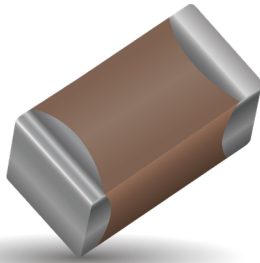


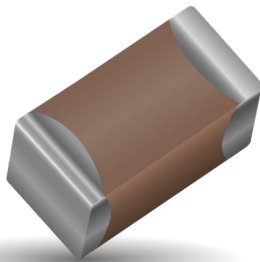
# High Voltage MLC Chip Capacitors

## 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 cards). AVX offers 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®.

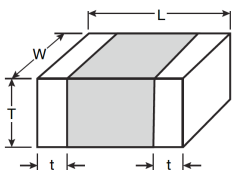
### HOW TO ORDER

1210	C	C	223	K	4	T	1	A
Size	Voltage	Dielectric	Capacitance Code	Capacitance Tolerance	Failure Rate	Terminations	Packaging	Special Code
1206 1210 1808 1812 2220	C = 630V A = 1000V S = 1500V G = 2000V W = 2500V H = 3000V	X7R = C	2 Sig. Digits + Number of Zeros e.g. 103 = 10nF (223 = 22nF)	J = ±5% (≤1μF) K = ±10% M = ±20%	4=Automotive	T = Plated Ni and Sn Z = FLEXITERM®	1 or 2 = 7" Reel 3 or 4 = 13" Reel	A = Std. Product

\*AVX offers nonstandard case size. 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 109)



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

# High Voltage MLC Chips FLEXITERM®

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

X7R CAPACITANCE RANGE  
PREFERRED SIZES ARE SHADED

CaseSize	1206					1210					1808					1812					2220								
Soldering	Reflow/Wave					ReflowOnly					ReflowOnly					ReflowOnly					ReflowOnly								
(L) Length	mm	3.20 ± 0.20					3.20 ± 0.20					4.57 ± 0.25					4.50 ± 0.30					5.70 ± 0.40							
(W) Width	mm	1.60 ± 0.20					2.50 ± 0.20					2.03 ± 0.25					3.20 ± 0.20					5.00 ± 0.40							
(T) Thickness	mm	1.52					1.70					2.03					2.54					3.30							
(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	2500	630	1000	1500	2000	2500	3000	630	1000	1500	2000	2500	3000	4000	630	1000	1500	2000	3000
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	2500	630	1000	1500	2000	2500	3000	630	1000	1500	2000	2500	3000	4000	630	1000	1500	2000	3000
CaseSize		1206					1210					1808					1812					2220							

NOTE: Contact factory for non-specified capacitance values