

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 Stations
- Wireless Communications
- Broadband Wireless Services
- Satellite Communications
- WiMAX (802.16)

Circuit Applications:

- Filter Networks
- High Q Frequency Sources
- 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
600	F	0805

Electrical Specifications

Capacitance:	0.1 to 240 pF
Tolerances:	See Cap Value Chart
Working Voltage (WVDC):	250 V
Quality Factor (Q):	> 2000 @ 1 MHz
Operating Temperature Range:	-55°C to +125°C (no derating of working voltage)
Temperature coefficient of Capacitance (TCC):	0 ± 30 ppm/°C, -55°C to +125°C
Insulation Resistance:	10 ⁵ MΩ min. at +25°C at rated WVDC 10 ⁴ MΩ min. at +125°C at rated WVDC
Dielectric Withstanding Voltage (DWV):	2.5 x WVDC for 5 seconds
Aging:	None
Piezo Effects:	None

Mechanical Specifications

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

Environmental Specifications

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

Military Approval

DSCC Drawing Number 05001



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



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ATC # 001-956
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ATC 600F Series Ultra-Low ESR, High Q NPO RF & Microwave Capacitors

Capacitance Values*

Value (pF)	Cap Code	Marking	Tolerances	Value (pF)	Cap Code	Marking	Tolerances	Value (pF)	Cap Code	Marking	Tolerances
0.1	0R1	A9	A, B	3.3	3R3	N0	A, B, C, D	30	300	M1	F, G, J, K, M
0.2	0R2	H9	A, B	3.6	3R6	P0	A, B, C, D	33	330	N1	F, G, J, K, M
0.3	0R3	M9	A, B, C	3.9	3R9	Q0	A, B, C, D	36	360	P1	F, G, J, K, M
0.4	0R4	d9	A, B, C	4.3	4R3	R0	A, B, C, D	39	390	Q1	F, G, J, K, M
0.5	0R5	f9	A, B, C	4.7	4R7	S0	A, B, C, D	43	430	R1	F, G, J, K, M
0.6	0R6	m9	A, B, C	5.1	5R1	T0	A, B, C, D	47	470	S1	F, G, J, K, M
0.7	0R7	n9	A, B, C	5.6	5R6	U0	A, B, C, D	51	510	T1	F, G, J, K, M
0.8	0R8	t9	A, B, C	6.2	6R2	V0	A, B, C, D	56	560	U1	F, G, J, K, M
0.9	0R9	y9	A, B, C	6.8	6R8	W0	B, C, J, K	62	620	V1	F, G, J, K, M
1.0	1R0	A0	A, B, C, D	7.5	7R5	X0	B, C, J, K	68	680	W1	F, G, J, K, M
1.1	1R1	B0	A, B, C, D	8.2	8R2	Y0	B, C, J, K	75	750	X1	F, G, J, K, M
1.2	1R2	C0	A, B, C, D	9.1	9R1	Z0	B, C, J, K	82	820	Y1	F, G, J, K, M
1.3	1R3	D0	A, B, C, D	10	100	A1	F, G, J, K, M	91	910	Z1	F, G, J, K, M
1.5	1R5	E0	A, B, C, D	11	110	B1	F, G, J, K, M	100	101	A2	F, G, J, K, M
1.6	1R6	F0	A, B, C, D	12	120	C1	F, G, J, K, M	110	111	B2	F, G, J, K, M
1.8	1R8	G0	A, B, C, D	15	150	E1	F, G, J, K, M	120	121	C2	F, G, J, K, M
2.0	2R0	H0	A, B, C, D	18	180	G1	F, G, J, K, M	150	151	E2	F, G, J, K, M
2.2	2R2	J0	A, B, C, D	20	200	H1	F, G, J, K, M	180	181	G2	F, G, J, K, M
2.4	2R4	K0	A, B, C, D	22	220	J1	F, G, J, K, M	200	201	H2	F, G, J, K, M
2.7	2R7	L0	A, B, C, D	24	240	K1	F, G, J, K, M	220	221	J2	F, G, J, K, M
3.0	3R0	M0	A, B, C, D	27	270	L1	F, G, J, K, M	240	241	K2	F, G, J, K, M

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

ATC Part Number Code

ATC Series 600 Case Size (0805) F Capacitance Code: 10 0 Indicates number of zeros following digits of capacitance in picofarads except for decimal values. Capacitance Tolerance J T 250 X T

Packaging
T - Tape and Reel (Standard)*
TV - Vertical Tape and Reel (Optional)
Laser Marked**

WVDC
Termination Code
T = Tin Plated over Nickel Barrier (Standard) RoHS Compliant
TN = Tin Plated over Non-Magnetic Barrier
W = Tin/Lead Solder Plated over Nickel Barrier

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, 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 (+1-631) 622-4700.

