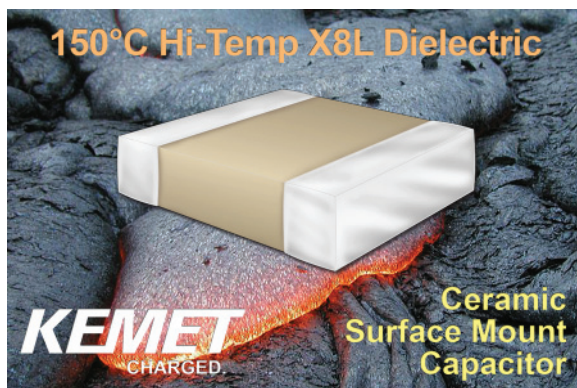


Surface Mount Ceramic Chip Capacitors – X8L Dielectric

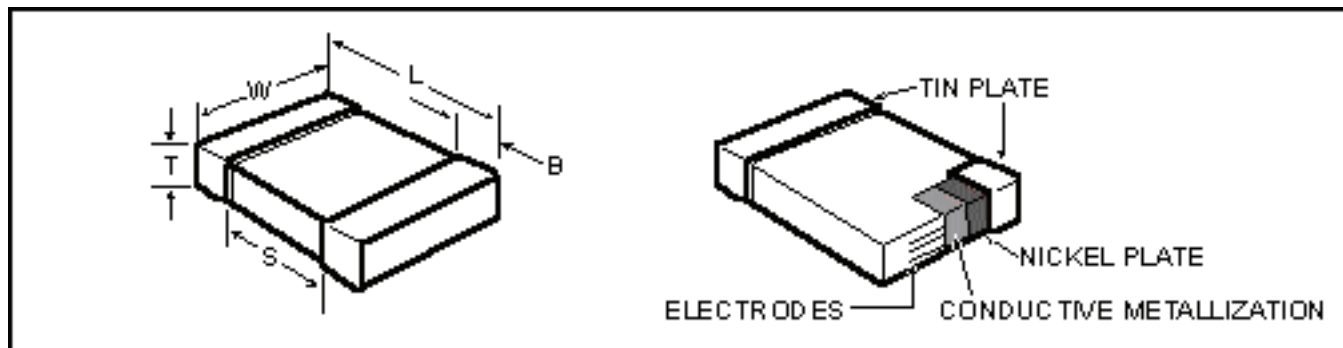


KEMET's X8L Dielectric offers an operating temperature range from -55°C to +150°C with capacitance shift limited to $\pm 15\%$ from -55°C to +125°C and +15, -40% from 125°C to 150°C. Product applications include harsh environments such as Down Hole (Oil Exploration), Automotive (Under Hood), Military and Aerospace.

Five standard package options are available which include EIA 0402, 0603, 0805, 1206, and 1210 case sizes. Devices are available in dc voltage ratings of 10V, 25V and 50V, with capacitance offerings ranging from 10pF to 0.22 μ F. Capacitance tolerances offerings include $\pm 5\%$, $\pm 10\%$ and $\pm 20\%$.

All parts are environmentally friendly, in compliance with RoHS legislation (RoHS 6/6) and are being offered in both commercial and automotive grades with 100% pure matte tin-plated terminations that allow for excellent solderability. A Sn/Pb termination option is also available upon request.

Outline Drawing



Dimensions - Millimeters (Inches)

