

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 reduce the risk of shorts 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".
- High voltage breakdown compared to standard design.
- Excellent reliability and thermal shock performance.



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

- ≤ 200 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
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
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 = 47000 pF	J = ± 5 % K = ± 10 % M = ± 20 %	X = Ni barrier 100 % tin plated F = AgPd	A = 50 V B = 100 V C = 200 V E = 500 V L = 630 V G = 1000 V R = 1500 V F = 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

Note

1. DC voltage rating should not be exceeded in application
2. Process code with 2 digits has to be added



OMD - X7R CAPACITANCE RANGE																					
EIA CODE		1206								1210 ¹⁾								1808 ¹⁾			
VOLTAGE (Vdc)		50	100	200	500	630	1000	1500	2000	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



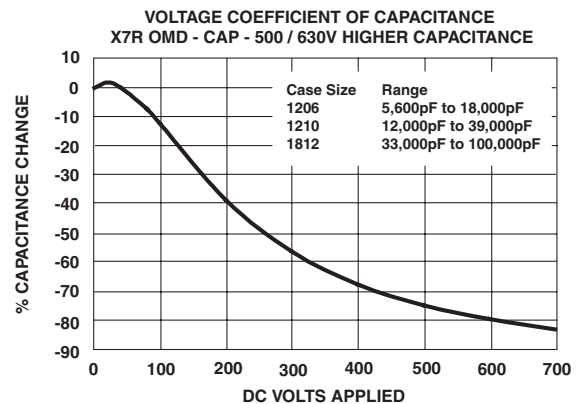
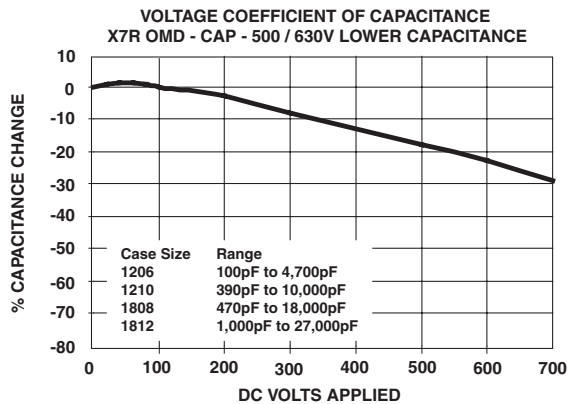
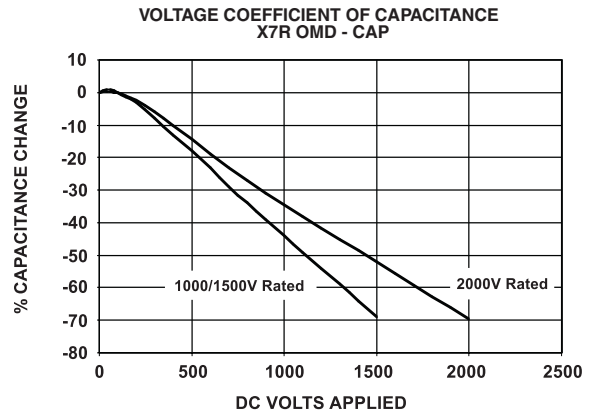
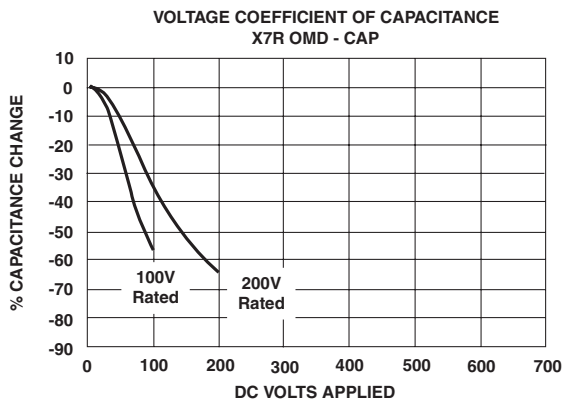
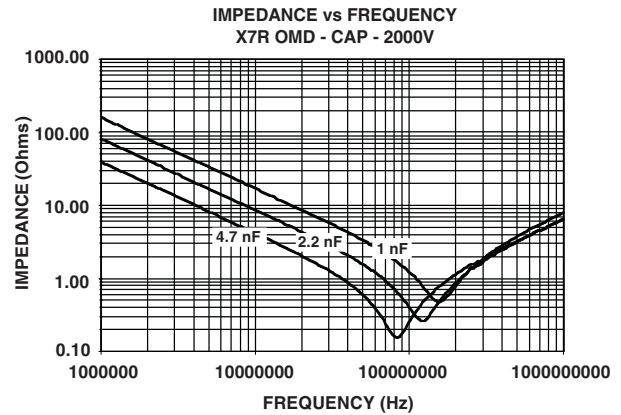
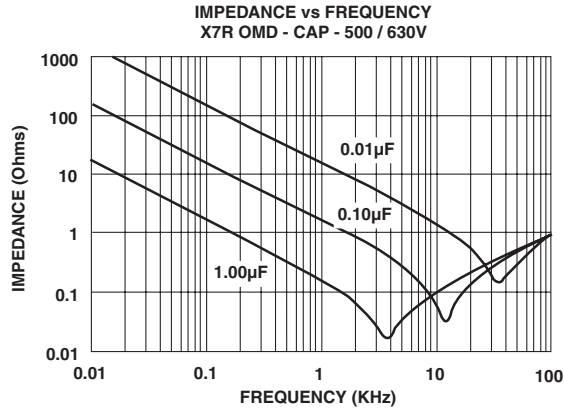
OMD - X7R CAPACITANCE RANGE																												
EIA CODE		1812 ¹⁾								1825 ¹⁾					2220 ¹⁾					2225 ¹⁾								
VOLTAGE		50	100	200	500	630	1000	1500	2000	3000	100	200	500	630	1000	100	200	500	630	1000	100	200	500	630	1000	1500	2000	
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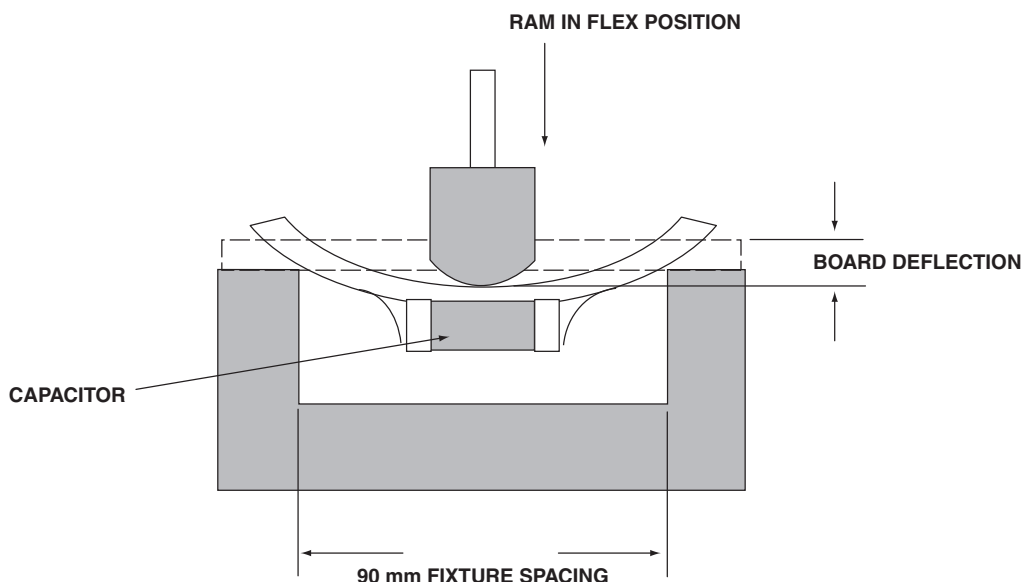
OMD - CAPACITORS - TYPICAL PARAMETERS



