ATC 700 B Series NPO Porcelain and Ceramic Multilayer Capacitors

- **Case B Size (.110" x .110")**
- **Capacitance Range 0.1 pF to 5100 pF**
- **Low ESR/ESL**
- **Zero TCC**
- **Low Noise**
- **High Self-Resonance**
- **Rugged Construction**
- **Established Reliability (QPL)**
- **Extended WVDC up to 1500 VDC**

ATC, the industry leader, is announcing new improved ESR/ESL performance for the 700 B 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, including RF power. Porcelain and ceramic construction provide a rugged, hermetic package.

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

Typical circuit applications: Filters, Oscillators, Timing and RF Power Amplifiers.

ENVIRONMENTAL TESTS

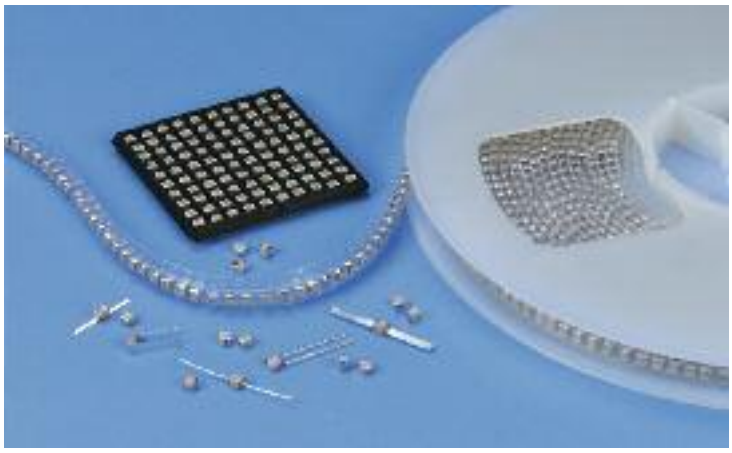
ATC 700 B Series Capacitors are designed and manufactured to meet and exceed the requirements of EIA-198, MIL-PRF-55681 and MIL-PRF-123.

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.
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 (0.1 pF to 200 pF) @ 1 MHz.
Greater than 2000 (220 pF to 1000 pF) @ 1 MHz.
Greater than 2000 (1100 pF to 5100 pF) @ 1 KHz.

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

INSULATION RESISTANCE (IR):
0.1 pF to 470 pF:
10^6 Megohms min. @ +25°C at rated WVDC.
10^5 Megohms min. @ +125°C at rated WVDC.
510 pF to 5100 pF:
10^5 Megohms min. @ +25°C at rated WVDC.
10^4 Megohms min. @ +125°C at rated WVDC.

WORKING VOLTAGE (WVDC): See Capacitance Values Table, page 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:
0.1 to 200 pF: from -55°C to +175°C
220 to 5100 pF: from -55°C to +125°C

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 5 lbs. min., 15 lbs. typical, for 5 seconds in direction perpendicular to the termination surface of the capacitor. Test per MIL-STD-202, method 211.

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THE ENGINEERS' CHOICE®
ISO 9001 REGISTERED COMPANY

THE ENGINEERS' CHOICE™
www.atceramics.com

ATC # 001-814 Rev.S, 9/14

ATC 700 B Capacitance Values

CAP. CODE	CAP. (pF)	TOL.	RATED WVDC STD.	RATED WVDC EXT.
0R1	**0.1**	B	500	EXTENDED VOLTAGE 1500 EXTENDED VOLTAGE
0R2	**0.2**			
0R3	**0.3**	B, C		
0R4	**0.4**			
0R5	**0.5**	B, C, D		
0R6	**0.6**			
0R7	**0.7**			
0R8	**0.8**			
0R9	**0.9**			
1R0	**1.0**			
1R1	**1.1**			
1R2	**1.2**			
1R3	**1.3**	B, C, D		
1R4	**1.4**			
1R5	**1.5**			
1R6	**1.6**			
1R7	**1.7**			
1R8	**1.8**			
1R9	**1.9**			
2R0	**2.0**			
2R1	**2.1**			
2R2	**2.2**			
2R4	**2.4**			
2R7	**2.7**			
3R0	**3.0**			

