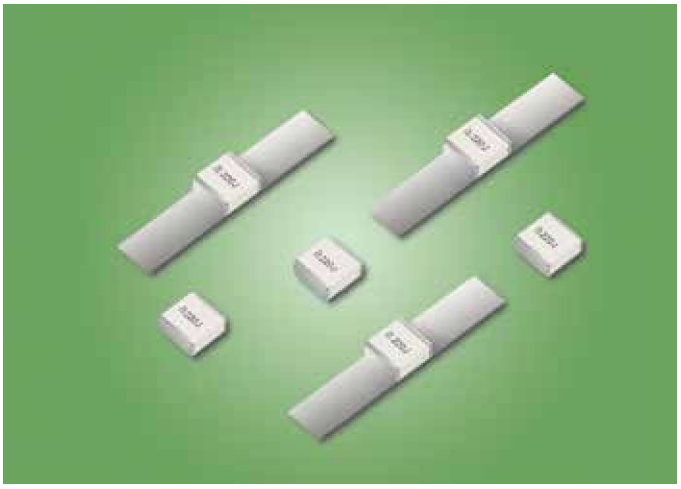
ATC 800 C Series NPO Ceramic High RF Power Multilayer Capacitors

- Case C Size (.250" x .250")
- Capacitance Range: 2.2 pF to 3000 pF
- High Q
- 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:
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).

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. P; 1/18

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		2500	561	560		
5R6	5.6			620	62			621	620		
6R2	6.2			680	68			681	680		
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		600
100	10	F, G, J. K		111	110			112	1100		
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		500
200	20			221	220			302	3000		
220	22										

VRMS = 0.707 X WVDC

SPECIAL VALUES, TOLERANCES AND MATCHING AVAILABLE. PLEASE CONSULT FACTORY.

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

ATC800C 22 0 J TN 3600 X C

- 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
- Termination Code
- WVDC
- Laser Marking
- Packaging
  - C - ATC Matrix Tray (Standard)
  - T - Tape and Reel, 500 pc. qty.
  - I - Special Packaging. Consult Factory

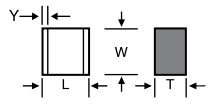
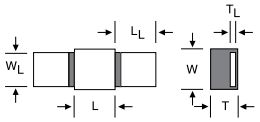
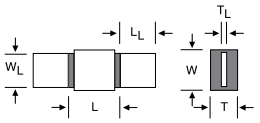
The above part number refers to a 800 C Series (case size C) 22 pF capacitor, J tolerance (±5%),3600 WVDC, with TN termination (RoHS Compliant, Tin Plated over Non-Magnetic Barrier Termination), laser marking and plastic Matrix Tray packaging.

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.

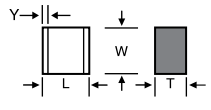
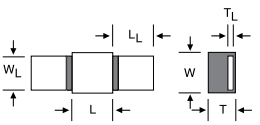
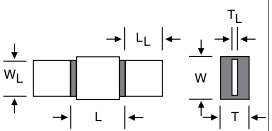
Consult factory for additional performance data.

ATC 800 C Capacitors: Mechanical Configurations

ATC SERIES & CASE SIZEo-lder.	ATC TERM. CODE	CASE SIZE & TYPE	OUTLINES W/T IS A TERMINATION SURFACE	BODY DIMENSIONS INCHES (mm) LENGTH (L)	WIDTH (W)	THICKNESS (T)	LEAD AND TERMINATION DIMENSIONS AND MATERIALS OVERLAP (Y)	MATERIALS
800C	T	C Solderable Barrier		230 +.025 -.010 (5.84 +0.64 -0.25)	250 ±.015 (6.35 ±0.38)	.200 (5.08) max.	.040 (1.02) max.	***RoHS Compliant*** Tin Plated over Nickel Barrier Termination
800C	MS	C 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	C Axial Ribbon						Silver Leads L_L = .500 (12.7) min. W_L = ** See below T_L = .004 ±.001 (.102 ±.025)

