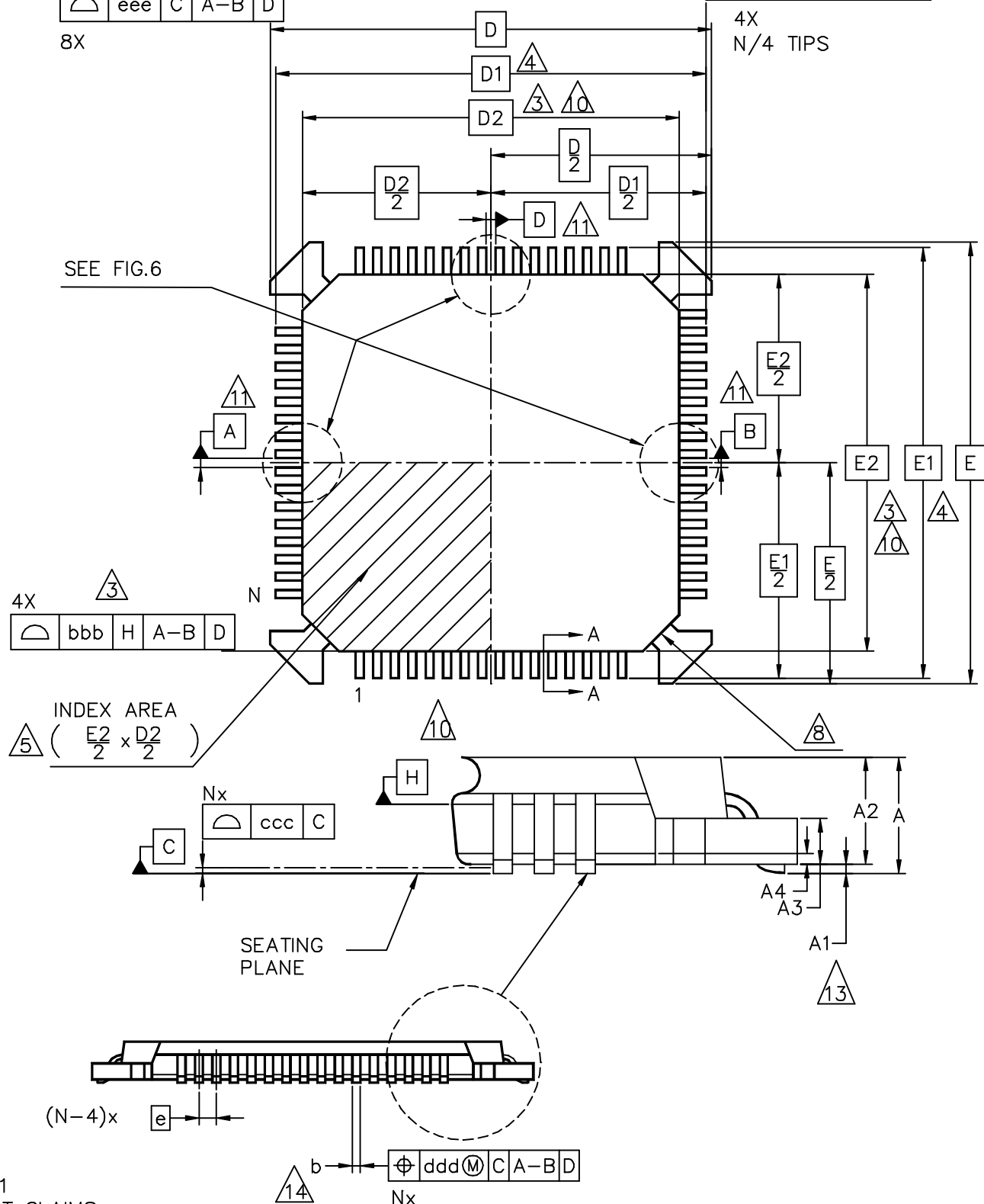
	aaa	C	A-B	D
---	-----	---	-----	---

4X
N/4 TIPS



HITACHI HAS STATED THAT U.S. PATENT APPLICATION NUMBER 08/547774 MAY RELATE TO A CERTAIN IMPLEMENTATION OF THIS PACKAGE OUTLINE.