CAP. CODE	CAP. (pF)	TOL.	RATED WVDC STD.	RATED WVDC EXT.
3R3	**3.3**	B, C, D	500	EXTENDED VOLTAGE 1500 EXTENDED VOLTAGE
3R6	**3.6**			
3R9	**3.9**			
4R3	**4.3**			
4R7	**4.7**			
5R1	**5.1**			
5R6	**5.6**			
6R2	**6.2**			
6R8	**6.8**	B, C, J K, M		
7R5	**7.5**			
8R2	**8.2**			
9R1	**9.1**			
100	**10**	F, G, J, K, M		
110	**11**			
120	**12**			
130	**13**			
150	**15**			
160	**16**			
180	**18**			
200	**20**			
220	**22**			
240	**24**			
270	**27**			
300	**30**			

CAP. CODE	CAP. (pF)	TOL.	RATED WVDC STD.	RATED WVDC EXT.
330	**33**	F, G, J K, M	500	EXT VOLT 1500 EXT VOLT
360	**36**			
390	**39**			
430	**43**			
470	**47**			
510	**51**			EXTENDED VOLTAGE 1000 EXTENDED VOLTAGE
560	**56**			
620	**62**			
680	**68**			
750	**75**			
820	**82**			
910	**91**			
101	**100**			
111	**110**		300	
121	**120**			
131	**130**			
151	**150**			
161	**160**			
181	**180**			
201	**200**			
221	220		200	N/A
241	240			
271	270			
301	300			

CAP. CODE	CAP. (pF)	TOL.	RATED WVDC STD.	RATED WVDC EXT.
331	330	F, G, J K, M	200	N/A
361	360			
391	390			
431	430			
471	470			
511	510		100	
561	560			
621	620			
681	680		50	
751	750			
821	820			
911	910			
102	1000			
112	1100			
122	1200			
152	1500			
182	1800			
222	2200			
272	2700			
302	3000			
332	3300			
392	3900			
472	4700			
512	5100			

VRMS = 0.707 x WVDC

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

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

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

NOTE: EXTENDED WVDC DOES NOT APPLY TO CDR PRODUCTS.

ATC PART NUMBER CODE

ATC700 B 33 1 J W 500 X T

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

Packaging
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

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%

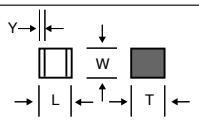
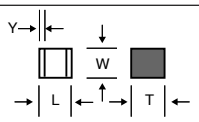
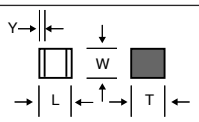
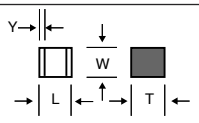
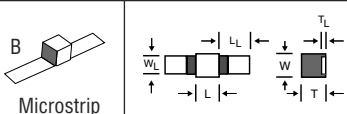
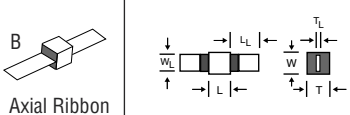
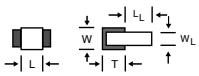
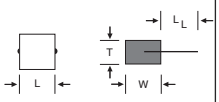
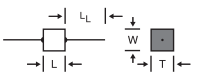
The above part number refers to a 700 B Series (case size B) 330 pF capacitor, J tolerance (±5%), 500 WVDC, with W termination (Tin/Lead, Solder Plated over Nickel Barrier), laser marking and ATC Cap-Pac® packaging.

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.

