

FIGURE 1
PRINCIPAL DIMENSIONS & DATUMS

THIS STANDARD OUTLINE HAS BEEN PREPARED BY THE JEDEC JC-11 COMMITTEE AND APPROVED BY THE JEDEC COUNCIL AND REFLECTS A PRODUCT WITH WIDE ACCEPTANCE IN THE ELECTRONICS INDUSTRY. CHANGES ARE NOT LIKELY TO OCCUR.

JEDEC
SOLID STATE PRODUCT
OUTLINES

TITLE METRIC PLASTIC QUAD
FLATPACK FAMILY
1.0, 0.8, 0.65 PITCH
PQFP-G/MQFP

ISSUE
B

DATE
12/96

MS-022

OF 11

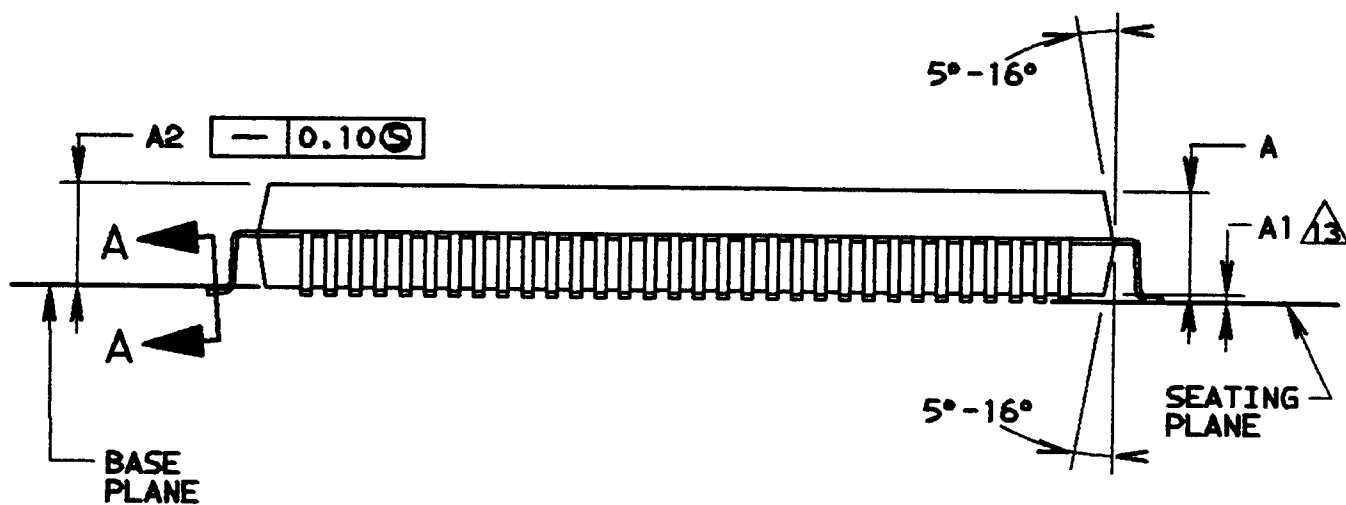
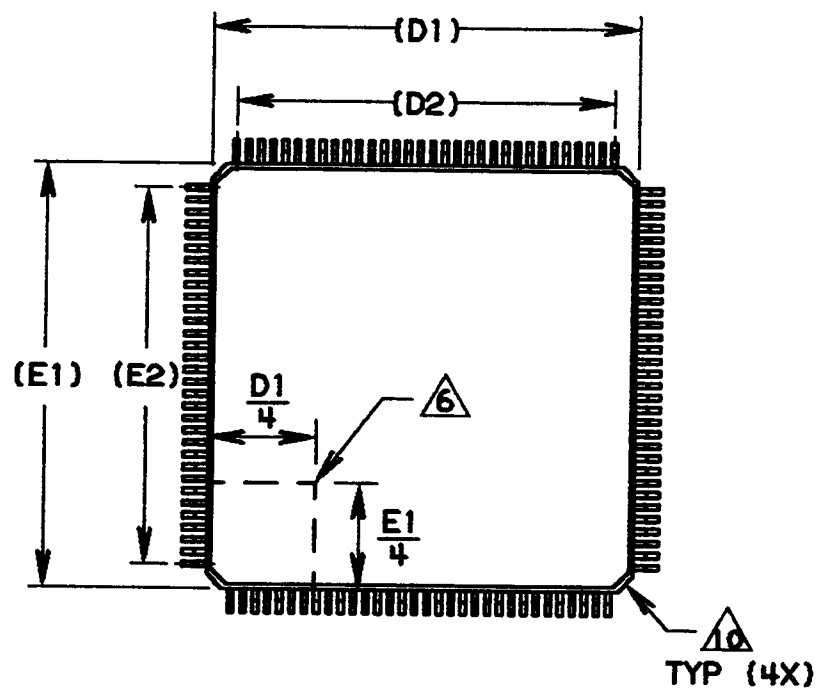
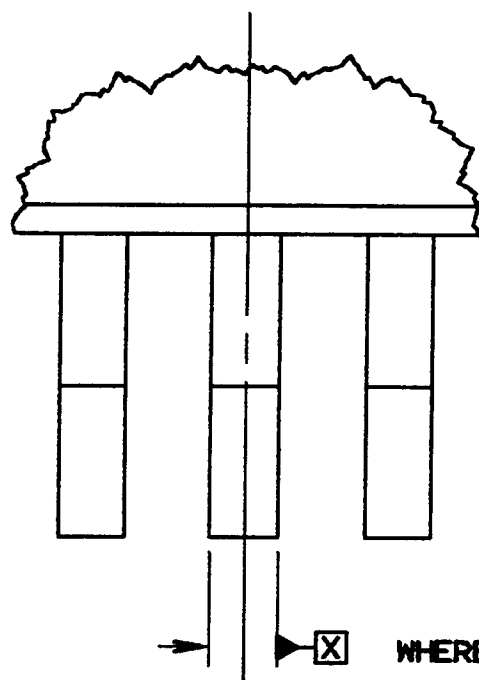
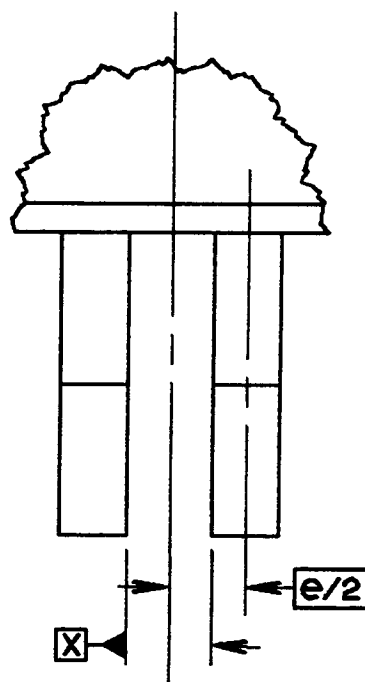


