

NATIONAL SEMICONDUCTOR HAS STATED THAT  
U.S. PATENT NO. 4,796,080 MAY RELATE TO A  
CERTAIN IMPLEMENTATION OF THIS PACKAGE OUTLINE.

LEADCOUNT SHOWN  
REDUCED FOR CLARITY

JEDEC  
SOLID STATE  
PRODUCT OUTLINES

THIS REGISTERED OUTLINE HAS BEEN PREPARED BY THE  
THE JEDEC JC-11 COMMITTEE AND REFLECTS A  
PRODUCT WITH ANTICIPATED USAGE IN THE ELECTRONICS  
INDUSTRY; CHANGES ARE LIKELY TO OCCUR.

TITLE:  
CERAMIC QUADPACK FAMILY  
.025 INCH LEAD SPACING WITH  
CERAMIC NON-CONDUCTIVE TIE BAR

JESD-30 DESIGNATOR  
CQFP-F

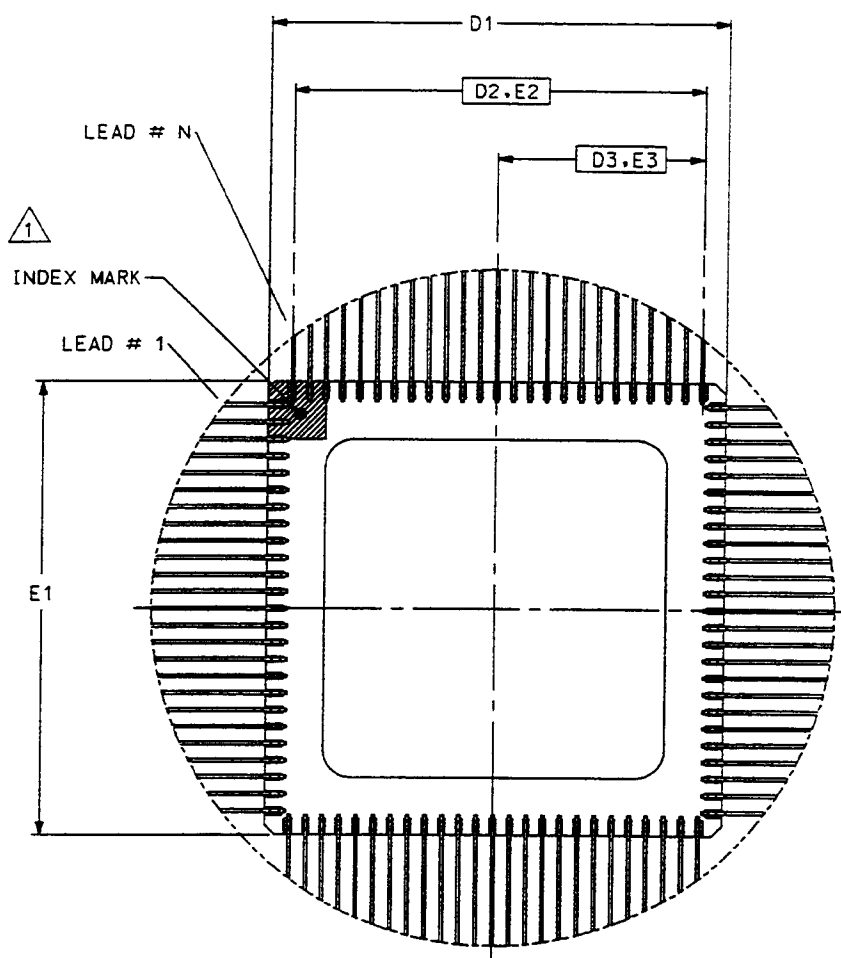
ISSUE:  
D

DATE:  
AUG  
1997

MO-113

SHEET:  
1 OF 7

INCH

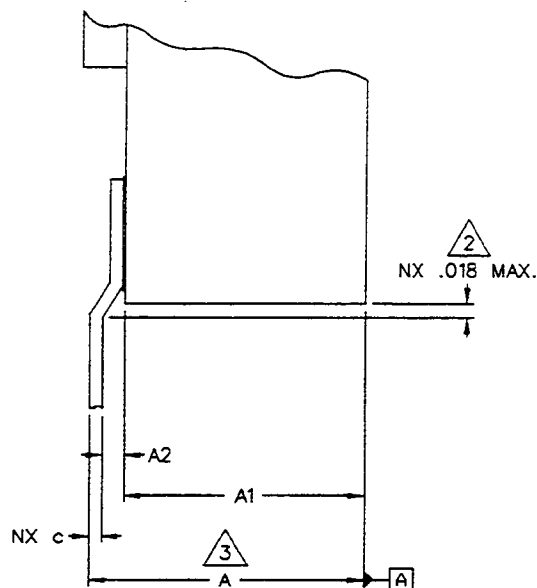


DETAIL A

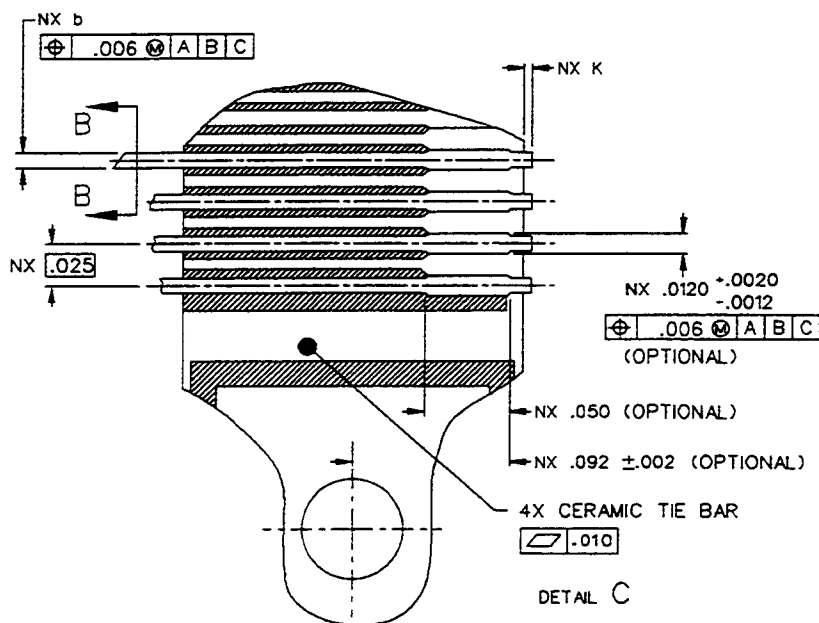
LEADCOUNT SHOWN  
REDUCED FOR CLARITY

JEDEC SOLID STATE PRODUCT OUTLINES	TITLE: CQFP-F CERAMIC QUADPACK FAMILY .025 INCH LEAD SPACING WITH CERAMIC NON-CONDUCTIVE TIE BAR	ISSUE: D	DATE: AUG 1997	MO-113	SHEET: 2 OF 7
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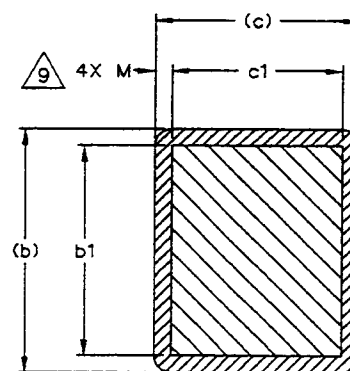
INCH



