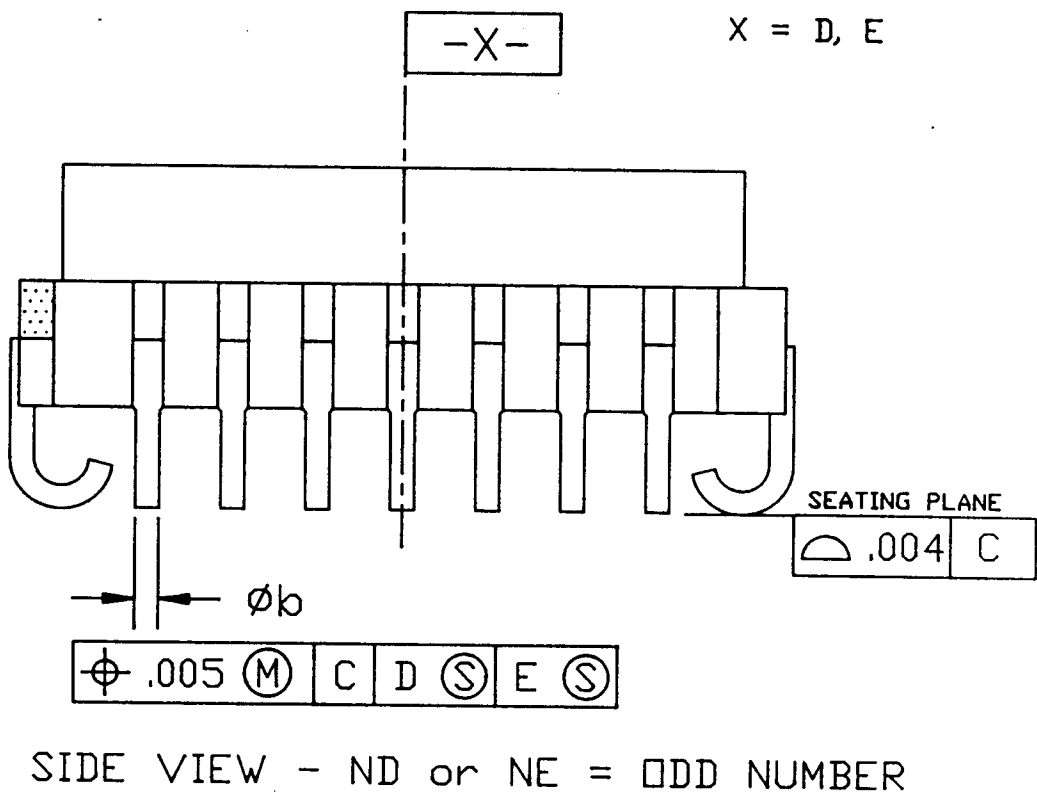
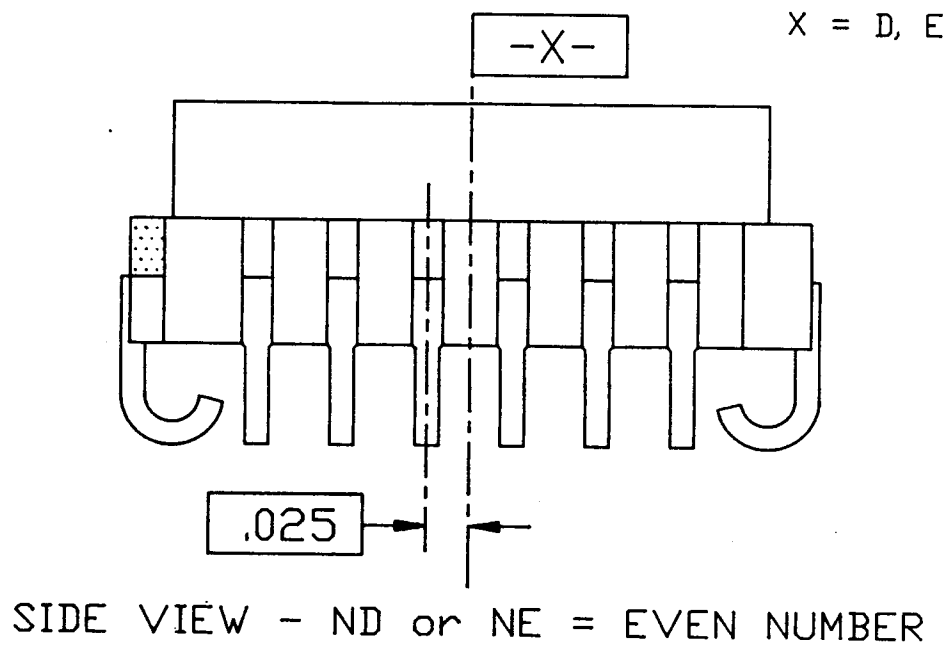


