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 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:
10⁶ Megohms min. @ +25°C at rated WVDC
10⁴ 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.
## ATC 800 B Capacitance Values

<table>
<thead>
<tr>
<th>CAP. CODE</th>
<th>CAP. (pF)</th>
<th>RATED WVDC</th>
<th>CAP. CODE</th>
<th>CAP. (pF)</th>
<th>RATED WVDC</th>
<th>CAP. CODE</th>
<th>CAP. (pF)</th>
<th>RATED WVDC</th>
<th>CAP. CODE</th>
<th>CAP. (pF)</th>
<th>RATED WVDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>0R1</td>
<td>0.1</td>
<td>B</td>
<td>2R4</td>
<td>2.4</td>
<td></td>
<td>200</td>
<td>20</td>
<td></td>
<td>151</td>
<td>150</td>
<td></td>
</tr>
<tr>
<td>0R2</td>
<td>0.2</td>
<td></td>
<td>2R7</td>
<td>2.7</td>
<td></td>
<td>220</td>
<td>22</td>
<td></td>
<td>161</td>
<td>160</td>
<td></td>
</tr>
<tr>
<td>0R3</td>
<td>0.3</td>
<td></td>
<td>3R0</td>
<td>3.0</td>
<td></td>
<td>240</td>
<td>24</td>
<td></td>
<td>181</td>
<td>180</td>
<td></td>
</tr>
<tr>
<td>0R4</td>
<td>0.4</td>
<td>B, C</td>
<td>3R3</td>
<td>3.3</td>
<td></td>
<td>270</td>
<td>27</td>
<td></td>
<td>201</td>
<td>200</td>
<td></td>
</tr>
<tr>
<td>0R5</td>
<td>0.5</td>
<td>B, C, D</td>
<td>3R6</td>
<td>3.6</td>
<td></td>
<td>300</td>
<td>30</td>
<td></td>
<td>221</td>
<td>220</td>
<td></td>
</tr>
<tr>
<td>0R6</td>
<td>0.6</td>
<td></td>
<td>3R9</td>
<td>3.9</td>
<td></td>
<td>330</td>
<td>33</td>
<td></td>
<td>241</td>
<td>240</td>
<td></td>
</tr>
<tr>
<td>0R7</td>
<td>0.7</td>
<td></td>
<td>4R3</td>
<td>4.3</td>
<td></td>
<td>360</td>
<td>36</td>
<td></td>
<td>271</td>
<td>270</td>
<td></td>
</tr>
<tr>
<td>0R8</td>
<td>0.8</td>
<td></td>
<td>4R7</td>
<td>4.7</td>
<td></td>
<td>390</td>
<td>39</td>
<td></td>
<td>301</td>
<td>300</td>
<td></td>
</tr>
<tr>
<td>0R9</td>
<td>0.9</td>
<td></td>
<td>5R1</td>
<td>5.1</td>
<td></td>
<td>430</td>
<td>43</td>
<td></td>
<td>331</td>
<td>330</td>
<td></td>
</tr>
<tr>
<td>1R0</td>
<td>1.0</td>
<td></td>
<td>5R6</td>
<td>5.6</td>
<td></td>
<td>470</td>
<td>47</td>
<td></td>
<td>361</td>
<td>360</td>
<td></td>
</tr>
<tr>
<td>1R1</td>
<td>1.1</td>
<td></td>
<td>6R2</td>
<td>6.2</td>
<td></td>
<td>510</td>
<td>51</td>
<td></td>
<td>391</td>
<td>390</td>
<td></td>
</tr>
<tr>
<td>1R2</td>
<td>1.2</td>
<td>B, C, D</td>
<td>6R8</td>
<td>6.8</td>
<td></td>
<td>560</td>
<td>56</td>
<td></td>
<td>431</td>
<td>430</td>
<td></td>
</tr>
<tr>
<td>1R3</td>
<td>1.3</td>
<td></td>
<td>7R5</td>
<td>7.5</td>
<td></td>
<td>620</td>
<td>62</td>
<td></td>
<td>471</td>
<td>470</td>
<td></td>
</tr>
<tr>
<td>1R4</td>
<td>1.4</td>
<td></td>
<td>8R2</td>
<td>8.2</td>
<td></td>
<td>680</td>
<td>68</td>
<td></td>
<td>511</td>
<td>510</td>
<td></td>
</tr>
<tr>
<td>1R5</td>
<td>1.5</td>
<td></td>
<td>9R1</td>
<td>9.1</td>
<td></td>
<td>750</td>
<td>75</td>
<td></td>
<td>561</td>
<td>560</td>
<td></td>
</tr>
<tr>
<td>1R6</td>
<td>1.6</td>
<td></td>
<td>100</td>
<td>10</td>
<td></td>
<td>820</td>
<td>82</td>
<td></td>
<td>621</td>
<td>620</td>
<td></td>
</tr>
<tr>
<td>1R7</td>
<td>1.7</td>
<td></td>
<td>110</td>
<td>11</td>
<td></td>
<td>910</td>
<td>91</td>
<td></td>
<td>681</td>
<td>680</td>
<td></td>
</tr>
<tr>
<td>1R8</td>
<td>1.8</td>
<td></td>
<td>120</td>
<td>12</td>
<td></td>
<td>101</td>
<td>100</td>
<td></td>
<td>751</td>
<td>750</td>
<td></td>
</tr>
<tr>
<td>1R9</td>
<td>1.9</td>
<td></td>
<td>130</td>
<td>13</td>
<td></td>
<td>111</td>
<td>110</td>
<td></td>
<td>821</td>
<td>820</td>
<td></td>
</tr>
<tr>
<td>2R0</td>
<td>2.0</td>
<td></td>
<td>150</td>
<td>15</td>
<td></td>
<td>121</td>
<td>120</td>
<td></td>
<td>911</td>
<td>910</td>
<td></td>
</tr>
<tr>
<td>2R1</td>
<td>2.1</td>
<td></td>
<td>160</td>
<td>16</td>
<td></td>
<td>131</td>
<td>130</td>
<td></td>
<td>102</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>2R2</td>
<td>2.2</td>
<td></td>
<td>180</td>
<td>18</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