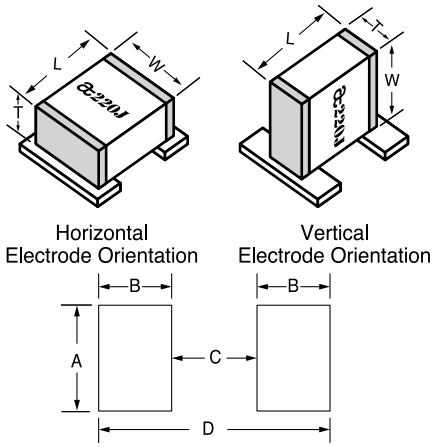
Custom lead styles and lengths are available; consult factory. All leads are high purity silver attached with high temperature solder and are **RoHS** compliant.
**W_L = .110 (2.79) for capacitance values ≤ 680 pF; W_L = .130 (3.30) for capacitance values > 680 pF

ATC 800 C Capacitors: Non-Magnetic Mechanical Configurations

ATC SERIES & CASE SIZEo-lder.	ATC TERM. CODE	CASE SIZE & TYPE	OUTLINES W/T IS A TERMINATION SURFACE	BODY DIMENSIONS INCHES (mm) LENGTH (L)	WIDTH (W)	THICKNESS (T)	LEAD AND TERMINATION DIMENSIONS AND MATERIALS OVERLAP (Y)	MATERIALS
800C	TN	C Non-Mag Solderable Barrier.		230 +.025 -.010 (5.84 +0.64 -0.25)	50 ±.015 (6.35 ±0.38)	.200 (5.08) max.	.040 (1.02) max.	***RoHS Compliant*** Tin Plated over Non-Magnetic Barrier Termination
800C	MN	C Non-Mag Microstrip245		±.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	C Non-Mag Axial Ribbon		245 ±.025 (6.22 ±0.64)				Silver Leads L_L = .500 (12.7) min. W_L = ** See below T_L = .004 ±.001 (.102 ±.025)

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

Suggested Mounting Pad Dimensions



Case C Vertical Mount

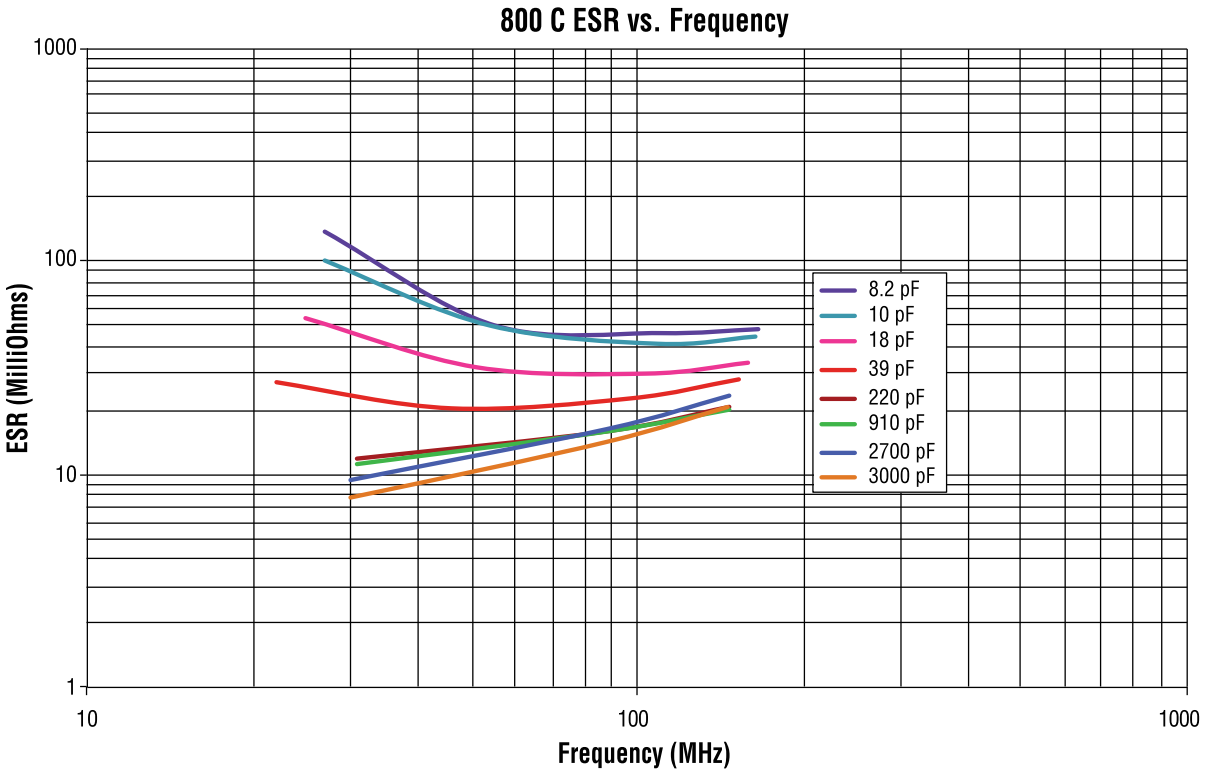
Cap Value	Pad Size	A Min.	B Min.	C Min.	D Min.
All values	Normal	.200	.050	.200	.300
	High Density	.180	.030	.200	.260

