

# 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:

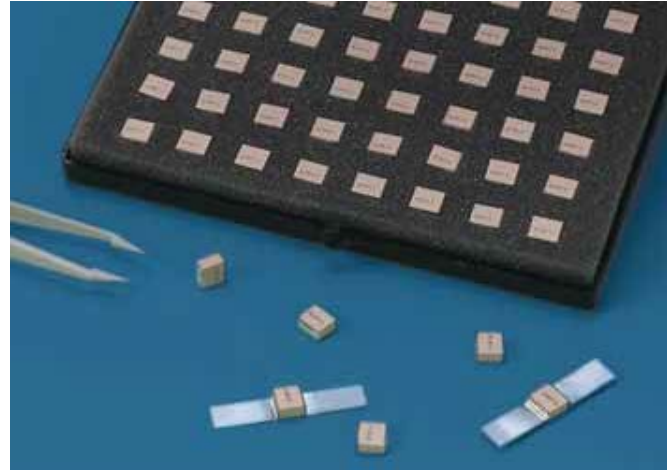
MIL-STD-202, Method 108, for 2000 hours, at 125°C.

Voltage applied.

1 pF to 470 pF: at WVDC

560 pF to 1200 pF: at 120% of WVDC

1500 pF to 2700 pF: at 200% of WVDC



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

10<sup>4</sup> 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):** \*See page 2.

**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.



AMERICAN TECHNICAL CERAMICS

ATC North America

631-622-4700

sales@atceramics.com

ATC Europe

+46 8 6800410

sales@atceramics-europe.com

ATC Asia

+86-755-8366-4318

sales@atceramics-asia.com



THE ENGINEERS' CHOICE™

ISO 9001 REGISTERED

ATC # 001-1002 Rev. D 9/07

www.atceramics.com

## 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			8R2	8.2	C, D		680	68			471	470		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	C, D	2500	220	22	G, J K, M	2500	181	180	G, J K, M		122	1200	G, J K, M	
3R3	3.3			270	27			221	220			152	1500		500
3R9	3.9			330	33			271	270			182	1800		
4R7	4.7			390	39			331	330			222	2200		
5R6	5.6			470	47			391	390		1500	272	2700		300
6R8	6.8			560	56										

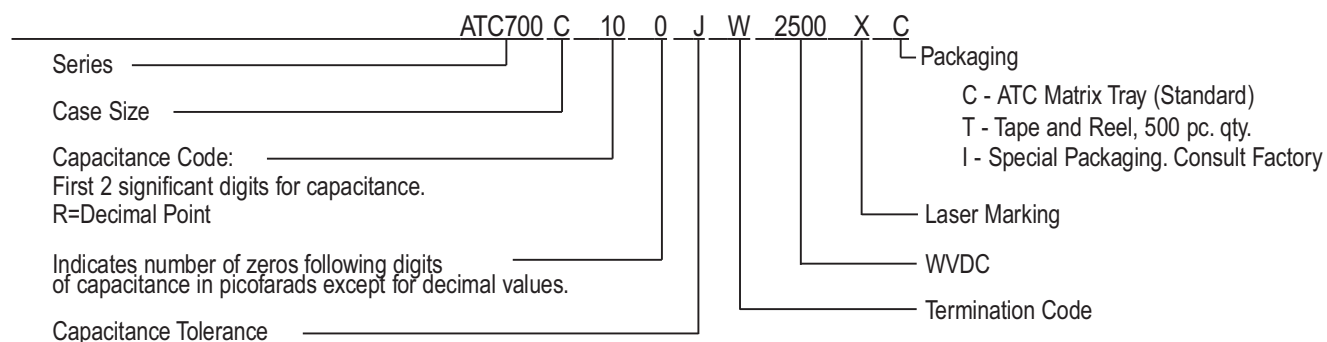
$$VRMS = 0.707 \times WVDC$$

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

- \* DWV: 1 pF to 470 pF: 120% of rated WVDC for 5 secs.  
 560 pF to 1200 pF: 150% of rated WVDC for 5 secs.  
 1500 pF to 2700 pF: 250% of rated WVDC for 5 secs.

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 (631) 622-4700.

Consult factory for additional performance data.

