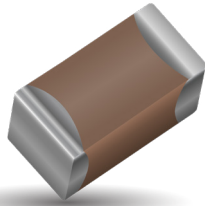


High Voltage MLC Chips

FLEXITERM® - 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 chips 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.

To make high voltage chips, larger physical sizes than are normally encountered are necessary. These larger sizes require that special precautions be taken in applying these chips in surface mount assemblies. In response to this, and to follow from the success of the FLEXITERM® range of low voltage parts, AVX is delighted to offer a FLEXITERM® high voltage range of capacitors, FLEXITERM®.

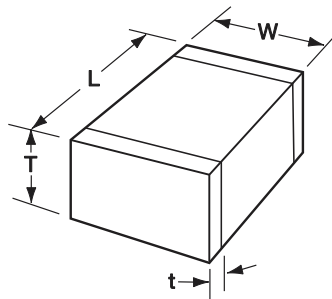
The FLEXITERM® layer is designed to enhance the mechanical flexure and temperature cycling performance of a standard ceramic capacitor, giving customers a solution where board flexure or temperature cycle damage are concerns.

HOW TO ORDER

| 1808 | A | C | 272 | K | A | Z | 1 | A |
|--|--|--------------------------------|--|---|-------------------|---|---|-------------------------------------|
| AVX Style | Voltage | Temperature Coefficient | Capacitance Code (2 significant digits + no. of zeros) Examples: | Capacitance Tolerance COG: J = ±5% K = ±10% M = ±20% X7R: K = ±10% M = ±20% Z = +80%, -20% | Test Level | Termination* Z = FLEXITERM® 100% Tin (RoHS Compliant) | Packaging 2 = 7" Reel 4 = 13" Reel | Special Code A = Standard |
| 0805 1206 1210 1808 1812 1825 2220 2225 | 600V/630V = C 1000V = A 1500V = S 2000V = G 2500V = W 3000V = H 4000V = J 5000V = K | COG = A X7R = C | 10 pF = 100 100 pF = 101 1,000 pF = 102 22,000 pF = 223 220,000 pF = 224 1 μF = 105 | | | | | |
| *** | | | | | | | | |

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

MILLIMETERS (INCHES)

| SIZE | 0805 | 1206 | 1210* | 1808* | 1812* | 1825* | 2220* | 2225* |
|--------------------|--------------------------------|--|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| (L) Length | 2.10 ± 0.20 (0.083 ± 0.008) | 3.30 ± 0.30 (0.130 ± 0.012) | 3.30 ± 0.40 (0.130 ± 0.016) | 4.60 ± 0.50 (0.181 ± 0.020) | 4.60 ± 0.50 (0.181 ± 0.020) | 4.60 ± 0.50 (0.181 ± 0.020) | 5.70 ± 0.50 (0.224 ± 0.020) | 5.70 ± 0.50 (0.224 ± 0.020) |
| (W) Width | 1.25 ± 0.20 (0.049 ± 0.008) | 1.60 ^{+0.30} _{-0.10} (0.063 ^{+0.012} _{-0.004}) | 2.50 ± 0.30 (0.098 ± 0.012) | 2.00 ± 0.20 (0.079 ± 0.008) | 3.20 ± 0.30 (0.126 ± 0.012) | 6.30 ± 0.40 (0.248 ± 0.016) | 5.00 ± 0.40 (0.197 ± 0.016) | 6.30 ± 0.40 (0.248 ± 0.016) |
| (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) |
| (t) terminal | min. max. | 0.50 ± 0.20 (0.020 ± 0.008) | 0.60 ± 0.20 (0.024 ± 0.008) | 0.75 ± 0.35 (0.030 ± 0.014) | 0.75 ± 0.35 (0.030 ± 0.014) | 0.75 ± 0.35 (0.030 ± 0.014) | 0.85 ± 0.35 (0.033 ± 0.014) | 0.85 ± 0.35 (0.033 ± 0.014) |

*Reflow Soldering Only



Performance of SMPS capacitors can be simulated by downloading SpiCalci software program - <http://www.avx.com/SpiApps/default.asp#spicalci>
Custom values, ratings and configurations are also available.

