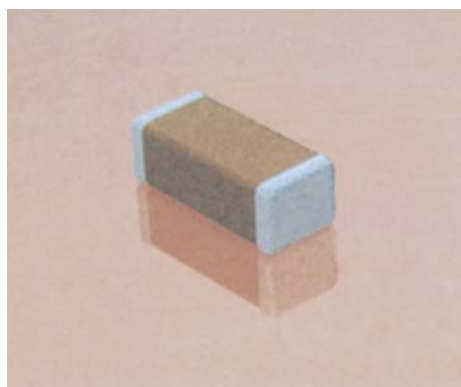


High Voltage MLC Chips FLEXITERM®



For 600V to 5000V Applications



High value, low leakage and small size are difficult parameters to obtain in capacitors for high voltage systems. AVX special high voltage MLC chips 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.

To make high voltage chips, larger physical sizes than are normally encountered are necessary. These larger sizes require that special precautions be taken in applying these chips in surface mount assemblies. In response to this, and to follow from the success of the FLEXITERM® range of low voltage parts, AVX is delighted to offer a FLEXITERM® high voltage range of capacitors, FLEXITERM®.

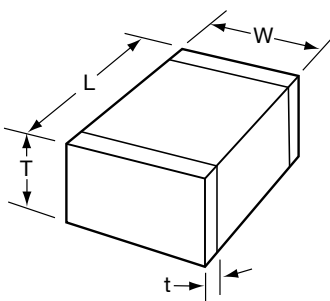
The FLEXITERM® layer is designed to enhance the mechanical flexure and temperature cycling performance of a standard ceramic capacitor, giving customers a solution where board flexure or temperature cycle damage are concerns.

HOW TO ORDER

1808	A	C	272	K	A	Z	1	A
AVX Style	Voltage	Temperature Coefficient	Capacitance Code (2 significant digits + no. of zeros) Examples:	Capacitance Tolerance C0G: J = ±5% K = ±10% M = ±20% X7R: K = ±10% M = ±20% Z = +80%, -20%	Test Level	Termination* Z = FLEXITERM® 100% Tin (RoHS Compliant)	Packaging 2 = 7" Reel 4 = 13" Reel	Special Code A = Standard
0805 1206 1210 1808 1812 1825 2220 2225	600V/630V = C 1000V = A 1500V = S 2000V = G 2500V = W 3000V = H 4000V = J 5000V = K	C0G = A X7R = C	10 pF = 100 100 pF = 101 1,000 pF = 102 22,000 pF = 223 220,000 pF = 224 1 µF = 105					

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.

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



DIMENSIONS

	millimeters (inches)							
SIZE	0805	1206	1210*	1808*	1812*	1825*	2220*	2225*
(L) Length	2.01 ± 0.20 (0.079 ± 0.008)	3.20 ± 0.20 (0.126 ± 0.008)	3.20 ± 0.20 (0.126 ± 0.008)	4.57 ± 0.25 (0.180 ± 0.010)	4.50 ± 0.30 (0.177 ± 0.012)	4.50 ± 0.30 (0.177 ± 0.012)	5.7 ± 0.40 (0.224 ± 0.016)	5.72 ± 0.25 (0.225 ± 0.010)
(W) Width	1.25 ± 0.20 (0.049 ± 0.008)	1.60 ± 0.20 (0.063 ± 0.008)	2.50 ± 0.20 (0.098 ± 0.008)	2.03 ± 0.25 (0.080 ± 0.010)	3.20 ± 0.20 (0.126 ± 0.008)	6.40 ± 0.30 (0.252 ± 0.012)	5.0 ± 0.40 (0.197 ± 0.016)	6.35 ± 0.25 (0.250 ± 0.010)
(T) Thickness Max.	1.30 (0.051)	1.52 (0.060)	1.70 (0.067)	2.20 (0.087)	2.54 (0.100)	2.54 (0.100)	3.30 (0.130)	2.54 (0.100)
(t) terminal min. max.	0.50 ± 0.25 (0.020 ± 0.010)	0.25 (0.010) 0.75 (0.030)	0.25 (0.010) 0.75 (0.030)	0.25 (0.010) 1.02 (0.040)	0.25 (0.010) 1.02 (0.040)	0.25 (0.010) 1.02 (0.040)	0.25 (0.010) 1.02 (0.040)	0.25 (0.010) 1.02 (0.040)

*Reflow Soldering Only



Performance of SMPS capacitors can be simulated by downloading SpiCalci software program - <http://www.avx.com/SpiApps/default.asp#spicalci>

Custom values, ratings and configurations are also available.