JEDEC SOLID STATE PRODUCT OUTLINE	THIS REGISTERED OUTLINE HAS BEEN PREPARED BY THE JEDEC JC-11 COMMITTEE AND REFLECTS A PRODUCT WITH ANTICIPATED USAGE IN THE ELECTRONICS INDUSTRY;CHANGES ARE LIKELY TO OCCUR.					
TITLE STANDARD AND LOW PROFILE PLASTIC QUAD FLAT PACKAGE OUTLINE WITH EXPOSED HEAT SINK	PACKAGE DESIGNATOR HL-PQFP-G H-PQFP-G	ISSUE B	DATE MAY 2001	MO-204	SHEET 1 OF 8	

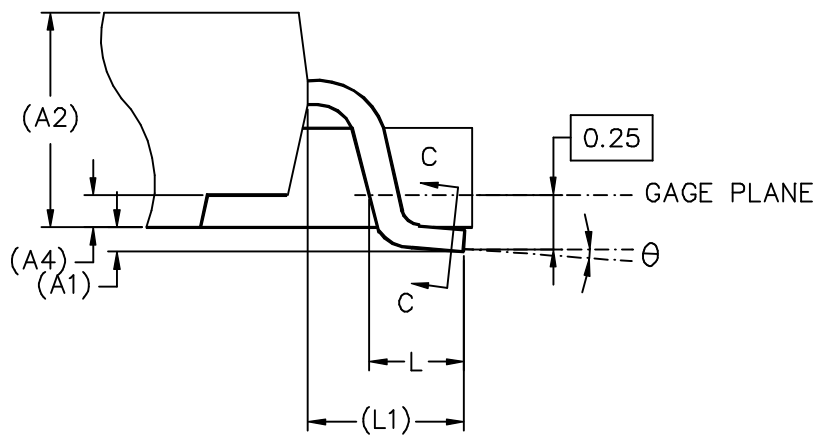


FIG.2 SECTION A-A

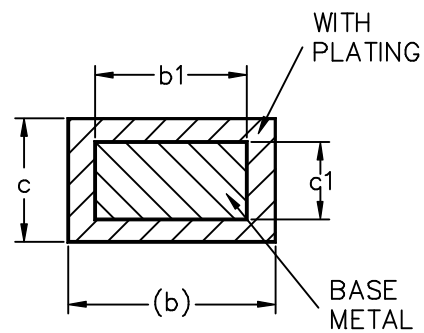


FIG.3 SECTION C-C $\triangle 7$

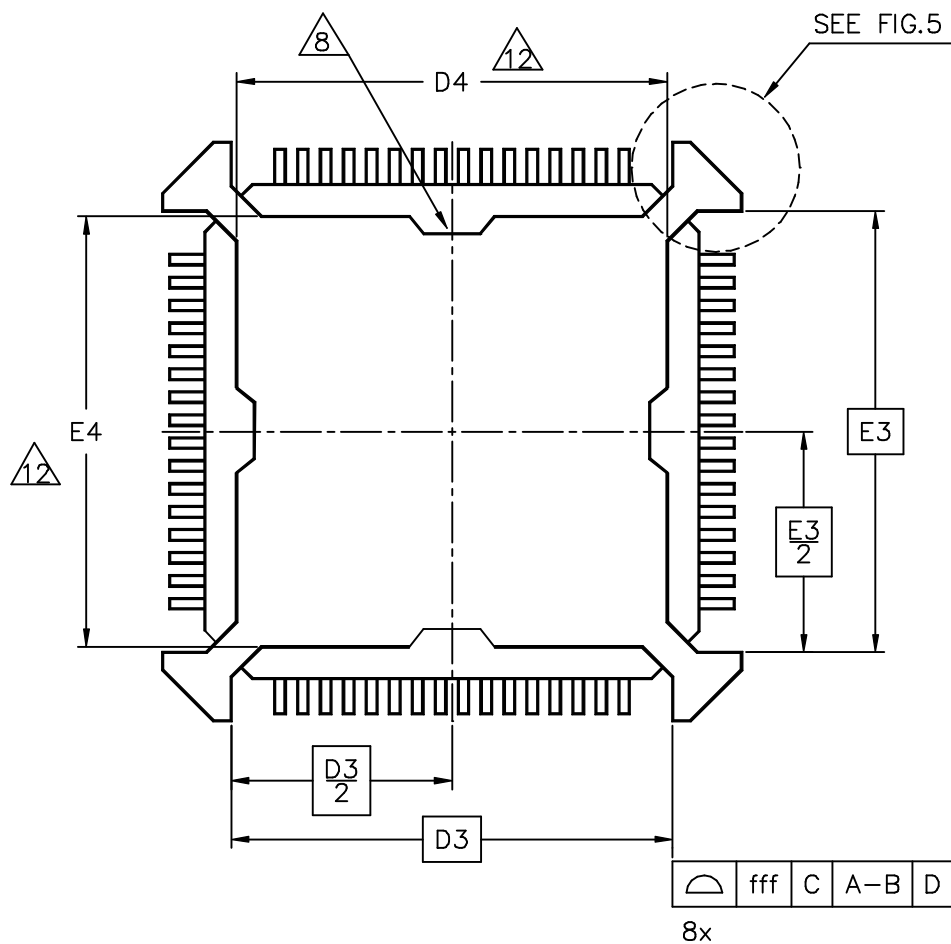
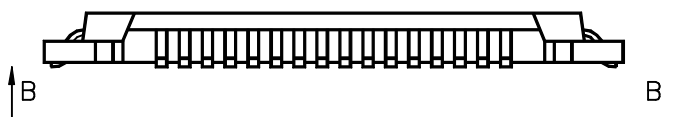