DETAIL B



DETAIL C



SECTION B-B  
NX

JEDEC  
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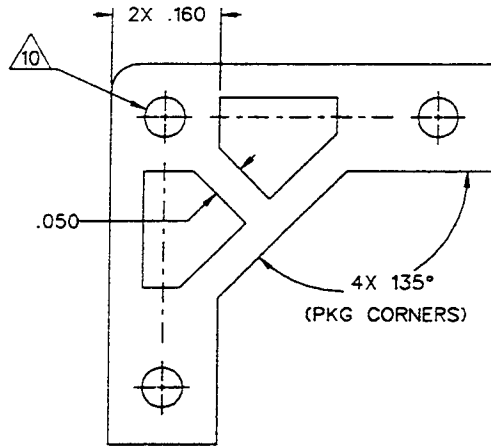
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3 OF 7

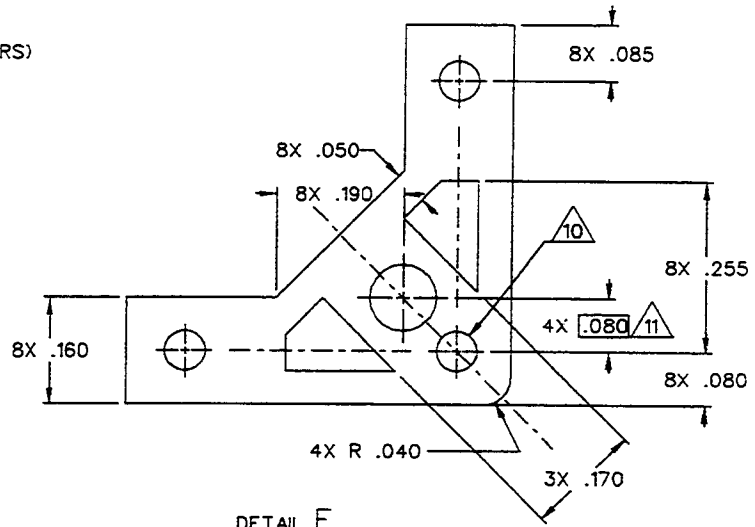
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SHEET:  
4 OF 7

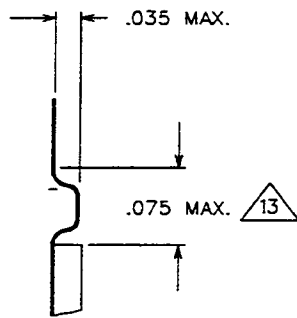
INCH



PIN 1 CORNER  
DETAIL E



DETAIL F



DETAIL G (OPTIONAL)  
LEAD REPAIR, TYP.

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# VARIATIONS

INCH

SYMBOL	AA				AB				AC			
	MIN	NOM	MAX	NOTE	MIN	NOM	MAX	NOTE	MIN	NOM	MAX	NOTE
A	.086	.101	.140	3	.086	.101	.140	3	.086	.101	.140	3
A1	.078	.086	.125		.078	.086	.125		.078	.086	.125	
A2	.006	.009	.012		.006	.009	.012		.006	.009	.012	
b	.007	--	.013		.007	--	.013		.007	--	.013	
b1	.007	--	.010	9	.007	--	.010	9	.007	--	.010	9
c	.004	--	.009		.004	--	.009		.004	--	.009	
c1	.004	--	.006	9	.004	--	.006	9	.004	--	.006	9
D1,E1	1.120	1.130	1.165		1.325	1.350	1.365		.935	.950	.965	
D2,E2	1.000 BASIC				1.200 BASIC				.800 BASIC			
D3,E3	.500 BASIC				.600 BASIC				.400 BASIC			
F	.275	.300	.325		.175	.200	.225		.325	.350	.375	
G	.059	.060	.061		.059	.060	.061		.059	.060	.061	
H	1.150 BASIC				1.150 BASIC				1.150 BASIC			
J	.030	.035	.040		.030	.035	.040		.030	.035	.040	
K	--	--	.020		--	--	.020		--	--	.020	
L	2.500	--	2.540		2.500	--	2.540		2.500	--	2.540	
L1	2.485	2.500	2.505		2.485	2.500	2.505		2.485	2.500	2.505	
L2	1.480	1.500	1.520		1.690	1.700	1.710		1.480	1.500	1.520	
M	--	--	.0015	9	--	--	.0015	9	--	--	.0015	9
N		164		5		196		5		132		5
ND		41		6		49		6		33		6
NOTE		4,7,8				4,7,8				4,7,8		
REF.		10-282				10-282				10-282		
ISSUE		A				A				B		