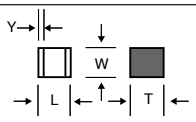
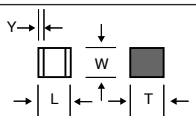
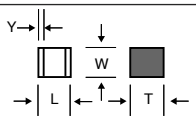
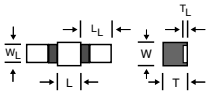
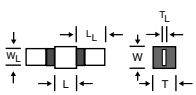
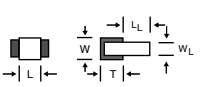
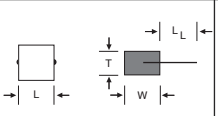
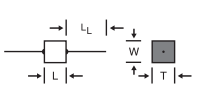
Consult factory for additional performance data.

ATC 700 B 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		
700B	W	CDR14BP	B Solder Plate		.110 +.020 -.010 (2.79 +0.51 -0.25)	.110 ±.015 (2.79 ±0.38)	.102 (2.59) max.	.015 (0.38) ±.010 (0.25)	Tin/Lead, Solder Plated over Nickel Barrier Termination		
700B	P	CDR14BP	B Pellet		.110 +.035 -.010 (2.79 +0.89 -0.25)	.110 ±.015 (2.79 ±0.38)			Heavy Tin/Lead Coated, over Nickel Barrier Termination		
700B	T	N/A	B Solderable Nickel Barrier		.110 +.020 -.010 (2.79 +0.51 -0.25)	.110 ±.015 (2.79 ±0.38)			***RoHS Compliant*** Tin Plated over Nickel Barrier Termination		
700B	CA	CDR13BP	B Gold Chip		.110 +.020 -.010 (2.79 +0.51 -0.25)	.110 ±.015 (2.79 ±0.38)			***RoHS Compliant*** Gold Plated over Nickel Barrier Termination		
700B	MS	CDR21BP	B Microstrip		.135 ±.015 (3.43 ±0.38)	.110 ±.015 (2.79 ±0.38	.120 (3.05) max.	N/A	Length (L_L)	Width (W_L)	Thickness (T_L)
700B	AR	CDR22BP	B Axial Ribbon				.102 (2.59) max.		.250 (6.35) min.	.093 ±.005 (2.36 ±0.13)	.004 ±.001 (.102 ±.025)
700B	RR	CDR24BP	B Radial Ribbon								
700B	RW	CDR23BP	B Radial Wire		.145 ±.020 (3.68 ±0.51)				.500 (12.7) min.	#26 AWG., .016 (.406) dia. nominal	
700B	AW	CDR25BP	B Axial Wire								

Additional lead styles available: Narrow Microstrip (NM), Narrow Axial Ribbon (NA) and Vertical Narrow Microstrip (H). Other lead lengths are available; consult factory. All leads are high purity silver attached with high temperature solder and are **RoHS** compliant. For a complete military catalog, request American Technical Ceramics document ATC 001-818.

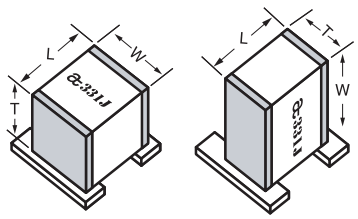
ATC 700 B Capacitors: Non-Magnetic Mechanical Configurations*