High Voltage MLC Chips

FLEXITERM® - 600V to 5000V Applications



NP0 (COG) Dielectric

Performance Characteristics

| | |
|---|--|
| Capacitance Range | 10 pF to 0.100 µF (+25°C, 1.0 ±0.2 Vrms, 1kHz) |
| Capacitance Tolerances | ±5%, ±10%, ±20% |
| Dissipation Factor | 0.1% max. (+25°C, 1.0 ±0.2 Vrms, 1kHz) |
| Operating Temperature Range | -55°C to +125°C |
| Temperature Characteristic | 0 ±30 ppm/°C (0 VDC) |
| Voltage Ratings | 600, 630, 1000, 1500, 2000, 2500, 3000, 4000 & 5000 VDC (+125°C) |
| Insulation Resistance (+25°C, at 500 VDC) | 100K MΩ min. or 1000 MΩ - µF min., whichever is less |
| Insulation Resistance (+125°C, at 500 VDC) | 10K MΩ min. or 100 MΩ - µF min., whichever is less |
| Dielectric Strength | Minimum 120% rated voltage for 5 seconds at 50 mA max. current |

NP0 (COG) CAPACITANCE RANGE

PREFERRED SIZES ARE SHADED

| Case Size Soldering | 0805 | | | 1206 | | | | | 1210 | | | | | 1808 | | | | | | | | 1812 | | | | | | | | | |
|------------------------|--------------------------------|-----|------|---|-----|------|------|------|--------------------------------|-----|------|------|------|--------------------------------|-----|------|------|------|------|------|------|--------------------------------|-----|------|------|------|------|------|------|---|---|
| | Reflow/Wave | | | Reflow/Wave | | | | | Reflow Only | | | | | Reflow Only | | | | | | | | Reflow Only | | | | | | | | | |
| (L) Length mm (in.) | 2.10 ± 0.20 (0.083 ± 0.008) | | | 3.30 ± 0.30 (0.130 ± 0.012) | | | | | 3.30 ± 0.40 (0.130 ± 0.016) | | | | | 4.60 ± 0.50 (0.181 ± 0.020) | | | | | | | | 4.60 ± 0.50 (0.181 ± 0.020) | | | | | | | | | |
| W) Width mm (in.) | 1.25 ± 0.20 (0.049 ± 0.008) | | | 1.60 ± 0.30/-0.10 (0.063 ± 0.012/-0.004) | | | | | 2.50 ± 0.30 (0.098 ± 0.012) | | | | | 2.00 ± 0.20 (0.079 ± 0.008) | | | | | | | | 3.20 ± 0.30 (0.126 ± 0.012) | | | | | | | | | |
| (T) Thickness mm (in.) | 1.35 (0.053) | | | 1.80 (0.071) | | | | | 2.80 (0.110) | | | | | 2.20 (0.087) | | | | | | | | 2.80 (0.110) | | | | | | | | | |
| (t) Terminal mm max | 0.50 ± 0.20 (0.020 ± 0.008) | | | 0.60 ± 0.20 (0.024 ± 0.008) | | | | | 0.75 ± 0.35 (0.030 ± 0.014) | | | | | 0.75 ± 0.35 (0.030 ± 0.014) | | | | | | | | 0.75 ± 0.35 (0.030 ± 0.014) | | | | | | | | | |
| Voltage (V) | 600 | 630 | 1000 | 600 | 630 | 1000 | 1500 | 2000 | 600 | 630 | 1000 | 1500 | 2000 | 600 | 630 | 1000 | 1500 | 2000 | 2500 | 3000 | 4000 | 600 | 630 | 1000 | 1500 | 2000 | 2500 | 3000 | 4000 | | |
| Cap (pF) | 1.5 | 1R5 | A | A | X | X | X | X | X | X | | | | | | | | | | | | | | | | | | | | | |
| | 1.8 | 1R8 | A | A | X | X | X | X | X | X | | | | | | | | | | | | | | | | | | | | | |
| | 2.2 | 2R2 | A | A | X | X | X | X | X | X | | | | | | | | | | | | | | | | | | | | | |
| | 2.7 | 2R7 | A | A | X | X | X | X | X | X | | | | | | | | | | | | | | | | | | | | | |
| | 3.3 | 3R3 | A | A | X | X | X | X | X | X | | | | | | | | | | | | | | | | | | | | | |
| | 3.9 | 3R9 | A | A | X | X | X | X | X | X | | | | | | | | | | | | | | | | | | | | | |
| | 4.7 | 4R7 | A | A | X | X | X | X | X | X | | | | | | | | | | | | | | | | | | | | | |
| | 5.6 | 5R6 | A | A | X | X | X | X | X | X | | | | | | | | | | | | | | | | | | | | | |
| | 6.8 | 6R8 | A | A | X | X | X | X | X | X | | | | | | | | | | | | | | | | | | | | | |
| | 8.2 | 8R2 | A | A | X | X | X | X | X | X | | | | | | | | | | | | | | | | | | | | | |
| | 10 | 100 | A | A | A | X | X | X | X | X | C | C | D | D | D | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | E |
| | 12 | 120 | A | A | A | X | X | X | X | X | C | C | D | D | D | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | E |
| | 15 | 150 | A | A | A | X | X | X | X | X | C | C | D | D | D | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | E |
| | 18 | 180 | A | A | A | X | X | X | X | X | C | C | D | D | D | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | E |
| | 22 | 220 | A | A | A | X | X | X | X | X | C | C | D | D | D | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | E |
| | 27 | 270 | A | A | A | X | X | X | X | X | C | C | D | D | D | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | E |
| | 33 | 330 | A | A | A | X | X | X | D | D | C | C | D | D | D | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | E |
| | 39 | 390 | A | A | A | X | X | X | D | D | C | C | D | D | D | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | E |