FIGURE 2
MOLDED DETAILS

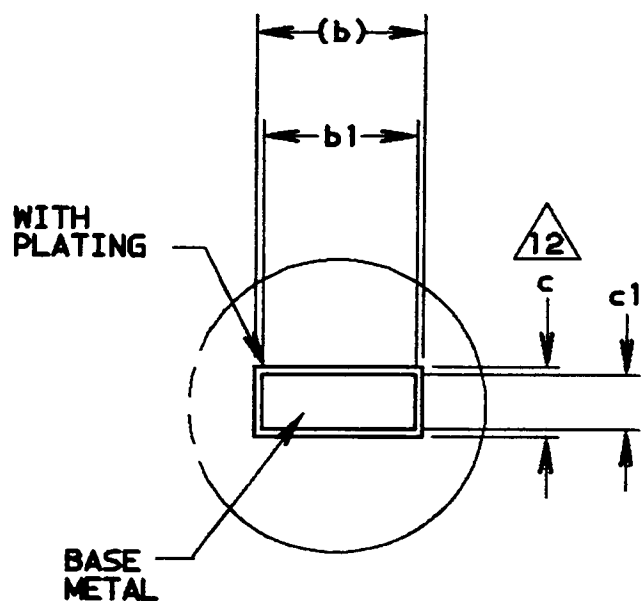


ODD LEADS/SIDE

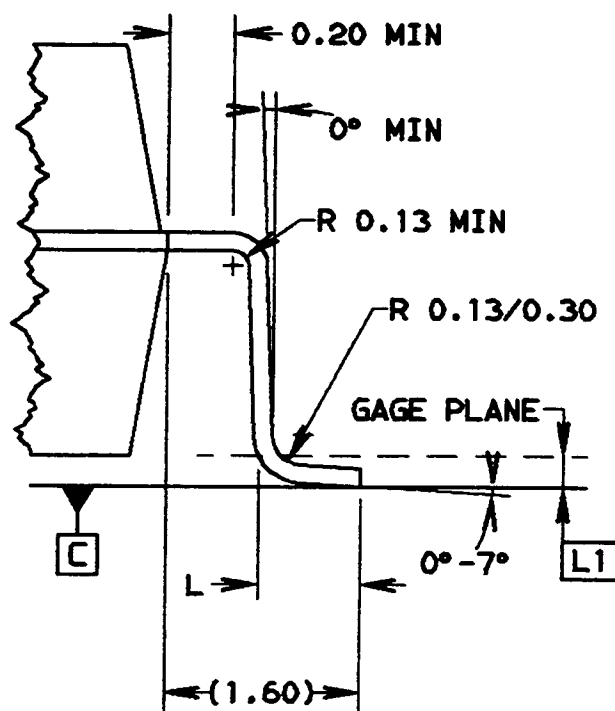


EVEN LEADS/SIDE

DETAIL A



SECTION A-A



DETAIL C

NOTES

- 1 ALL DIMENSIONING AND TOLERANCING CONFORM TO ASME Y14.5M-1994.
- 2 DATUM PLANE H IS LOCATED AT THE BOTTOM OF THE MOLD PARTING LINE COINCIDENT WITH WHERE THE LEAD EXITS THE BODY.
- 3 DATUMS A-B AND D TO BE DETERMINED AT DATUM PLANE H.
- 4 TO BE DETERMINED AT SEATING PLANE C.
- 5 DIMENSIONS D1 AND E1 DO NOT INCLUDE MOLD PROTRUSION. ALLOWABLE PROTRUSION IS 0.25 mm PER SIDE. DIMENSIONS D1 AND E1 DO INCLUDE MOLD MISMATCH AND ARE DETERMINED AT DATUM PLANE H.
- 6 DETAILS OF PIN 1 IDENTIFIER ARE OPTIONAL BUT MUST BE LOCATED WITHIN THE ZONE INDICATED.
- 7 REGARDLESS OF THE RELATIVE SIZE OF THE UPPER AND LOWER BODY SECTIONS, DIMENSIONS D1 AND E1 ARE DETERMINED AT THE LARGEST FEATURE OF THE BODY EXCLUSIVE OF MOLD FLASH AND GATE BURRS, BUT INCLUDING ANY MISMATCH BETWEEN THE UPPER AND LOWER SECTIONS OF THE MOLDED BODY.
- 8 ALL DIMENSIONS ARE IN MILLIMETERS.
- 9 DIMENSION b DOES NOT INCLUDE DAMBAR PROTRUSION. THE DAMBAR PROTRUSION(S) SHALL NOT CAUSE THE LEAD WIDTH TO EXCEED b MAXIMUM BY MORE THAN 0.08 mm. DAMBAR CANNOT BE LOCATED ON THE LOWER RADIUS OR THE LEAD FOOT.
- 10 EXACT SHAPE AND SIZE OF THIS FEATURE IS OPTIONAL.
- 11 N IS THE NUMBER OF LEADS.
- 12 THESE DIMENSIONS APPLY TO THE FLAT SECTION OF THE LEAD BETWEEN 0.10 mm AND 0.25 mm FROM THE LEAD TIP.
- 13 A1 IS DEFINED AS THE DISTANCE FROM THE SEATING PLANE TO THE LOWEST POINT OF THE PACKAGE BODY.

JEDEC SOLID STATE PRODUCT OUTLINES	TITLE METRIC PLASTIC QUAD FLATPACK FAMILY 1.0, 0.8, 0.65 PITCH PQFP-G/MQFP	ISSUE B	DATE 12/96	MS-022	4 OF 11
--	---	------------	---------------	--------	------------

COMMON DIMENSIONS				
SYMBOL	MIN	NOM	MAX	NOTE
c	0.11		0.23	
c1	0.11	0.15	0.19	
L	0.73	0.88	1.03	
L1	0.25 BASIC			
aaa			0.25	
bbb			0.20	

