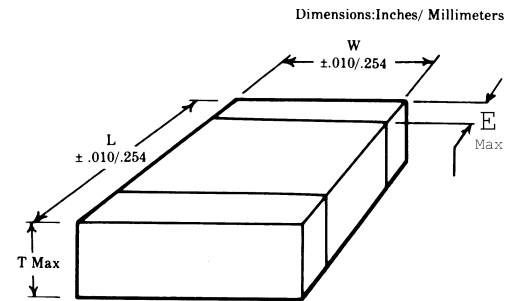


### FEATURES

- NPO (COG) & X7R, Temperature Coefficients.
- 250VDC ~ 5,000VDC.



### PART NUMBERING

Part Number Example: CMC-2K0/102KX1206TF									
CMC	-	2K0	/	102	K	X	1206	T	F
Type		Rated DC Voltage		Capacitance Code (pF)*	Tolerance Code	Dielectric Material**	Case Size	Package Code***	RoHs Compliant
* Capacitance Code: First two digits represent significant figures, third digit represents multiplier (number of zeros).									
** Dielectric Material: N = NPO, X = X7R.									
*** Package Code: T = 7" Tape & Reel, T13 = 13" Tape & Reel, W = Waffle.									

### SIZE AND CAPACITANCE SPECIFICATIONS

DIMENSIONS: INCHES (mm)

EIA	0805	1206	1210	1808	1812	1825	2225
Length	0.080(2.03)	0.125(3.18)	0.125(3.18)	0.180(4.57)	0.175(4.45)	0.180(4.57)	0.225(5.72)
Width	0.050(1.27)	0.062(1.58)	0.095(2.41)	0.080(2.03)	0.125(3.18)	0.250(6.35)	0.250(6.35)
Thickness	0.054(1.37)	0.050(1.27)	0.065(1.65)	0.100(2.54)	0.100(2.54)	0.140(3.56)	0.150(3.81)
Endband	0.020(0.508)	0.020(0.508)	0.020(0.508)	0.020(0.508)	0.020(0.508)	0.020(0.508)	0.020(0.508)

### MAXIMUM CAPACITANCE IN pF (EIA)

	Case	0805	1206	1210	1808	1812	1825	2225
NPO	250V	0R5-102	0R5-472	3R0-153	3R0-682	3R0-103	3R0-273	390-333
	500V	0R1-681	0R5-182	3R0-392	100-332	150-562	390-104	390-223
	1000V	0R1-331	0R5-821	3R0-182	100-182	150-682	390-103	390-123
	2000V		0R5-391	3R0-681	100-102	150-222	390-682	390-472
	3000V		2R0-390		100-102	150-102	390-332	390-472
	4000V				100-121	150-271	390-102	390-681
	5000V						390-471	390-681
X7R	250V	121-473	121-104	121-474	151-154	221-105	102-105	102-225
	500V	121-223	121-473	121-683	390-823	390-224	390-474	390-564
	1000V	121-272	121-103	121-393	390-223	390-683	390-184	390-224
	2000V		121-152	121-222	390-392	390-103	390-273	390-333
	3000V				390-182	390-272	390-103	390-123
	4000V				390-561	390-122	390-472	390-682
	5000V						390-102	390-152

### TOLERANCE CODE

Tolerance	±0.1pF	±0.25pF	±0.50pF	±1%	±2%	±5%	±10%	±20%	-0% + 100%	-20% - +80%
Code	B	C	D	F	G	J	K	M	P (GMV)	Z

**NPO ceramics, Class I**, offer one of the most stable capacitor dielectric available. Typical capacitance change with life is less than  $\pm 0.1\%$  for NPOs, one-fifth that shown by most other dielectrics.

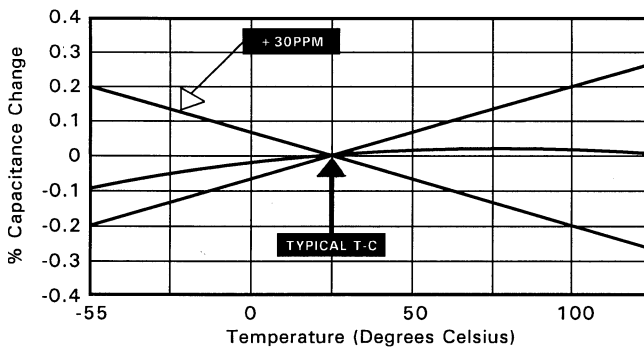
The NPO formulation usually has  $Q_s$  (Quality Factor) in excess of 1000 and show little capacitance or  $Q$  changes with frequency.

