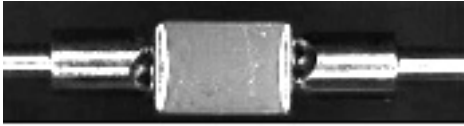
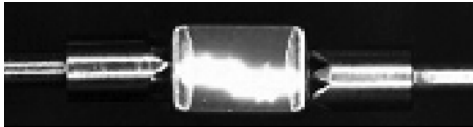


Surface Mount Multilayer Ceramic Chip Capacitors Prohibit Surface Arc-over in High Voltage Applications



HVArc Guard® Capacitor with no Surface Arc-over



Standard Capacitor with Surface Arc-over

FEATURES

For this Worldwide Patented Technology

- MLCC that protects against surface arc-over
- Surface mount, wet build process
- Reliable Noble Metal Electrode (NME) system
- Higher capacitances and smaller case sizes that save board space, as compared to standard high voltage MLCCs
- Voltage breakdowns as much as double of competitor products
- Excellent high voltage performance
- Available with polymer termination for increase resistance to board flex cracking. Please contact factory for availability.
- Speciality: High voltage applications
- Halogen-free according to IEC 61249-2-21



RoHS
COMPLIANT
HALOGEN
FREE

APPLICATIONS

- Power Supplies
- DC-to-DC converters (Buck and Boost)
- Voltage multipliers for flyback converters
- Lighting and AC power applications contact:
mlcc@vishay.com

ELECTRICAL SPECIFICATIONS

Note:

Electrical characteristics at + 25 °C unless otherwise specified

Operating Temperature: - 55 °C to + 125 °C

Capacitance Range: 100 pF to 0.27 µF

Voltage Range: 250 V_{DC} to 1000 V_{DC}

Temperature Coefficient of Capacitance (TCC):
± 15 % from - 55 °C to + 125 °C, with 0 V_{dc} applied

Dissipation Factor:
2.5 % max. at 1.0 V_{RMS} and 1 kHz

Aging Rate: 1 % maximum per decade

Insulation Resistance (IR):

At + 25 °C and rated voltage 100 000 MΩ minimum or 1000 ΩF, whichever is less

At + 125 °C and rated voltage 10 000 MΩ minimum or 100 ΩF, whichever is less

Dielectric Strength Test:

Performed per method 103 of EIA 198-2-E.

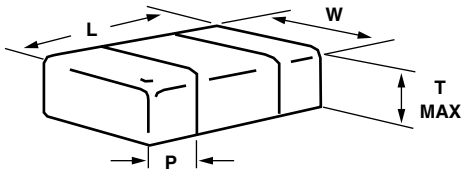
Applied test voltages:

≤ 500 V_{DC}-rated: 200 % of rated voltage

630 V_{DC}-rated: 150 % of rated voltage

1000 V_{DC}-rated: 120 % of rated voltage

DIMENSIONS in inches [millimeters]



| PART ORDERING NUMBER | LENGTH (L) | WIDTH (W) | MAXIMUM THICKNESS (T) | TERMINATION PAD (P) | |
|----------------------|--------------------------------|--------------------------------|-----------------------|---------------------|--------------|
| | | | | MINIMUM | MAXIMUM |
| VJ0805 | 0.079 ± 0.008 [2.00 ± 0.20] | 0.049 ± 0.008 [1.25 ± 0.20] | 0.057 [1.45] | 0.010 [0.25] | 0.028 [0.71] |
| VJ1206 | 0.126 ± 0.008 [3.20 ± 0.20] | 0.063 ± 0.008 [1.60 ± 0.20] | 0.067 [1.70] | 0.010 [0.25] | 0.030 [0.76] |
| VJ1210 | 0.126 ± 0.008 [3.20 ± 0.20] | 0.098 ± 0.008 [2.50 ± 0.20] | 0.067 [1.70] | 0.010 [0.25] | 0.030 [0.76] |
| VJ1808 | 0.177 ± 0.010 [4.50 ± 0.25] | 0.080 ± 0.010 [2.03 ± 0.25] | 0.067 [1.70] | 0.010 [0.25] | 0.030 [0.76] |
| VJ1812 | 0.177 ± 0.010 [4.50 ± 0.25] | 0.126 ± 0.008 [3.20 ± 0.20] | 0.086 [2.18] | 0.010 [0.25] | 0.030 [0.76] |

