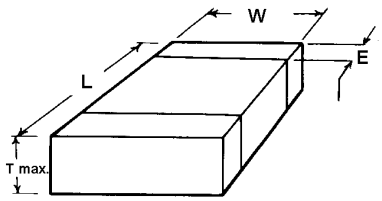
PART NUMBERING

Part Number Example: CMC-016/104KX0603TF									
CMC	-	016	/	104	K	X	0603	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, X5 = X5R, Y = Y5V									
*** Package Code: T = 7" Tape & Reel, T13 = 13" Tape & Reel, W = Waffle.									

Dimensions:Inches/ Millimeters



CAPACITANCE RANGE (pF-EIA)

EIA/ TC	W VDC	01005	0201	0402	0603	0805	1206	1210	1812	1825	2225
NPO	200				0R3-561	0R5-182	0R5-562	5R0-103	100-273	100-683	270-823
	100				0R5-122	0R5-472	0R5-103	5R0-183	100-104	100-823	270-104
	50		0R5-101	0R1-102	0R5-332	0R5-223	0R5-823	5R0-104	100-224	150-104	270-124
	25		0R5-101	0R1-682	0R5-103	102-333	0R5-104	5R0-273	100-224	150-104	270-124
	16	0R5-470	0R5-101	0R1-682	0R5-103	102-333	0R5-104	5R0-473	100-224	150-104	270-124
	10	0R5-470	0R5-101	0R1-682	0R5-103	102-333	0R5-104	5R0-473	100-224	150-104	270-124
	6.3	0R5-101									
X7R	200				121-103	121-333	121-104	121-184	151-564	471-155	471-185
	100			121-472	221-104	121-474	121-105	121-105	151-225	471-185	471-225
	50		151-102	121-223	101-104	121-105	102-475	121-475	151-685	471-185	471-225
	35		151-102	121-223	101-104	121-105	102-475	121-475	151-685	471-225	471-225
	25		101-222	121-473	101-474	102-225	102-475	121-106	151-226	471-225	471-225
	16		101-472	121-104	101-105	102-475	102-106	121-226	151-336	471-225	471-275
	10	101-102	151-103	121-104	101-225	102-106	102-106	121-226	151-336	471-225	471-275
	6.3		103	121-104	101-225	102-106	102-226	121-476	151-336	471-225	471-275
X5R	100			121-472	221-104	121-474	102-105	121-105	151-225	471-185	471-225
	50		101-471	121-223	101-104	121-105	103-225	105-106	151-685	471-185	471-225
	35		101-471	121-223	101-105	121-105	103-225	105-106	151-685	471-225	471-225
	25		101-104	103-104	101-105	121-475	103-106	225-226	106	471-225	471-225
	16	103	101-104	103-224	101-225	102-106	103-226	475-476	226	471-225	471-275
	10	103	101-105	102-105	101-106	102-226	103-476	106-476	226-476	471-225	471-275
	6.3	151-104	101-105	102-225	101-106	102-476	103-107	226-107	476-107	471-225	471-275
	4		101-105	102-225	101-226	102-476	103-107	226-107	476-107	471-225	471-275
Y5V	200			121-682	121-103	121-333	121-104	681-334	332-564	103-155	103-185
	100			121-103	101-332	102-474	102-105	681-105	332-185	103-395	103-475
	50		101-471	102-223	101-224	102-105	104-475	681-106	332-106	103-395	103-186
	35		101-471	102-223	101-224	102-105	104-106	475-226	106-226	103-156	103-186
	25		101-222	102-104	101-105	102-475	104-106	681-226	332-226	103-186	103-226
	16		102-103	102-474	101-225	102-106	104-106	681-226	332-476	103-226	103-226
	10		102-104	102-105	101-475	102-106	104-226	226-107	476-107	103-226	103-226
	6.3		102-104	103-225	102-475	102-226	104-107	476-107	107	103-226	103-226
	4		102-104	103-225	102-475	102-226	104-107	476-107	107	103-226	103-226

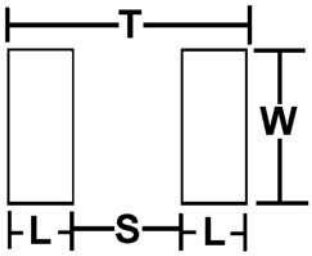
SIZE AND CAPACITANCE SPECIFICATIONS

DIMENSIONS: mm (INCHES)

