

# ATC 800 E Series NPO Ceramic High RF Power Multilayer Capacitors

- Case E Size (.380" x .380")
- High Q
- Ultra Low ESR
- High RF Power
- 7200 WVDC
- Capacitance Range: 1 pF to 56 pF and 2700 pF to 5100 pF
- Ultra-Stable Performance
- High RF Current/Voltage
- High Reliability
- RoHS Compliant, Pb free

ATC's 800 E 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 insure that the 800 E 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 E 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.

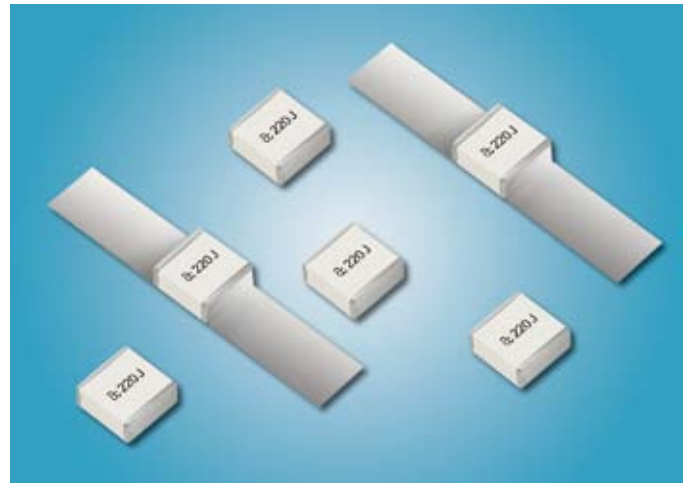
### LIFE TEST:

MIL-STD-202, Method 108, for 2000 hours, at 125°C.

Voltage applied.

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 (1 pF to 5100 pF) @ 1 MHz.

### TEMPERATURE COEFFICIENT OF CAPACITANCE (TCC):

0 ±30 PPM/°C (-55°C to +125°C)

### INSULATION RESISTANCE (IR):

1 pF to 56 pF; 2700 pF to 5100 pF:

10<sup>5</sup> Megohms min. @ +25°C at rated WVDC

10<sup>4</sup> Megohms min. @ +125°C at rated WVDC

### WORKING VOLTAGE (WVDC):

See Capacitance Values Table, page 2

### DIELECTRIC WITHSTANDING VOLTAGE (DWV):

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

### TERMINATION STYLE:

See Mechanical Configurations, page 3

**TERMINAL STRENGTH:** Terminations for chips withstand a pull of 10 lbs. min., 25 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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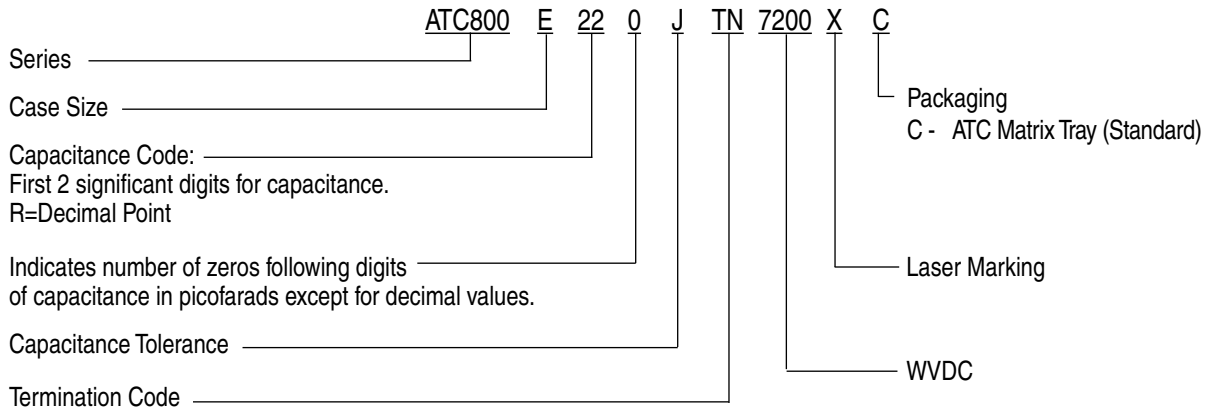
ATC # 001-1077 Rev. D, 10/10

