

# ATC 600F Series

## Ultra-Low ESR, High Q, NPO RF & Microwave Capacitors

### Features:

- **Lowest ESR in Class**
- Highest Working Voltage in class – 250V
- Standard EIA Size: 0805
- Laser Marking (Optional)
- High Self Resonance Frequencies

### Applications:

- Cellular Base Station Equipment
- High Q Frequency Sources
- Broadband Wireless Services
- Satcom Equipment
- Point-to-Point/Point-to-MultiPoint Radio

### Circuit Applications:

- Filter Networks
- Matching Networks
- Tuning, Coupling, Bypass and DC Blocking



### ATC 600 SERIES OVERVIEW

ATC Series	ATC Case Size	EIA Case Size
600	L	0402
600	S	0603
<b>600</b>	<b>F</b>	<b>0805</b>

### Electrical Specifications

<b>Capacitance:</b>	0.1 to 240 pF
<b>Tolerances:</b>	See Cap Value Chart
<b>Working Voltage (WVDC):</b>	250 V
<b>Quality Factor (Q):</b>	≥ 2000
<b>Temperature coefficient of Capacitance (TCC):</b>	0 ± 30 ppm/°C, -55°C to +125°C
<b>Insulation Resistance:</b>	10 <sup>5</sup> MΩ min. at +25°C at rated WVDC
	10 <sup>4</sup> MΩ min. at +125°C at rated WVDC
<b>Dielectric Withstanding Voltage (DWV):</b>	2.5 x WVDC for 5 seconds
<b>Aging:</b>	None

### Mechanical Specifications

<b>Terminations:</b>	T = Tin Plated over Nickel Barrier* (Standard) W = Tin/Lead Solder Plated over Nickel Barrier
<b>Solderability:</b>	Solder coverage > 90% of end termination
<b>Terminal Strength:</b>	4 lbs. Typ., 2 lbs. min.

### Environmental Specifications

<b>Life Test:</b>	2000 hours, +125°C at 2X WVDC
<b>Thermal Shock:</b>	5 cycles, -55°C to +125°C
<b>Moisture Resistance:</b>	240 hours, 85% Relative Humidity at +85°C

*\*Lead-Free and RoHS Compliant*

ATC 600 Series Capacitors are designed and manufactured to meet and exceed the requirements of EIA-198, MIL-PRF-55681 and MIL-PRF-123.



**A M E R I C A N   T E C H N I C A L   C E R A M I C S**

**ATC North America**  
631-622-4700  
sales@atceramics.com

**ATC Europe**  
+46 8 6800410  
sales@atceramics-europe.com

**ATC Asia**  
+86-755-8366-4318  
sales@atceramics-asia.com



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[www.atceramics.com](http://www.atceramics.com)

ATC # 001-956;  
Rev F. 10/05

# ATC 600F Series Ultra-Low ESR, High Q NPO RF & Microwave Capacitors

## Capacitance Values\*

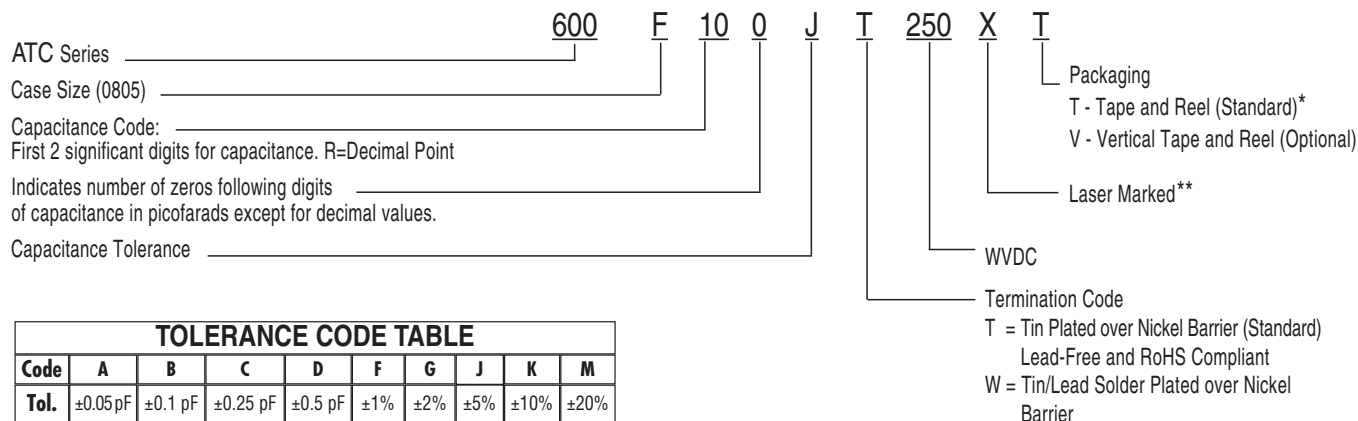
Value (pF)	Cap Code	Marking	Tolerances
0.1	0R1	A9	A, B
0.2	0R2	H9	A, B
0.3	0R3	M9	A, B
0.4	0R4	d9	A, B
0.5	0R5	f9	A, B
0.6	0R6	m9	A, B
0.7	0R7	n9	A, B
0.8	0R8	t9	A, B
0.9	0R9	y9	A, B
1.0	1R0	A0	A, B
1.1	1R1	B0	A, B, C
1.2	1R2	C0	A, B, C
1.3	1R3	D0	A, B, C
1.5	1R5	E0	A, B, C
1.6	1R6	F0	A, B, C
1.8	1R8	G0	A, B, C
2.0	2R0	H0	A, B, C
2.2	2R2	J0	A, B, C
2.4	2R4	K0	A, B, C
2.7	2R7	L0	A, B, C
3.0	3R0	M0	A, B, C