BOARDFLEX SENSITIVE APPLICATIONS - SOLUTION:

A predominant failure mode in multilayer ceramic capacitors is cracking caused by board flexure that results in capacitance loss, leakage and more seriously, high current shorts. A short circuit condition can cause further failures of downstream components.

Extensive board flexure testing was performed on OMD-Capacitors soldered onto glass epoxy resin boards. The boards were then subjected to 8 mm flexure (see diagram below) and the Insulation Resistance (IR) of each capacitor was measured. IR remained > 100 OhmF in all cases because these designs do not allow cracks to bridge across opposing electrodes creating conductive pathways. Commercial grade product may experience a serious loss in IR and eventually short when tested under the same conditions.



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"
1206	8 mm	N/A	3,000	N/A	10,000	5,000	N/A
1210	8 mm	N/A	3,000	N/A	10,000	5,000	N/A
1808	12 mm	N/A	3,000	N/A	10,000	1,000	N/A
1812	12 mm	N/A	1,000	N/A	5,000	1,000	N/A
1825	12 mm	N/A	1,000	N/A	5,000	1,000	1,000
2220	12 mm	N/A	1,000	N/A	5,000	N/A	1,000
2225	12 mm	N/A	1,000	N/A	5,000	N/A	1,000

Note

1. Vishay Vitramon uses embossed plastic carrier tape
2. REFERENCE: EIA Standard RS 481 – "Taping of Surface Mount Components for Automatic Placement"
3. N/A = Not Available



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