| | 47 | 470 | A | A | A | X | X | M | D | D | C | C | D | D | D | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | E |
| | 56 | 560 | A | A | A | X | X | M | C | C | C | C | D | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | F |
| | 68 | 680 | A | A | A | X | X | M | C | C | C | C | D | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | F |
| | 82 | 820 | X | X | X | X | X | C | C | C | C | C | D | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | F |
| | 100 | 101 | X | X | X | X | X | C | C | C | C | C | C | C | C | C | C | C | C | C | F | F | | | | | | | | | F |
| | 120 | 121 | C | C | C | X | X | C | E | E | C | C | C | C | C | C | C | C | C | C | F | F | | | | | | | | | G |
| | 150 | 151 | C | C | C | X | X | C | E | E | C | C | C | E | E | C | C | C | F | F | F | F | | | | | | | | | G |
| | 180 | 181 | C | C | C | X | X | E | E | E | C | C | E | E | E | C | C | C | F | F | F | F | | | | | | | | | G |
| | 220 | 221 | C | C | C | X | X | E | E | E | C | C | E | E | E | C | C | C | F | F | F | F | | | | | | | | | G |
| | 270 | 271 | C | C | C | C | C | E | E | E | C | C | E | E | E | C | C | C | F | F | F | F | | | | | | | | | G |
| | 330 | 331 | C | C | C | C | C | E | E | E | C | C | E | E | E | C | C | C | F | F | F | F | | | | | | | | | G |
| | 390 | 391 | C | C | C | C | C | E | E | E | C | C | E | E | E | C | C | C | F | F | F | F | | | | | | | | | G |
| | 470 | 471 | C | C | C | C | C | E | E | E | C | C | E | E | E | C | C | C | F | F | F | F | | | | | | | | | G |
| | 560 | 561 | C | C | C | C | C | E | E | E | C | C | E | E | E | C | C | C | F | F | F | F | | | | | | | | | G |
| | 680 | 681 | C | C | C | C | C | E | E | E | C | C | E | F | F | C | C | C | F | F | F | F | | | | | | | | | G |
| | 750 | 751 | C | C | C | E | E | E | E | E | C | C | E | G | G | C | C | C | F | F | F | F | | | | | | | | | G |
| | 820 | 821 | C | C | C | E | E | E | E | E | C | C | E | G | G | C | C | C | F | E | E | E | | | | | | | | | G |
| | 1000 | 102 | | | | E | E | E | E | E | C | C | E | | | C | C | C | F | E | E | E | | | | | | | | | G |
| | 1200 | 122 | | | | E | E | E | E | E | C | C | E | | | E | E | F | E | E | E | | | | | | | | | | G |
| | 1500 | 152 | | | | E | E | E | E | E | C | C | G | | | E | E | F | | | | | | | | | | | | | G |
| | 1800 | 182 | | | | E | E | E | E | E | C | C | G | | | E | E | F | | | | | | | | | | | | | G |
| | 2200 | 222 | | | | E | E | E | E | E | E | E | | | | E | E | | | | | | | | | | | | | | G |
| | 2700 | 272 | | | | E | E | E | E | E | E | E | | | | E | E | | | | | | | | | | | | | | G |
| | 3300 | 332 | | | | E | E | E | E | E | E | E | | | | E | E | | | | | | | | | | | | | | G |
| | 3900 | 392 | | | | E | E | E | E | E | E | E | | | | E | E | | | | | | | | | | | | | | G |
| | 4700 | 472 | | | | E | E | E | E | E | E | E | | | | E | E | | | | | | | | | | | | | | G |
| | 5600 | 562 | | | | E | E | E | E | E | E | E | | | | E | E | | | | | | | | | | | | | | G |
| | 6800 | 682 | | | | E | E | E | E | E | E | E | | | | F | F | | | | | | | | | | | | | | G |
| | 8200 | 822 | | | | E | E | E | E | E | E | E | | | | F | F | | | | | | | | | | | | | | G |
| Cap (µF) | 0.010 | 103 | | | | E | E | E | E | E | E | E | | | | E | E | | | | | | | | | | | | | | G |
| | 0.012 | 123 | | | | E | E | E | E | E | E | E | | | | F | F | | | | | | | | | | | | | | G |
| | 0.015 | 153 | | | | E | E | E | E | E | E | E | | | | G | G | | | | | | | | | | | | | | G |
| | 0.018 | 183 | | | | E | E | E | E | E | E | E | | | | G | G | | | | | | | | | | | | | | G |
| | 0.022 | 223 | | | | E | E | E | E | E | E | E | | | | | | | | | | | | | | | | | | | G |
| | 0.033 | 333 | | | | E | E | E | E | E | E | E | | | | | | | | | | | | | | | | | | | G |
| | 0.047 | 473 | | | | E | E | E | E | E | E | E | | | | | | | | | | | | | | | | | | | G |
| | 0.056 | 563 | | | | E | E | E | E | E | E | E | | | | | | | | | | | | | | | | | | | G |
| | 0.068 | 683 | | | | E | E | E | E | E | E | E | | | | | | | | | | | | | | | | | | | G |
| | 0.100 | 104 | | | | E | E | E | E | E | E | E | | | | | | | | | | | | | | | | | | | G |
| Voltage (V) | 600 | 630 | 1000 | 600 | 630 | 1000 | 1500 | 2000 | 600 | 630 | 1000 | 1500 | 2000 | 600 | 630 | 1000 | 1500 | 2000 | 2500 | 3000 | 4000 | 600 | 630 | 1000 | 1500 | 2000 | 2500 | 3000 | 4000 | | |
| Case Size | 0805 | | | 1206 | | | | | 1210 | | | | | 1808 | | | | | | | | 1812 | | | | | | | | | |

