

# ATC 800 B Series NPO Ceramic, High RF Power Ultra-Low ESR Multilayer Capacitors

- Case B Size (.110" x .110")
- Rugged, reliable NPO dielectric
- Case optimized for highest self resonant frequency
- Capacitance Range 0.1 pF to 1000 pF
- Lowest ESR
- Capable of highest RF Power
- RoHS Compliant / Lead-Free

ATC's 800 B Series offers superb performance in demanding high RF power applications requiring consistent and reliable operation. The combination of highly conductive metal electrode systems, optimized case geometries, and proprietary dielectrics, yields the lowest ESR. ATC's new NPO low loss rugged dielectrics are designed to provide superior heat transfer in high RF power applications. Ultra-low ESR and superior thermal performance insure that the 800 B Series products are your best choice for high RF power applications from VHF through microwave frequencies.

Typical applications: VHF / UHF / HDTV Broadcast Transmitters, Wireless Communications, Public Safety Radio, Avionics, Telecom, WiMAX, Microwave Communication Systems and Satellite Systems.

Typical circuit applications: High RF Power Filter Networks, Combiners, Couplers, Matching Networks, Output Coupling, Antenna Coupling, and DC Blocking and Bypassing.

## ENVIRONMENTAL TESTS

ATC 800 B 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:

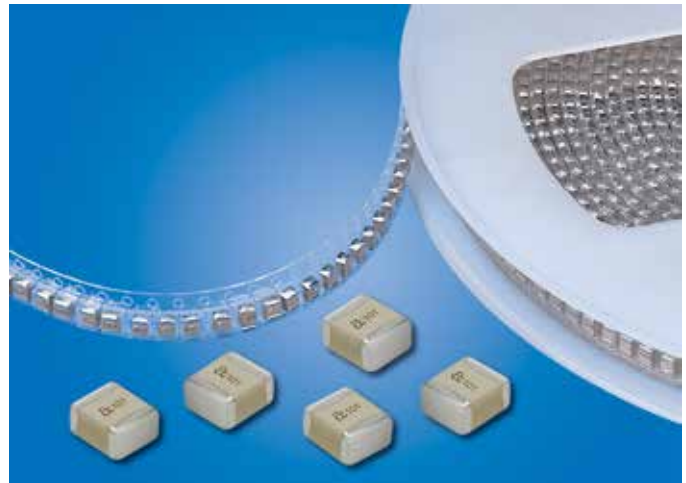
MIL-STD-202, Method 106

### LOW VOLTAGE HUMIDITY:

MIL-STD-202, Method 103, Condition A, with 1.5 Volts DC 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):** > 2000 @ 1 MHz

**TEMPERATURE COEFFICIENT OF CAPACITANCE (TCC):**  
0 ±30 PPM/°C (-55°C to +125°C)

### INSULATION RESISTANCE (IR):

0.1 pF to 1000 pF:  
10<sup>5</sup> Megohms min. @ +25°C at rated WVDC  
10<sup>4</sup> Megohms min. @ +125°C at rated WVDC

### WORKING VOLTAGE (WVDC):

See Capacitance Values Table, page 2

### DIELECTRIC WITHSTANDING VOLTAGE (DWV):

Case B: 250% of rated WVDC for 5 secs

**RETRACE:** Less than ±(0.02% or 0.02 pF), whichever is greater

**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:

From -55°C to +125°C (No derating of working voltage)

### TERMINATION STYLES:

RoHS Compliant and Solder Plate  
See Mechanical Configurations, 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. Test per MIL-STD-202, method 211.



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ATC # 001-1033 Rev. J, 1/18

# ATC 800 B Capacitance Values

CAP. CODE	CAP. (pF)	TOL.	RATED WVDC	CAP. CODE	CAP. (pF)	TOL.	RATED WVDC	CAP. CODE	CAP. (pF)	TOL.	RATED WVDC	CAP. CODE	CAP. (pF)	TOL.	RATED WVDC	
OR1	0.1	B	500	2R4	2.4	B, C, D	500	200	20	F, G, J, K, M	500	151	150	F, G, J, K, M	300	
OR2	0.2			2R7	2.7				220			22	161			160
OR3	0.3	B, C		3R0	3.0				240			24	181			180
OR4	0.4			3R3	3.3				270			27	201			200
OR5	0.5	B, C, D		3R6	3.6				300			30	221			220
OR6	0.6			3R9	3.9				330			33	241			240
OR7	0.7			4R3	4.3				360			36	271			270
OR8	0.8			4R7	4.7				390			39	301			300
OR9	0.9			5R1	5.1				430			43	331			330
1R0	1.0			5R6	5.6				470			47	361			360
1R1	1.1		6R2	6.2		510	51	391	390							
1R2	1.2		B, C, D	6R8	6.8		560	56	431	430						
1R3	1.3			7R5	7.5	B, C, J, K, M	620	62	471	470						
1R4	1.4		50	8R2	8.2		680	68	511	510						
1R5	1.5	9R1		9.1		750	75	561	560							
1R6	1.6	100		10		820	82	621	620							
1R7	1.7	110		11		910	91	681	680							
1R8	1.8	120		12	F, G, J, K, M	101	100	751	750							
1R9	1.9	130		13		111	110	821	820							
2R0	2.0	150		15		121	120	911	910							
2R1	2.1	160		16		131	130	102	1000							
2R2	2.2	180		18												

