

ATC 180 R Series NPO Porcelain Ultra-Low ESR Multilayer Capacitors

- Case R Size (.070" x .090")
- High Q
- Low ESR/ESL
- 500 WVDC
- High Reliability
- Capacitance Range 0.5 pF to 100 pF
- Ultra Stable Performance
- High Self-Resonance
- Low Noise

ATC, the industry leader, offers new improved ESR/ESL performance for the 180 R Series RF/Microwave Capacitors. This is ATC's lowest ESR multilayer capacitor. The high Q, high self-resonance characteristic supports many RF/Microwave applications.

Typical functional applications: Bypass, Coupling, Tuning, Feedback, Impedance Matching and D.C. Blocking.

Typical circuit applications: RF Power Amplifiers, Filters, Oscillators, Timing Circuits and Delay Lines.

ENVIRONMENTAL TESTS

ATC 180 R Series Capacitors are designed and manufactured to meet and exceed the requirements of EIA-198, MIL-PRF-55681 and MIL-PRF-123.

THERMAL SHOCK:

MIL-STD-202, Method 107, Condition A.

MOISTURE RESISTANCE:

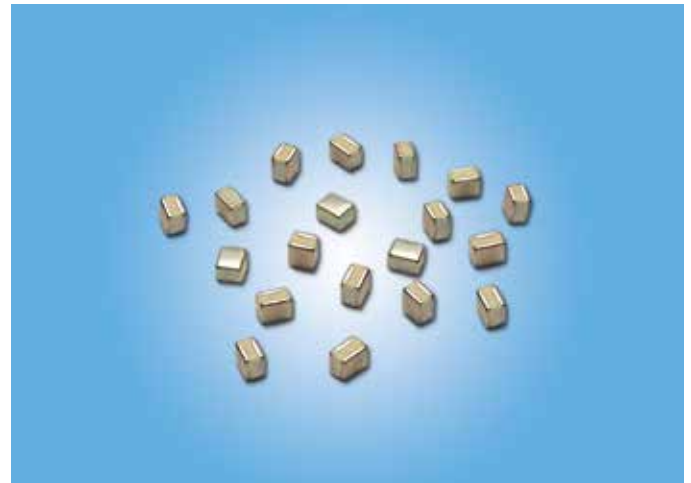
MIL-STD-202, Method 106.

LOW VOLTAGE HUMIDITY:

MIL-STD-202, Method 103, Condition A, with 1.5 Volts D.C. applied while subjected to an environment of 85°C with 85% relative humidity for 240 hours min.

LIFE TEST:

MIL-STD-202, Method 108, for 2000 hours, at 125°C. 200% WVDC applied.



ELECTRICAL AND MECHANICAL SPECIFICATIONS

QUALITY FACTOR (Q): greater than 10,000 at 1 MHz.

TEMPERATURE COEFFICIENT OF CAPACITANCE (TCC):

0 ±30 PPM/°C (-55°C to +125°C).

0 ±60 PPM/°C (+125°C to +175°C).

INSULATION RESISTANCE (IR):

0.5 pF to 100 pF:

10⁶ Megohms min. @ +25°C at rated WVDC.

10⁵ Megohms min. @ +125°C at rated WVDC.

10⁴ Megohms min. above +125°C.

WORKING VOLTAGE (WVDC): 500 WVDC.

DIELECTRIC WITHSTANDING VOLTAGE (DWV):

Case R: 250% of rated WVDC for 5 secs.

AGING EFFECTS: None

PIEZOELECTRIC EFFECTS:

None
(No capacitance variation with voltage or pressure).

CAPACITANCE DRIFT: ±(0.02% or 0.02 pF), whichever is greater.

OPERATING TEMPERATURE RANGE:

-55°C to +175°C (No derating of working voltage).

TERMINATION STYLES:

See Mechanical Configuration, page 3.

TERMINAL STRENGTH: Terminations for chips withstand a pull of 5 lbs. min., 15 lbs. typical, for 5 seconds in direction perpendicular to the termination surface of the capacitor.