High Voltage MLC Chips

FLEXITERM® - 600V to 5000V Applications



NP0 (C0G) CAPACITANCE RANGE

PREFERRED SIZES ARE SHADED

| Case Size | 1825 | | | | | | | | 2220 | | | | | | | | 2225 | | | | | | | | | |
|---------------|--------------------------------|-----|------|------|------|------|------|------|--------------------------------|-----|------|------|------|------|------|------|--------------------------------|-----|-----|------|------|------|------|------|------|------|
| Soldering | Reflow Only | | | | | | | | Reflow Only | | | | | | | | Reflow Only | | | | | | | | | |
| (L) Length | 4.60 ± 0.50 (0.181 ± 0.020) | | | | | | | | 5.70 ± 0.50 (0.224 ± 0.020) | | | | | | | | 5.72 ± 0.25 (0.225 ± 0.010) | | | | | | | | | |
| (W) Width | 6.30 ± 0.40 (0.248 ± 0.016) | | | | | | | | 5.00 ± 0.40 (0.197 ± 0.016) | | | | | | | | 6.35 ± 0.25 (0.250 ± 0.010) | | | | | | | | | |
| (T) Thickness | 3.40 (0.134) | | | | | | | | 3.40 (0.134) | | | | | | | | 3.40 (0.134) | | | | | | | | | |
| (t) Terminal | 0.75 ± 0.35 (0.030 ± 0.014) | | | | | | | | 0.85 ± 0.35 (0.033 ± 0.014) | | | | | | | | 0.85 ± 0.35 | | | | | | | | | |
| Voltage (V) | 600 | 630 | 1000 | 1500 | 2000 | 2500 | 3000 | 4000 | 600 | 630 | 1000 | 1500 | 2000 | 2500 | 3000 | 4000 | 5000 | 600 | 630 | 1000 | 1500 | 2000 | 2500 | 3000 | 4000 | 5000 |
| Cap (pF) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.5 1R5 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.8 1R8 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.2 2R2 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.7 2R7 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3.3 3R3 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3.9 3R9 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4.7 4R7 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5.6 5R6 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6.8 6R8 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8.2 8R2 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 100 | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | F | F |
| 12 120 | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | F | F |
| 15 150 | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | F | F |
| 18 180 | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | F | F |
| 22 220 | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | F | F |
| 27 270 | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | F | F |
| 33 330 | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | F | F |
| 39 390 | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | F | F |
| 47 470 | E | E | E | E | E | E | E | F | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | F | G |
| 56 560 | E | E | E | E | E | E | E | F | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | F | G |
| 68 680 | E | E | E | E | E | E | E | F | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | F | G |
| 82 820 | E | E | E | E | E | E | E | F | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | F | G |
| 100 101 | E | E | E | E | E | E | E | F | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | G | G |
| 120 121 | E | E | E | E | E | E | E | F | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | G | G |
| 150 151 | E | E | E | E | E | E | E | F | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | G | G |
| 180 181 | E | E | E | E | E | E | E | F | E | E | E | E | E | E | E | F | F | E | E | E | E | E | E | E | G | G |
| 220 221 | E | E | E | E | E | E | E | F | E | E | E | E | E | E | E | F | F | E | E | E | E | E | E | E | G | G |
| 270 271 | E | E | E | E | E | E | E | F | E | E | E | E | E | E | E | | | E | E | E | E | E | E | E | G | G |
| 330 331 | E | E | E | E | E | E | E | F | E | E | E | E | E | E | E | | | E | E | E | E | E | E | E | G | |
| 390 391 | E | E | E | E | E | E | E | | E | E | E | E | E | E | E | | | E | E | E | E | E | E | E | G | |
| 470 471 | E | E | E | E | E | E | E | | E | E | E | E | E | E | E | | | E | E | E | E | E | E | E | G | |
| 560 561 | E | E | E | E | E | E | E | | E | E | E | E | E | E | E | | | E | E | E | E | E | E | E | G | |
| 680 681 | E | E | E | E | E | F | F | | E | E | E | E | F | F | | | E | E | E | E | E | E | E | E | | |
| 750 751 | E | E | E | E | E | F | F | | E | E | E | E | F | F | | | E | E | E | E | E | E | E | E | | |
| 820 821 | E | E | E | E | E | F | F | | E | E | E | E | F | F | | | E | E | E | E | E | F | E | E | | |
| 1000 102 | E | E | E | E | E | F | F | | E | E | E | E | F | F | | | E | E | E | E | E | E | E | E | | |
| 1200 122 | E | E | E | E | E | G | G | | E | E | E | E | G | G | | | E | E | E | E | E | F | F | E | | |
| 1500 152 | E | E | E | F | F | G | G | | E | E | E | F | F | G | G | | | E | E | E | E | E | F | F | | |
| 1800 182 | E | E | E | F | F | G | G | | E | E | E | F | F | G | G | | | E | E | E | E | E | G | G | | |
| 2200 222 | E | E | E | G | G | | | | E | E | E | G | G | | | | | E | E | E | E | E | | | | |
| 2700 272 | E | E | E | G | G | | | | E | E | E | G | G | | | | | E | E | E | F | F | | | | |
| 3300 332 | E | E | E | G | G | | | | E | E | E | G | G | | | | | E | E | E | F | F | | | | |
| 3900 392 | E | E | E | G | G | | | | E | E | E | G | G | | | | | E | E | E | G | G | | | | |
| 4700 472 | E | E | E | G | G | | | | E | E | E | G | G | | | | | F | F | F | G | G | | | | |
| 5600 562 | F | F | F | G | G | | | | F | F | F | | | | | | | F | F | F | G | G | | | | |
| 6800 682 | F | F | F | | | | | | F | F | F | | | | | | | F | F | F | G | G | | | | |
| 8200 822 | G | G | G | | | | | | G | G | G | | | | | | | G | G | G | | | | | | |
| Cap (µF) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.010 103 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.012 123 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.015 153 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.018 183 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.022 223 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.033 333 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.047 473 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.056 563 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.068 683 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.100 104 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Voltage (V) | 600 | 630 | 1000 | 1500 | 2000 | 2500 | 3000 | 4000 | 600 | 630 | 1000 | 1500 | 2000 | 2500 | 3000 | 4000 | 5000 | 600 | 630 | 1000 | 1500 | 2000 | 2500 | 3000 | 4000 | 5000 |
| Case Size | 1825 | | | | | | | | 2220 | | | | | | | | 2225 | | | | | | | | | |

