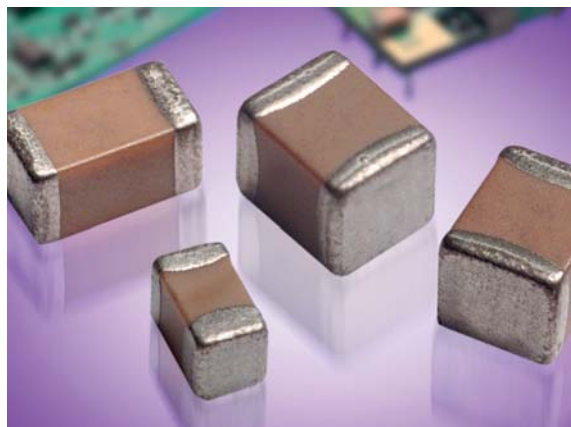


High Voltage MLC Chips

For 600V to 5000V Applications



NEW 630V RANGE

High value, low leakage and small size are difficult parameters to obtain in capacitors for high voltage systems. AVX special high voltage MLC chip capacitors meet these performance characteristics and are designed for applications such as snubbers in high frequency power converters, resonators in SMPS, and high voltage coupling/dc blocking. These high voltage chip designs exhibit low ESRs at high frequencies.

Larger physical sizes than normally encountered chips are used to make high voltage MLC chip products. Special precautions must be taken in applying these chips in surface mount assemblies. The temperature gradient during heating or cooling cycles should not exceed 4°C per second. The preheat temperature must be within 50°C of the peak temperature reached by the ceramic bodies through the soldering process. Chip sizes 1210 and larger should be reflow soldered only. Capacitors may require protective surface coating to prevent external arcing.

For 1825, 2225 and 3640 sizes, AVX offers leaded version in either thru-hole or SMT configurations (for details see section on high voltage leaded MLC chips).

HOW TO ORDER

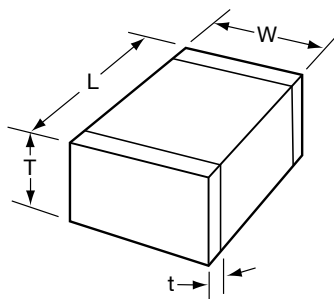
1808	A	A	271	K	A	1	2	A
AVX Style	Voltage	Temperature Coefficient	Capacitance Code	Capacitance Tolerance	Test Level	Termination*	Packaging	Special Code
0805	600V/630V = C	NPO (C0G) = A	(2 significant digits + no. of zeros)	C0G: J = ±5%	A = Standard	1 = Pd/Ag	1 or 2 = 7" Reel**	A = Standard
1206	1000V = A	X7R = C	Examples:	K = ±10%		T = Plated	3 or 4 = 13" Reel	
1210	1500V = S		10 pF = 100	M = ±20%		Ni and Sn (RoHS Compliant)		
1808	2000V = G		100 pF = 101	X7R: K = ±10%				
1812	2500V = W		1,000 pF = 102	M = ±20%				
1825	3000V = H		22,000 pF = 223	Z = +80%, -20%				
2220	4000V = J		220,000 pF = 224					
2225	5000V = K		1 µF = 105					
3640								

***Note:** Terminations with 5% minimum lead (Pb) is available, see pages 105 and 106 for LD style. Leaded terminations are available, see pages 107-111.

Notes: Capacitors with X7R dielectrics are not intended for applications across AC supply mains or AC line filtering with polarity reversal. Contact plant for recommendations. Contact factory for availability of Termination and Tolerance options for Specific Part Numbers.