FIG.4 VIEW B-B

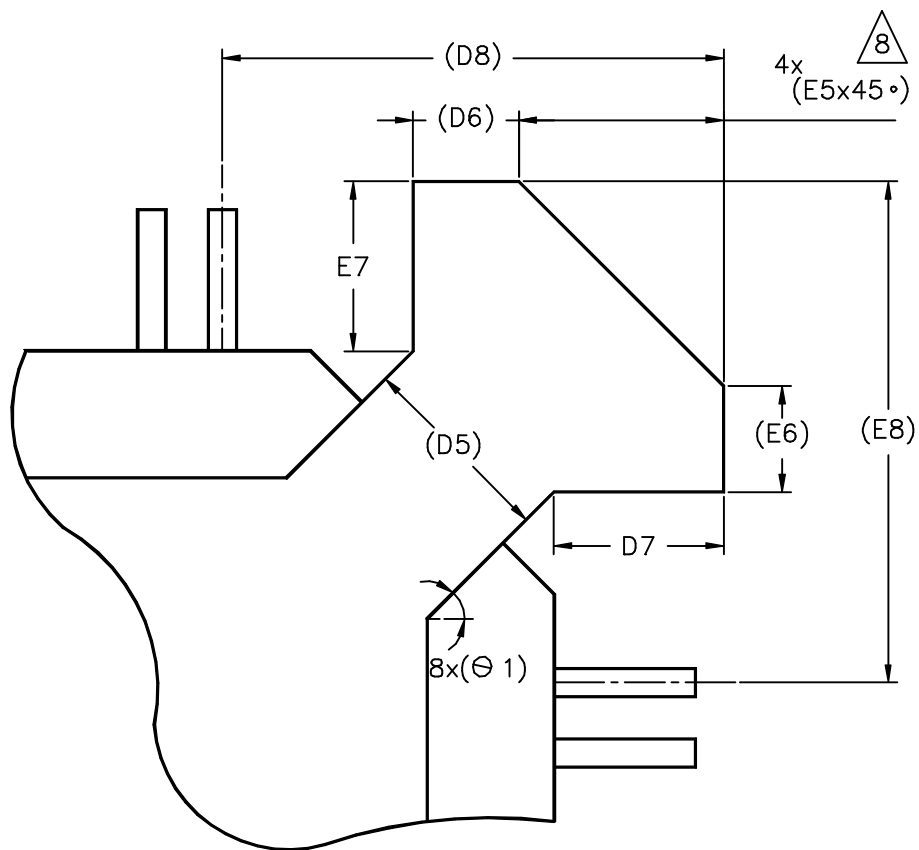
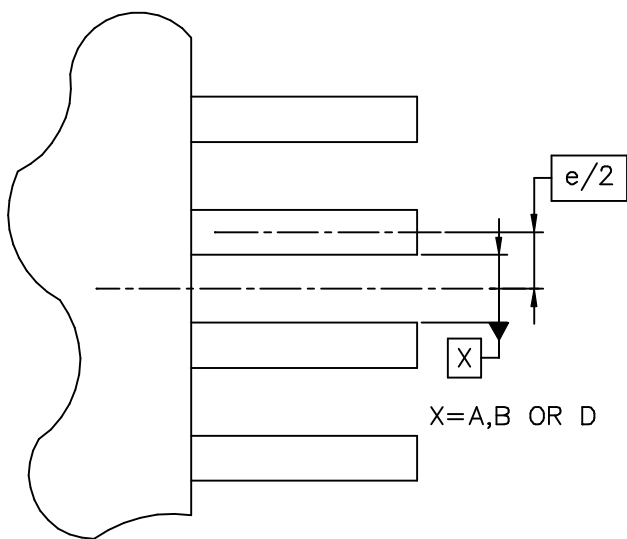
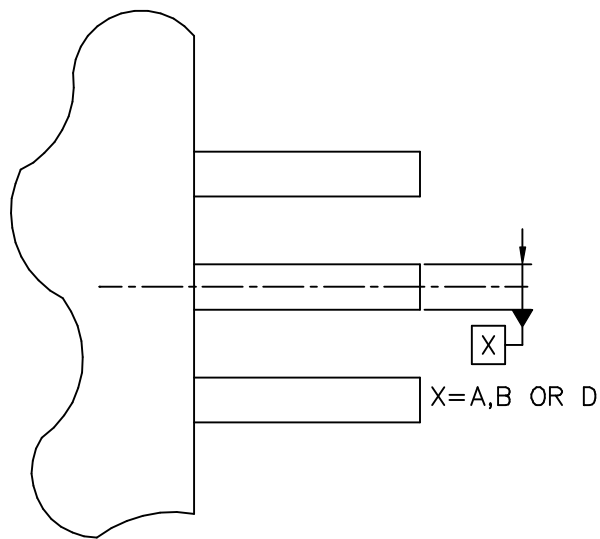


FIG.5 CORNER DETAIL(4 places)



EVEN LEAD
SIDES
TOP VIEW



ODD LEAD
SIDES
TOP VIEW

FIG.6

SUMMARY TABLE				
BODY SIZE	PITCH	LEAD COUNT	1.40 mm THE BODY HL-PQFP-G	2.50 mm THE BODY H-PQFP-G
14X14	0.80	44	—	BA
14X14	0.65	52	AA	BB
14X14	0.65	64	AB	BC
14X14	0.50	80	AC	BD
14X14	0.50	100	AD	BE

SYMBOLS	COMMON DIMENSIONS			NOTES
	MIN	NOM	MAX	
θ	0 °	—	8 °	
θ_1	45 ° REF.			
D2	14.00 BSC.			3,10
D7	1.00	—	1.20	
E2	14.00 BSC.			3,10
E7	1.00	—	1.20	
TOLERANCES OF FORM AND POSITION				
aaa	0.20			
bbb	0.20			
eee	0.20			
fff	0.20			
NOTES	1,2			
REF.	11-503			
ISSUE	A			

