

# 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:

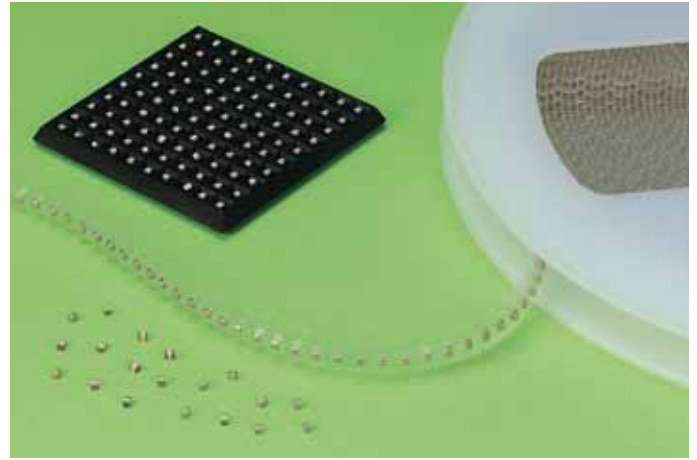
MIL-STD-202, Method 106.

### 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:  
10<sup>6</sup> Megohms min. @ +25°C at rated WVDC.  
10<sup>5</sup> Megohms min. @ +125°C at rated WVDC.  
510 pF to 1000 pF:  
10<sup>5</sup> Megohms min. @ +25°C at rated WVDC.  
10<sup>4</sup> 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  
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sales@atceramics.com

ATC Europe  
+46 8 6800410  
sales@atceramics-europe.com

ATC Asia  
+86-755-2386-8759  
sales@atceramics-asia.com

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ATC # 001-813 Rev. L 12/08

# 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	150	250	2R4	2.4	B, C, D	150	250	200	20	F, G, J, K, M	150	250	151	150	F, G, J, K, M	150	N/A
0R2	0.2	B, C			2R7	2.7				220	22				161	160			
0R3	0.3				3R0	3.0				240	24				181	180			
0R4	0.4	3R3			3.3	270				27	201				200				
0R5	0.5	B, C, D			3R6	3.6				300	30				221	220			
0R6	0.6				3R9	3.9				330	33				241	240			
0R7	0.7				4R3	4.3				360	36				271	270			
0R8	0.8				4R7	4.7				390	39				301	300			
0R9	0.9				5R1	5.1				430	43				331	330			
1R0	1.0				5R6	5.6				470	47				361	360			
1R1	1.1				6R2	6.2				510	51				391	390			
1R2	1.2				6R8	6.8				560	56				431	430			
1R3	1.3		7R5	7.5	620	62	471	470											
1R4	1.4		8R2	8.2	680	68	511	510											
1R5	1.5		9R1	9.1	750	75	561	560											
1R6	1.6		100	10	820	82	621	620											
1R7	1.7	110	11	910	91	681	680												
1R8	1.8	120	12	101	100	751	750												
1R9	1.9	130	13	111	110	821	820												
2R0	2.0	150	15	121	120	911	910												
2R1	2.1	160	16	131	130	102	1000												
2R2	2.2	180	18																

**VRMS = 0.707 x WVDC**

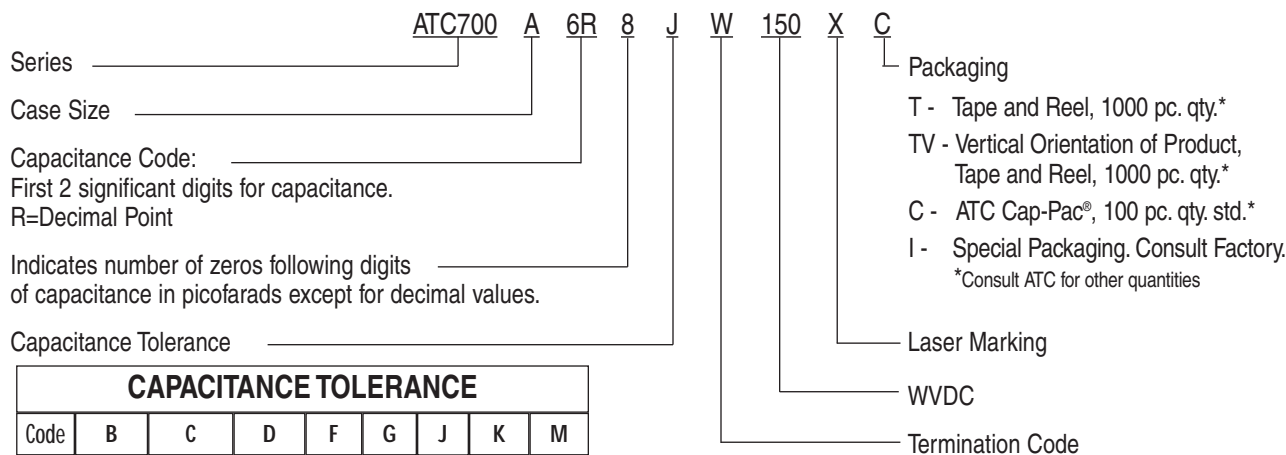
**SPECIAL VALUES, TOLERANCES, HIGHER WVDC AND MATCHING AVAILABLE. PLEASE CONSULT FACTORY.**

