

ATC 100 B Series Porcelain Superchip® Multilayer Capacitors

- Case B Size
(.110" x .110")
- High Q
- Low ESR/ESL
- Low Noise
- Available with
Encapsulation Option*
- Capacitance Range
0.1 pF to 1000 pF
- Ultra-Stable Performance
- High Self-Resonance
- Established Reliability (QPL)
- Extended WVDC
up to 1500 VDC

ATC, the industry leader, offers new improved ESR/ESL performance for the 100 B Series RF/Microwave Capacitors. This Series is now available with extended operating temperatures up to 175°C. 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, Feedback, Impedance Matching and DC Blocking.

Typical circuit applications: UHF/Microwave RF Power Amplifiers, Mixers, Oscillators, Low Noise Amplifiers, Filter Networks, Timing Circuits and Delay Lines.

*For leaded styles only.

ENVIRONMENTAL TESTS

ATC 100 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:

High Rel Products:

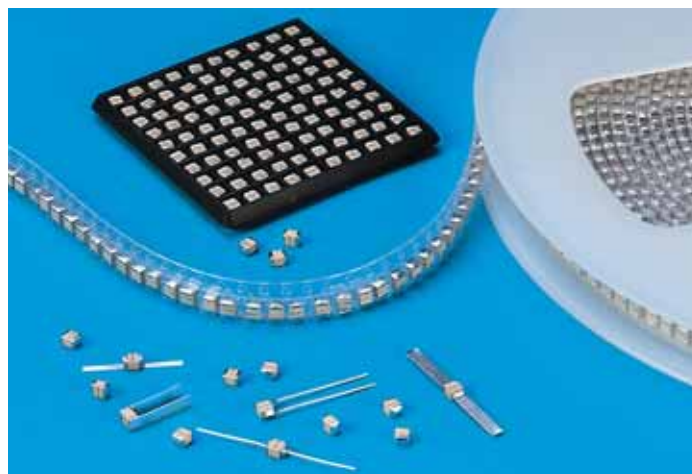
MIL-STD-202, Method 108, for 2000 hours, at 125°C.
200% WVDC applied

Extended Voltage Products:

Voltage Applied:

0.1 pF to 47 pF at WVDC

51 pF to 200 pF at 120% of WVDC



ELECTRICAL AND MECHANICAL SPECIFICATIONS

QUALITY FACTOR (Q): greater than 10,000 at 1 MHz.

TEMPERATURE COEFFICIENT OF CAPACITANCE (TCC):

+90 ±20 PPM/°C (-55°C to +125°C)
+90 ±30 PPM/°C (+125°C to +175°C)

INSULATION RESISTANCE (IR):

0.1 pF to 470 pF:

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

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

510 pF to 1000 pF:

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

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

IR above +125°C is derated by one order of magnitude.

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

DIELECTRIC WITHSTANDING VOLTAGE (DWV):

250% WVDC for WVDC ≤ 500 Volts

150% WVDC for WVDC > 500 Volts or ≤ 1250 Volts

120% WVDC for WVDC > 1250 Volts

Test voltage is applied 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:

Standard WVDC:

0.1 to 330 pF: from -55°C to +175°C

360 to 1000 pF: from -55°C to +125°C

Extended WVDC:

0.1 to 1000 pF: 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 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.



AMERICAN TECHNICAL CERAMICS

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

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

ATC Asia
+86-755-8366-4318
sales@atceramics-asia.com

THE
ENGINEERS'
CHOICE™
ISO 9001 REGISTERED

www.atceramics.com

ATC # 001-807 Rev. L 1/08

ATC 100 B 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	500	EXTENDED VOLTAGE	2R4	2.4	B, C, D	500	EXTENDED VOLTAGE	200	20	F, G, J, K, M	500	1500	151	150	F, G, J, K, M	300	VOLT EXT 1000
0R2	0.2				2R7	2.7				220	22				161	160			
0R3	0.3	B, C			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. • ENCAPSULATION OPTION AVAILABLE. PLEASE CONSULT FACTORY.

NOTE: EXTENDED WVDC DOES NOT APPLY TO CDR PRODUCTS.

ATC PART NUMBER CODE

Series ATC100 B 91 0 J W 500 X C

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.*
C - ATC Cap-Pac®, 100 pc. qty. std.*
I - Special Packaging. Consult Factory.
*Consult ATC for other quantities

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 100 B Series (case size B) 91 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 (631) 622-4700.

Consult factory for additional performance data.

