

ATC 700 A Series NPO Porcelain and Ceramic Multilayer Capacitors

- Case A Size (.055" x .055")
- Low ESR/ESL
- Low Noise
- Rugged Construction
- Extended WVDC up to 250 VDC
- Capacitance Range 0.1 pF to 1000 pF
- Zero TCC
- High Self-Resonance
- Established Reliability (QPL)

ATC, the industry leader, offers new improved ESR/ESL performance for the 700 A Series RF/Microwave Capacitors. The superior high self-resonance and zero TCC characteristic of this Series provide excellent performance over a broad range of RF and microwave applications requiring minimum drift. High density porcelain and ceramic constructions provide a rugged, hermetic package.

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

Typical circuit applications: Filters, Oscillators and Timing

ENVIRONMENTAL TESTS

ATC 700 A 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.
200% WVDC applied.



ELECTRICAL AND MECHANICAL SPECIFICATIONS

QUALITY FACTOR (Q):

Greater than 10,000 (0.1 pF to 100 pF) @ 1 MHz.
Greater than 2000 (110 pF to 1000 pF) @ 1 MHz.

TEMPERATURE COEFFICIENT OF CAPACITANCE (TCC):

0 ±30 PPM/°C (-55°C to +125°C)

INSULATION RESISTANCE (IR):

0.1 pF to 470 pF:

10⁶ Megohms min. @ +25°C at rated WVDC.

10⁵ Megohms min. @ +125°C at rated WVDC.

510 pF to 1000 pF:

10⁵ Megohms min. @ +25°C at rated WVDC.

10⁴ Megohms min. @ +125°C at rated WVDC.

WORKING VOLTAGE (WVDC):

See Capacitance Values Table, p 2.

DIELECTRIC WITHSTANDING VOLTAGE (DWV):

250% of rated WVDC for 5 secs.

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 styles. See Mechanical Configurations, page 3.

TERMINAL STRENGTH: Terminations for chips and pellets withstand a pull of 5 lbs. min., 10 lbs. typical, for 5 seconds in direction perpendicular to the termination surface of the capacitor.



AMERICAN

TECHNICAL

CERAMICS

ATC North America

+1-631-622-4700

sales@atceramics.com

ATC Europe

+46 8 6800410

sales@atceramics-europe.com

ATC Asia

+86-755-2396-8759

sales@atceramics-asia.com



ATC 700 A 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		
			STD.	EXT.				STD.	EXT.				STD.	EXT.				STD.	EXT.	
0R1	0.1	B, C	EXTENDED VOLTAGE	2R4	2.4	EXTENDED VOLTAGE	200	20	EXTENDED VOLTAGE	151	150	EXTENDED VOLTAGE	161	160	EXTENDED VOLTAGE	181	180	EXTENDED VOLTAGE	201	200
0R2	0.2			2R7	2.7		220	22		221	220		241	240		271	270		301	300
0R3	0.3			3R0	3.0		240	24		330	33		360	36		390	39		430	330
0R4	0.4			3R3	3.3		270	27		390	39		470	47	F, G, J, K, M	510	51		391	390
0R5	0.5			3R6	3.6		300	30		620	62		560	56		431	430		471	470
0R6	0.6			3R9	3.9		330	33		680	68		750	75		511	510		561	560
0R7	0.7			4R3	4.3		360	36		820	82		820	82		621	620		681	680
0R8	0.8			4R7	4.7		390	39		910	91		101	100		821	820		751	750
0R9	0.9			5R1	5.1		430	43		111	110		121	120		911	910		102	1000
1R0	1.0			5R6	5.6		470	47		131	130		NA	EXT	F, G, J, K, M	391	390	N/A	431	430
1R1	1.1			6R2	6.2		510	51												
1R2	1.2			6R8	6.8		560	56												
1R3	1.3			7R5	7.5															
1R4	1.4			8R2	8.2															
1R5	1.5			9R1	9.1															
1R6	1.6			100	10															
1R7	1.7			110	11															
1R8	1.8			120	12															
1R9	1.9			130	13															
2R0	2.0			150	15															
2R1	2.1			160	16															
2R2	2.2			180	18															

$$VRMS = 0.707 \times WVDC$$

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

NOTE: EXTENDED WVDC DOES NOT APPLY TO CDR PRODUCTS.