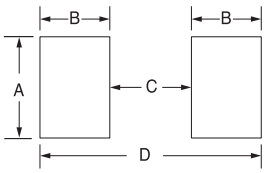
ATC SERIES & CASE SIZE	ATC TERM. CODE	MIL-PRF-55681	CASE SIZE & TYPE	OUTLINES W/T IS A TERMINATION SURFACE	BODY DIMENSIONS INCHES (mm) LENGTH (L)	WIDTH (W)	THICKNESS (T)	LEAD AND TERMINATION DIMENSIONS AND MATERIALS OVERLAP (Y)	MATERIALS		
700B	WN	Meets Require-ments	B Non-Mag Solder Plate		.110 +.025 -.010 (2.79 +0.64 -0.25)	.110 ±.015 (2.79 ±0.38)	.102 (2.59) max.	.015 (0.38) ±.010 (0.25)	Tin/Lead, Solder Plated over Non-Magnetic Barrier Termination		
700B	PN	Meets Require-ments	B Non-Mag Pellet		.110 +.035 -.010 (2.79 +0.89 -0.25)	.110 ±.015 (2.79 ±0.38)			Heavy Tin/Lead Coated, over Non-Magnetic Barrier Termination		
700B	TN	Meets Require-ments	B Non-Mag Solderable Barrier		.110 +.025 -.010 (2.79 +0.64 -0.25)	.110 ±.015 (2.79 ±0.38)			***RoHS Compliant*** Tin Plated over Non-Magnetic Barrier Termination		
700B	MN	Meets Require-ments	B Non-Mag Microstrip		.135 ±.015 (3.43 ±0.38)	.110 ±.015 (2.79 ±0.38)	.120 (3.05) max.	N/A	Length (L_L)	Width (W_L)	Thickness (T_L)
700B	AN	Meets Require-ments	B Non-Mag Axial Ribbon				.106 (2.69) max.		.250 (6.35) min.	.093 ±.005 (2.36 ±0.13)	.004 ±.001 (.102 ±.025)
700B	FN	Meets Require-ments	B Non-Mag Radial Ribbon								
700B	RN	Meets Require-ments	B Non-Mag Radial Wire		.145 ±.020 (3.68 ±0.51)				.500 (12.7) min.	#26 AWG., .016 (.406) dia. nominal	
700B	BN	Meets Require-ments	B Non-Mag Axial Wire								

*Capacitors with values greater than 200 pF contain a trace magnetic element that may exhibit weak magnetic properties.

Additional lead styles available: Narrow Microstrip (DN), Narrow Axial Ribbon (GN) and Vertical Narrow Microstrip (HN). Other lead 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 B Vertical Mount

Cap Value		A Min.	B Min.	C Min.	D Min.
0.1 pF	Normal	.065	.050	.075	.175
	High Density	.045	.030	.075	.135
0.2 pF	Normal	.090	.050	.075	.175
	High Density	.070	.030	.075	.135
0.3 to 510 pF	Normal	.110	.050	.075	.175
	High Density	.090	.030	.075	.135
> 510 pF	Normal	.120	.050	.075	.175
	High Density	.100	.030	.075	.135

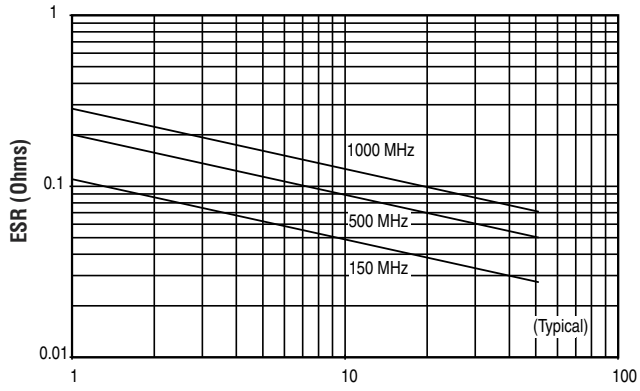
Horizontal Mount

All values	Normal	.130	.050	.075	.175
	High Density	.110	.030	.075	.135

Dimensions are in inches.

