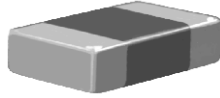


Surface Mount Ceramic Capacitor Solutions for Boardflex Sensitive Applications



ELECTRICAL SPECIFICATIONS

NOTE: Electrical characteristics at + 25 °C unless otherwise stated

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

Capacitance Range: 100 pF to 1.8 μF

Voltage Rating: 50 Vdc to 3000 Vdc

Temperature Coefficient of Capacitance (TCC):

X7R: ± 15 % from - 55 °C to + 125 °C, with 0 Vdc applied

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

FEATURES

- OMD-Cap (Open Mode Design) reduce the risk of short or low IR because of board flex cracks
- Efficient low-power consumption, ripple current capable to 1.2 Arms at 100 kHz
- Available with 100 % voltage condition, process code “5H” (is available for 630 V and lower. Contact mlcc.specials@vishay.com for higher voltages)
- High Voltage breakdown compared to standard design
- Excellent reliability and thermal shock performance
- Available with polymer termination for increase resistance to board flex cracking



**RoHS
COMPLIANT**

APPLICATIONS

- Ideal for Power Supplies

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

≤ 250 Vdc: DWV at 250 % of rated voltage

500 Vdc: DWV at 200 % of rated voltage

630 Vdc: DWV at 150 % of rated voltage

1000 Vdc: DWV at 150 % of rated voltage

1500 Vdc: DWV at 120 % of rated voltage

2000 Vdc: DWV at 120 % of rated voltage

3000 Vdc: DWV at 120 % of rated voltage

DIMENSIONS in inches [millimeters]

PART ORDERING NUMBER	LENGTH	WIDTH	MAXIMUM THICKNESS (T)	TERMINATION PAD	
				MINIMUM	MAXIMUM
VJ0805	0.126 ± 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 [1.68]	0.010 [0.25]	0.028 [0.71]
VJ1210	0.126 ± 0.008 [3.20 ± 0.20]	0.098 ± 0.008 [2.50 ± 0.20]	0.067 [1.68]	0.010 [0.25]	0.028 [0.71]
VJ1808	0.180 ± 0.010 [4.57 ± 0.25]	0.080 ± 0.010 [2.03 ± 0.25]	0.067 [1.68]	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]
VJ1825	0.177 ± 0.010 [4.50 ± 0.25]	0.252 ± 0.010 [6.40 ± 0.25]	0.086 [2.18]	0.010 [0.25]	0.030 [0.76]
VJ2220	0.220 ± 0.008 [5.59 ± 0.20]	0.197 ± 0.008 [5.00 ± 0.20]	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]

ORDERING INFORMATION

VJ1210	Y	474	K	X	A	A	T	## 2)
CASE SIZE	DIELECTRIC	CAPACITANCE CODE	CAPACITANCE TOLERANCE	TERMINATION	DC VOLTAGE RATING ¹⁾	MARKING	PACKAGING	PROCESS CODE
0805 1206 1210 1808 1812 1825 2220 2225	Y = X7R	Expressed in picofarads (pF). The first two digits are significant, the third is a multiplier. Example: 474 = 470 000 pF	J = ± 5 % K = ± 10 % M = ± 20 %	X = Ni barrier 100 % tin plate matte finish F = AgPd B = Polymer 100 % tin plate matte finish	J = 16 X = 25 A = 50 V B = 100 V C = 200 V D = 250 V E = 500 V L = 630 V M = 1000 V N = 1500 V P = 2000 V H = 3000 V	A = Unmarked	T = 7" Reels R = 11 1/4" Reels B = Bulk W = Waffle tray	4X = OMD Cap 5H = OMD Cap 100 % voltage conditioning

Notes

1. DC voltage rating should not be exceeded in application
2. Process code with 2 digits has to be added
3. Polymer plus termination “B” termination part number code length dimensions positive tolerances (including bandwidth) above are allowed to increase by the following amounts.
1210 and larger case sizes: Length 0.004 (0.1)



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for Boardflex Sensitive Applications