| Letter | A | C | E | F | G | X |
|-----------|---------|---------|---------|---------|---------|---------|
| Max. | 0.813 | 1.448 | 1.803 | 2.210 | 2.794 | 0.940 |
| Thickness | (0.032) | (0.057) | (0.071) | (0.087) | (0.110) | (0.037) |

NOTE: Contact factory for non-specified capacitance



High Voltage MLC Chips

FLEXITERM® - 600V to 5000V Applications



X7R Dielectric

Performance Characteristics

| | |
|---|--|
| Capacitance Range | 10 pF to 0.82 µF (25°C, 1.0 ±0.2 Vrms at 1kHz) |
| Capacitance Tolerances | ±10%; ±20%; +80%, -20% |
| Dissipation Factor | 2.5% max. (+25°C, 1.0 ±0.2 Vrms, 1kHz) |
| Operating Temperature Range | -55°C to +125°C |
| Temperature Characteristic | ±15% (0 VDC) |
| Voltage Ratings | 600, 630, 1000, 1500, 2000, 2500, 3000, 4000 & 5000 VDC (+125°C) |
| Insulation Resistance (+25°C, at 500 VDC) | 100K MΩ min. or 1000 MΩ - µF min., whichever is less |
| Insulation Resistance (+125°C, at 500 VDC) | 10K MΩ min. or 100 MΩ - µF min., whichever is less |
| Dielectric Strength | Minimum 120% rated voltage for 5 seconds at 50 mA max. current |