** The 3640 Style is not available on 7" Reels.

*** AVX offers nonstandard chip sizes. Contact factory for details.



DIMENSIONS

	millimeters (inches)								
SIZE	0805	1206	1210*	1808*	1812*	1825*	2220*	2225*	3640*
(L) Length	2.10 ± 0.20 (0.083 ± 0.008)	3.30 ± 0.30 (0.130 ± 0.012)	3.30 ± 0.40 (0.130 ± 0.016)	4.60 ± 0.50 (0.181 ± 0.020)	4.60 ± 0.50 (0.181 ± 0.020)	4.60 ± 0.50 (0.181 ± 0.020)	5.70 ± 0.50 (0.224 ± 0.020)	5.72 ± 0.25 (0.225 ± 0.010)	9.14 ± 0.25 (0.360 ± 0.010)
(W) Width	1.25 ± 0.20 (0.049 ± 0.008)	1.60 ^{+0.30} _{-0.10} (0.063 ^{+0.012} _{-0.004})	2.50 ± 0.30 (0.098 ± 0.012)	2.00 ± 0.20 (0.079 ± 0.008)	3.20 ± 0.30 (0.126 ± 0.012)	6.30 ± 0.40 (0.248 ± 0.016)	5.00 ± 0.40 (0.197 ± 0.016)	6.35 ± 0.25 (0.250 ± 0.010)	10.2 ± 0.25 (0.400 ± 0.010)
(T) Thickness Max.	1.35 (0.053)	1.80 (0.071)	2.80 (0.110)	2.20 (0.087)	2.80 (0.110)	3.40 (0.134)	3.40 (0.134)	2.54 (0.100)	2.54 (0.100)
(t) terminal min. max.	0.50 ± 0.20 (0.020 ± 0.008)	0.60 ± 0.20 (0.024 ± 0.008)	0.75 ± 0.35 (0.030 ± 0.014)	0.75 ± 0.35 (0.030 ± 0.014)	0.75 ± 0.35 (0.030 ± 0.014)	0.75 ± 0.35 (0.030 ± 0.014)	0.85 ± 0.35 (0.033 ± 0.014)	0.85 ± 0.35 (0.033 ± 0.014)	0.76 (0.030) 1.52 (0.060)

*Reflow Soldering Only



High Voltage MLC Chips

For 600V to 5000V Applications

NP0 (C0G) Dielectric Performance Characteristics

Capacitance Range	10 pF to 0.100 μ F (25°C, 1.0 $\pm$ 0.2 Vrms at 1kHz, for $\leq$ 1000 pF use 1 MHz)
Capacitance Tolerances	$\pm$ 5%, $\pm$ 10%, $\pm$ 20%
Dissipation Factor	0.1% max. (+25°C, 1.0 $\pm$ 0.2 Vrms, 1kHz, for $\leq$ 1000 pF use 1 MHz)
Operating Temperature Range	-55°C to +125°C
Temperature Characteristic	0 $\pm$ 30 ppm/°C (0 VDC)
Voltage Ratings	600, 630, 1000, 1500, 2000, 2500, 3000, 4000 & 5000 VDC (+125°C)
Insulation Resistance (+25°C, at 500 VDC)	100K M Ω min. or 1000 M Ω - μ F min., whichever is less
Insulation Resistance (+125°C, at 500 VDC)	10K M Ω min. or 100 M Ω - μ F min., whichever is less
Dielectric Strength	Minimum 120% rated voltage for 5 seconds at 50 mA max. current

