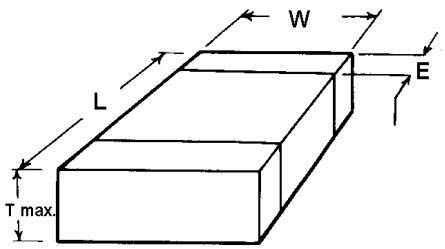
PART NUMBERING

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.									
*** Package Code: T = 7" Tape & Reel, T13 = 13" Tape & Reel, W = Waffle.									

Dimensions:Inches/ Millimeters



CAPACITANCE RANGE (pF-EIA)

EIA/TC	WVDC	0201	0402	0603	0805	1206	1210	1812	1825	2225
NPO	200		0R3-101	0R3-561	0R5-182	0R5-562	5R0-103	100-273	100-683	270-823
	100		0R3-181	0R5-122	0R5-302	0R5-103	5R0-183	100-104	100-823	270-104
	50	0R5-101	0R3-102	0R5-103	0R5-103	0R5-473	5R0-104	100-224	150-104	270-124
	35									
	25	0R5-101	0R3-102	0R3-103	0R5-103	0R5-104	5R0-273	100-104	150-104	270-124
	16	390-101	0R5-102	0R3-152	0R5-103	0R5-104	5R0-473	100-124	150-104	270-124
	10	820-101		0R5-102						
	6.3			0R5-102						
X7R	200		121-222	121-103	121-333	121-104	121-184	151-564	471-155	471-185
	100		121-472	121-223	121-104	121-474	121-105	151-225	471-185	471-225
	50	101-471	121-472	121-104	121-474	121-225	121-335	151-685		471-225
	35					684-105	105-106		471-225	
	25	101-222	121-103	121-224	121-105	121-475	121-106	151-226	471-225	471-225
	16	101-472	121-104	121-105	121-225	121-106	121-226	151-336	471-225	471-275
	10	682-103	682-104	104-105	331-225	152-106	121-226			
	6.3					106-226				
X5R	100				103-104					
	50			104	683-474		105			
	35			153-473	154-474	474-105	105-225			
	25	100-102	102-223	473-474	334-475	225-106	225-226	106		
	16	152-103	332-104	154-105	684-106	225-226	475-476	226		
	10	222-223	332-224	154-225	684-106	155-476	106-476	226-476		
	6.3	223-104	154-105	474-475	155-226	475-476	226-107	476-107		
	4		334-105	106	685-226	476				
Y5V	200		121-682	121-153	471-563	681-154	681-334	332-564	103-155	103-185
	100		121-103	121-563	471-224	681-474	681-105	332-185	103-395	103-475
	50		121-103	121-224	471-105	681-225	681-106	332-106		103-186
	35					105-106	475-226	106-226	103-156	
	25	102	121-104	121-105	471-225	681-106	681-226	332-226	103-186	103-226
	16	103	121-104	121-225	471-475	681-106	681-226	332-476	103-226	103-226
	10	102-103	224-474	474-225	105-106	225-225	226-107	476-107		
	6.3	103-104	474-105	225-475	106-226	106-476	476-107	107		
	4	104								

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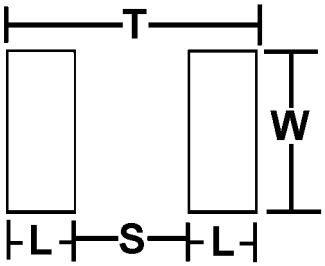
SIZE AND CAPACITANCE SPECIFICATIONS

DIMENSIONS: mm (INCHES)

EIA	0201	0402	0603	0805	1206	1210	1812	1825	2225
Length	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
	(0.0236 ± 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	0.3 ± 0.03	0.50 ± 0.10	0.81 + 0.15	1.25 ± 0.20	1.60 ± 0.20	2.50 ± 0.20	3.20 ± 0.20	6.40 ± 0.40	6.35 ± 0.25
	(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	0.3 ± 0.03	0.60	0.90	1.4	1.78	2.70	3.05	2.30	2.30
	(0.0118 ± 0.001)	(0.024)	(0.035)	(0.055)	(0.07)	(0.106)	(0.12)	(0.08)	(0.08)
Endband	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
	(0.006 ± 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 Termination		
	8mm		12mm
Embossed Carrier Punched Carrier	0201	0603-1210	1812-1825
Punched Only		0402-0603	
“Pieces/7”” Reel”	15000	2000 (4000 low T)	1,000
“Pieces/13”” Reel”		10,000	4,000

RECOMMENDED PAD DIMENSIONS (INCHES (MM))

Chip Size	L	W	S	T
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.