## AMERICAN TECHNICAL CERAMICS

ATC North America

631-622-4700 • sales@atceramics.com


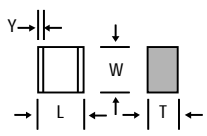

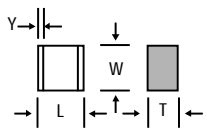

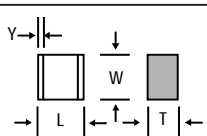

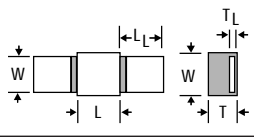
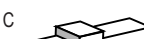
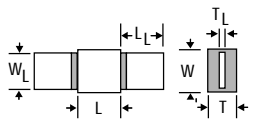
ATC Europe

+46 8 6800410 • sales@atceramics-europe.com

ATC Asia

+86-755-8366-4318 • sales@atceramics-asia.com

## 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)	<div>.250 ±.015 (6.35 ±0.38)</div>	<div>.145 (3.68) max. for capacitance values ≤ 680 pF; .165 (4.19) max. for capacitance values &gt; 680 pF.</div>	.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)				<b>RoHS Compliant</b> Tin Plated over Nickel Barrier Termination		
700C	MS	 C Microstrip		<div>.245 ±.025 (6.22 ±0.64)</div>			N/A	High Purity Silver Leads L <sub>L</sub> = .500 (12.7) min. W <sub>L</sub> = .240 ±.005 (6.10 ±.127) T <sub>L</sub> = .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.

**A M E R I C A N   T E C H N I C A L   C E R A M I C S**

**ATC North America**

631-622-4700 • sales@atceramics.com

**ATC Europe**

+46 8 6800410 • sales@atceramics-europe.com

**ATC Asia**

+86-755-8366-4318 • sales@atceramics-asia.com

# 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	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)				<b>RoHS Compliant</b> 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 <sub>L</sub> = .500 (12.7) min. W <sub>L</sub> = .240 ±.005 (6.10 ±.127) T <sub>L</sub> = .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

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

**A M E R I C A N   T E C H N I C A L   C E R A M I C S**

ATC North America

631-622-4700 • sales@atceramics.com

ATC Europe

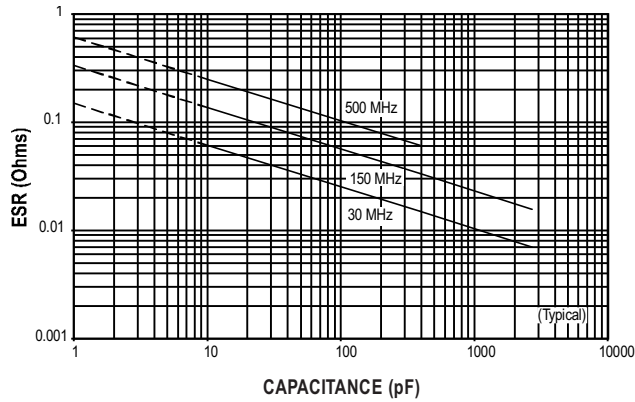
+46 8 6800410 • sales@atceramics-europe.com

ATC Asia

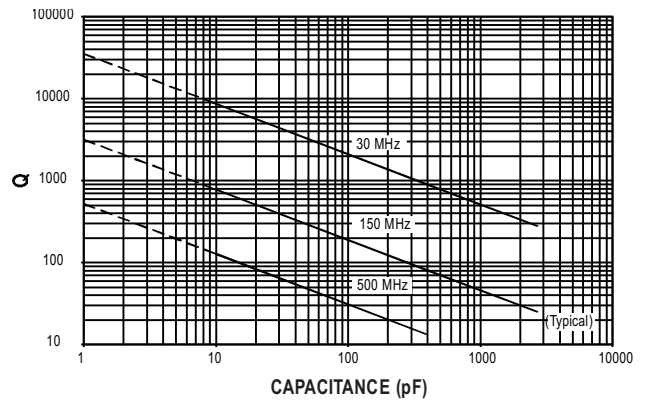
+86-755-8366-4318 • sales@atceramics-asia.com