NP0 (C0G) CAPACITANCE RANGE – PREFERRED SIZES ARE SHADED

Case Size	0805	1206	1210	1808	1812
Soldering	Reflow/Wave	Reflow/Wave	Reflow Only	Reflow Only	Reflow Only
(L) Length mm (in.)	2.10 $\pm$ 0.20 (0.085 $\pm$ 0.008)	3.30 $\pm$ 0.30 (0.130 $\pm$ 0.012)	3.30 $\pm$ 0.40 (0.130 $\pm$ 0.016)	4.60 $\pm$ 0.50 (0.181 $\pm$ 0.020)	4.60 $\pm$ 0.50 (0.177 $\pm$ 0.012)
(W) Width mm (in.)	1.25 $\pm$ 0.20 (0.049 $\pm$ 0.008)	1.60 $\pm$ 0.30/-0.10 (0.063 $\pm$ 0.012/-0.004)	2.50 $\pm$ 0.30 (0.098 $\pm$ 0.012)	2.00 $\pm$ 0.20 (0.079 $\pm$ 0.008)	3.20 $\pm$ 0.30 (0.126 $\pm$ 0.008)
(T) Thickness mm (in.)	1.35 (0.053)	1.80 (0.071)	2.80 (0.110)	2.20 (0.087)	2.80 (0.100)
(t) Terminal min max	0.50 $\pm$ 0.20 (0.020 $\pm$ 0.008)	0.60 $\pm$ 0.20 (0.024 $\pm$ 0.008)	0.75 $\pm$ 0.35 (0.030 $\pm$ 0.014)	0.75 $\pm$ 0.35 (0.030 $\pm$ 0.014)	0.75 $\pm$ 0.35 (0.030 $\pm$ 0.014)
Voltage (V)	600 630 1000	600 630 1000 1500 2000	600 630 1000 1500 2000	600 630 1000 1500 2000 2500 3000 4000	600 630 1000 1500 2000 2500 3000 4000
Cap (pF)	1.5 1R5 1.8 1R8 2.2 2R2 2.7 2R7 3.3 3R3 3.9 3R9 4.7 4R7 5.6 5R6 6.8 6R8 8.2 8R2	A A X X X X X X X X X X X X X X X X X X	A A X X X X X X X X X X X X X X X X X X	A A X X X X X X X X X X X X X X X X X X	A A X X X X X X X X X X X X X X X X X X
10 100	A A A	X X X X X X X	C C D D D	C C C C C C C C	C C C C C C C C
12 120	A A A	X X X X X X X	C C D D D	C C C C C C C C	C C C C C C C C
15 150	A A A	X X X X X X X	C C D D D	C C C C C C C C	C C C C C C C C
18 180	A A A	X X X X X X X	C C D D D	C C C C C C C C	C C C C C C C C
22 220	A A A	X X X X X X X	C C D D D	C C C C C C C C	C C C C C C C C
27 270	A A A	X X X X X X X	C C D D D	C C C C C C C C	C C C C C C C C
33 330	A A A	X X X X X X X	C C D D D	C C C C C C C C	C C C C C C C C
39 390	A A A	X X X X X X X	C C D D D	C C C C C C C C	C C C C C C C C
47 470	A A A	X X X X X X X	C C D D D	C C C C C C C C	C C C C C C C C
56 560	A A A	X X X X X X X	C C D D D	C C C C C C C C	C C C C C C C C
68 680	A A A	X X X X X X X	C C D D D	C C C C C C C C	C C C C C C C C
82 820	X X X	X X X X X X X	C C D D D	C C C C C C C C	C C C C C C C C
100 101	X X X	X X X X X X X	C C D D D	C C C C C C C C	C C C C C C C C
120 121	C C C	X X X X X X X	C C D D D	C C C C C C C C	C C C C C C C C
150 151	C C C	X X X X X X X	C C D D D	C C C C C C C C	C C C C C C C C
180 181	C C C	X X X X X X X	C C D D D	C C C C C C C C	C C C C C C C C
220 221	C C C	X X X X X X X	C C D D D	C C C C C C C C	C C C C C C C C
270 271	C C C	C C C X X X X	C C D D D	C C C C C C C C	C C C C C C C C
330 331	C C C	C C C X X X X	C C D D D	C C C C C C C C	C C C C C C C C
390 391	C C C	C C C X X X X	C C D D D	C C C C C C C C	C C C C C C C C
470 471	C C C	C C C X X X X	C C D D D	C C C C C C C C	C C C C C C C C
560 561	C C C	C C C X X X X	C C D D D	C C C C C C C C	C C C C C C C C
680 681	C C C	C C C X X X X	C C D D D	C C C C C C C C	C C C C C C C C
750 751	C C C	C C C X X X X	C C D D D	C C C C C C C C	C C C C C C C C
820 821	C C C	C C C X X X X	C C D D D	C C C C C C C C	C C C C C C C C
1000 102		E E E E	C C C E	C C C F	C C C F
1200 122		E E E E	C C C E	C C C F	C C C F
1500 152		E E E E	C C C E	C C C F	C C C F
1800 182		E E E E	C C C E	C C C F	C C C F
2200 222		E E E E	C C C E	C C C F	C C C F
2700 272		E E E E	C C C E	C C C F	C C C F
3300 332		E E E E	C C C E	C C C F	C C C F
3900 392		E E E E	C C C E	C C C F	C C C F
4700 472		E E E E	C C C E	C C C F	C C C F
5600 562		E E E E	C C C E	C C C F	C C C F
6800 682		E E E E	C C C E	C C C F	C C C F
8200 822		E E E E	C C C E	C C C F	C C C F
Cap (μ F)	0.010 103				
0.012 123					
0.015 153					
0.018 183					
0.022 223					
0.033 333					
0.047 473					
0.056 563					
0.068 683					
0.100 104					
Voltage (V)	600 630 1000	600 630 1000 1500 2000	600 630 1000 1500 2000	600 630 1000 1500 2000 2500 3000 4000	600 630 1000 1500 2000 2500 3000 4000
Case Size	0805	1206	1210	1808	1812

Letter	A	C	E	F	G	X	7
Max. Thickness	0.813 (0.032)	1.448 (0.057)	1.8034 (0.071)	2.2098 (0.087)	2.794 (0.110)	0.940 (0.037)	3.30 (0.130)

