

## Multilayer Ceramic Chip Capacitors



### FEATURES

- General purpose dielectric.
- Excellent aging characteristics.
- Ideal for decoupling and filtering.
- Wide range of case sizes, voltage ratings and capacitance values.

### GENERAL SPECIFICATIONS

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

**Capacitance Range:** 100 pF to 1.0  $\mu$ F.

**Temperature Coefficient of Capacitance (TCC):**

X7R:  $\pm 15\%$  from - 55 °C to + 125 °C, with 0 Vdc applied.

**Dissipation Factor (DF):**

$\leq 25$  V ratings: 3.5 % maximum at 1.0 Vrms and 1kHz.

50 V, 100 V ratings: 2.5 % maximum at 1.0 Vrms and 1kHz.

**Aging Rate:** 1 % maximum per decade.

**Insulation Resistance (IR):**

At + 25 °C and rated voltage 100,000 M $\Omega$  minimum or 1000  $\Omega$ F, whichever is less.

At + 125 °C and rated voltage 10,000 M $\Omega$  minimum or 100  $\Omega$ F, 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 50mA

$\leq 100$ V DC : DWV at 250 % of rated voltage.

### ORDERING INFORMATION

VJ0805	Y	102	K	X	A	A	T	### <sup>3)</sup>
CASE CODE	DIELECTRIC	CAPACITANCE NOMINAL CODE	CAPACITANCE TOLERANCE	TERMINATION	DC VOLTAGE RATING <sup>1)</sup>	MARKING	PACKAGING	PROCESS CODE
0402 0603 0805 1206 1210 1808 1812 1825 2220 2225 3640	Y = X7R	Expressed in picofarads (pF). The first two digits are significant, the third is a multiplier. <b>Examples:</b> 102 = 1000 pF	J = $\pm 5\%$ K = $\pm 10\%$ M = $\pm 20\%$	X = Ni barrier 100% tin plated F = AgPd	J = 16V X = 25V A = 50V B = 100V	A = Unmarked M = Marked <b>NOTE:</b> Marking is only available for 0805 and 1206.	T = 7" reel / plastic tape C = 7" reel / paper tape R = 11 1/4" reel / plastic tape P = 11 1/4" reel / paper tape I = 7" reel / flamed paper tape O = 11 1/4" reel / flamed paper tape <b>NOTE:</b> "I" and "O" is used for "F" termination.	

**Note**

1. DC voltage rating should not be exceeded in application
3. Process Code may be added with up to three digits, used to control non-standard products and/or special requirements



<b>X7R DIELECTRIC</b>																					
STYLE		VJ0402				VJ0603				VJ0805				VJ1206				VJ1210 <sup>1)</sup>			
EIA TYPE		0402				0603				0805				1206				1210			
VOLTAGE (Vdc)		16	25	50	100	16	25	50	100	16	25	50	100	16	25	50	100	16	25	50	100
CAP. CODE	CAP.																				
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 $\mu$ F																				
123	0.012 $\mu$ F																				
153	0.015 $\mu$ F																				
183	0.018 $\mu$ F																				
223	0.022 $\mu$ F																				
273	0.027 $\mu$ F																				
333	0.033 $\mu$ F																				
393	0.039 $\mu$ F																				
473	0.047 $\mu$ F																				
563	0.056 $\mu$ F																				
683	0.068 $\mu$ F																				
823	0.082 $\mu$ F																				
104	0.10 $\mu$ F																				
124	0.12 $\mu$ F																				
154	0.15 $\mu$ F																				
184	0.18 $\mu$ F																				
224	0.22 $\mu$ F																				
274	0.27 $\mu$ F																				
334	0.33 $\mu$ F																				
394	0.39 $\mu$ F																				
474	0.47 $\mu$ F																				
564	0.56 $\mu$ F																				
684	0.68 $\mu$ F																				
824	0.82 $\mu$ F																				
105	1.0 $\mu$ F																				
125	1.2 $\mu$ F																				
155	1.5 $\mu$ F																				
185	1.8 $\mu$ F																				
225	2.2 $\mu$ F																				
275	2.7 $\mu$ F																				
335	3.3 $\mu$ F																				
395	3.9 $\mu$ F																				
475	4.7 $\mu$ F																				
565	5.6 $\mu$ F																				
685	6.5 $\mu$ F																				