SYMBOLS	VARIATIONS ALL DIMENSION IN MILLIMETER											
	AA			NOTES	AB			NOTES	AC			NOTES
	MIN	NOM	MAX		MIN	NOM	MAX		MIN	NOM	MAX	
A	—	—	1.70		—	—	1.70		—	—	1.70	
A1	0.00	—	0.10	13	0.00	—	0.10	13	0.00	—	0.10	13
A2	1.35	1.40	1.45		1.35	1.40	1.45		1.35	1.40	1.45	
A3	—	0.60	—		—	0.60	—		—	0.60	—	
A4	—	—	—		—	—	—		—	—	—	
b	0.24	0.32	0.40	7,14	0.24	0.32	0.40	7,14	0.17	0.22	0.27	7,14
b1	0.24	0.30	0.36	7	0.24	0.30	0.36	7	0.16	0.20	0.24	7
c	0.12	—	0.22	7	0.12	—	0.22	7	0.12	—	0.22	7
c1	0.11	—	0.19	7	0.11	—	0.19	7	0.11	—	0.19	7
D	16.40 BSC.				16.40 BSC.				16.40 BSC.			
D1	16.00 BSC.				16.00 BSC.				16.00 BSC.			
D3	12.20 BSC.				13.00 BSC.				12.20 BSC.			
D4	11.00	—	13.00	12	11.00	—	13.00	12	11.00	—	13.00	12
D5	1.40 REF.				0.85 REF.				1.40 REF.			
D6	0.75 REF.				0.25 REF.				0.75 REF.			
D8	4.30 REF.				3.30 REF.				3.45 REF.			
E	16.40 BSC.				16.40 BSC.				16.40 BSC.			
E1	16.00 BSC.				16.00 BSC.				16.00 BSC.			
E3	12.20 BSC.				13.00 BSC.				12.20 BSC.			
E4	11.00	—	13.00	12	11.00	—	13.00	12	11.00	—	13.00	12
E5	1.45 REF.				1.45 REF.				1.45 REF.			
E6	0.75 REF.				0.25 REF.				0.75 REF.			
E8	4.30 REF.				3.30 REF.				3.45 REF.			
e	0.65 BSC.				0.65 BSC.				0.50 BSC.			
L	0.45	—	0.75		0.45	—	0.75		0.45	—	0.75	
L1	1.00 REF.				1.00 REF.				1.00 REF.			
N	52			6	64			6	80			6
TOLERANCES OF FORM AND POSITION												
ccc	0.10				0.10				0.08			
ddd	0.13				0.13				0.08			
NOTES	1,2				1,2				1,2			
REF.	11–503				11–503				11–503			
ISSUE	A				A				A			
JEDEC SOLID STATE PRODUCT OUTLINE				TITLE STANDARD AND LOW PROFILE PLASTIC QUAD FLAT PACKAGE OUTLINE WITH EXPOSED HEAT SINK				ISSUE B	DATE MAY 2001		MO–204	SHEET 5 OF 8

