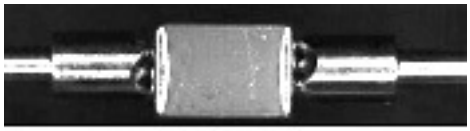
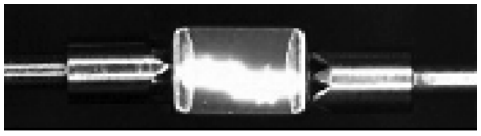
Surface Mount Multilayer Ceramic Chip Capacitors Prohibit Surface Arc-over in High Voltage Applications



HVArc Guard® Capacitor with no Surface Arc-over



Standard Capacitor with Surface Arc-over

FEATURES

For this Worldwide Patented Technology

RoHS COMPLIANT

- Surface-mountable, precious metal technology, wet build process MLCC that protect against surface arc-over
- Higher capacitances and smaller case sizes that save board space, as compared to standard high voltage MLCCs
- Voltage breakdowns are twice that of some competitor products
- Excellent reliability and high voltage performance
- Available with polymer termination for increase resistance to board flex cracking. Please contact factory for availability

APPLICATIONS

- DC-to-DC converters (Buck and Boost)
- Voltage multipliers for flyback converters
- Lighting ballast circuits
- Power Supplies

ELECTRICAL SPECIFICATIONS

Note: Electrical characteristics at + 25 °C unless otherwise specified.

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

Capacitance Range: 10 pF to 8200 pF

Voltage Rating: 1000 Vdc to 2500 Vdc

Temperature Coefficient of Capacitance (TCC):
C0G: 0 ± 30 ppm/°C from - 55 °C to + 125 °C

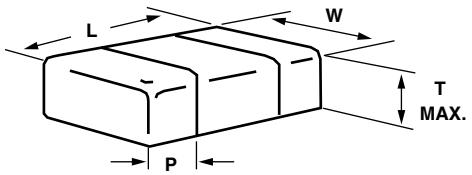
Dissipation Factor:
0.1 % max. at 1.0 V_{rms} and 1 MHz for values ≤ 1000 pF
0.1 % max. at 1.0 V_{rms} and 1 kHz for values > 1000 pF

Aging Rate: 0 % 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 Withstanding Voltage (DWV):
This is the maximum voltage the capacitors are tested for a 1 to 5 second period, and the charge/discharge current does not exceed 50 mA.
1000 Vdc: DWV at 150 % of rated voltage
1500 Vdc and 2500 Vdc: DWV at 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 ± 0.020]	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]
VJ2220	0.220 ± 0.010 [5.59 ± 0.25]	0.200 ± 0.010 [5.08 ± 0.25]	0.086 [2.18]	0.010 [0.25]	0.030 [0.76]
VJ2225	0.220 ± 0.010 [5.59 ± 0.25]	0.250 ± 0.010 [6.35 ± 0.25]	0.086 [2.18]	0.010 [0.25]	0.030 [0.76]

VJ HVArc Guard® C0G (NP0)

Vishay Vitramon

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

ORDERING INFORMATION

VJ0805	A	102	J	X	G	A	T	5Z (2)
CASE CODE	DIELECTRIC	CAPACITANCE NOMINAL CODE	CAPACITANCE TOLERANCE	TERMINATION	DC VOLTAGE RATING (1)	MARKING	PACKAGING	PROCESS CODE
0805 1206 1210 2220 2225	A = C0G	Expressed in picofarads (pF). The first two digits are significant, the third is a multiplier. **Examples:** 102 = 1000 pF	J = ± 5 % K = ± 10 % M = ± 20 %	X = Ni barrier 100 % tin plated matte finish F = AgPd B = Polymer 100 % tin plated matte finish (3)	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" 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
(3) Please contact factory for Polymer termination availability
• Polymer plus terminations, "B" termination part number code length dimensions positive tolerances (including bandwidth) above are allowed to increase by the following amounts: 1206 and smaller case sizes: Length 0.002" (0.05 mm)
1210 and larger case sizes: Length 0.004" (0.1 mm)

