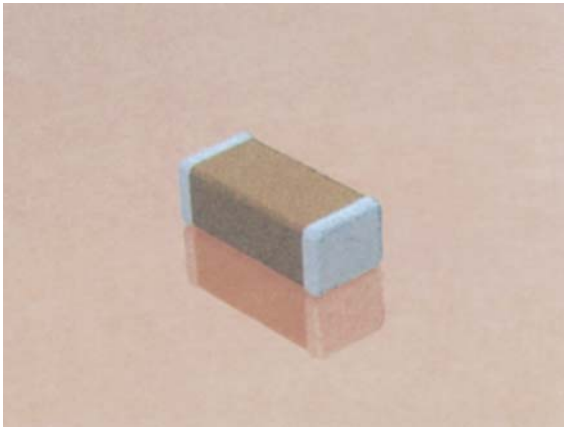


# High Voltage MLC Chips



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 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.

Larger physical sizes than normally encountered chips are used to make high voltage MLC chip products. Special precautions must be taken in applying these chips in surface mount assemblies. 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.

For 1825, 2225 and 3640 sizes, AVX offers leaded version in either thru-hole or SMT configurations (for details see section on high voltage leaded MLC chips).

**NEW 630V RANGE**

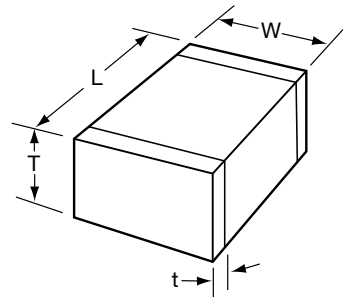
## HOW TO ORDER

1808	A	A	271	K	A	1	1	A
AVX Style	Voltage	Temperature Coefficient	Capacitance Code (2 significant digits + no. of zeros) Examples:	Capacitance Tolerance COG: J = ±5% K = ±10% X7R: K = ±10% M = ±20% Z = +80%, -20%	Test Level A = Standard	Termination* 1 = Pd/Ag T = Plated Ni and Sn (RoHS Compliant)	Packaging 1 = 7" Reel 3 = 13" Reel 9 = Bulk	Special Code A = Standard
0805	600V/630V = C	C0G = A	10 pF = 100					
1206	1000V = A	X7R = C	100 pF = 101					
1210	1500V = S		1,000 pF = 102					
1808	2000V = G		22,000 pF = 223					
1812	2500V = W		220,000 pF = 224					
1825	3000V = H		1 μF = 105					
2220	4000V = J							
2225	5000V = K							
3640								

**Note:** Terminations with 5% minimum lead (Pb) is available, see pages 81 and 82 for LD style. Leaded terminations are available, see pages 85 and 86.

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

SIZE	0805	1206	1210*	1808*	1812*	1825*	2220*	2225*	3640*
(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)	5.70 ± 0.40 (0.224 ± 0.016)	5.72 ± 0.25 (0.225 ± 0.010)	9.14 ± 0.25 (0.360 ± 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)	5.00 ± 0.40 (0.197 ± 0.016)	6.35 ± 0.25 (0.250 ± 0.010)	10.2 ± 0.25 (0.400 ± 0.010)
(T) Thickness Max.	1.30 (0.051)	1.52 (0.060)	1.70 (0.067)	2.03 (0.080)	2.54 (0.100)	2.54 (0.100)	3.30 (0.130)	2.54 (0.100)	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)	0.76 (0.030) 1.52 (0.060)

\*Reflow Soldering Only



# High Voltage MLC Chips



For 600V to 5000V Applications

## C0G Dielectric

### Performance Characteristics

<b>Capacitance Range</b>	10 pF to 0.047 $\mu$ F (25°C, 1.0 $\pm$ 0.2 Vrms at 1kHz, for $\leq$ 1000 pF use 1 MHz)
<b>Capacitance Tolerances</b>	$\pm$ 5%, $\pm$ 10%, $\pm$ 20%
<b>Dissipation Factor</b>	0.1% max. (+25°C, 1.0 $\pm$ 0.2 Vrms, 1kHz, for $\leq$ 1000 pF use 1 MHz)
<b>Operating Temperature Range</b>	-55°C to +125°C
<b>Temperature Characteristic</b>	0 $\pm$ 30 ppm/°C (0 VDC)
<b>Voltage Ratings</b>	600, 630, 1000, 1500, 2000, 2500, 3000, 4000 & 5000 VDC (+125°C)
<b>Insulation Resistance</b> (+25°C, at 500 VDC)	100K M $\Omega$ min. or 1000 M $\Omega$ - $\mu$ F min., whichever is less
<b>Insulation Resistance</b> (+125°C, at 500 VDC)	10K M $\Omega$ min. or 100 M $\Omega$ - $\mu$ F min., whichever is less
<b>Dielectric Strength</b>	Minimum 120% rated voltage for 5 seconds at 50 mA max. current

