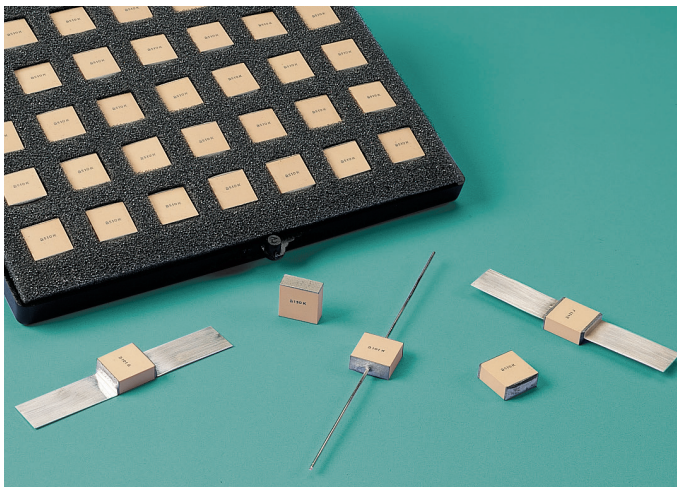
ATC 700 E Series NPO Porcelain High RF Power Multilayer Capacitors

- Case E Size (.380" x .380")
- Capacitance Range 1 pF to 2200 pF
- High Q
- Ultra-Stable NPO Performance
- Low ESR/ESL
- High RF Current/Voltage
- High RF Power
- High Reliability
- Extended WVDC up to 7200 VDC
- Available with Encapsulation Option*



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

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

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

Typical circuit applications: HF/RF Power Amplifiers, Transmitters, Antenna Tuning, Plasma Chambers and Medical (MRI coils).

*For leaded styles only

ENVIRONMENTAL TESTS

ATC 700 E 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.
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 pF to 1000 pF) @ 1 MHz.
Greater than 10,000 (1100 pF to 2200 pF) @ 1 KHz.

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

INSULATION RESISTANCE (IR):
1 pF to 2200 pF:
10^5 Megohms min. @ +25°C at 500 VDC.
10^4 Megohms min. @ +125°C at 500 VDC.

WORKING VOLTAGE (WVDC):
See Capacitance Values Table, page 2.

DIELECTRIC WITHSTANDING VOLTAGE (DWV):
150% of WVDC for capacitors rated at 1250 volts DC or less for 5 seconds.
120% of WVDC forÏ 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., 25 lbs. typical, for 5 seconds in direction perpendicular to the termination surface of the capacitor. Test per MIL-STD-202, method 211.

ATC 700 E 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	B, C, D	3600	EXTENDED VOLTAGE 7200 EXTENDED VOLTAGE 5000 VOLT. N/A	5R1	5.1	B, C, D	3600	EXTENDED VOLTAGE 7200 EXTENDED VOLTAGE 5000 VOLT. N/A	390	39	F, G, J, K, M	3600	VOLTAGE 7200 EXTENDED EXT. 5000 VOLT. N/A	271	270	F, G, J, K, M	3600	N/A
1R1	1.1				5R6	5.6				430	4				301	300			
1R2	1.2				6R2	6.2				470	47				331	330			
1R3	1.3				6R8	6.8				510	51				361	360			
1R4	1.4				7R5	7.5				560	56				391	390			
1R5	1.5				8R2	8.2				620	62				431	430			
1R6	1.6				9R1	9.1				680	68				471	470			
1R7	1.7				100	10	F, G, J, K, M			750	75				511	510			
1R8	1.8				110	11				820	82				561	560			
1R9	1.9				120	12				910	91				621	620			
2R0	2.0				130	13				101	100				681	680			
2R1	2.1				150	15				111	110				751	750			
2R2	2.2				160	16				121	120				821	820			
2R4	2.4				180	18				131	130				911	910			
2R7	2.7				200	20				151	150				102	1000			
3R0	3.0				220	22				161	160				112	1100			
3R3	3.3				240	24				181	180				122	1200			
3R6	3.6				270	27				201	200				152	1500			
3R9	3.9				300	30				221	220				182	1800			
4R3	4.3				330	33				241	240				222	2200			
4R7	4.7				360	36													

