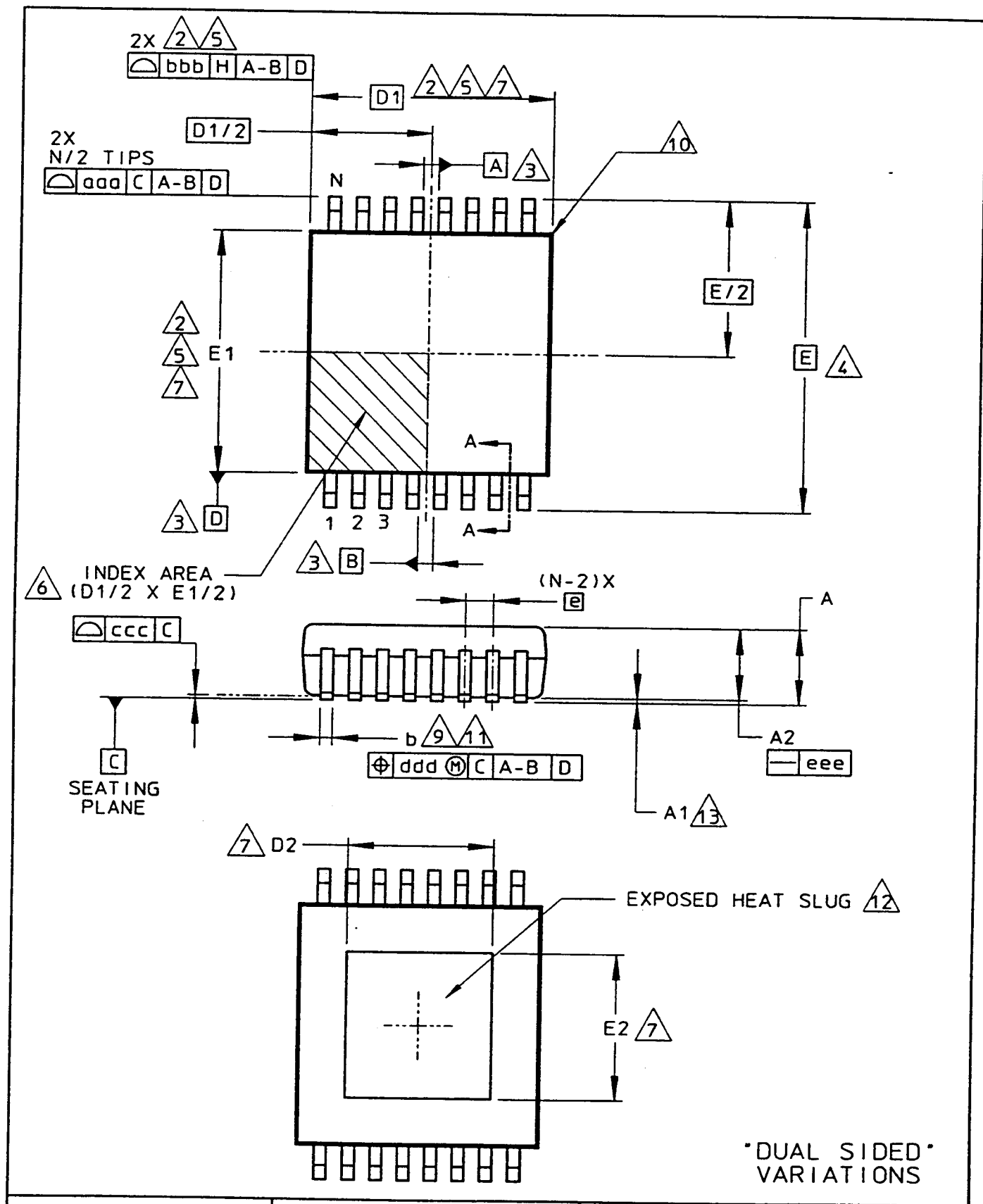
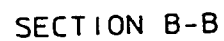
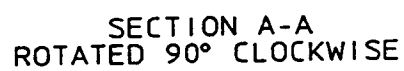


"QUAD SIDED"
VARIATIONS

JEDEC SOLID STATE PRODUCT OUTLINES	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 PLASTIC QUAD FLAT HEATSLUG PACKAGE (2.0mm THICK 2.00mm FOOT PRINT QUAD & DUAL-SIDED LEADS)	JESD-30 DESIGNATOR H-LQFP-G	ISSUE A	DATE MAR 96	ITEM MO-189	PAGE 1 OF 7



JEDEC SOLID STATE PRODUCT OUTLINES	TITLE PLASTIC QUAD FLAT HEATSLUG PACKAGE (2.0mm THICK 2.00mm FOOT PRINT QUAD & DUAL-SIDED LEADS)	ISSUE A	DATE MAR 96	ITEM MO-189	PAGE 2 OF 7
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JEDEC SOLID STATE PRODUCT OUTLINES	TITLE PLASTIC QUAD FLAT HEATSLUG PACKAGE (2.0mm THICK 2.00mm FOOT PRINT QUAD & DUAL-SIDED LEADS)	ISSUE A	DATE MAR 96	ITEM M0-189	PAGE 3 OF 7
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NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M-1994.

