

ATC 800 C Series NPO Ceramic High RF Power Multilayer Capacitors

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

MIL-STD-202, Method 106.

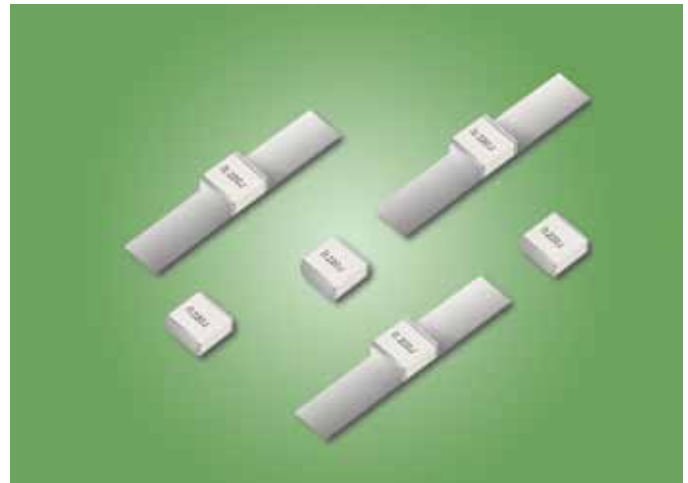
LOW VOLTAGE HUMIDITY:

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:
10⁵ Megohms min. @ +25°C at rated WVDC.
10⁴ 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).

TERMINATION 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.



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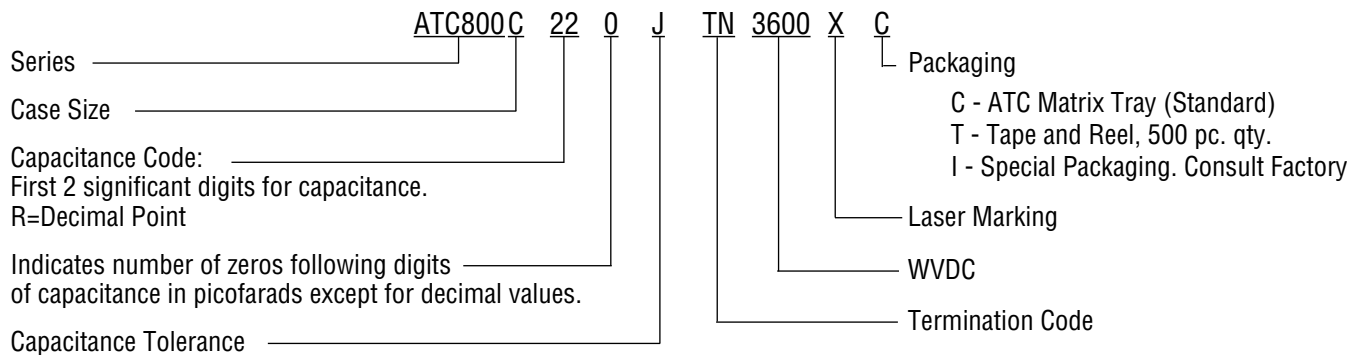
ATC # 001-1076 Rev. M; 1/14

ATC 800 C Capacitance Values

CAP CODE	CAP (pF)	TOL.	RATED WVDC	CAP CODE	CAP (pF)	TOL.	RATED WVDC	CAP CODE	CAP (pF)	TOL.	RATED WVDC						
2R2	2.2	B, C, D	3600	240	24	F, G, J, K	3600	241	240	F, G, J, K	1000						
2R4	2.4			270	27			271	270								
2R7	2.7			300	30			301	300								
3R0	3.0			330	33			331	330								
3R3	3.3			360	36			361	360								
3R6	3.6			390	39			391	390								
3R9	3.9			430	43			431	430								
4R3	4.3			470	47			471	470								
4R7	4.7			510	51			511	510								
5R1	5.1			560	56			561	560								
5R6	5.6	620	62	621	620												
6R2	6.2	F, G, J, K	3600	680	68	F, G, J, K	3600	681	680	F, G, J, K	1000						
6R8	6.8			750	75			751	750								
7R5	7.5			820	82			821	820								
8R2	8.2			910	91			911	910								
9R1	9.1			101	100			102	1000								
100	10			F, G, J, K	2500			111	110			F, G, J, K	2500	112	1100	F, G, J, K	600
110	11							121	120					122	1200		
120	12							131	130					152	1500		
130	13							151	150					182	1800		
150	15							161	160					222	2200		
160	16	181	180			242	2400										
180	18	201	200			272	2700										
200	20	221	220			302	3000										
220	22																

CAPACITANCE TOLERANCE							
Code	B	C	D	F	G	J	K
Tol.	±0.1 pF	±0.25 pF	±0.5 pF	±1%	±2%	±5%	±10%

ATC PART NUMBER CODE



The above part number refers to a 800 C Series (case size C) 22 pF capacitor, J tolerance (±5%),3600 WVDC, with TN termination (RoHS Compliant, Tin Plated over Non-Magnetic Barrier Termination), laser marking and plastic 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 (+1-631) 622-4700.