NOTE: Contact factory for non-specified capacitance values

High Voltage MLC Chips

For 600V to 5000V Applications

NP0 (C0G) CAPACITANCE RANGE – PREFERRED SIZES ARE SHADED

Case Size	1825								2220								2225								3640										
Soldering	Reflow Only								Reflow Only								Reflow Only								Reflow Only										
(L) Length mm (in.)	4.60 ± 0.50 (0.181 ± 0.020)								5.70 ± 0.50 (0.224 ± 0.020)								5.70 ± 0.50 (0.225 ± 0.010)								9.14 ± 0.25 (0.360 ± 0.010)										
(W) Width mm (in.)	6.30 ± 0.40 (0.248 ± 0.016)								5.00 ± 0.40 (0.197 ± 0.016)								6.30 ± 0.40 (0.250 ± 0.010)								10.2 ± 0.25 (0.400 ± 0.010)										
(T) Thickness mm (in.)	3.40 (0.134)								3.40 (0.134)								3.40 (0.100)								2.54 (0.100)										
(t) Terminal min max	0.75 ± 0.35 (0.030 ± 0.014)								0.85 ± 0.35 (0.033 ± 0.014)								0.85 ± 0.35 (0.033 ± 0.014)								0.76 (0.030) 1.52 (0.060)										
Voltage (V)	600	630	1000	1500	2000	2500	3000	4000	600	630	1000	1500	2000	2500	3000	4000	5000	600	630	1000	1500	2000	2500	3000	4000	5000	600	630	1000	1500	2000	2500	3000	4000	5000
Cap (pF)	1.5 1R5																																		
	1.8 1R8																																		
	2.2 2R2																																		
	2.7 2R7																																		
	3.3 3R3																																		
	3.9 3R9																																		
	4.7 4R7																																		
	5.6 5R6																																		
	6.8 6R8																																		
	8.2 8R2																																		
	10 100	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	F	F									
	12 120	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	F	F									
	15 150	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	F	F									
	18 180	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	F	F									
	22 220	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	F	F									
	27 270	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	F	F									
	33 330	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	F	F									
	39 390	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	F	F									
	47 470	E	E	E	E	E	E	E	F	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	F	G								G	
	56 560	E	E	E	E	E	E	E	F	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	F	G								G	
	68 680	E	E	E	E	E	E	E	F	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	F	G								G	
	82 820	E	E	E	E	E	E	E	F	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	F	G								G	
	100 101	E	E	E	E	E	E	E	F	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	G	G				G	G	G	G	G	
	120 121	E	E	E	E	E	E	E	F	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	G	G				G	G	G	G	G	
	150 151	E	E	E	E	E	E	E	F	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	G	G				G	G	G	G	G	
	180 181	E	E	E	E	E	E	E	F	E	E	E	E	E	E	E	F	F	E	E	E	E	E	E	G	G				G	G	G	G	G	
	220 221	E	E	E	E	E	E	E	F	E	E	E	E	E	E	E	F	F	E	E	E	E	E	E	G	G				G	G	G	G	G	
	270 271	E	E	E	E	E	E	E	F	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	G	G				G	G	G	G	G	
	330 331	E	E	E	E	E	E	E	F	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	G	G				G	G	G	G	G	
	390 391	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	G	G				G	G	G	G	G	
	470 471	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	G	G				G	G	G	G	G	
	560 561	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	G	G				G	G	G	G	G	
	680 681	E	E	E	E	E	F	F	E	E	E	E	E	F	F	E	E	E	E	E	E	E	E	E	G	G				G	G	G	G	G	
	750 751	E	E	E	E	E	F	F	E	E	E	E	E	F	F	E	E	E	E	E	E	E	E	E	G	G				G	G	G	G	G	
	820 821	E	E	E	E	E	F	F	E	E	E	E	E	F	F	E	E	E	E	E	F	E	E	E	G	G				G	G	G	G	G	
	1000 102	E	E	E	E	E	F	F	E	E	E	E	E	F	F	E	E	E	E	E	E	E	E	E	G	G				G	G	G	G	G	
	1200 122	E	E	E	E	E	G	G	E	E	E	E	E	G	G	E	E	E	E	E	F	F	E	E	G	G				G	G	G	G	G	
	1500 152	E	E	E	F	F	G	G	E	E	E	F	F	G	G	E	E	E	E	E	F	F	E	E	G	G				G	G	G	G	G	
	1800 182	E	E	E	F	F	G	G	E	E	E	F	F	G	G	E	E	E	E	E	G	G	E	E	G	G				G	G	G	G	G	
	2200 222	E	E	E	G	G	G	G	E	E	E	G	G	G	G	E	E	E	E	E	E	E	E	E	G	G				G	G	G	G	G	
	2700 272	E	E	E	G	G	G	G	E	E	E	G	G	G	G	E	E	E	F	F	F	F	E	E	G	G				G	G	G	G	G	
	3300 332	E	E	E	G	G	G	G	E	E	E	G	G	G	G	E	E	E	F	F	F	F	E	E	G	G				G	G	G	G	G	
	3900 392	E	E	E	G	G	G	G	E	E	E	G	G	G	G	E	E	E	G	G	G	G	E	E	G	G				G	G	G	G	G	
	4700 472	E	E	E	G	G	G	G	E	E	E	G	G	G	G	F	F	F	G	G	G	G	E	E	G	G				G	G	G	G	G	
	5600 562	F	F	F	G	G	G	G	F	F	F	G	G	G	G	F	F	F	G	G	G	G	E	E	G	G				G	G	G	G	G	
	6800 682	F	F	F					F	F	F					F	F	F	G	G	G	G	E	E	G	G				G	G	G	G	G	
	8200 822	G	G	G					G	G	G					G	G	G					E	E	G	G				G	G	G	G	G	
Cap (µF)	0.010 103	F	F	G					7	7	7							G	G	G					G	G				G	G	G	G	G	
	0.012 123																	G	G						G	G			G	G	G	G	G	G	
	0.015 153																	G	G						G	G			G	G	G	G	G	G	
	0.018 183																	G	G						G	G			G	G	G	G	G	G	
	0.022 223																	G	G						G	G			G	G	G	G	G	G	
	0.033 333																	G	G						G	G			G	G					
	0.047 473																	G	G						G	G			G	G					
	0.056 563																	G	G						G	G			G	G					
	0.068 683																	G	G						G	G			G	G					
	0.100 104																	G	G						G	G			G	G					
Voltage (V)	600	630	1000	1500	2000	2500	3000	4000	600	630	1000	1500	2000	2500	3000	4000	5000	600	630	1000	1500	2000	2500	3000	4000	5000	600	630	1000	1500	2000	2500	3000	4000	5000
Case Size	1825								2220								2225								3640										

