



# Surface Mount Multilayer Ceramic Chip Capacitors for High Frequency Applications



## FEATURES

- Ultra-stable dielectric offering a Temperature Coefficient of Capacitance (TCC) of 0 ppm/°C ± 30 ppm/°C over the entire temperature range
- Low Dissipation Factor (DF)
- Wet build process
- Reliable Noble Metal Electrode (NME) system
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**  
**GREEN**  
(5-2008)  
Available

## APPLICATIONS

- Ideal for critical timing applications
- Ideal for tuning applications

## ELECTRICAL SPECIFICATIONS

### Note

- Electrical characteristics at + 25 °C unless otherwise specified.

**Operating Temperature:** - 55 °C to + 150 °C

**Voltage Range:** 50 V<sub>DC</sub> to 200 V<sub>DC</sub>

**Capacitance Range:** 1.0 pF to 220 pF

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

0 ppm/°C ± 30 ppm/°C from - 55 °C to + 125 °C

**Dissipation Factor (DF):**

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

**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 Strength Test:**

Performed per method 103 of EIA 198-2-E.

Applied test voltages:

≤ 200 V<sub>DC</sub>-rated: 250 % of rated voltage

QUICK REFERENCE DATA				
DIELECTRIC	CASE	MAXIMUM VOLTAGE (V)	CAPACITANCE	
			MINIMUM	MAXIMUM
HIGH Q COG (NP0)	0603	100	1.0 pF	100 pF
	0805	200	1.0 pF	220 pF

**Note**

- Detail ratings see "Selection Chart"

ORDERING INFORMATION								
VJ0805	Q	101	K	X	A	A	C	### <sup>(2)</sup>
CASE CODE	DIELECTRIC	CAPACITANCE NOMINAL CODE	CAPACITANCE TOLERANCE	TERMINATION	DC VOLTAGE RATING <sup>(1)</sup>	MARKING	PACKAGING	PROCESS CODE
0603 0805	Q = HIGH Q	Expressed in picofarads (pF). The first two digits are significant, the third is a multiplier. An "R" indicates a decimal point. <b>Examples:</b> 101 = 100 pF 1R8 = 1.8 pF	B = ± 0.10 pF C = ± 0.25 pF D = ± 0.5 pF F = ± 1 % G = ± 2 % J = ± 5 % K = ± 10 % <b>Note</b> B, C, D < 10 pF F, G, J, K ≥ 10 pF	X = Ni barrier 100 % tin plated F, E = AgPd <sup>(3)</sup>	A = 50 V B = 100 V C = 200 V	A = Unmarked	C = 7" reel/paper tape O = reel/flamed paper tape I = 11 1/4"/13" reel/flamed paper tape P = 11 1/4"/13" reel/paper tape <b>Note</b> "O" and "I" are used for "F" and "E" termination	

**Notes**

- Size 0402 available with Vishay Basic Commodity series, see datasheet: [www.vishay.com/doc?28534](http://www.vishay.com/doc?28534)
- (1) 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)
- (2) Process code may be added with up to three digits, used to control non-standard products and /or special requirements.
- (3) Termination code "E" is for conductive epoxy assembly.

ENVIRONMENTAL STATUS			
TERMINATION CODE	TERMINATION DESCRIPTION	RoHS COMPLIANT	VISHAY GREEN
X	Ni barrier 100 % tin plated matte finish	Yes	Yes
E	AgPd	Yes	Yes
F	AgPd	Yes	No

DIMENSIONS in inches (millimeters)						
CASE CODE	STYLE	LENGTH (L)	WIDTH (W)	MAXIMUM THICKNESS (T)	TERMINATION (P)	
					MINIMUM	MAXIMUM
0603	VJ0603	0.063 ± 0.006 (1.60 ± 0.15)	0.031 ± 0.006 (0.80 ± 0.15)	0.036 (0.92)	0.012 (0.30)	0.022 (0.55)
0805	VJ0805	0.079 ± 0.008 (2.00 ± 0.20)	0.049 ± 0.008 (1.25 ± 0.20)	0.057 (1.45)	0.010 (0.25)	0.030 (0.76)