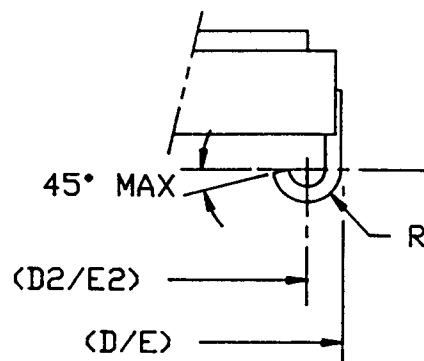
# NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M-1982.
2. CONTROLLING DIMENSION: INCH.
3. REFER TO SECTION 2.2 FOR SYMBOL LIST.
4. PIN NUMBER IS ASCENDING IN THE COUNTERCLOCKWISE DIRECTION PER JEDEC LEADLESS PACKAGE NUMBERING CONVENTION.
5.  $N$  IS THE NUMBER OF TERMINALS.  $N_D$  DENOTES NUMBER OF LEADS ON THE TWO NARROW SIDES OF RECTANGULAR PACKAGE.  $N_E$  DENOTES NUMBER OF LEADS ON THE LONG SIDES OF RECTANGULAR PACKAGE.  $N_D = N_E$  FOR SQUARE PACKAGE.
6. FEATURES FOR PIN #1 INDICATOR, ELECTRICAL/OPTICAL ORIENTATION OR HANDLING PURPOSES MUST BE WITHIN THE AREA SHOWN.
7. WHEN A WINDOW IS USED, DIMENSIONS ' $A$ ' AND ' $A2$ ' MUST INCREASE BY A MINIMUM OF  $.010$  INCH ( $0.254\text{mm}$ ) AND A MAXIMUM OF  $.040$  INCH ( $1.020\text{mm}$ ).

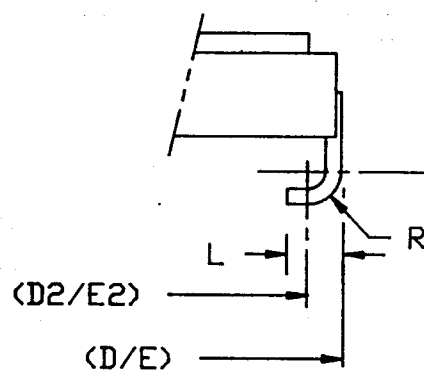
JEDEC SOLID STATE PRODUCT OUTLINE	TITLE ROUND LEAD, 'J' FORM .050" CENTER CERAMIC CHIP CARRIER	ISSUE A	DATE 7-90	M-110	SHEET 1 OF 8
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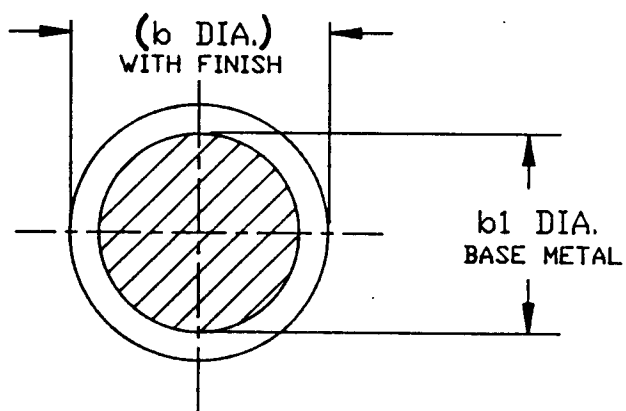
JEDEC SOLID STATE PRODUCT OUTLINE	TITLE ROUND LEAD, 'J' FORM .050" CENTER CERAMIC CHIP CARRIER	ISSUE A	DATE 7-90	M $\square$ -110	SHEET 2 OF 8
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LEAD OPTION A