High Voltage MLC Chips

For 600V to 5000V Applications

X7R Dielectric Performance Characteristics

Capacitance Range	10 pF to 0.82 μ F (25°C, 1.0 $\pm$ 0.2 Vrms at 1kHz)
Capacitance Tolerances	$\pm$ 10%; $\pm$ 20%; +80%, -20%
Dissipation Factor	2.5% max. (+25°C, 1.0 $\pm$ 0.2 Vrms, 1kHz)
Operating Temperature Range	-55°C to +125°C
Temperature Characteristic	$\pm$ 15% (0 VDC)
Voltage Ratings	600, 630, 1000, 1500, 2000, 2500, 3000, 4000 & 5000 VDC (+125°C)
Insulation Resistance (+25°C, at 500 VDC)	100K M Ω min. or 1000 M Ω - μ F min., whichever is less
Insulation Resistance (+125°C, at 500 VDC)	10K M Ω min. or 100 M Ω - μ F min., whichever is less
Dielectric Strength	Minimum 120% rated voltage for 5 seconds at 50 mA max. current

X7R CAPACITANCE RANGE – PREFERRED SIZES ARE SHADED

Case Size		0805			1206				1210				1808							1812										
Soldering		Reflow/Wave			Reflow/Wave				Reflow Only				Reflow Only							Reflow Only										
(L) Length	mm (in.)	2.10 ± 0.20 (0.085 ± 0.008)			3.30 ± 0.30 (0.130 ± 0.012)				3.30 ± 0.40 (0.130 ± 0.016)				4.60 ± 0.50 (0.181 ± 0.020)							4.60 ± 0.50 (0.177 ± 0.012)										
(W) Width	mm (in.)	1.25 ± 0.20 (0.049 ± 0.008)			1.60 ± 0.30/-0.10 (0.063 ± 0.012/-0.004)				2.50 ± 0.30 (0.098 ± 0.012)				2.00 ± 0.20 (0.079 ± 0.008)							3.20 ± 0.30 (0.126 ± 0.008)										
(T) Thickness	mm (in.)	1.35 (0.053)			1.80 (0.071)				2.80 (0.110)				2.20 (0.087)							2.80 (0.100)										
(t) Terminal	min max	0.50 ± 0.20 (0.020 ± 0.008)			0.60 ± 0.20 (0.024 ± 0.008)				0.75 ± 0.35 (0.030 ± 0.014)				0.75 ± 0.35 (0.030 ± 0.014)							0.75 ± 0.35 (0.030 ± 0.014)										
Voltage (V)		600	630	1000	600	630	1000	1500	2000	600	630	1000	1500	2000	600	630	1000	1500	2000	2500	3000	4000	600	630	1000	1500	2000	2500	3000	4000
Cap (pF)	100	101	X	X	C	C	C	E	E	E	E	E	E	E																
	120	121	X	X	C	C	C	E	E	E	E	E	E	E																
	150	151	X	X	C	C	C	E	E	E	E	E	E	E																
	180	181	X	X	C	C	C	E	E	E	E	E	E	E																
	220	221	X	X	C	C	C	E	E	E	E	E	E	E																
	270	271	X	X	C	C	C	E	E	E	E	E	E	E									E	E	E	E	E			
	330	331	X	X	C	C	C	E	E	E	E	E	E	E	E	E	E	E	E	E	F		E	E	E	E	E			
	390	391	X	X	C	C	C	E	E	E	E	E	E	E	E	E	E	E	E	F		E	E	E	E	E				