SYMBOL	AD				AE			
	MIN	NOM	MAX	NOTE	MIN	NOM	MAX	NOTE
A	.086	.101	.140	3	.086	.101	.140	3
A1	.078	.086	.125		.078	.086	.125	
A2	.006	.009	.012		.006	.009	.012	
b	.007	--	.013		.007	--	.013	
b1	.007	--	.010	9	.007	--	.010	9
c	.004	--	.009		.004	--	.009	
c1	.004	--	.006	9	.004	--	.006	9
D1,E1	.735	.750	.765		1.125	1.150	1.165	
D2,E2	.600 BASIC				1.050 BASIC			
D3,E3	.300 BASIC				.525 BASIC			
F	.425	.450	.475		.175	.200	.225	
G	.059	.060	.061		.059	.060	.061	
H	1.150 BASIC				1.150 BASIC			
J	.030	.035	.040		.030	.035	.040	
K	--	--	.020		--	--	.020	
L	2.500	--	2.540		2.500	--	2.540	
L1	2.485	2.500	2.505		2.485	2.500	2.505	
L2	1.480	1.500	1.520		1.690	1.700	1.710	
M	--	--	.0015	9	--	--	.0015	9
N		100		5		172		5
ND		25		6		43		6
NOTE		4,7,8				4,7,8		
REF.		10-282				10-282		
ISSUE		B				B		

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- 1 AN INDEX MARK SHALL BE LOCATED WITHIN THE SHADED AREA SHOWN.
- 2 GENERIC LEAD ATTACH DOGLEG DEPICTION. MAY BE FLAT LEAD CONFIGURATION.
- 3 INCLUDES LEAD ATTACH DOGLEG HEIGHT AND LID HEIGHT, WHICHEVER IS GREATER. DIMENSION A AND A1 DO NOT INCLUDE HEAT SINKS OR OTHER ATTACHED FEATURES.
- 4 CORNER CHAMFERS ARE OPTIONAL. PIN #1 MAY HAVE OPTIONAL FEATURE (LARGER OR SMALLER CHAMFER OR NOTCH) FOR MECHANICAL ORIENTATION PURPOSES.
- 5 DIMENSION N: NUMBER OF TERMINALS.
- 6 DIMENSION ND: NUMBER OF TERMINALS PER PACKAGE EDGE.
- 7 ALL DIMENSIONS ARE IN INCHES. TOLERANCE IS  $\pm 0.005$  UNLESS OTHERWISE SPECIFIED.
- 8 INTERPRET DIMENSIONS AND TOLERANCES IN ACCORDANCE WITH ASME Y14.5M-1994.
- 9 DIMENSIONS b1 AND c1 APPLY TO BASE METAL ONLY. DIMENSION M APPLIES TO THE PLATING THICKNESS.
- 10 OPTIONAL HOLE CONFIGURATION APPLICABLE TO ALL FOUR CORNERS.
- 11 CIRCULAR CORNER HOLE ONLY. SLOTTED HOLE LOCATIONS ARE SHOWN ON SHEET 4, DETAIL D (OPTIONAL).
- 12 LEAD REPAIR IS OPTIONAL. THIS VIEW SHOWS THE DRAWN PORTION OF THE LEAD THAT MUST RESIDE WITHIN THESE DIMENSIONS. THE SHAPE OF THE REPAIRED LEAD (AS SHOWN) IS FOR REFERENCE ONLY.
- 13 COPLANARITY REQUIREMENTS DO NOT APPLY IN THIS AREA OF A REPAIRED LEAD.

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