## HIGH VOLTAGE C0G CAPACITANCE VALUES

VOLTAGE	0805	1206	1210	1808	1812	1825	2220	2225	3640
600/630	min. 10pF max. 330pF	10 pF 1200 pF	100 pF 2700 pF	100 pF 3300 pF	100 pF 5600 pF	1000 pF 0.012 $\mu$ F	1000 pF 0.012 $\mu$ F	1000 pF 0.018 $\mu$ F	1000 pF 0.047 $\mu$ F
1000	min. 10pF max. 180pF	10 pF 560 pF	10 pF 1500 pF	100 pF 2200 pF	100 pF 3300 pF	100 pF 8200 pF	1000 pF 0.010 $\mu$ F	1000 pF 0.010 $\mu$ F	1000 pF 0.022 $\mu$ F
1500	min. — max. —	10 pF 270 pF	10 pF 680 pF	10 pF 820 pF	10 pF 1800 pF	100 pF 4700 pF	100 pF 4700 pF	100 pF 5600 pF	100 pF 0.010 $\mu$ F
2000	min. — max. —	10 pF 120 pF	10 pF 270 pF	10 pF 330 pF	10 pF 1000 pF	100 pF 1800 pF	100 pF 2200 pF	100 pF 2700 pF	100 pF 6800 pF
2500	min. — max. —	—	—	10 pF 180 pF	10 pF 470 pF	10 pF 1200 pF	100 pF 1500 pF	100 pF 1800 pF	100 pF 3900 pF
3000	min. — max. —	—	—	10 pF 120 pF	10 pF 330 pF	10 pF 820 pF	10 pF 1000 pF	10 pF 1200 pF	100 pF 2700 pF
4000	min. — max. —	—	—	10 pF 47 pF	10 pF 150 pF	10 pF 330 pF	10 pF 470 pF	10 pF 560 pF	100 pF 1200 pF
5000	min. — max. —	—	—	—	—	—	10 pF 220 pF	10 pF 270 pF	10 pF 820 pF

## X7R Dielectric

### Performance Characteristics

<b>Capacitance Range</b>	10 pF to 0.56 $\mu$ F (25°C, 1.0 $\pm$ 0.2 Vrms at 1kHz)
<b>Capacitance Tolerances</b>	$\pm$ 10%; $\pm$ 20%; +80%, -20%
<b>Dissipation Factor</b>	2.5% max. (+25°C, 1.0 $\pm$ 0.2 Vrms, 1kHz)
<b>Operating Temperature Range</b>	-55°C to +125°C
<b>Temperature Characteristic</b>	$\pm$ 15% (0 VDC)
<b>Voltage Ratings</b>	600, 630, 1000, 1500, 2000, 2500, 3000, 4000 & 5000 VDC (+125°C)
<b>Insulation Resistance</b> (+25°C, at 500 VDC)	100K M $\Omega$ min. or 1000 M $\Omega$ - $\mu$ F min., whichever is less
<b>Insulation Resistance</b> (+125°C, at 500 VDC)	10K M $\Omega$ min. or 100 M $\Omega$ - $\mu$ F min., whichever is less
<b>Dielectric Strength</b>	Minimum 120% rated voltage for 5 seconds at 50 mA max. current

## HIGH VOLTAGE X7R MAXIMUM CAPACITANCE VALUES

VOLTAGE	0805	1206	1210	1808	1812	1825	2220	2225	3640
600/630	min. 100pF max. 6800pF	1000 pF 0.022 $\mu$ F	1000 pF 0.056 $\mu$ F	1000 pF 0.068 $\mu$ F	1000 pF 0.120 $\mu$ F	0.010 $\mu$ F 0.270 $\mu$ F	0.010 $\mu$ F 0.270 $\mu$ F	0.010 $\mu$ F 0.330 $\mu$ F	0.010 $\mu$ F 0.560 $\mu$ F
1000	min. 100pF max. 1500pF	100 pF 6800 pF	1000 pF 0.015 $\mu$ F	1000 pF 0.018 $\mu$ F	1000 pF 0.039 $\mu$ F	1000 pF 0.100 $\mu$ F	1000 pF 0.120 $\mu$ F	1000 pF 0.150 $\mu$ F	1000 pF 0.220 $\mu$ F
1500	min. — max. —	100 pF 2700 pF	100 pF 5600 pF	100 pF 6800 pF	100 pF 0.015 $\mu$ F	1000 pF 0.056 $\mu$ F	1000 pF 0.056 $\mu$ F	1000 pF 0.068 $\mu$ F	1000 pF 0.100 $\mu$ F
2000	min. — max. —	10 pF 1500 pF	100 pF 3300 pF	100 pF 3300 pF	100 pF 8200 pF	100 pF 0.022 $\mu$ F	1000 pF 0.027 $\mu$ F	1000 pF 0.033 $\mu$ F	1000 pF 0.027 $\mu$ F
2500	min. — max. —	—	—	10 pF 2200 pF	10 pF 5600 pF	100 pF 0.015 $\mu$ F	100 pF 0.018 $\mu$ F	100 pF 0.022 $\mu$ F	1000 pF 0.022 $\mu$ F
3000	min. — max. —	—	—	10 pF 1800 pF	10 pF 3900 pF	100 pF 0.010 $\mu$ F	100 pF 0.012 $\mu$ F	100 pF 0.015 $\mu$ F	1000 pF 0.018 $\mu$ F
4000	min. — max. —	—	—	—	—	—	—	—	100 pF 6800 pF
5000	min. — max. —	—	—	—	—	—	—	—	100 pF 3300 pF