ATC 100 B Series
Porcelain Superchip®
Multilayer Capacitors

• Case B Size (.110” x .110”)
• Capacitance Range 0.1 pF to 1000 pF
• High Q
• Ultra-Stable Performance
• Low ESR/ESL
• High Self-Resonance
• Low Noise
• Established Reliability (QPL)
• Extended WVDC up to 1500 VDC

ATC, the industry leader, offers new improved ESR/ESL performance for the 100 B Series RF/Microwave Capacitors. This Series is now available with extended operating temperatures up to 175°C. High Density porcelain construction provides a rugged, hermetic package.

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


ENVIRONMENTAL TESTS
ATC 100 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.
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.
Voltage Applied:
200% of WVDC for capacitors rated at 500 volts DC or less.
120% of WVDC for capacitors rated at 1250 volts DC or less.
100% of WVDC for capacitors rated above 1250 volts DC.

ELECTRICAL AND MECHANICAL SPECIFICATIONS

QUALITY FACTOR (Q): greater than 10,000 at 1 MHz.
TEMPERATURE COEFFICIENT OF CAPACITANCE (TCC):
+90 ±20 PPM/°C (-55°C to +125°C)
+90 ±30 PPM/°C (+125°C to +175°C)

INSULATION RESISTANCE (IR):
0.1 pF to 470 pF: 10⁶ Megohms min. @ +25°C at rated WVDC.
10³ Megohms min. @ +125°C at rated WVDC.
510 pF to 1000 pF: 10⁵ Megohms min. @ +25°C at rated WVDC.
10³ Megohms min. @ +125°C at rated WVDC.
IR above +125°C is derated by one order of magnitude.

WORKING VOLTAGE (WVDC): See Capacitance Values Table, page 2.
DIELECTRIC WITHSTANDING VOLTAGE (DWV):
250% of WVDC for capacitors rated at 500 volts DC or less for 5 seconds.
150% of WVDC for capacitors rated at 1250 volts DC or less for 5 seconds.
120% of WVDC for capacitors rated above 1250 volts DC for 5 seconds.

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:
0.1 to 330 pF: from -55°C to +175°C
360 to 1000 pF: from -55°C to +125°C

TERMINATION STYLES:
Available in various surface mount and leaded styles.
See Mechanical Configurations, page 3.

TERMINAL STRENGTH: Terminations for chips and pellets 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 100 B Capacitance Values**

VRMS = 0.707 X WVDC

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

NOTE: EXTENDED WVDC DOES NOT APPLY TO CDR PRODUCTS.

**ATC PART NUMBER CODE**

Series  ATC 100  B 91  O  J  W  500  X  T

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**

<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 100 B Series (case size B) 91 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.

**AMERICAN TECHNICAL CERAMICS**

ATC North America  sales@atceramics.com

ATC Europe  saleseur@atceramics.com

ATC Asia  sales@atceramics-asia.com

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

Consult factory for additional performance data.
### ATC 100 B Capacitors: Mechanical Configurations

<table>
<thead>
<tr>
<th>ATC SERIES &amp; CASE SIZE</th>
<th>ATC TERM. CODE</th>
<th>MIL-PRF-55681</th>
<th>CASE SIZE &amp; TYPE</th>
<th>OUTLINES</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>W/T IS A TERMINATION SURFACE</td>
<td>LENGTH (L)</td>
<td>WIDTH (W)</td>
</tr>
<tr>
<td>100B W</td>
<td>CDR14BG B</td>
<td></td>
<td>Solder Plate.1</td>
<td>Y→</td>
<td>I</td>
<td>110 +.020 -.010 (2.79 +0.51 -0.25)</td>
</tr>
<tr>
<td>100B P</td>
<td>CDR14BG B</td>
<td></td>
<td>Pellet</td>
<td>Y→</td>
<td>I</td>
<td>.135 ±.015 (3.43 ±0.38)</td>
</tr>
<tr>
<td>100B T</td>
<td>N/A</td>
<td></td>
<td>Solderable Nickel Barrier</td>
<td>Y→</td>
<td>I</td>
<td>.110 ±.020 -.010 (2.79 +0.51 -0.25)</td>
</tr>
<tr>
<td>100B CA</td>
<td>CDR13BG B</td>
<td></td>
<td>Gold Chip</td>
<td>Y→</td>
<td>I</td>
<td>.110 ±.015 (2.79 ±0.38)</td>
</tr>
<tr>
<td>100B MS</td>
<td>CDR21BG B</td>
<td>Microstrip</td>
<td></td>
<td>Y→</td>
<td>I</td>
<td>.120 (3.05) max.</td>
</tr>
<tr>
<td>100B AR</td>
<td>CDR22BG B</td>
<td>Axial Ribbon</td>
<td></td>
<td>Y→</td>
<td>I</td>
<td>.135 ±.015 (3.43 ±0.38)</td>
</tr>
<tr>
<td>100B RR</td>
<td>CDR24BG B</td>
<td>Radial Ribbon</td>
<td></td>
<td>Y→</td>
<td>I</td>
<td>.110 ±.015 (2.79 ±0.38)</td>
</tr>
<tr>
<td>100B RW</td>
<td>CDR23BG B</td>
<td>Radial Wire</td>
<td></td>
<td>Y→</td>
<td>I</td>
<td>.145 ±.020 (3.68 ±0.51)</td>
</tr>
<tr>
<td>100B AW</td>
<td>CDR25BG B</td>
<td>Axial Wire</td>
<td></td>
<td>Y→</td>
<td>I</td>
<td>.145 ±.020 (3.68 ±0.51)</td>
</tr>
</tbody>
</table>

