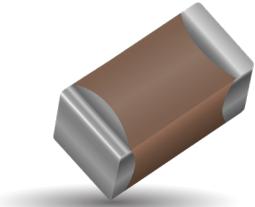


# High Voltage MLC Chips

Tin/Lead Termination "B"

For 600V to 5000V Applications



AVX Corporation will support those customers for commercial and military Multilayer Ceramic Capacitors with a termination consisting of 5% minimum lead. This termination is indicated by the use of a "B" in the 12th position of the AVX Catalog Part Number. This fulfills AVX's commitment to providing a full range of products to our customers. AVX has provided in the following pages, a full range of values that we are offering in this "B" termination.

Larger physical sizes than normally encountered chips are used to make high voltage MLC chip product. 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 lead version in either thru-hole or SMT configurations (for details see section on high voltage lead MLC chips).

## NEW 630V RANGE

## HOW TO ORDER

LD08	A	A	271	K	A	B	1	A
AVX Style	Voltage	Temperature Coefficient	Capacitance Code	Capacitance Tolerance	Test Level	Termination*	Packaging	Special Code
LD05 - 0805	600V/630V = C 1000V = A 1500V = S 2000V = G 2500V = W 3000V = H 4000V = J 5000V = K	COG = A X7R = C	(2 significant digits + no. of zeros) Examples: 10 pF = 100 100 pF = 101 1,000 pF = 102 22,000 pF = 223 220,000 pF = 224 1 μF = 105	COG: J = ±5% K = ±10% M = ±20% X7R: K = ±10% M = ±20% Z = +80%, -20%	A = Standard 4 = Automotive*	B = 5% Min Pb X = FLEXITERM® 5% min. Pb*	2 = 7" Reel** 4 = 13" Reel	A = Standard
LD06 - 1206								
LD10 - 1210								
LD12 - 1808								
LD13 - 1812								
LD20 - 1825								
LD14 - 2220								
LD40 - 2225								

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

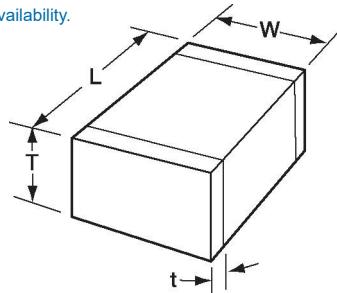
\* FLEXITERM is not available in the LD40 Style

\*\* The LD40 Style is not available on 7" Reels.

\*\*\* AVX offers nonstandard chip sizes. Contact factory for details..

\* Not all values are supported in Automotive grade. Please contact factory for availability.

NOT RoHS Compliant



## DIMENSIONS

SIZE	LD05 (0805)	LD06 (1206)	LD10* (1210)	LD08* (1808)	LD12* (1812)	LD13* (1825)	LD20* (2220)	LD14* (2225)	LD40* (3640)
(L) Length	$2.10 \pm 0.20$ ( $0.083 \pm 0.008$ )	$3.30 \pm 0.30$ ( $0.130 \pm 0.012$ )	$3.30 \pm 0.40$ ( $0.130 \pm 0.016$ )	$4.60 \pm 0.50$ ( $0.181 \pm 0.020$ )	$4.60 \pm 0.50$ ( $0.181 \pm 0.020$ )	$4.60 \pm 0.50$ ( $0.181 \pm 0.020$ )	$5.70 \pm 0.50$ ( $0.224 \pm 0.020$ )	$5.70 \pm 0.50$ ( $0.224 \pm 0.020$ )	$9.14 \pm 0.25$ ( $0.360 \pm 0.010$ )
(W) Width	$1.25 \pm 0.20$ ( $0.049 \pm 0.008$ )	$1.60 \pm 0.20$ ( $0.063 \pm 0.008$ )	$2.50 \pm 0.30$ ( $0.098 \pm 0.012$ )	$2.00 \pm 0.20$ ( $0.079 \pm 0.008$ )	$3.20 \pm 0.30$ ( $0.126 \pm 0.012$ )	$6.30 \pm 0.40$ ( $0.248 \pm 0.016$ )	$5.00 \pm 0.40$ ( $0.197 \pm 0.016$ )	$6.30 \pm 0.40$ ( $0.248 \pm 0.016$ )	$10.2 \pm 0.25$ ( $0.400 \pm 0.010$ )
(T) Thickness Max.	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)	2.54 (0.100)
(t) terminal min. max.	$0.50 \pm 0.20$ ( $0.020 \pm 0.008$ )	$0.60 \pm 0.20$ ( $0.024 \pm 0.008$ )	$0.75 \pm 0.35$ ( $0.030 \pm 0.014$ )	$0.85 \pm 0.35$ ( $0.033 \pm 0.014$ )	$0.85 \pm 0.35$ ( $0.033 \pm 0.014$ )	$0.76 (0.030)$ $1.52 (0.060)$			

\*Reflow Soldering Only

Performance of ceramic capacitors can be simulated by using the online SpiMLCC software program - <http://spicat.avx.com/mlcc>  
Custom values, ratings and configurations are also available.

