

ATC 700 C Series NPO Porcelain High RF Power Multilayer Capacitors

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

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:

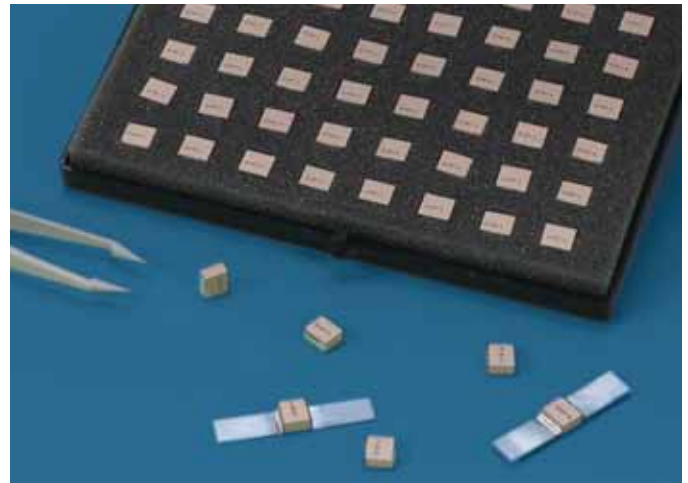
MIL-STD-202, Method 108, for 2000 hours, at 125°C.

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:

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 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.



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ISO 9001 REGISTERED

ATC # 001-1002 Rev. E 3/10

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ATC 700 C Capacitance Values

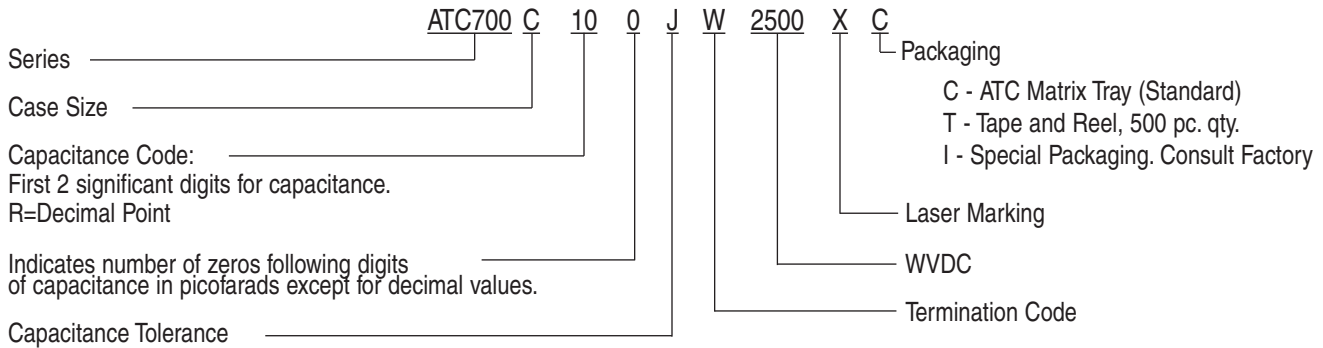
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1R0	1.0	C, D	2500	8R2	8.2	C, D	2500	680	68	G, J K, M	2500	471	470	G, J K, M	1500
1R2	1.2			100	10	820		82	561			560			
1R5	1.5			120	12	101		100	681			680			
1R8	1.8			150	15	121		120	821			820			
2R2	2.2			180	18	151		150	102			1000			
2R7	2.7			220	22	181		180	122			1200			
3R3	3.3			270	27	221		220	152			1500			
3R9	3.9			330	33	271		270	182			1800			
4R7	4.7	1500	390	39	331	330	222	2200							
5R6	5.6		470	47	391	390	272	2700							
6R8	6.8		560	56											

$VRMS = 0.707 \times WVDC$

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

CAPACITANCE TOLERANCE						
Code	C	D	G	J	K	M
Tol.	±0.25 pF	±0.5 pF	±2%	±5%	±10%	±20%

ATC PART NUMBER CODE



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.