VRMS = 0.707 x WVDC

- **SPECIAL VALUES, TOLERANCES, MATCHING, AND CAPACITOR ASSEMBLIES ARE AVAILABLE.**
- **ATC'S CUSTOM POWER CAPACITOR ASSEMBLY CATALOG, ATC # 001-900 LISTS ASSEMBLY OPTIONS.**
- **EXTENDED WORKING VOLTAGES ARE AVAILABLE FOR COMMERCIAL ORDERS ONLY.**
- **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

ATC700E 39 1 K W 3600 X

- Series: ATC700E
- Case Size: 39
- Capacitance Code: First 2 significant digits for capacitance. R=Decimal Point: 1
- Indicates number of zeros following digits of capacitance in picofarads except for decimal values.: K
- Capacitance Tolerance: W
- Termination Code: 3600
- WVDC: X
- Laser Marking
- Packaging
  - ATC Matrix Tray (Standard) Quantity varies by termination/lead style. Consult factory. For this option, leave last position blank.
  - T - Tape and Reel, 250 pc. qty. Surface Mount Termination Only
  - I - Special Packaging (Consult Factory)

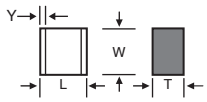
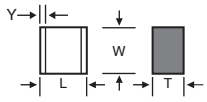
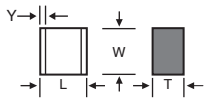
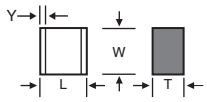
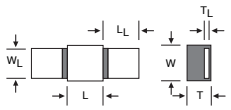
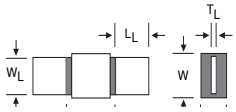
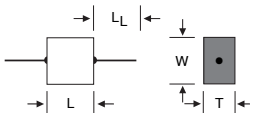
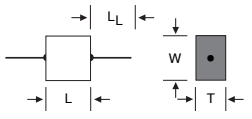
The above part number refers to a 700 E Series (case size E) 390 pF capacitor, K tolerance (±10%), 3600 WVDC, with W termination (Tin/Lead, Solder Plated over Nickel Barrier), laser marking and ATC Matrix Tray packaging.

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 (+1-631) 622-4700.

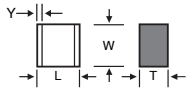
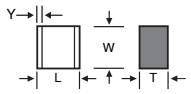
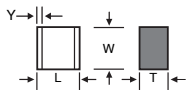
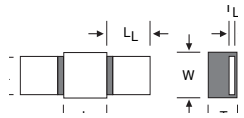
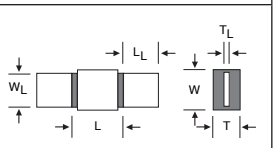
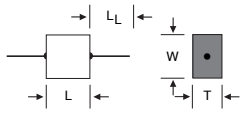
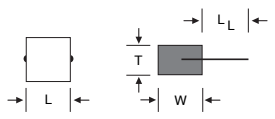
Consult factory for additional performance data.

ATC 700 E Capacitors: Mechanical Configurations

ATC SERIES & CASE SIZE	ATC TERM. CODE	CASE SIZE & TYPECASE 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
700E	W	E Solder Plate		.380 +.015 -.010 (9.65 +0.38 -0.25)	.380±.010 (9.65±0.25)	170 (4.32) max.	.040 (1.02) max.	Tin/Lead, Solder Plated over Nickel Barrier Termination
700E	P	E Pellet		.380 +.040 -.010 (9.65 +1.02 -0.25)				Heavy Tin/Lead Coated, over Nickel Barrier Termination
700E	T	E Solderable Nickel Barrier		.380 +.015 -.010 (9.65 +0.38 -0.25)				***RoHS Compliant*** Tin Plated over Nickel Barrier Termination
700E	CA	E Gold Chip		.380 +.015 -.010 (9.65 +0.38 -0.25)				***RoHS Compliant*** Gold Plated over Nickel Barrier Termination
700E	MS	E Microstrip		.380 +.035 -.010 (9.65 +0.89 -0.25)			N/A.	High Purity Silver Leads L_L = .750 (19.05) min. W_L = .350 ±.010 (8.89 ±0.25) T_L = .010 ±.005 (0.25 ±0.13) Leads are Attached with High Temperature Solder
700E	AR	E Axial Ribbon						
700E	AW	E Axial Wire						Silver-plated Copper Leads Dia. = .032 ±.002 (.813 ±.051) L_L = 2.25 (57.2) min.
700E	RW	E Radial Wire						Silver-plated Copper Leads Dia. = .032 ±.002 (.813 ±.051) L_L = 1.0 (25.4) min.