SYMBOLS	VARIATIONS ALL DIMENSION IN MILLIMETER											
	AD			NOTES	BA			NOTES	BB			NOTES
	MIN	NOM	MAX		MIN	NOM	MAX		MIN	NOM	MAX	
A	—	—	1.70		—	—	3.15		—	—	3.15	
A1	0.00	—	0.10	13	0.00	—	0.10	13	0.00	—	0.10	13
A2	1.35	1.40	1.45		2.45	2.50	2.55		2.45	2.50	2.55	
A3	—	0.60	—		—	1.28	—		—	1.28	—	
A4	—	—	—		0.00	—	0.25		0.00	—	0.25	
b	0.17	0.22	0.27	7,14	0.29	0.37	0.45	7,14	0.22	0.30	0.38	7,14
b1	0.16	0.22	0.24	7	0.29	0.35	0.41	7	0.22	0.28	0.34	7
c	0.12	—	0.22	7	0.17	—	0.27	7	0.17	—	0.27	7
c1	0.11	—	0.19	7	0.16	—	0.24	7	0.16	—	0.24	7
D	16.40 BSC.				17.20 BSC.				17.20 BSC.			
D1	16.00 BSC.				16.80 BSC.				16.80 BSC.			
D3	13.00 BSC.				13.00 BSC.				13.00 BSC.			
D4	11.00	—	13.00	12	10.00	—	13.00	12	10.00	—	13.00	12
D5	0.85 REF.				1.40 REF.				1.40 REF.			
D6	0.25 REF.				1.10 REF.				1.10 REF.			
D8	2.20 REF.				4.60 REF.				4.70 REF.			
E	16.40 BSC.				17.20 BSC.				17.20 BSC.			
E1	16.00 BSC.				16.80 BSC.				16.80 BSC.			
E3	13.00 BSC.				13.00 BSC.				13.00 BSC.			
E4	11.00	—	13.00	12	10.00	—	13.00	12	10.00	—	13.00	12
E5	1.45 REF.				1.00 REF.				1.00 REF.			
E6	0.25 REF.				1.10 REF.				1.10 REF.			
E8	2.20 REF.				4.60 REF.				4.70 REF.			
e	0.50 BSC.				0.80 BSC.				0.65 BSC.			
L	0.45	—	0.75		0.73	—	1.03		0.73	—	1.03	
L1	1.00 REF.				1.40 REF.				1.40 REF.			
N	100			6	44			6	52			6
TOLERANCES OF FORM AND POSITION												
ccc	0.08				0.10				0.10			
ddd	0.08				0.13				0.13			
NOTES	1,2				1,2				1,2			
REF.	11–503				11–586				11–586			
ISSUE	A				B				B			
JEDEC SOLID STATE PRODUCT OUTLINE				TITLE STANDARD AND LOW PROFILE PLASTIC QUAD FLAT PACKAGE OUTLINE WITH EXPOSED HEAT SINK				ISSUE B	DATE MAY 2001		MO–204	SHEET 6 OF 8