# High Voltage MLC Chips Tin/Lead Termination "B"

For 600V to 5000V Applications

## C0G Dielectric Performance Characteristics

<b>Capacitance Range</b>	10 pF to 0.047 µF (25°C, 1.0 ±0.2 Vrms at 1kHz, for ≤ 1000 pF use 1 MHz)
<b>Capacitance Tolerances</b>	±5%, ±10%, ±20%
<b>Dissipation Factor</b>	0.1% max. (+25°C, 1.0 ±0.2 Vrms, 1kHz, for ≤ 1000 pF use 1 MHz)
<b>Operating Temperature Range</b>	-55°C to +125°C
<b>Temperature Characteristic</b>	0 ±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 MΩ min. or 1000 MΩ - µF min., whichever is less
<b>Insulation Resistance</b> (+125°C, at 500 VDC)	10K MΩ min. or 100 MΩ - µF 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	LD05 (0805)	LD06 (1206)	LD10 (1210)	LD08 (1808)	LD12 (1812)	LD13 (1825)	LD20 (2220)	LD14 (2225)	LD40 (3640)
600/630 min.	10pF 330pF	10 pF 1200 pF	100 pF 2700 pF	100 pF 3300 pF	100 pF 5600 pF	1000 pF 0.012 µF	1000 pF 0.012 µF	1000 pF 0.018 µF	1000 pF 0.047 µF
1000 min.	10pF 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 µF	1000 pF 0.010 µF	1000 pF 0.022 µF
1500 min.	—	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 µF
2000 min.	—	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.	—	—	—	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.	—	—	—	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.	—	—	—	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.	—	—	—	—	—	—	10 pF 220 pF	10 pF 270 pF	10 pF 820 pF

## X7R Dielectric Performance Characteristics

### Performance Characteristics

<b>Capacitance Range</b>	10 pF to 0.56 µF (25°C, 1.0 ±0.2 Vrms at 1kHz)
<b>Capacitance Tolerances</b>	±10%; ±20%; +80%, -20%
<b>Dissipation Factor</b>	2.5% max. (+25°C, 1.0 ±0.2 Vrms, 1kHz)
<b>Operating Temperature Range</b>	-55°C to +125°C
<b>Temperature Characteristic</b>	±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 MΩ min. or 1000 MΩ - µF min., whichever is less
<b>Insulation Resistance</b> (+125°C, at 500 VDC)	10K MΩ min. or 100 MΩ - µF 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 6800pF	1000 pF 0.022 µF	1000 pF 0.056 µF	1000 pF 0.068 µF	1000 pF 0.120 µF	0.010 µF 0.270 µF	0.010 µF 0.270 µF	0.010 µF 0.330 µF	0.010 µF 0.560 µF
1000 min.	100pF 1500pF	100 pF 6800 pF	1000 pF 0.015 µF	1000 pF 0.018 µF	1000 pF 0.039 µF	0.100 µF 0.120 µF	1000 pF 0.120 µF	1000 pF 0.150 µF	1000 pF 0.220 µF
1500 min.	—	100 pF 2700 pF	100 pF 5600 pF	100 pF 6800 pF	100 pF 0.015 µF	1000 pF 0.056 µF	1000 pF 0.056 µF	1000 pF 0.068 µF	1000 pF 0.100 µF
2000 min.	—	10 pF 1500 pF	100 pF 3300 pF	100 pF 3300 pF	100 pF 8200 pF	100 pF 0.022 µF	1000 pF 0.027 µF	1000 pF 0.033 µF	1000 pF 0.027 µF
2500 min.	—	—	—	10 pF 2200 pF	10 pF 5600 pF	100 pF 0.015 µF	100 pF 0.018 µF	100 pF 0.022 µF	1000 pF 0.022 µF
3000 min.	—	—	—	10 pF 1800 pF	10 pF 3900 pF	100 pF 0.010 µF	100 pF 0.012 µF	100 pF 0.015 µF	1000 pF 0.018 µF
4000 min.	—	—	—	—	—	—	—	—	100 pF 6800 pF
5000 min.	—	—	—	—	—	—	—	—	100 pF 3300 pF