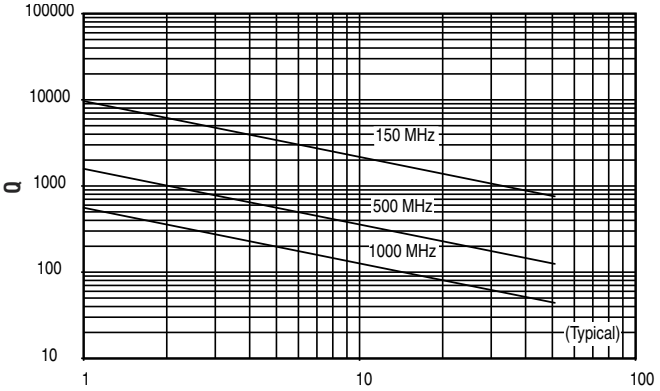
ATC 700 B Performance Data

ESR VS. CAPACITANCE
ATC SERIES 700, CASE B



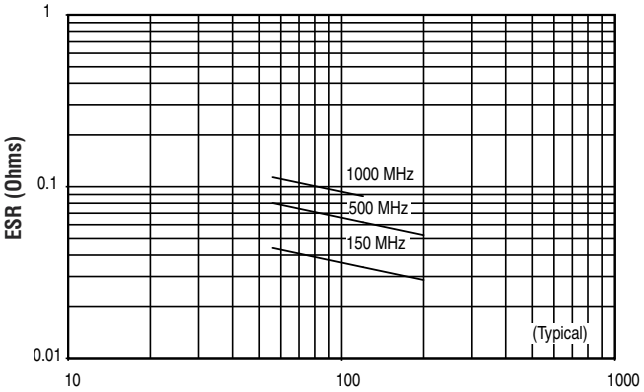
CAPACITANCE (pF)
(1.0 pF to 51 pF)

Q VS. CAPACITANCE
ATC SERIES 700, CASE B



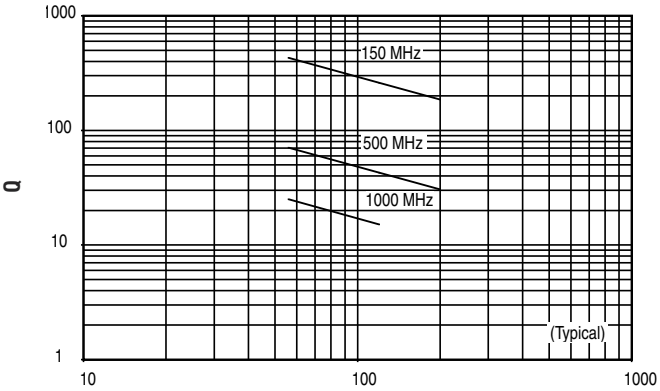
CAPACITANCE (pF)
(1.0 pF to 51 pF)

ESR VS. CAPACITANCE
ATC SERIES 700, CASE B



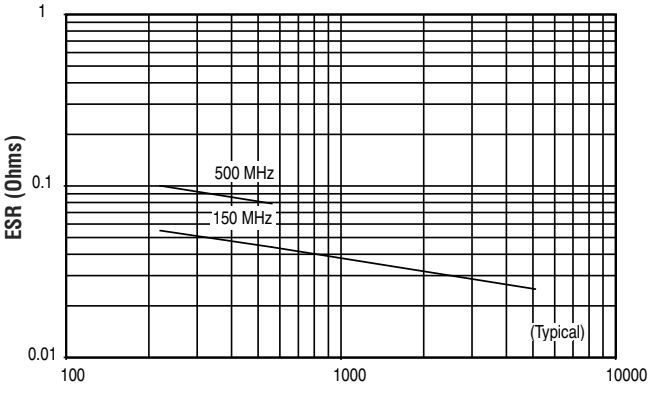
CAPACITANCE (pF)
(56 pF to 200 pF)