VRMS = 0.707 X WVDC

• SPECIAL VALUES, TOLERANCES AND MATCHING AVAILABLE. PLEASE CONSULT FACTORY.

## ATC PART NUMBER CODE

ATC800 B 91 0 J T 500 X T

Series \_\_\_\_\_

Case Size \_\_\_\_\_

Capacitance Code: \_\_\_\_\_  
 First 2 significant digits for capacitance.  
 R=Decimal Point

Indicates number of zeros following digits \_\_\_\_\_  
 of capacitance in picofarads except for decimal values.

Capacitance Tolerance \_\_\_\_\_

CAPACITANCE TOLERANCE							
Code	B	C	D	F	G	J	M
Tol.	±0.1 pF	±0.25 pF	±0.5 pF	±1%	±2%	±5%	±20%

Packaging  
 T - Tape & Reel: 500 and 1000 pc. qty. std.\*  
 TV - Vertical Orientation of Product,  
 Tape & Reel: 500 and 1000 pc. qty. std.\*  
 I - Special Packaging. Consult Factory.  
 \*Consult ATC for other quantities


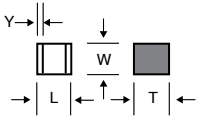

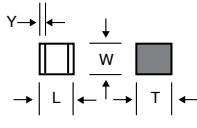
Laser Marking  
 WVDC  
 Termination Code

The above part number refers to a 800 B Series (case size B) 91 pF capacitor, J tolerance (±5%), 500 WVDC, with T termination (Tin Plated over Nickel Barrier Termination, RoHS Compliant), laser marking and tape and reel packaging.


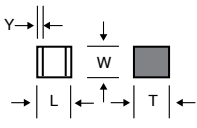
ATC accepts orders for our parts using designations *with* or *without* the "ATC" prefix. Both methods of defining the part number are equivalent, i.e., part numbers referenced with the "ATC" prefix are interchangeable to parts referenced without the "ATC" prefix. Customers are free to use either in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

For additional information and catalogs contact your ATC representative or call direct at (+1-631) 622-4700.  
 Consult factory for additional performance data.

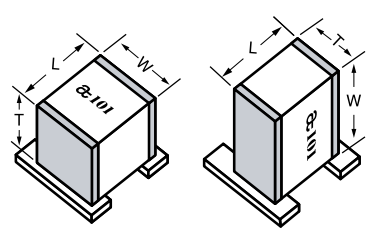
## ATC 800 B Capacitors: Mechanical Configurations

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)	MATERIAL
800B	T	 B Solderable Nickel Barrier		.110 +.020 -.010 (2.79 +0.51 -0.25)	.110 ±.015 (2.79 ±0.38)	.070 (1.78) max.	.015 (0.38) ±.010 (0.25)	<b>RoHS Compliant</b> Tin Plated over Nickel Barrier Termination
800B	W	 B Solder Plate		.110 +.020 -.010 (2.79 +0.51 -0.25)	.110 ±.015 (2.79 ±0.38)	.070 (1.78) max.	.015 (0.38) ±.010 (0.25)	Tin/Lead Solder Plated over Nickel Barrier Termination

## ATC 800 B Capacitors: Non-Magnetic 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)	MATERIAL
800B	TN	 B Non-Mag Solderable Barrier		.110 +.020 -.010 (2.79 +0.51 -0.25)	.110 ±.015 (2.79 ±0.38)	.070 (1.78) max.	.015 (0.38) ±.010 (0.25)	<b>RoHS Compliant</b> Tin Plated over Non-Magnetic Barrier Termination

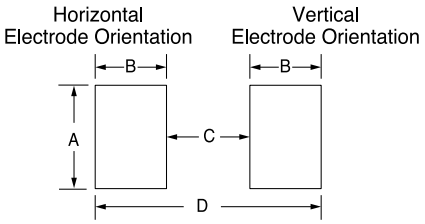
## Suggested Mounting Pad Dimensions



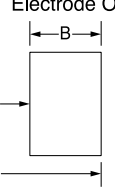
**Case B Vertical Mount**

Cap Value <sup>.43</sup>	Pad Size	A Min	B Min	C Min	D Min
All Values	Normal	.090 (2.29)	.050 (1.27)	.075 (1.91)	.175 (4.45)
	High Density	.070 (1.78)	.030 (.762)	.075 (1.91)	.135 (3.43)

