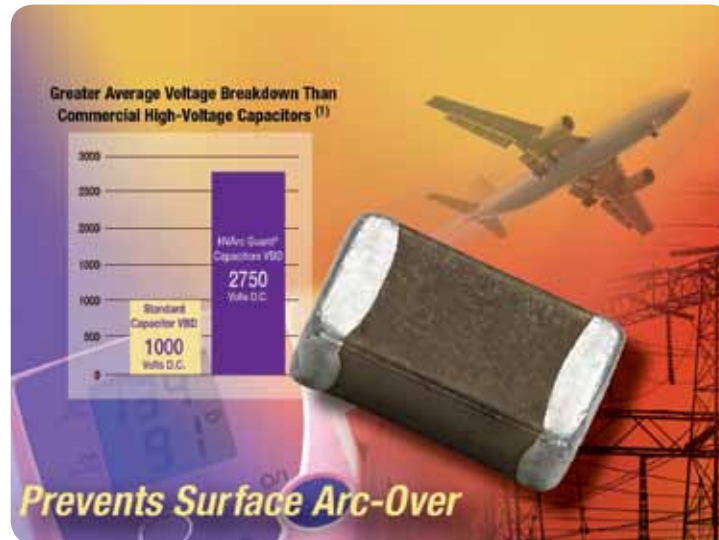


## HVArc Guard® High-Voltage, Surface-Mount Multilayer Ceramic Chip Capacitors



### KEY BENEFITS

- Average voltage breakdown (VBD) is typically twice that of standard commercial grade products
- Offer capacitance ranges of 10 pF to 0.27  $\mu$ F
- High capacitance and small case sizes save board space (compared to standard high-voltage MLCCs)
- Excellent reliability and high-voltage performance: rated for 250  $V_{DC}$  to 2500  $V_{DC}$
- Eliminate the need to encapsulate capacitors with a conformal coating
- Replaces wire-leaded, through-hole capacitors
- Available with polymer terminations

### APPLICATIONS

- Medical equipment and instrumentation
- Electronic transmissions
- DC electric motors
- High-voltage generators
- S/B lighting ballasts for compact florescent lighting and HID
- Power supplies

### RESOURCES

- Datasheet: HVArc Guard® - <http://www.vishay.com/doc?45197>
- For technical questions contact [mlcc@vishay.com](mailto:mlcc@vishay.com)
- Material categorization: For definitions of compliance please see <http://www.vishay.com/doc?99912>

Note

<sup>(1)</sup> 1206 case size, X7R dielectric, 33 nF, 500  $V_{DC}$  rated HVArc Guard® vs. commercial grade capacitor when tested in air, not covered in fluid or conformal coated.



One of the World's Largest Manufacturers of  
Discrete Semiconductors and Passive Components



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

**ELECTRICAL SPECIFICATIONS**

COG (NP0)
<b>GENERAL SPECIFICATION</b>
<b>Note</b> Electrical characteristics at +25 °C unless otherwise specified
<b>Operating Temperature:</b> -55 °C to +125 °C
<b>Capacitance Range:</b> 10 pF to 8.2 nF
<b>Voltage Range:</b> 1000 V <sub>DC</sub> to 2500 V <sub>DC</sub>
<b>Temperature Coefficient of Capacitance (TCC):</b> 0 ppm/°C ± 30 ppm/°C from -55 °C to +125 °C
<b>Dissipation Factor (DF):</b> 0.1 % maximum at 1.0 V <sub>RMS</sub> and 1 MHz for values ≤ 1000 pF 0.1 % maximum at 1.0 V <sub>RMS</sub> and 1 kHz for values > 1000 pF
<b>Insulating Resistance:</b> At +25 °C 100 000 MΩ min. or 1000 ΩF whichever is less At +125 °C 10 000 MΩ min. or 100 ΩF whichever is less
<b>Aging Rate:</b> 0 % maximum per decade
<b>Dielectric Strength Test:</b> Performed per method 103 of EIA 198-2-E Applied test voltages 1000 V <sub>DC</sub> -rated: 150 % of rated voltage 1500 V <sub>DC</sub> , 2500 V <sub>DC</sub> -rated: 120 % of rated voltage