EIA	01005	0201	0402	0603	0805	1206	1210	1812	1825	2225
Length	0.4 ± 0.02	0.6 ± 0.03	1.00 ± 0.10	1.60 ± 0.15	2.01 ± 0.20	3.2 ± 0.20	3.20 ± 0.20	4.5 ± 0.30	4.5 ± 0.30	5.72 ± 0.25
	(0.016 ± 0.0008)	(0.0236 ± 0.001)	(0.040 ± 0.004)	(0.063 ± 0.006)	(0.079 ± 0.008)	(0.126 ± 0.008)	(0.126 ± 0.008)	(0.177 ± 0.012)	(0.177 ± 0.012)	(0.225 ± 0.010)
Width	0.2 ± 0.02	0.3 ± 0.03	0.50 ± 0.10	0.81 + 0.15	1.25 ± 0.20	1.60 ± 0.20	2.50 ± 0.20	3.20 ± 0.40	6.40 ± 0.40	6.35 ± 0.25
	(0.008 ± 0.0008)	(0.0118 ± 0.001)	(0.020 ± 0.004)	(0.032 ± 0.006)	(0.049 ± 0.008)	(0.063 ± 0.008)	(0.098 ± 0.008)	(0.126 ± 0.008)	(0.252 ± 0.016)	(0.25 ± 0.01)
Thickness	0.2 ± 0.02	0.3 ± 0.03	0.60	0.90	1.4	1.78	2.70	3.05	2.30	2.30
	(0.008 ± 0.0008)	(0.0118 ± 0.001)	(0.024)	(0.035)	(0.055)	(0.07)	(0.106)	(0.12)	(0.08)	(0.08)
Endband	0.07~0.14	0.15 ± 0.05	0.25 ± 0.15	0.35 ± 0.15	0.50 + 0.25	0.50 ± 0.25	0.50 ± 0.25	0.60 ± 0.35	0.6 ± 0.35	0.64 ± 0.39
	(0.0028 ~ 0.0055)	(0.006 ± 0.005)	(0.010 ± 0.006)	(0.014 ± 0.006)	(0.020 ± 0.10)	(0.020 ± 0.010)	(0.020 ± 0.010)	(0.024 ± 0.014)	(0.024 ± 0.014)	(0.025 ± 0.015)

TOLERANCE CODE

Tolerance	±0.1pF	±0.25pF	±0.50pF	±1.0%	±2.0%	±5%	±10%	±20%	-0% ~ +100%	-20% ~ +80%
Code	B	C	D	F	G	J	K	M	P (GMV)	Z



Sizes	Standard Terminations			
	8mm			12mm
Embossed Carrier Punched Carrier	01005	0201	0603-1210	1812-1825
Punched Only			0402-0603	
“Pieces/7”” Reel”	20000	15000	2000 (4000 low T)	1,000
“Pieces/13”” Reel”	50000		10,000	4,000

RECOMMENDED PAD DIMENSIONS (INCHES (MM))

Chip Size	L	W	S	T
01005	.006~0.009 (0.15~O.24)	.006~.009 (0.16~0.24)	0.006~0.007 (0.11~0.18)	.016~.022 (0.41~0.66)
0201	0.010 (0.254)	0.016 (0.406)	0.010 (0.254)	0.040 (1.000)
0402	0.020 (0.060)	0.022 (0.560)	0.017 (0.431)	0.059 (1.500)
0504	0.030 (0.800)	0.050 (1.270)	0.020 (0.060)	0.090 (2.290)
0603	0.030 (0.800)	0.030 (0.800)	0.030 (0.800)	0.100 (2.540)
0805	0.040 (1.000)	0.050 (1.270)	0.040 (1.000)	0.120 (3.050)
1005	0.040 (1.000)	0.050 (1.270)	0.060 (1.520)	0.140 (3.560)
0907	0.040 (1.000)	0.070 (1.780)	0.050 (1.270)	0.130 (3.300)
1206	0.040 (1.000)	0.065 (1.650)	0.080 (2.030)	0.160 (4.060)
1505	0.040 (1.000)	0.050 (1.270)	0.110 (3.300)	0.190 (4.820)
1805	0.040 (1.000)	0.050 (1.270)	0.130 (3.300)	0.210 (5.330)
1210	0.040 (1.000)	0.100 (2.540)	0.080 (2.030)	0.160 (4.060)
1808	0.050 (1.270)	0.080 (2.030)	0.130 (3.300)	0.230 (5.840)
1812	0.050 (1.270)	0.120 (3.050)	0.130 (3.300)	0.230 (5.840)
1825*	0.050 (1.270)	0.250 (6.350)	0.130 (3.300)	0.230 (5.840)
2225*	0.050 (1.270)	0.250 (6.350)	0.170 (4.310)	0.270 (6.860)
3640*	0.060 (1.520)	0.400 (10.100)	0.300 (0.800)	0.420 (10.700)

*These sizes are recommended for use with IR and vapor phase soldering only and the use of stress relieving lead frames with them is recommended.