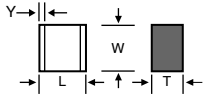

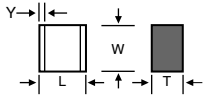

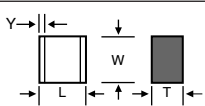
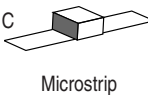
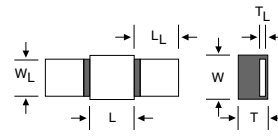
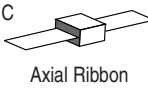
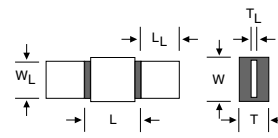
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ATC 700 C Capacitors: Mechanical Configurations

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 +0.020 -.010 (5.84 +0.51 -0.25)	.250 ±0.015 (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 +0.025 -.010 (5.84 +0.64 -0.25)				Heavy Tin/Lead Coated, over Nickel Barrier Termination
700C	T	 C Solderable Nickel Barrier		.230 +0.020 -.010 (5.84 +0.51 -0.25)				RoHS Compliant Tin Plated over Nickel Barrier Termination
700C	MS	 C Microstrip		.245 ±0.025 (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.


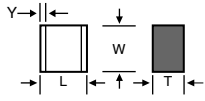

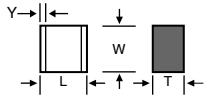

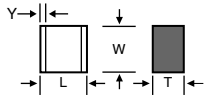
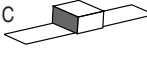
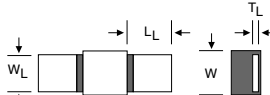
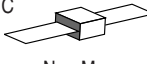
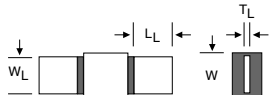
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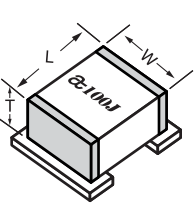
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ATC 700 C Capacitors: Non-Magnetic Mechanical Configurations

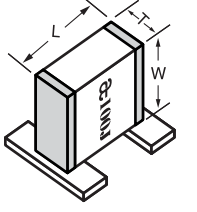
ATC SERIES & CASE SIZE	ATC TERM. CODE	CASE SIZE & TYPE	OUTLINES W/T IS A TERMINATION SURFACE	BODY DIMENSIONS INCHES (mm)			LEAD AND TERMINATION DIMENSIONS AND MATERIALS	
				LENGTH (L)	WIDTH (W)	THICKNESS (T)	OVERLAP (Y)	MATERIALS
700C	WN	 Non-Mag Solder Plate		.230 +.020 -.010 (5.84 +.051 -.025)	.250 ±.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	 Non-Mag Pellet		.230 +.025 -.010 (5.84 +.064 -.025)				Heavy Tin/Lead Coated, over Non-Magnetic Barrier Termination
700C	TN	 Non-Mag Solderable Barrier		.230 +.020 -.010 (5.84 +.051 -.025)				RoHS Compliant Tin Plated over Non-Magnetic Barrier Termination
700C	MN	 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	 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



Horizontal Electrode Orientation



Vertical Electrode Orientation

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	Pad Size	A Min.	B Min.	C Min.	D Min.
All values	Normal	.280	.050	.200	.300
	High Density	.260	.030	.200	.260

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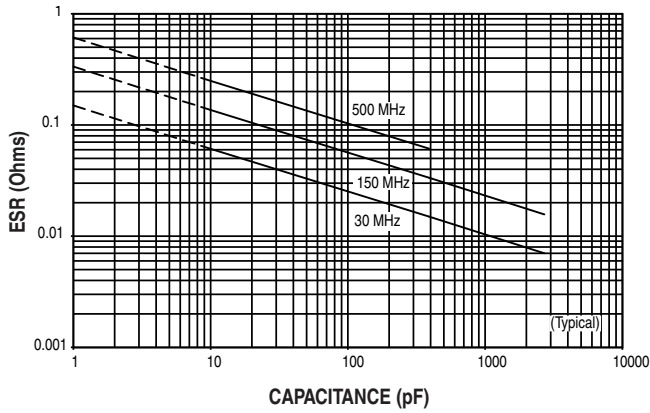
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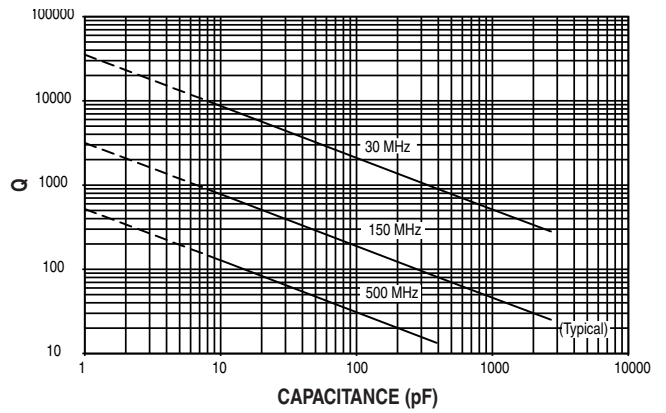
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ATC 700 C Performance Data

