ATC 100 C Series 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 100 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

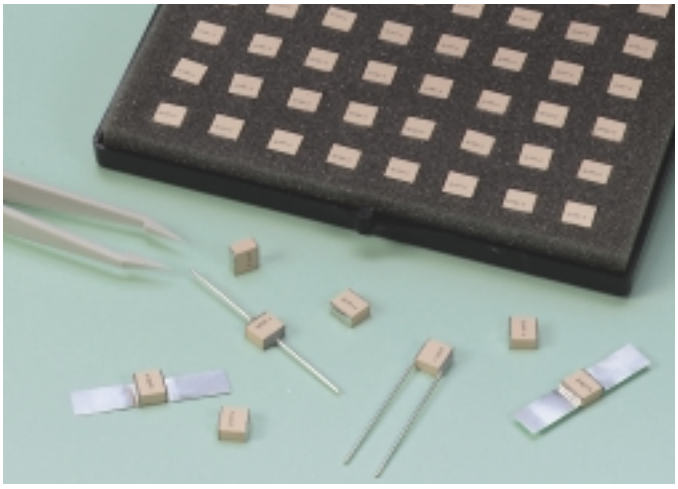
ATC 100 C Series Capacitors are designed and manufactured to meet and exceed the requirements of EIA-198, MIL-PRF-55681 and MIL-PRF-123.

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):
+90 ±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): *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

ATC 100 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	B, C, D	2500	8R2	8.2	B, C, D	2500	680	68	F, G, J, K, M	2500	471	470	F, G, J, K, M	1500
1R2	1.2			100	10	F, G, J, K, M		820	82			561	560		1000
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		500
3R9	3.9			330	33			271	270			182	1800		
4R7	4.7			390	39			331	330		1500	222	2200		300
5R6	5.6			470	47			391	390			272	2700		
6R8	6.8			560	56										

VRMS = 0.707 x 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	B	C	D	F	G	J	K	M
Tol.	±0.1 pF	±0.25 pF	±0.5 pF	±1%	±2%	±5%	±10%	±20%

ATC PART NUMBER CODE

ATC100 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 Waffle-pack (Standard)
  - B - Bulk Packaging (packed in plastic bags)
  - I - Special Packaging. Consult Factory

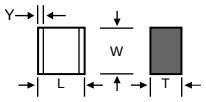
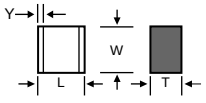
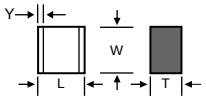
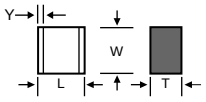
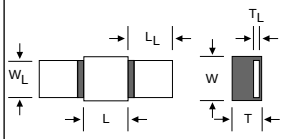
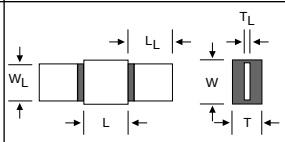
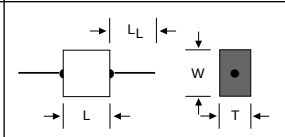
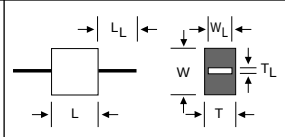
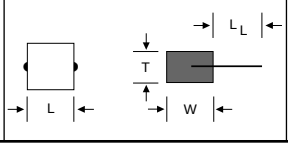
The above part number refers to a 100 C Series (case size C) 10 pF capacitor, J tolerance (±5%), 2500 WVDC, with W termination (Tin/Lead, Solder Plated over Nickel Barrier), laser marking and ATC Waffle-packaging.

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.

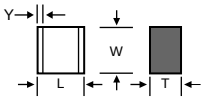
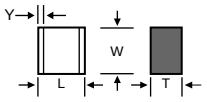
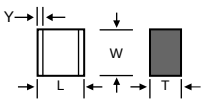
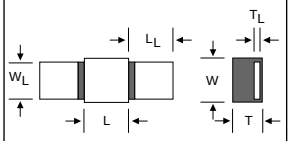
Consult factory for additional performance data.