Capacitance values in **bold** type indicate porcelain dielectric. All other capacitance values indicate ceramic dielectric.

All 700 A Capacitors are available laser marked with ATC's identification, capacitance code and tolerance.

ATC PART NUMBER CODE

Series	ATC700	A	6R	8	J	W	150	X	T
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									
CAPACITANCE TOLERANCE									
Code	B	C	D	F	G	J	K	M	
Tol.	$\pm 0.1 \text{ pF}$	$\pm 0.25 \text{ pF}$	$\pm 0.5 \text{ pF}$	$\pm 1\%$	$\pm 2\%$	$\pm 5\%$	$\pm 10\%$	$\pm 20\%$	

- T - Tape and Reel, 1000 pc. qty.*
- TV - Vertical Orientation of Product, Tape and Reel, 1000 pc. qty.*
- I - Special Packaging. Consult Factory.
*Consult ATC for other quantities
- ATC Cap-Pac® packaging (100 pc. qty. std.) is also available. For this option, leave last field blank.
- Laser Marking
- WVDC
- Termination Code

The above part number refers to a 700 A Series (case size A) 6.8 pF capacitor,

J tolerance ($\pm 5\%$), 150 WVDC, with W termination (Tin/Lead, Solder Plated over Nickel Barrier), laser marking and ATC Cap-Pac® 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.

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

+1-631-622-4700 • sales@atceramics.com

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

ATC Asia

+86-755-2396-8759 • sales@atceramics-asia.com

ATC 700 A Capacitors: Mechanical Configurations

ATC SERIES & CASE SIZE	ATC TERM. CODE	MIL-PRF-55681	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
700A	W	CDR12BP	A Solder Plate		.055 +.015 -.010 (1.40 +.38 -.25)	.055 ±.015 (1.40 ±.38)	.057 (1.45) max.	.010 +.010 -.005 (.25 +.25 -.13)	Tin/Lead, Solder Plated over Nickel Barrier Termination
700A	P	CDR12BP	A Pellet		.055 +.025 -.010 (1.40 +.64 -.25)	.055 ±.015 (1.40 ±.38)	.057 (1.45) max.	.010 +.010 -.005 (.25 +.25 -.13)	Heavy Tin/Lead Coated, over Nickel Barrier Termination
700A	T	N/A	A Solderable Nickel Barrier		.055 +.015 -.010 (1.40 +.38 -.25)	.055 ±.015 (1.40 ±.38)	.057 (1.45) max.	.010 +.010 -.005 (.25 +.25 -.13)	RoHS Compliant Tin Plated over Nickel Barrier Termination
700A	CA	CDR11BP	A Gold Chip		.055 +.015 -.010 (1.40 +.38 -.25)	.055 ±.015 (1.40 ±.38)	.057 (1.45) max.	.010 +.010 -.005 (.25 +.25 -.13)	RoHS Compliant Gold Plated over Nickel Barrier Termination

For a complete military catalog, request American Technical Ceramics document ATC 001-818.

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

+1-631-622-4700 • sales@atceramics.com

ATC Europe

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

ATC Asia

+86-755-2396-8759 • sales@atceramics-asia.com

ATC 700 A Non-Magnetic Capacitors: Mechanical Configurations*

ATC SERIES & CASE SIZE	ATC TERM. CODE	MIL-PRF-55681	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
700A	WN	Meets Requirements	A Non-Mag Solder Plate		.055 .025 -.010 (1.40 +.64 -.25)	.055 ±.015 (1.40 ±.38)	.057 (1.45) max.	.010 .010 -.005 (.25 +.25 -.13)	Tin/Lead, Solder Plated over Non-Magnetic Barrier Termination
700A	PN	Meets Requirements	A Non-Mag Pellet		.055 .035 -.010 (1.40 +.89 -.25)	.055 ±.015 (1.40 ±.38)	.057 (1.45) max.	.010 .010 -.005 (.25 +.25 -.13)	Heavy Tin/Lead Coated, over Non-Magnetic Barrier Termination
700A	TN	Meets Requirements	A Non-Mag Solderable Barrier		.055 .025 -.010 (1.40 +.64 -.25)	.055 ±.015 (1.40 ±.38)	.057 (1.45) max.	.010 .010 -.005 (.25 +.25 -.13)	RoHS Compliant Tin Plated over Non-Magnetic Barrier Termination

*Capacitors with values greater than 100 pF contain a trace magnetic element that may exhibit weak magnetic properties.