Q VS. CAPACITANCE
ATC SERIES 700, CASE B



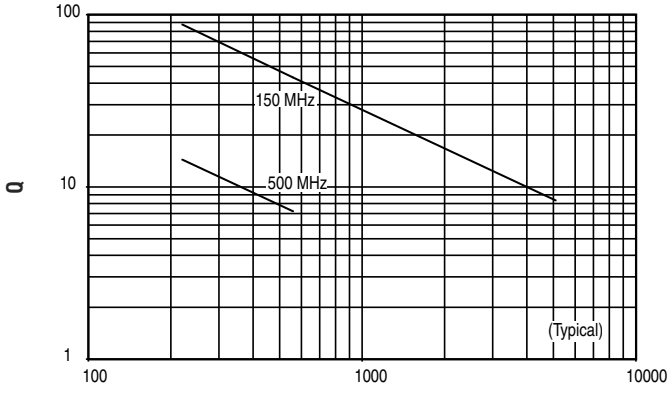
CAPACITANCE (pF)
(56 pF to 200 pF)

ESR VS. CAPACITANCE
ATC SERIES 700, CASE B



CAPACITANCE (pF)
(220 pF to 5100 pF)

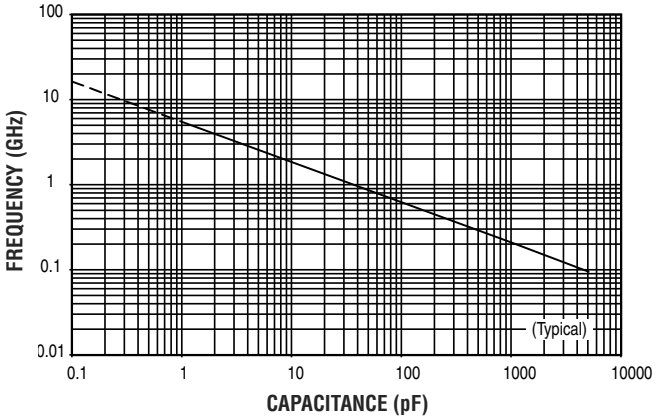
Q VS. CAPACITANCE
ATC SERIES 700, CASE B



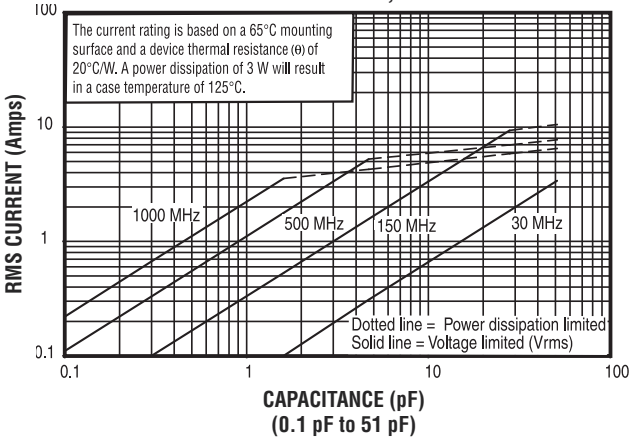
CAPACITANCE (pF)
(220 pF to 5100 pF)