**Additional lead styles available:** Narrow Microstrip (NM), Narrow Axial Ribbon (NA) and Vertical Narrow Microstrip (H). Other lead lengths are available; consult factory. All leads are high purity silver attached with high temperature solder and are RoHS compliant. For a complete military catalog, request American Technical Ceramics document ATC 001-818.
### ATC 100 B Non-Magnetic Capacitors: Mechanical Configurations

<table>
<thead>
<tr>
<th>ATC SERIES &amp; CASE SIZE</th>
<th>ATC TERM. CODE</th>
<th>MIL-PRF-55681</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></td>
<td>LENGTH (L)</td>
<td>WIDTH (W)</td>
</tr>
<tr>
<td>100B</td>
<td>WN</td>
<td></td>
<td>Non-Mag Solder Plate</td>
<td><img src="outline1.png" alt="Outline" /></td>
<td>.110 ±.010 (.279 ±.25)</td>
<td>110 ±.015 (2.79 ±.38)</td>
</tr>
<tr>
<td>100B</td>
<td>PN</td>
<td></td>
<td>Non-Mag Pellet</td>
<td><img src="outline2.png" alt="Outline" /></td>
<td>.110 ±.010 (.279 ±.25)</td>
<td>110 ±.015 (2.79 ±.38)</td>
</tr>
<tr>
<td>100B</td>
<td>TN</td>
<td></td>
<td>Non-Mag Solderable Barrier</td>
<td><img src="outline3.png" alt="Outline" /></td>
<td>.110 ±.010 (.279 ±.25)</td>
<td>110 ±.015 (2.79 ±.38)</td>
</tr>
<tr>
<td>100B</td>
<td>MN</td>
<td></td>
<td>Non-Mag Microstrip</td>
<td><img src="outline4.png" alt="Outline" /></td>
<td>.120 (3.05) max.</td>
<td>.250 (6.35) min.</td>
</tr>
<tr>
<td>100B</td>
<td>AN</td>
<td></td>
<td>Non-Mag Axial Ribbon</td>
<td><img src="outline5.png" alt="Outline" /></td>
<td>.135 ±.015 (3.43 ±.38)</td>
<td>.110 ±.015 (2.79 ±.38)</td>
</tr>
<tr>
<td>100B</td>
<td>FN</td>
<td></td>
<td>Non-Mag Radial Ribbon</td>
<td><img src="outline6.png" alt="Outline" /></td>
<td>.145 ±.020 (3.68 ±.51)</td>
<td>.145 ±.020 (3.68 ±.51)</td>
</tr>
<tr>
<td>100B</td>
<td>RN</td>
<td></td>
<td>Non-Mag Radial Wire</td>
<td><img src="outline7.png" alt="Outline" /></td>
<td>.145 ±.020 (3.68 ±.51)</td>
<td>.145 ±.020 (3.68 ±.51)</td>
</tr>
<tr>
<td>100B</td>
<td>BN</td>
<td></td>
<td>Non-Mag Axial Wire</td>
<td><img src="outline8.png" alt="Outline" /></td>
<td>.145 ±.020 (3.68 ±.51)</td>
<td>.145 ±.020 (3.68 ±.51)</td>
</tr>
</tbody>
</table>

Additional lead styles available: Narrow Microstrip (DN), Narrow Axial Ribbon (GN) and Vertical Narrow Microstrip (HN). Other lead lengths are available; consult factory. All leads are high purity silver attached with high temperature solder and are RoHS compliant.

