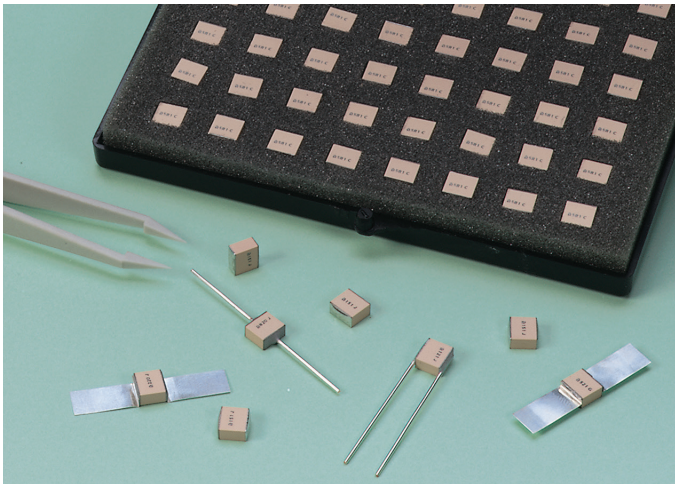
ATC 100 C Series Porcelain High RF Power Multilayer Capacitors

- 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*
- Extended WVDC up to 3600 VDC



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.
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):
+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):
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 100 C Capacitance Values

CAP. CODE	CAP. (pF)	TOL.	RATED WVDC STD.	RATED WVDC EXT.	CAP. CODE	CAP. (pF)	TOL.	RATED WVDC STD.	RATED WVDC EXT.	CAP. CODE	CAP. (pF)	TOL.	RATED WVDC STD.	RATED WVDC EXT.	CAP. CODE	CAP. (pF)	TOL.	RATED WVDC STD.	RATED WVDC EXT.
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			
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	3600	130	13		2500	3600	101	100	F, G, J, K, M	2500		751	750	F, G, J, K, M	1000	1500
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, K, M			131	130				102	1000			
2R7	2.7				200	20				151	150				112	1100			
3R0	3.0				220	22				161	160				122	1200			
3R3	3.3				240	24				181	180				152	1500		500	800
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	500
4R7	4.7				360	36				271	270				272	2700			

EXTENDED VOLTAGE (3600) — EXTENDED VOLTAGE (3000) — EXTENDED VOLTAGE (1500 EXT. VOLT. 2000) — EXTENDED VOLTAGE (1000 1500)

VRMS = 0.707 x WVDC

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

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

- Series: ATC100
- Case Size: C
- Capacitance Code: First 2 significant digits for capacitance. R=Decimal Point: 10
- Indicates number of zeros following digits of capacitance in picofarads except for decimal values: 0
- Capacitance Tolerance: J
- Termination Code: W
- WVDC: 2500
- Laser Marking: X
- Packaging:
  - ATC Matrix Tray (Standard) Quantity varies by termination style. Consult factory. For this option, leave last position blank.
  - T - Tape and Reel, 500 pc. qty., Surface mount termination only.
  - I - Special Packaging. Consult Factory

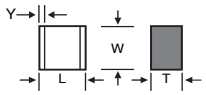
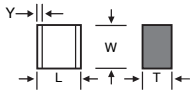
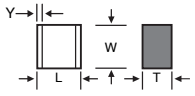
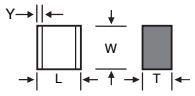
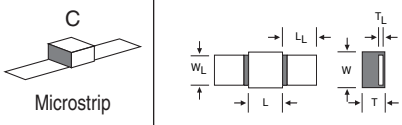
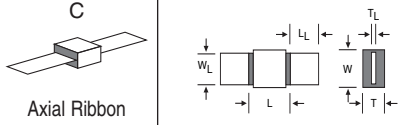
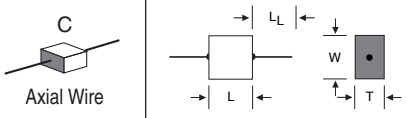
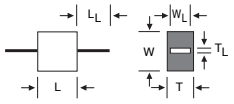
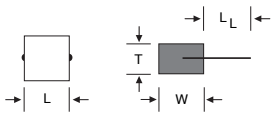
The above part number refers to a 100 C Series (case size C) 10 pF capacitor, J tolerance (±5%), 2500 WVDC, with W termination (Tin/Lead, Solder Plated over Nickel Barrier), laser marking and ATC Matrix Tray packaging.