ATC 700 B Performance Data

SERIES RESONANCE VS. CAPACITANCE
ATC SERIES 700, CASE B

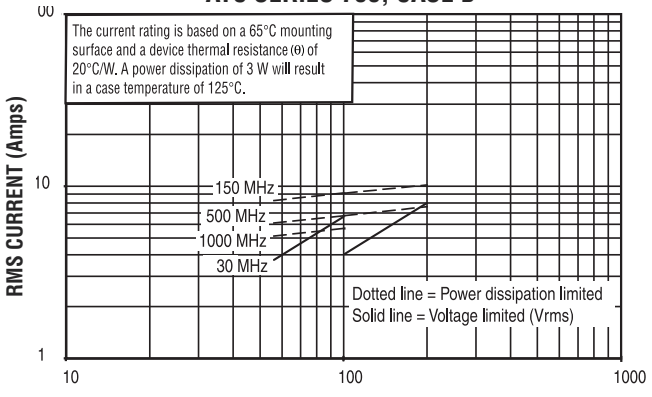


CURRENT RATING VS. CAPACITANCE
ATC SERIES 700, CASE B



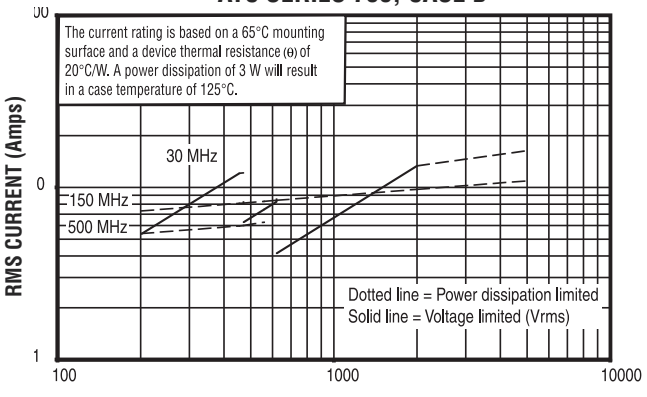
(0.1 pF to 51 pF)

CURRENT RATING VS. CAPACITANCE
ATC SERIES 700, CASE B



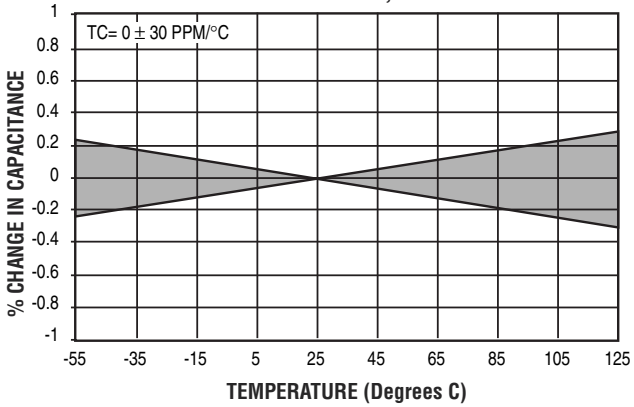
(56 pF to 200 pF)

CURRENT RATING VS. CAPACITANCE
ATC SERIES 700, CASE B



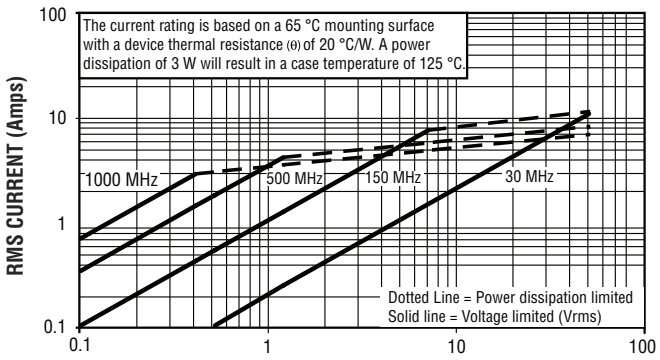
(220 pF to 5100 pF)

CAPACITANCE CHANGE VS. TEMPERATURE
ATC SERIES 700, CASE B



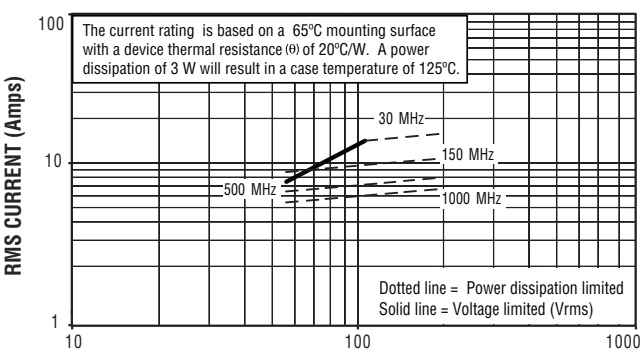
ATC 700 B Performance Data

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



CAPACITANCE (pF)
(0.1 pF to 51 pF)

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



CAPACITANCE (pF)
(56 pF to 200 pF)

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