SELECTION CHART						
DIELECTRIC		HIGH Q				
STYLE		VJ0603		VJ0805		
CASE CODE		0603		0805		
VOLTAGE (V <sub>DC</sub> )		50	100	50	100	200
VOLTAGE CODE		A	B	A	B	C
CAP. CODE	CAP.					
1R0	1.0 pF	••	••	••	••	••
1R2	1.2 pF	••	••	••	••	••
1R5	1.5 pF	••	••	••	••	••
1R8	1.8 pF	••	••	••	••	••
2R2	2.2 pF	••	••	••	••	••
2R7	2.7 pF	••	••	••	••	••
3R3	3.3 pF	••	••	••	••	••
3R9	3.9 pF	••	••	••	••	••
4R7	4.7 pF	••	••	••	••	••
5R6	5.6 pF	••	••	••	••	••
6R8	6.8 pF	••	••	••	••	••
8R2	8.2 pF	••	••	••	••	••
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			••	••	

**Notes**

- RoHS-compliant
- Available in paper carrier tape only

HIGH Q PACKAGING QUANTITIES <sup>(1)</sup>			
CASE CODE	TAPE SIZE	7" REEL QUANTITIES	11 1/4" AND 13" REEL QUANTITIES
		PACKAGING CODE "C"/"O"	PACKAGING CODE "P"/"I"
0603	8 mm	4000	10 000
0805	8 mm	3000	10 000