Consult factory for additional performance data.


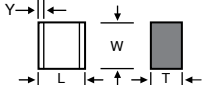

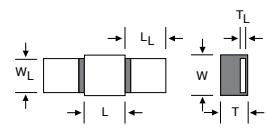
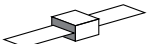
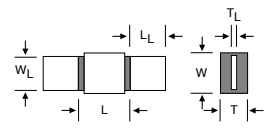
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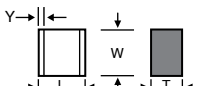

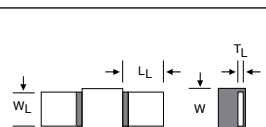
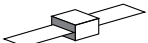
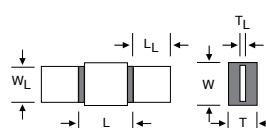
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ATC 800 C Capacitors: Mechanical Configurations

ATC SERIES & CASE SIZE ^{Order.}	ATC TERM. CODE	CASE SIZE & TYPE	OUTLINES W/T IS A TERMINATION SURFACE	BODY DIMENSIONS INCHES (mm)			LEAD AND TERMINATION DIMENSIONS AND MATERIALS	
				LENGTH (L)	WIDTH (W)	THICKNESS (T)	OVERLAP (Y)	MATERIALS
800C	T	 Solderable Barrier		230 +.025 -.010 (5.84 +0.64 -0.25)	250 ±.015 (6.35 ±0.38)	75 (4.45) max.	.040 (1.02) max.	RoHS Compliant Tin Plated over Nickel Barrier Termination
800C	MS	 Microstrip		245 ±.025 (6.22 ±0.64)				High Purity Silver Leads L _L = .500 (12.7) min. W _L = .240 ±.005 (6.10 ±.127) T _L = .004 ±.001 (.102 ±.025) Leads are Attached with High Temperature Solder
800C	AR	 Axial Ribbon						

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

ATC 800 C Capacitors: Non-Magnetic Mechanical Configurations

ATC SERIES & CASE SIZE ^{Order.}	ATC TERM. CODE	CASE SIZE & TYPE	OUTLINES W/T IS A TERMINATION SURFACE	BODY DIMENSIONS INCHES (mm)			LEAD AND TERMINATION DIMENSIONS AND MATERIALS	
				LENGTH (L)	WIDTH (W)	THICKNESS (T)	OVERLAP (Y)	MATERIALS
800C	TN	 Non-Mag Solderable Barrier.		230 +.025 -.010 (5.84 +0.64 -0.25)	50 ±.015 (6.35 ±0.38)	75 (4.45) max.	.040 (1.02) max.	RoHS Compliant Tin Plated over Non-Magnetic Barrier Termination
800C	MN	 Non-Mag Microstrip ²⁴⁵		±.025 (6.22 ±0.64)				High Purity Silver Leads L _L = .500 (12.7) min. W _L = .240 ±.005 (6.10 ±.127) T _L = .004 ±.001 (.102 ±.025) Leads are Attached with High Temperature Solder
800C	AN	 Non-Mag Axial Ribbon		245 ±.025 (6.22 ±0.64)				

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

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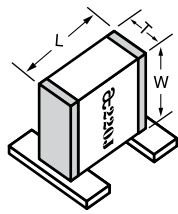
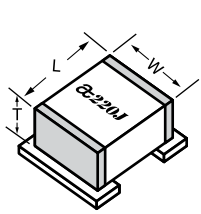
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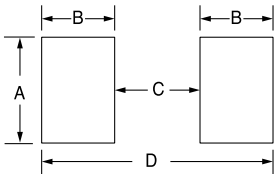
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Suggested Mounting Pad Dimensions



Horizontal Electrode Orientation

Vertical Electrode Orientation



Case C Vertical Mount

Cap Value	Pad Size	A Min.	B Min.	C Min.	D Min.
All values	Normal	.200	.050	.200	.300
	High Density	.180	.030	.200	.260