### Suggested Mounting Pad Dimensions

**Case B Vertical Mount**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1 pF</td>
<td>Normal</td>
<td>.065</td>
<td>.050</td>
<td>.075</td>
<td>.175</td>
</tr>
<tr>
<td></td>
<td>High Density</td>
<td>.045</td>
<td>.030</td>
<td>.075</td>
<td>.135</td>
</tr>
<tr>
<td>0.2 pF</td>
<td>Normal</td>
<td>.090</td>
<td>.050</td>
<td>.075</td>
<td>.175</td>
</tr>
<tr>
<td></td>
<td>High Density</td>
<td>.070</td>
<td>.030</td>
<td>.075</td>
<td>.135</td>
</tr>
<tr>
<td>0.3 to 510 pF</td>
<td>Normal</td>
<td>.110</td>
<td>.050</td>
<td>.075</td>
<td>.175</td>
</tr>
<tr>
<td></td>
<td>High Density</td>
<td>.090</td>
<td>.030</td>
<td>.075</td>
<td>.135</td>
</tr>
<tr>
<td>&gt; 510 pF</td>
<td>Normal</td>
<td>.120</td>
<td>.050</td>
<td>.075</td>
<td>.175</td>
</tr>
<tr>
<td></td>
<td>High Density</td>
<td>.100</td>
<td>.030</td>
<td>.075</td>
<td>.135</td>
</tr>
</tbody>
</table>

### Additional Resources

**www.atceramics.com**

**ATC North America**
sales@atceramics.com

**ATC Europe**
saleseur@atceramics.com

**ATC Asia**
sales@atceramics-asia.com
**ATC 100 B Performance Data**

**ESR VS. CAPACITANCE**  
ATC SERIES 100, CASE B  
**CAPACITANCE (pF)**  
(Typical)

**CAPACITANCE (pF)**  
(1.0 pF to 51 pF)

**Q VS. CAPACITANCE**  
ATC SERIES 100, CASE B  
**CAPACITANCE (pF)**  
(Typical)

**CAPACITANCE (pF)**  
(56 pF to 1000 pF)

**SERIES RESONANCE VS. CAPACITANCE**  
ATC SERIES 100, CASE B  
**CAPACITANCE (pF)**  
(Typical)

**CAPACITANCE CHANGE VS. TEMPERATURE**  
ATC SERIES 100, CASE B  
**% CHANGE IN CAPACITANCE**  
(Typical)

**TEMPERATURE (Degrees C)**

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**AMERICAN TECHNICAL CERAMICS**  
ATC North America  
sales@atceramics.com  
ATC Europe  
saleseur@atceramics.com  
ATC Asia  
sales@atceramics-asia.com

www.atceramics.com
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ATC 100 B Performance Data

CURRENT RATING VS. CAPACITANCE
ATC SERIES 100, CASE B

The current rating is based on a 65°C mounting surface and a device thermal resistance (h) of 20°C/W. A power dissipation of 3W will result in a case temperature of 125°C.

Dotted line = Power dissipation limited
Solid line = Voltage limited (Vrms)

RMS CURRENT (Amps)

CAPACITANCE (pF)
(0.1 pF to 51 pF)

CURRENT RATING VS. CAPACITANCE
ATC SERIES 100, CASE B

The current rating is based on a 65°C mounting surface and a device thermal resistance (h) of 20°C/W. A power dissipation of 3W will result in a case temperature of 125°C.

Dotted line = Power dissipation limited
Solid line = Voltage limited (Vrms)

RMS CURRENT (Amps)

CAPACITANCE (pF)
(56 pF to 1000 pF)

CURRENT RATING VS. CAPACITANCE
ATC SERIES 100, CASE B, EXTENDED VOLTAGE

The current rating is based on a 65°C mounting surface and a device thermal resistance (h) of 20°C/W. A power dissipation of 3W will result in a case temperature of 125°C.

Dotted line = Power dissipation limited
Solid line = Voltage limited (Vrms)

RMS CURRENT (Amps)

CAPACITANCE (pF)

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