LEAD OPTION B



LEAD CROSS SECTION

JEDEC SOLID STATE PRODUCT OUTLINE	TITLE ROUND LEAD, 'J' FORM .050" CENTER CERAMIC CHIP CARRIER	ISSUE A	DATE 7-90	M□-110	SHEET 3 OF 8
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VARIATIONS					ALL DIMENSIONS IN MILLIMETERS									
SYMBOL	AA			7	SYMBOL	AB			7	SYMBOL	AC			7
	MIN.	NOM.	MAX.			MIN.	NOM.	MAX.			MIN.	NOM.	MAX.	
A	2.54		5.08		A	2.54		5.08		A	2.54		5.08	
A1	1.02		2.54		A1	1.02		2.54		A1	1.02		2.54	
A2	1.27		3.05	7	A2	1.27		3.05	7	A2	1.27		3.05	7
A3	0.94		2.24		A3	0.94		2.24		A3	0.94		2.24	
Øb	0.31		0.46		Øb	0.31		0.46		Øb	0.31		0.46	
Øb1	0.31	0.36	0.41		Øb1	0.31	0.36	0.41		Øb1	0.31	0.36	0.41	
D	7.42	7.87	8.08		D	8.69	9.14	9.34		D	10.03	10.41	10.67	
D1	7.42	7.62	7.82		D1	8.69	8.89	9.09		D1	10.03	10.16	10.41	
D2	5.89	6.35	6.55		D2	7.16	7.62	7.82		D2	8.51	8.89	9.14	
D3	3.81 BSC				D3	5.08 BSC				D3	6.35 BSC			
D4			7.42		D4			8.69		D4			10.03	
E	7.42	7.87	8.08		E	8.69	9.14	9.34		E	10.03	10.41	10.67	
E1	7.42	7.62	7.82		E1	8.69	8.89	9.09		E1	10.03	10.16	10.41	
E2	5.89	6.35	6.55		E2	7.16	7.62	7.82		E2	8.51	8.89	9.14	
E3	3.81 BSC				E3	5.08 BSC				E3	6.35 BSC			
E4			7.42		E4			8.69		E4			10.03	
R	.64		.89		R	.64		.89		R	.64		.89	
L	1.02		1.52		L	1.02		1.52		L	1.02		1.52	
e	1.27 BSC				e	1.27 BSC				e	1.27 BSC			
ND	4			5	ND	5			5	ND	6			5
NE	4			5	NE	5			5	NE	6			5
N	16			4,5	N	20			4,5	N	24			4,5
NOTE	1,2,3													
REF.	10-292													
ISSUE	A													

VARIATIONS				ALL DIMENSIONS IN INCHES											
SYMBOL	AA			7	SYMBOL	AB			7	SYMBOL	AC			7	
	MIN.	NOM.	MAX.			MIN.	NOM.	MAX.			MIN.	NOM.	MAX.		
A	.100		.200		A	.100		.200		A	.100		.200		
A1	.040		.100		A1	.040		.100		A1	.040		.100		
A2	.050		.120	7	A2	.050		.120	7	A2	.050		.120	7	
A3	.037		.088		A3	.037		.088		A3	.037		.088		
Øb	.012		.018		Øb	.012		.018		Øb	.012		.018		
Øb1	.012	.014	.016		Øb1	.012	.014	.016		Øb1	.012	.014	.016		
D	.292	.310	.318		D	.342	.360	.368		D	.395	.410	.420		
D1	.292	.300	.308		D1	.342	.350	.358		D1	.395	.400	.410		
D2	.232	.250	.258		D2	.282	.300	.308		D2	.335	.350	.360		
D3	.150 BSC				D3	.200 BSC				D3	.250 BSC				
D4			.292		D4			.342		D4			.395		
E	.292	.310	.318		E	.342	.360	.368		E	.395	.410	.420		
E1	.292	.300	.308		E1	.342	.350	.358		E1	.395	.400	.410		
E2	.232	.250	.258		E2	.282	.300	.308		E2	.335	.350	.360		
E3	.150 BSC				E3	.200 BSC				E3	.250 BSC				
E4			.292		E4			.342		E4			.395		
R	.025		.035		R	.025		.035		R	.025		.035		
L	.040		.060		L	.040		.060		L	.040		.060		
e	.050 BSC				e	.050 BSC				e	.050 BSC				
ND	4			5	ND	5			5	ND	6			5	
NE	4			5	NE	5			5	NE	6			5	
N	16			4,5	N	20			4,5	N	24			4,5	
NOTE	1,2,3														
REF.	10-292														
ISSUE	A														
JEDEC SOLID STATE PRODUCT OUTLINE				TITLE ROUND LEAD, 'J' FORM .050" CENTER CERAMIC CHIP CARRIER				ISSUE A		DATE 7-90		MO-110		SHEET 4 OF 8	

