

ATC GENERAL PURPOSE CAPACITORS: NPO (COG) DIELECTRIC

Electrical Characteristics

Capacitance Range:

0.5 pF to 0.12 μ F

Temperature Coefficient of Capacitance:

$0 \pm 30 \text{ ppm}/^\circ\text{C}$

Operating Temperature Range:

-55°C to $+125^\circ\text{C}$

Dissipation Factor:

0.1% (max.) for $C \geq 30 \text{ pF}$ @ 25°C @ 1 MHz

0.25% (max.) for $C < 30 \text{ pF}$ @ 25°C @ 1 MHz

Insulation Resistance:

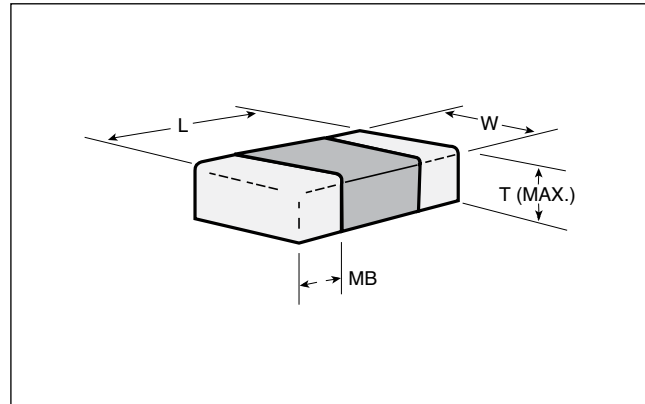
@ $+25^\circ\text{C}$ and rated Vdc: 100,000 megohms (min.) or

1000 ohm-farads (min.), whichever is less

Aging:

None

Dimension Drawing



Dielectric Withstanding Voltage:

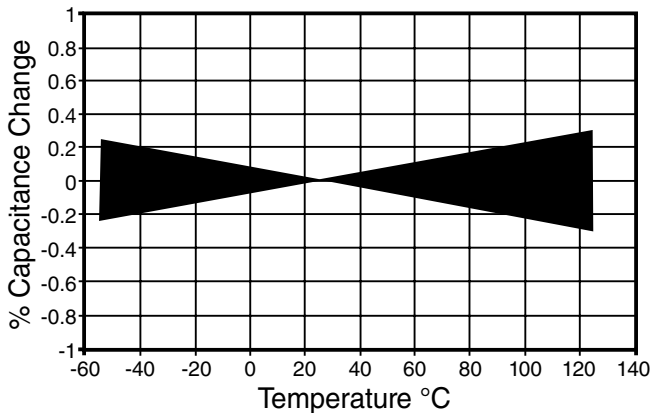
250% WVDC for $\text{WVDC} < 200\text{V}$

150% WVDC for $200\text{V} < \text{WVDC} \leq 500\text{V}$

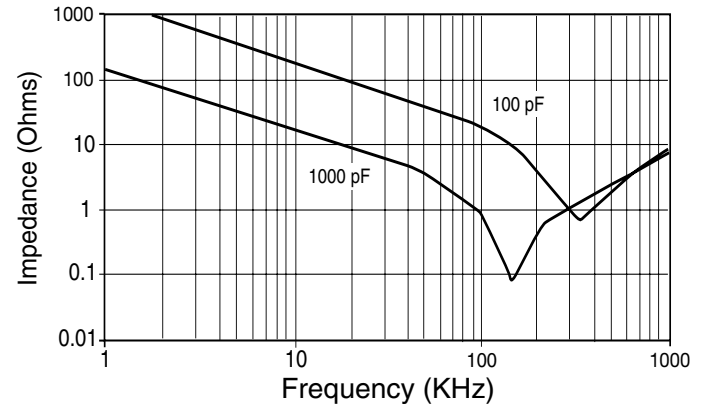
120% WVDC for $\text{WVDC} > 500\text{V}$ Applied for $5 \pm 1 \text{ sec.}$

Note: Unless otherwise specified all test data is at $+25^\circ\text{C}$.