EIA SIZE CODE	METRIC SIZE CODE	L - LENGTH	W - WIDTH	B - BANDWIDTH	S SEPARATION minimum	MOUNTING TECHNIQUE
0402	1005	1.0 (.04) $\pm$.05 (.002)	0.5 (.02) $\pm$.05 (.002)	0.30 (.012) $\pm$.10 (.004)	0.3 (.012)	Solder Reflow
0603	1608	1.6 (.063) $\pm$.15 (.006)	0.8 (.032) $\pm$.15 (.006)	0.35 (.014) $\pm$.15 (.006)	0.7 (.028)	Solder Wave + or Solder Reflow
0805	2012	2.0 (.079) $\pm$.20 (.008)	1.25 (.049) $\pm$.20 (.008)	0.50 (.02) $\pm$.25 (.010)	0.75 (.030)	
1206	3216	3.2 (.126) $\pm$.20 (.008)	1.6 (.063) $\pm$.20 (.008)	0.50 (.02) $\pm$.25 (.010)	N/A	Solder Reflow
1210	3225	3.2 (.126) $\pm$.20 (.008)	2.5 (.098) $\pm$.20 (.008)	0.50 (.02) $\pm$.25 (.010)	N/A	

Qualification Certification:

Automotive Grade Available: AEC-Q200 Rev. C
 RoHS-PRC (6/6) - 100% matte Sn termination

Electrical Parameters:

As detailed in the KEMET Surface Mount Catalog F3102 for X8L, with following specific requirements based on room temperature (25°C) parameters:

- Operating Temperature Range: -55°C to +150°C
- Temperature Coefficient of Capacitance : $\pm 15\%$ (-55 to 125°C)
 $+15, -40\%$ (125 to 150°C)
- Insulation Resistance (IR) measured after 2 minutes at rated voltage @ 25°C:
 Limit is 1000 megohm microfarads or 100GΩ, whichever of the two is smaller.
- Capacitance and Dissipation Factor (DF) measured under the following conditions:
 1kHz and 1 Vrms

DF Limits are:

10 Volts: 3.5%
 25 and 50 volts: 2.5%

Ordering Information

C	1206	C	106	K	8	N	A	C
Ceramic	Case Size (L"x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Voltage	Dielectric	Failure Rate/ Design	End Metallization (Plated)
	0402 0603 0805 1206 1210	C = Standard X = Flexible Termination (Not available w/SnPd)	2 Sig. Digits + Number of Zeros	J = $\pm 5\%$ K = $\pm 10\%$ M = $\pm 20\%$	8 = 10V 3 = 25V 5 = 50V	N = X8L	A = N/A	C = 100% Matte Sn L = SnPb (5% min)

Soldering Process

All parts incorporate the standard KEMET barrier layer of pure nickel, with an overplate of pure tin to provide excellent solderability as well as resistance to leaching. The recommended techniques are as follows:

- 0402 and ≥ 1210 Case Sizes - Solder Reflow Only
- 0603/0805/1206 Case Sizes - Solder Wave/Solder Reflow

Marking

These chips will be supplied unmarked. If required, they can be laser-marked as an extra option. Details on the marking format are included in KEMET Surface Mount catalog F3102.

In general, the information in the KEMET Surface Mount catalog F3102 applies to these capacitors. The information in this bulletin supplements that in the catalog.

X8L DIELECTRIC (0402 - 1210 Case Sizes)