**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



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%

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

J tolerance (±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

ATC Europe  
+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 +0.38 -0.25)	.055 ±.015 (1.40 ±0.38)	.057 (1.45) max.	.010 +.010 -.005 (0.25 +0.25 -0.13)	Tin/Lead, Solder Plated over Nickel Barrier Termination
700A	P	CDR12BP	A Pellet		.055 +.025 -.010 (1.40 +0.64 -0.25)	.055 ±.015 (1.40 ±0.38)	.057 (1.45) max.	.010 +.010 -.005 (0.25 +0.25 -0.13)	Heavy Tin/Lead Coated, over Nickel Barrier Termination
700A	T	N/A	A Solderable Nickel Barrier		.055 +.015 -.010 (1.40 +0.38 -0.25)	.055 ±.015 (1.40 ±0.38)	.057 (1.45) max.	.010 +.010 -.005 (0.25 +0.25 -0.13)	<b>RoHS Compliant</b> Tin Plated over Nickel Barrier Termination
700A	CA	CDR11BP	A Gold Chip		.055 +.015 -.010 (1.40 +0.38 -0.25)	.055 ±.015 (1.40 ±0.38)	.057 (1.45) max.	.010 +.010 -.005 (0.25 +0.25 -0.13)	<b>RoHS Compliant</b> Gold Plated over Nickel Barrier Termination

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

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# 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 ±0.38)	.057 (1.45) max.	.010 +.010 -.005 (0.25 +.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 ±0.38)	.057 (1.45) max.	.010 +.010 -.005 (0.25 +.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 ±0.38)	.057 (1.45) max.	.010 +.010 -.005 (0.25 +.25 -.13)	<b>RoHS Compliant</b> 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

Horizontal Electrode Orientation

Vertical Electrode Orientation

Case A

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

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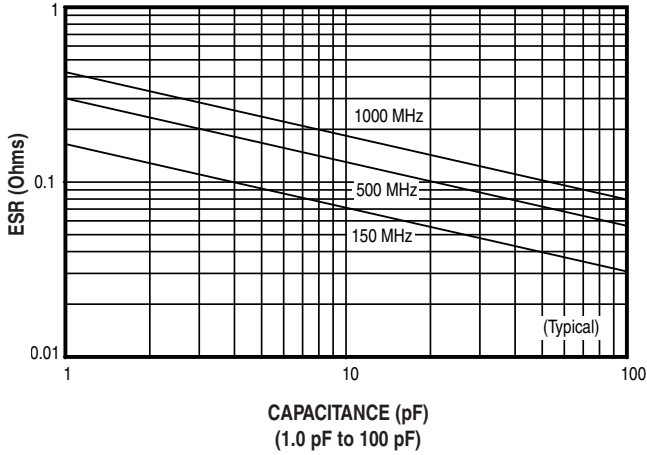
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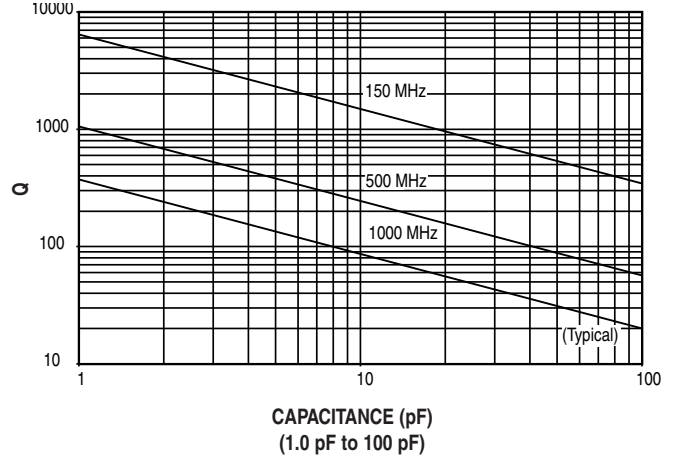
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# ATC 700 A Performance Data