NP0 (C0G) Dielectric Performance Characteristics

Capacitance Range	10 pF to 0.100 μ F (+25°C, 1.0 $\pm$ 0.2 Vrms, 1kHz)
Capacitance Tolerances	$\pm$ 5%, $\pm$ 10%, $\pm$ 20%
Dissipation Factor	0.1% max. (+25°C, 1.0 $\pm$ 0.2 Vrms, 1kHz)
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

[illegible]

High Voltage MLC Chips FLEXITERM®



For 600V to 5000V Applications

NP0 (C0G) CAPACITANCE RANGE PREFERRED SIZES ARE SHADED

Case Size	1825								2220								2225									
Soldering	Reflow Only								Reflow Only								Reflow Only									
(L) Length	4.50 ± 0.30 (0.177 ± 0.012)								5.70 ± 0.40 (0.224 ± 0.016)								5.72 ± 0.25 (0.225 ± 0.010)									
(W) Width	6.40 ± 0.30 (0.252 ± 0.012)								5.00 ± 0.40 (0.197 ± 0.016)								6.35 ± 0.25 (0.250 ± 0.010)									
(T) Thickness	2.54 (0.100)								3.30 (0.130)								2.54 (0.100)									
(t) Terminal	0.25 (0.010) 1.02 (0.040)								0.25 (0.010) 1.02 (0.040)								0.25 (0.010) 1.02 (0.040)									
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
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	F	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	F	G
	56 560	E	E	E	E	E	E	F	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	F	G
	68 680	E	E	E	E	E	E	F	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	F	G
	82 820	E	E	E	E	E	E	F	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	F	G
	100 101	E	E	E	E	E	E	F	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	G	G
	120 121	E	E	E	E	E	E	F	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	G	G
	150 151	E	E	E	E	E	E	F	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	G	G
	180 181	E	E	E	E	E	E	F	E	E	E	E	E	E	E	E	E	F	F	E	E	E	E	E	G	G
	220 221	E	E	E	E	E	E	F	E	E	E	E	E	E	E	E	F	F	E	E	E	E	E	E	G	G
	270 271	E	E	E	E	E	E	F	E	E	E	E	E	E	E				E	E	E	E	E	E	G	G
	330 331	E	E	E	E	E	E	F	E	E	E	E	E	E	E				E	E	E	E	E	E	G	
	390 391	E	E	E	E	E	E		E	E	E	E	E	E	E				E	E	E	E	E	E	E	
	470 471	E	E	E	E	E	E		E	E	E	E	E	E	E				E	E	E	E	E	E	E	G
	560 561	E	E	E	E	E	E		E	E	E	E	E	E	E				E	E	E	E	E	E	E	G
	680 681	E	E	E	E	E	F	F	E	E	E	E	E	F	F				E	E	E	E	E	E		
	750 751	E	E	E	E	E	F	F	E	E	E	E	E	F	F				E	E	E	E	E	E		
	820 821	E	E	E	E	E	F	F	E	E	E	E	E	F	F				E	E	E	E	E	F	E	
	1000 102	E	E	E	E	E	F	F	E	E	E	E	E	F	F				E	E	E	E	E	E		
	1200 122	E	E	E	E	E	G	G	E	E	E	E	E	G	G				E	E	E	E	E	F	F	
	1500 152	E	E	E	F	F	G	G	E	E	E	F	F	G	G				E	E	E	E	F	F		
	1800 182	E	E	E	F	F	G	G	E	E	E	F	F	G	G				E	E	E	E	E	G	G	
	2200 222	E	E	E	G	G			E	E	E	G	G						E	E	E	E				
	2700 272	E	E	E	G	G			E	E	E	G	G						E	E	E	F	F			
	3300 332	E	E	E	G	G			E	E	E	G	G						E	E	E	F	F			
	3900 392	E	E	E	G	G			E	E	E	G	G						E	E	E	G	G			
	4700 472	E	E	E	G	G			E	E	E	G	G						F	F	F	G	G			
	5600 562	F	F	F	G	G			F	F	F	G	G						F	F	F	G	G			
	6800 682	F	F	F					F	F	F								F	F	F	G	G			
	8200 822	G	G	G					G	G	G								G	G	G					
Cap (µF)	0.010 103																		G	G	G					
	0.012 123																		G	G	G					
	0.015 153																		G	G	G					
	0.018 183																		G	G	G					
	0.022 223																		G	G	G					
	0.033 333																		G	G	G					
	0.047 473																		G	G	G					
	0.056 563																		G	G	G					
	0.068 683																		G	G	G					
	0.100 104																		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
Case Size	1825								2220								2225									