VJ OMD - X7R
Vishay Vitramon

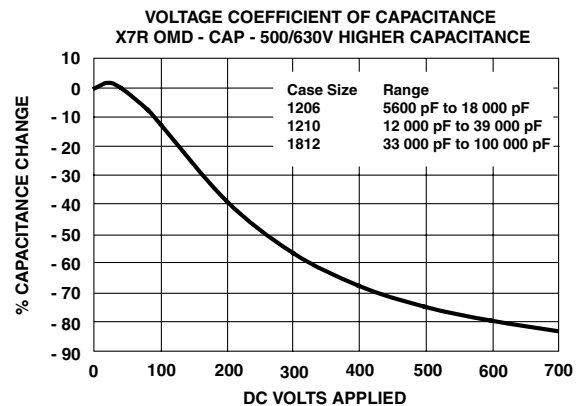
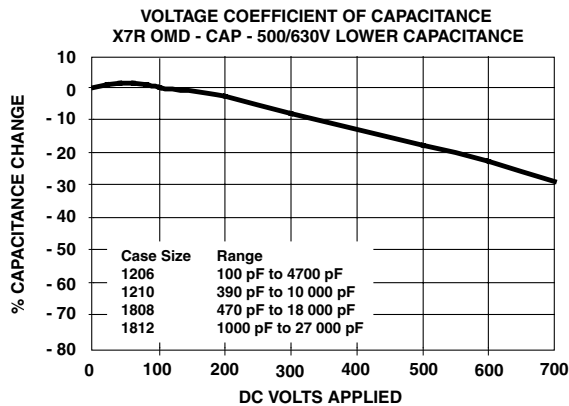
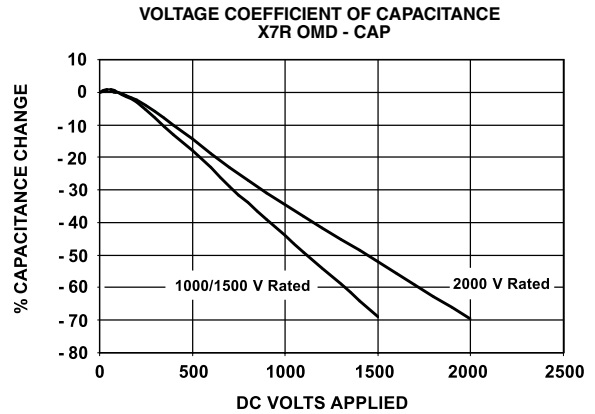
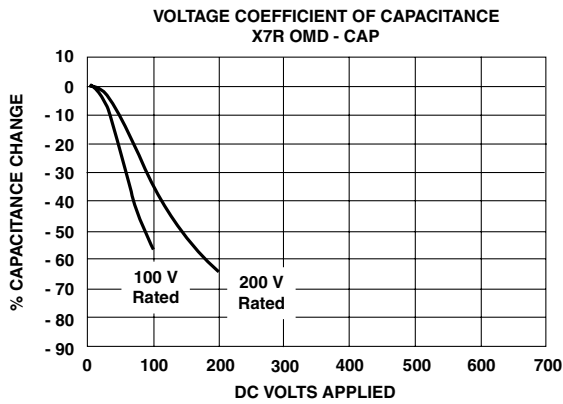
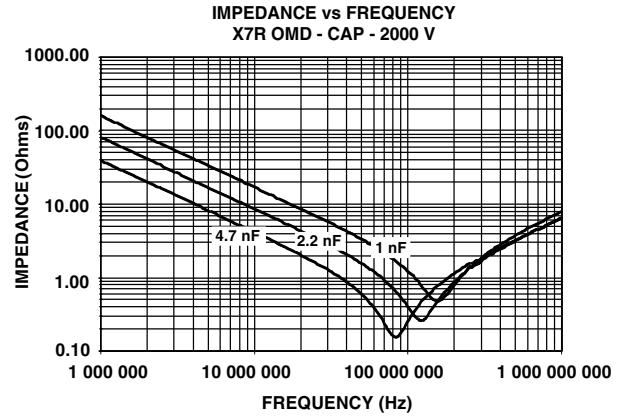
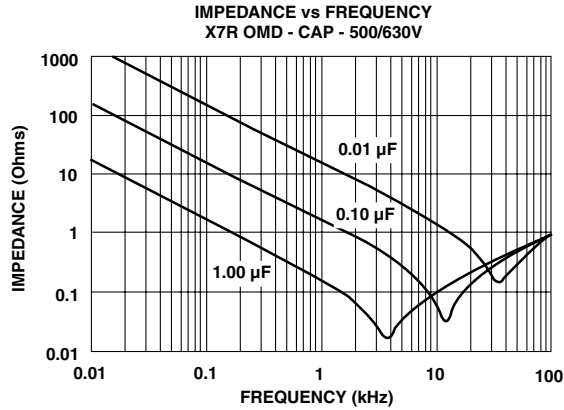
OMD - X7R CAPACITANCE RANGE																																
EIA CODE		0805						1206						1210 ¹⁾						1808 ¹⁾												
VOLTAGE (Vdc)		16	25	50	100	200	500	630	16	25	50	100	200	500	630	1000	1500	2000	16	25	50	100	200	500	630	1000	1500	2000	630	1000	1500	2000
CAP. CODE	CAP.																															
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	0.010 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																															
394	0.39 μF																															
474	0.47 μF																															
564	0.56 μF																															
684	0.68 μF																															
824	0.82 μF																															
105	1.0 μF																															
125	1.2 μF																															
155	1.5 μF																															
185	1.8 μF																															
225	2.2 μF																															

Note

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



OMD - CAPACITORS - TYPICAL PARAMETERS



BOARDFLEX SENSITIVE APPLICATIONS - SOLUTION:

A predominant failure mode in multilayer ceramic chip capacitors is cracking caused board flexure. Cracks can then create a path for current to pass from one electrode through the dielectric to an opposing electrode or from the terminations at one end of the MLCC through the dielectric to an opposing electrode. This may subsequently result in capacitance loss, leakage - low Insulation Resistance (IR) - and/or more seriously, high current shorts. A short circuit condition in the surface mounted capacitors can cause further failures of downstream components. Vishay's Open Mode Design Capacitors (VJ OMD - Cap series) reduce the risk of these destructive conditions through MLCC designs that prevent board flexure cracks reaching the opposing electrode.