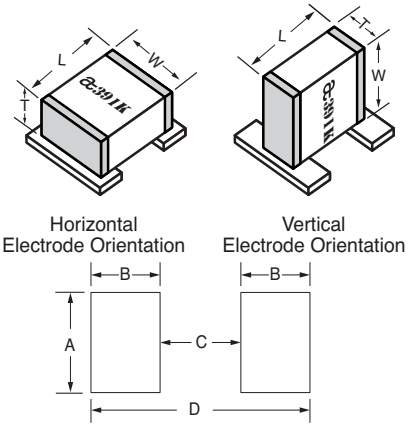
Custom lead styles and lengths are available; consult factory. All leads are high purity silver attached with high temperature solder and are **RoHS** compliant.

ATC 700 E 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
100E	WN	E Non-Mag Solder Plate		.380 +.015 -.010 (9.65 +0.38 -0.25)	.380±.010 (9.65±0.25)	170 (4.32) max.	.040 (1.02) max.	Tin/Lead, Solder Plated over Non-Magnetic Barrier Termination
100E	PN	E Non-Mag Pellet		.380 +.040 -.010 (9.65 +1.02 -0.25)				Heavy Tin/Lead Coated, over Non-Magnetic Barrier Termination
100E	TN	E Non-Mag Solderable Barrier		.380 +.015 -.010 (9.65 +0.38 -0.25)				***RoHS Compliant*** Tin Plated over Non-Magnetic Barrier Termination
100E	MN	E Non-Mag Microstrip		.380 +.035 -.010 (9.65 +0.89 -0.25)			N/A.	High Purity Silver Leads L_L = .750 (19.05) min. W_L = .350 ±.010 (8.89 ±0.25) T_L = .010 ±.005 (0.25 ±0.13) Leads are Attached with High Temperature Solder.
100E	AN	E Non-Mag Axial Ribbon						
100E	BN	E Non-Mag Axial Wire						Silver-plated Copper Leads Dia. = .032 ±.002 (.813 ±.051) L_L = 2.25 (57.2) min.
100E	RN	E Non-Mag Radial Wire						Silver-plated Copper Leads Dia. = .032 ±.002 (.813 ±.051) L_L = 1.0 (25.4) min.

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



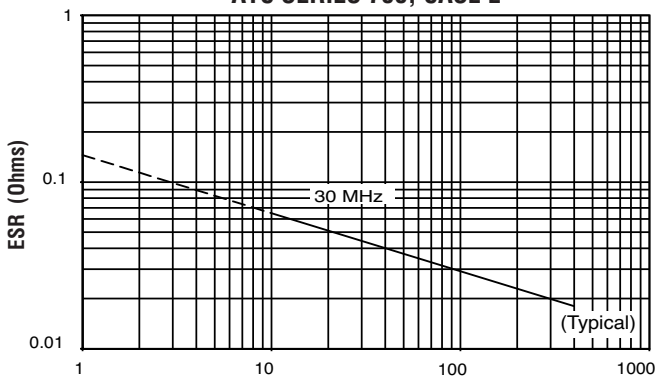
Case E

	Pad Size	A Min.	B Min.	C Min.	D Min.
Vertical Mount	Normal	.185	.050	.325	.425
	High Density	.165	.030	.325	.385
Horizontal Mount	Normal	.405	.050	.325	.425
	High Density	.385	.030	.325	.385

Dimensions are in inches.