Suggested Mounting Pad Dimensions

Case A					
Vertical Mount	Pad Size	A Min.	B Min.	C Min.	D Min.
	Normal	.070	.050	.030	.130
	High Density	.050	.030	.030	.090
	Horizontal Mount	Normal	.080	.050	.030
		High Density	.060	.030	.030

AMERICAN TECHNICAL CERAMICS

ATC North America

+1-631-622-4700 • sales@atceramics.com

ATC Europe

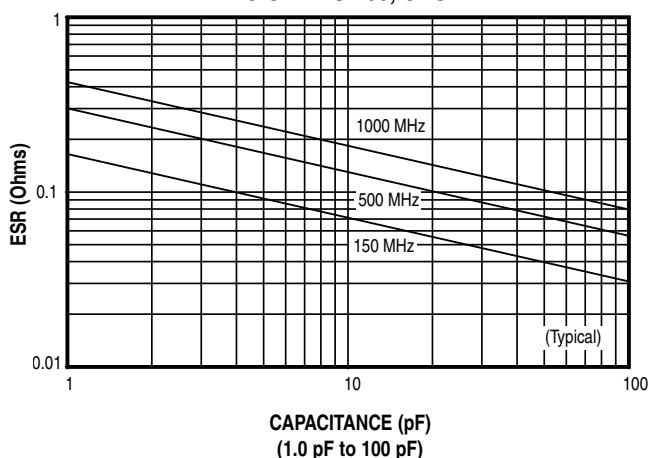
+46 8 6800410 • sales@atceramics-europe.com

ATC Asia

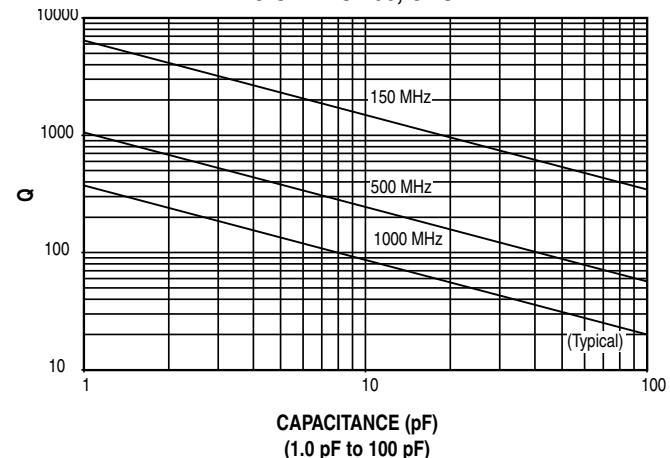
+86-755-2396-8759 • sales@atceramics-asia.com

ATC 700 A Performance Data

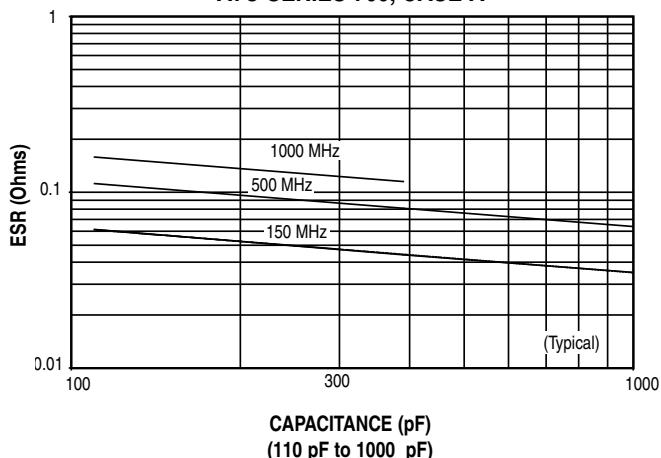
ESR VS. CAPACITANCE
ATC SERIES 700, CASE A