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.

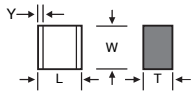
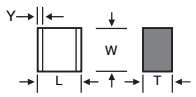
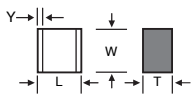
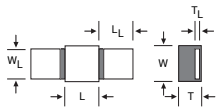
Consult factory for additional performance data.

ATC 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)			LEAD AND TERMINATION DIMENSIONS AND MATERIALS	
				LENGTH (L)	WIDTH (W)	THICKNESS (T)	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 ≤680pF .165(4.19) max. for capacitance values >680pF	.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 Solderable Nickel Barrie		.230 +.020 -.010 (5.84 +0.51 -0.25				***RoHS Compliant*** Tin Plated over Nickel Barrier Termination
100C	CA	C Gold Chip		.230 +.020 -.010 (5.84 +0.51 -0.25				***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 = 2.25 (57.15) 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

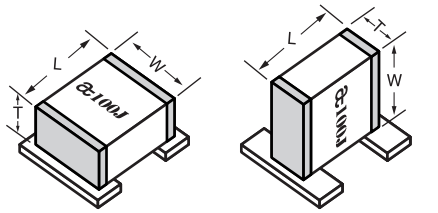
ATC 100 C Capacitors: Non-Magnetic Mechanical Configurations

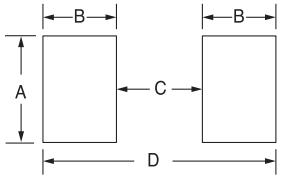
ATC SERIES & CASE SIZE	ATC TERM. CODE	CASE SIZE & TYPE	OUTLINES W/T IS A TERMINATION SURFACE	BODY DIMENSIONS INCHES (MM) LENGTH (L)	WIDTH (W)	THICKNESS (T)	LEAD AND TERMINATION DIMENSIONS AND MATERIALS OVERLAP (Y)	MATERIALS
100C	WN	C Non-Mag Solder Plate		.230 +.025 -.010 (5.84 +0.64 -0.25)	.250 ±.015 (6.35 ±0.38)	.145 (3.68) max. for capacitance values ≤680pF .165 (4.19) max. for capacitance values >680pF	.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 Solderable Nickel Barrier		.230 +.025 -.010 (5.84 +0.64 -0.25)				***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.

TRIM LINE

Suggested Mounting Pad Dimensions





Case C Vertical Mount

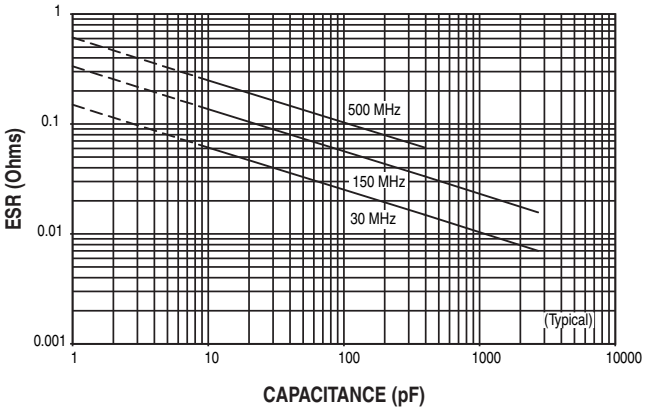
Cap Value	Pad Size	A Min.	B Min.	C Min.	D Min.
< 680 pF	Normal	.150	.050	.200	.300
	High Density	.130	.030	.200	.260
> 680 pF	Normal	.185	.050	.200	.300
	High Density	.165	.030	.200	.260

