65	9.65	10.65	11.65
	NOM	3.70	4.70	5.70	6.70	7.70	8.70	9.70	10.70	11.70
	MAX	3.75	4.75	5.75	6.75	7.75	8.75	9.75	10.75	11.75
E2	MIN	3.65	4.65	5.65	6.65	7.65	8.65	9.65	10.65	11.65
	NOM	3.70	4.70	5.70	6.70	7.70	8.70	9.70	10.70	11.70
	MAX	3.75	4.75	5.75	6.75	7.75	8.75	9.75	10.75	11.75
D3	MIN	—	—	—	—	—	—	—	—	—
	NOM	—	—	—	—	—	—	—	—	—
	MAX	—	—	—	—	—	—	—	—	—
E3	MIN	—	—	—	—	—	—	—	—	—
	NOM	—	—	—	—	—	—	—	—	—
	MAX	—	—	—	—	—	—	—	—	—
N	128	152	176	200	224	248	272	296	320	
NDA	12	14	16	18	20	22	24	26	28	
NDB	9	11	13	15	17	19	21	23	25	
NDC	8	10	12	14	16	18	20	22	24	
NEA	12	14	16	18	20	22	24	26	28	
NEB	9	11	13	15	17	19	21	23	25	
NEC	8	10	12	14	16	18	20	22	24	
NOTES	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	
REF	11-746									
ISSUE	C									

NOTES:

1. Dimensioning and tolerancing schemes conform to ASME Y14.5M–1994.
2. All dimensions are in millimeters.
3. Terminal A1 identifier and terminal numbering convention shall conform to JEP95 SPP–002. Terminal A1 identifier must be located within the zone indicated on the outline drawing. Topside terminal A1 indicator may be a molded, marked, or metallized feature. Optional indicator on bottom surface may be a molded, marked or metallized feature. See Detail D for examples of pin 1 indicators.
4. "N" is the maximum number of terminal positions for the specified body size. Depopulation is allowed, but only under the following conditions.
 - a– Depopulation scheme must be consistent in each quadrant of the package.
 - b– Non–symmetric variations should be broken out as separate mechanical outline variations, including depopulation graphics.
5. Outlines with "D" and "E" increments less than 0.5 mm should be registered as "stand alone" outlines. These outlines should use as many of the algorithms and dimensions stated in the design standard as possible to insure predictability in manufacturing.
6. Inner edge of corner terminals may be chamfered or rounded in order to achieve minimum gap "k". This feature should not affect the terminal width "b", which is measured L/2 from the edge of the package body.
7. For a complete set of dimensions for each variation, see the individual variation tables and the common dimensions and tolerance on pages 4 & 5.
8. Various companies have patents and related patent applications that may apply to this registration. If the current 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. Reference patents are as follows:

ASAT	US PATENT #'s 6,498,099; 6,635,957; 6,872,661; 6,933,594; 6,946,324; 6,964,918; 6,989,294; 6,995,460 7,009,286; 7,033,517; 7,049,177; 7,081,403
AIT	US PATENT #'s 6,812,552; 7,129,116

9. Diameter not greater than "b" maximum.
10. Dimensions "b" and "L" are measured at package surface.

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: October 2003	Item Number: 11.11-639
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Revision History:

Issue: B	Date: May 2005	Item Number: 11.11-721
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Location	Change from:	Change to:
Table 1	W and U thickness profiles	V, W and U thickness profiles
Pages 1-3	Datums A and B shown	Switched datums A and B
Page 11	1 ASAT patent shown	Added 6,635,957 & 6,872,661

Issue: C	Date: March 2006	Item Number: 11.11-746
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Location	Change from:	Change to:
Page 1	Corner terminal dimension = LC	Corner terminal dimension = L
Table 2	Values of LC shown	Delete LC from the table
Tables 4-14	N, NDA, NDB, NDC, NEA, NEB and NEC per DGuide 4.19B	N, NDA, NDB, NDC, NEA, NEB and NEC per DGuide 4.19C
	Non-existent	Added 11x11, 14x14 and 15x15mm body sizes
Pages 1-3	Non-existent	Corner terminals added to 2nd and 3rd rows
Page 11, Note 3	...conform to JESD30.	...conform to JEP95 SPP-002.
Page 11, Note 7	Any...variation tables.	(Delete Note 7 and renumber)
Page 11, Note 8	3 ASAT patents shown	Added 5 more patent numbers

Issue: D	Date: May 2007	Item Number: 11.11-767
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Location	Change from:	Change to:
Page 1		Added Detail D, Detail E and Note 3 and 9 reference
Page 2-3		Added Detail D callout and Note 3 and 10 reference
Page 4	Table 2, NOTES: 1,2	Table 2, NOTES: 1,2, 10
Page 5	A1 max. dimension = 0.10	A1 max. dimension = 0.13
Page 11, Note 3		Added reference to Detail D
Page 11	8 ASAT patents shown	Added Notes 9 and 10. Added 2 AIT and 4 ASAT patent numbers.