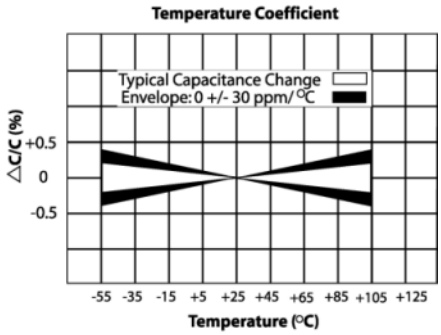
NPO ceramics, Class I, offer one of the most stable capacitor dielectric available. Typical capacitance change with life is less than ±0.1% for NPOs, 1/5 that shown by most other dielectrics.

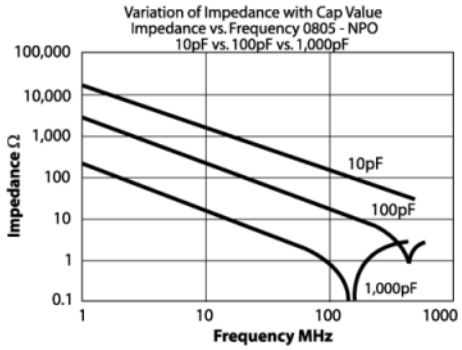
The NPO formulation usually has Q (Quality Factor) in excess of 1000 and show little capacitance or Q changes with frequency.

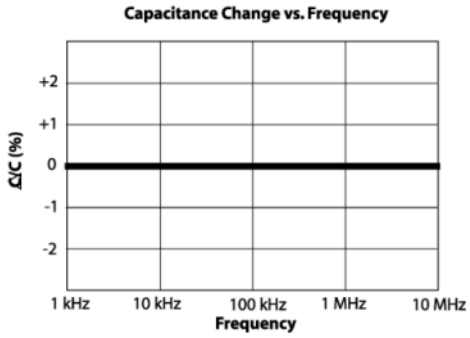
The inherent stability of these devices makes them ideally suited for use in precision applications such as oscillator, filtering and timing circuits.

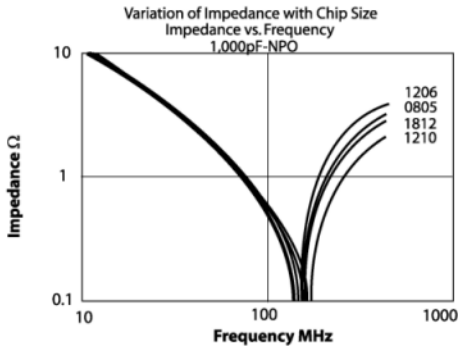
SPECIFICATIONS

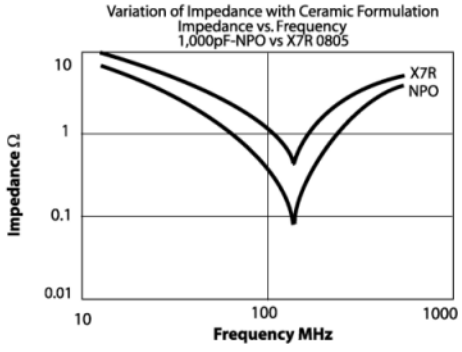
Performance Characteristics	
Operating Temperature Range	-55°C ~ +125°C.
Temperature Coefficient	0ppm/°C ± 30ppm/°C from -55°C ~ +125°C.
Withstanding Voltage (between leads)	2.5 times rated voltage, 50mA maximum for 1 second
Capacitance Tolerance	±0.1pF, ±0.25pF, & ±0.50pF @ <10pF. ±1%, ±2%, ±5%, & ±10% @ ≥10pF.
Maximum Dissipation Factor % (25°C)	0.1 maximum
Minimum Insulation Resistance (25°C)	10G Ω or 500meg Ω x Farads, whichever is less, measured @ rated voltage.
Testing Conditions (25°C)	1MHz ± 50Hz @ 1.0Vrms ± 0.20Vrms (values ≤100pF). 1KHz ± 50Hz @ 1.0Vrms ± 0.20Vrms (values >100pF).