NPO Temperature Coefficient of Capacitance



NPO Impedance vs. Frequency



Standard EIA Capacitance Values Reference Chart

Note: Upper capacitance value limit for NPO is .12 μ F

Cap. Code	Cap. pF	Cap. Code	Cap. pF	Cap. Code	Cap. pF	Cap. Code	Cap. pF	Cap. Code	Cap. pF	Cap. Code	Cap. μ F	Cap. Code	Cap. μ F	Cap. Code	Cap. μ F
0R5	0.5	8R2	8.2	820	82	821	820	822	8200	563	.056	474	.47	335	3.3
1R0	1.0	100	10	101	100	102	1000	Cap. Code Cap. μ F		683	.068	564	.56	395	3.9
1R2	1.2	120	12	121	120	122	1200			823	.082	684	.68	475	4.7
1R5	1.5	150	15	151	150	152	1500	103	.010	104	.10	824	.82	565	5.6
1R8	1.8	180	18	181	180	182	1800	123	.012	124	.12	105	1.0	685	6.8
2R2	2.2	220	22	221	220	222	2200	153	.015	154	.15	125	1.2	825	8.2
2R7	2.7	270	27	271	270	272	2700	183	.018	184	.18	155	1.5	106	10.0
3R3	3.3	330	33	331	330	332	3300	223	.022	224	.22	185	1.8	126	12.0
3R9	3.9	390	39	391	390	392	3900	273	.027	274	.27	225	2.2	156	15.0
4R7	4.7	470	47	471	470	472	4700	333	.033	334	.33	275	2.7		
5R6	5.6	560	56	561	560	562	5600	393	.039	394	.39				
6R8	6.8	680	68	681	680	682	6800	473	.047						

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ATC GENERAL PURPOSE CAPACITORS: NPO (COG) DIELECTRIC

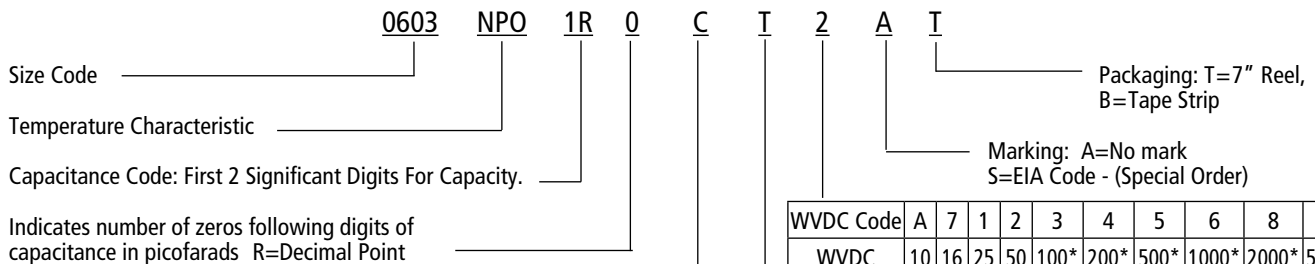
Selection Guide

Case Size	0402	0504	0603	0805	1206	1210	1812	2225
Length (L)	.040 (1.02)	.050 (1.27)	.063 (1.60)	.079 (2.00)	.125 (3.18)	.125 (3.18)	.180 (4.57)	.220 (5.59)
Width (W)	.020 (0.51)	.040 (1.02)	.031 (0.80)	.049 (1.25)	.063 (1.60)	.100 (2.54)	.125 (3.18)	.250 (6.35)
Tol. L & W	±.004 (0.10)	±.006 (.152)	±.005 (0.12)	±.008 (0.2)	±.008 (0.2)	±.008 (0.2)	±.012 (.305)	±.015 (0.38)
T Max.	.024 (0.61)	.044 (1.12)	.035 (0.89)	.054 (1.37)	.064 (1.63)	.070 (1.78)	.100 (2.54)	.150 (3.81)
Term. (MB) Min. Max.	.004 (.10) .014 (.36)	.005 (.12) .015 (.38)	.004 (.10) .015 (.38)	.010 (.25) .030 (.76)	.010 (.25) .030 (.76)	.010 (.25) .030 (.76)	.010 (.25) .030 (.76)	.010 (.25) .030 (.76)
Min. Cap.	0R5	0R5	0R5	0R5	0R5	3R0	100	270
Max. Cap. (code) & WVDC								
10V								
16V	331	182	152	103	223	273	393	124
25V	331	122	102	103	223	223	393	124
50V	331	102	102	103	123	223	333	124
100V	181	561	102	392	562	183	273	683
200V	101	391	561	182	392	103	183	563
500V				821	182	472	103	273
1000V				471	102	222	472	153
200								392
5000V								

Dimensions in inches (mm)

Higher voltages available upon request.

Part Number Code



CAPACITANCE TOLERANCE					
Code	B*	C	F	G	J
Tol.	±0.1 pF	±0.25 pF	±1%	±2%	±5%
	pF (Values < 10 pF)		% (Values ≥ 10 pF)		

*Tighter tolerances available.