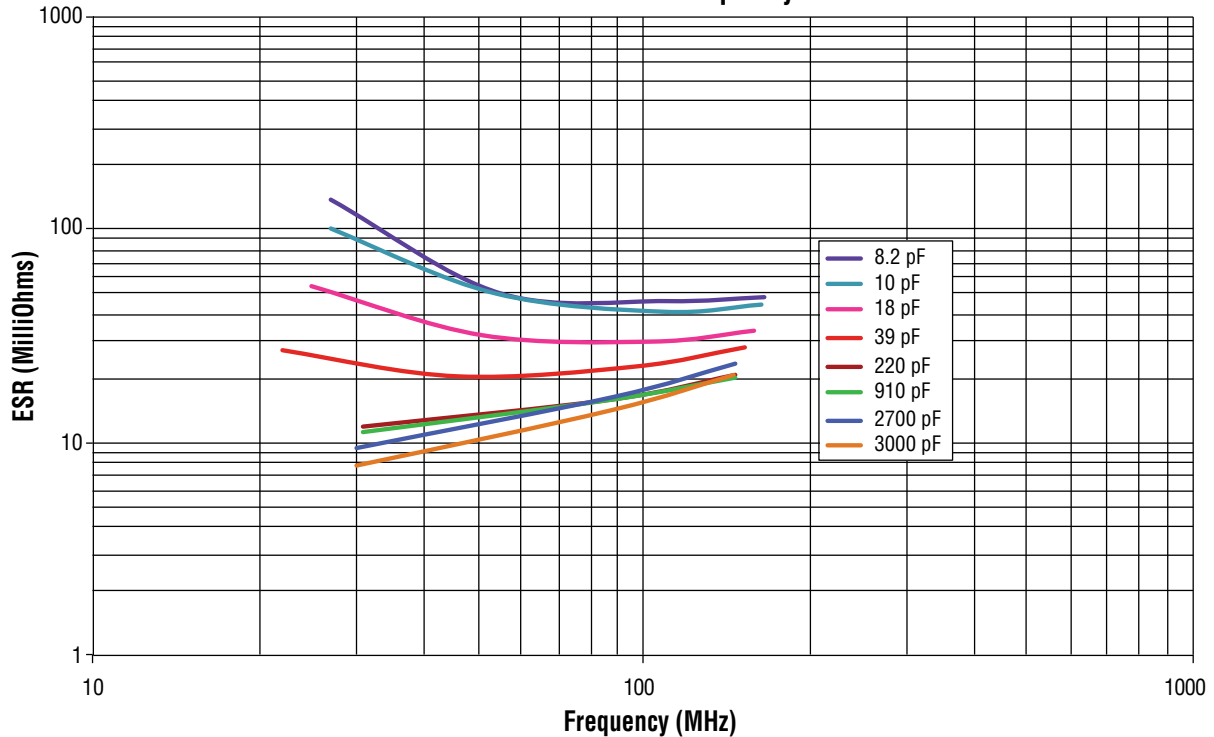
Horizontal Mount

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

Dimensions are in inches

ATC 800 C Performance Data

800 C ESR vs. Frequency



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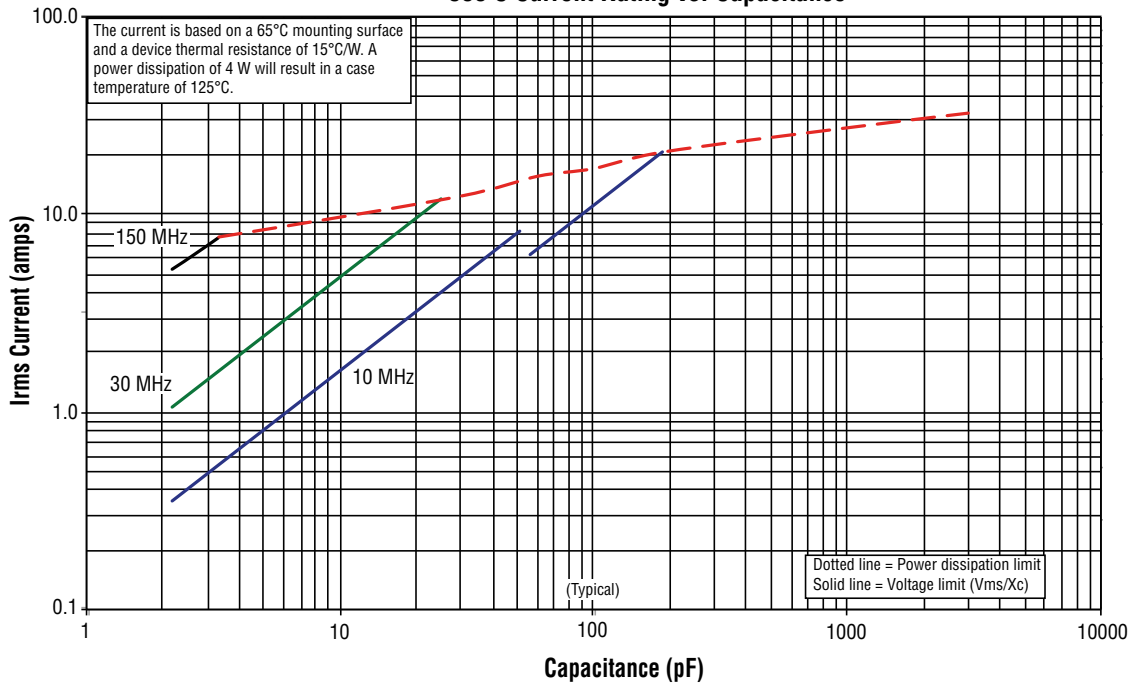
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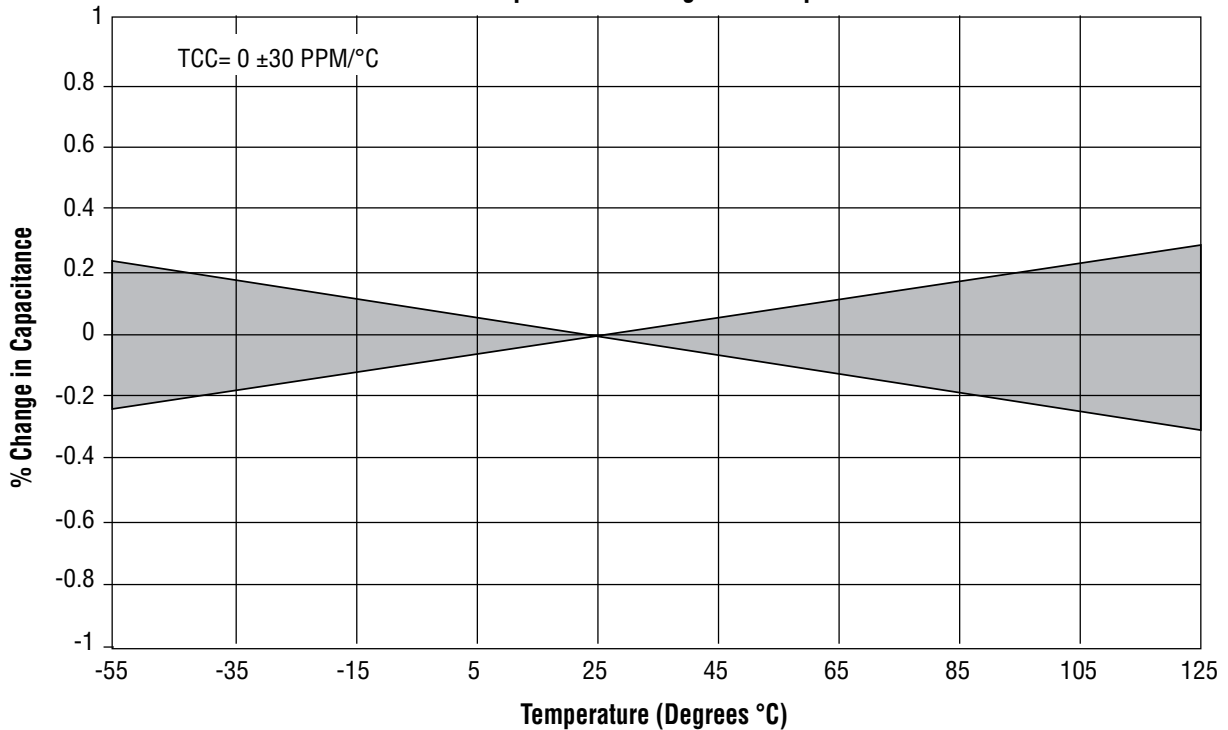
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ATC 800 C Performance Data

800 C Current Rating vs. Capacitance



800C Capacitance Change vs. Temperature



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ATC # 001-1076 Rev. M, 1/14

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