Horizontal  
Electrode Orientation



Vertical  
Electrode Orientation

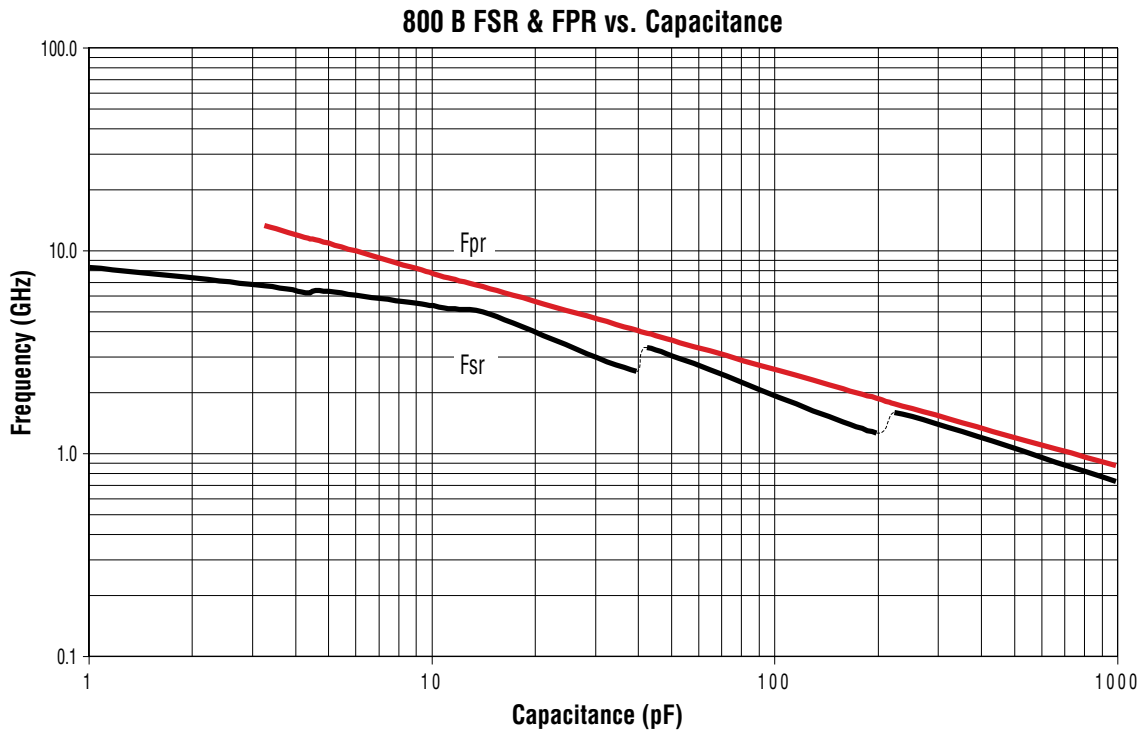
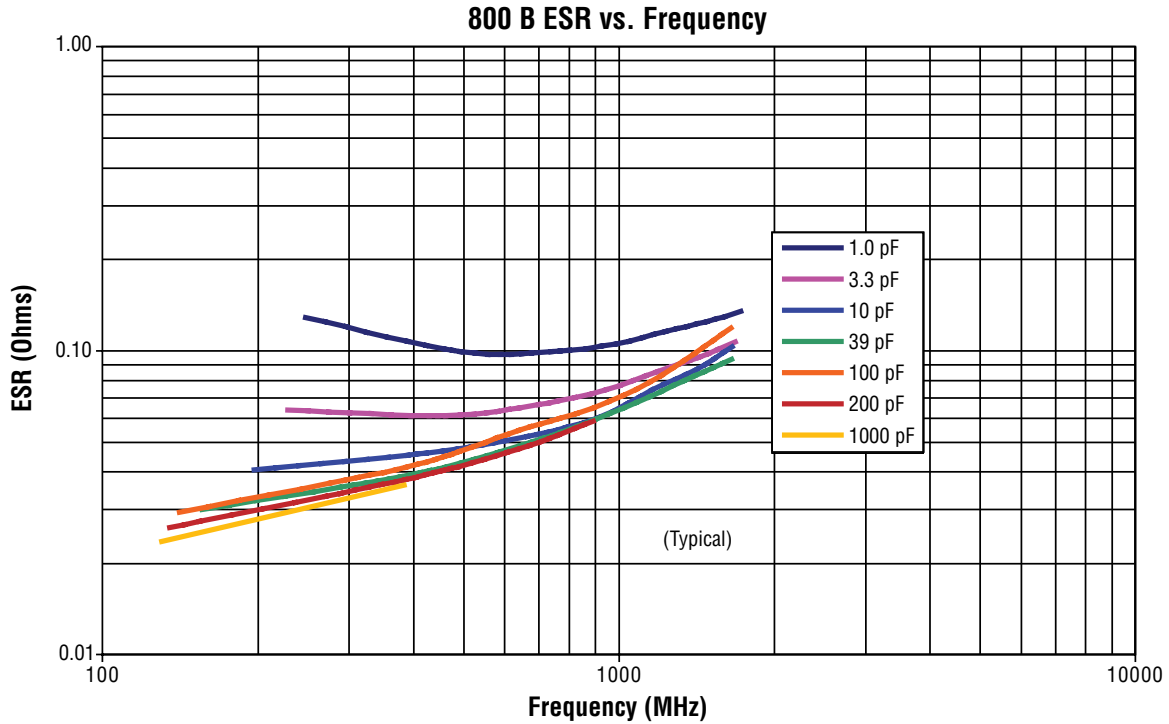