Value (pF)	Cap Code	Marking	Tolerances
3.3	3R3	N0	A, B, C
3.6	3R6	P0	A, B, C
3.9	3R9	Q0	A, B, C
4.3	4R3	R0	A, B, C
4.7	4R7	S0	A, B, C
5.1	5R1	T0	A, B, C
5.6	5R6	U0	A, B, C
6.2	6R2	V0	A, B, C
6.8	6R8	W0	B, C, D
7.5	7R5	X0	B, C, D
8.2	8R2	Y0	B, C, D
9.1	9R1	Z0	B, C, D
10	100	A1	F, G, J
11	110	B1	F, G, J
12	120	C1	F, G, J
15	150	E1	F, G, J
18	180	G1	F, G, J
20	200	H1	F, G, J
22	220	J1	F, G, J
24	240	K1	F, G, J
27	270	L1	F, G, J

Value (pF)	Cap Code	Marking	Tolerances
30	300	M1	F, G, J
33	330	N1	F, G, J
36	360	P1	F, G, J
39	390	Q1	F, G, J
43	430	R1	F, G, J
47	470	S1	F, G, J
51	510	T1	F, G, J
56	560	U1	F, G, J
62	620	V1	F, G, J
68	680	W1	F, G, J
75	750	X1	F, G, J
82	820	Y1	F, G, J
91	910	Z1	F, G, J
100	101	A2	F, G, J
110	111	B2	F, G, J
120	121	C2	F, G, J
150	151	E2	F, G, J
180	181	G2	F, G, J
200	201	H2	F, G, J
220	221	J2	F, G, J
240	241	K2	F, G, J

\*Non-standard values and custom tolerances are available upon request.

## ATC Part Number Code



### TOLERANCE CODE TABLE

Code	A	B	C	D	F	G	J	K	M
Tol.	±0.05 pF	±0.1 pF	±0.25 pF	±0.5 pF	±1%	±2%	±5%	±10%	±20%

\*4,000 pieces on 7" reel and 500 pieces on prototype reel. Consult ATC for other options.

The above part number refers to a 600F Series (case size F) 10 pF capacitor, J tolerance (±5%), 250 WVDC, with T termination (Tin Plated over Nickel Barrier Lead-Free and RoHS Compliant), Laser Marking and Tape and Reel packaging.

\*\*Marking is optional.

ATC accepts orders for our parts using designations **with** or **without** the "ATC" prefix. Both methods of defining the part number are equivalent, i.e., part numbers referenced with the "ATC" prefix are interchangeable to parts referenced without the "ATC" prefix. Customers are free to use either in specifying or procuring parts from American Technical Ceramics.

For additional information and catalogs contact your ATC representative or call direct at (631) 622-4700.

Consult factory for 500 piece reels for prototyping.

Consult factory for additional performance data.

