

HIGH VOLTAGE MONOLITHIC CERAMIC SMD CAPACITORS

TYPE CMC

GENERAL SPECIFICATION

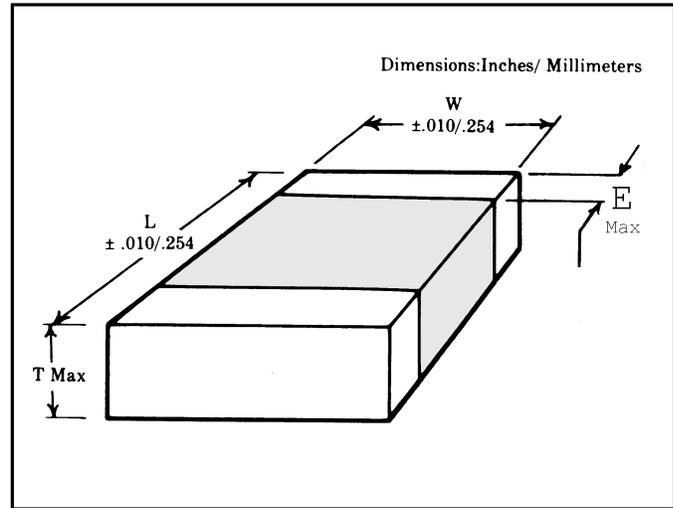
NPO (COG) & X7R, Temperature Coefficients
500 to 5,000 Volts

CMC Chips can be supplied with established reliability screening per MIL-C 55681, or high reliability screening upon request.

TAPE & REEL QUANTITIES

All tape and reel specifications are in compliance with RS481.

Sizes	Standard Electrodes	
	1206, 1210, 1808	1812, 1825, 2225
Embossed Carrier	8mm	12mm
Pieces/7" Reel	3,000 - 5,000	1,000 - 1,500
Pieces/13" Reel	10,000	4,000 - 10,000



SIZE AND CAPACITANCE SPECIFICATIONS

Dimensions: Inches (millimeters)

EIA:		1206	1210	1808	1812	1825	2225
Length	in. (mm)	.125 (3.18)	.125 (3.18)	.180 (4.57)	.175 (4.45)	.180 (4.57)	.225 (5.72)
Width	in. (mm)	.062 (1.58)	.095 (2.41)	.080 (2.03)	.125 (3.18)	.250 (6.35)	.250 (6.35)
Thickness	Max.	.050 (1.27)	.065 (1.65)	.1 (2.54)	.1 (2.54)	.1 (2.54)	.1 (2.54)
Endband	Max.	.020 (.508)	.020 (.508)	.020 (.508)	.020 (.508)	.020 (.508)	.020 (.508)

Part Number Example

CMC	500	103	K	X	1206	T
CERAMIC		EIA	EIA	DIELECTRIC	CASE	PKG CODE
MONO	1K0	STD. CODE	TOL	MATERIAL	SIZE	T = T/R
CHIP	1K6	IN P.F.	CODE	N = NPO		TA = TAPE & AMMO
	5K0			X = X7R		
	WVDC					

Max. Capacitance in pf (EIA)							
	CASE	1206	1210	1808	1812	1825	2225
NPO	500v	OR5-102	3R0-222	100-332	150-472	390-123	390-183
	1000v	OR5-821	3R0-182	100-152	150-222	390-822	390-103
	2000v	OR5-271	3R0-681	100-821	150-122	390-392	390-472
	3000v	—	—	100-331	150-561	390-182	390-222
	4000v	—	—	100-181	150-331	390-102	390-122
	5000v	—	—	—	—	390-101	390-181
X7R	500v	121-273	121-563	121-683	391-124	821-274	821-394
	1000v	121-682	121-153	121-183	391-273	821-823	821-124
	2000v	121-102	121-222	121-272	391-392	821-153	821-183
	3000v	—	—	391-102	391-182	821-472	821-562
	4000v	—	—	391-471	391-681	821-222	821-272
	5000v	—	—	—	—	821-391	821-681

TOL.	±0.1pf	±.25pf	±.50pf	±1.0%	±2.0%	±5%	±10%	±20%	-0 + 100%	-20% - +80%
CODE	B	C	D	F	G	J	K	M	P (GMV)	Z