VRMS = 0.707 X WVDC

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

## ATC PART NUMBER CODE

**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**

**Code**

<table>
<thead>
<tr>
<th>Code</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>F</th>
<th>G</th>
<th>J</th>
<th>K</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tol.</td>
<td>±0.1 pF</td>
<td>±0.25 pF</td>
<td>±0.5 pF</td>
<td>±1%</td>
<td>±2%</td>
<td>±5%</td>
<td>±10%</td>
<td>±20%</td>
</tr>
</tbody>
</table>

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.

### Capacitance Tolerance

- **B**: ±0.1 pF
- **C**: ±0.25 pF
- **D**: ±0.5 pF
- **F**: ±1%
- **G**: ±2%
- **J**: ±5%
- **K**: ±10%
- **M**: ±20%

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 Capacitance Values**

**ATC PART NUMBER CODE**

**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**

**Code**

<table>
<thead>
<tr>
<th>Code</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>F</th>
<th>G</th>
<th>J</th>
<th>K</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tol.</td>
<td>±0.1 pF</td>
<td>±0.25 pF</td>
<td>±0.5 pF</td>
<td>±1%</td>
<td>±2%</td>
<td>±5%</td>
<td>±10%</td>
<td>±20%</td>
</tr>
</tbody>
</table>

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.

