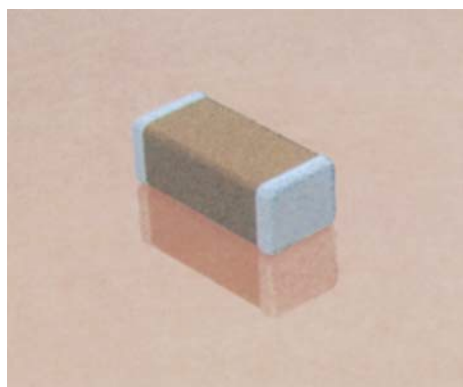


High Voltage MLC Chips FLEXITERM®

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®.

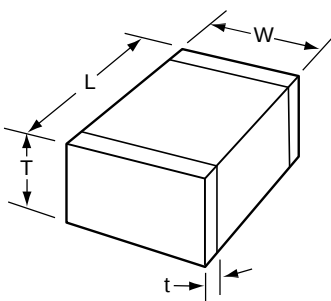
The FLEXITERM® layer is designed to enhance the mechanical flexure and temperature cycling performance of a standard ceramic capacitor, giving customers a solution where board flexure or temperature cycle damage are concerns.

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 COG: 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	COG = 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	2.10 ± 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)	5.70 ± 0.50 (0.224 ± 0.020)
(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)	6.30 ± 0.40 (0.248 ± 0.016)
(T) Thickness	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)	3.40 (0.134)
(t) terminal min.	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)
max.								

*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.



For 600V to 5000V Applications

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 (0VDC)
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

Case Size Soldering		0805			1206					1210					1808								1812							
		Reflow/Wave			Reflow/Wave					Reflow Only					Reflow Only								Reflow Only							
(L) Length	mm (in.)	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)							
(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 ± 0.012)							
(T) Thickness	mm (in.)	1.35 (0.053)			1.80 (0.071)					2.80 (0.110)					2.20 (0.087)								2.80 (0.110)							
(t) Terminal	mm 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)	1.5 1R5	A	A		X	X	X	X	X																					
	1.8 1R8	A	A		X	X	X	X	X																					
	2.2 2R2	A	A		X	X	X	X	X																					
	2.7 2R7	A	A		X	X	X	X	X									C	C	C	C	C								
	3.3 3R3	A	A		X	X	X	X	X									C	C	C	C	C								
	3.9 3R9	A	A		X	X	X	X	X									C	C	C	C	C								
	4.7 4R7	A	A		X	X	X	X	X									C	C	C	C	C								
	5.6 5R6	A	A		X	X	X	X	X									C	C	C	C	C								
	6.8 6R8	A	A		X	X	X	X	X									C	C	C	C	C								
	8.2 8R2	A	A		X	X	X	X	X									C	C	C	C	C								
	10 100	A	A	A	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	E
	12 120	A	A	A	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	E
	15 150	A	A	A	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	E
	18 180	A	A	A	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	E
	22 220	A	A	A	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	E
	27 270	A	A	A	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	E
	33 330	A	A	A	X	X	X	D	D	C	C	D	D	D	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	E
	39 390	A	A	A	X	X	X	D	D	C	C	D	D	D	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	E
	47 470	A	A	A	X	X	M	D	D	C	C	D	D	D	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	E
	56 560	A	A	A	X	X	M	C	C	C	C	D	C	C	C	C</														