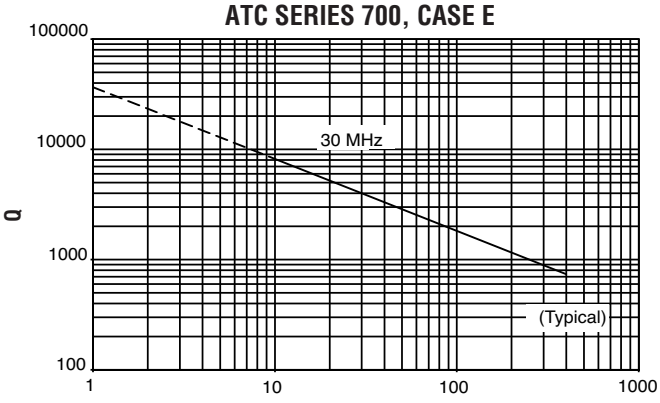
ATC 700 E Performance Data

ESR VS. CAPACITANCE
ATC SERIES 700, CASE E



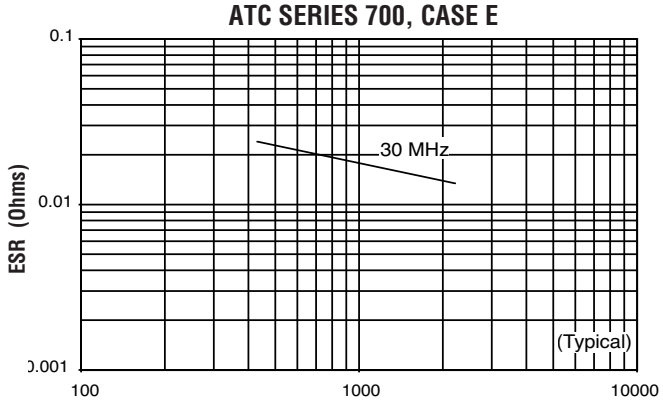
CAPACITANCE (pF)
(1.0 pF to 400 pF)

Q VS. CAPACITANCE
ATC SERIES 700, CASE E



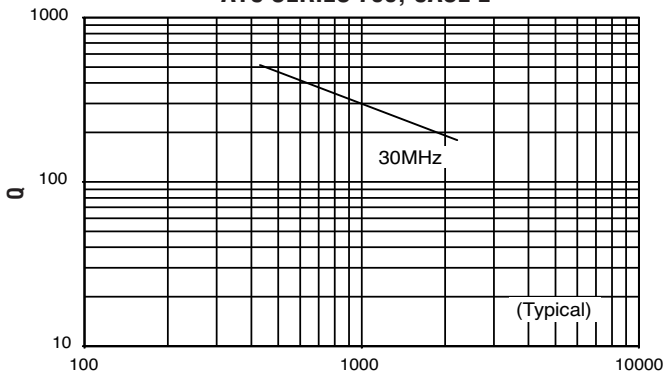
CAPACITANCE (pF)
(1.0 pF to 400 pF)

ESR VS. CAPACITANCE
ATC SERIES 700, CASE E



CAPACITANCE (pF)
(430 pF to 2200 pF)

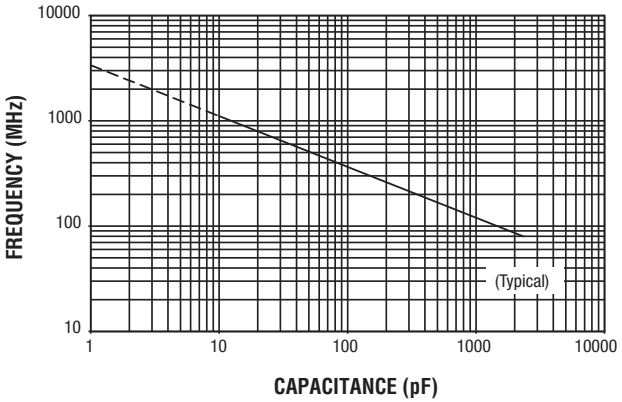
Q VS. CAPACITANCE
ATC SERIES 700, CASE E