Consult factory for 500 piece reels for prototyping.

Consult factory for additional performance data.

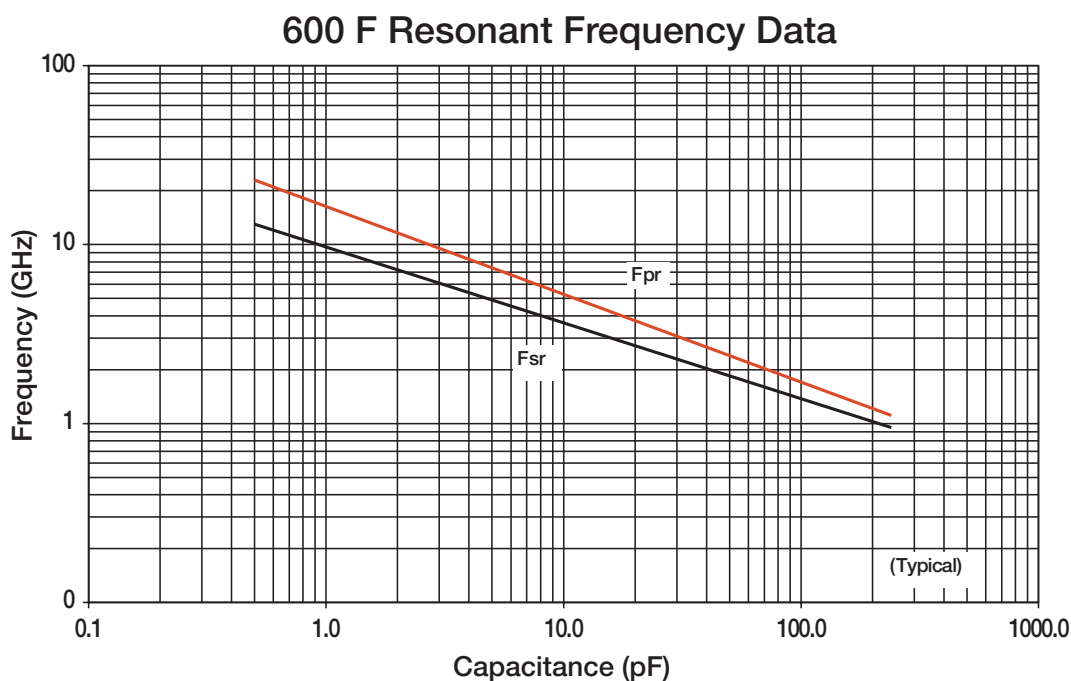
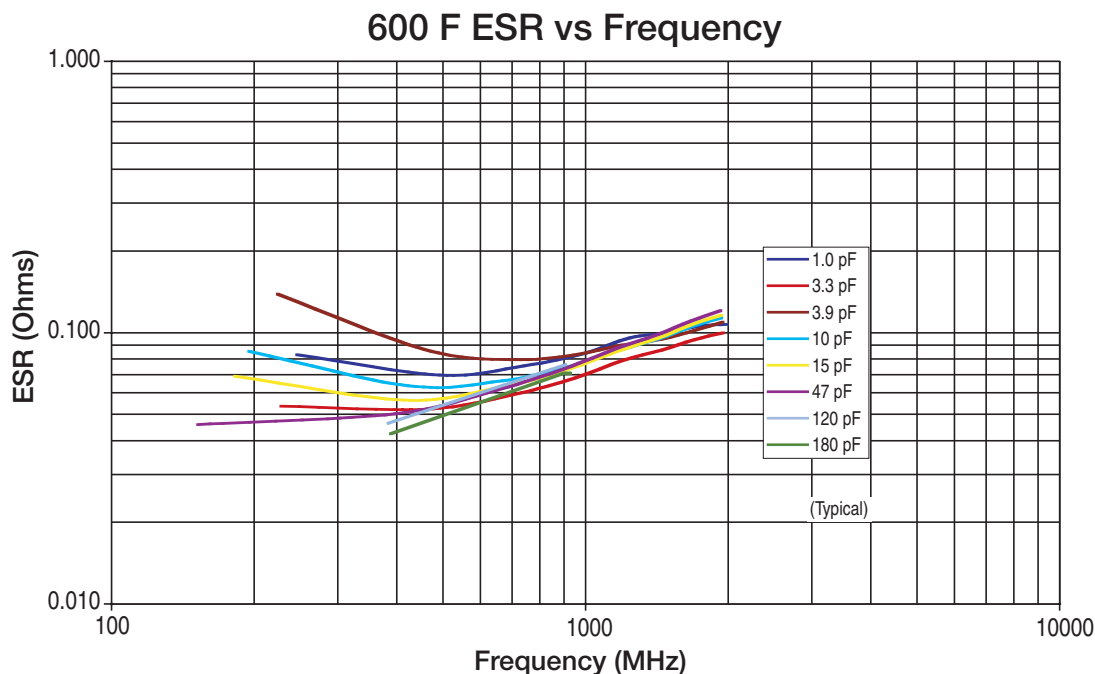
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ATC 600F Series Data Sheet Test Condition Description