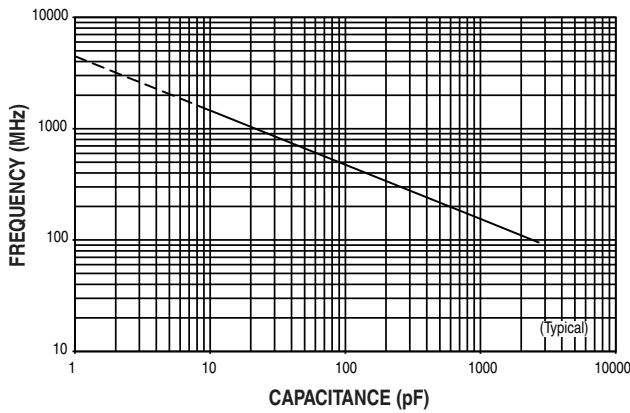
ESR VS. CAPACITANCE
ATC SERIES 700, CASE C



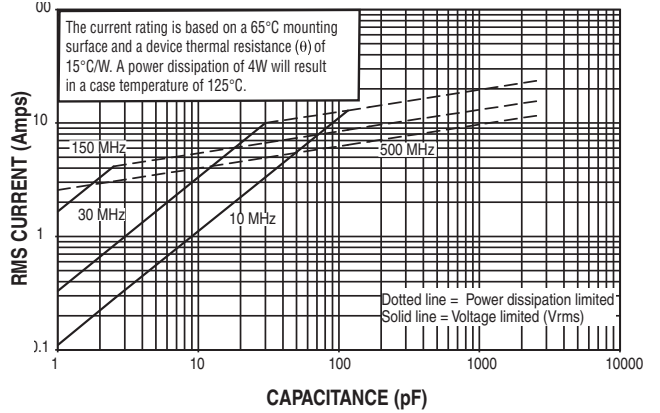
Q VS. CAPACITANCE
ATC SERIES 700, CASE C



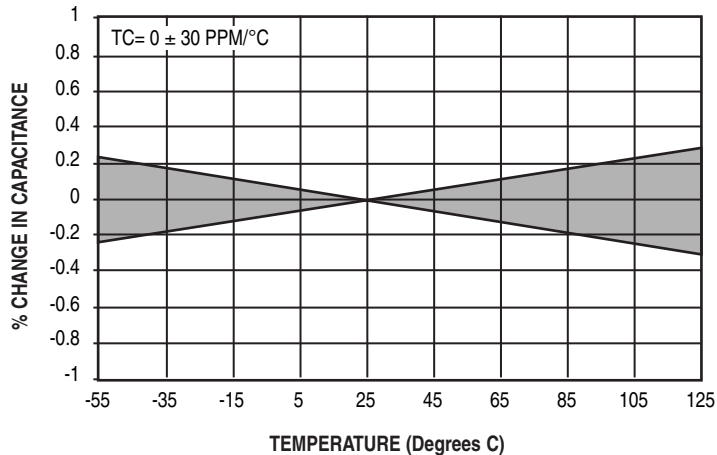
SERIES RESONANCE VS. CAPACITANCE
ATC SERIES 700, CASE C



CURRENT RATING VS. CAPACITANCE
ATC SERIES 700, CASE C



CAPACITANCE CHANGE VS. TEMPERATURE
ATC SERIES 700, CASE C



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