ORDERING INFORMATION

| VJ1812 | Y | 102 | J | X | P | A | T | 5Z |
|--------------------------------------|------------|---|---------------------------------------|---|---|-----------------|--|-------------------------------------|
| CASE CODE | DIELECTRIC | CAPACITANCE NOMINAL CODE | CAPACITANCE TOLERANCE | TERMINATION | DC VOLTAGE RATING ⁽¹⁾ | MARKING | PACKAGING | PROCESS CODE ⁽²⁾ |
| 0805 1206 1210 1808 1812 | Y = X7R | Expressed in picofarads (pF). The first two digits are significant, the third is a multiplier. Examples: 223 = 22 000 pF | J = ± 5 % K = ± 10 % M = ± 20 % | X = Ni barrier 100 % tin plated F = Silver Palladium B = Polymer 100 % tin plated matte finish N = Non-magnetic | P = 250 V E = 500 V L = 630 V G = 1000 V | A = Unmarked | C = 7" reel/ paper tape T = 7" reel/ plastic tape P = 11 1/4" reel/ paper tape R = 11 1/4" reel/ plastic tape | 5Z = HVArc Guard [®] |

Notes

⁽¹⁾ DC voltage rating should not be exceeded in application

⁽²⁾ Process code with 2 digits has to be added

- Lighting and AC power applications please contact: mlcc@vishay.com
- Polymer (B-termination) have increased dimensions:
1206 and smaller case sizes: Length 0.002" (0.05 mm)
1210 and larger case sizes: Length 0.004" (0.10 mm)