ATC 100 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) LENGTH (L)	WIDTH (W)	THICKNESS (T)	LEAD AND TERMINATION DIMENSIONS AND MATERIALS OVERLAP (Y)	MATERIALS
100C	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
100C	P	C Pellet		.230 +.025 -.010 (5.84 +0.64 -0.25)				Heavy Tin/Lead Coated, over Nickel Barrier Termination
100C	T	C Lead-Free Solderable Nickel Barrier		.230 +.020 -.010 (5.84 +0.51 -0.25)				***Lead-Free and RoHS Compliant*** Tin Plated over Nickel Barrier Termination
100C	CA	C Gold Chip		.230 +.020 -.010 (5.84 +0.51 -0.25)				***Lead-Free and RoHS Compliant*** Gold Plated over Nickel Barrier Termination
100C	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.
100C	AR	C Axial Ribbon						
100C	AW	C Axial Wire						Silver-plated Copper Leads L_L = 1.0 (25.4) min. Dia. = .032 ±.002 (0.81 ±0.05)
100C	VA	C Vertical Axial Ribbon						Silver Leads L_L = .500 (12.7) min. W_L = ** See below T_L = .004 ±.001 (.102 ±.025)
100C	RW	C Radial Wire						Silver-plated Copper Leads L_L = 1.0 (25.4) min. Dia. = .032 ±.002 (0.81 ±0.05)

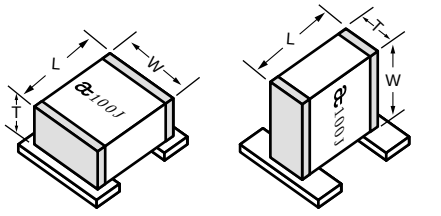
Custom lead styles and lengths are available; consult factory. All leads are high purity silver attached with high temperature solder and are **RoHS** compliant.
**W_L = .110 (2.79) for capacitance values ≤ 680 pF; W_L = .130 (3.30) for capacitance values > 680 pF

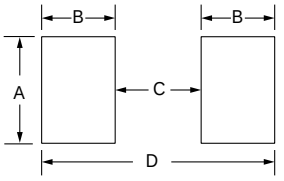
ATC 100 C Capacitors: Non-Magnetic Mechanical Configurations

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
100C	WN	C Non-Mag Solder Plate		.230 +.025 -.010 (5.84 +0.64 -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
100C	PN	C Non-Mag Pellet		.230 +.035 -.010 (5.84 +0.89 -0.25)				Heavy Tin/Lead Coated, over Non-Magnetic Barrier Termination
100C	TN	C Non-Mag Lead-Free Solderable Barrier		.230 +.025 -.010 (5.84 +0.64 -0.25)				***Lead-Free and RoHS Compliant*** Tin Plated over Non-Magnetic Barrier Termination
100C	MN	C Non-Mag 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.

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

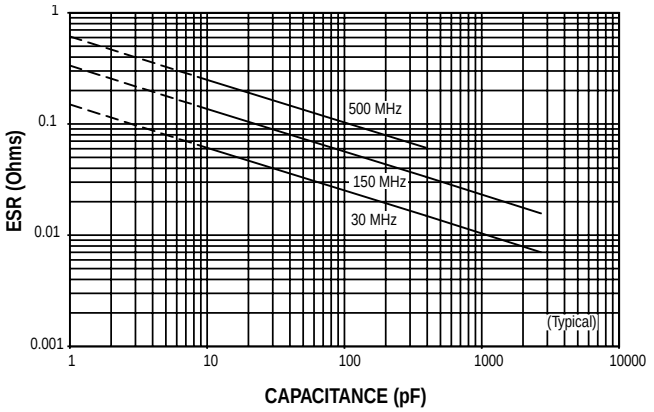
Cap Value	Pad Size	A Min.	B Min.	C Min.	D Min.
< 680 pF	Normal	.150	.050	.200	.300
	High Density	.130	.030	.200	.260
> 680 pF	Normal	.185	.050	.200	.300
	High Density	.165	.030	.200	.260