Horizontal Mount

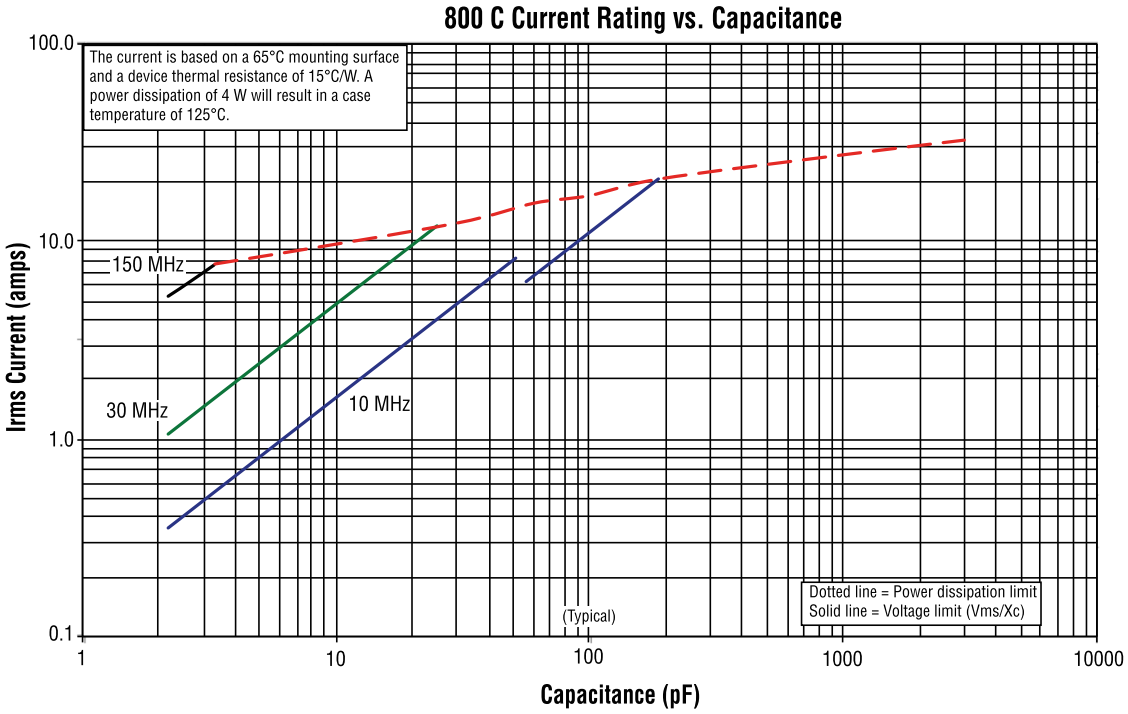
All values	Normal	.280	.050	.200	.300
	High Density	.260	.030	.200	.260