# ATC 700 C Performance Data

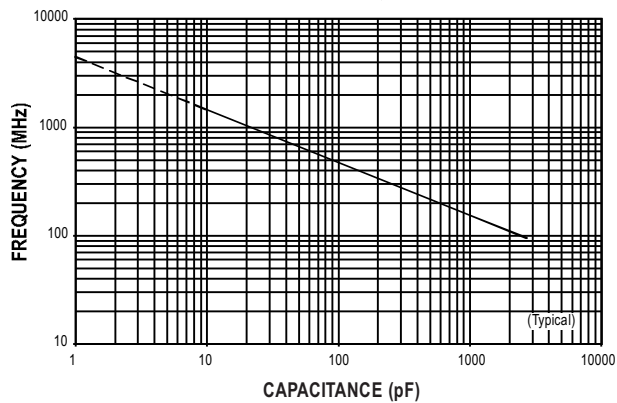
**ESR VS. CAPACITANCE**  
ATC SERIES 700, CASE C



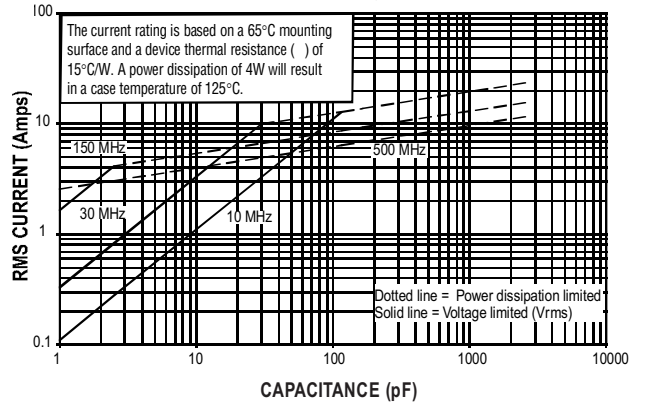
**Q VS. CAPACITANCE**  
ATC SERIES 700, CASE C



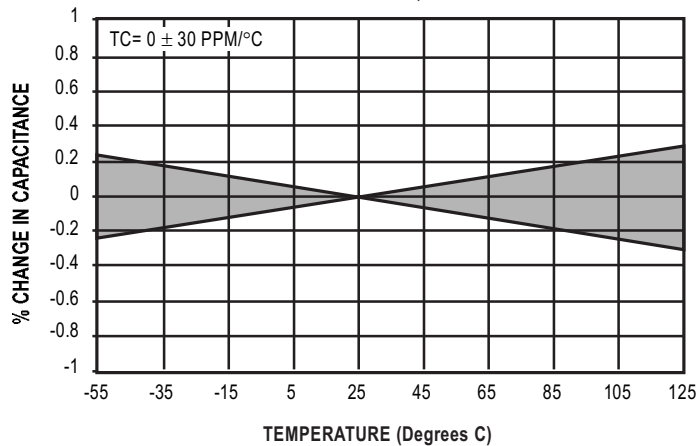
**SERIES RESONANCE VS. CAPACITANCE**  
ATC SERIES 700, CASE C



**CURRENT RATING VS. CAPACITANCE**  
ATC SERIES 700, CASE C



**CAPACITANCE CHANGE VS. TEMPERATURE**  
ATC SERIES 700, CASE C



**A M E R I C A N   T E C H N I C A L   C E R A M I C S**

**ATC North America**

631-622-4700 • sales@atceramics.com

**ATC Europe**

+46 8 6800410 • sales@atceramics-europe.com

**ATC Asia**

+86-755-8366-4318 • sales@atceramics-asia.com

*Sales of ATC products are subject to the terms and conditions contained in American Technical Ceramics Corp. Terms and Conditions of Sale (ATC document #001-992 Rev. B; 12/05). Copies of these terms and conditions will be provided upon request. They may also be viewed on ATC's website at [www.atceramics.com/productfinder/default.asp](http://www.atceramics.com/productfinder/default.asp). Click on the link for Terms and Conditions of Sale.*

*ATC has made every effort to have this information as accurate as possible. However, no responsibility is assumed by ATC for its use, nor for any infringements of rights of third parties which may result from its use. ATC reserves the right to revise the content or modify its product without prior notice.*

© 1996 American Technical Ceramics Corp. All Rights Reserved.

ATC # 001-1002 Rev. D 9/07



**A M E R I C A N      T E C H N I C A L      C E R A M I C S**

**ATC North America**  
631-622-4700  
[sales@atceramics.com](mailto:sales@atceramics.com)

**ATC Europe**  
+46 8 6800410  
[sales@atceramics-europe.com](mailto:sales@atceramics-europe.com)

**ATC Asia**  
+86-755-8366-4318  
[sales@atceramics-asia.com](mailto:sales@atceramics-asia.com)



---

**[www.atceramics.com](http://www.atceramics.com)**