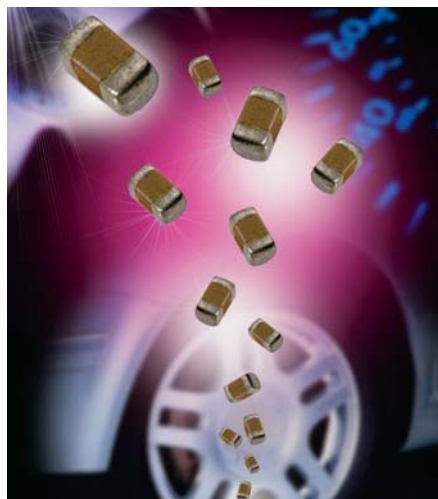


High Voltage MLC Chip Capacitors

For 600V to 3000V Automotive Applications – AEC-Q200



Modern automotive electronics could require components capable to work with high voltage (e.g. xenon lamp circuits or power converters in hybrid cars). AVX offer high voltage ceramic capacitors qualified according to AEC-Q200 standard.

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.

Due to high voltage nature, larger physical dimensions are necessary. These larger sizes require special precautions to be taken in applying of MLC chips. 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.

To improve mechanical and thermal resistance, AVX recommend to use flexible terminations system - FLEXITERM®.

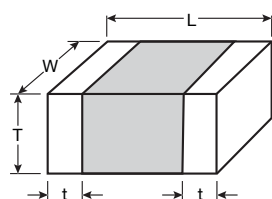
HOW TO ORDER

1210	C	C	223	K	4	T	1	A
AVX Style	Voltage	Dielectric	Capacitance Code	Capacitance Tolerance	Failure Rate	Termination	Packaging	Special Code
1206	A = 1000V	C = X7R	(2 significant digits + no. of zeros) e.g. 103 = 10nF (223 = 22nF)	J = ±5% K = ±10% M = ±20%	4 = Automotive	T = Plated Ni/Sn Z = FLEXITERM®	1 or 2 = 7" Reel 3 or 4 = 13" Reel	A = Standard
1210	S = 1500V							
1808	G = 2000V							
1812	W = 2500V							
2220	H = 3000V							

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

Notes: Capacitors with X7R dielectrics are not intended for applications across AC supply mains or AC line filtering with polarity reversal. Please contact AVX for recommendations.

CHIP DIMENSIONS DESCRIPTION (See capacitance range chart on page 106)



L = Length
W = Width
T = Thickness
t = Terminal

X7R DIELECTRIC PERFORMANCE CHARACTERISTICS

Parameter/Test	Specification Limits	Measuring Conditions
Operating Temperature Range	-55°C to +125°C	Temperature Cycle Chamber
Capacitance Dissipation Factor Capacitance Tolerance	within specified tolerance 2.5% max. ±5% (J), ±10% (K), ±20% (M)	Freq.: 1kHz ±10% Voltage: 1.0Vrms ±0.2Vrms T = +25°C, V = 0Vdc
Temperature Characteristics	X7R = ±15%	Vdc = 0V, T = (-55°C to +125°C)
Insulation Resistance	100GΩ min. or 1000MΩ • μF min. (whichever is less) 10GΩ min. or 100MΩ • μF min. (whichever is less)	T = +25°C, V = 500Vdc T = +125°C, V = 500Vdc (t ≥ 120 sec, I ≤ 50mA)
Dielectric Strength	No breakdown or visual defect	120% of rated voltage t ≤ 5 sec, I ≤ 50mA

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X7R CAPACITANCE RANGE PREFERRED SIZES ARE SHADED

Case Size			1206					1210					1808					1812					2220				
Soldering			Reflow/Wave					Reflow Only					Reflow Only					Reflow Only					Reflow Only				
(L) Length	mm		3.20 ± 0.20					3.20 ± 0.20					4.57 ± 0.25					4.50 ± 0.30					5.70 ± 0.40				
	(in.)		(0.126 ± 0.008)					(0.126 ± 0.008)					(0.180 ± 0.010)					(0.177 ± 0.012)					(0.224 ± 0.016)				
(W) Width	mm		1.60 ± 0.20					2.50 ± 0.20					2.03 ± 0.25					3.20 ± 0.20					5.00 ± 0.40				
	(in.)		(0.063 ± 0.008)					(0.098 ± 0.008)					(0.080 ± 0.010)					(0.126 ± 0.008)					(0.197 ± 0.016)				
(T) Thickness	mm		1.52					1.70					2.03					2.54					3.30				
	(in.)		(0.060)					(0.067)					(0.080)					(0.100)					(0.130)				
(t) Terminal	min		0.25 (0.010)					0.25 (0.010)					0.25 (0.010)					0.25 (0.010)					0.25 (0.010)				
	max		0.75 (0.030)					0.75 (0.030)					1.02 (0.040)					1.02 (0.040)					1.02 (0.040)				
Voltage (V)			630	1000	1500	2000	2500	630	1000	1500	2000	630	1000	1500	2000	2500	3000	630	1000	1500	2000	2500	3000	630	1000	1500	2000
Cap (pF)	100	101																									
	120	121																									
	150	151																									
	180	181																									
	220	221																									
	270	271																									
	330	331																									
	390	391																									
	470	471																									
	560	561																									
	680	681																									
	820	821																									
	1000	102																									
	1200	122																									
	1500	152																									
	1800	182																									
	2200	222																									
	2700	272																									
	3300	332																									
	3900	392																									
	4700	472																									
	5600	562																									
	6800	682																									
	8200	822																									
Cap (µF)	0.01	103																									
	0.012	123																									
	0.015	153																									
	0.018	183																									
	0.022	223																									
	0.027	273																									
	0.033	333																									
	0.039	393																									
	0.047	473																									
	0.056	563																									
0.068	683																										
	0.082	823																									
	0.100	104																									
	0.120	124																									
	0.150	154																									
Voltage (V)			630	1000	1500	2000	2500	630	1000	1500	2000	630	1000	1500	2000	2500	3000	630	1000	1500	2000	2500	3000	630	1000	1500	2000
Case Size			1206					1210					1808					1812					2220				

NOTE: Contact factory for non-specified capacitance values