# ATC 800 E Capacitance Values

CAP. CODE	CAP. (pF)	TOL	RATED WVDC	CAP. CODE	CAP. (pF)	TOL.	RATED WVDC	CAP. CODE	CAP. (pF)	TOL.	RATED WVDC
1R0	1.0	B, C, D	7200	3R9	3.9	B, C, D	7200	220	22	F, G, J, K	7200
1R1	1.1			4R3	4.3			240	24		
1R2	1.2			4R7	4.7			270	27		
1R3	1.3			5R1	5.1			300	30		
1R4	1.4			5R6	5.6			330	33		
1R5	1.5			6R2	6.2			360	36		
1R6	1.6			6R8	6.8			390	39		
1R7	1.7			7R5	7.5			430	43		
1R8	1.8			8R2	8.2			470	47		
1R9	1.9			9R1	9.1			510	51		
2R0	2.0	F, G, J, K	7200	100	10	F, G, J, K	7200	560	56	G, J, K	1000
2R1	2.1			110	11			272	2700		
2R2	2.2			120	12			302	3000		
2R4	2.4			130	13			332	3300		
2R7	2.7			150	15			392	3900		
3R0	3.0			160	16			472	4700		
3R3	3.3			180	18			512	5100		
3R6	3.6			200	20						

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


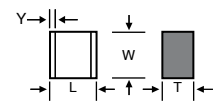
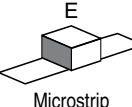
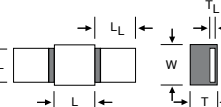
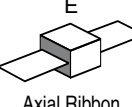
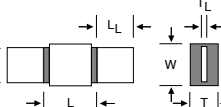


The above part number refers to a 800 E Series (case size E) 22 pF capacitor, J tolerance (±5%), 7200 WVDC, with TN termination (Tin Plated over Non-Magnetic Barrier Termination), laser marking and plastic Matrix Tray packaging.

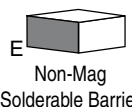
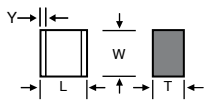
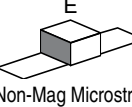
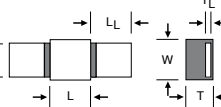
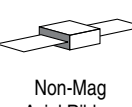
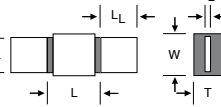
ATC accepts orders for our parts using designations **with** or **without** the "ATC" prefix. Both methods of defining the part number are equivalent, i.e., part numbers referenced with the "ATC" prefix are interchangeable to parts referenced without the "ATC" prefix. Customers are free to use either in specifying or procuring parts from American Technical Ceramics.