SUMMARY TABLE			
BODY SIZE	PITCH	LEADCOUNT	VARIATIONS
10 mm X 10 mm	1.00 mm	36	AA
10 mm X 10 mm	0.80 mm	44	AB
10 mm X 10 mm	0.65 mm	52	AC
14 mm X 14 mm	1.00 mm	52	BA,BD
14 mm X 14 mm	0.80 mm	64	BB,BE
14 mm X 14 mm	0.65 mm	80	BC,BF
20 mm X 20 mm	1.00 mm	76	CA-1,CA-2
20 mm X 20 mm	0.80 mm	88	CB-1,CB-2
20 mm X 20 mm	0.65 mm	112	CC-1,CC-2
28 mm X 28 mm	0.80 mm	120	DA-1,DA-2
28 mm X 28 mm	0.80 mm	128	DB-1,DB-2
28 mm X 28 mm	0.65 mm	144	DC-1,DC-2
28 mm X 28 mm	0.65 mm	160	DD-1,DD-2
32 mm X 32 mm	0.65 mm	184	EA
40 mm X 40 mm	0.65 mm	232	FA
20 mm X 14 mm	1.00 mm	64	GA-1,GA-2
20 mm X 14 mm	0.80 mm	80	GB-1,GB-2
20 mm X 14 mm	0.65 mm	100	GC-1,GC-2

JEDEC SOLID STATE PRODUCT OUTLINES	TITLE METRIC PLASTIC QUAD FLATPACK FAMILY 1.0, 0.8, 0.65 PITCH PQFP-G/MQFP	ISSUE B	DATE 12/96	MS-022	OF ⁵ 11

SYMBOL	VARIATIONS											
	AA			NOTE	AB			NOTE	AC			NOTE
	MIN	NOM	MAX		MIN	NOM	MAX		MIN	NOM	MAX	
A			2.45				2.45				2.45	
A1	0.00		0.25	13	0.00		0.25	13	0.00		0.25	13
A2	1.80	2.00	2.20		1.80	2.00	2.20		1.80	2.00	2.20	
b	0.34		0.50	9	0.29		0.45	9	0.22		0.40	9
b1	0.34	0.40	0.46		0.29	0.35	0.41		0.22	0.30	0.36	
D	13.20 BASIC			4	13.20 BASIC			4	13.20 BASIC			4
D1	10.00 BASIC			7	10.00 BASIC			7	10.00 BASIC			7
D2	8.00 REF				8.00 REF				7.80 REF			
E	13.20 BASIC			4	13.20 BASIC			4	13.20 BASIC			4
E1	10.00 BASIC			7	10.00 BASIC			7	10.00 BASIC			7
E2	8.00 REF				8.00 REF				7.80 REF			
CCC	0.20				0.20				0.13			
e	1.00 BASIC				0.80 BASIC				0.65 BASIC			
N	36				44				52			
NOTE	1 8				1 8				1 8			
REF.	ITEM 11-320				ITEM 11-320				ITEM 11-320			
ISSUE	A				A				A			

SYMBOL	VARIATIONS											
	BA			NOTE	BB			NOTE	BC			NOTE
	MIN	NOM	MAX		MIN	NOM	MAX		MIN	NOM	MAX	
A			2.45				2.45				2.45	
A1	0.00		0.25	13	0.00		0.25	13	0.00		0.25	13
A2	1.80	2.00	2.20		1.80	2.00	2.20		1.80	2.00	2.20	
b	0.34		0.50	9	0.29		0.45	9	0.22		0.40	9
b1	0.34	0.40	0.46		0.29	0.35	0.41		0.22	0.30	0.36	
D	17.20 BASIC			4	17.20 BASIC			4	17.20 BASIC			4
D1	14.00 BASIC			7	14.00 BASIC			7	14.00 BASIC			7
D2	12.00 REF				12.00 REF				12.35 REF			
E	17.20 BASIC			4	17.20 BASIC			4	17.20 BASIC			4
E1	14.00 BASIC			7	14.00 BASIC			7	14.00 BASIC			7
E2	12.00 REF				12.00 REF				12.35 REF			
CCC	0.20				0.20				0.13			
e	1.00 BASIC				0.80 BASIC				0.65 BASIC			
N	52				64				80			
NOTE	1 8				1 8				1 8			
REF.	ITEM 11-320				ITEM 11-320				ITEM 11-320			
ISSUE	A				A				A			

JEDEC SOLID STATE PRODUCT OUTLINES			TITLE METRIC PLASTIC QUAD FLATPACK FAMILY 1.0, 0.8, 0.65 PITCH PQFP-G/MQFP			ISSUE B	DATE 12/96	MS-022	6 OF 11
--	--	--	---	--	--	------------	---------------	--------	------------