X7R CAPACITANCE RANGE

PREFERRED SIZES ARE SHADED

| Case Size Soldering | 0805 | | | | | 1206 | | | | | 1210 | | | | | 1808 | | | | | | | | 1812 | | | | | | | |
|------------------------|------------------------------|-----|------|---|---|---|-----|------|------|------|------------------------------|-----|------|------|------|------------------------------|-----|------|------|------|------|------|------|------------------------------|-----|------|------|------|------|------|------|
| | Reflow/Wave | | | | | Reflow/Wave | | | | | Reflow Only | | | | | Reflow Only | | | | | | | | Reflow Only | | | | | | | |
| (L) Length | 2.10 ±0.20 (0.083 ±0.008) | | | | | 3.30 ±0.30 (0.130 ±0.012) | | | | | 3.30 ±0.40 (0.130 ±0.016) | | | | | 4.60 ±0.50 (0.181 ±0.020) | | | | | | | | 4.60 ±0.50 (0.181 ±0.020) | | | | | | | |
| W) Width | 1.25 ±0.20 (0.049 ±0.008) | | | | | 1.60 +0.30/-0.10 (0.063 +0.012/-0.004) | | | | | 2.50 ±0.30 (0.098 ±0.012) | | | | | 2.00 ±0.20 (0.079 ±0.008) | | | | | | | | 3.20 ±0.30 (0.126 ±0.012) | | | | | | | |
| (T) Thickness | 1.35 (0.053) | | | | | 1.80 (0.071) | | | | | 2.80 (0.110) | | | | | 2.20 (0.087) | | | | | | | | 2.80 (0.110) | | | | | | | |
| (t) Terminal | 0.50 ±0.20 (0.020 ±0.008) | | | | | 0.60 ±0.20 (0.024 ±0.008) | | | | | 0.75 ±0.35 (0.030 ±0.014) | | | | | 0.75 ±0.35 (0.030 ±0.014) | | | | | | | | 0.75 ±0.35 (0.030 ±0.014) | | | | | | | |
| Voltage (V) | 600 | 630 | 1000 | | | 600 | 630 | 1000 | 1500 | 2000 | 600 | 630 | 1000 | 1500 | 2000 | 600 | 630 | 1000 | 1500 | 2000 | 2500 | 3000 | 4000 | 600 | 630 | 1000 | 1500 | 2000 | 2500 | 3000 | 4000 |
| Cap (pF) 100 101 | X | X | C | C | C | C | C | E | E | E | E | E | E | E | E | E | E | E | E | E | E | F | | | | | | | | | |
| 120 121 | X | X | C | C | C | C | E | E | E | E | E | E | E | E | E | | | | | | | | | | | | | | | | |
| 150 151 | X | X | C | C | C | C | E | E | E | E | E | E | E | E | E | | | | | | | | | | | | | | | | |
| 180 181 | X | X | C | C | C | C | E | E | E | E | E | E | E | E | E | | | | | | | | | | | | | | | | |
| 220 221 | X | X | C | C | C | C | E | E | E | E | E | E | E | E | E | | | | | | | | | | | | | | | | |
| 270 271 | X | X | C | C | C | C | E | E | E | E | E | E | E | E | E | | | | | | | | | | | E | E | E | E | E | |
| 330 331 | X | X | C | C | C | C | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | F | | | E | E | E | E | E | |
| 390 391 | X | X | C | C | C | C | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | F | | | E | E | E | E | E | |
| 470 471 | X | X | C | C | C | C | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | F | | | E | E | E | E | E | E |
| 560 561 | X | X | C | C | C | C | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | F | F | | | E | E | E | E | E | E |
| 680 681 | X | X | C | C | C | C | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | F | F | | | E | E | E | E | E | F |
| 750 751 | X | X | C | C | C | C | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | F | F | | | E | E | E | E | E | F |
| 820 821 | X | X | C | C | C | C | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | F | F | | | E | E | E | E | E | F |
| 1000 102 | X | X | C | C | C | C | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | F | F | | | E | E | E | E | E | F |
| 1200 122 | X | X | C | C | C | C | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | F | F | | | F | F | F | F | F | F |