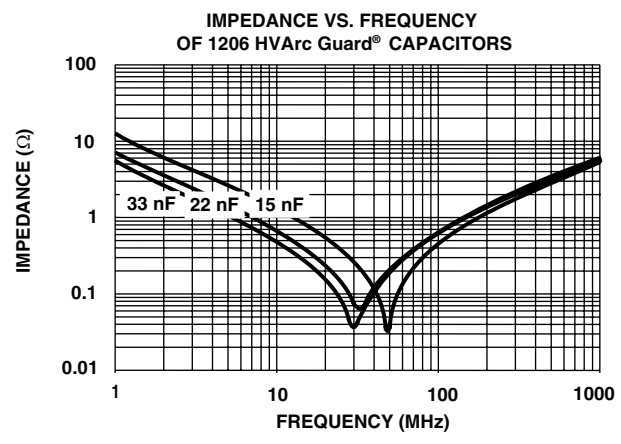
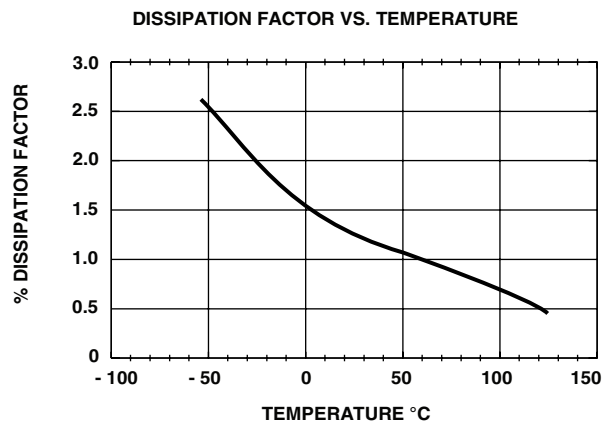
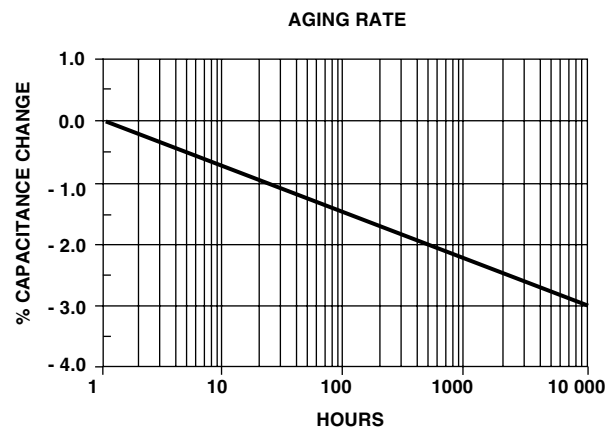
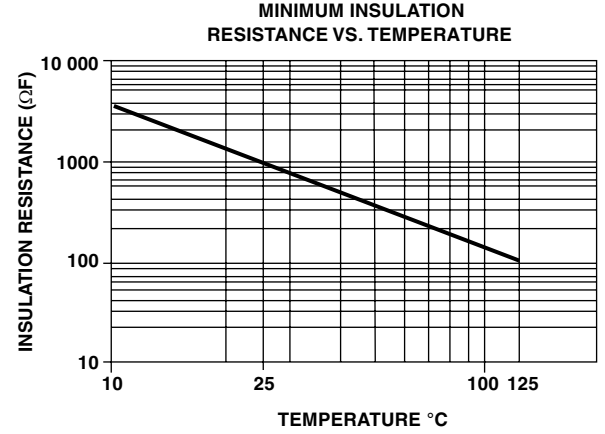
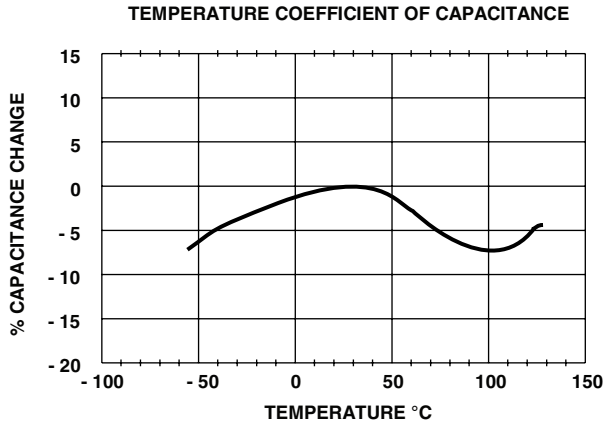
| HVARC GUARD® X7R CAPACITANCE RANGE | | | | | | | | | | | | | | | | | | | |
|------------------------------------|----------|------|------|------|-----|-----|------|------|-----|-----|------|------|-----|-----|------|------|-----|-----|------|
| EIA CODE | | 0805 | | 1206 | | | | 1210 | | | | 1808 | | | | 1812 | | | |
| VOLTAGE (V _{DC}) | | 630 | 1000 | 250 | 500 | 630 | 1000 | 250 | 500 | 630 | 1000 | 250 | 500 | 630 | 1000 | 250 | 500 | 630 | 1000 |
| VOLTAGE CODE | | L | G | P | E | L | G | P | E | L | G | P | E | L | G | P | E | L | G |
| CAP.CODE | CAP. | | | | | | | | | | | | | | | | | | |
| 101 | 100 pF | ** | ** | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 121 | 120 pF | ** | ** | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 151 | 150 pF | ** | ** | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 181 | 180 pF | ** | ** | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 221 | 220 pF | ** | ** | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 271 | 270 pF | ** | ** | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 331 | 330 pF | ** | ** | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 391 | 390 pF | ** | ** | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 471 | 470 pF | ** | ** | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 561 | 560 pF | ** | ** | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 681 | 680 pF | ** | ** | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 821 | 820 pF | ** | ** | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 102 | 1000 pF | ** | ** | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 122 | 1200 pF | ** | ** | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 152 | 1500 pF | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 182 | 1800 pF | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 222 | 2200 pF | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 272 | 2700 pF | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 332 | 3300 pF | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 392 | 3900 pF | | | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 472 | 4700 pF | | | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 562 | 5600 pF | | | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 682 | 6800 pF | | | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 822 | 8200 pF | | | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 103 | 0.01 µF | | | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 123 | 0.012 µF | | | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 153 | 0.015 µF | | | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 183 | 0.018 µF | | | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 223 | 0.022 µF | | | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 273 | 0.027 µF | | | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 333 | 0.033 µF | | | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 393 | 0.039 µF | | | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 473 | 0.047 µF | | | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| 563 | 0.056 µF | | | | | | | . | . | . | . | . | . | . | . | . | . | . | . |
| 683 | 0.068 µF | | | | | | | . | . | . | . | . | . | . | . | . | . | . | . |
| 823 | 0.082 µF | | | | | | | . | . | . | . | . | . | . | . | . | . | . | . |
| 104 | 0.10 µF | | | | | | | | | | | . | | | | . | . | | |
| 124 | 0.12 µF | | | | | | | | | | | | | | | . | . | | |
| 154 | 0.15 µF | | | | | | | | | | | | | | | . | . | | |
| 184 | 0.18 µF | | | | | | | | | | | | | | | . | . | | |
| 224 | 0.22 µF | | | | | | | | | | | | | | | . | . | | |
| 274 | 0.27 µF | | | | | | | | | | | | | | | . | . | | |
| 334 | 0.33 µF | | | | | | | | | | | | | | | . | . | | |