X7R
<b>GENERAL SPECIFICATION</b>
<b>Note</b> Electrical characteristics at +25 °C unless otherwise specified
<b>Operating Temperature:</b> -55 °C to +125 °C
<b>Capacitance Range:</b> 220 pF to 270 nF
<b>Voltage Range:</b> 250 V <sub>DC</sub> to 1000 V <sub>DC</sub>
<b>Temperature Coefficient of Capacitance (TCC):</b> ± 15 % from -55 °C to +125 °C, with 0 V <sub>DC</sub> applied
<b>Dissipation Factor (DF):</b> 2.5 % maximum at 1.0 V <sub>RMS</sub> and 1 kHz
<b>Insulating Resistance:</b> At +25 °C 100 000 MΩ min. or 1000 ΩF whichever is less At +125 °C 10 000 MΩ min. or 100 ΩF whichever is less
<b>Aging Rate:</b> 1 % maximum per decade
<b>Dielectric Strength Test:</b> Performed per method 103 of EIA 198-2-E. Applied test voltages ≤ 250 V <sub>DC</sub> -rated: 200 % of rated voltage 500 V <sub>DC</sub> -rated: min. 150 % of rated voltage 630 V <sub>DC</sub> , 1000 V <sub>DC</sub> -rated: 120 % of rated voltage



HV Arc Guard® Capacitor with no Surface Arc-over



Standard Capacitor with Surface Arc-over

QUICK REFERENCE DATA				
DIELECTRIC	CASE	MAXIMUM VOLTAGE (V)	CAPACITANCE	
			MINIMUM	MAXIMUM
COG (NP0)	0805	1500	10 pF	390 pF
	1206	1500	10 pF	1.5 nF
	1210	1500	10 pF	2.7 nF
	2220	1500	470 pF	5.6 nF
	2225	2500	470 pF	8.2 nF
X7R	0805	1000	470 pF	3.3 nF
	1206	1000	220 pF	47 nF
	1210	1000	220 pF	82 nF
	1808	1000	220 pF	100 nF
	1812	1000	220 pF	270 nF

**Note**

- Detail ratings see selection chart

ORDERING INFORMATION <sup>(4)</sup>								
VJ0805	A	101	J	X	G	A	C	5Z <sup>(2)</sup>
CASE CODE	DIELECTRIC	CAPACITANCE NOMINAL CODE	CAPACITANCE TOLERANCE	TERMINATION	DC VOLTAGE RATING <sup>(1)</sup>	MARKING	PACKAGING	PROCESS CODE
0805 1206 1210 1808 1812 2220 2225	A = COG (NP0) Y = X7R	Expressed in picofarads (pF). The first two digits are significant, the third is a multiplier. <b>Examples</b> 102 = 1000 pF 223 = 22 000 pF	J = ± 5 % K = ± 10 % M = ± 20 %	X = Ni barrier 100 % tin plated F, E = AgPd <sup>(3)</sup> B = Polymer 100 % tin plated matte finish <sup>(4)</sup> N = Non-magnetic	P = 250 V E = 500 V L = 630 V G = 1000 V R = 1500 V O = 2500 V	A = Unmarked	C = 7" reel/paper tape T = 7" reel/plastic tape P = 11 1/4"/13" reel/paper tape R = 11 1/4"/13" reel/plastic tape O = 7" reel/flamed paper tape I = 11 1/4"/13" reel/flamed paper tape	5Z = HV Arc Guard®

**Notes**

<sup>(1)</sup> DC voltage rating should not be exceeded in application. Other application factors may affect the MLCC performance. Consult for questions: [mlcc@vishay.com](mailto:mlcc@vishay.com)

<sup>(2)</sup> Process code with 2 digits has to be added

<sup>(3)</sup> Termination code "E" is for conductive epoxy assembly

<sup>(4)</sup> Please contact factory for polymer termination availability

Capacitors - Prevent Surface Arc-Over

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