ATC 100 A Series
Porcelain Superchip®
Multilayer Capacitors

- Case Size (.055" x .055")
- Capacitance Range 0.1 pF to 100 pF
- High Q
- Ultra-Stable Performance
- Low ESR/ESL
- High Self-Resonance
- Low Noise
- Established Reliability (QPL)
- Extended WVDC up to 250 VDC

ATC, the industry leader, offers new improved ESR/ESL performance for the 100 A Series RF/Microwave Capacitors. This is ATC’s most versatile high Q, high self resonant multilayer capacitor. 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 A 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:**

**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)

**INSULATION RESISTANCE (IR):**
0.1 pF to 100 pF:
- 10⁶ Megohms min. @ +25°C at rated WVDC.
- 10⁵ Megohms min. @ +125°C at rated WVDC.

**WORKING VOLTAGE (WVDC):**
See Capacitance Values Table, page 2.

**DIELECTRIC WITHSTANDING VOLTAGE (DWV):**
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:** Available in various surface mount styles. See Mechanical Configurations, page 3.

**TERMINAL STRENGTH:** Terminations for chips and pellets withstand a pull of 5 lbs. min., 10 lbs. typical, for 5 seconds in direction perpendicular to the termination surface of the capacitor. Test per MIL-STD-202, method 211.
### ATC 100 A Capacitance Values

<table>
<thead>
<tr>
<th>CAP. CODE</th>
<th>CAP. (pF)</th>
<th>TOL.</th>
<th>RATED WVDC</th>
<th>CAP. CODE</th>
<th>CAP. (pF)</th>
<th>TOL.</th>
<th>RATED WVDC</th>
<th>CAP. CODE</th>
<th>CAP. (pF)</th>
<th>TOL.</th>
<th>RATED WVDC</th>
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<tbody>
<tr>
<td>0R1</td>
<td>0.1</td>
<td></td>
<td></td>
<td>2R2</td>
<td>2.2</td>
<td></td>
<td></td>
<td>160</td>
<td>16</td>
<td></td>
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<tr>
<td>0R4</td>
<td>0.4</td>
<td></td>
<td></td>
<td>2R7</td>
<td>2.7</td>
<td></td>
<td></td>
<td>180</td>
<td>18</td>
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<tr>
<td>0R5</td>
<td>0.5</td>
<td>B, C</td>
<td></td>
<td>3R0</td>
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<td>0R6</td>
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<td>620</td>
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<tr>
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<td>1R9</td>
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<td>120</td>
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<td>F, G, J, K</td>
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<td>101</td>
<td>100</td>
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</tr>
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</table>

### ATC PART NUMBER CODE

- **Series**: ATC100
- **Case Size**: A
- **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**: ±0.1 pF, ±0.25 pF, ±0.5 pF, ±1%, ±2%, ±5%, ±10%, ±20%
- **Termination Code**: W

**Packaging**
- T - Tape and Reel, 1000 pc. qty.*
- TV - Vertical Orientation of Product, Tape and Reel, 1000 pc. qty.*
- C - ATC Cap-Pac®, 100 pc. qty. std.*
- I - Special Packaging, Consult Factory.

*Consult ATC for other quantities

The above part number refers to a 100 A Series (case size A) 10 pF capacitor, J tolerance (±5%), 150 WVDC, with W termination (Tin/Lead, Solder Plated over Nickel Barrier), laser marking and ATC Cap-Pac® packaging.

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.

### 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>
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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>
</tr>
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</table>

### ATC PART NUMBER

**Series**

**Case Size**

**Capacitance Code**

Indicates number of zeros following digits of capacitance in picofarads except for decimal values.