	470	471	X	X	C	C	C	E	E	E	E	E	E	E	E	E	E	E	E	F		E	E	E	E	E	E	E	E	
	560	561	X	X	C	C	C	E	E	E	E	E	E	E	E	E	E	E	F	F		E	E	E	E	E	E	E	E	
	680	681	X	X	C	C	C	E	E	E	E	E	E	E	E	E	E	E	F	F		E	E	E	E	E	F	F		
	750	751	X	X	C	C	C	E	E	E	E	E	E	E	E	E	E	E	F	F		E	E	E	E	E	F	F		
	820	821	X	X	C	C	C	E	E	E	E	E	E	E	E	E	E	E	F	F		E	E	E	E	E	F	F		
	1000	102	X	X	X	C	C	E	E	E	E	E	E	E	E	E	E	E	F	F		E	E	E	E	E	F	F		
	1200	122	X	X	X	C	C	E	E	E	E	E	E	E	E	E	E	E	F	F		E	E	E	E	E	F	F		
	1500	152	X	X	X	C	C	E	E	E	E	E	E	E	E	E	E	E	F	F		E	E	E	E	E	G	G		
	1800	182	X	X	X	C	C	E	E	E	E	E	E	E	E	E	E	E	F	F		E	E	E	E	E	G	G		
	2200	222	X	X	X	C	C	E	E	E	E	E	E	F	E	E	E	E	F	F	F		E	E	E	E	E	G	G	
	2700	272	C	C		C	C	E	E				E	E	E	F	E	E	E	F	F		E	E	E	E	E	G	G	
	3300	332	C	C		C	C	E					E	E	E	F	E	E	E	F	F		E	E	E	F	F	G	G	
	3900	392	C	C		C	C	E					E	E	E	F				F			E	E	E	F	F	G	G	
	4700	472	C	C		C	C	E					E	E	E	F							E	E	E	F	F	G	G	
	5600	562	C	C		C	C	E					E	E	E	F							E	E	E	G	G	G		
	6800	682	C	C		C	C	E					E	E	E					F			E	E	E	G	G			
	8200	822	C	C		C	C	E					E	E	E								E	E	E	G	G			
Cap (µF)	0.010	103	C	C		C	C	E					E	E	E								E	E	F	G	G			
	0.015	153	C	C		E	E	E					E	E	E	F	F	F					E	E	F	G				
	0.018	183	C	C		E	E						E	E	E	F	F	F	F				E	E	G					
	0.022	223	C	C		E	E						E	E	F				F	F			E	E	G					
	0.027	273				E	E						E	E					F	F			E	E	G					
	0.033	333				E	E						E	E					F	F			E	E	G					
	0.039	393											E	E					F	F			E	E	G					
	0.047	473											E	E					F	F			E	E	G					
	0.056	563											F	F					F	F			F	F						
	0.068	683											F	F					F	F			F	F						
	0.082	823											F	F									F	F						
	0.100	104											F	F									F	F						
	0.150	154																					G	G						
	0.220	224																					G	G						
	0.270	274																												
	0.330	334																												
	0.390	394																												
	0.470	474																												
	0.560	564																												
	0.680	684																												
	0.820	824																												
	1.000	105																												
Voltage (V)		600	630	1000	600	630	1000	1500	2000	600	630	1000	1500	2000	600	630	1000	1500	2000	2500	3000	4000	600	630	1000	1500	2000	2500	3000	4000
Case Size		0805			1206				1210				1808							1812										