SYMBOL	VARIATIONS															
	BE			NOTE	BF			NOTE	CA-2			NOTE	CA-1			NOTE
	MIN	NOM	MAX		MIN	NOM	MAX		MIN	NOM	MAX		MIN	NOM	MAX	
A			3.15				3.15				3.15				3.40	
A1	0.00		0.25	13	0.00		0.25	13	0.00		0.25	13	0.25		0.50	13
A2	2.50	2.70	2.90		2.50	2.70	2.90		2.50	2.70	2.90		2.50	2.70	2.90	
b	0.29		0.45	9	0.22		0.40	9	0.34		0.50	9	0.35		0.50	9
b1	0.29	0.35	0.41		0.22	0.30	0.36		0.34	0.40	0.46		0.35	0.40	0.45	
D	17.20 BASIC			4	17.20 BASIC			4	23.20 BASIC			4	23.20 BASIC			4
D1	14.00 BASIC			7	14.00 BASIC			7	20.00 BASIC			7	20.00 BASIC			7
D2	12.00 REF				12.35 REF				18.00 REF				18.00 REF			
E	17.20 BASIC			4	17.20 BASIC			4	23.20 BASIC			4	23.20 BASIC			4
E1	14.00 BASIC			7	14.00 BASIC			7	20.00 BASIC			7	20.00 BASIC			7
E2	12.00 REF				12.35 REF				18.00 REF				18.00 REF			
CCC	0.20				0.13				0.20				0.20			
e	0.80 BASIC				0.65 BASIC				1.00 BASIC				1.00 BASIC			
N	64				80				76				76			
NOTE	1 8				1 8				1 8				1 8			
REF.	ITEM 11-320				ITEM 11-320				ITEM 11-320				ITEM 11-320			
ISSUE	A				A				A				A			

SYMBOL	VARIATIONS															
	CB-2			NOTE	CB-1			NOTE	CC-2			NOTE	CC-1			NOTE
	MIN	NOM	MAX		MIN	NOM	MAX		MIN	NOM	MAX		MIN	NOM	MAX	
A			3.15				3.40				3.15				3.40	
A1	0.00		0.25	13	0.25		0.50	13	0.00		0.25	13	0.25		0.50	13
A2	2.50	2.70	2.90		2.50	2.70	2.90		2.50	2.70	2.90		2.50	2.70	2.90	
b	0.29		0.45	9	0.29		0.45	9	0.22		0.40	9	0.22		0.40	9
b1	0.29	0.35	0.41		0.29	0.35	0.41		0.22	0.30	0.36		0.22	0.30	0.36	
D	23.20 BASIC			4	23.20 BASIC			4	23.20 BASIC			4	23.20 BASIC			4
D1	20.00 BASIC			7	20.00 BASIC			7	20.00 BASIC			7	20.00 BASIC			7
D2	16.80 REF				16.80 REF				17.55 REF				17.55 REF			
E	23.20 BASIC			4	23.20 BASIC			4	23.20 BASIC			4	23.20 BASIC			4
E1	20.00 BASIC			7	20.00 BASIC			7	20.00 BASIC			7	20.00 BASIC			7
E2	16.80 REF				16.80 REF				17.55 REF				17.55 REF			
CCC	0.20				0.20				0.13				0.13			
e	0.80 BASIC				0.80 BASIC				0.65 BASIC				0.65 BASIC			
N	88				88				112				112			
NOTE	1 8				1 8				1 8				1 8			
REF.	ITEM 11-320				ITEM 11-320				ITEM 11-320				ITEM 11-320			
ISSUE	A				A				A				A			