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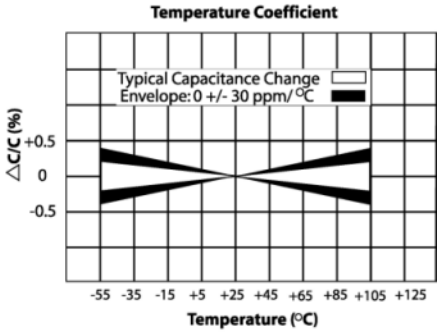
NPO ceramics, Class I, offer one of the most stable capacitor dielectric available. Typical capacitance change with life is less than ±0.1% for NPOs, 1/5 that shown by most other dielectrics.

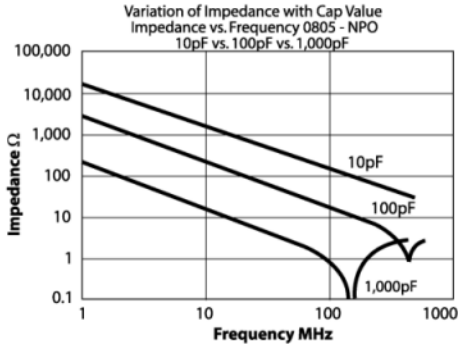
The NPO formulation usually has Qs (Quality Factor) in excess of 1000 and show little capacitance or Q changes with frequency.

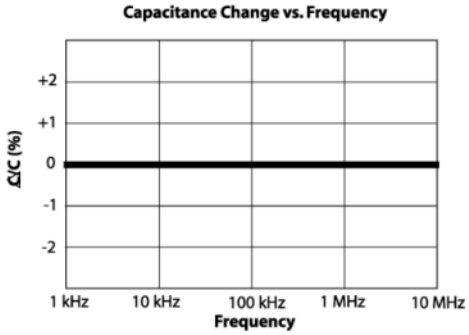
The inherent stability of these devices makes them ideally suited for use in precision applications such as oscillator, filtering and timing circuits.

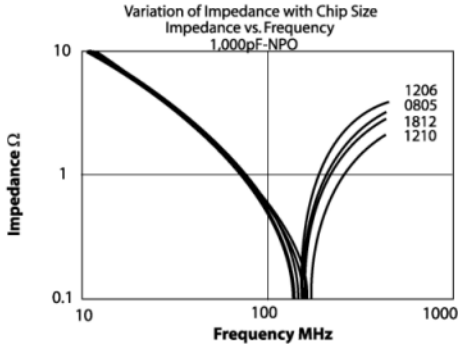
SPECIFICATIONS

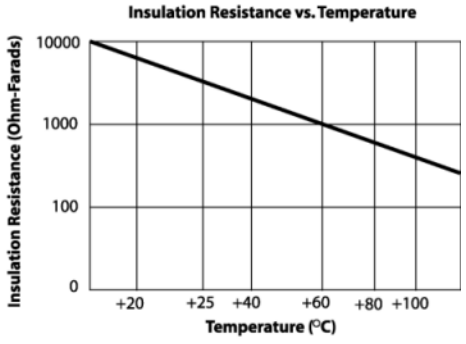
Performance Characteristics	
Operating Temperature Range	-55°C ~ +125°C.
Temperature Coefficient	0ppm/°C ± 30ppm/°C from -55°C ~ +125°C.
Withstanding Voltage (between leads)	2.5 times rated voltage, 50mA maximum.
Capacitance Tolerance	±0.1pF, ±0.25pF, & ±0.50pF @ <10pF. ±1%, ±2%, ±5%, & ±10% @ ≥10pF.
Maximum Dissipation Factor % (25°C)	>0.1.
Minimum Insulation Resistance (25°C)	100000MΩ or 1000MΩ xF, whichever is less, measured @ rated voltage.
Minimum Insulation Resistance (125°C)	10000 MΩ or 100 MΩ xF, whichever is less, measured @ rated voltage.
Testing Conditions (25°C)	1MHz ± 50KHz @ 1.0Vrms ± 0.20Vrms (values ≤100pF). 1KHz ± 50Hz @ 1.0Vrms ± 0.20Vrms (values >100pF).

