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)
- Available with
  Encapsulation Option*
- 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 porce-
lain construction provides a rugged, hermetic package.

ATC offers an encapsulation option for applications requiring extended
protection against arc-over and corona.

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

Typical circuit applications: UHF/Microwave RF Power Amplifiers, Mixers,
Oscillators, Low Noise Amplifiers, Filter Networks, Timing Circuits and
Delay Lines.

*For leaded styles only.

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:
High Rel Products:
MIL-STD-202, Method 108, for 2000 hours, at 125°C.
200% WVDC applied
Extended Voltage Products:
Voltage Applied:
0.1 pF to 47 pF at WVDC
51 pF to 200 pF at 120% of WVDC

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:
10° Megohms min. @ +25°C at rated WVDC.
10° Megohms min. @ +125°C at rated WVDC.
510 pF to 1000 pF:
10° Megohms min. @ +25°C at rated WVDC.
10° 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% WVDC for WVDC ≤ 500 Volts
150% WVDC for WVDC > 500 Volts or ≤ 1250 Volts
120% WVDC for WVDC > 1250 Volts
Test voltage is applied 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:
Standard WVDC:
0.1 to 330 pF: from -55°C to +175°C
360 to 1000 pF: from -55°C to +125°C
Extended WVDC:
0.1 to 1000 pF: from -55°C to +125°C
(No derating of working voltage).
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.  - ENCAPSULATION OPTION AVAILABLE.  PLEASE CONSULT FACTORY.  

NOTE: EXTENDED WVDC DOES NOT APPLY TO CDR PRODUCTS.

ATC PART NUMBER CODE

Series ATC 100  B  91  0  J  W  X  C

Case Size  B

Capacitance Code:  Tolerance (±5%), 500 WVDC, with W termination (Tin/Lead, Solder Plated over Nickel Barrier), laser marking and ATC Cap-Pac® packaging.

Capacitance Tolerance

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 ATC Cap-Pac® 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.

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www.atceramics.com
## ATC 100 B Capacitors: Mechanical Configurations

<table>
<thead>
<tr>
<th>ATC SERIES &amp; CASE SIZE</th>
<th>ATC TERM. CODE</th>
<th>MIL-PRF-55661</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 W</td>
<td>CDR14BG</td>
<td>B</td>
<td>Solder Plate</td>
<td>Y W T</td>
<td>.110 ±.015 (2.79 ±.25)</td>
<td>.110 ±.015 (2.79 ±.25)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Pellet</td>
<td>Y W T</td>
<td>.110 ±.015 (2.79 ±.25)</td>
<td>.110 ±.015 (2.79 ±.25)</td>
</tr>
<tr>
<td>100B T</td>
<td>N/A</td>
<td>B</td>
<td>Solderable</td>
<td>Y W T</td>
<td>.110 ±.015 (2.79 ±.25)</td>
<td>.110 ±.015 (2.79 ±.25)</td>
</tr>
<tr>
<td>100B CA</td>
<td>CDR13BG</td>
<td>B</td>
<td>Gold Chip</td>
<td>Y W T</td>
<td>.110 ±.015 (2.79 ±.25)</td>
<td>.110 ±.015 (2.79 ±.25)</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Microstrip</td>
<td>Y W T</td>
<td>.120 (3.05) max.</td>
<td>.120 (3.05) max.</td>
</tr>
<tr>
<td>100B AR</td>
<td>CDR22BG</td>
<td>B</td>
<td>Axial Ribbon</td>
<td>Y W T</td>
<td>.105 ±.015 (2.67 ±.31)</td>
<td>.105 ±.015 (2.67 ±.31)</td>
</tr>
<tr>
<td>100B RR</td>
<td>CDR24BG</td>
<td>B</td>
<td>Radial Ribbon</td>
<td>Y W T</td>
<td>.110 ±.015 (2.79 ±.25)</td>
<td>.110 ±.015 (2.79 ±.25)</td>
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<tr>
<td>100B RW</td>
<td>CDR23BG</td>
<td>B</td>
<td>Radial Wire</td>
<td>Y W T</td>
<td>.145 ±.020 (3.68 ±.51)</td>
<td>.145 ±.020 (3.68 ±.51)</td>
</tr>
<tr>
<td>100B AW</td>
<td>CDR25BG</td>
<td>B</td>
<td>Axial Wire</td>
<td>Y W T</td>
<td>.150 ±.025 (3.81 ±.63)</td>
<td>.150 ±.025 (3.81 ±.63)</td>
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</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**