Letter	A	C	E	F	G	X	7
Max. Thickness	0.813 (0.032)	1.448 (0.057)	1.8034 (0.071)	2.2098 (0.087)	2.794 (0.110)	0.940 (0.037)	3.30 (0.130)

NOTE: Contact factory for non-specified capacitance values

High Voltage MLC Chips

For 600V to 5000V Applications

X7R CAPACITANCE RANGE PREFERRED SIZES ARE SHADED

Case Size		1825								2220								2225								3640										
Soldering		Reflow Only								Reflow Only								Reflow Only								Reflow Only										
(L) Length	mm (in.)	4.60 ± 0.50 (0.181 ± 0.020)								5.70 ± 0.50 (0.224 ± 0.020)								5.70 ± 0.50 (0.225 ± 0.010)								9.14 ± 0.25 (0.360 ± 0.010)										
(W) Width	mm (in.)	6.30 ± 0.40 (0.248 ± 0.016)								5.00 ± 0.40 (0.197 ± 0.016)								6.30 ± 0.40 (0.250 ± 0.010)								10.2 ± 0.25 (0.400 ± 0.010)										
(T) Thickness	mm (in.)	3.40 (0.134)								3.40 (0.134)								3.40 (0.100)								2.54 (0.100)										
(t) Terminal	min max	0.75 ± 0.35 (0.030 ± 0.014)								0.85 ± 0.35 (0.033 ± 0.014)								0.85 ± 0.35 (0.033 ± 0.014)								0.76 (0.030) 1.52 (0.060)										
Voltage (V)		600	630	1000	1500	2000	2500	3000	4000	600	630	1000	1500	2000	2500	3000	4000	5000	600	630	1000	1500	2000	2500	3000	4000	5000	600	630	1000	1500	2000	2500	3000	4000	5000
Cap (pF)		100	101																																	
		120	121																																	
		150	151																																	
		180	181																																	
		220	221																																	
		270	271																																	
		330	331																																	
		390	391																																	
		470	471																																	
		560	561																																	
		680	681																																	
		750	751																																	
		820	821																																	
		1000	102	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	G	G	G	G	G	G	G	G	G	
		1200	122	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	G	G	G	G	G	G	G	G	G	
		1500	152	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	G	G	G	G	G	G	G	G	G	
		1800	182	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	G	G	G	G	G	G	G	G	G	
		2200	222	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	G	G	G	G	G	G	G	G	G	
		2700	272	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	G	G	G	G	G	G	G	G	G	
		3300	332	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	G	G	G	G	G	G	G	G	G	
		3900	392	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	G	G	G	G	G	G	G	G	G	
		4700	472	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	G	G	G	G	G	G	G	G	G	
		5600	562	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	G	G	G	G	G	G	G	G	G	
		6800	682	F	F	F	G	G	G	G	G	G	G	G	G	G	G	G	F	F	F	F	F	F	F	G	G	G	G	G	G	G	G	G	G	
		8200	822	F	F	F	G	G	G	G	G	G	G	G	G	G	G	G	F	F	F	F	F	F	G	G	G	G	G	G	G	G	G	G	G	
Cap (µF)		0.010	103	F	F	F	G	G	G	G	G	G	G	G	G	G	G	F	F	F	F	F	F	G	G	G	G	G	G	G	G	G	G	G	G	
		0.015	153	F	F	F	G	G	G	G	G	G	G	G	G	G	G	F	F	F	F	F	F	G	G	G	G	G	G	G	G	G	G	G	G	
		0.018	183	F	F	F	G	G	G	G	G	G	G	G	G	G	G	F	F	F	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
		0.022	223	F	F	F	G	G	G	G	G	G	G	G	G	G	G	F	F	F	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
		0.027	273	F	F	F	G	G	G	G	G	G	G	G	G	G	G	F	F	F	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
		0.033	333	F	F	F	G	G	G	G	G	G	G	G	G	G	G	F	F	F	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
		0.039	393	F	F	F	G	G	G	G	G	G	G	G	G	G	G	F	F	F	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
		0.047	473	F	F	F	P	G	G	G	G	G	G	G	G	G	G	F	F	F	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
		0.056	563	F	F	F	G	G	G	G	G	G	G	G	G	G	G	F	F	F	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
		0.068	683	F	F	G	G	G	G	G	G	G	G	G	G	G	G	F	F	F	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
		0.082	823	F	F	G	G	G	G	G	G	G	G	G	G	G	G	F	F	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
		0.100	104	F	F	G	G	G	G	G	G	G	G	G	G	G	G	F	F	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
		0.150	154	F	F	G	G	G	G	G	G	G	G	G	G	G	G	F	F	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
		0.220	224	F	F	G	G	G	G	G	G	G	G	G	G	G	G	F	F	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
		0.270	274	F	F	G	G	G	G	G	G	G	G	G	G	G	G	F	F	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
		0.330	334	F	F	G	G	G	G	G	G	G	G	G	G	G	G	F	F	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
		0.390	394	F	F	G	G	G	G	G	G	G	G	G	G	G	G	F	F	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
		0.470	474	F	F	G	G	G	G	G	G	G	G	G	G	G	G	F	F	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
		0.560	564	G	G	G	G	G	G	G	G	G	G	G	G	G	G	F	F	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
		0.680	684															G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
		0.820	824															G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
		1.000	105																																	
Voltage (V)		600	630	1000	1500	2000	2500	3000	4000	600	630	1000	1500	2000	2500	3000	4000	5000	600	630	1000	1500	2000	2500	3000	4000	5000	600	630	1000	1500	2000	2500	3000	4000	5000
Case Size		1825								2220								2225								3640										