Capacitors horizontally mounted on 23.3-mil thick Rogers RO4350® 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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Outline Dimensions

	F (0805) L: .079 ± .008 (2.01 ± 0.20) W: .049 ± .008 (1.24 ± 0.20)	T: .051 max. (1.30 max.) Y: .020 ± 0.01 (0.51 ± 0.25)
Inches (mm)		

Suggested Mounting Pad Dimensions

Horizontal
Electrode Orientation

Vertical
Electrode Orientation

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
Kit 32T	DK0032T 	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	±0.1	\$90.00
				1.6, 1.8, 2.0	±0.25	
Kit 33T	DK0033T 	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	±0.1	\$90.00
				3.9, 4.7, 5.6, 6.8, 8.2	±0.25	
				10	±5%	
Kit 34T	DK0034T 	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	±5%	\$90.00
Kit 35T	DK0035T 	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	±5%	\$50.00

For Online Kit Orders, Catalog & Application Notes, Visit: www.atceramics.com

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600F510JT250XT	600F680JT250XT	600F0R7AT250XT	600F2R2AW250XT	600F390JT250XT	600F101JT250XT
600F8R2BT250XT	600F2R4BT250XT	600F0R8BT250XT	600F1R0AT250XT	600F100GT250XT	600F6R8CT250XT
600F0R3BT250XT	600F150FT250XT	600F1R2AT250XT	600F2R0AT250XT	600F0R5AT250XT	600F9R1JT250XT
600F1R8AT250XT	600F3R0CT250XT	600F120JT250XT	600F7R5BT250XT	600F910JT250XT	600F201JT250XT
600F0R4AT250XT	600F121FT250XT	600F470FT250XT	600F470JT250XT	600F430FT250XT	600F9R1BT250XT
600F1R8BT250XT	600F1R2BT250XT	600F2R7AT250XT	600F6R8JT250XT	600F0R9BT250XT	600F560FT250XT
600F5R1CT250XT	600F7R5JT250XT	600F3R0AT250XT	600F150GT250XT	600F0R6AT250XT	600F0R5BT250XT
600F2R0BT250XT	600F5R6AT250XT	600F5R6CT250XT	600F3R3BT250XT	600F100JT250XT	600F4R7AT250XT
600F200JT250XT	600F220JT250XT	600F330FT250XT	600F9R1CT250XT	600F100FT250XT	600F4R3BT250XT
600F8R2CT250XT	600F0R7BT250XT	600F270JT250XT	600F0R1AT250XT	600F2R0CT250XT	600F1R5CT250XT
600F390FT250XT	600F680FT250XT	600F3R9AT250XT	600F2R2BT250XT	600F150JT250XT	600F3R3CT250XT
600F4R7BT250XT	600F240FT250XT	600F221JT250XT	600F330JT250XT	600F2R7CT250XT	600F101GT250XT
600F151JT250XT	600F1R5AT250XT	600F680GT250XT	600F0R1BT250XT	600F390GT250XT	600F4R3CT250XT
600F0R8AT250XT	600F1R0BT250XT	600F1R6BT250XT	600F430JT250XT	600F0R3AT250XT	600F181FT250XT
600F220FT250XT	600F3R9BT250XT	600F6R8BT250XT	600F101FT250XT	600F241FT250XT	600F750JT250XT
600F0R4BT250XT	600F2R7BT250XT	600F820FT250XT	600F180JT250XT		