ATC 100 C Series
Porcelain High RF Power Multilayer Capacitors

- Case C Size (.250" x .250")
- Capacitance Range 1 pF to 2700 pF
- High Q
- Ultra-Stable Performance
- Low ESR/ESL
- High RF Current/Voltage
- Available with Encapsulation Option* up to 3600 VDC
- High RF Power
- High Reliability

ATC, the industry leader, offers new improved ESR/ESL performance for the 100 C Series RF Capacitors. This high Q multilayer capacitor is ultra-stable under high RF current and voltage applications. High density Porcelain 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, Impedance Matching and DC Blocking.

Typical circuit applications: VHF/UHF RF Power Amplifiers, Antenna Tuning, Plasma Chambers and Medical (MRI coils).

*For leaded styles only.

ENVIRONMENTAL TESTS

ATC 100 C 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:

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 (1.0 pF to 1000 pF) @ 1 MHz.
Greater than 10,000 (1100 pF to 2700 pF) @ 1 KHz.

TEMPERATURE COEFFICIENT OF CAPACITANCE (TCC):
+90 ±30 PPM/°C (-55°C to +125°C)

INSULATION RESISTANCE (IR):
1 pF to 2700 pF:
10^5 Megohms min. @ +25°C at rated WVDC.
10^4 Megohms min. @ +125°C at rated WVDC.
Max. test voltage is 500 VDC.

WORKING VOLTAGE (WVDC): See Capacitance Values Table, p 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:
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: Terminiations for chips and pellets withstand a pull of 10 lbs. min., 20 lbs. typical, for 5 seconds in direction perpendicular to the termination surface of the capacitor. Test per MIL-STD-202, method 211.
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

The above part number refers to a 100 C Series (case size C) 10 pF capacitor,
J tolerance (±5%), 2500 WVDC, with W termination (Tin/Lead, Solder Plated over Nickel Barrier), laser marking and ATC Matrix Tray 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.
# ATC 100 C 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</th>
<th>BODY DIMENSIONS INCHES (MM)</th>
<th>LEAD AND TERMINATION DIMENSIONS AND MATERIALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>100C</td>
<td>W</td>
<td></td>
<td>W/T IS A TERMINATION SURFACE</td>
<td>LENGTH (L)</td>
<td>WIDTH (W)</td>
</tr>
<tr>
<td>100C</td>
<td>P</td>
<td></td>
<td></td>
<td>.230 +.020 - .010 (5.84 +0.51 -0.25)</td>
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</tr>
<tr>
<td>100C</td>
<td>T</td>
<td></td>
<td></td>
<td>.230 +.020 - .010 (5.84 +0.51 -0.25)</td>
<td></td>
</tr>
<tr>
<td>100C</td>
<td>CA</td>
<td></td>
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<td>.230 +.020 - .010 (5.84 +0.51 -0.25)</td>
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<tr>
<td>100C</td>
<td>MS</td>
<td>C</td>
<td>Microstrip</td>
<td>.250 ±0.015 (6.35 ±0.38)</td>
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<tr>
<td>100C</td>
<td>AR</td>
<td>C</td>
<td>Axial Ribbon</td>
<td>.245 ±0.025 (6.22 ±0.64)</td>
<td></td>
</tr>
<tr>
<td>100C</td>
<td>AW</td>
<td>C</td>
<td>Axial Wire</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100C</td>
<td>VA</td>
<td>C</td>
<td>Vertical Axial Ribbon</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100C</td>
<td>RW</td>
<td>C</td>
<td>Radial Wire</td>
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</tbody>
</table>

Custom lead styles and lengths are available; consult factory. All leads are high purity silver attached with high temperature solder and are RoHS compliant.

- W_T = 0.110 (2.79) for capacitance values ≤ 680 pF;
- W_T = 0.130 (3.30) for capacitance values > 680 pF

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**ATC 100 C Capacitors: Mechanical Configurations**

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ATC 100 C 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</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>W/T IS A TERMINATION SURFACE</td>
<td>LENGTH (L)</td>
<td>WIDTH (W)</td>
</tr>
<tr>
<td>100C</td>
<td>WN</td>
<td>Non-Mag Solder Plate</td>
<td>![Diagram](100C WN Diagram)</td>
<td>230 +.025 -010 (5.84 +0.64 -0.25)</td>
<td>![Diagram](100C WN Diagram)</td>
</tr>
<tr>
<td>100C</td>
<td>PN</td>
<td>Non-Mag Pellet</td>
<td>![Diagram](100C PN Diagram)</td>
<td>230 +.035 -010 (5.84 +0.89 -0.25)</td>
<td>![Diagram](100C PN Diagram)</td>
</tr>
<tr>
<td>100C</td>
<td>TN</td>
<td>Non-Mag Solderable Nickel Barrier</td>
<td>![Diagram](100C TN Diagram)</td>
<td>.230 +.025 -010 (5.84 +0.64 -0.25)</td>
<td>![Diagram](100C TN Diagram)</td>
</tr>
<tr>
<td>100C</td>
<td>MN</td>
<td>Non-Mag Microstrip</td>
<td>![Diagram](100C MN Diagram)</td>
<td>.245 ±.025 (6.22 ±0.64)</td>
<td>![Diagram](100C MN Diagram)</td>
</tr>
</tbody>
</table>

Custom lead styles and 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 C Vertical Mount

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</thead>
<tbody>
<tr>
<td>&lt; 680 pF</td>
<td>Normal</td>
<td>.150</td>
<td>.050</td>
<td>.200</td>
<td>.300</td>
</tr>
<tr>
<td></td>
<td>High Density</td>
<td>.130</td>
<td>.030</td>
<td>.200</td>
<td>.260</td>
</tr>
<tr>
<td>&gt; 680 pF</td>
<td>Normal</td>
<td>.185</td>
<td>.050</td>
<td>.200</td>
<td>.300</td>
</tr>
<tr>
<td></td>
<td>High Density</td>
<td>.165</td>
<td>.030</td>
<td>.200</td>
<td>.260</td>
</tr>
</tbody>
</table>

**Horizontal Mount**

| All values | Normal | .280 | .050 | .200 | .300 |
|            | High Density | .280 | .030 | .200 | .260 |
The current rating is based on a 65°C mounting surface and a device thermal resistance (θj) of 15°C/W. A power dissipation of 4W will result in a case temperature of 125°C.

The current rating is based on a 65°C mounting surface and a device thermal resistance (θj) of 15°C/W. A power dissipation of 4W will result in a case temperature of 125°C.
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