Cap pF	Cap Code	Series	C0402C			C0603C			C0805C			C1206C			C1210C		
		Voltage	10V	25V		10V	25V	50V	10V	25V	50V	10V	25V	50V	10V	25V	50V
		Voltage Code	8	3		8	3	5	8	3	5	8	3	5	8	3	5
		Cap Tolerance	Product Availability and Chip Thickness Codes See Page 78 for Chip Thickness Dimensions														
12,000	123	J K M	BB	BB													
15,000	153	J K M	BB	BB													
18,000	183	J K M	BB	BB													
22,000	223	J K M	BB	BB													
27,000	273	J K M	BB														
33,000	333	J K M	BB														
39,000	393	J K M	BB														
47,000	473	J K M	BB		CB	CB	CB										
56,000	563	J K M															
68,000	683	J K M															
82,000	823	J K M															
100,000	104	J K M															
120,000	124	J K M			CB	CB											
150,000	154	J K M			CB	CB		DG	DG	DG							
180,000	184	J K M			CB			DG	DG	DG							
220,000	224	J K M			CB			DD	DD	DD							
270,000	274	J K M						DD	DD								
330,000	334	J K M						DD	DD								
390,000	394	J K M						DE	DE						FD	FD	FD
470,000	474	J K M						DE	DE						FD	FD	FD
560,000	564	J K M						DG	DH						FF	FF	FF
680,000	684	J K M						DG							FG	FG	FG
820,000	824	J K M						DG							FL	FL	FL
1,000,000	105	J K M						DG							FM	FM	FM
1,200,000	125	J K M									ED	ED			FG	FG	
1,500,000	155	J K M									EH	EH			FG	FG	
1,800,000	185	J K M									EH				FG	FG	
2,200,000	225	J K M									EH				FG	FG	
2,700,000	275	J K M													FG	FH	
3,300,000	335	J K M													FM	FM	
3,900,000	395	J K M													FG	FK	
4,700,000	475	J K M													FG	FS	
5,600,000	565	J K M													FH		
6,800,000	685	J K M													FM		
8,200,000	825	J K M													FK		
10,000,000	106	J K M													FS		
Cap pF	Cap Code	Voltage Code	8	3		8	3	5	8	3	5	8	3	5	8	3	5
		Voltage	10V	25V		10V	25V	50V	10V	25V	50V	10V	25V	50V	10V	25V	50V
		Series	C0402C			C0603C			C0805C			C1206C			C1210C		