Notes

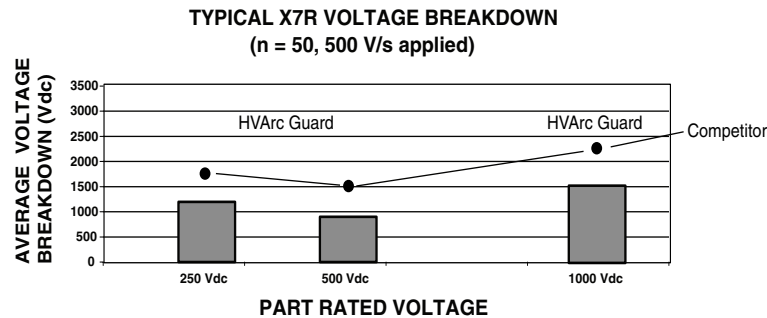
See soldering recommendations within this databook, or visit www.vishay.com/doc?45034

- Available in plastic carrier tape only
- Only available in paper carrier tape

HVARC GUARD[®] X7R DIELECTRIC - TYPICAL PARAMETERS



TYPICAL X7R VOLTAGE BREAKDOWN



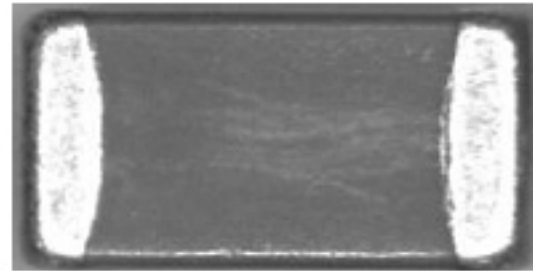
TYPICAL

Crack caused by surface arc from end termination to top electrode layer cause component failure



ARCING ON MLCCS (shown in polarized light)

Corona traces due to arc-over become conductive paths leading to component failure



STANDARD PACKAGING QUANTITIES

| | | 7" REEL QUANTITIES | | 11 1/4" AND 13" REEL QUANTITIES | |
|---------------------|-----------|---------------------------|-----------------------------|---------------------------------|-----------------------------|
| BODY SIZE | TAPE SIZE | PAPER TAPE PACKAGING CODE | PLASTIC TAPE PACKAGING CODE | PAPER TAPE PACKAGING CODE | PLASTIC TAPE PACKAGING CODE |
| 0805 | 8 mm | C: 3000 | T: 3000 | P: 10 000 | R: 10 000 |
| 1206 ⁽⁶⁾ | 8 mm | N/a | T: 2500 | N/a | R: 10 000 |
| 1210 ⁽⁶⁾ | 8 mm | N/a | T: 2500 | N/a | R: 10 000 |
| 1808 | 12 mm | N/a | T: 2000 | N/a | R: 10 000 |
| 1812 | 12 mm | N/a | T: 1000 | N/a | R: 4000 |

Notes

- (1) Vishay Vitramon uses embossed plastic carrier tape and punch paper carrier tape
- (2) Paper tape is not available for case sizes > 1206 or for component thickness > 0.035" [0.89 mm]
- (3) 11 1/4" reel is standard for large quantities. 13" is maybe used for large "T" dimension parts
- (4) REFERENCE: EIA Standard RS 481 - "Taping of Surface Mount Components for Automatic Placement"
- (5) N/a = Not available
- (6) Packaging quantity can vary with product thickness

Contact mlcc@vishay.com with respect to specific part number requirements



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All product specifications and data are subject to change without notice.

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