The inherent stability of these devices makes them ideally suited for use in precision applications such as oscillator, filtering, and timing circuits.

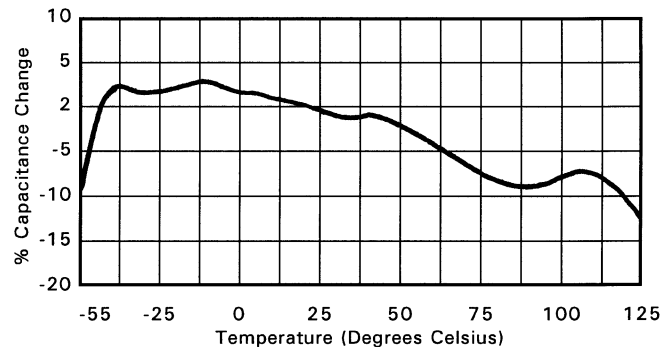
### SPECIFICATIONS

Performance Characteristics	
Temperature Coefficient	0ppm/°C $\pm$ 30ppm/°C from -55°C ~ +125°C.
Withstanding Voltage (between leads)	1.2 times rated voltage for 1-5 seconds, 50mA maximum.
Capacitance Tolerance	$\pm 0.1\text{pF}$ , $\pm 0.25\text{pF}$ , & $\pm 0.50\text{pF}$ @ $< 10\text{pF}$ . $\pm 1\%$ , $\pm 2\%$ , $\pm 5\%$ , & $\pm 10\%$ @ $\geq 10\text{pF}$ .
Maximum Dissipation Factor % (25°C, 1KHz)	0.1
Minimum Insulation Resistance (25°C)	100000M $\Omega$ or 1000M $\Omega$ xF, whichever is less, measured @ rated voltage.
Minimum Insulation Resistance (125°C)	10000 M $\Omega$ or 100 M $\Omega$ xF, whichever is less, measured @ rated voltage.
Testing Conditions (25°C)	1MHz $\pm$ 50KHz, @ 1.0Vrms $\pm$ 0.20Vrms (values $< 100\text{pF}$ ). 1KHz $\pm$ 50Hz @ 1.0Vrms $\pm$ 0.20Vrms (values $> 100\text{pF}$ ).

Typical NPO Temperature Coefficient



Typical X7R Temperature Coefficient



**X7R ceramics, "Mid-K", Class II**, are the most temperature-stable ceramics in their class. Capacitance for X7R varies under the influence of electrical operating conditions such as voltage and frequency. It also varies with time, approximately 2.5%  $\Delta C$  per decade hour, representing about 12.5% change in ten years.

These devices are suited for bypass and de-coupling applications, filtering, frequency discrimination, DC blocking, and voltage suppression.

### SPECIFICATIONS

Performance Characteristics	
Temperature Coefficient	$\pm 15\% \Delta^\circ\text{C}$ maximum from -55°C ~ +125°C.
Capacitance Tolerance	$\pm 5\%$ (J), $\pm 10\%$ (K), $\pm 20\%$ (M).
Maximum Dissipation Factor (25°C, 1KHz)	$\leq 2.5\%$ @ 1.0Vrms.
Minimum Insulation Resistance (25°C)	100000M $\Omega$ or 1000M $\Omega$ $\mu\text{F}$ , whichever is less, measured @ rated voltage.
Minimum Insulation Resistance (125°C)	10000 M $\Omega$ or 100 M $\Omega$ $\mu\text{F}$ , whichever is less, measured @ rated voltage.
Withstanding Voltage	$> 1.2$ times rated voltage for 5 seconds, 50mA maximum.
Testing Conditions (25°C)	1KHz $\pm$ 50Hz @ 1.0Vrms $\pm$ 0.20Vrms.

Application -- For high voltage capacitors above 1000 volts, a surface coating may be required after assembly to prevent external arcing.