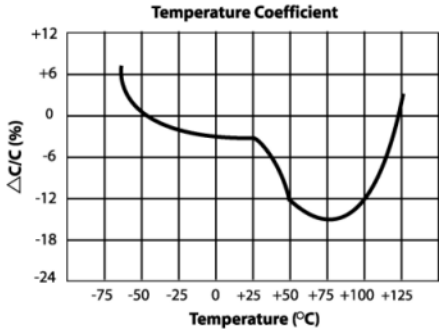


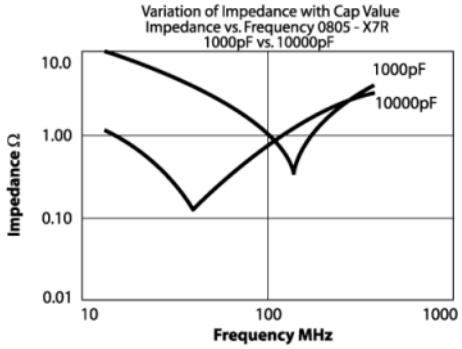
X7R ceramics, "Mid-K", Class II, are the most temperature-stable ceramics in their class. Capacitance for X7R varies under the influence of electrical operating conditions such as voltage and frequency. It also varies with time, approximately 2.5% ΔC per decade.

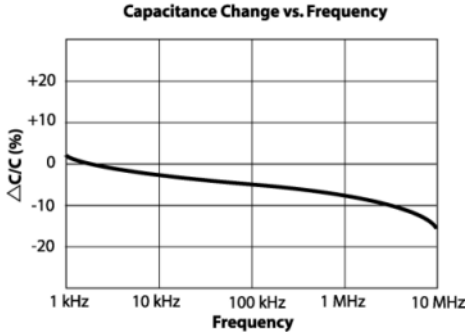
These devices are suited for bypass and decoupling applications, filtering, frequency discrimination, DC blocking, and voltage suppression.

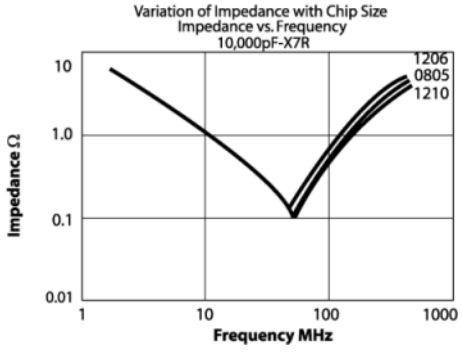
SPECIFICATIONS

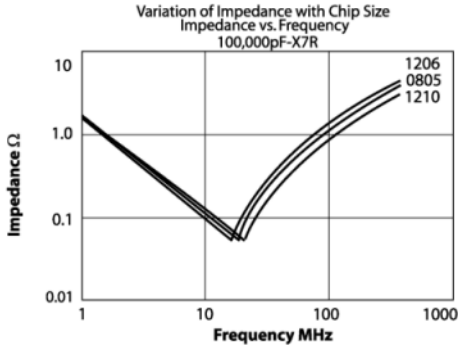
Performance Characteristics	
Operating Temperature Range	-55°C ~ +125°C (X7R). -55°C ~ +85°C (X5R).
Temperature Coefficient	±15% Δ°C maximum from -55°C ~ +125°C (X7R). ±15% Δ°C maximum from -55°C ~ +85°C (X5R).
Withstanding Voltage (between leads)	2.5 times rated voltage, 50mA maximum for 1 second
Capacitance Tolerance	±5%, ±10%, & ±20%.
Maximum Dissipation Factor % (25°C, 1KHz)	2.5 @ 1.0Vrms, except 16 & 25VDC (X7R). 3.5 @ 16 & 25VDC (X7R). 5 @ 1.0Vrms (X5R).
Minimum Insulation Resistance (25°C)	10G Ω or 500 meg Ω x Farads, whichever is less, measured @ rated voltage.
Testing Conditions (25°C)	1KHz ± 50Hz @ 1.0Vrms ± 0.20Vrms (values ≤10μF). 120Hz @ 0.5Vrms (values >10μF).











Y5V ceramics, Class III dielectric offer the highest capacitance values available. Ideally suited for bypass and decoupling applications where space is at a premium or as replacements for tantalum capacitors. Best performance is obtained at or near room temperature and at low DC bias conditions. Their aging rate is approximately 7% per decade.

SPECIFICATIONS

Performance Characteristics	
Operating Temperature Range	-30°C ~ +85°C.
Temperature Coefficient	+22% ~ -82% Δ°C maximum from -30°C ~ +85°C.
Withstanding Voltage (between leads) (25°C)	2.5 times rated voltage, 50mA maximum for 1 second
Capacitance Tolerance	-20% / +80%.
Maximum Dissipation Factor % (25°C)	5.0
Minimum Insulation Resistance (25°C)	10G Ω or 500 meg Ω x Farads, whichever is less.
Testing Conditions (25°C)	1KHz ± 50Hz @ 1.0Vrms ± 0.20Vrms (values ≤10μF). 120Hz @ 0.5Vrms (values >10μF).