**Case B Horizontal Mount**

Cap Value <sup>.43</sup>	Pad Size	A Min	B Min	C Min	D Min
All Values	Normal	.130 (3.30)	.050 (1.27)	.075 (1.91)	.175 (4.45)
	High Density	.110 (2.79)	.030 (.762)	.075 (1.91)	.135 (3.43)

*inches (mm)*

# ATC 800 B Performance Data



#### ATC 800 B Series Data Sheet Test Condition Description

Capacitors vertically mounted in series microstrip configuration on 23.3-mil thick Rogers RO4350<sup>®</sup> softboard, 52-mils 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.

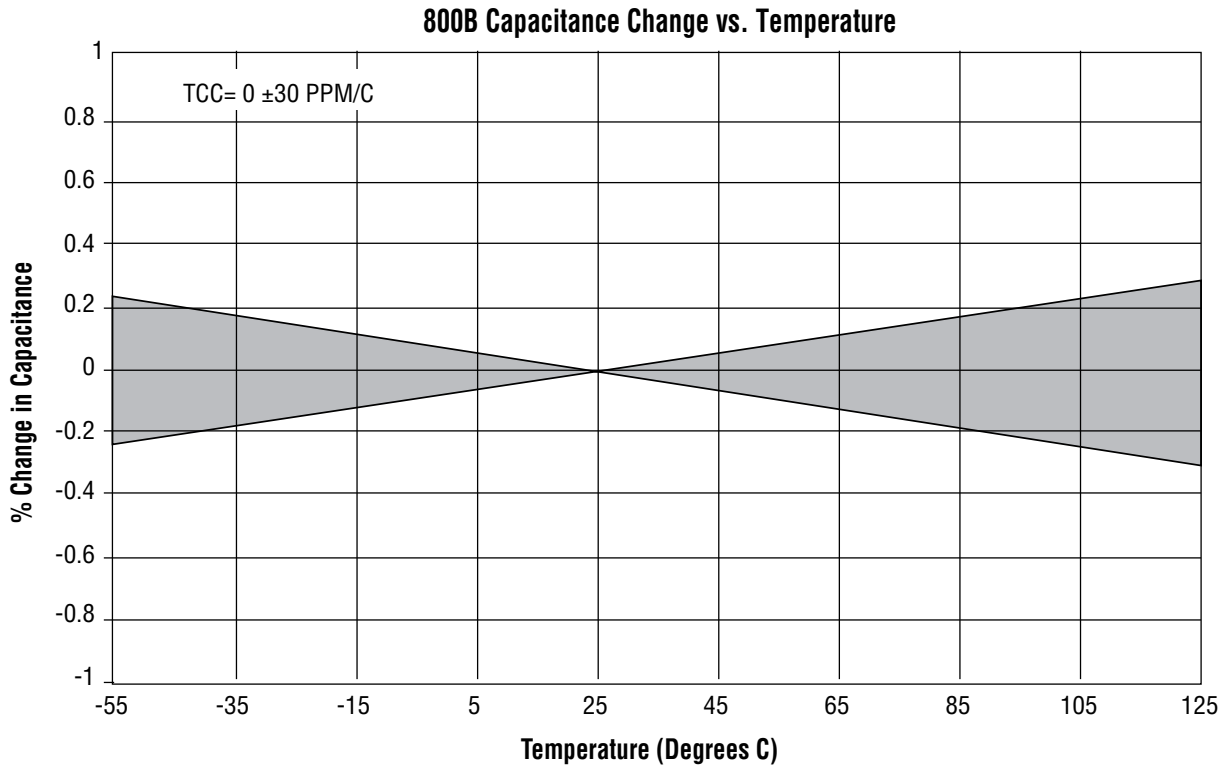
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# ATC 800 B Performance Data



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