VARIATIONS					ALL DIMENSIONS IN MILLIMETERS									
SYMBOL	AD			7	SYMBOL	AE			7	SYMBOL	AF			7
	MIN.	NOM.	MAX.			MIN.	NOM.	MAX.			MIN.	NOM.	MAX.	
A	2.54		5.08		A	2.54		5.08		A	2.54		5.08	
A1	1.02		2.54		A1	1.02		2.54		A1	1.02		2.54	
A2	1.27		3.05	7	A2	1.27		3.05	7	A2	1.27		3.05	7
A3	0.94		2.24		A3	0.94		2.24		A3	0.94		2.24	
Øb	0.31		0.46		Øb	0.31		0.46		Øb	0.31		0.46	
Øb1	0.31	0.36	0.41		Øb1	0.31	0.36	0.41		Øb1	0.31	0.36	0.41	
D	11.23	11.68	11.89		D	16.26	16.76	17.02		D	18.77	19.30	19.58	
D1	11.23	11.43	11.63		D1	16.26	16.51	16.76		D1	18.77	19.05	19.33	
D2	9.70	10.16	10.36		D2	14.73	15.24	15.49		D2	17.25	17.78	18.06	
D3	7.62 BSC				D3	12.7 BSC				D3	15.24 BSC			
D4			11.23		D4			16.26		D4			18.77	
E	11.23	11.68	11.89		E	16.26	16.76	17.02		E	18.77	19.30	19.58	
E1	11.23	11.43	11.63		E1	16.26	16.51	16.76		E1	18.77	19.05	19.33	
E2	9.70	10.16	10.36		E2	14.73	15.24	15.49		E2	17.25	17.78	18.06	
E3	7.62 BSC				E3	12.7 BSC				E3	15.24 BSC			
E4			11.23		E4			16.26		E4			18.77	
R	.64		.89		R	.64		.89		R	.64		.89	
L	1.02		1.52		L	1.02		1.52		L	1.02		1.52	
e	1.27 BSC				e	1.27 BSC				e	1.27 BSC			
ND	7			5	ND	11			5	ND	13			5
NE	7			5	NE	11			5	NE	13			5
N	28			4,5	N	44			4,5	N	52			4,5
NOTE	1.23													
REF.	10-292													
ISSUE	A													

VARIATIONS					ALL DIMENSIONS IN INCHES										
SYMBOL	AD			7	SYMBOL	AE			7	SYMBOL	AF			7	
	MIN.	NOM.	MAX.			MIN.	NOM.	MAX.			MIN.	NOM.	MAX.		
A	.100		.200	7	A	.100		.200	7	A	.100		.200	7	
A1	.040		.100		A1	.040		.100		A1	.040		.100		
A2	.050		.120	7	A2	.050		.120	7	A2	.050		.120	7	
A3	.037		.088		A3	.037		.088		A3	.037		.088		
Øb	.012		.018		Øb	.012		.018		Øb	.012		.018		
Øb1	.012	.014	.016		Øb1	.012	.014	.016		Øb1	.012	.014	.016		
D	.442	.460	.468		D	.640	.660	.670		D	.739	.760	.771		
D1	.442	.450	.458		D1	.640	.650	.660		D1	.739	.750	.761		
D2	.382	.400	.408		D2	.580	.600	.610		D2	.679	.700	.711		
D3		.300 BSC			D3		.500 BSC			D3		.600 BSC			
D4			.442		D4			.640		D4			.739		
E	.442	.460	.468		E	.640	.660	.670		E	.739	.760	.771		
E1	.442	.450	.458		E1	.640	.650	.660		E1	.739	.750	.761		
E2	.382	.400	.408		E2	.580	.600	.610		E2	.679	.700	.711		
E3		.300 BSC			E3		.500 BSC			E3		.600 BSC			
E4			.442		E4			.640		E4			.739		
R	.025		.035		R	.025		.035		R	.025		.035		
L	.040		.060		L	.040		.060		L	.040		.060		
e		.050 BSC			e		.050 BSC			e		.050 BSC			
ND		7		5	ND		11		5	ND		13		5	
NE		7		5	NE		11		5	NE		13		5	
N		28		4.5	N		44		4.5	N		52		4.5	
NOTE	1.23														
REF.	10-292														
ISSUE	A														
JEDEC				TITLE				ISSUE		DATE		M0-110		SHEET	
SOLID STATE PRODUCT				ROUND LEAD, 'J' FORM				A		7-90				5	
OUTLINE				.050" CENTER										OF	
				CERAMIC CHIP CARRIER										8	