**Capacitance Tolerance**

**Termination Code**

**Packaging**

**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 A 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>
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<td></td>
<td></td>
<td></td>
<td>LENGTH (L)</td>
<td>WIDTH (W)</td>
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<tr>
<td>100A</td>
<td>W</td>
<td>CDR12BG</td>
<td>A Solder Plate</td>
<td>Y-</td>
<td>L W T</td>
<td>.055 +.015 -.010 (1.40 +0.38 -0.25)</td>
</tr>
<tr>
<td>100A</td>
<td>P</td>
<td>CDR12BG</td>
<td>A Pellet</td>
<td>Y-</td>
<td>L W T</td>
<td>.055 +.025 -.010 (1.40 +0.64 -0.25)</td>
</tr>
<tr>
<td>100A</td>
<td>T</td>
<td>N/A</td>
<td>A Solderable Nickel Barrier</td>
<td>Y-</td>
<td>L W T</td>
<td>.055 +.015 -.010 (1.40 +0.38 -0.25)</td>
</tr>
<tr>
<td>100A</td>
<td>CA</td>
<td>CDR11BG</td>
<td>A Gold Chip</td>
<td>Y-</td>
<td>L W T</td>
<td>.055 +.015 -.010 (1.40 +0.38 -0.25)</td>
</tr>
</tbody>
</table>

For a complete military catalog, request American Technical Ceramics document ATC 001-818.
**ATC 100 A 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>100A WN</td>
<td>Meets Require-</td>
<td>Non-Mag</td>
<td>L W T</td>
<td>0.055 ± 0.15 (1.40 ± 0.38) 0.057 (1.45) max. 0.010 +0.10 -0.05 (0.25 +0.25 -0.13)</td>
<td>Tin/Lead, Solder Plated over Non-Magnetic Barrier Termination</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ments</td>
<td>Solder Plate</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100A PN</td>
<td>Meets Require-</td>
<td>Non-Mag</td>
<td>L W T</td>
<td>0.055 ± 0.15 (1.40 ± 0.38) 0.057 (1.45) max. 0.010 +0.10 -0.05 (0.25 +0.25 -0.13)</td>
<td>Heavy Tin/Lead Coated, over Non-Magnetic Barrier Termination</td>
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<tr>
<td></td>
<td>ments</td>
<td>Pellet</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100A TN</td>
<td>Meets Require-</td>
<td>Non-Mag</td>
<td>L W T</td>
<td>0.055 ± 0.15 (1.40 ± 0.38) 0.057 (1.45) max. 0.010 +0.10 -0.05 (0.25 +0.25 -0.13)</td>
<td>RoHS Compliant</td>
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<tr>
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<td>ments</td>
<td>Solderable</td>
<td></td>
<td></td>
<td></td>
<td>Tin Plated over Non-Magnetic Barrier Termination</td>
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All 100 A Capacitors are available laser marked with ATC’s identification, capacitance code and tolerance.

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**Suggested Mounting Pad Dimensions**

<table>
<thead>
<tr>
<th>Case A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
</tr>
<tr>
<td>High Density</td>
</tr>
<tr>
<td>Horizontal Mount</td>
</tr>
<tr>
<td>High Density</td>
</tr>
</tbody>
</table>

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**Contact Information**

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www.atceramics.com
ATC 100 A Performance Data

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

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

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

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

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

The current rating is based on a 65°C mounting surface and a device thermal resistance ($\theta_{ja}$) of 40°C/W. A power dissipation of 1.5 W will result in a case temperature of 125°C.

$\Delta C/\Delta T = +90 \pm 20 \text{ PPM/°C}$

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

The current rating is based on a 65°C mounting surface and a device thermal resistance ($\theta_{ja}$) of 40°C/W. A power dissipation of 1.5 W will result in a case temperature of 125°C.

$\Delta C/\Delta T = +90 \pm 20 \text{ PPM/°C}$

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ATC 100 A Performance Data

The current rating is based on a 65°C mounting surface and a device thermal resistance (θ) of 40°C/W. A power dissipation of 1.5 W will result in a case temperature of 125°C.

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

RMS CURRENT (Amps)

0.1 1 10 100

CAPACITANCE (1 TO 56 pF)

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

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

RMS CURRENT (Amps)

0.1 1 10 100

CAPACITANCE (62 TO 100 pF)

Dotted line = Power dissipation limited

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