Letter	A	C	E	F	G	X
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)

NOTE: Contact factory for non-specified capacitance values



High Voltage MLC Chips FLEXITERM®



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	2.01 ± 0.20 (0.079 ± 0.008)			3.20 ± 0.20 (0.126 ± 0.008)				3.20 ± 0.20 (0.126 ± 0.008)				4.57 ± 0.25 (0.180 ± 0.010)						4.50 ± 0.30 (0.177 ± 0.012)											
(W) Width	1.25 ± 0.20 (0.049 ± 0.008)			1.60 ± 0.20 (0.063 ± 0.008)				2.50 ± 0.20 (0.098 ± 0.008)				2.03 ± 0.25 (0.080 ± 0.010)						3.20 ± 0.20 (0.126 ± 0.008)											
(T) Thickness	1.30 (0.051)			1.52 (0.060)				1.70 (0.067)				2.03 (0.080)						2.54 (0.100)											
(t) Terminal	0.50 ± 0.25 (0.020 ± 0.010)			0.25 (0.010) 0.75 (0.030)				0.25 (0.010) 0.75 (0.030)				0.25 (0.010) 1.02 (0.040)						0.25 (0.010) 1.02 (0.040)											
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																
	120	121	X	X	C	C	C	E	E	E	E	E	E																
	150	151	X	X	C	C	C	E	E	E	E	E	E																
	180	181	X	X	C	C	C	E	E	E	E	E	E																
	220	221	X	X	C	C	C	E	E	E	E	E	E																
	270	271	X	X	C	C	C	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	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	F		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	E	F	F		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	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	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	E	F	F		E	E	E	E	E	F	F
	1000	102	X	X	C	C	C	E	E	E	E	E	E	E	E	E	E	E	E	F	F		E	E	E	E	E	F	F
	1200	122	X	X	C	C	C	E	E	E	E	E	E	E	E	E	E	E	E	F	F		E	E	E	E	E	F	F
	1500	152	X	X	C	C	C	E	E	E	E	E	E	E	E	E	E	E	E	F	F		E	E	E	E	E	G	G
	1800	182	X	X		C	C	E	E	E	E	E	E	E	E	E	E	E	E	F	F		E	E	E	E	E	G	G
	2200	222	X	X		C	C	E	E	E	E	E	E	E	E	E	E	E	F	F	F		E	E	E	E	E	G	G
	2700	272	X	X		C	C	E	E		E	E	E	F	E	E	E	E	F	F			E	E	E	E	E	G	G
	3300	332	X	X		C	C	E			E	E	E	F	E	E	E	E	F	F			E	E	E	F	F	G	G
	3900	392	X	X		C	C	E			E	E	E	G		E	E	E	F				E	E	E	F	F	G	G
	4700	472	X	X		C	C	E			E	E	E	G		E	E	E	F				E	E	E	F	F	G	G
	5600	562	X	X		C	C	E			E	E	E	G		E	E	E	F				E	E	E	G	G		
	6800	682	X	X		C	C	E			E	E	E			E	E	E	F				E	E	E	G	G		
	8200	822	X	X		C	C	E			E	E	E			E	E	E					E	E	E	G	G		
Cap (µF)	0.010	103	C	C		C	C	E			E	E	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					E	E	G				
	0.022	223	C	C		E	E				E	E	E			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											



