ATC 700 C Series NPO Porcelain High RF Power Multilayer Capacitors

- **Case C Size (.250" x .250")**
- **Capacitance Range 1 pF to 2700 pF**
- **High Q**
- **Ultra-Stable Performance**
- **Low ESR/ESL**
- **High RF Current/Voltage**
- **High RF Power**
- **High Reliability**
- **Available with Encapsulation Option***

ATC, the industry leader, offers new improved ESR/ESL performance for the 700 C Series RF Capacitors. This high Q multilayer capacitor is ultra-stable under high RF current and voltage applications. High density porcelain construction provides a rugged, hermetic package.

ATC offers an encapsulation option for applications requiring extended protection against arc-over and corona.

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

Typical circuit applications: VHF/UHF RF Power Amplifiers, Antenna Tuning, Plasma Chambers and Medical (MRI coils).
*For leaded styles only.

ENVIRONMENTAL TESTS

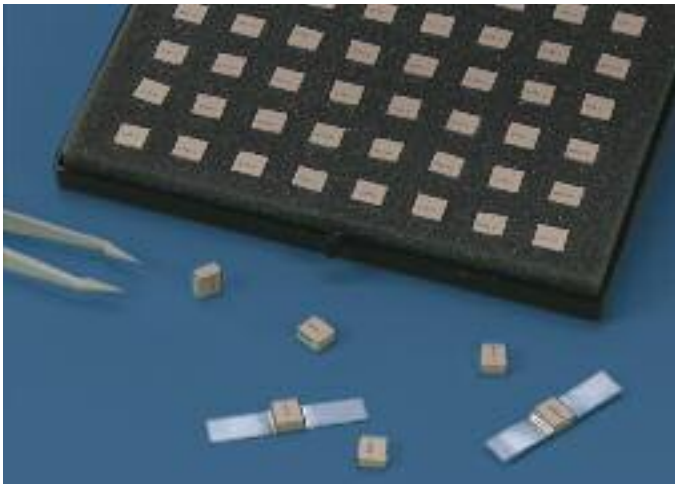
ATC 700 C Series Capacitors are designed and manufactured to meet and exceed the requirements of EIA-198, MIL-PRF-55681 and MIL-PRF-123.

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 10,000 (1.0 pF to 1000 pF) @ 1 MHz.
Greater than 10,000 (1100 pF to 2700 pF) @ 1 KHz.

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

INSULATION RESISTANCE (IR):
1 pF to 2700 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 at 1250 volts DC or less 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:
Available in various surface mount and leaded styles.
See Mechanical Configurations, page 3.

TERMINAL STRENGTH: Terminations for chips and pellets 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 700 C Capacitance Values

CAP. CODE	CAP. (pF)	TOL.	RATED WVDC	CAP. CODE	CAP. (pF)	TOL.	RATED WVDC	CAP. CODE	CAP. (pF)	TOL.	RATED WVDC	CAP. CODE	CAP. (pF)	TOL.	RATED WVDC
1R0	1.0			5R1	5.1			390	39			301	300		
1R1	1.1			5R6	5.6			430	43			331	330		
1R2	1.2			6R2	6.2			470	47			361	360		
1R3	1.3			6R8	6.8	B, C, D		510	51			391	390		1500
1R4	1.4			7R5	7.5			560	56			431	430		
1R5	1.5			8R2	8.2			620	62			471	470		
1R6	1.6			9R1	9.1			680	68			511	510		
1R7	1.7			100	10			750	75			561	560		
1R8	1.8			110	11			820	82			621	620		
1R9	1.9			120	12			910	91			681	680		
2R0	2.0	B, C, D	2500	130	13		2500	101	100	F, G, J K, M	2500	751	750	F, G, J K, M	1000
2R1	2.1			150	15			111	110			821	820		
2R2	2.2			160	16			121	120			911	910		
2R4	2.4			180	18	F, G, J		131	130			102	1000		
2R7	2.7			200	20	K, M		151	150			112	1100		
3R0	3.0			220	22			161	160			122	1200		
3R3	3.3			240	24			181	180			152	1500		500
3R6	3.6			270	27			201	200			182	1800		
3R9	3.9			300	30			221	220			222	2200		
4R3	4.3			330	33			241	240			242	2400		300
4R7	4.7			360	36			271	270			272	2700		

VRMS = 0.707 x WVDC

• SPECIAL VALUES, TOLERANCES, HIGHER WVDC AND MATCHING AVAILABLE. • ENCAPSULATION OPTION AVAILABLE. PLEASE CONSULT FACTORY.