VARIATIONS													
ALL DIMENSIONS IN MILLIMETERS													
SYMBOL	AG			T <sub>E</sub>	SYMBOL	AH			T <sub>E</sub>	SYMBOL			
	MIN.	NOM.	MAX.			MIN.	NOM.	MAX.			MIN.	NOM.	MAX.
A	2.54		3.08	7	A	2.54		3.08	7	A			
A1	1.02		2.54		A1	1.02		2.54		A1			
A2	1.27		3.05	7	A2	1.27		3.05	7	A2			
A3	0.94		2.24		A3	0.94		2.24		A3			
Øb	0.31		0.46		Øb	0.31		0.46		Øb			
Øb1	0.31	0.36	0.41		Øb1	0.31	0.36	0.41		Øb			
D	23.83	24.38	24.69		D	28.83	29.46	29.85		D			
D1	23.83	24.14	24.43		D1	28.83	29.21	29.59		D1			
D2	22.30	22.86	23.16		D2	27.31	27.94	28.32		D2			
D3	20.32 BSC				D3	25.4 BSC				D3			
D4			23.83		D4			28.83		D4			
E	23.83	24.38	24.69		E	28.83	29.46	29.85		E			
E1	23.83	24.14	24.43		E1	28.83	29.21	29.59		E1			
E2	22.30	22.86	23.16		E2	27.31	27.94	28.32		E2			
E3	20.32 BSC				E3	25.4 BSC				E3			
E4			23.83		E4			28.83		E4			
R	.64		.89		R	.64		.89		R			
L	1.02		1.52		L	1.02		1.52		L			
e	127 BSC				e	127 BSC				e			
ND		17		5	ND		21		5	ND			
NE		17		5	NE		21		5	NE			
N		68		4.5	N		84		4.5	N			
NOTE	1,2,3												
REF.	10-292												
ISSUE	A												

VARIATIONS													
ALL DIMENSIONS IN INCHES													
SYMBOL	AG			T <sub>E</sub>	SYMBOL	AH			T <sub>E</sub>	SYMBOL			
	MIN.	NOM.	MAX.			MIN.	NOM.	MAX.			MIN.	NOM.	MAX.
A	.100		.200	7	A	.100		.200	7	A			
A1	.040		.100		A1	.040		.100		A1			
A2	.050		.120	7	A2	.050		.120	7	A2			
A3	.037		.088		A3	.037		.088		A3			
Øb	.012		.018		Øb	.012		.018		Øb			
Øb1	.012	.014	.016		Øb1	.012	.014	.016		Øb1			
D	.938	.960	.972		D	1.135	1.160	1.175		D			
D1	.938	.950	.962		D1	1.135	1.150	1.165		D1			
D2	.878	.900	.912		D2	1.075	1.100	1.115		D2			
D3	.800 BSC				D3	1.000 BSC				D3			
D4			.938		D4			1.135		D4			
E	.938	.960	.972		E	1.135	1.160	1.175		E			
E1	.938	.950	.962		E1	1.135	1.150	1.165		E1			
E2	.878	.900	.912		E2	1.075	1.100	1.115		E2			
E3	.800 BSC				E3	1.000 BSC				E3			
E4			.938		E4			1.135		E4			
R	.025		.035		R	.025		.035		R			
L	.040		.060		L	.040		.060		L			
e	.050 BSC				e	.050 BSC				e			
ND		17		5	ND		21		5	ND			
NE		17		5	NE		21		5	NE			
N		68		4.5	N		84		4.5	N			
NOTE	1,2,3												
REF.	10-292												
ISSUE	A												
JEDEC SOLID STATE PRODUCT OUTLINE					TITLE ROUND LEAD, 'J' FORM .050" CENTER CERAMIC CHIP CARRIER					ISSUE A	DATE 7-90	MO-110	SHEET 6 OF 8