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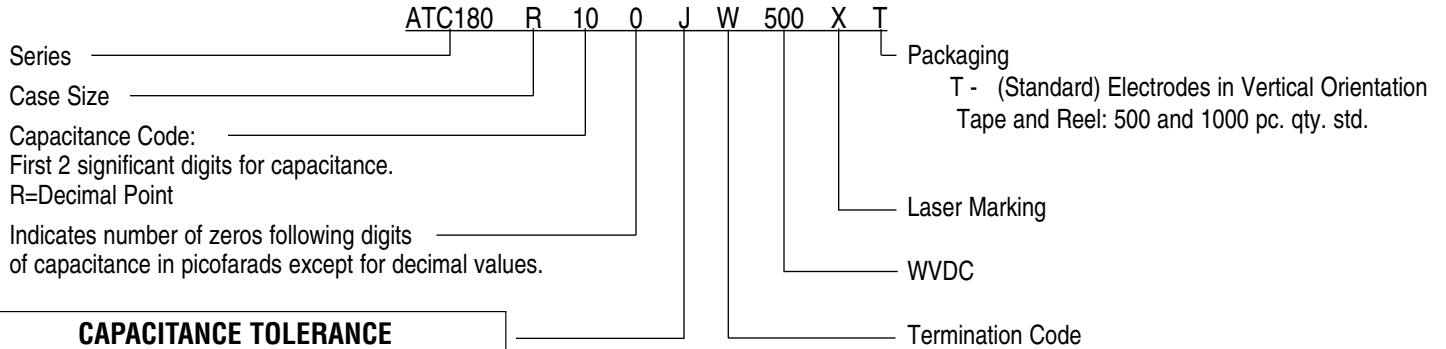


ATC 180 R Capacitance Values

CAP. CODE	CAP. (pF)	TOL.	RATED WVDC	CAP. CODE	CAP. (pF)	TOL.	RATED WVDC	CAP. CODE	CAP. (pF)	TOL.	RATED WVDC
0R5	0.5	B, C, D	500	3R0	3.0	B, C, D	500	200	20	G, J, K, M	500
0R6	0.6			3R3	3.3			220	22		
0R7	0.7			3R6	3.6			240	24		
0R8	0.8			3R9	3.9			270	27		
0R9	0.9			4R3	4.3			300	30		
1R0	1.0			4R7	4.7			330	33		
1R1	1.1			5R1	5.1			360	36		
1R2	1.2			5R6	5.6			390	39		
1R3	1.3			6R2	6.2			430	43		
1R4	1.4			6R8	6.8	470		47			
1R5	1.5			7R5	7.5	510		51			
1R6	1.6			8R2	8.2	560		56			
1R7	1.7			9R1	9.1	620		62			
1R8	1.8			100	10	680		68			
1R9	1.9			110	11	750		75			
2R0	2.0			120	12	820		82			
2R1	2.1			130	13	910		91			
2R2	2.2			150	15	101		100			
2R4	2.4			160	16						
2R7	2.7	180	18								

$VRMS = 0.707 \times WVDC$

ATC PART NUMBER CODE



CAPACITANCE TOLERANCE

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

The above part number refers to a 180 R Series (case size R) 10 pF capacitor, J tolerance (±5%), 500 WVDC, with W termination (Tin/Lead, Solder Plated over Nickel Barrier), laser marking and tape and reel packaging.

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 additional performance data.