CAPACITANCE TOLERANCE

Code	C	B	D	F	G	J	K	M
Tol.	±0.25 pF	±0.1 pF	±0.5 pF	±1%	±2%	±5%	±10%	±20%

ATC PART NUMBER CODE

ATC700 C 10 0 J W 2500 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

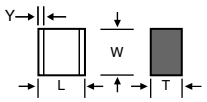
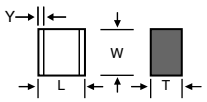
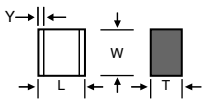
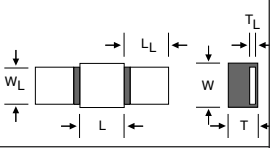
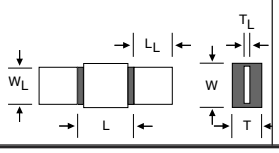
The above part number refers to a 700 C Series (case size C) 10 pF capacitor, J tolerance (±5%), 2500 WVDC, with W termination (Tin/Lead, Solder Plated over Nickel Barrier), laser marking and ATC Waffle-packaging.

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.

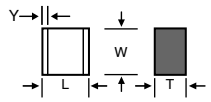
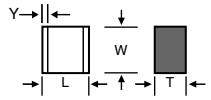
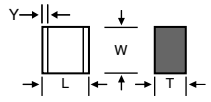
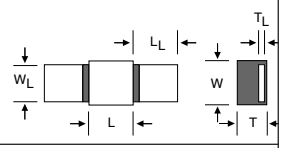
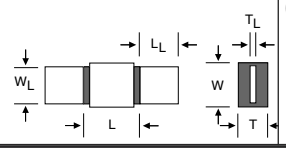
Consult factory for additional performance data.

ATC 700 C 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
700C	W	C Solder Plate		.230 +.020 -.010 (5.84 +0.51 -0.25)	.250 ±.015 (6.35 ±0.38)	.145 (3.68) max. for capacitance values ≤ 680 pF; .165 (4.19) max. for capacitance values > 680 pF.	.040 (1.02) max.	Tin/Lead, Solder Plated over Nickel Barrier Termination
700C	P	C Pellet		.230 +.025 -.010 (5.84 +0.64 -0.25)				Heavy Tin/Lead Coated, over Nickel Barrier Termination
700C	T	C Solderable Nickel Barrier		.230 +.020 -.010 (5.84 +0.51 -0.25)				***RoHS Compliant*** Tin Plated over Nickel Barrier Termination
700C	MS	C Microstrip		.245 ±.025 (6.22 ±0.64)			N/A	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.
700C	AR	C Axial Ribbon						

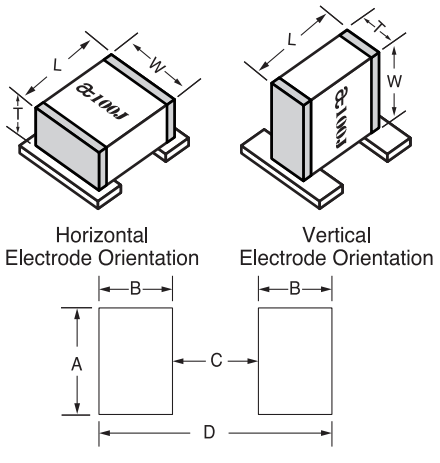
Custom lead styles and lengths are available; consult factory. All leads are high purity silver attached with high temperature solder and are **RoHS** compliant.

ATC 700 C Capacitors: Non-Magnetic Mechanical Configurations

ATC SERIES & CASE SIZE	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
700C	WN	C Non-Mag Solder Plate		.230 +.020 -.010 (5.84 +0.51 -0.25)	.250 ±.015 (6.35 ±0.38)	.145 (3.68) max. for capacitance values ≤ 680 pF; .165 (4.19) max. for capacitance values > 680 pF.	.040 (1.02) max.	Tin/Lead, Solder Plated over Non-Magnetic Barrier Termination
700C	PN	C Non-Mag Pellet		.230 +.025 -.010 (5.84 +0.64 -0.25)				Heavy Tin/Lead Coated, over Non-Magnetic Barrier Termination
700C	TN	C Non-Mag Solderable Barrier		.230 +.020 -.010 (5.84 +0.51 -0.25)				***RoHS Compliant*** Tin Plated over Non-Magnetic Barrier Termination
700C	MN	C Non-Mag Microstrip		.245 ±.025 (6.22 ±0.64)			N/A	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.
700C	AN	C 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.

Suggested Mounting Pad Dimensions



Case C Vertical Mount

Cap Value	Pad Size	A Min.	B Min.	C Min.	D Min.
< 680 pF	Normal	.150	.050	.200	.300
	High Density	.130	.030	.200	.260
> 680 pF	Normal	.185	.050	.200	.300
	High Density	.165	.030	.200	.260