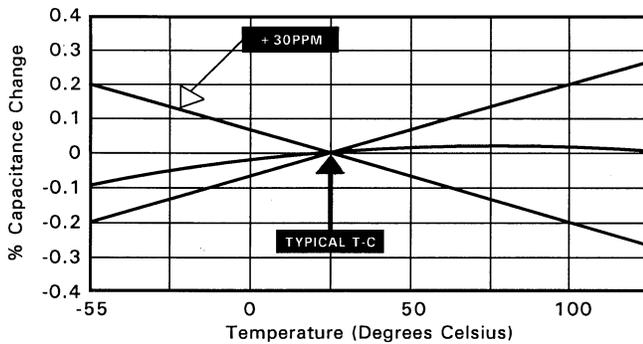
NPO ceramics, Class I, offer one of the most stable capacitor dielectric available. Typical capacitance change with life is less than $\pm 0.1\%$ for NPOs, one-fifth that shown by most other dielectrics.

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

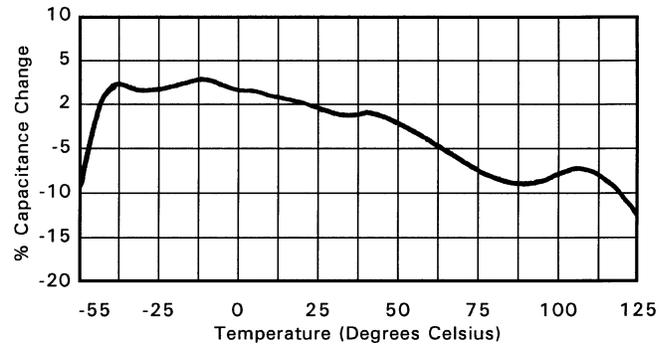
The inherent stability of these devices makes them ideally suited for use in precision applications such as oscillator, filtering, and timing circuits.

- Temperature Coefficient:** $0 \pm 30 \text{ ppm } / ^\circ\text{C}$ from -55°C to $+125^\circ\text{C}$
- Dissipation Factor:** $\leq 0.1\%$ @ $25^\circ\text{C}/1\text{KHz}$
- Insulation Resistance:** 100,000 $M\omega$ min. or 1000 ω xF whichever is less @ WVDC, 25°C
10,000 $M\omega$ min. or 100 ω xF whichever is less @ WVDC, 125°C
- Dielectric Strength:** > 1.2 times WVDC, 50 mA MAX.
- Testing Conditions:** 1MHz ± 50 KHz @ $1.0 \pm .20$ Vrms @ 25°C for values $< 1000\text{pf}$
1KHz ± 50 Hz @ $1.0 \pm .20$ Vrms @ 25°C for values $> 1000\text{pf}$
- Capacitance Tolerance:** Values $> 10\text{pF}$: B ($\pm 0.1\text{pF}$), C ($\pm 0.25\text{pF}$) and D ($\pm 0.50\text{pF}$)
Values $\geq 10\text{pF}$: F ($\pm 1\%$), G ($\pm 2\%$), J ($\pm 5\%$) and K ($\pm 10\%$)

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% DC 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.

- Temperature Coefficient:** $\pm 15\%$ $^\circ\text{C}$ Max from -55°C to $+125^\circ\text{C}$
- Dissipation Factor:** $\leq 2.5\%$ @ 1KHz, 1.0 Vrms, 25°C
- Insulation Resistance:** 100,000 $M\omega$ min. or 1000 ω xF whichever is less @ WVDC, 25°C
10,000 $M\omega$ min. or 100 ω xF whichever is less @ WVDC, 125°C
- Dielectric Strength:** > 1.2 times WVDC, 50 mA MAX.
- Testing Conditions:** 1KHz ± 50 KHz @ $1.0 \pm .20$ Vrms @ 25°C
- Capacitance Tolerance:** J ($\pm 5\%$), K ($\pm 10\%$), and M ($\pm 20\%$)

TERMINATION	-	NICKEL BARRIER, PALLADIUM SILVER
PACKAGING	-	EMBOSSED PLASTIC TAPE 8MM (1206 & 1210)
		12MM (1808, 1812, 1825 & 2225)
	-	BULK
APPLICATION	-	FOR HIGH VOLTAGE CAPACITORS ABOVE 1000 VOLTS, A SURFACE COATING MAY BE REQUIRED AFTER ASSEMBLY TO PREVENT EXTERNAL ARCING.