ATC 100 C Series
Porcelain High RF Power
Multilayer Capacitors

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

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: Terminations 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 100 C Capacitance Values

<table>
<thead>
<tr>
<th>CAP. CODE</th>
<th>CAP. (pF)</th>
<th>TOL.</th>
<th>RATED WVDC STD.</th>
<th>EXT.</th>
<th>CAP. CODE</th>
<th>CAP. (pF)</th>
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**CAPACITANCE TOLERANCE**

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<th>Code</th>
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<th>C</th>
<th>D</th>
<th>F</th>
<th>G</th>
<th>J</th>
<th>K</th>
<th>M</th>
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<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>
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**ATC PART NUMBER CODE**

- **Series**: 100
- **Case Size**: C
- **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**: ±5%

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.

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

Consult factory for additional performance data.

**VRMS = 0.707 x WVDC**

- **SPECIAL VALUES, TOLERANCES, HIGHER WVDC AND MATCHING AVAILABLE.**
- **ENCAPSULATION OPTION AVAILABLE.**
  - **PLEASE CONSULT FACTORY.**
## 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><strong>W</strong></td>
<td>100C W</td>
<td>Solder Plate</td>
<td>![Solder Plate Diagram]</td>
<td>LENGTH (L)</td>
<td>WIDTH (W)</td>
</tr>
<tr>
<td><strong>P</strong></td>
<td>100C P</td>
<td>Pellet</td>
<td>![Pellet Diagram]</td>
<td>.230 +.020 -.010 (5.84 +0.51 -0.25)</td>
<td>.040 (1.02) max.</td>
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<tr>
<td><strong>T</strong></td>
<td>100C T</td>
<td>Solderable Nickel Barrier</td>
<td>![Solderable Nickel Barrier Diagram]</td>
<td>.230 +.025 -.010 (5.84 +0.64 -0.25)</td>
<td>.145(3.68) max. for capacitance values ≤680pF</td>
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<tr>
<td><strong>MS</strong></td>
<td>100C MS</td>
<td>Microstrip</td>
<td>![Microstrip Diagram]</td>
<td>.250 ±.015 (6.35 ±0.38)</td>
<td>.165(4.19) max. for capacitance values &gt;680pF</td>
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<tr>
<td><strong>AR</strong></td>
<td>100C AR</td>
<td>Axial Ribbon</td>
<td>![Axial Ribbon Diagram]</td>
<td>.245 ±.025 (6.22 ±0.64)</td>
<td>N/A High Purity Silver Leads (L) = 500 (12.7) min. Dia. = .032 ±.002 (0.81 ±0.05)</td>
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<tr>
<td><strong>AW</strong></td>
<td>100C AW</td>
<td>Axial Wire</td>
<td>![Axial Wire Diagram]</td>
<td>![Silver-plated Copper Leads Diagram]</td>
<td>Silver Leads (L) = 500 (12.7) min. Dia. = .032 ±.002 (0.81 ±0.05)</td>
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<td><strong>VA</strong></td>
<td>100C VA</td>
<td>Vertical Axial Ribbon</td>
<td>![Vertical Axial Ribbon Diagram]</td>
<td>![Silver-plated Copper Leads Diagram]</td>
<td>Silver-plated Copper Leads (L) = 1.0 (25.4) min. Dia. = .032 ±.002 (0.81 ±0.05)</td>
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<td>Radial Wire</td>
<td>![Radial Wire Diagram]</td>
<td>![Silver-plated Copper Leads Diagram]</td>
<td>Silver-plated Copper Leads (L) = 1.0 (25.4) min. Dia. = .032 ±.002 (0.81 ±0.05)</td>
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</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.

- \(W_L = .110 (2.79)\) for capacitance values ≤ 680 pF,
- \(W_L = .130 (3.30)\) for capacitance values > 680 pF

**RoHS Compliant**
- Tin Plated over Nickel Barrier Termination
- High Purity Silver Leads (L) = 500 (12.7) min. Dia. = .032 ±.002 (0.81 ±0.05)
- Silver Leads (L) = 500 (12.7) min. Dia. = .032 ±.002 (0.81 ±0.05)
- Silver-plated Copper Leads (L) = 1.0 (25.4) min. Dia. = .032 ±.002 (0.81 ±0.05)

**RoHS Compliant**
- Heavy Tin/Lead Coated, over Nickel Barrier Termination
- Leads are Attached with High Temperature Solder.

**RoHS Compliant**
- Tin/Lead, Solder Plated over Nickel Barrier Termination
- RoHS Compliant Tin Plated over Nickel Barrier Termination

**RoHS Compliant**
- High Purity Silver Leads (L) = 500 (12.7) min. Dia. = .032 ±.002 (0.81 ±0.05)
### Suggested Mounting Pad Dimensions

**Case C Vertical Mount**

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<td>High Density</td>
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<td>&gt; 680 pF</td>
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<td>.030</td>
<td>.200</td>
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</table>

**Horizontal Mount**

| All values | Normal | .280 | .050 | .200 | .300 |
|            | High Density | .280 | .030 | .200 | .260 |

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Custom lead styles and lengths are available; consult factory. All leads are high purity silver attached with high temperature solder and are RoHS compliant.
**ATC 100 C Performance Data**

**ESR VS. CAPACITANCE**
ATC SERIES 100, CASE C

**Q VS. CAPACITANCE**
ATC SERIES 100, CASE C

**SERIES RESONANCE VS. CAPACITANCE**
ATC SERIES 100, CASE C

**CURRENT RATING VS. CAPACITANCE**
ATC SERIES 100, CASE C

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

**CAPACITANCE CHANGE VS. TEMPERATURE**
ATC SERIES 100, CASE C

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