AMERICAN TECHNICAL CERAMICS

ATC North America

631-622-4700 • sales@atceramics.com

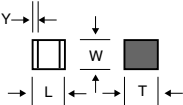
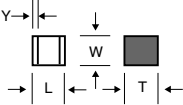
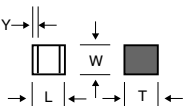
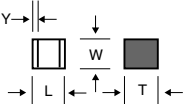
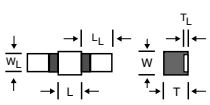
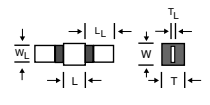
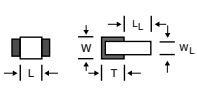
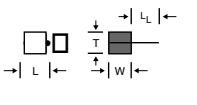
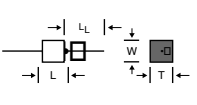
ATC Europe

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

ATC Asia

+86-755-8366-4318 • sales@atceramics-asia.com

ATC 100 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			
100B	W	CDR14BG	 Solder Plate		.110 +.020 -.010 (2.79 +0.51 -.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			
100B	P	CDR14BG	 Pellet		.110 +.035 -.010 (2.79 +0.89 -.25)	.110 ±.015 (2.79 ±0.38)			Heavy Tin/Lead Coated, over Nickel Barrier Termination			
100B	T	N/A	 Solderable Nickel Barrier		.110 +.020 -.010 (2.79 +0.51 -.25)	.110 ±.015 (2.79 ±0.38)			RoHS Compliant Tin Plated over Nickel Barrier Termination			
100B	CA	CDR13BG	 Gold Chip		.110 +.020 -.010 (2.79 +0.51 -.25)	.110 ±.015 (2.79 ±0.38)			RoHS Compliant Gold Plated over Nickel Barrier Termination			
100B	MS	CDR21BG	 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)	
100B	AR	CDR22BG	 Axial Ribbon				.102 (2.59) max.		.250 (6.35) min.	.093 ±.005 (2.36 ±0.13)	.004 ±.001 (.102 ±.025)	
100B	RR	CDR24BG	 Radial Ribbon									
100B	RW	CDR23BG	 Radial Wire		.145 ±.020 (3.68 ±0.51)				.500 (12.7) min.	#26 AWG., .016 (.406) dia. nominal		
100B	AW	CDR25BG	 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.

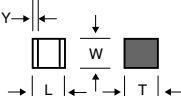
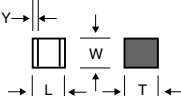
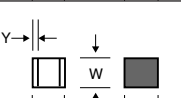
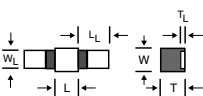
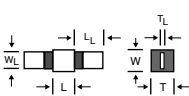
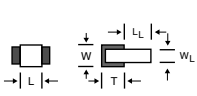
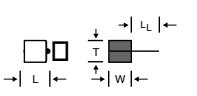
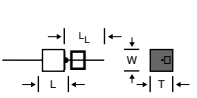
A M E R I C A N T E C H N I C A L C E R A M I C S

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

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

ATC Asia
+86-755-8366-4318 • sales@atceramics-asia.com

ATC 100 B 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				
100B	WN	Meets Require- ments	 B Non-Mag Solder Plate		.110 +.025 -.010 (2.79 +.64 -.25)	.110 ±.015 (2.79 ±.38)	.102 (2.59) max.	.015 (0.38) ±.010 (0.25)	Tin/Lead, Solder Plated over Non-Magnetic Barrier Termination				
100B	PN	Meets Require- ments	 B Non-Mag Pellet		.110 +.035 -.010 (2.79 +.89 -.25)	.110 ±.015 (2.79 ±.38)			Heavy Tin/Lead Coated, over Non-Magnetic Barrier Termination				
100B	TN	Meets Require- ments	 B Non-Mag Solderable Barrier		.110 +.025 -.010 (2.79 +.64 -.25)	.110 ±.015 (2.79 ±.38)			<i>RoHS Compliant</i> Tin Plated over Non-Magnetic Barrier Termination				
100B	MN	Meets Require- ments	 Non-Mag Microstrip		135 ±.015 (3.43 ±.38)	.110 ±.015 (2.79 ±.38)	.120 (3.05) max.	N/A	Length (L _L)	Width (W _L)	Thickness (T _L)		
100B	AN	Meets Require- ments	 Non-Mag Axial Ribbon				.102 (2.59) max.				.250 (6.35) min.	.093 ±.005 (2.36 ±.13)	.004 ±.001 (.102 ±.025)
100B	FN	Meets Require- ments	 B Non-Mag Radial Ribbon										
100B	RN	Meets Require- ments	 B Non-Mag Radial Wire		.500 (12.7) min.	#26 AWG., .016 (.406) dia. nominal							
100B	BN	Meets Require- ments	 B Non-Mag Axial Wire										

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

The diagram illustrates the dimensions for Case B Vertical Mount components. The top row shows two isometric views: the left one is labeled 'Normal' and the right one 'High Density'. Dimensions shown include length (L), width (W), and thickness (T). The bottom row shows two top-down views of the electrode orientations. The 'Horizontal Electrode Orientation' shows dimensions A (height), B (width), and D (total width including pads). The 'Vertical Electrode Orientation' shows dimensions B (width), C (pad width), and D (total width including pads).