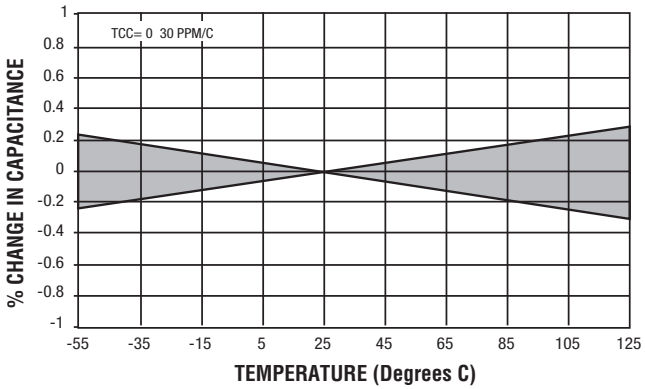
CAPACITANCE (pF)
(430 pF to 2200 pF)

ATC 700 E Performance Data

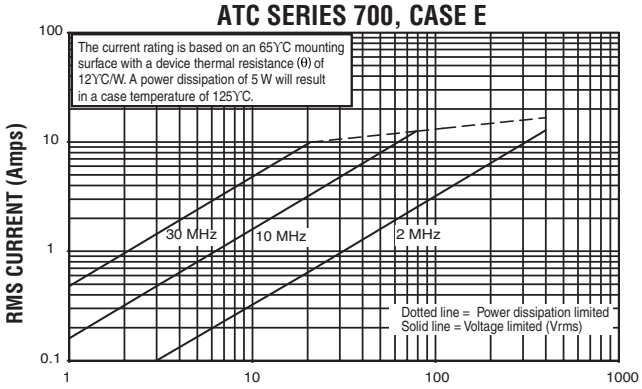
SERIES RESONANCE VS. CAPACITANCE
ATC SERIES 700, CASE E



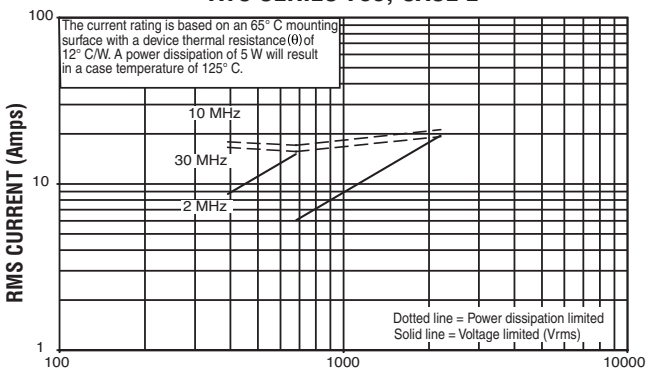
CAPACITANCE CHANGE VS. TEMPERATURE
ATC SERIES 700, CASE E



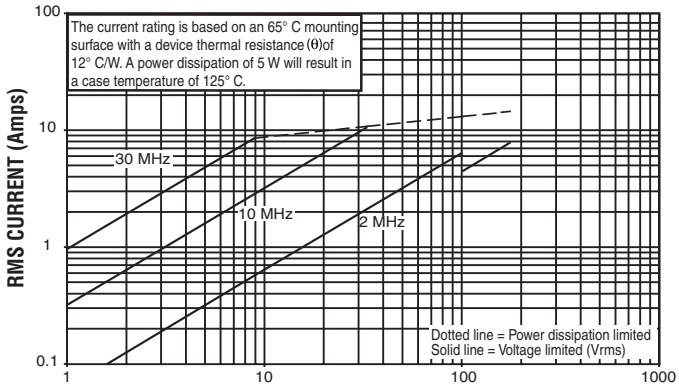
CURRENT RATING VS. CAPACITANCE
ATC SERIES 700, CASE E



CURRENT RATING VS. CAPACITANCE
ATC SERIES 700, CASE E



CURRENT RATING VS. CAPACITANCE
ATC SERIES 700, CASE E, EXTENDED VOLTAGE



ATC # 001-943 Rev.N, 9/19

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