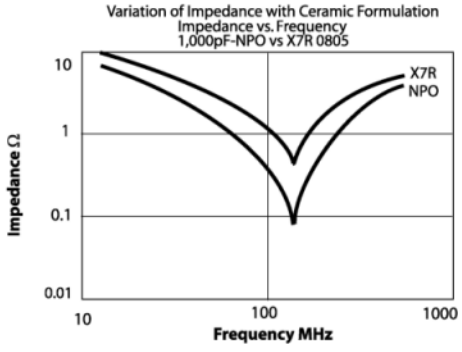












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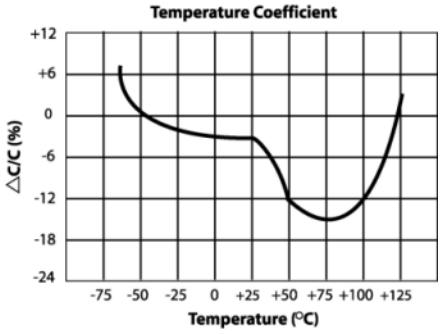
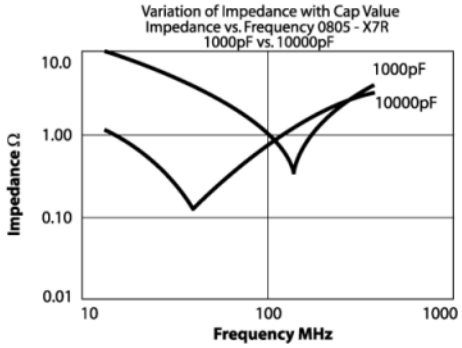
X7R ceramics, "Mid-K", Class II, are the most temperature-stable ceramics in their class. Capacitance for X7R varies under the influence of electrical operating conditions such as voltage and frequency. It also varies with time, approximately 2.5% ΔC per decade.

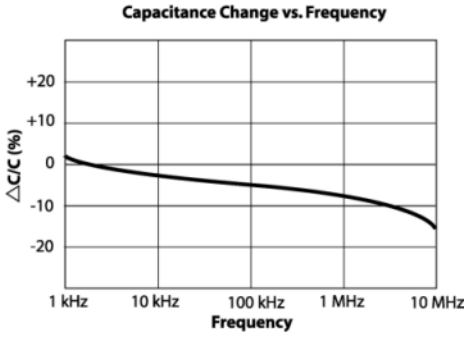
These devices are suited for bypass and decoupling applications, filtering, frequency discrimination, DC blocking, and voltage suppression.

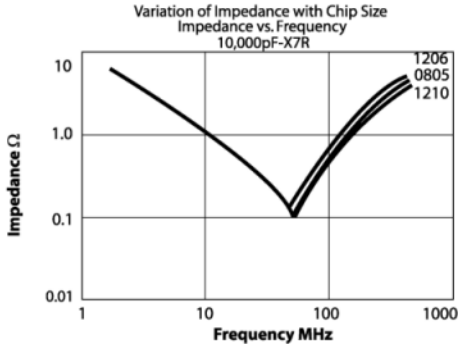
SPECIFICATIONS

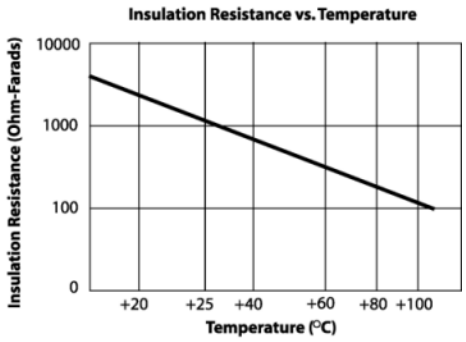
Performance Characteristics	
Operating Temperature Range	-55°C ~ +125°C (X7R). -55°C ~ +85°C (X5R).
Temperature Coefficient	±15% Δ°C maximum from -55°C ~ +125°C (X7R). ±15% Δ°C maximum from -55°C ~ +85°C (X5R).
Withstanding Voltage (between leads)	2.5 times rated voltage, 50mA maximum.
Capacitance Tolerance	±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)	100000MΩ or 1000MΩ μF, whichever is less, measured @ rated voltage.
Minimum Insulation Resistance (125°C)	10000 MΩ or 100 MΩ μF, whichever is less, measured @ rated voltage.
Testing Conditions (25°C)	1KHz ± 50Hz @ 1.0Vrms ± 0.20Vrms.