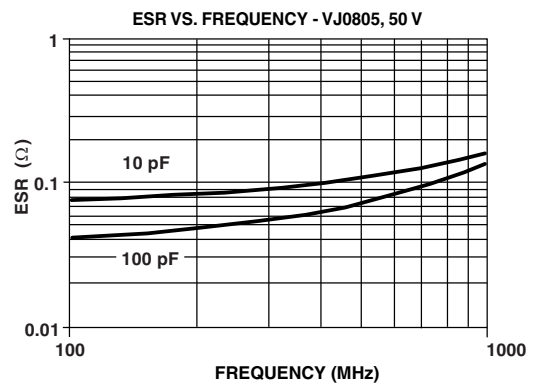
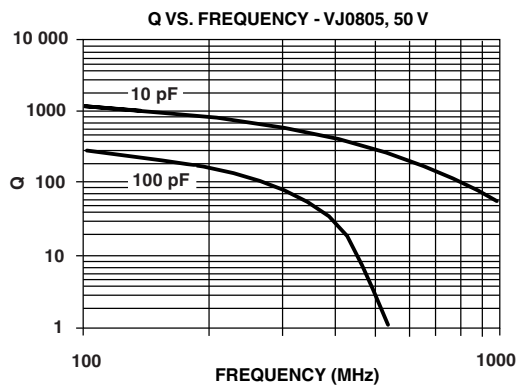
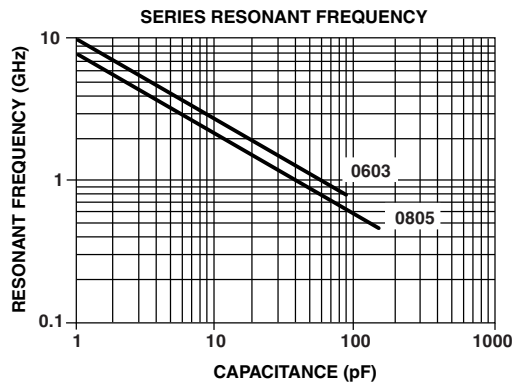
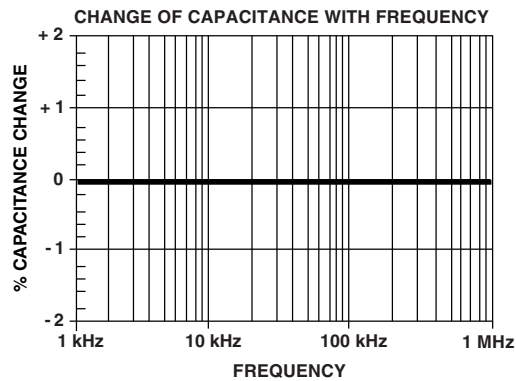
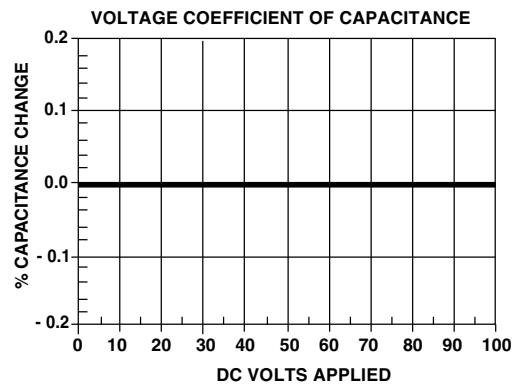
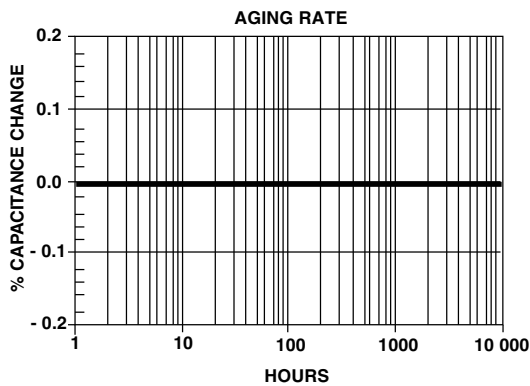
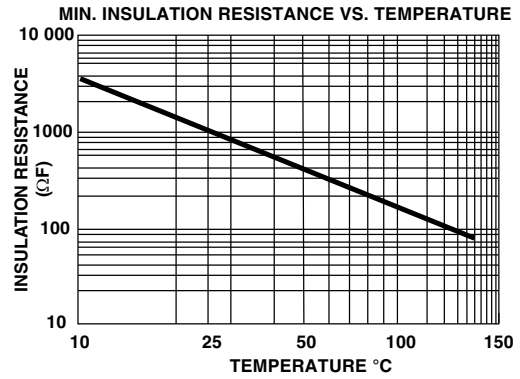
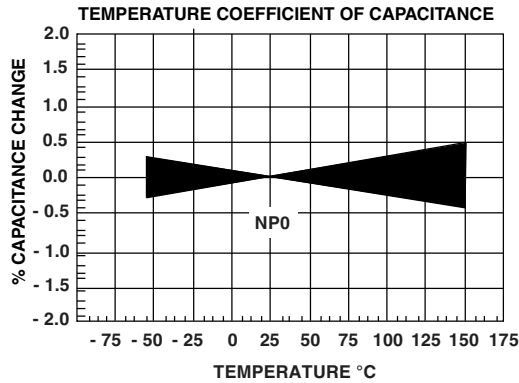
**Note**

<sup>(1)</sup> Reference: EIA standard RS481 - "Taping of Surface Mount Components for Automatic Placement"

STORAGE AND HANDLING CONDITIONS
<p>(1) Store the components at 5 °C to + 40 °C ambient temperature and ≤ 70 % related humidity conditions.</p> <p>(2) The product is recommended to be used within a time-frame of 2 years after shipment. Check solderability in case extended shelf life beyond the expiry date is needed.</p> <p>Precautions:</p> <ol style="list-style-type: none"> <li>a. Do not store products in an environment containing corrosive elements, especially where chloride gas, sulfide gas, acid, alkali, salt or the like are present. This may cause corrosion or oxidization of the terminations, which can easily lead to poor soldering.</li> <li>b. Store products on the shelf and avoid exposure to moisture or dust.</li> <li>c. Do not expose products to excessive shock, vibration, direct sunlight and so on.</li> </ol>



**HIGH Q DIELECTRIC - TYPICAL PARAMETERS**





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