| 1500 152 | X | X | C | C | C | C | E | E | E | E | E | E | E | E | E | E | E | E | E | E | E | F | F | | | F | F | F | F | F | G |
| 1800 182 | X | X | | | | C | C | E | E | E | E | E | E | E | E | E | E | E | E | E | E | F | F | | | F | F | F | F | F | G |
| 2200 222 | X | X | | | | C | C | E | E | E | E | E | E | E | E | E | E | E | E | E | E | F | F | F | | F | F | F | F | F | G |
| 2700 272 | X | X | | | | C | C | E | E | | E | E | E | F | E | E | E | E | E | F | F | | | | | F | F | F | F | F | G |
| 3300 332 | X | X | | | | C | C | E | | | E | E | E | F | E | E | E | E | F | F | | | | | | F | F | F | F | F | G |
| 3900 392 | X | X | | | | C | C | E | | | E | E | E | G | | E | E | E | F | | | | | | | F | F | F | F | F | G |
| 4700 472 | X | X | | | | C | C | E | | | E | E | E | G | | E | E | E | F | | | | | | | F | F | F | F | F | G |
| 5600 562 | X | X | | | | C | C | E | | | E | E | E | G | | E | E | E | F | | | | | | | F | F | F | G | G | |
| 6800 682 | X | X | | | | C | C | E | | | E | E | E | | | E | E | E | F | | | | | | | F | F | F | G | G | |
| 8200 822 | X | X | | | | C | C | E | | | E | E | E | | | E | E | E | | | | | | | | F | F | E | G | G | |
| Cap (µF) 0.010 103 | C | C | | | | C | C | E | | | E | E | E | | | E | E | E | | | | | | | | F | F | F | G | G | |
| 0.015 153 | C | C | | | | E | E | E | | | E | E | E | | | F | F | F | | | | | | | | F | F | F | G | | |
| 0.018 183 | C | C | | | | E | E | | | | E | E | E | | | F | F | F | | | | | | | | F | F | G | | | |
| 0.022 223 | C | C | | | | E | E | | | | E | E | E | | | F | F | | | | | | | | | F | F | G | | | |
| 0.027 273 | | | | | | E | E | | | | E | E | | | | F | F | | | | | | | | | F | F | G | | | |
| 0.033 333 | | | | | | E | E | | | | E | E | | | | F | F | | | | | | | | | F | F | G | | | |
| 0.039 393 | | | | | | | | | | | E | E | | | | F | F | | | | | | | | | F | F | G | | | |
| 0.047 473 | | | | | | | | | | | E | E | | | | F | F | | | | | | | | | F | F | G | | | |
| 0.056 563 | | | | | | | | | | | F | F | | | | F | F | | | | | | | | | F | F | | | | |
| 0.068 683 | | | | | | | | | | | F | F | | | | F | F | | | | | | | | | F | F | | | | |
| 0.082 823 | | | | | | | | | | | F | F | | | | F | F | | | | | | | | | F | F | | | | |
| 0.100 104 | | | | | | | | | | | F | F | | | | | | | | | | | | | | F | F | | | | |
| 0.150 154 | | | | | | | | | | | | | | | | | | | | | | | | | | G | G | | | | |
| 0.220 224 | | | | | | | | | | | | | | | | | | | | | | | | | | G | G | | | | |
| 0.270 274 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.330 334 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.390 394 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.470 474 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.560 564 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.680 684 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.820 824 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.000 105 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Voltage (V) | 600 | 630 | 1000 | | | 600 | 630 | 1000 | 1500 | 2000 | 600 | 630 | 1000 | 1500 | 2000 | 600 | 630 | 1000 | 1500 | 2000 | 2500 | 3000 | 4000 | 600 | 630 | 1000 | 1500 | 2000 | 2500 | 3000 | 4000 |
| Case Size | 0805 | | | | | 1206 | | | | | 1210 | | | | | 1808 | | | | | | | | 1812 | | | | | | | |



