ATC 800 C Series
NPO Ceramic
High RF Power
Multilayer Capacitors

- Case C Size (.250” x .250”)
- Capacitance Range: 2.2 pF to 3000 pF
- High Q
- Low ESR/ESL
- High RF Power
- 3600 WVDC
- Ultra-Stable Performance
- High RF Current/Voltage
- Low ESR/ESL
- High RF Power
- High Reliability
- RoHS Compliant, Pb free

ATC’s 800 C Series offers superb performance in demanding high RF power applications requiring consistent and reliable operation. The combination of highly conductive metal electrode systems, optimized case geometries, and proprietary dielectrics, yields the lowest ESR. ATC’s new NPO low loss rugged dielectrics are designed to provide superior heat transfer in high RF power applications. Ultra-low ESR and superior thermal performance ensure that the 800 C Series products are your best choice for high RF power applications from VHF through microwave frequencies.

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

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

ENVIRONMENTAL TESTS
ATC 800 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 5,000 (2.2 pF to 1000 pF) @ 1 MHz.
Greater than 5,000 (1100 pF to 3000 pF) @ 1 KHz.

TEMPERATURE COEFFICIENT OF CAPACITANCE (TCC):
0 ±30 PPM/°C (-55°C to +125°C)

INSULATION RESISTANCE (IR):

2.2 pF to 3000 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 above 500 volts DC and ≤1250 volts DC 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).

TERMINAL STYLES:
See Mechanical Configurations, page 3.

TERMINAL STRENGTH:
Terminations for chips 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 800 C 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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**CAPACITANCE TOLERANCE**

<table>
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<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>
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</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>
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</tbody>
</table>

**ATC PART NUMBER CODE**

- **Series**: 800 C
- **Case Size**: 22
- **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%

**RATED WVDC**

- 3600
- 2500
- 2000
- 1500
- 1000
- 600
- 500

**Tape and Reel, 500 pc. qty. Surface Mount Termination Only**

**Laser Marking**

**WVDC**

**Termination Code**

**ATC Matrix Tray (Standard)**

**Special Values, Tolerances and Matching Available. Please Consult Factory.**

**VRMS = 0.707 X WVDC**

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

Consult factory for additional performance data.
## ATC 800 C Capacitors: Mechanical Configurations

<table>
<thead>
<tr>
<th>ATC SERIES &amp; CASE SIZE &amp; CODE</th>
<th>ATC TERM. &amp; 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>800C T</td>
<td>800C T</td>
<td>C</td>
<td>W/L = .110 (2.79) for capacitance values ≤ 680 pF; W/L = .130 (3.30) for capacitance values &gt; 680 pF</td>
<td>230</td>
<td>.025 - .010 (5.84 +/-.64)</td>
</tr>
<tr>
<td>800C MS</td>
<td>800C MS</td>
<td>C</td>
<td>Microstrip</td>
<td>250 ±.015 (6.35 ±.38) max.</td>
<td>.200 (5.08) max.</td>
</tr>
<tr>
<td>800C AR</td>
<td>800C AR</td>
<td>C</td>
<td>Axial Ribbon</td>
<td>245 ±.025 (6.22 ±.64) max.</td>
<td>.040 (1.02) max.</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.

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## ATC 800 C Capacitors: Non-Magnetic Mechanical Configurations

<table>
<thead>
<tr>
<th>ATC SERIES &amp; CASE SIZE &amp; CODE</th>
<th>ATC TERM. &amp; 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>800C TN</td>
<td>800C TN</td>
<td>Non-Mag Solderable Barrier</td>
<td>W/L = .110 (2.79) for capacitance values ≤ 680 pF; W/L = .130 (3.30) for capacitance values &gt; 680 pF</td>
<td>230</td>
<td>.025 - .010 (5.84 +/-.64)</td>
</tr>
<tr>
<td>800C MN</td>
<td>800C MN</td>
<td>Non-Mag Microstrip</td>
<td>±.025 (6.22 ±.64)</td>
<td>50 ±.015 (6.35 ±.38) max.</td>
<td>.200 (5.08) max.</td>
</tr>
<tr>
<td>800C AN</td>
<td>800C AN</td>
<td>Non-Mag Axial Ribbon</td>
<td>245 ±.025 (6.22 ±.64)</td>
<td></td>
<td></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.

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American Technical Ceramics

**www.atceramics.com**

ATC North America
sales@atceramics.com

ATC Europe
saleseur@atceramics.com

ATC Asia
sales@atceramics-asia.com
### ATC 800 C Performance Data

#### 800 C ESR vs. Frequency

![Graph showing ESR vs. Frequency for different Capacitances](image)

- **8.2 pF**
- **10 pF**
- **18 pF**
- **39 pF**
- **220 pF**
- **910 pF**
- **2700 pF**
- **3000 pF**

#### ATC 800 C Case C Vertical Mount

<table>
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<th></th>
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</thead>
<tbody>
<tr>
<td>All values</td>
<td></td>
<td>.200</td>
<td>.050</td>
<td>.200</td>
<td>.300</td>
</tr>
<tr>
<td>High Density</td>
<td></td>
<td>.180</td>
<td>.030</td>
<td>.200</td>
<td>.260</td>
</tr>
</tbody>
</table>

#### Horizontal Mount

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

Dimensions are in inches.

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### Suggested Mounting Pad Dimensions

- **Horizontal Electrode Orientation**
- **Vertical Electrode Orientation**

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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](http://www.atceramics.com)
ATC 800 C Performance Data

800 C Current Rating vs. Capacitance

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

Dotted line = Power dissipation limit
Solid line = Voltage limit (Vms/Xc)

Capacitance (pF)

-1 0 1 10 100 1000 10000

I rms Current (amps)

0.1 1 10 100 1000

ESR (MilliOhms)

8.2 pF 10 pF 18 pF 39 pF 1500 pF 2700 pF

800 C Capacitance Change vs. Temperature

TCC= 0 ±30 PPM/°C

%-Change in Capacitance

-1 -0.8 -0.6 -0.4 -0.2 0 0.2 0.4 0.6 0.8 1

Temperature (Degrees °C)

-55 -35 -15 5 25 45 65 85 105 125

ATC North America sales@atceramics.com
ATC Europe saleseur@atceramics.com
ATC Asia sales@atceramics-asia.com

www.atceramics.com

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