Horizontal Mount

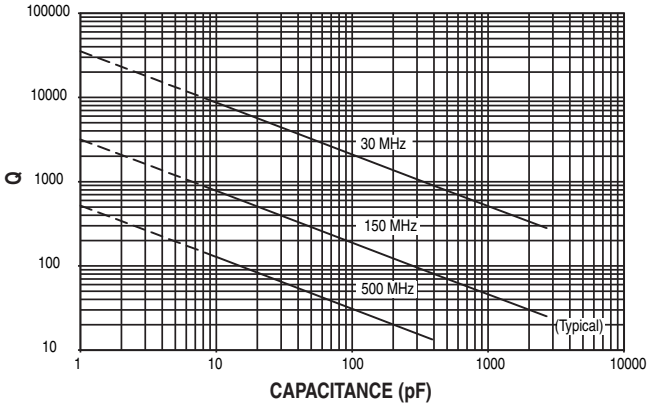
All values	Normal	.280	.050	.200	.300
	High Density	.260	.030	.200	.260

ATC 100 C Performance Data

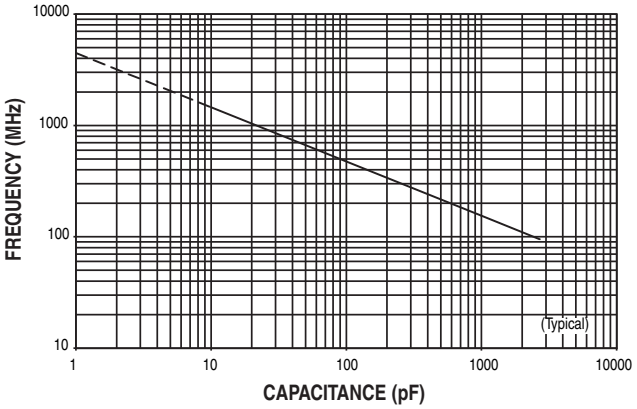
ESR VS. CAPACITANCE
ATC SERIES 100, CASE C



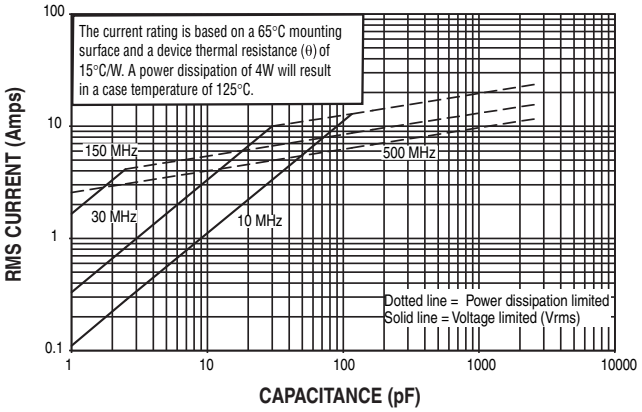
Q VS. CAPACITANCE
ATC SERIES 100, CASE C



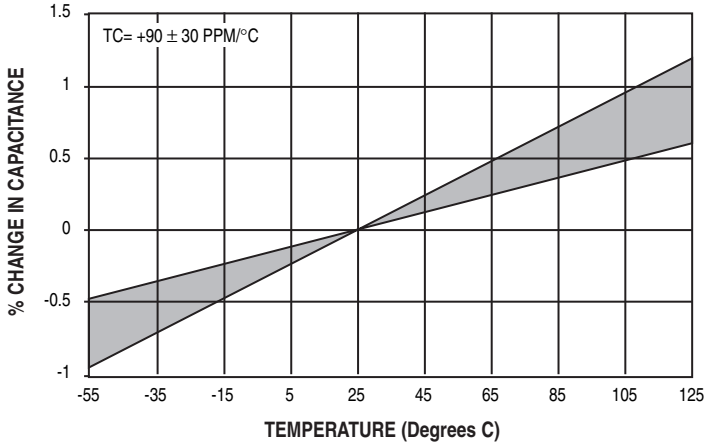
SERIES RESONANCE VS. CAPACITANCE
ATC SERIES 100, CASE C



CURRENT RATING VS. CAPACITANCE
ATC SERIES 100, CASE C



CAPACITANCE CHANGE VS. TEMPERATURE
ATC SERIES 100, CASE C



ATC # 001-808 Rev. M, 1/17

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