

# ATC GENERAL PURPOSE CAPACITORS: NPO (COG) DIELECTRIC

## Electrical Characteristics

### Capacitance Range:

0.5 pF to 0.12  $\mu$ F

### Temperature Coefficient of Capacitance:

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

### Operating Temperature Range:

-55 $^{\circ}$ C to +125 $^{\circ}$ C

### Dissipation Factor:

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

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

### Insulation Resistance:

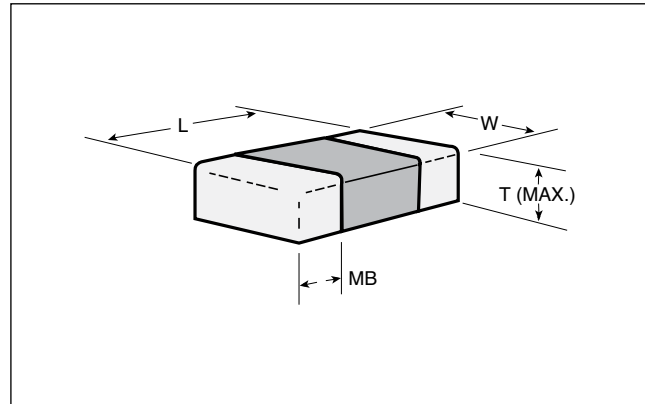
@ + 25 $^{\circ}$ C and rated Vdc:100,000 megohms (min.) or

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

### Aging:

None

## Dimension Drawing



### Dielectric Withstanding Voltage:

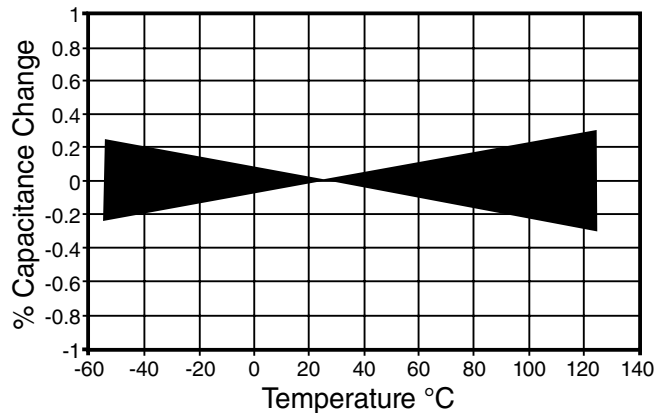
250% WVDC for WVDC < 200V

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

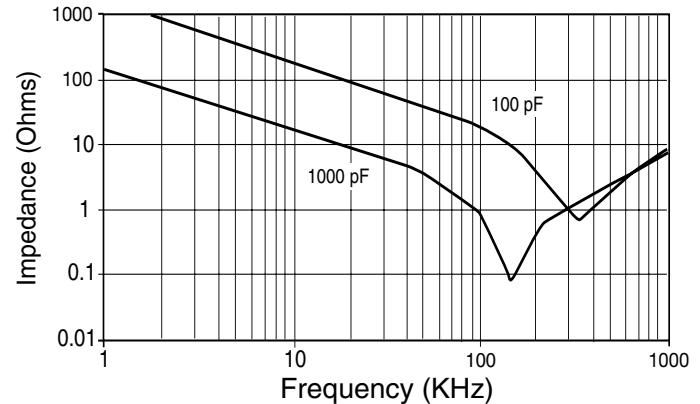
120% WVDC for WVDC > 500V Applied for 5  $\pm$  1 sec.

**Note:** Unless otherwise specified all test data is at + 25 $^{\circ}$ 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  $\mu$ F

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

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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

Size Code: 0603

Temperature Characteristic: NPO

Capacitance Code: First 2 Significant Digits For Capacity. 1R 0

Indicates number of zeros following digits of capacitance in picofarads R=Decimal Point

Termination Code: C

Marking: A=No mark, S=EIA Code - (Special Order)

WVDC Code: 2 A

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

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.

# ATC GENERAL PURPOSE CAPACITORS: X7R DIELECTRIC

## Electrical Characteristics

### Capacitance Range:

120 pF to 10  $\mu$ 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

$\leq 1000$  pF; @1 KHz >1000 pF

See Page 9 for DF Exceptions for X7R

### Insulation Resistance:

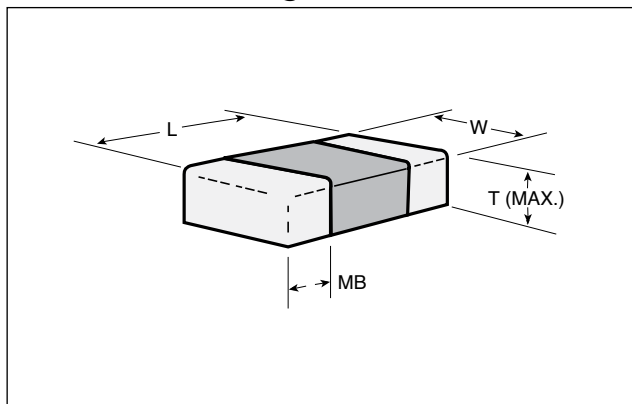
@ +25°C and rated Vdc: 10,000 megohms (min.) or

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

### Aging:

3% (max.) per decade hr.

## Dimension Drawing



### Dielectric Withstanding Voltage:

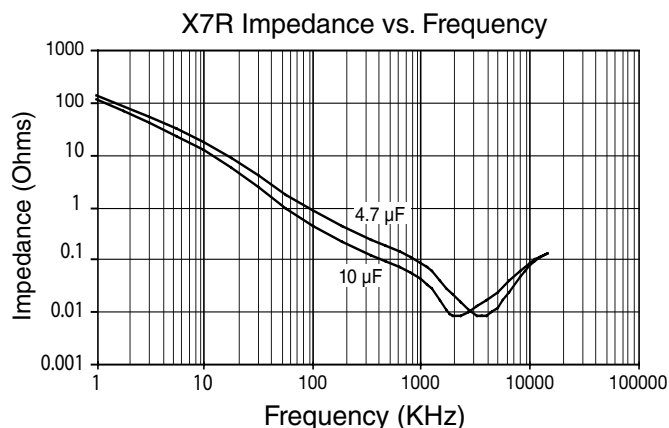
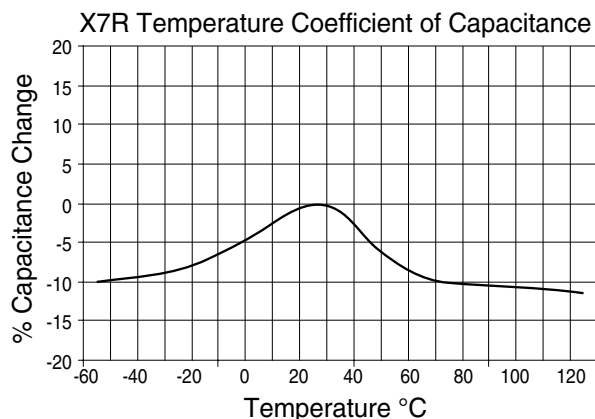
250% WVDC for WVDC < 200V

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  $\mu$ F

Cap. Code	Cap. pF	Cap. Code	Cap. pF	Cap. Code	Cap. pF	Cap. Code	Cap. pF	Cap. Code	Cap. pF	Cap. Code	Cap. $\mu$ F	Cap. Code	Cap. $\mu$ F	Cap. Code	Cap. $\mu$ F
0R5	0.5	8R2	8.2	820	82	821	820	822	8200	563	.056	474	.47	335	3.3
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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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