SYMBOLS	VARIATIONS ALL DIMENSION IN MILLIMETER											
	BC			NOTES	BD			NOTES	BE			NOTES
	MIN	NOM	MAX		MIN	NOM	MAX		MIN	NOM	MAX	
A	—	—	3.15		—	—	3.15		—	—	3.15	
A1	0.00	—	0.10	13	0.00	—	0.10	13	0.00	—	0.10	13
A2	2.45	2.50	2.55		2.45	2.50	2.55		2.45	2.50	2.55	
A3	—	1.28	—		—	1.28	—		—	1.28	—	
A4	0.00	—	0.25		0.00	—	0.25		0.00	—	0.25	
b	0.22	0.30	0.38	7,14	0.17	0.22	0.27	7,14	0.17	0.22	0.27	7,14
b1	0.22	0.28	0.34	7	0.16	0.20	0.24	7	0.16	0.20	0.24	7
c	0.17	—	0.27	7	0.17	—	0.27	7	0.17	—	0.27	7
c1	0.16	—	0.24	7	0.16	—	0.24	7	0.16	—	0.24	7
D	17.20 BSC.				17.20 BSC.				17.20 BSC.			
D1	16.80 BSC.				16.80 BSC.				16.80 BSC.			
D3	13.00 BSC.				13.00 BSC.				13.00 BSC.			
D4	10.00	—	13.00	12	10.00	—	13.00	12	10.00	—	13.00	12
D5	1.40 REF.				1.40 REF.				1.40 REF.			
D6	1.10 REF.				1.10 REF.				1.10 REF.			
D8	3.73 REF.				3.85 REF.				2.60 REF.			
E	17.20 BSC.				17.20 BSC.				17.20 BSC.			
E1	16.80 BSC.				16.80 BSC.				16.80 BSC.			
E3	13.00 BSC.				13.00 BSC.				13.00 BSC.			
E4	10.00	—	13.00	12	10.00	—	13.00	12	10.00	—	13.00	12
E5	1.00 REF.				1.00 REF.				1.00 REF.			
E6	1.10 REF.				1.10 REF.				1.10 REF.			
E8	3.73 REF.				3.85 REF.				2.60 REF.			
e	0.65 BSC.				0.50 BSC.				0.50 BSC.			
L	0.73	—	1.03		0.73	—	1.03		0.73	—	1.03	
L1	1.40 REF.				1.40 REF.				1.40 REF.			
N	64			6	80			6	100			6
TOLERANCES OF FORM AND POSITION												
ccc	0.10				0.10				0.10			
ddd	0.13				0.10				0.10			
NOTES	1,2				1,2				1,2			
REF.	11–586				11–586				11–586			
ISSUE	B				B				B			
JEDEC SOLID STATE PRODUCT OUTLINE				TITLE STANDARD AND LOW PROFILE PLASTIC QUAD FLAT PACKAGE OUTLINE WITH EXPOSED HEAT SINK				ISSUE B	DATE MAY 2001		MO–204	SHEET 7 OF 8