VARIATIONS ALL DIMENSIONS IN MILLIMETERS															
SYMBOL	BA			7	SYMBOL	BB			7	SYMBOL	BC			7	
	MIN.	NOM.	MAX.			MIN.	NOM.	MAX.			MIN.	NOM.	MAX.		
A	2.54		5.08		A	2.54		5.08		A	2.54		5.08		
A1	1.02		2.54		A1	1.02		2.54		A1	1.02		2.54		
A2	1.27		3.05	7	A2	1.27		3.05	7	A2	1.27		3.05	7	
A3	0.94		2.24		A3	0.94		2.24		A3	0.94		2.24		
Øb	0.31		0.46		Øb	0.31		0.46		Øb	0.31		0.46		
Øb1	0.31	0.36	0.41		Øb1	0.31	0.36	0.41		Øb1	0.31	0.36	0.41		
D	7.11	7.49	8.00		D	7.11	7.49	8.00		D	7.11	7.49	8.00		
D1	7.11	7.24	7.75		D1	7.11	7.24	7.75		D1	7.11	7.24	7.75		
D2	5.59	5.97	6.48		D2	5.59	5.97	6.48		D2	5.59	5.97	6.48		
D3		3.81 BSC			D3		3.81 BSC			D3		3.81 BSC			
D4			7.11		D4			7.11		D4			7.11		
E	10.59	11.30	11.43		E	10.59	11.30	11.43		E	12.19	12.70	12.95		
E1	10.59	11.05	11.18		E1	10.59	11.05	11.18		E1	12.19	12.45	12.70		
E2	9.07	9.78	9.91		E2	9.07	9.78	9.91		E2	10.67	11.18	11.43		
E3		5.08 BSC			E3		6.35 BSC			E3		7.62 BSC			
E4			10.59		E4			10.59		E4			12.19		
R	.64		.89		R	.64		.89		R	.64		.89		
L	1.02		1.52		L	1.02		1.52		L	1.02		1.52		
e		1.27 BSC			e		1.27 BSC			e		1.27 BSC			
ND		4		5	ND		4		5	ND		4		5	
NE		5		5	NE		6		5	NE		7		5	
N		18		4,5	N		20		4,5	N		22		4,5	
NOTE		12,3													
REF.		10-292													
ISSUE		A													

VARIATIONS ALL DIMENSIONS IN INCHES															
SYMBOL	BA			7	SYMBOL	BB			7	SYMBOL	BC			7	
	MIN.	NOM.	MAX.			MIN.	NOM.	MAX.			MIN.	NOM.	MAX.		
A	.100		.200		A	.100		.200		A	.100		.200		
A1	.040		.100		A1	.040		.100		A1	.040		.100		
A2	.050		.120	7	A2	.050		.120	7	A2	.050		.120	7	
A3	.037		.088		A3	.037		.088		A3	.037		.088		
Øb	.012		.018		Øb	.012		.018		Øb	.012		.018		
Øb1	.012	.014	.016		Øb1	.012	.014	.016		Øb1	.012	.014	.016		
D	.280	.295	.315		D	.280	.295	.315		D	.280	.295	.315		
D1	.280	.285	.305		D1	.280	.285	.305		D1	.280	.285	.305		
D2	.220	.235	.255		D2	.220	.235	.255		D2	.220	.235	.255		
D3		.150 BSC			D3		.150 BSC			D3		.150 BSC			
D4			.280		D4			.280		D4			.280		
E	.417	.445	.450		E	.417	.445	.450		E	.480	.500	.510		
E1	.417	.435	.440		E1	.417	.435	.440		E1	.480	.490	.500		
E2	.357	.385	.390		E2	.357	.385	.390		E2	.420	.440	.450		
E3		.200 BSC			E3		.250 BSC			E3		.300 BSC			
E4			.417		E4			.417		E4			.480		
R	.025		.035		R	.025		.035		R	.025		.035		
L	.040		.060		L	.040		.060		L	.040		.060		
e		.050 BSC			e		.050 BSC			e		.050 BSC			
ND		4		5	ND		4		5	ND		4		5	
NE		5		5	NE		6		5	NE		7		5	
N		18		4,5	N		20		4,5	N		22		4,5	
NOTE		12,3													
REF.		10-292													
ISSUE		A													
JEDEC					TITLE					ISSUE		DATE		SHEET	
SOLID STATE PRODUCT					ROUND LEAD, 'J' FORM					A		7-90		7	
OUTLINE					.050" CENTER							MO-110		DF	
					CERAMIC CHIP CARRIER									8	