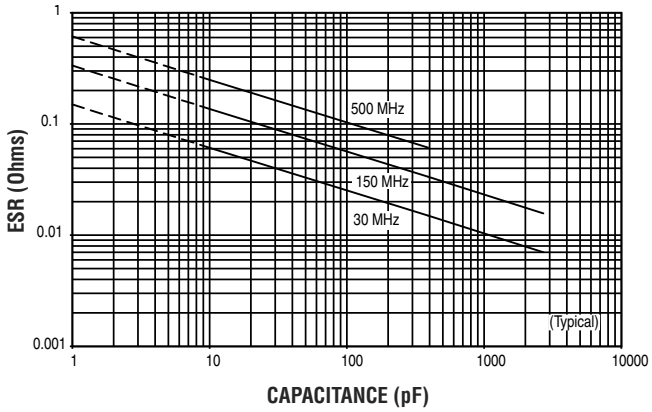
Horizontal Mount

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

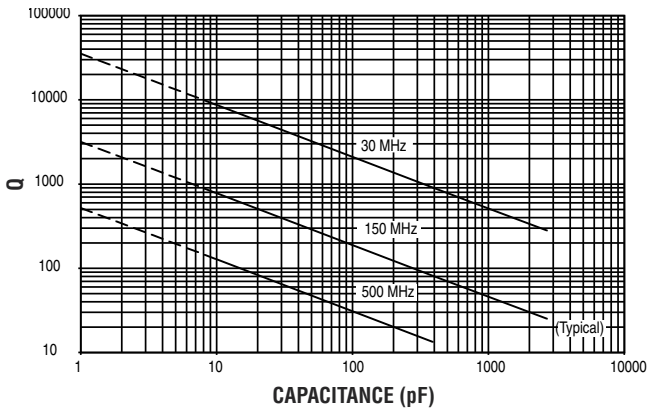
Dimensions are in inches.

ATC 700 C Performance Data

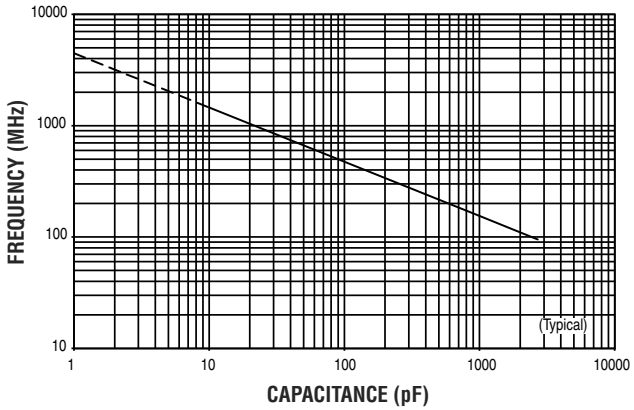
ESR VS. CAPACITANCE
ATC SERIES 700, CASE C



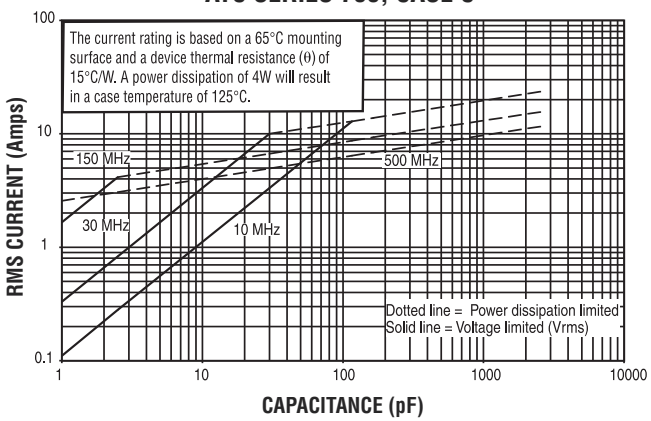
Q VS. CAPACITANCE
ATC SERIES 700, CASE C



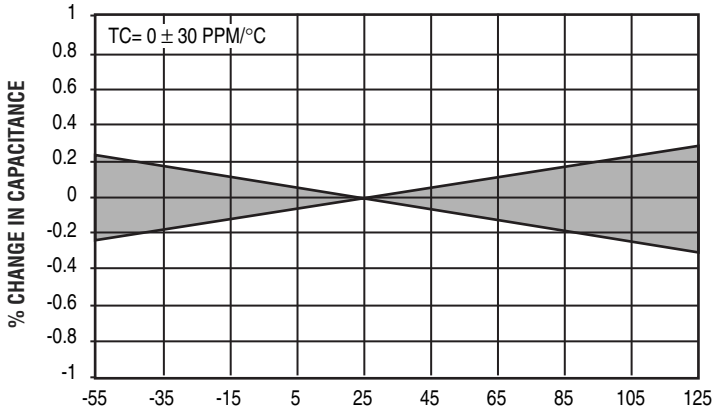
SERIES RESONANCE VS. CAPACITANCE
ATC SERIES 700, CASE C



CURRENT RATING VS. CAPACITANCE
ATC SERIES 700, CASE C



CAPACITANCE CHANGE VS. TEMPERATURE
ATC SERIES 700, CASE C



ATC # 001-1002 Rev. H, 9/14

AMERICAN TECHNICAL CERAMICS

ATC North America
sales@atceramics.com

ATC Europe
saleseur@atceramics.com

ATC Asia
sales@atceramics-asia.com

THE ENGINEERS' CHOICE®
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THE ENGINEERS' CHOICE™ **www.atceramics.com**