The Important Information/Disclaimer is incorporated in the catalog where these specifications came from or available online at www.avx.com/disclaimer/ by reference and should be reviewed in full before placing any order.

High Voltage MLC Chips

FLEXITERM® - 600V to 5000V Applications



X7R CAPACITANCE RANGE

PREFERRED SIZES ARE SHADED

| Case Size | 1825 | | | | | | | | 2220 | | | | | | | | 2225 | | | | | | | | 3640 | | | | | | | | | | |
|-------------------|------------------------------|-----|------|------|------|------|------|------|------------------------------|-----|------|------|------|------|------|------|--------------------------------|-----|-----|------|------|------|------|------|--------------------------------|------|-----|-----|------|------|------|------|------|------|------|
| Soldering | Reflow Only | | | | | | | | Reflow Only | | | | | | | | Reflow Only | | | | | | | | Reflow Only | | | | | | | | | | |
| (L) Length | 4.60 0.50 (0.181 0.020) | | | | | | | | 5.70 0.50 (0.224 0.020) | | | | | | | | 5.72 ± 0.25 (0.225 ± 0.010) | | | | | | | | 9.14 ± 0.25 (0.360 ± 0.010) | | | | | | | | | | |
| (W) Width | 6.30 0.40 (0.248 ± 0.016) | | | | | | | | 5.00 0.40 (0.197 0.016) | | | | | | | | 6.35 ± 0.25 (0.250 ± 0.010) | | | | | | | | 5.72 ± 0.25 (0.225 ± 0.010) | | | | | | | | | | |
| (T) Thickness | 3.40 (0.134) | | | | | | | | 3.40 (0.134) | | | | | | | | 2.54 (0.100) | | | | | | | | 2.54 (0.100) | | | | | | | | | | |
| (t) Terminal | 0.75 0.35 (0.030 ± 0.014) | | | | | | | | 0.85 0.35 (0.033 ± 0.014) | | | | | | | | 0.85 ± 0.35 (0.033 ± 0.014) | | | | | | | | 0.76 (0.030) 1.52 (0.062) | | | | | | | | | | |
| Voltage (V) | 600 | 630 | 1000 | 1500 | 2000 | 2500 | 3000 | 4000 | 600 | 630 | 1000 | 1500 | 2000 | 2500 | 3000 | 4000 | 5000 | 600 | 630 | 1000 | 1500 | 2000 | 2500 | 3000 | 4000 | 5000 | 600 | 630 | 1000 | 1500 | 2000 | 2500 | 3000 | 4000 | 5000 |
| Cap (pF) 100 101 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 120 121 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 150 151 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 180 181 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 220 221 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 270 271 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 330 331 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 390 391 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 470 471 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 560 561 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 680 681 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 750 751 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 820 821 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1000 102 | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | | |
| 1200 122 | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | | |
| 1500 152 | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | | |
| 1800 182 | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | | |
| 2200 222 | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | | |
| 2700 272 | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | | |
| 3300 332 | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | | |
| 3900 392 | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | | |
| 4700 472 | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | | |
| 5600 562 | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | | |
| 6800 682 | F | F | F | G | G | G | G | G | F | F | F | F | F | F | G | G | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | | |
| 8200 822 | F | F | F | G | G | G | G | G | F | F | F | F | F | F | G | G | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | | |
| Cap (uF) 0010 103 | F | F | F | G | G | G | G | G | F | F | F | F | F | F | G | G | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | | |
| 0015 153 | F | F | F | G | G | G | G | G | F | F | F | F | F | F | G | G | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | | |
| 0018 183 | F | F | F | G | G | G | G | G | F | F | F | F | F | F | G | G | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | | |
| 0022 223 | F | F | F | G | G | G | G | G | F | F | F | F | F | F | G | G | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | | |
| 0027 273 | F | F | F | G | G | G | G | G | F | F | F | F | F | F | G | G | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | | |
| 0033 333 | F | F | F | G | G | G | G | G | F | F | F | F | F | F | G | G | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | | |
| 0039 393 | F | F | F | G | G | G | G | G | F | F | F | F | F | F | G | G | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | | |
| 0047 473 | F | F | F | P | P | P | P | P | F | F | F | F | F | F | G | G | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | | |
| 0056 563 | F | F | F | G | G | G | G | G | F | F | F | F | F | F | G | G | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | | |
| 0068 683 | F | F | F | G | G | G | G | G | F | F | F | F | F | F | G | G | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | | |
| 0082 823 | F | F | F | G | G | G | G | G | F | F | F | F | F | F | G | G | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | | |
| 0100 104 | F | F | F | G | G | G | G | G | F | F | F | F | F | F | G | G | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | | |
| 0150 154 | F | F | F | G | G | G | G | G | F | F | F | F | F | F | G | G | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | | |
| 0220 224 | F | F | F | G | G | G | G | G | F | F | F | F | F | F | G | G | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | | |
| 0270 274 | F | F | F | G | G | G | G | G | F | F | F | F | F | F | G | G | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | | |
| 0330 334 | F | F | F | G | G | G | G | G | F | F | F | F | F | F | G | G | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | | |
| 0390 394 | F | F | F | G | G | G | G | G | F | F | F | F | F | F | G | G | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | | |
| 0470 474 | F | F | F | G | G | G | G | G | F | F | F | F | F | F | G | G | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | | |
| 0560 564 | G | G | G | G | G | G | G | G | F | F | F | F | F | F | G | G | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | | |
| 0680 684 | G | G | G | G | G | G | G | G | F | F | F | F | F | F | G | G | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | | |
| 0820 824 | G | G | G | G | G | G | G | G | F | F | F | F | F | F | G | G | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | | |
| 1000 105 | G | G | G | G | G | G | G | G | F | F | F | F | F | F | G | G | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | F | | |
| Voltage (V) | 600 | 630 | 1000 | 1500 | 2000 | 2500 | 3000 | 4000 | 600 | 630 | 1000 | 1500 | 2000 | 2500 | 3000 | 4000 | 5000 | 600 | 630 | 1000 | 1500 | 2000 | 2500 | 3000 | 4000 | 5000 | 600 | 630 | 1000 | 1500 | 2000 | 2500 | 3000 | 4000 | 5000 |
| Case Size | 1825 | | | | | | | | 2220 | | | | | | | | 2225 | | | | | | | | 3640 | | | | | | | | | | |

| Letter | A | C | E | F | G | P | X |
|----------------|------------------|------------------|-------------------|-------------------|------------------|------------------|------------------|
| Max. Thickness | 0.813 (0.032) | 1.448 (0.057) | 1.8034 (0.071) | 2.2098 (0.087) | 2.794 (0.110) | 3.048 (0.120) | 0.940 (0.037) |

NOTE: Contact factory for non-specified capacitance values