NOTES:

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

2. ALL DIMENSIONS ARE IN MILLIMETERS(ANGLES IN DEGREES).

△3. DIMENSIONS D2 AND E2 DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS. MOLD FLASH, PROTRUSIONS OR GATE BURRS SHALL NOT EXCEED 0.25mm PER SIDE. D2 AND E2 ARE MAXIMUM PLASTIC BODY SIZE DIMENSIONS INCLUDING MOLD MISMATCH.

△4. TO BE DETERMINED AT SEATING PLANE DATUM C.

△5. A VISUAL TERMINAL ONE INDEX FEATURE MUST BE LOCATED WITHIN THE CROSS-HATCHED AREA.

6. N IS THE MAXIMUM NUMBER OF LEADS.

△7. THESE DIMENSIONS APPLY TO THE FLAT SECTION OF THE LEAD BETWEEN 0.10mm AND 0.25mm FROM THE LEAD TIP.

△8. EXACT SHAPE AND SIZE OF THIS FEATURE IS OPTIONAL.

9. SEATING PLANE IS DEFINED BY LEAD TIPS ONLY.

△10. DIMENSIONS D2 AND E2 TO BE DETERMINED AT DATUM PLANE H.

△11. DATUMS A-B AND D TO BE DETERMINED AT DATUM PLANE H.

△12. D4 AND E4 MINIMUM DIMENSIONS OF THERMALLY ENHANCED TYPES ARE VARIABLES DEPENDING ON DEVICE FUNCTION(DIE PADDLE SIZE). END USER SHOULD VERIFY ACTUAL SIZE OF EXPOSED THERMAL PAD FOR SPECIFIC DEVICE APPLICATION.

△13. A1 IS DEFINED AS THE DISTANCE FROM THE SEATING PLANE TO THE LOWEST POINT ON THE PACKAGE BODY.

△14. DIMENSION b DOES NOT INCLUDE DAM BAR PROTRUSION. ALLOWABLE DAM BAR PROTRUSION SHALL NOT CAUSE THE LEAD WIDTH TO EXCEED THE MAXIMUM b DIMENSION BY MORE THAN 0.08 mm. DAM BAR CANNOT BE LOCATED ON THE LOWER RADIUS OR THE FOOT. MINIMUM SPACE BETWEEN PROTRUSION AND AN ADJACENT LEAD SHALL NOT BE LESS THAN 0.07 mm.

JEDEC SOLID STATE PRODUCT OUTLINE	TITLE STANDARD AND LOW PROFILE PLASTIC QUAD FLAT PACKAGE OUTLINE WITH EXPOSED HEAT SINK	ISSUE B	DATE MAY 2001	MO-204	SHEET 8 OF 8
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