JEDEC
SOLID STATE PRODUCT
OUTLINES

TITLE METRIC PLASTIC QUAD
FLATPACK FAMILY
1.0, 0.8, 0.65 PITCH
PQFP-G/MQFP

ISSUE DATE
B 12/96

MS-022 OF 11

SYMBOL	VARIATIONS															
	DA-2			NOTE	DA-1			NOTE	DB-2			NOTE	DB-1			NOTE
	MIN	NOM	MAX		MIN	NOM	MAX		MIN	NOM	MAX		MIN	NOM	MAX	
A			3.85				4.10				3.85				4.10	
A1	0.00		0.25	13	0.25		0.50	13	0.00		0.25	13	0.25		0.50	13
A2	3.20	3.40	3.60		3.20	3.40	3.60		3.20	3.40	3.60		3.20	3.40	3.60	
b	0.29		0.45	9	0.29		0.45	9	0.29		0.45	9	0.29		0.45	9
b1	0.29	0.35	0.41		0.29	0.35	0.41		0.29	0.35	0.41		0.29	0.35	0.41	
D	31.20 BASIC			4	31.20 BASIC			4	31.20 BASIC			4	31.20 BASIC			4
D1	28.00 BASIC			7	28.00 BASIC			7	28.00 BASIC			7	28.00 BASIC			7
D2	23.20 REF				23.20 REF				24.80 REF				24.80 REF			
E	31.20 BASIC			4	31.20 BASIC			4	31.20 BASIC			4	31.20 BASIC			4
E1	28.00 BASIC			7	28.00 BASIC			7	28.00 BASIC			7	28.00 BASIC			7
E2	23.20 REF				23.20 REF				24.80 REF				24.80 REF			
CCC	0.20				0.20				0.20				0.20			
e	0.80 BASIC				0.80 BASIC				0.80 BASIC				0.80 BASIC			
N	120				120				128				128			
NOTE	1 8				1 8				1 8				1 8			
REF.	ITEM 11-320				ITEM 11-320				ITEM 11-320				ITEM 11-320			
ISSUE	A				A				A				A			

SYMBOL	VARIATIONS															
	DC-2			NOTE	DC-1			NOTE	DD-2			NOTE	DD-1			NOTE
	MIN	NOM	MAX		MIN	NOM	MAX		MIN	NOM	MAX		MIN	NOM	MAX	
A			3.85				4.10				3.85				4.10	
A1	0.00		0.25	13	0.25		0.50	13	0.00		0.25	13	0.25		0.50	13
A2	3.20	3.40	3.60		3.20	3.40	3.60		3.20	3.40	3.60		3.20	3.40	3.60	
b	0.22		0.40	9	0.22		0.40	9	0.22		0.40	9	0.22		0.40	9
b1	0.22	0.30	0.36		0.22	0.30	0.36		0.22	0.30	0.36		0.22	0.30	0.36	
D	31.20 BASIC			4	31.20 BASIC			4	31.20 BASIC			4	31.20 BASIC			4
D1	28.00 BASIC			7	28.00 BASIC			7	28.00 BASIC			7	28.00 BASIC			7
D2	22.75 REF				22.75 REF				25.35 REF				25.35 REF			
E	31.20 BASIC			4	31.20 BASIC			4	31.20 BASIC			4	31.20 BASIC			4
E1	28.00 BASIC			7	28.00 BASIC			7	28.00 BASIC			7	28.00 BASIC			7
E2	22.75 REF				22.75 REF				25.35 REF				25.35 REF			
CCC	0.13				0.13				0.13				0.13			
e	0.65 BASIC				0.65 BASIC				0.65 BASIC				0.65 BASIC			
N	144				144				160				160			
NOTE	1 8				1 8				1 8				1 8			
REF.	ITEM 11-320				ITEM 11-320				ITEM 11-320				ITEM 11-320			
ISSUE	A				A				A				A			

JEDEC SOLID STATE PRODUCT OUTLINES			TITLE METRIC PLASTIC QUAD FLATPACK FAMILY 1.0, 0.8, 0.65 PITCH PGFP-G/MGFP			ISSUE B		DATE 12/96		MS-022		8 OF 11	
--	--	--	---	--	--	------------	--	---------------	--	--------	--	------------	--

SYMBOL	VARIATIONS															
	EA			NOTE	FA			NOTE				NOTE				NOTE
	MIN	NOM	MAX		MIN	NOM	MAX		MIN	NOM	MAX		MIN	NOM	MAX	
A			4.10				4.50									
A1	0.25		0.50	13	0.25		0.50	13								
A2	3.20	3.40	3.60		3.55	3.80	4.05									
b	0.22		0.40	9	0.22		0.40	9								
b1	0.22	0.30	0.36		0.22	0.30	0.36									
D	35.20 BASIC			4	43.20 BASIC			4								
D1	32.00 BASIC			7	40.00 BASIC			7								
D2	29.25 REF				37.05 REF											
E	35.20 BASIC			4	43.20 BASIC			4								
E1	32.00 BASIC			7	40.00 BASIC			7								
E2	29.25 REF				37.05 REF											
CCC	0.13				0.13											
e	0.65 BASIC				0.65 BASIC											
N	184				232											
NOTE	1 8				1 8											
REF.	ITEM 11-320				ITEM 11-320											
ISSUE	A				A											