Letter	A	C	E	F	G	X	7
Max. Thickness	0.813 (0.032)	1.448 (0.057)	1.8034 (0.071)	2.2098 (0.087)	2.794 (0.110)	0.940 (0.037)	3.30 (0.130)

NOTE: Contact factory for non-specified capacitance values

Mouser Electronics

Authorized Distributor

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AVX:

1206AC472KA11A	1206AC472MAT9A	1206CC102KAT1A	1206GC471KA11A	1206GC471MAT1A
1210AC822KAT1A	1210CC273MAT9A	1808AC153KA11A	1808AC153KAT3A	1808AC153MAT1A
1808AC153MAT3A	1808CC393MA11A	1808CC393MA19A	1812AC273KA11A	1812AC273KAT3A
1812AC273KAT9A	1812AC273MA11A	1812AC273MAT3A	1812CC683KA11A	1812CC683KAT3A
1812CC683KAT9A	1812CC683MAT1A	1825AC683KA11A	1825AC683KAT1A	1825AC683KAT3A
1825AC683MAT3A	1825AC683MAT9A	1825CC154KA11A	1825CC154KA19A	1825CC154KAT3A
1825CC154KAT9A	1825CC154MA11A	1825CC154MAT3A	1825CC154MAT9A	2225AC823KAT9A
2225CC224KA11A	2225CC224MAT3A	2225CC224MAT9A	3640AC224KA19A	3640AC224MAT9A
3640CC564KA13A	3640CC564KA19A	3640CC564KAT9A	3640CC564MAT9A	1210CC273KA1ME
1206CC391KAT1A	3640CC104KAT9A	1812AC102MAT1A	2220AC104KAT1A	3640CC474KAT3A
1206CC331KAT1A	1206AC821KAT1A	1206AC102KAT1AJ	1206AC102KA11A	1206AC102MAT1A
1206AC102MA11A	1206AC220KAT1A	1206AC330KA11A	1206AC470KAT9A	1206AC562KAJ1A
1206AC562MAT1A	1206CC101KAJ1A	1206CC102KATME	1206CC102KAT1AJ	1206CC102KA11A
1206CC102MA11A	1206CC152KAT1A	1206CC183JAT1A	1206CC183KAT1A	1206CC221KAT1A
1206CC332KAT1A	1206CC562KAJ1A	1206CC562MAJ1A	1206CC562MAT1A	1206GC102KA11A
1206GC102MA11A	1206GC220KAT1A	1206GC330KA11A	1206SC102KA11A	1206SC102MA11A
1210AC101KAT1A	1210AC101MAT1A	1210AC102KAJ1A	1210AC102KAT3A	1210AC102MAT1A
1210AC102MAT3A	1210AC103KAJ1A	1210AC103KAT1AJ	1210AC103KAT3A	1210AC103KAT9A
1210AC122KAT1A	1210AC152KAT1A	1210AC153KAT1A	1210AC153MAT1A	1210AC181KAT1A
1210AC222KA11A	1210AC821KAT1A	1210CC101MAT1A	1210CC102KAJ1A	1210CC102KAT3A