**Note**

1 See page 55 for soldering recommendations, or visit [www.vishay.com/doc?45034](http://www.vishay.com/doc?45034)



X7R DIELECTRIC																		
STYLE		VJ1808 <sup>1)</sup>			VJ1812 <sup>1)</sup>			VJ1825 <sup>1)</sup>			VJ2220 <sup>1)</sup>		VJ2225 <sup>1)</sup>			VJ3640 <sup>1)</sup>		
EIA TYPE		-			1812			1825			-		-			-		
VOLTAGE (Vdc)		-	50	100	25	50	100	25	50	100	50	100	25	50	100	25	50	100
CAP. CODE	CAP.																	
121	120 pF																	
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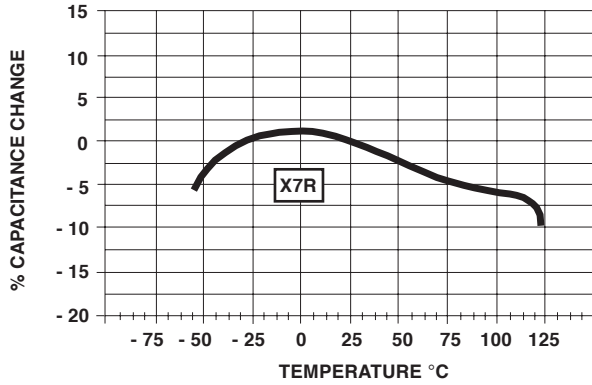
Note

1 See page 55 for soldering recommendations, or visit [www.vishay.com/doc?45034](http://www.vishay.com/doc?45034)

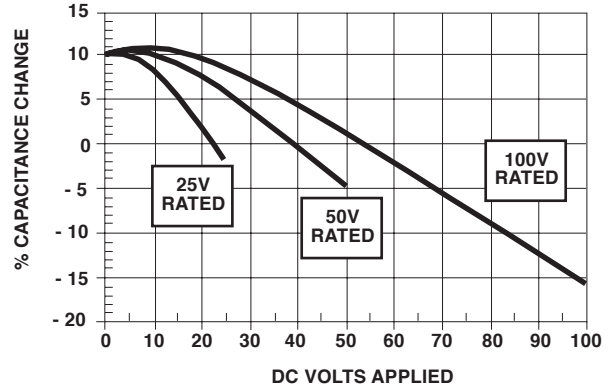


**X7R DIELECTRIC - TYPICAL PARAMETERS**

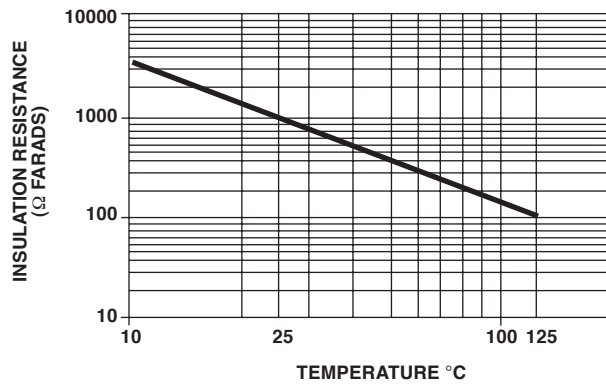
TEMPERATURE COEFFICIENT OF CAPACITANCE



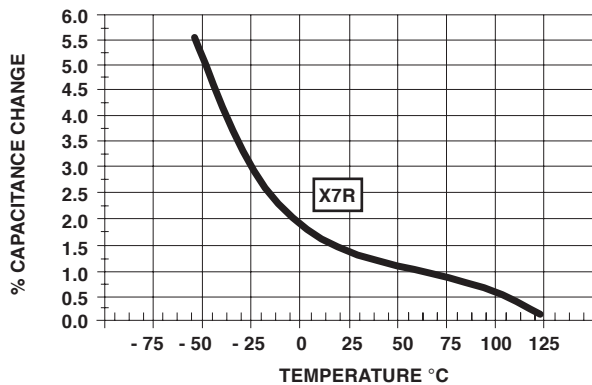
VOLTAGE COEFFICIENT OF CAPACITANCE - X7R



MINIMUM INSULATION RESISTANCE VS TEMPERATURE



DISSIPATION FACTOR vs TEMPERATURE



AGING RATE - X7R