HVARC GUARD® C0G (NP0) CAPACITANCE RANGE

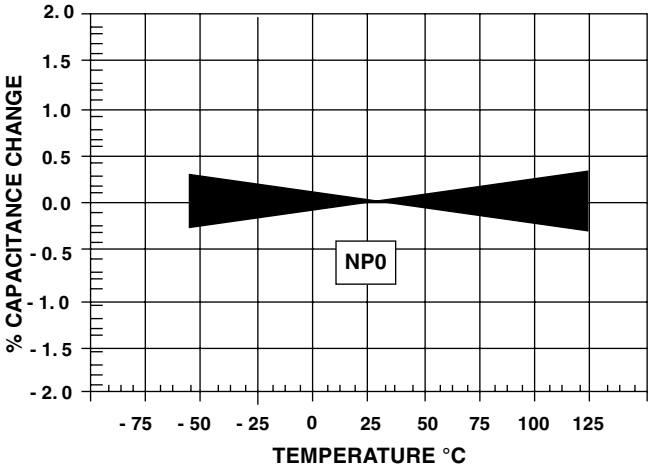
EIA CODE		0805		1206		1210		2220		2225		
VOLTAGE (Vdc)		1000	1500	1000	1500	1000	1500	1000	1500	1000	1500	2500
VOLTAGE CODE		G	R	G	R	G	R	G	R	G	R	O
CAP. CODE	CAP.											
100	10 pF	•	•	•	•	•	•					
120	12 pF	•	•	•	•	•	•					
150	15 pF	•	•	•	•	•	•					
180	18 pF	•	•	•	•	•	•					
220	22 pF	••	••	•	•	•	•					
270	27 pF	••	••	•	•	•	•					
330	33 pF	••	••	•	•	•	•					
390	39 pF	••	••	•	•	•	•					
470	47 pF	••	••	•	•	•	•					
560	56 pF	••	••	•	•	•	•					
680	68 pF	••	••	•	•	•	•					
820	82 pF	••	••	•	•	•	•					
101	100 pF	••	••	•	•	•	•					
121	120 pF	•	•	•	•	•	•					
151	150 pF	•	•	•	•	•	•					
181	180 pF	•	•	•	•	•	•					
221	220 pF	•	•	•	•	•	•					
271	270 pF	•	•	•	•	•	•					
331	330 pF	•	•	•	•	•	•					
391	390 pF	•	•	•	•	•	•					
431	430 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									•	•	•

Notes:

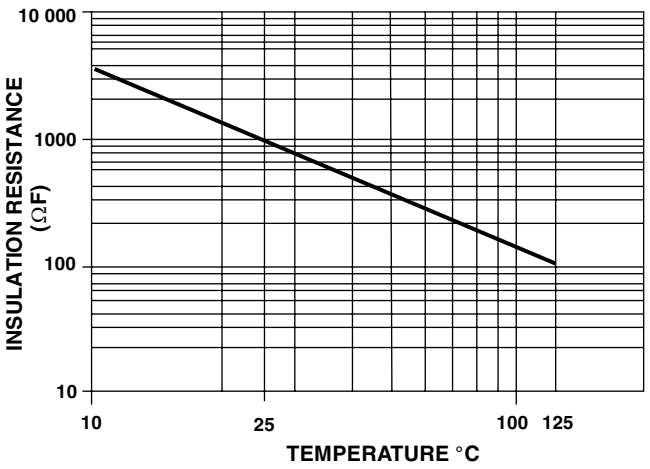
See soldering recommendations within this data book, or visit www.vishay.com/doc?45034
• Available in plastic carrier tape only
•• Available in paper carrier tape only

C0G (NP0) DIELECTRIC - TYPICAL PARAMETERS

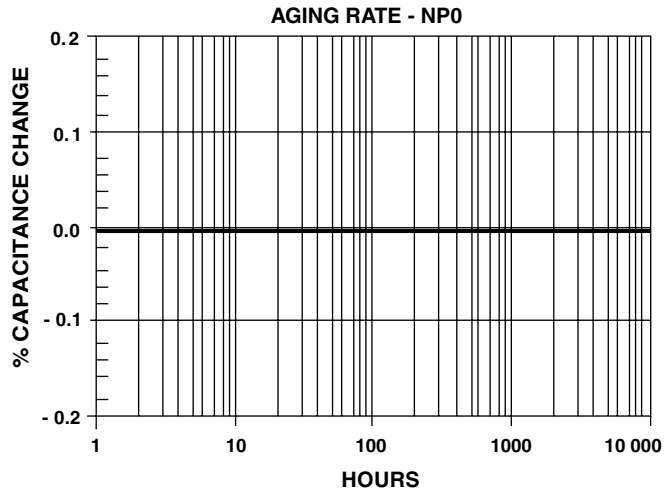
TEMPERATURE COEFFICIENT OF CAPACITANCE



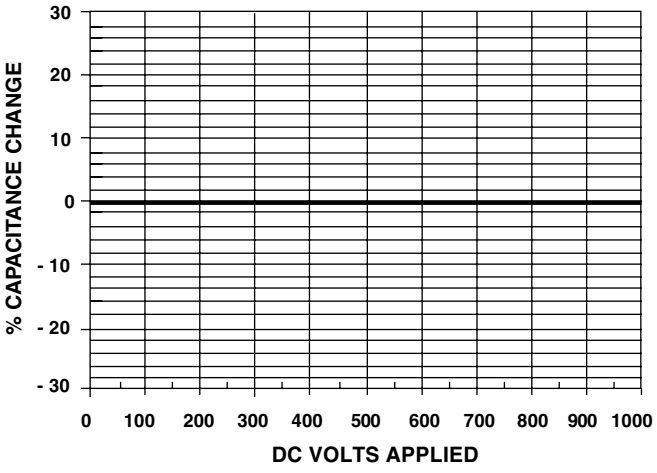
MINIMUM INSULATION RESISTANCE VS. TEMPERATURE