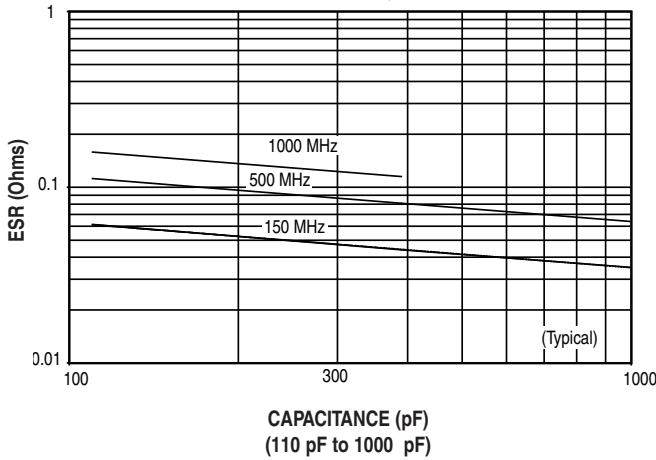
**ESR VS. CAPACITANCE  
ATC SERIES 700, CASE A**



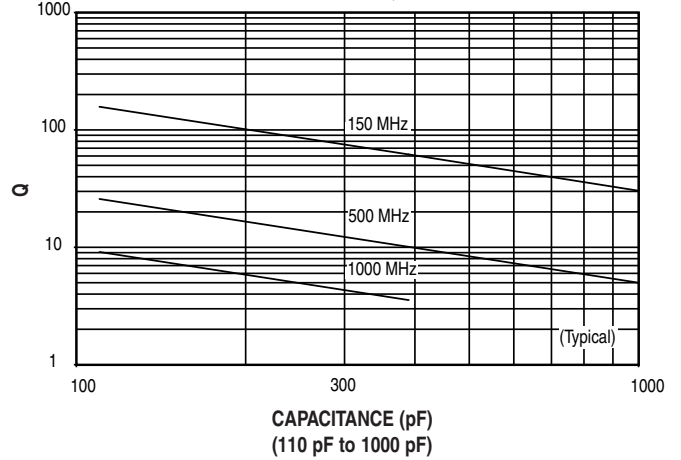
**Q VS. CAPACITANCE  
ATC SERIES 700, CASE A**



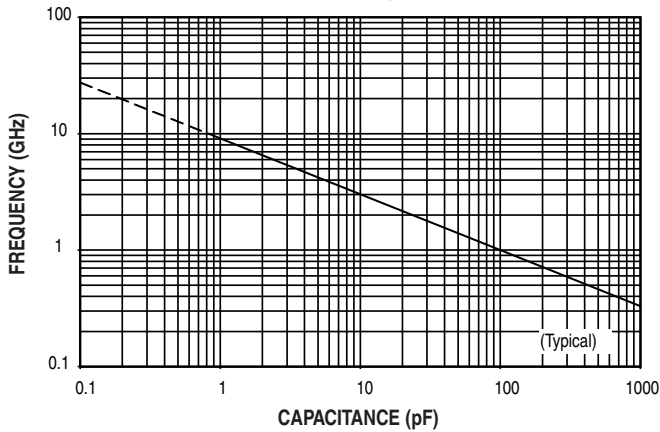
**ESR VS. CAPACITANCE  
ATC SERIES 700, CASE A**



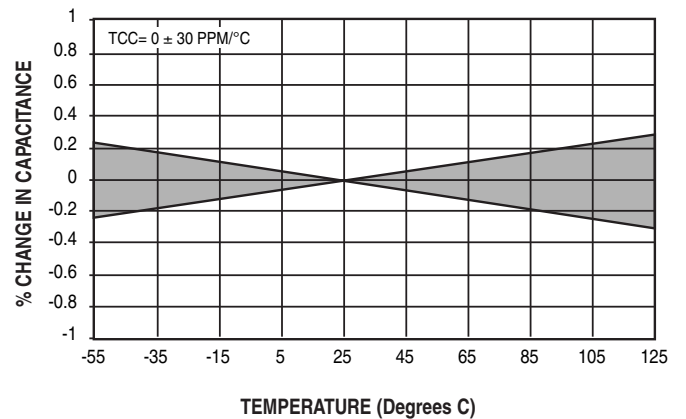
**Q VS. CAPACITANCE  
ATC SERIES 700, CASE A**