### Capacitance Tolerance

- **B**: ±0.1 pF
- **C**: ±0.25 pF
- **D**: ±0.5 pF
- **F**: ±1%
- **G**: ±2%
- **J**: ±5%
- **K**: ±10%
- **M**: ±20%

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**

<table>
<thead>
<tr>
<th>ATC SERIES &amp; CASE SIZE</th>
<th>ATC TERM. CODE</th>
<th>CASE SIZE &amp; TYPE</th>
<th>OUTLINES W/T IS A TERMINATION SURFACE</th>
<th>BODY DIMENSIONS Inches (mm)</th>
<th>LEAD AND TERMINATION DIMENSIONS AND MATERIALS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>LENGTH (L)</td>
<td>WIDTH (W)</td>
</tr>
<tr>
<td>800B T</td>
<td>B</td>
<td>Solderable Nickel Barrier</td>
<td>.110 +0.020 -0.010 (2.79 +0.51 -0.25)</td>
<td>.110 ±0.015 (2.79 ±0.38) max.</td>
<td>.070 (1.76) max.</td>
</tr>
<tr>
<td>800B W</td>
<td>B</td>
<td>Solder Plate</td>
<td>.110 +0.020 -0.010 (2.79 +0.51 -0.25)</td>
<td>.110 ±0.015 (2.79 ±0.38) max.</td>
<td>.070 (1.76) max.</td>
</tr>
</tbody>
</table>

**ATC 800 B Capacitors: Non-Magnetic Mechanical Configurations**

<table>
<thead>
<tr>
<th>ATC SERIES &amp; CASE SIZE</th>
<th>ATC TERM. CODE</th>
<th>CASE SIZE &amp; TYPE</th>
<th>OUTLINES W/T IS A TERMINATION SURFACE</th>
<th>BODY DIMENSIONS Inches (mm)</th>
<th>LEAD AND TERMINATION DIMENSIONS AND MATERIALS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>LENGTH (L)</td>
<td>WIDTH (W)</td>
</tr>
<tr>
<td>800B TN</td>
<td>B</td>
<td>Non-Mag Solderable Barrier</td>
<td>.110 +0.020 -0.010 (2.79 +0.51 -0.25)</td>
<td>.110 ±0.015 (2.79 ±0.38) max.</td>
<td>.070 (1.76) max.</td>
</tr>
</tbody>
</table>

**Suggested Mounting Pad Dimensions**

**Case B Vertical Mount**

<table>
<thead>
<tr>
<th>Cap Value (.43)</th>
<th>Pad Size</th>
<th>A Min</th>
<th>B Min</th>
<th>C Min</th>
<th>D Min</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>.090 (2.29)</td>
<td>.050 (1.27)</td>
<td>.075 (1.91)</td>
<td>.175 (4.45)</td>
<td></td>
</tr>
<tr>
<td>High Density</td>
<td>.070 (1.78)</td>
<td>.030 (.762)</td>
<td>.075 (1.91)</td>
<td>.135 (3.43)</td>
<td></td>
</tr>
</tbody>
</table>

**Case B Horizontal Mount**

<table>
<thead>
<tr>
<th>Cap Value (.43)</th>
<th>Pad Size</th>
<th>A Min</th>
<th>B Min</th>
<th>C Min</th>
<th>D Min</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>.130 (3.30)</td>
<td>.050 (1.27)</td>
<td>.075 (1.91)</td>
<td>.175 (4.45)</td>
<td></td>
</tr>
<tr>
<td>High Density</td>
<td>.110 (2.79)</td>
<td>.030 (.762)</td>
<td>.075 (1.91)</td>
<td>.135 (3.43)</td>
<td></td>
</tr>
</tbody>
</table>

*inches (mm)*
ATC 800 B Performance Data

800 B ESR vs. Frequency

800 B FSR & FPR vs. Capacitance

ATC 800 B Series Data Sheet Test Condition Description
Capacitors vertically mounted in series microstrip configuration on 23.3-mil thick Rogers RO4350® 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.

AMERICAN TECHNICAL CERAMICS
ATC North America
sales@atceramics.com
ATC Europe
saleseur@atceramics.com
ATC Asia
sales@atceramics-asia.com
ATC 800 B Performance Data

800B Capacitance Change vs. Temperature

TCC = 0 ±30 PPM/C

% Change in Capacitance

Temperature (Degrees C)

© 2006 American Technical Ceramics Corp. All Rights Reserved.

AMERICAN TECHNICAL CERAMICS

ATC North America
sales@atceramics.com

ATC Europe
saleseur@atceramics.com

ATC Asia
sales@atceramics-asia.com

www.atceramics.com