WVDC Code	A	7	1	2	3	4	5	6	8	9
WVDC	10	16	25	50	100*	200*	500*	1000*	2000*	5000*

*Special Order - Consult Factory



Termination Code

T = Tin plated over Nickel Barrier (Standard), RoHS Compliant
 C = Palladium Silver, (non-magnetic), RoHS Compliant
 Solder and Conductive Epoxy Attachment**
 W = Tin/Lead, Solder Plated over Nickel Barrier**

**Consult ATC for availability

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ATC GENERAL PURPOSE CAPACITORS: X7R DIELECTRIC

Electrical Characteristics

Capacitance Range:

120 pF to 10 μ F

Temperature Coefficient of Capacitance:

$\pm 15\%$ with 0 Vdc applied

Operating Temperature Range:

-55°C to +125°C

Dissipation Factor:

2.5% (max.) @ +25°C, @1 MHz

≤ 1000 pF; @1 KHz >1000 pF

See Page 9 for DF Exceptions for X7R

Insulation Resistance:

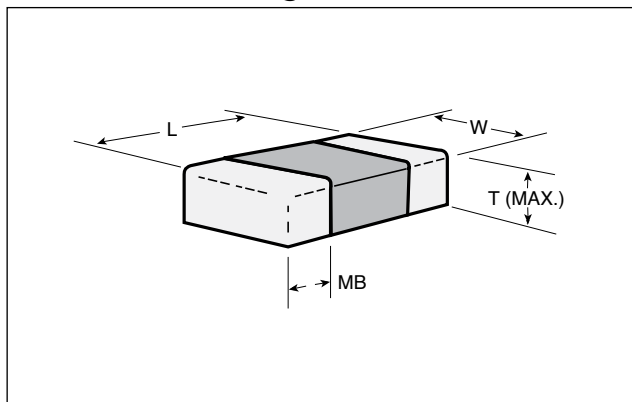
@ +25°C and rated Vdc: 10,000 megohms (min.) or

500 ohm-farads (min.), whichever is less

Aging:

3% (max.) per decade hr.

Dimension Drawing



Dielectric Withstanding Voltage:

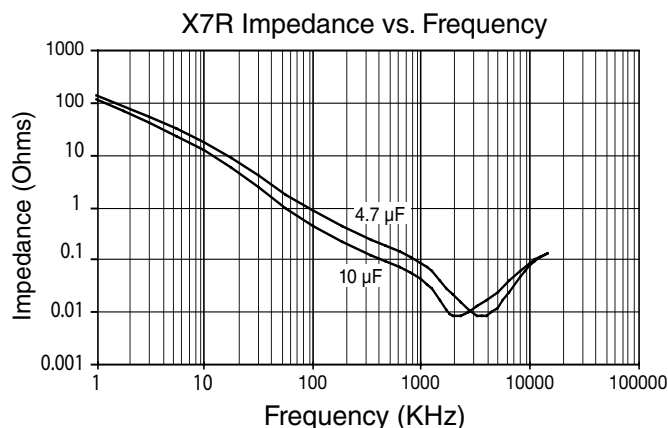
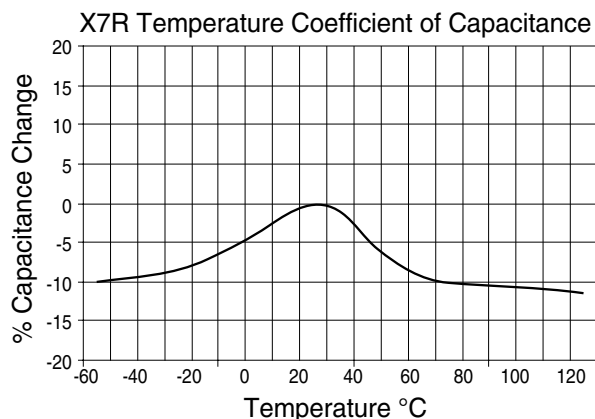
250% WVDC for WVDC < 200V

150% WVDC for 200V < WVDC $\leq$ 500V

120% WVDC for WVDC > 500V

Applied for 5 $\pm$ 1 sec.

Note: Unless otherwise specified all test data is at +25°C.



Standard EIA Capacitance Values Reference Chart

Note: Upper capacitance value limit for X7R is 10.0 μ F

Cap. Code	Cap. pF	Cap. Code	Cap. pF	Cap. Code	Cap. pF	Cap. Code	Cap. pF	Cap. Code	Cap. pF	Cap. Code	Cap. pF	Cap. Code	Cap. pF	Cap. Code	Cap. pF
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