SYMBOL	VARIATIONS															
				NOTE				NOTE				NOTE				NOTE
	MIN	NOM	MAX		MIN	NOM	MAX		MIN	NOM	MAX		MIN	NOM	MAX	
A																
A1																
A2																
b																
b1																
D																
D1																
D2																
E																
E1																
E2																
CCC																
e																
N																
NOTE																
REF.																
ISSUE																

JEDEC SOLID STATE PRODUCT OUTLINES				TITLE METRIC PLASTIC QUAD FLATPACK FAMILY 1.0, 0.8, 0.65 PITCH PGFP-G/MQFP				ISSUE B	DATE 12/96	MS-022	9 OF 11
--	--	--	--	---	--	--	--	------------	---------------	--------	------------

SYMBOL	VARIATIONS															
	GA-2			NOTE	GA-1			NOTE	GB-2			NOTE	GB-1			NOTE
	MIN	NOM	MAX		MIN	NOM	MAX		MIN	NOM	MAX		MIN	NOM	MAX	
A			3.15				3.40				3.15				3.40	
A1	0.00		0.25	13	0.25		0.50	13	0.00		0.25	13	0.25		0.50	13
A2	2.50	2.70	2.90		2.50	2.70	2.90		2.50	2.70	2.90		2.50	2.70	2.90	
b	0.34		0.50	9	0.34		0.50	9	0.29		0.45	9	0.29		0.45	9
b1	0.34	0.40	0.46		0.34	0.40	0.46		0.29	0.35	0.41		0.29	0.35	0.41	
D	23.20 BASIC			4	23.20 BASIC			4	23.20 BASIC			4	23.20 BASIC			4
D1	20.00 BASIC			7	20.00 BASIC			7	20.00 BASIC			7	20.00 BASIC			7
D2	18.00 REF				18.00 REF				18.40 REF				18.40 REF			
E	17.20 BASIC			4	17.20 BASIC			4	17.20 BASIC			4	17.20 BASIC			4
E1	14.00 BASIC			7	14.00 BASIC			7	14.00 BASIC			7	14.00 BASIC			7
E2	12.00 REF				12.00 REF				12.00 REF				12.00 REF			
CCC	0.20				0.20				0.20				0.20			
e	1.00 BASIC				1.00 BASIC				0.80 BASIC				0.80 BASIC			
N	64				64				80				80			
N _D	19				19				24				24			
N _E	13				13				16				16			
NOTE	1 8				1 8				1 8				1 8			
REF.	ITEM 11-320				ITEM 11-320				ITEM 11-320				ITEM 11-320			
ISSUE	A				A				A				A			
JEDEC SOLID STATE PRODUCT OUTLINES				TITLE METRIC PLASTIC QUAD FLATPACK FAMILY 1.0, 0.8, 0.65 PITCH PGFP-G/MQFP				ISSUE B		DATE 12/96		MS-022		10 OF 11		

SYMBOL	VARIATIONS															
	GC-2			NOTE	GC-1			NOTE				NOTE				NOTE
	MIN	NOM	MAX		MIN	NOM	MAX		MIN	NOM	MAX		MIN	NOM	MAX	
A			3.15				3.40									
A1	0.00		0.25	13	0.25		0.50	13								
A2	2.50	2.70	2.90		2.50	2.70	2.90									
b	0.22		0.40	9	0.22		0.40	9								
b1	0.22	0.30	0.36		0.22	0.30	0.36									
D	23.20 BASIC			4	23.20 BASIC			4								
D1	20.00 BASIC			7	20.00 BASIC			7								
D2	18.85 REF				18.85 REF											
E	17.20 BASIC			4	17.20 BASIC			4								
E1	14.00 BASIC			7	14.00 BASIC			7								
E2	12.35 REF				12.35 REF											
CCC	0.13				0.13											
e	0.65 BASIC				0.65 BASIC											
N	100				100											
N _D	30				30											
N _E	20				20											
NOTE	1 B				1 B											
REF.	ITEM 11-320				ITEM 11-320											
ISSUE	A				A											
JEDEC SOLID STATE PRODUCT OUTLINES				TITLE METRIC PLASTIC QUAD FLATPACK FAMILY 1.0, 0.8, 0.65 PITCH PQFP-G/MQFP				ISSUE B		DATE 12/96		MS-022		11 OF 11		