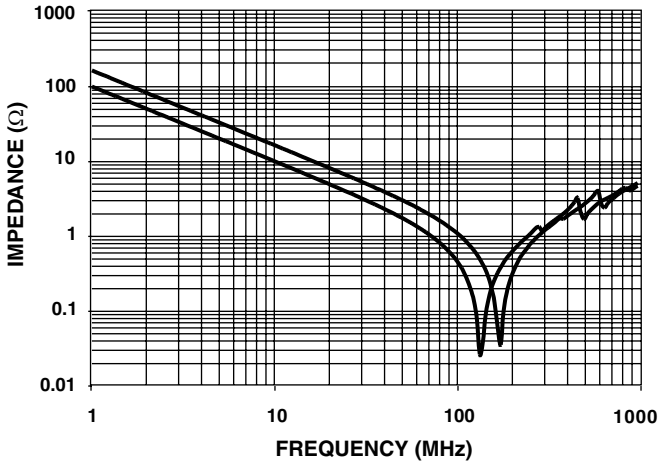
AGING RATE - NP0



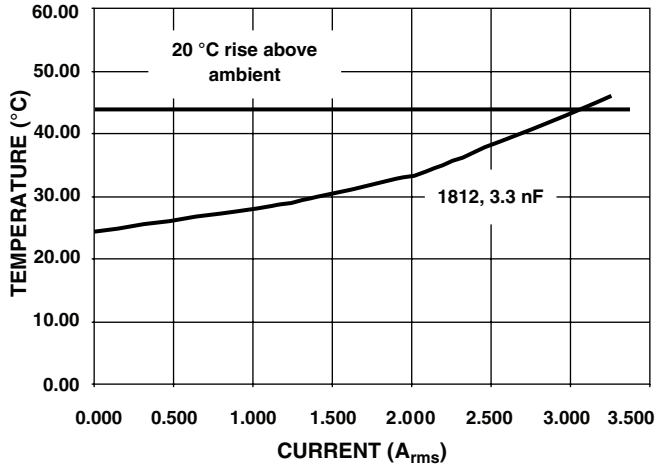
VOLTAGE COEFICIENT OF CAPACITANCE - 1000 V RATED



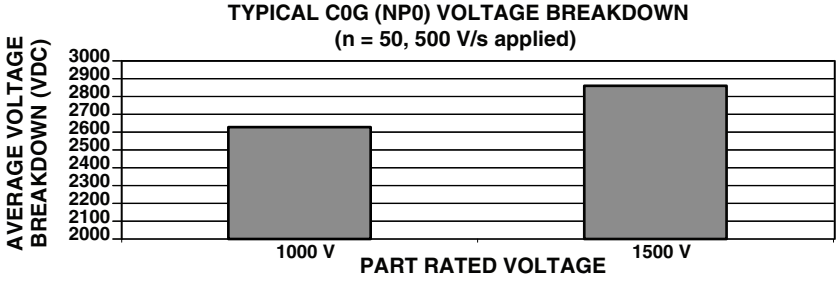
IMPEDANCE VS. FREQUENCY OF 1206 NP0 HVArc Guard®



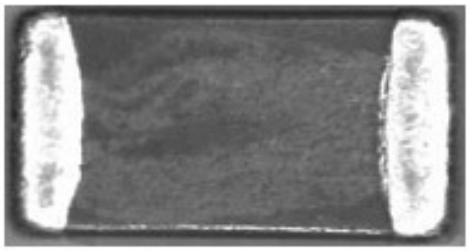
1 MHz RIPPLE CURRENT OF 1812 NP0 HVArc Guard® CAPACITOR

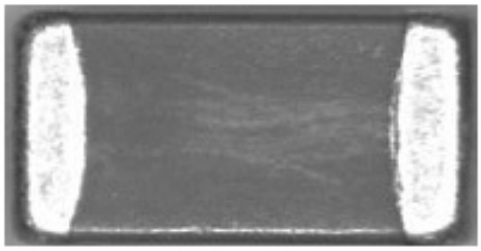


TYPICAL C0G (NP0) VOLTAGE BREAKDOWN



TYPICAL TERMINATION TO TERMINATION SURFACE ARCING ON MLCCS (shown in polarized light)





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	8 mm	N/a	T: 2500	N/a	R: 10 000
1210	8 mm	N/a	T: 2500	N/a	R: 10 000
2220	12 mm	N/a	T: 1000	N/a	T: 5000
2225	12 mm	N/a	T: 1000	N/a	T: 5000

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

Please visit Vishay Website (www.vishay.com) for the following documents:

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

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