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

## ATC 800 E Capacitors: Mechanical Configurations

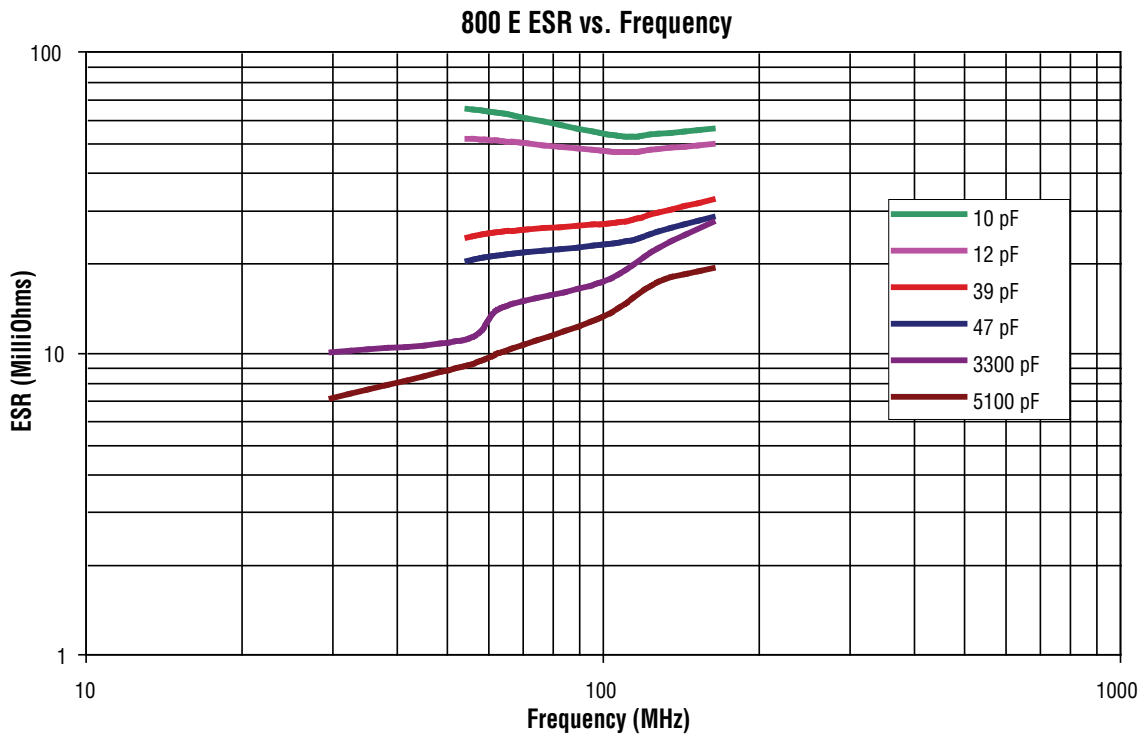
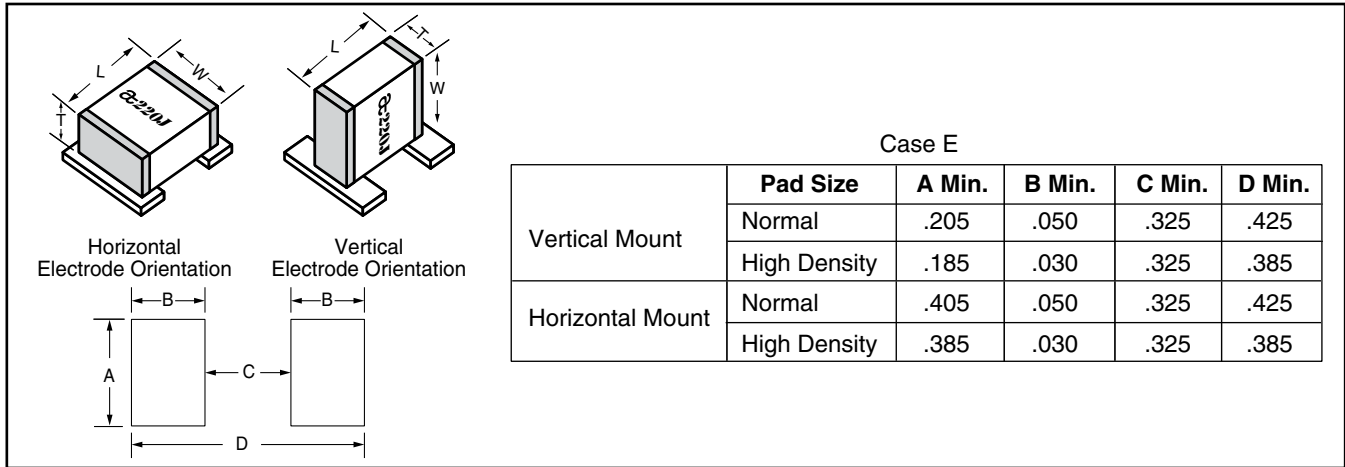
ATC SERIES & CASE SIZE	ATC TERM. CODE	CASE SIZE & TYPE	OUTLINES W/T IS A TERMINATION SURFACE	BODY DIMENSIONS INCHES (mm)			LEAD AND TERMINATION DIMENSIONS AND MATERIALS	
				LENGTH (L)	WIDTH (W)	THICKNESS (T)	OVERLAP (Y)	MATERIALS
800 E	T	 Solderable Nickel Barrier		.380 +0.015 -.010 (9.65 +0.38 -0.25)	.380 +0.015 -.010 (9.65 +0.38 -0.25)	.190 (4.83) max.	.040 (1.02) max.	<b>RoHS Compliant</b> Tin Plated over Nickel Barrier Termination
800 E	MS	 Microstrip		.380 +0.035 -.010 (9.65 +0.89 -0.25)			N/A.	High Purity Silver Leads $L_L = .750 (19.05) \text{ min.}$ $W_L = .350 \pm 0.010$ (8.89 ±0.25) $T_L = .010 \pm 0.005$ (0.25 ±0.13) Leads are Attached with High Temperature Solder
800 E	AR	 Axial Ribbon						

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

ATC SERIES & CASE SIZE	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
800 E	TN	 Non-Mag Solderable Barrier		.380 +0.015 -.010 (9.65 +0.38 -0.25)	.380 +0.015 -.010 (9.65 +0.38 -0.25)	.190 (4.83) max.	.040 (1.02) max.	<b>RoHS Compliant</b> Tin Plated over Non-Magnetic Barrier Termination
800 E	MN	 Non-Mag Microstrip		.380 +0.035 -.010 (9.65 +0.89 -0.25)			N/A.	High Purity Silver Leads $L_L = .750 (19.05) \text{ min.}$ $W_L = .350 \pm 0.010$ (8.89 ±0.25) $T_L = .010 \pm 0.005$ (0.25 ±0.13) Leads are Attached with High Temperature Solder.
800 E	AN	 Non-Mag 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.

# ATC 800 E Capacitors: Suggested Mounting Pad Dimensions



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