VJ OMD - Cap MLCCs reduce the risk of early field failures associated with board flex cracks. However, it is important to note that even in the open mode designs the presence of flexure related cracks can cause capacitance loss leading to localized stresses on the parts. Eventually, depending on the application environment, including such factors and high voltage pulse frequency and thermal cycling this may lead to internal breakdown of the component.

POLYMER TERMINATION

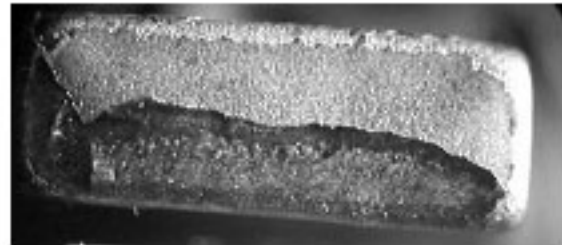
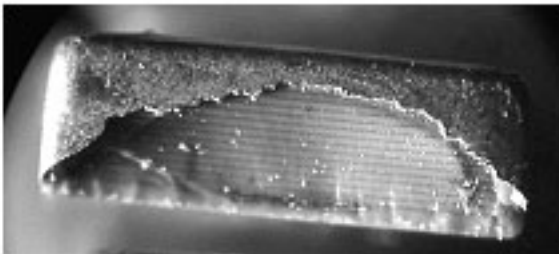
Polymer termination provides additional protection against board flexure damage by absorbing greater mechanical and thermal stresses. Components can be packaged, transported, stored and handled the same standard terminated product. Wave and reflow soldering of MLCC does not require modification to equipment and/or process. Polymer termination greatly reduces the risk of mechanical cracking however it does not completely eliminate.

STANDARD TERMINATION

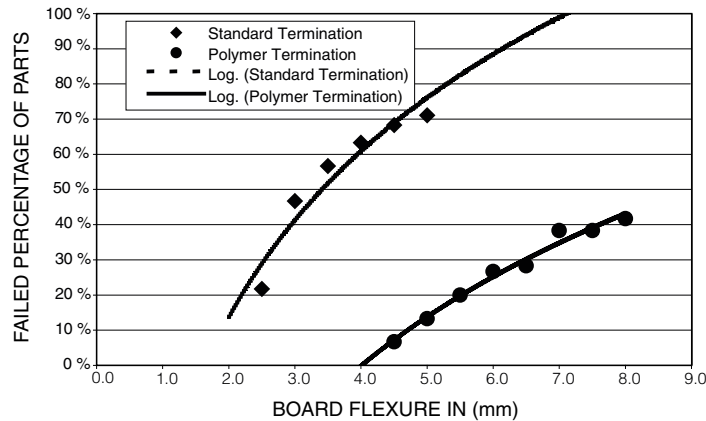
Exposed Electrodes = Electrical Short

OMD CAP PLUS POLYMER TERMINATION

No Exposed Electrodes = No Electrical short



BEND TEST RESULTS 2220 CASE SIZE





STANDARD PACKAGING QUANTITIES ^{1/2/3)}							
		7" REEL QUANTITIES		11 1/4" AND 13" REEL QUANTITIES		BULK QUANTITIES	
BODY SIZE	TAPE SIZE	PAPER TAPE PACKAGING CODE "C"	PLASTIC TAPE PACKAGING CODE "T"	PAPER TAPE PACKAGING CODE "P"	PLASTIC TAPE PACKAGING CODE "R"	VIAL PACKAGING CODE "B"	WAFFLE PACKAGING CODE "W"
0805	8 mm	3000	3000	10 000	10 000	5000	N/A
1206	8 mm	N/A	2500	N/A	10 000	5000	5000
1210	8 mm	N/A	3000	N/A	10 000	5000	N/A
1808	12 mm	N/A	3000	N/A	10 000	1000	N/A
1812	12 mm	N/A	1000	N/A	5000	1000	N/A
1825	12 mm	N/A	1000	N/A	5000	1000	1000
2220	12 mm	N/A	1000	N/A	5000	N/A	1000
2225	12 mm	N/A	1000	N/A	5000	N/A	1000

Notes

1. Vishay Vitramon uses embossed plastic and punch paper carrier tapes. Paper tape is not available for case sizes > 1206 or for component thickness > 0.035" [0.89 mm]
2. REFERENCE: EIA Standard RS 481 – "Taping of Surface Mount Components for Automatic Placement"
3. N/A = Not Available



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