High Voltage MLC Chips FLEXITERM®



For 600V to 5000V Applications

X7R CAPACITANCE RANGE PREFERRED SIZES ARE SHADED

Case Size	1825								2220								2225									
Soldering	Reflow Only								Reflow Only								Reflow Only									
(L) Length mm (in.)	4.50 ± 0.30 (0.177 ± 0.012)								5.70 ± 0.40 (0.224 ± 0.016)								5.72 ± 0.25 (0.225 ± 0.010)									
(W) Width mm (in.)	6.40 ± 0.30 (0.252 ± 0.012)								5.00 ± 0.40 (0.197 ± 0.016)								6.35 ± 0.25 (0.250 ± 0.010)									
(T) Thickness mm (in.)	2.54 (0.100)								3.30 (0.130)								2.54 (0.100)									
(t) Terminal min max	0.25 (0.010) 1.02 (0.040)								0.25 (0.010) 1.02 (0.040)								0.25 (0.010) 1.02 (0.040)									
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
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	G		F	F	F	F	F	F	F	F
	1200	122	F	F	F	F	F	F	F		F	F	F	F	F	F	G		F	F	F	F	F	F	F	F
	1500	152	F	F	F	F	F	F	F		F	F	F	F	F	F	G		F	F	F	F	F	F	F	F
	1800	182	F	F	F	F	F	F	F		F	F	F	F	F	F	G		F	F	F	F	F	F	F	F
	2200	222	F	F	F	F	F	F	F		F	F	F	F	F	F	G		F	F	F	F	F	F	F	F
	2700	272	F	F	F	F	F	F	F		F	F	F	F	F	F	G		F	F	F	F	F	F	F	F
	3300	332	F	F	F	F	F	F	F		F	F	F	F	F	F	G		F	F	F	F	F	F	F	F
	3900	392	F	F	F	F	F	F	F		F	F	F	F	F	F	G		F	F	F	F	F	F	F	F
	4700	472	F	F	F	F	F	F	F		F	F	F	F	F	F	G		F	F	F	F	F	F	F	F
	5600	562	F	F	F	F	F	F	F		F	F	F	F	F	F	G		F	F	F	F	F	F	F	F
	6800	682	F	F	F	G	G	G	G		F	F	F	F	F	G	G		F	F	F	F	F	G	G	G
	8200	822	F	F	F	G	G	G	G		F	F	F	G	G	G	G		F	F	F	F	F	G	G	G
Cap (µF)	0.010	103	F	F	F	G	G	G	G		F	F	F	G	G	G	G		F	F	F	F	F	G	G	G
	0.015	153	F	F	F	G	G	G			F	F	F	G	G	G			F	F	F	G	G	G	G	
	0.018	183	F	F	F	G	G				F	F	F	G	G	G			F	F	F	G	G	G		
	0.022	223	F	F	F	G	G				F	F	F	G	G				F	F	F	G	G	G		
	0.027	273	F	F	F	G					F	F	F	G	G				F	F	F	G	G			
	0.033	333	F	F	F	G					F	F	F	G					F	F	F	G	G			
	0.039	393	F	F	F	G					F	F	F	G					F	F	F	G				
	0.047	473	F	F	F	P					F	F	F	G					F	F	F	G				
	0.056	563	F	F	F	G					F	F	F	G					F	F	F	G				
	0.068	683	F	F	G						F	F	G						F	F	F	G				
	0.082	823	F	F	G						F	F	G						F	F	G					
	0.100	104	F	F	G						F	F	G						F	F	G					
	0.150	154	F	F							F	F	G						F	F	G					
	0.220	224	F	F							F	F	G						F	F						
	0.270	274	F	F							F	F							F	F						
	0.330	334	F	F							F	F							F	F						
	0.390	394	F	F							F	F							F	F						
	0.470	474	F	F							F	F							F	F						
	0.560	564	G	G							G	G							F	F						
	0.680	684									G	G							G	G						
	0.820	824																	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
Case Size	1825								2220								2225									

Letter	A	C	E	F	G	P	X
Max.	0.813	1.448	1.8034	2.2098	2.794	3.048	0.940
Thickness	(0.032)	(0.057)	(0.071)	(0.087)	(0.110)	(0.120)	(0.037)

NOTE: Contact factory for non-specified capacitance values