## A M E R I C A N T E C H N I C A L C E R A M I C S

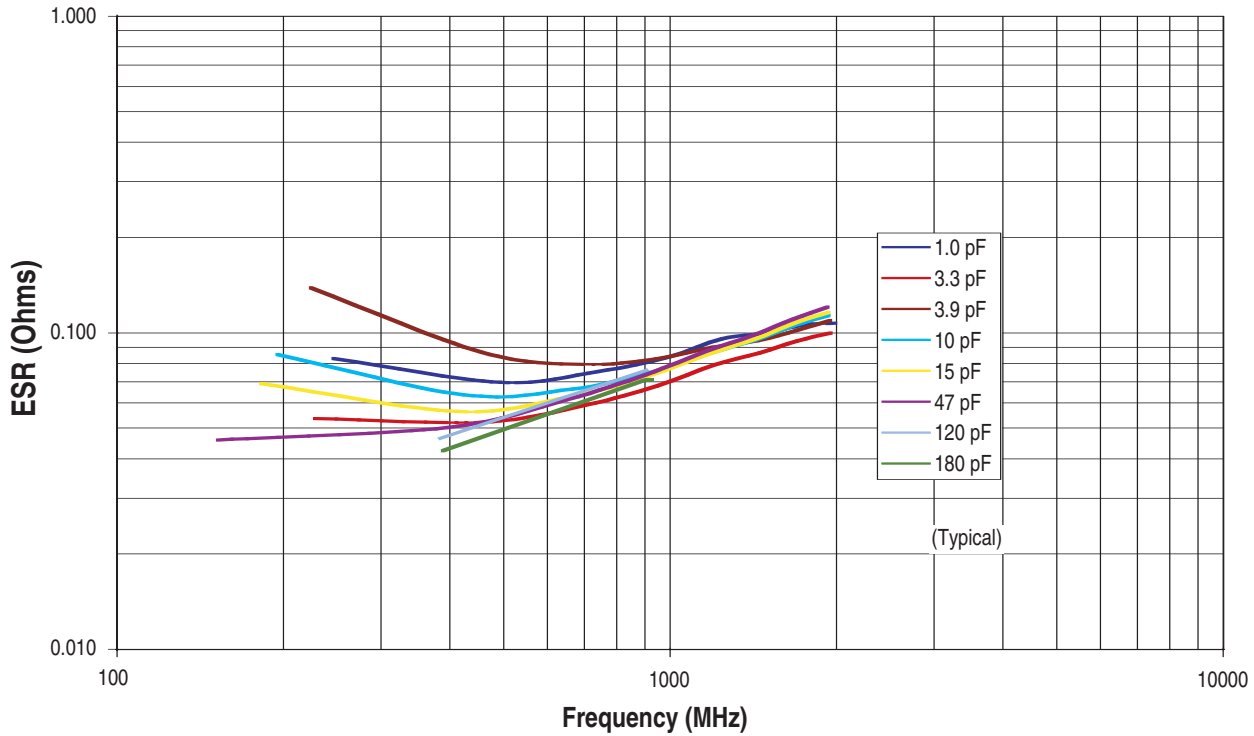
ATC North America  
631-622-4700 sales@atceramics.com

ATC Europe  
+46 8 6800410 sales@atceramics-europe.com

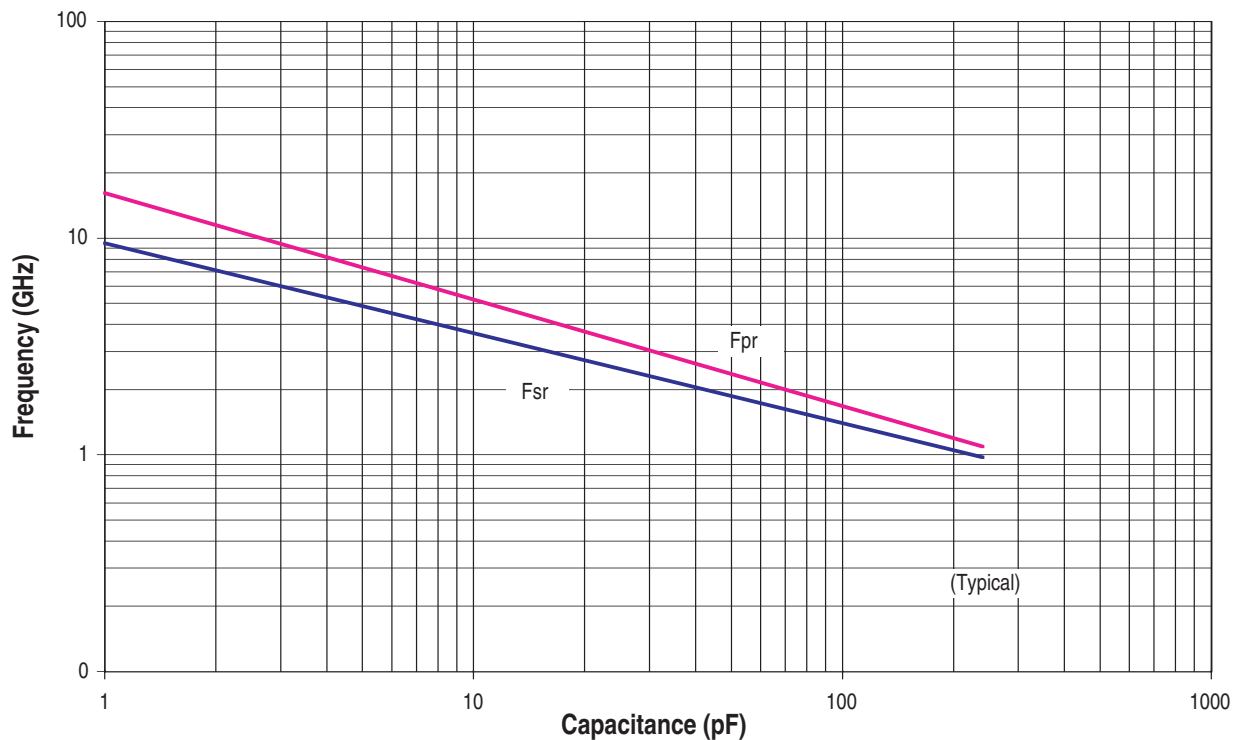
ATC Asia  
86-755-8366-4318 sales@atceramics-asia.com