Horizontal Mount

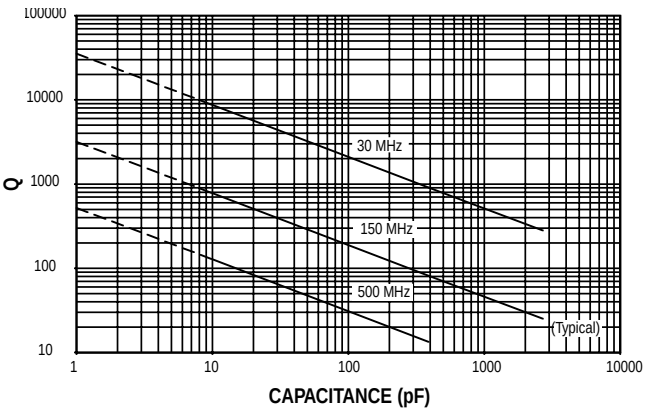
All values	Normal	.280	.050	.200	.300
	High Density	.260	.030	.200	.260

ATC 100 C Performance Data

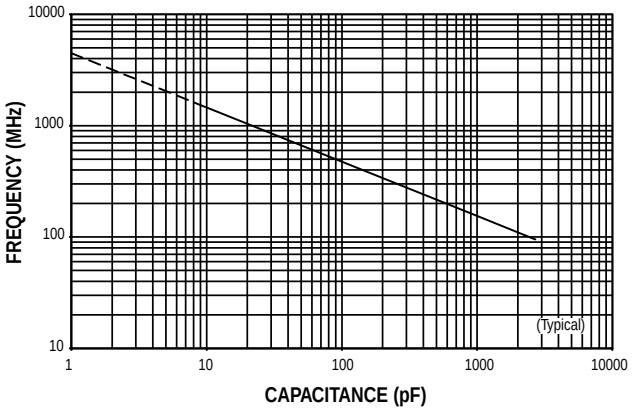
ESR VS. CAPACITANCE
ATC SERIES 100, CASE C



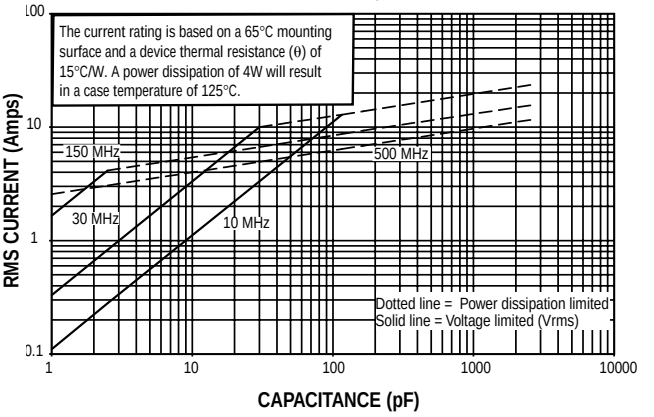
Q VS. CAPACITANCE
ATC SERIES 100, CASE C



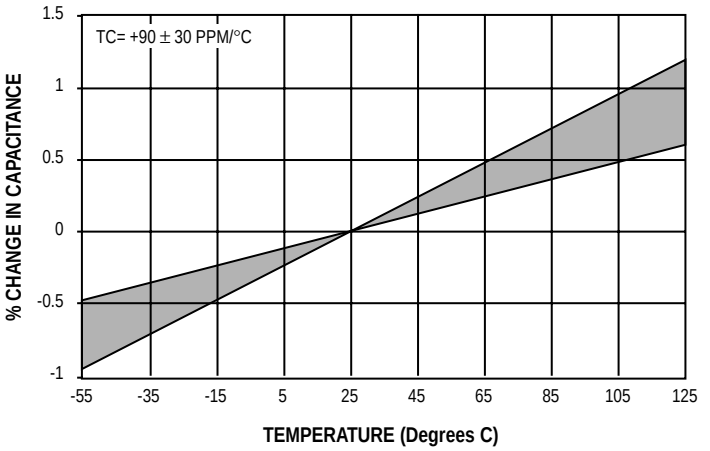
SERIES RESONANCE VS. CAPACITANCE
ATC SERIES 100, CASE C



CURRENT RATING VS. CAPACITANCE
ATC SERIES 100, CASE C



CAPACITANCE CHANGE VS. TEMPERATURE
ATC SERIES 100, CASE C



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. A 10/03). Copies of these terms and conditions will be provided upon request. They may also be viewed on ATC's website at www.atceramics.com/aboutatc/terms_conditions_sale.html

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 line without prior notice.

ATC # 001-808 Rev. G 12/04

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

www.atceramics.com