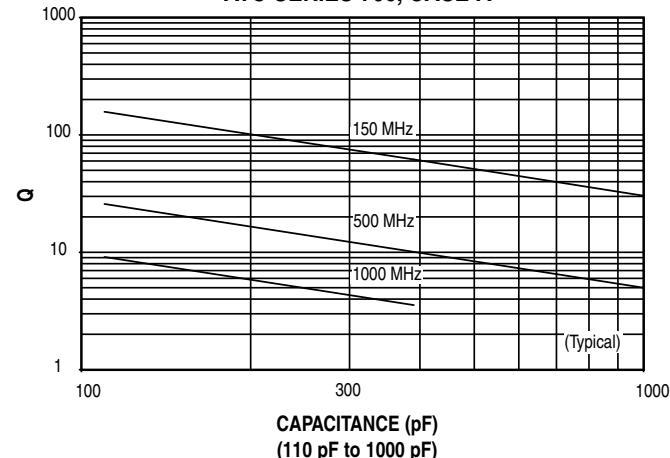
Q VS. CAPACITANCE
ATC SERIES 700, CASE A



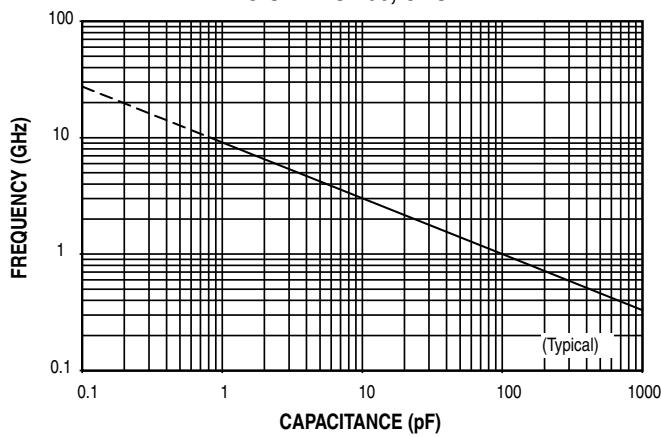
ESR VS. CAPACITANCE
ATC SERIES 700, CASE A



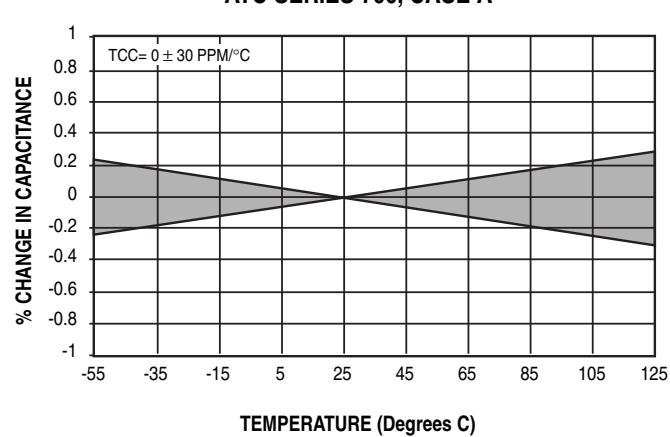
Q VS. CAPACITANCE
ATC SERIES 700, CASE A



SERIES RESONANCE VS. CAPACITANCE
ATC SERIES 700, CASE A



CAPACITANCE CHANGE VS. TEMPERATURE
ATC SERIES 700, CASE A



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

+1-631-622-4700 • sales@atceramics.com

ATC Europe

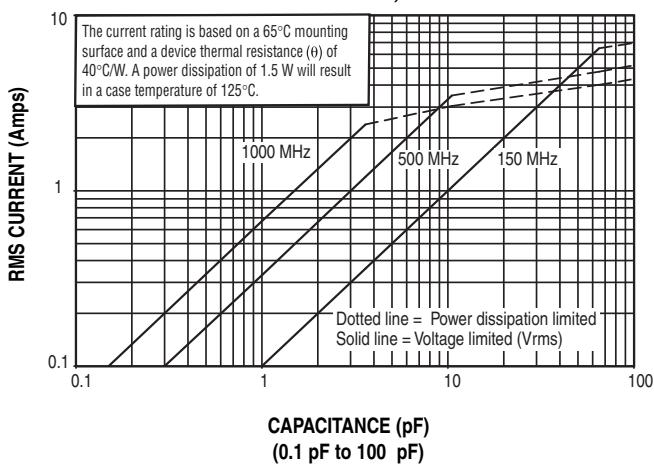
+46 8 6800410 • sales@atceramics-europe.com