# ATC 600F Series Ultra-Low ESR, High Q NPO RF & Microwave Capacitors

## 600 F ESR vs Frequency



## 600 F Resonance Frequency Data



### ATC 600F Series Data Sheet Test Condition Description

Capacitors horizontally mounted on 23.3-mil thick Rogers RO4350<sup>®</sup> softboard, 52-mil wide, 1/2 oz. Cu traces.

**FSR** = lowest frequency at which S11 response, referenced at capacitor edge, crosses real axis on Smith Chart.

**FPR** = lowest frequency at which there is a notch in S21 magnitude response.

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# ATC 600F Series Ultra-Low ESR, High Q NPO RF & Microwave Capacitors

## Outline Dimensions

<b>F (0805)</b>	L: $.079 \pm .008$ (2.01 $\pm$ 0.20)	T: .051 max. (1.30 max.)
	W: $.049 \pm .008$ (1.24 $\pm$ 0.20)	Y: $.020 \pm 0.01$ (0.51 $\pm$ 0.25)

inches (mm)

## Suggested Mounting Pad Dimensions

Case Sizes L, S and F

Case Size	A Min	B Min	C Min	D Min
0402 (1005)	.0275 (0.70)	.0354 (0.90)	.0157 (0.40)	.0866 (2.20)
0603 (1608)	.0393 (1.00)	.0433 (1.10)	.0236 (0.60)	.110 (2.80)
0805 (2012)	.0590 (1.50)	.0512 (1.30)	.0236 (0.60)	.1259 (3.20)

inches (mm)

**Design Kits** Each Kit contains a selection of standard capacitor values for circuit prototyping.

Kit #	Item #	Description	Cap. Value Range (pF)	Cap. Values (pF)	Tol. (pF)	Price
<b>Kit 32</b>	DK0032	600F Series Ultra-low ESR, High Q Microwave Capacitors 16 different values, 15 pcs. min. per value	0.1 to 2.0	0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1.0, 1.1, 1.2, 1.5	$\pm 0.1$	\$90.00
				1.6, 1.8, 2.0	$\pm 0.25$	
<b>Kit 33</b>	DK0033	600F Series Ultra-low ESR, High Q Microwave Capacitors 16 different values, 15 pcs. min. per value	1.0 to 10	1.0, 1.2, 1.5, 1.8, 2.0, 2.2, 2.4, 2.7, 3.0, 3.3	$\pm 0.1$	\$90.00
				3.9, 4.7, 5.6, 6.8, 8.2	$\pm 0.25$	
				10	$\pm 5\%$	
<b>Kit 34</b>	DK0034	600F Series Ultra-low ESR, High Q Microwave Capacitors 16 different values, 15 pcs. min. per value	10 to 100	10, 12, 15, 18, 20, 22, 24, 27, 30, 33, 39, 47, 56, 68, 82, 100	$\pm 5\%$	\$90.00
<b>Kit 35</b>	DK0035	600F Series Ultra-low ESR, High Q Microwave Capacitors 7 different values, 15 pcs. min. per value	100 to 240	100, 120, 150, 180, 200, 220, 240	$\pm 5\%$	\$50.00

For Online Kit Orders, Catalog & Application Notes, Visit: [www.atceramics.com](http://www.atceramics.com)

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**A M E R I C A N T E C H N I C A L C E R A M I C S**

ATC North America  
631-622-4700 sales@atceramics.com

ATC Europe  
+46 8 6800410 sales@atceramics-europe.com

ATC Asia  
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