### OUTLINES

<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>W/T IS A TERMINATION SURFACE</th>
</tr>
</thead>
<tbody>
<tr>
<td>100B</td>
<td>WN</td>
<td></td>
<td>B Non-Mag Solder Plate</td>
<td><img src="image" alt="" /></td>
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<tr>
<td>100B</td>
<td>PN</td>
<td></td>
<td>B Non-Mag Pellet</td>
<td><img src="image" alt="" /></td>
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<tr>
<td>100B</td>
<td>TN</td>
<td></td>
<td>B Non-Mag Solderable Barrier</td>
<td><img src="image" alt="" /></td>
</tr>
<tr>
<td>100B</td>
<td>MN</td>
<td></td>
<td>Non-Mag Microstrip</td>
<td><img src="image" alt="" /></td>
</tr>
<tr>
<td>100B</td>
<td>AN</td>
<td></td>
<td>Non-Mag Axial Ribbon</td>
<td><img src="image" alt="" /></td>
</tr>
<tr>
<td>100B</td>
<td>FN</td>
<td></td>
<td>B Non-Mag Radial Ribbon</td>
<td><img src="image" alt="" /></td>
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<tr>
<td>100B</td>
<td>RN</td>
<td></td>
<td>B Non-Mag Radial Wire</td>
<td><img src="image" alt="" /></td>
</tr>
<tr>
<td>100B</td>
<td>BN</td>
<td></td>
<td>B Non-Mag Axial Wire</td>
<td><img src="image" alt="" /></td>
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</tbody>
</table>

### BODY DIMENSIONS INCHES (mm)

<table>
<thead>
<tr>
<th>LENGTH (L)</th>
<th>WIDTH (W)</th>
<th>THICKNESS (T)</th>
<th>OVERLAP (Y)</th>
<th>MATERIALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>100B</td>
<td></td>
<td></td>
<td></td>
<td>Tin /Lead, Solder Plated over Non-Magnetic Barrier Termination</td>
</tr>
<tr>
<td>100B</td>
<td></td>
<td></td>
<td></td>
<td>Heavy Tin/Lead Coated, over Non-Magnetic Barrier Termination</td>
</tr>
</tbody>
</table>

### Lead and Termination Dimensions and Materials

Additonal 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>
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<th></th>
<th></th>
<th></th>
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</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>

Horizontal Mount

| All values | Normal   | .130   | .050   | .075   | .175   |
|           | High Density | .110   | .030   | .075   | .135   |

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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.
ATC 100 B Performance Data

ESR VS. CAPACITANCE
ATC SERIES 100, CASE B

CAPACITANCE (pF)
(1.0 pF to 51 pF)

Q VS. CAPACITANCE
ATC SERIES 100, CASE B

CAPACITANCE (pF)
(1.0 pF to 51 pF)

ESR VS. CAPACITANCE
ATC SERIES 100, CASE B

CAPACITANCE (pF)
(56 pF to 1000 pF)

Q VS. CAPACITANCE
ATC SERIES 100, CASE B

CAPACITANCE (pF)
(56 pF to 1000 pF)

SERIES RESONANCE VS. CAPACITANCE
ATC SERIES 100, CASE B

CAPACITANCE CHANGE VS. TEMPERATURE
ATC SERIES 100, CASE B

TEMPERATURE (Degrees C)

% CHANGE IN CAPACITANCE

FREQUENCY (GHz)

ESR (Ohms)

Q

CAPACITANCE (pF)

% CHANGE IN CAPACITANCE

TEMPERATURE (Degrees C)
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