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ATC 180 R Capacitors: Mechanical Configurations

ATC SERIES & CASE SIZE	ATC TERM. CODE	CASE SIZE & TYPE	OUTLINES W/T IS A TERMINATION SURFACE	BODY DIMENSIONS Inches (mm)			LEAD AND TERMINATION DIMENSIONS AND MATERIALS	
				LENGTH (L)	WIDTH (W)	THICKNESS (T)	OVERLAP (Y)	MATERIALS
180R	W	R Solder Plate		.070 ±.015 (1.78 ±0.38)	.090 ±.010 (2.29 ±0.25)	.115 (2.92) max.	.010 +.010 - .005 (0.25 +.025 - 0.13)	Tin/Lead, Solder Plated over Nickel Barrier Termination
180R	T	R Solderable Nickel Barrier		.070 ±.015 (1.78 ±0.38)	.090 ±.010 (2.29 ±0.25)	.115 (2.92) max.	.010 +.010 - .005 (0.25 +.025 - 0.13)	RoHS Compliant Tin Plated over Nickel Barrier Termination

All 180 R Capacitors are available laser marked with ATC's identification, capacitance code and tolerance.

Suggested Mounting Pad Dimensions

Horizontal Electrode Orientation

Vertical Electrode Orientation

Case R

	Pad Size	A Min.	B Min.	C Min.	D Min.
Vertical Mount	Normal	.125	.050	.030	.130
	High Density	.115	.030	.030	.090
Horizontal Mount	Normal	.110	.050	.030	.130
	High Density	.090	.030	.030	.090

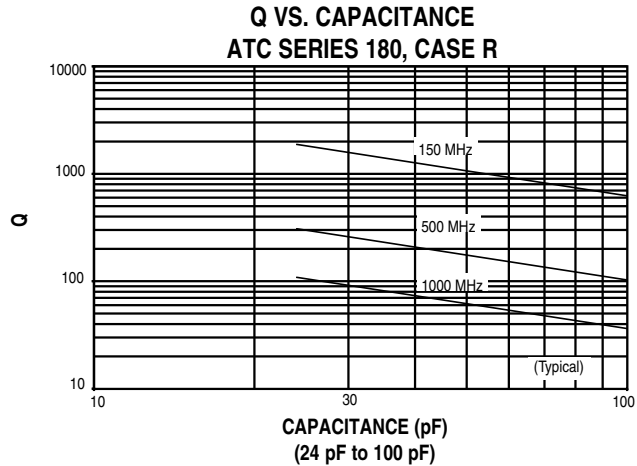
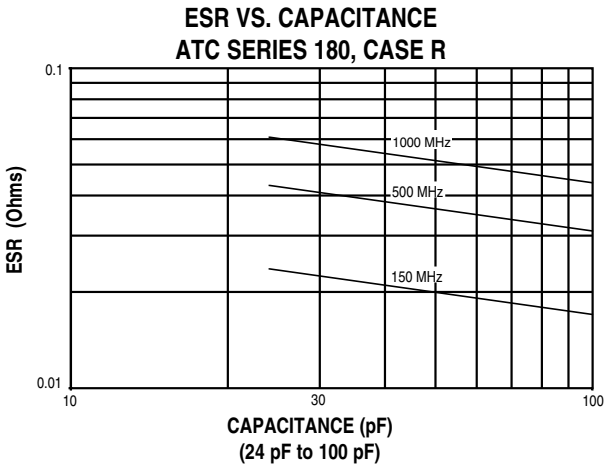
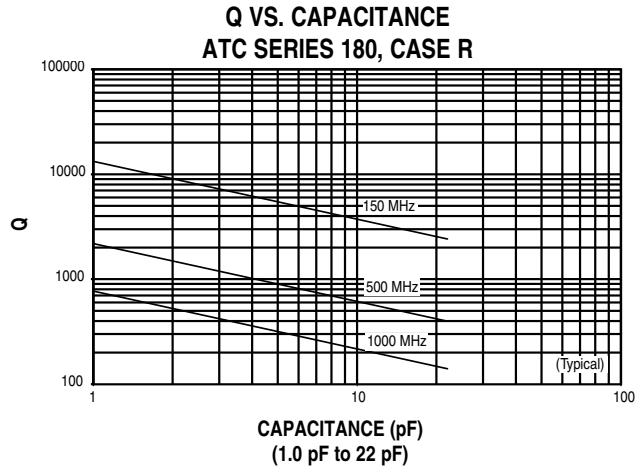
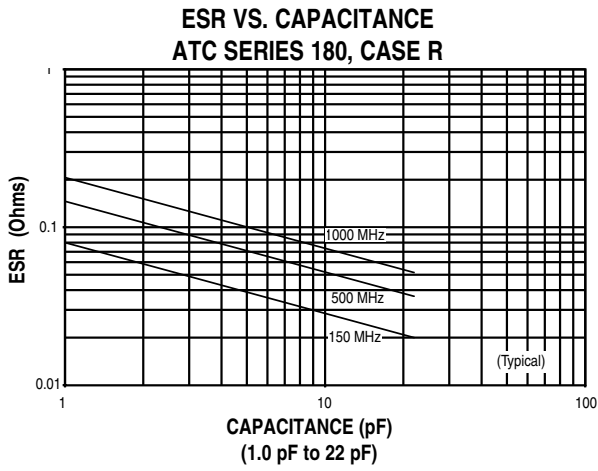
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ATC 180 R Performance Data