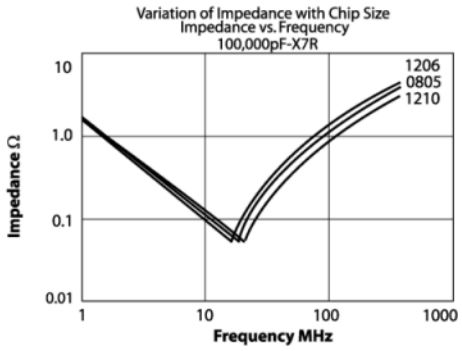












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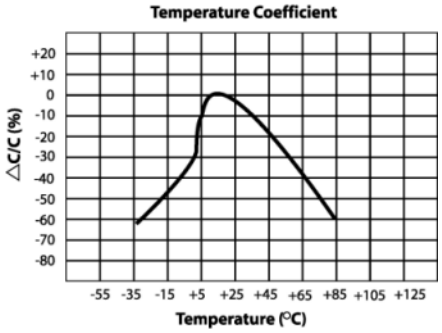
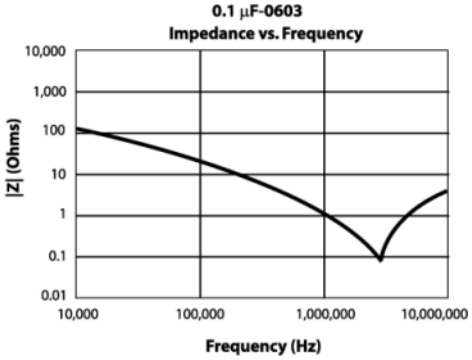
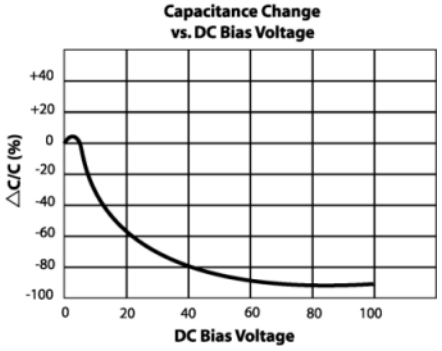
Y5V ceramics, Class III dielectric offer the highest capacitance values available. Ideally suited for bypass and decoupling applications where space is at a premium or as replacements for tantalum capacitors. Best performance is obtained at or near room temperature and at low DC bias conditions. Their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

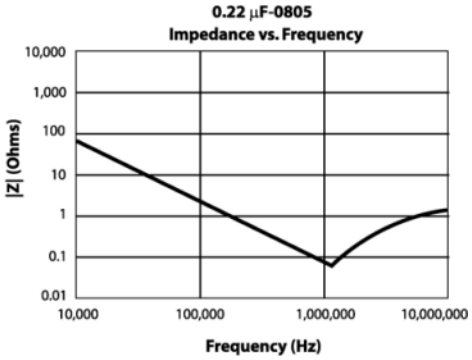
SPECIFICATIONS

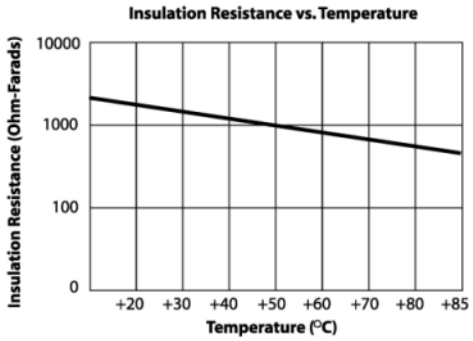
Performance Characteristics	
Operating Temperature Range	-30°C ~ +85°C.
Temperature Coefficient	+22% ~ -82% Δ°C maximum from -30°C ~ +85°C.
Withstanding Voltage (between leads) (25°C)	2.5 times rated voltage, 50mA maximum.
Capacitance Tolerance	-20% / +80%.
Maximum Dissipation Factor % (25°C)	5.0.
Minimum Insulation Resistance (25°C)	10000MΩ or 1000MΩ x µF, whichever is less.
Testing Conditions (25°C)	1KHz ± 50Hz @ 1.0Vrms ± 0.20Vrms.

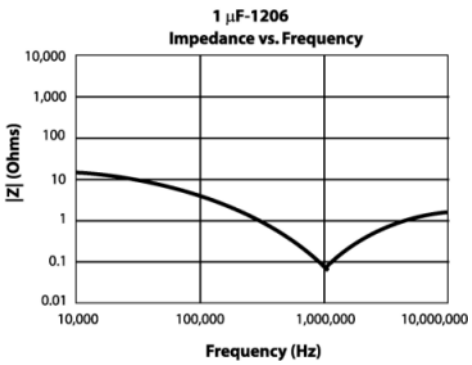












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