2 THE TOP PACKAGE BODY SIZE MAY BE SMALLER THAN THE BOTTOM PACKAGE SIZE BY AS MUCH AS 0.15mm.

3 DATUMS A, B AND D TO BE DETERMINED AT DATUM PLANE H.

4 TO BE DETERMINED AT SEATING DATUM PLANE C.

5 DIMENSIONS D1 AND E1 DO NOT INCLUDE MOLD PROTRUSIONS. ALLOWABLE PROTRUSION IS 0.25mm PER SIDE. DIMENSIONS D1 AND E1 INCLUDE MOLD MISMATCH AND ARE AT DATUM PLANE H AS MEASURED IN SILHOUETTE ONLY, AS ESTABLISHED PERPENDICULAR TO DATUM PANE H.

6 DETAILS OF PIN 1 IDENTIFIER ARE OPTIONAL BUT MUST BE LOCATED WITHIN THE ZONE INDICATED.

7 DIMENSION D2 AND E2 SHOW THE MINIMUM ALLOWED FOR THE EXPOSED HEAT SLUG. THE MAXIMUM ALLOWED IS EQUAL TO THE PACKAGE BODY SIZE (D1 & E1). HOWEVER, THE SIZE OF THE EXPOSED HEAT SLUG ARE VARIABLES DEPENDING ON DEVICE FUNCTION (DIE SIZE). END USERS SHOULD VERIFY THE ACTUAL SIZE OF EXPOSED THERMAL PAD FOR SPECIFIC DEVICE APPLICATION.

8. ALL DIMENSIONS ARE IN MILLIMETERS.

9 DIMENSION b DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL NOT CAUSE THE LEAD WIDTH TO EXCEED THE MAXIMUM b DIMENSION BY MORE THAN 0.08mm. DAMBAR CAN NOT BE LOCATED ON THE LOWER RADIUS OF THE FOOT. MINIMUM SPACE BETWEEN PROTRUSION AND AN ADJACENT LEAD IS 0.07mm.

10 EXACT SHAPE OF EACH CORNER IS OPTIONAL.

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

12 THE EXPOSED HEATSLUG IS COINCIDENT WITH THE BOTTOM SIDE OF THE PACKAGE AND NOT ALLOWED TO PROTRUDE BEYOND THAT SURFACE.

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

JEDEC SOLID STATE PRODUCT OUTLINES	TITLE PLASTIC QUAD FLAT HEATSLUG PACKAGE (2.0mm THICK 2.00mm FOOT PRINT QUAD & DUAL-SIDED LEADS)	ISSUE A	DATE MAR 96	ITEM MO-189	PAGE 4 OF 7
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HQFP MATRIX SUMMARY TABLE

BODY SIZE	PITCH	VARIATIONS	LEAD COUNT	
			QUAD	DUAL
5 X 5	0.50	AA	32	--
5 X 5	0.50	AA-1	--	16
7 X 7	0.80	BA	32	--
7 X 7	0.80	BA-1	--	16
7 X 7	0.65	BB	40	--
7 X 7	0.65	BB-1	--	20
7 X 7	0.50	BC	48	--
7 X 7	0.50	BC-1	--	24

COMMON DIMENSIONS (MILLIMETERS)				
S Y M B O L	HQFP QUAD AND DUAL LEAD COUNTS			N O T E S
	MIN.	NOM.	MAX.	
A1	0.00	0.13	0.25	13
L	0.45	0.60	0.75	
L1	1.00 REF			
aaa	0.20			
bbb	0.20			
eee	0.05			
θ1	0°	-----	7°	
θ2	5° REF			
θ3	5° REF			
NOTES	1. 8			
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JEDEC SOLID STATE PRODUCT OUTLINES	TITLE PLASTIC QUAD FLAT HEATSLUG PACKAGE (2.0mm THICK 2.00mm FOOT PRINT QUAD & DUAL-SIDED LEADS)	ISSUE A	DATE MAR 96	ITEM MO-189	PAGE
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VARIATIONS

SYMBOL	AA			NOTES				NOTES				NOTES
	MIN.	NOM.	MAX.		MIN.	NOM.	MAX.		MIN.	NOM.	MAX.	
A	----	----	2.35									
A2	1.95	2.00	2.10									
D	7.00 BSC			4								
D1	5.00 BSC			2.5.7								
D2	2.00	----	----	7								
E	7.00 BSC			4								
E1	5.00 BSC			2.5.7								
E2	2.00	----	----	7								
N	32											
b	0.17	----	0.27	9.11								
b1	0.17	0.20	0.23									
c	0.13	----	0.23									
c1	0.13	0.15	0.17									
e	0.50 BSC											
R1	0.08	----	----									
R2	0.08	----	0.20									
ccc	0.08											
ddd	0.08											
NOTE	1. 8											
REF												
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VARIATIONS