**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**

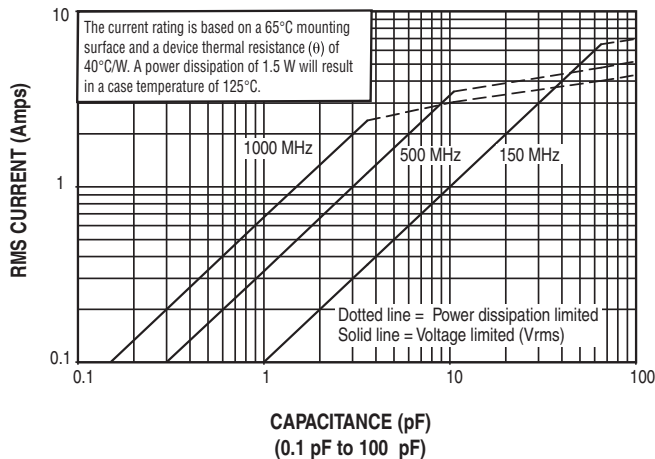
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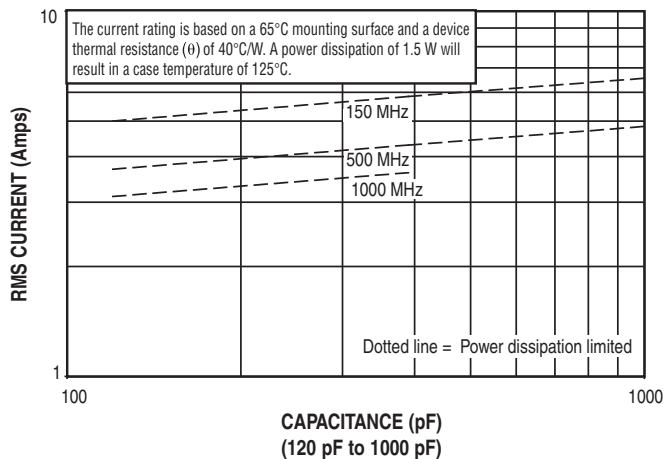
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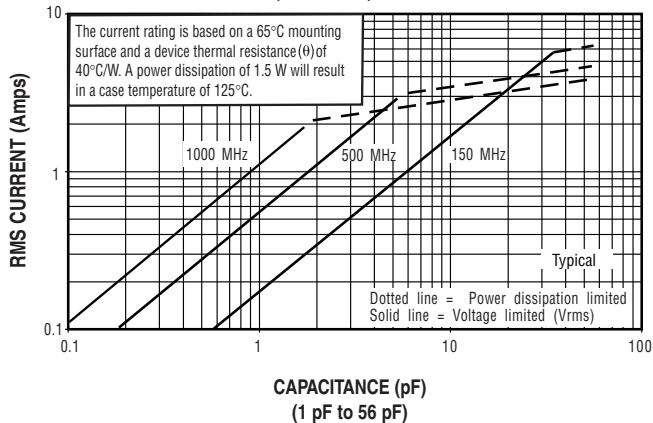
**CURRENT RATING VS. CAPACITANCE  
ATC SERIES 700, CASE A**



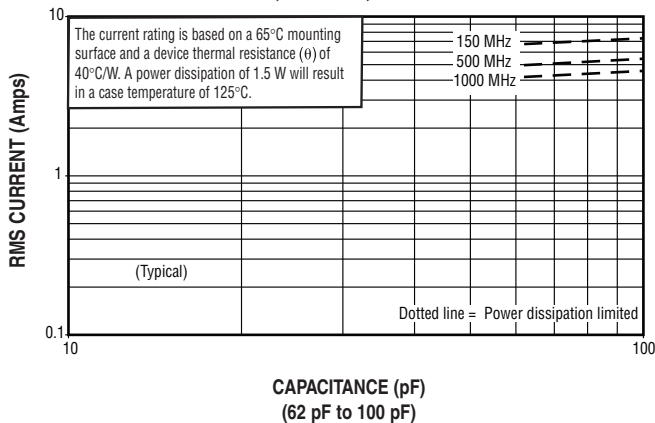
**CURRENT RATING VS. CAPACITANCE  
ATC SERIES 700, CASE A**



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



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



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

ATC Europe  
+46 8 6800410  
sales@atceramics-europe.com

ATC Asia  
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sales@atceramics-asia.com



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