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Packaging Specifications

Thickness Code	Chip Size	Thickness ± Range (mm)	Qty per Reel 7" Plastic	Qty per Reel 13" Plastic	Qty per Reel 7" Paper	Qty per Reel 13" Paper	Qty per Bulk Cassette
AA	01005	0.20 ± 0.02	--	--	15000	--	--
AB	0201	0.30 ± 0.03	--	--	15000	--	--
BB	0402	0.50 ± 0.05	--	--	10000	50000	50000
CB	0603	0.80 ± 0.07	--	--	4000	10000	15000
CC	0603	0.80 ± 0.10	--	--	4000	10000	--
CD	0603	0.80 ± 0.15	--	--	4000	10000	--
DB	0805	0.60 ± 0.10	--	--	4000	10000	10000
DC	0805	0.78 ± 0.10	--	--	4000	10000	--
DD	0805	0.90 ± 0.10	--	--	4000	10000	--
DE	0805	1.00 ± 0.10	2500	10000	--	--	--
DF	0805	1.10 ± 0.10	2500	10000	--	--	--
DG	0805	1.25 ± 0.15	2500	10000	--	--	--
DH	0805	1.25 ± 0.20	2500	10000	--	--	--
DL	0805	0.95 ± 0.10	4000	10000	--	--	--
EB	1206	0.78 ± 0.10	4000	10000	4000	10000	--
EC	1206	0.90 ± 0.10	4000	10000	--	--	--
ED	1206	1.00 ± 0.10	2500	10000	--	--	--
EE	1206	1.10 ± 0.10	2500	10000	--	--	--
EF	1206	1.20 ± 0.15	2500	10000	--	--	--
EG	1206	1.60 ± 0.15	2000	8000	--	--	--
EH	1206	1.60 ± 0.20	2000	8000	--	--	--
EJ	1206	1.70 ± 0.20	2000	8000	--	--	--
EK	1206	0.80 ± 0.10	2000	8000	--	--	--
EM	1206	1.25 ± 0.15	2500	10000	--	--	--
EN	1206	0.95 ± 0.10	4000	10000	--	--	--
FB	1210	0.78 ± 0.10	4000	10000	--	--	--
FC	1210	0.90 ± 0.10	4000	10000	--	--	--
FD	1210	0.95 ± 0.10	4000	10000	--	--	--
FE	1210	1.00 ± 0.10	2500	10000	--	--	--
FF	1210	1.10 ± 0.10	2500	10000	--	--	--
FG	1210	1.25 ± 0.15	2500	10000	--	--	--
FH	1210	1.55 ± 0.15	2000	8000	--	--	--
FJ	1210	1.85 ± 0.20	2000	8000	--	--	--
FK	1210	2.10 ± 0.20	2000	8000	--	--	--
FL	1210	1.40 ± 0.15	2000	8000	--	--	--
FM	1210	1.70 ± 0.20	2000	8000	--	--	--
FN	1210	1.85 ± 0.20	2000	8000	--	--	--
FO	1210	1.50 ± 0.20	2000	8000	--	--	--
FP	1210	1.60 ± 0.20	2000	8000	--	--	--
FR	1210	2.25 ± 0.20	2000	8000	--	--	--
FS	1210	2.50 ± 0.20	1000	4000	--	--	--
FT	1210	1.90 ± 0.20	1500	4000	--	--	--
GB	1812	1.00 ± 0.10	1000	4000	--	--	--
GC	1812	1.10 ± 0.10	1000	4000	--	--	--
GD	1812	1.25 ± 0.15	1000	4000	--	--	--
GE	1812	1.30 ± 0.10	1000	4000	--	--	--
GF	1812	1.50 ± 0.10	1000	4000	--	--	--
GG	1812	1.55 ± 0.10	1000	4000	--	--	--
GH	1812	1.40 ± 0.15	1000	4000	--	--	--
GJ	1812	1.70 ± 0.15	1000	4000	--	--	--
GK	1812	1.60 ± 0.20	1000	4000	--	--	--
GL	1812	1.90 ± 0.20	1000	4000	--	--	--
GM	1812	2.00 ± 0.20	1000	4000	--	--	--
GN	1812	1.70 ± 0.20	1000	4000	--	--	--
GO	1812	2.50 ± 0.20	500	2000	--	--	--
HB	1825	1.10 ± 0.15	1000	4000	--	--	--
HC	1825	1.15 ± 0.15	1000	4000	--	--	--
HD	1825	1.30 ± 0.15	1000	4000	--	--	--
HE	1825	1.40 ± 0.15	1000	4000	--	--	--
HF	1825	1.50 ± 0.15	1000	4000	--	--	--
HG	1825	1.60 ± 0.20	1000	4000	--	--	--
JB	2220	1.00 ± 0.15	1000	4000	--	--	--
JC	2220	1.10 ± 0.15	1000	4000	--	--	--
JD	2220	1.30 ± 0.15	1000	4000	--	--	--
JE	2220	1.40 ± 0.15	1000	4000	--	--	--
JF	2220	1.50 ± 0.15	1000	4000	--	--	--
JG	2220	1.70 ± 0.15	1000	4000	--	--	--
JH	2220	1.80 ± 0.15	1000	4000	--	--	--
JO	2220	2.40 ± 0.15	500	2000	--	--	--
JP	2220	1.60 ± 0.20	1000	4000	--	--	--
KB	2225	1.00 ± 0.15	1000	4000	--	--	--
KC	2225	1.10 ± 0.15	1000	4000	--	--	--
KD	2225	1.30 ± 0.15	1000	4000	--	--	--
KE	2225	1.40 ± 0.15	1000	4000	--	--	--
KF	2225	1.60 ± 0.20	1000	4000	--	--	--
LA	1808	1.40 ± 0.15	1000	4000	--	--	--
LB	1808	1.60 ± 0.15	1000	4000	--	--	--
LC	1808	2.00 ± 0.15	1000	4000	--	--	--
LD	1808	0.90 ± 0.10	2500	10000	--	--	--
MA	1632	0.80 ± 0.10	4000	10000	--	--	--
NA	1706	0.90 ± 0.10	4000	10000	--	--	--
NA	1706	0.90 ± 0.10	4000	10000	--	--	--
PA	1220	0.80 ± 0.10	4000	10000	--	--	--

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