SYMBOL	AA-1			NOTES				NOTES				NOTES
	MIN.	NOM.	MAX.		MIN.	NOM.	MAX.		MIN.	NOM.	MAX.	
A	----	----	2.35									
A2	1.95	2.00	2.10									
D	----	----	----									
D1	5.00 BSC			2.5.7								
D2	2.00	----	----	7								
E	7.00 BSC			4								
E1	4.90	5.00	5.10	2.5.7								
E2	2.00	----	----	7								
N	16											
b	0.17	----	0.27	9.11								
b1	0.17	0.20	0.23									
c	0.13	----	0.23									
c1	0.13	0.15	0.17									
e	0.50 BSC											
R1	0.08	----	----									
R2	0.08	----	0.20									
ccc	0.08											
ddd	0.08											
NOTE	1. 8											
REF												
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JEDEC
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OUTLINES

TITLE PLASTIC QUAD FLAT
HEATSLUG PACKAGE
(2.0mm THICK 2.00mm FOOT PRINT
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VARIATIONS												
SYMBOL	BA			NOTES	BB			NOTES	BC			NOTES
	MIN.	NOM.	MAX.		MIN.	NOM.	MAX.		MIN.	NOM.	MAX.	
A	----	----	2.35		----	----	2.35		----	----	2.35	
A2	1.95	2.00	2.10		1.95	2.00	2.10		1.95	2.00	2.10	
D	9.00 BSC			4	9.00 BSC			4	9.00 BSC			4
D1	7.00 BSC			2.5.7	7.00 BSC			2.5.7	7.00 BSC			2.5.7
D2	4.00	----	----	7	4.00	----	----	7	4.00	----	----	7
E	9.00 BSC			4	9.00 BSC			4	9.00 BSC			4
E1	7.00 BSC			2.5.7	7.00 BSC			2.5.7	7.00 BSC			2.5.7
E2	4.00	----	----	7	4.00	----	----	7	4.00	----	----	7
N	32				40				48			
b	0.30	----	0.45	9.11	0.22	----	0.38	9.11	0.17	----	0.27	9.11
b1	0.30	0.35	0.40		0.22	0.30	0.33		0.17	0.20	0.23	
c	0.18	----	0.28		0.13	----	0.23		0.13	----	0.23	
c1	0.18	0.20	0.23		0.13	0.15	0.17		0.13	0.15	0.17	
e	0.80 BSC				0.65 BSC				0.50 BSC			
R1	0.13	----	----		0.08	----	----		0.08	----	----	
R2	0.13	----	0.30		0.08	----	0.20		0.08	----	0.20	
ccc	0.10				0.10				0.08			
ddd	0.20				0.13				0.08			
NOTE	1. 8				1. 8				1. 8			
REF												
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VARIATIONS												
SYMBOL	BA - 1			NOTES	BB - 1			NOTES	BC - 1			NOTES
	MIN.	NOM.	MAX.		MIN.	NOM.	MAX.		MIN.	NOM.	MAX.	
A	----	----	2.35		----	----	2.35		----	----	2.35	
A2	1.95	2.00	2.10		1.95	2.00	2.10		1.95	2.00	2.10	
D	----	----	----		----	----	----		----	----	----	
D1	7.00 BSC			2.5.7	7.00 BSC			2.5.7	7.00 BSC			2.5.7
D2	4.00	----	----	7	4.00	----	----	7	4.00	----	----	7
E	9.00 BSC			4	9.00 BSC			4	9.00 BSC			4
E1	6.90	7.00	7.10	2.5.7	6.90	7.00	7.10	2.5.7	6.90	7.00	7.10	2.5.7
E2	4.00	----	----	7	4.00	----	----	7	4.00	----	----	7
N	16				20				24			
b	0.30	----	0.45	9.11	0.22	----	0.38	9.11	0.17	----	0.27	9.11
b1	0.30	0.35	0.40		0.22	0.30	0.33		0.17	0.20	0.23	
c	0.18	----	0.28		0.13	----	0.23		0.13	----	0.23	
c1	0.18	0.20	0.23		0.13	0.15	0.17		0.13	0.15	0.17	
e	0.80 BSC				0.65 BSC				0.50 BSC			
R1	0.13	----	----		0.08	----	----		0.08	----	----	
R2	0.13	----	0.30		0.08	----	0.20		0.08	----	0.20	
ccc	0.10				0.10				0.08			
ddd	0.20				0.13				0.08			
NOTE	1. 8				1. 8				1. 8			
REF												
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JEDEC
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TITLE PLASTIC QUAD FLAT
HEATSLUG PACKAGE
(2.0mm THICK 2.00mm FOOT PRINT
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