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	4.60 ± 0.50										5.70 ± 0.50										5.72 ± 0.25									
(W) Width	6.30 ± 0.40										5.00 ± 0.40										6.35 ± 0.25									
(T) Thickness	3.40										3.40										2.54									
(t) Terminal	0.75 ± 0.35										0.85 ± 0.35										0.85 ± 0.35									
min	(0.030 ± 0.014)										(0.033 ± 0.014)										(0.100)									
max																														
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	12	120	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	18	180	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	27	270	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	39	390	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	E	56	560	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	E	E	82	820	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	E	E	120	121	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	E	E	180	181	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	G	G
	220	221	E	E	E	E	E	E	E	E	270	271	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	G	G
	330	331	E	E	E	E	E	E	E	E	390	391	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	G	G
	470	471	E	E	E	E	E	E	E	E	560	561	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	G	G
	680	681	E	E	E	E	E	E	E	E	820	821	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E		
	1000	102	E	E	E	E	E	E	E	E	1200	122	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E		
	1500	152	E	E	E	E	E	E	E	E	1800	182	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E		
	2200	222	E	E	E	E	E	E	E	E	2700	272	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E		
	3300	332	E	E	E	E	E	E	E	E	3900	392	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E		
	4700	472	E	E	E	E	E	E	E	E	5600	562	F	F	F	G	G													
	6800	682	F	F	F	G	G				8200	822	F	F	G	G	G													
	0.010	103	F	F	G	G					0.012	123	F	F																
	0.015	153	F	F							0.018	183	F	F																
	0.022	223	F	F							0.033	333	F	F																
	0.047	473	G	G							0.056	563	G	G																
	0.068	683	G	G							0.100	104	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.	0.813	1.448	1.8034	2.2098	2.794	0.940
Thickness	(0.032)	(0.057)	(0.071)	(0.087)	(0.110)	(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 µF (25°C, 1.0 ±0.2 Vrms at 1kHz)
Capacitance Tolerances	±10%; ±20%; +80%, -20%
Dissipation Factor	2.5% max. (+25°C, 1.0 ±0.2 Vrms, 1kHz)
Operating Temperature Range	-55°C to +125°C
Temperature Characteristic	±15% (0VDC)
Voltage Ratings	600, 630, 1000, 1500, 2000, 2500, 3000, 4000 & 5000 VDC (+125°C)
Insulation Resistance (+25°C, at 500 VDC)	100K MΩ min. or 1000 MΩ - µF min., whichever is less
Insulation Resistance (+125°C, at 500 VDC)	10K MΩ min. or 100 MΩ - µF 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 Soldering		0805			1206					1210					1808							1812								
		Reflow/Wave			Reflow/Wave					Reflow Only					Reflow Only							Reflow Only								
(L) Length	mm (in.)	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)								
(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 ±0.012)								
(T) Thickness	mm (in.)	1.35 (0.053)			1.80 (0.071)					2.80 (0.110)					2.20 (0.087)							2.80 (0.110)								
(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	E	E	E	E	E	E	F									
	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	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	E	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	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	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	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	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	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	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	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	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	E	E	F	F	E	E	E	E	E	G	G	
	2700	272	X	X		C	C	E	E					E	E	E	E	E	E	E	F	F	E	E	E	E	E	G	G	
	3300	332	X	X		C	C	E						E	E	E	E	E	E	E	F	F	E	E	E	F	F	G	G	
	3900	392	X	X		C	C	E						E	E	E	E	E	E	E	F		E	E	E	F	F	G	G	
	4700	472	X	X		C	C	E	E					E	E	E	E	E	E	E	F		E	E	E	F	F	G	G	
	5600	562	X	X		C	C	E						E	E	E	E	E	E	E	F		E	E	E	G	G			
	6800	682	X	X		C	C	E						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	G	G			
Cap (µF)	0.010	103	C	C		C	C	E						E	E	E	E						E	E	F	G	G			
	0.015	153	C	C		E	E	E						E	E	E							E	E	F	G				
	0.018	183	C	C		E	E							E	E	E							E	E	G					
	0.022	223	C	C		E	E							E	E	E							E	E	G	G				
	0.027	273				E	E							E	E	E							E	E	G					
	0.033	333				E	E							E	E	E	G						E	E	G					
	0.039	393				E	E	F						E	E	F							E	E	G					
	0.047	473				E	E							E	E	G							E	E	G					
	0.056	563												F	F								F	F						
	0.068	683												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																					G	G						
	0.330	334																					G	G						
	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								

For 600V to 5000V Applications

[illegible]

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

NOTE: Contact factory for non-specified capacitance values