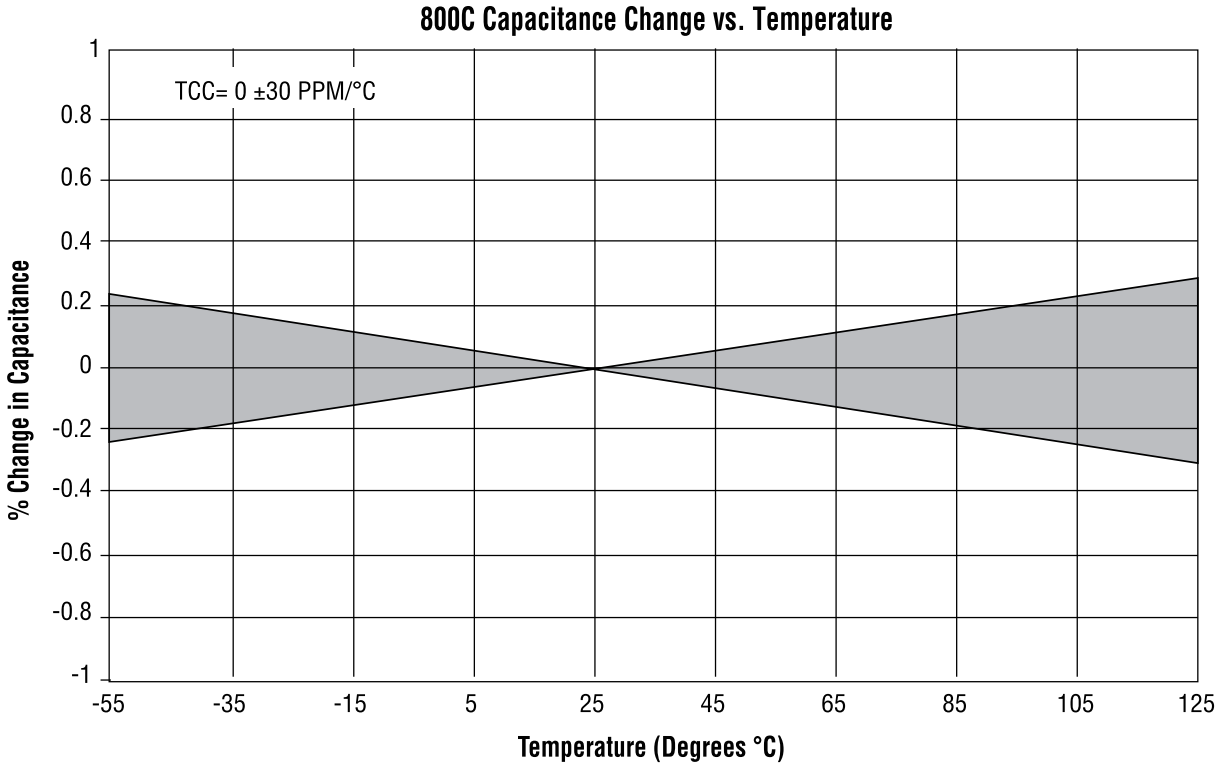
Dimensions are in inches

ATC 800 C Performance Data



ATC 800 C Performance Data





ATC # 001-1076 Rev. O, 1/18

ATC 800B Vs. 100B

		Frequency SRF				Resistance ESR		Q		Inductance ESL		at Frequency		FREQ. (MHz)	CAP. (pF)
4p7															4p7
10															10
27															27
68															68
100															100

SRF: it is important because it allows the use the capacitors at a higher frequency.
Current: higher current equals greater power handling.
ESR + Q: indicates a lower dissipated loss and less heat, hence a higher MTBF (Mean Time Between Failure).
ESL: the 800B series thanks to a lower height drastically reduces the series inductance of the capacitor.
Real Capacity: if the real capacity has a smaller variation on frequency, it results in a better consistency in the calculation of the parameters of the circuit layout and a greater repeatability.