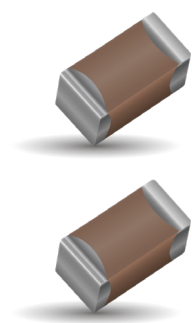


High Voltage MLC Chip Capacitors

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

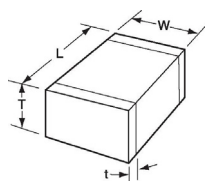
1210	C	C	223	K	4	T	2	A
Size 1206 1210 1808 1812 2220	Voltage C = 630V A = 1000V S = 1500V G = 2000V W = 2500V H = 3000V	Dielectric X7R = C	Capacitance Code 2 Sig. Digits + Number of Zeros e.g. 103 = 10nF (223 = 22nF)	Capacitance Tolerance K = ±10% M = ±20%	Failure Rate 4 = Automotive	Terminations T = Plated Ni and Sn Z = FLEXITERM®	Packaging 2 = 7" Reel 4 = 13" Reel	Special Code 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 128)



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	within specified tolerance	Freq.: 1kHz ±10%
Dissipation Factor	2.5% max.	Voltage: 1.0Vrms ±0.2Vrms
Capacitance Tolerance	±5% (J), ±10% (K), ±20% (M)	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

Case Size	1206	1210	1808	1812	2220
Soldering	Reflow/Wave	Reflow/Wave	Reflow Only	Reflow Only	Reflow Only
(L) Length mm	3.2 ± 0.2	3.2 ± 0.2	4.57 ± 0.25	4.5 ± 0.3	5.7 ± 0.5
(L) Length (in.)	(0.126 ± 0.008)	(0.126 ± 0.008)	(0.18 ± 0.01)	(0.177 ± 0.012)	(0.224 ± 0.02)
(W) Width mm	1.6 ± 0.2	2.5 ± 0.2	2.03 ± 0.25	3.2 ± 0.2	5 ± 0.4
(W) Width (in.)	(0.063 ± 0.008)	(0.098 ± 0.008)	(0.08 ± 0.01)	(0.126 ± 0.008)	(0.197 ± 0.016)
(t) Terminal mm	0.5 ± 0.25	0.5 ± 0.25	0.61 ± 0.36	0.61 ± 0.36	0.64 ± 0.39
(t) Terminal max	(0.02 ± 0.01)	(0.02 ± 0.01)	(0.024 ± 0.014)	(0.024 ± 0.014)	(0.025 ± 0.015)
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 3000
Cap (pF)	101 100	101 100	101 100	101 100	101 100
	121 120	121 120	121 120	121 120	121 120
	151 150	151 150	151 150	151 150	151 150
	181 180	181 180	181 180	181 180	181 180
	221 220	221 220	221 220	221 220	221 220
	271 270	271 270	271 270	271 270	271 270
	331 330	331 330	331 330	331 330	331 330
	391 390	391 390	391 390	391 390	391 390
	471 470	471 470	471 470	471 470	471 470
	561 560	561 560	561 560	561 560	561 560
	681 680	681 680	681 680	681 680	681 680
	821 820	821 820	821 820	821 820	821 820
	102 1000	102 1000	102 1000	102 1000	102 1000
	122 1220	122 1220	122 1220	122 1220	122 1220
	152 1500	152 1500	152 1500	152 1500	152 1500
	182 1800	182 1800	182 1800	182 1800	182 1800
	222 2200	222 2200	222 2200	222 2200	222 2200
	272 2700	272 2700	272 2700	272 2700	272 2700
	332 3300	332 3300	332 3300	332 3300	332 3300
	392 3900	392 3900	392 3900	392 3900	392 3900
	472 4700	472 4700	472 4700	472 4700	472 4700
	562 5600	562 5600	562 5600	562 5600	562 5600
	682 6800	682 6800	682 6800	682 6800	682 6800
	822 8200	822 8200	822 8200	822 8200	822 8200
	103 0.01	103 0.01	103 0.01	103 0.01	103 0.01
	123 0.012	123 0.012	123 0.012	123 0.012	123 0.012
	153 0.015	153 0.015	153 0.015	153 0.015	153 0.015
	183 0.018	183 0.018	183 0.018	183 0.018	183 0.018
	223 0.022	223 0.022	223 0.022	223 0.022	223 0.022
	273 0.027	273 0.027	273 0.027	273 0.027	273 0.027
	333 0.033	333 0.033	333 0.033	333 0.033	333 0.033
	393 0.039	393 0.039	393 0.039	393 0.039	393 0.039
	473 0.047	473 0.047	473 0.047	473 0.047	473 0.047
	563 0.056	563 0.056	563 0.056	563 0.056	563 0.056
	683 0.068	683 0.068	683 0.068	683 0.068	683 0.068
	823 0.082	823 0.082	823 0.082	823 0.082	823 0.082
	104 0.1	104 0.1	104 0.1	104 0.1	104 0.1
	124 0.12	124 0.12	124 0.12	124 0.12	124 0.12
	154 0.15	154 0.15	154 0.15	154 0.15	154 0.15
	224 0.22	224 0.22	224 0.22	224 0.22	224 0.22
	334 0.33	334 0.33	334 0.33	334 0.33	334 0.33
	474 0.47	474 0.47	474 0.47	474 0.47	474 0.47
	684 0.68	684 0.68	684 0.68	684 0.68	684 0.68
	105 1	105 1	105 1	105 1	105 1
	155 1.5	155 1.5	155 1.5	155 1.5	155 1.5
	225 2.2	225 2.2	225 2.2	225 2.2	225 2.2
	335 3.3	335 3.3	335 3.3	335 3.3	335 3.3
	475 4.7	475 4.7	475 4.7	475 4.7	475 4.7
	106 10	106 10	106 10	106 10	106 10
	226 22	226 22	226 22	226 22	226 22
WVDC	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 3000
Size	1206	1210	1808	1812	2220

NOTE: Contact factory for non-specified capacitance values

Letter	A	C	E	F	G	Q	X	Y
Max Thickness	0.813 (0.032)	1.448 (0.057)	1.8034 (0.071)	2.2098 (0.087)	2.794 (0.110)	1.78 (0.07)	2.29 (0.09)	2.54 (0.1)



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