VARIATIONS					ALL DIMENSIONS IN MILLIMETERS									
SYMBOL	BD			T <sub>1</sub> E	SYMBOL	BE			T <sub>1</sub> E	SYMBOL				T <sub>1</sub> E
	MIN.	NOM.	MAX.			MIN.	NOM.	MAX.			MIN.	NOM.	MAX.	
A	2.54		5.08	7	A	2.54		5.08	7	A				
A1	1.02		2.54		A1	1.02		2.54		A1				
A2	1.27		3.05	7	A2	1.27		3.05	7	A2				
A3	0.94		2.24		A3	0.94		2.24		A3				
Øb	0.31		0.46		Øb	0.31		0.46		Øb				
Øb1	0.31	0.36	0.41		Øb1	0.31	0.36	0.41		Øb1				
D	8.69	9.14	9.34		D	11.23	11.68	11.88		D				
D1	8.69	8.89	9.09		D1	11.23	11.43	11.63		D1				
D2	7.17	7.62	7.82		D2	9.71	10.16	10.36		D2				
D3	5.08 BSC				D3	7.62 BSC				D3				
D4			8.69		D4			11.23		D4				
E	13.72	14.22	14.47		E	13.72	14.22	14.47		E				
E1	13.72	13.97	14.22		E1	13.72	13.97	14.22		E1				
E2	12.2	12.70	12.95		E2	12.2	12.70	12.95		E2				
E3	10.16 BSC				E3	10.16 BSC				E3				
E4			13.72		E4			13.72		E4				
R	.64		.89		R	.64		.89		R				
L	1.02		1.52		L	1.02		1.52		L				
e	1.27 BSC				e	1.27 BSC				e				
ND	5			5	ND	7			5	ND				
NE	9			5	NE	9			5	NE				
N	28			4,5	N	32			4,5	N				
NOTE	12,3													
REF.	10-292													
ISSUE	A													

VARIATIONS					ALL DIMENSIONS IN INCHES										
SYMBOL	BD			N <sub>1</sub>	SYMBOL	BE			N <sub>2</sub>	SYMBOL				N <sub>3</sub>	
	MIN.	NOM.	MAX.			MIN.	NOM.	MAX.			MIN.	NOM.	MAX.		
A	.100		.200	7	A	.100		.200	7	A					
A1	.040		.100		A1	.040		.100		A1					
A2	.050		.120	7	A2	.050		.120	7	A2					
A3	.037		.088		A3	.037		.088		A3					
Øb	.012		.018		Øb	.012		.018		Øb					
Øb1	.012	.014	.016		Øb1	.012	.014	.016		Øb1					
D	.342	.360	.368		D	.442	.460	.468		D					
D1	.342	.350	.358		D1	.442	.450	.458		D1					
D2	.282	.300	.308		D2	.382	.400	.408		D2					
D3	.200 BSC				D3	.300 BSC				D3					
D4			.342		D4			.442		D4					
E	.540	.560	.570		E	.540	.560	.570		E					
E1	.540	.550	.560		E1	.540	.550	.560		E1					
E2	.480	.500	.510		E2	.480	.500	.510		E2					
E3	.400 BSC				E3	.400 BSC				E3					
E4			.540		E4			.540		E4					
R	.025		.035		R	.025		.035		R					
L	.040		.060		L	.040		.060		L					
e	.050 BSC				e	.050 BSC				e					
ND	5			5	ND	7			5	ND					
NE	9			5	NE	9			5	NE					
N	28			4,5	N	32			4,5	N					
NOTE	12,3														
REF.	10-292														
ISSUE	A														
JEDEC SOLID STATE PRODUCT OUTLINE				TITLE ROUND LEAD, 'J' FORM .050" CENTER CERAMIC CHIP CARRIER				ISSUE A		DATE 7-90		MO-110		SHEET 8 OF 8	