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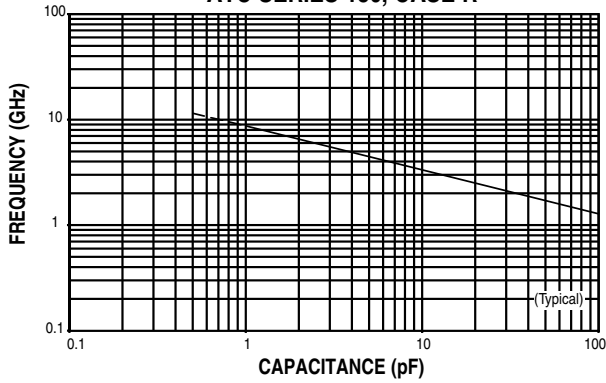
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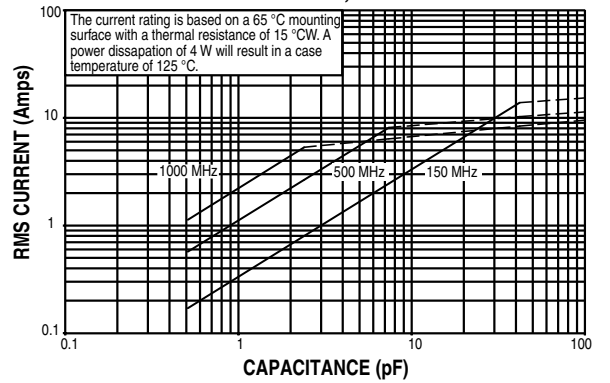
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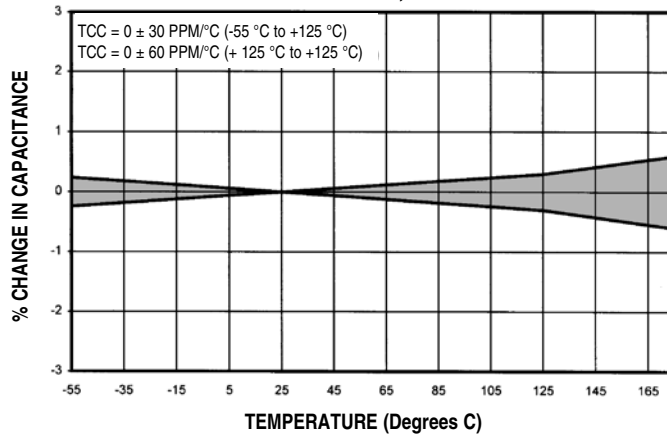
**SERIES RESONANCE VS. CAPACITANCE
ATC SERIES 180, CASE R**



**CURRENT RATING VS. CAPACITANCE
ATC SERIES 180, CASE R**



**CAPACITANCE CHANGE VS. TEMPERATURE
ATC SERIES 180, CASE R**



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