ATC Asia

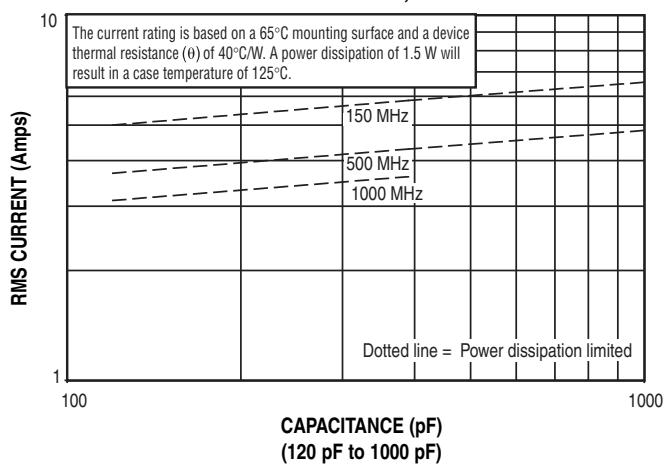
+86-755-2396-8759 • sales@atceramics-asia.com

ATC 700 A Performance Data

CURRENT RATING VS. CAPACITANCE ATC SERIES 700, CASE A

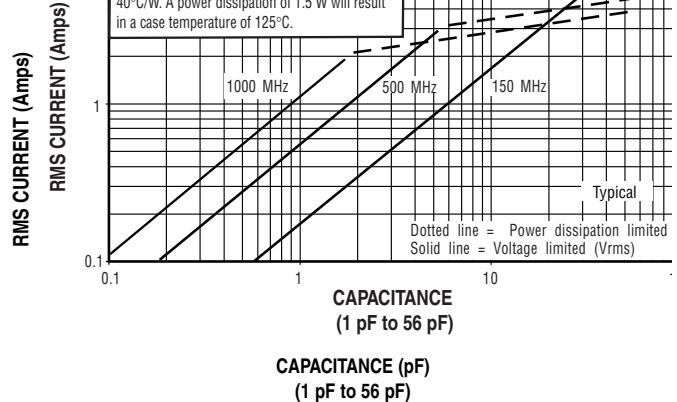


CURRENT RATING VS. CAPACITANCE ATC SERIES 700, CASE A



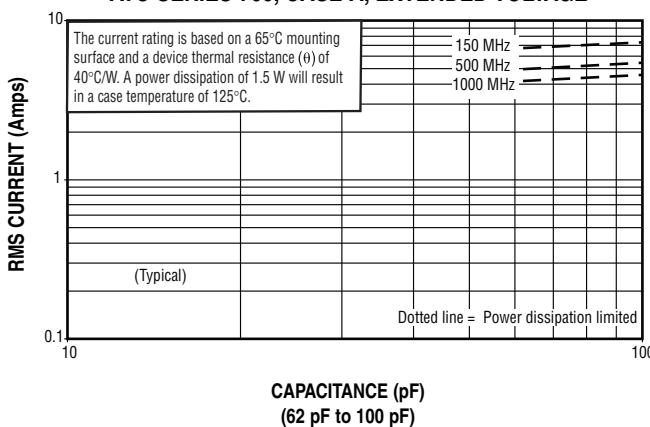
CURRENT RATING VS. CAPACITANCE

ATC SERIES 700, CASE A, EXTENDED VOLTAGE



CURRENT RATING VS. CAPACITANCE

ATC SERIES 700, CASE A, EXTENDED VOLTAGE



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. 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 # 001-813 Rev. M, 9/12



AMERICAN TECHNICAL CERAMICS

ATC North America
+1-631-622-4700
sales@atceramics.com

ATC Europe
+46 8 6800410

sales@atceramics-europe.com sales@atceramics-asia.com

ATC Asia
+86-755-2396-8759

THE
ENGINEERS'
CHOICE®
ISO 9001 REGISTERED