Case B Vertical Mount

Cap Value	Pad Size	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

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

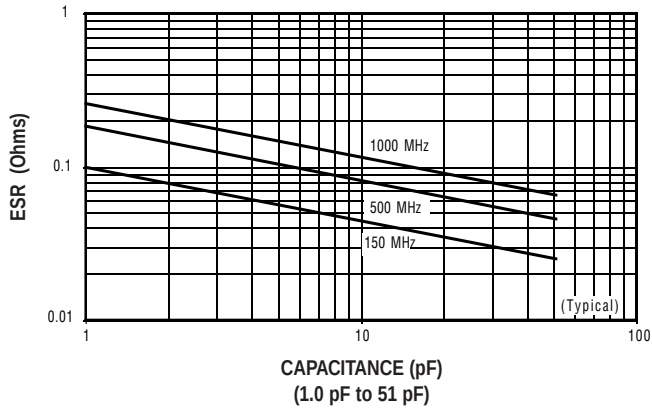
ATC North America
631-622-4700 • sales@atceramics.com

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

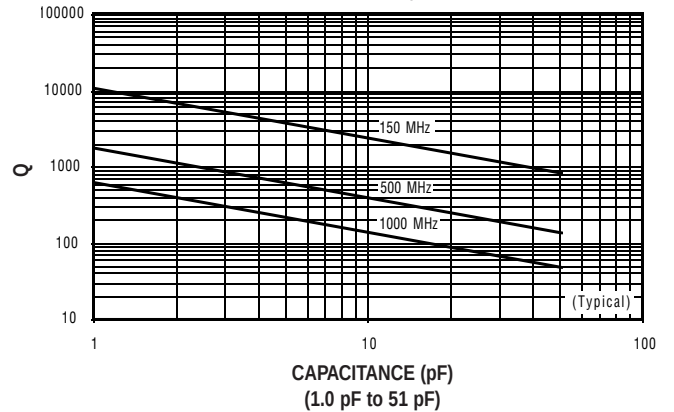
ATC Asia
+86-755-8366-4318 • sales@atceramics-asia.com

ATC 100 B Performance Data

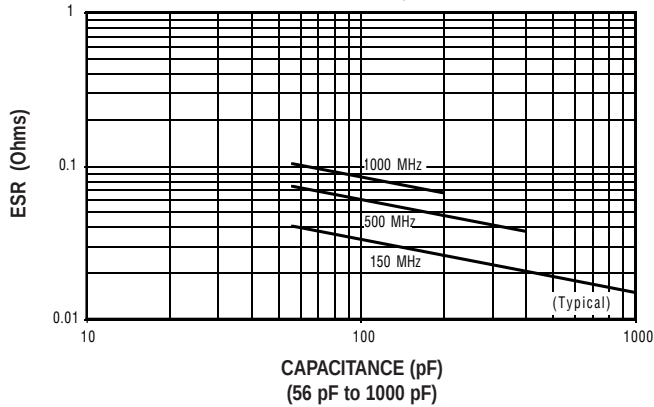
ESR VS. CAPACITANCE
ATC SERIES 100, CASE B



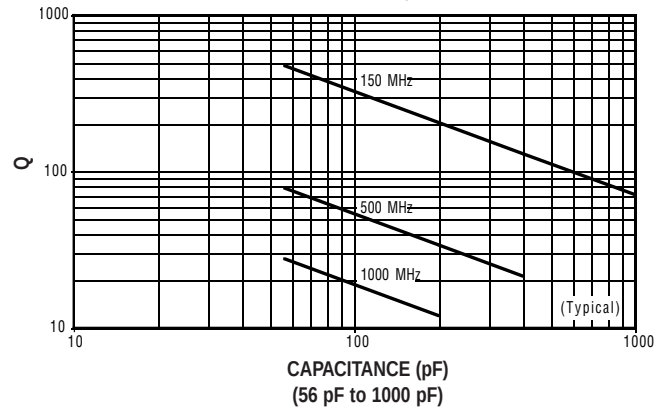
Q VS. CAPACITANCE
ATC SERIES 100, CASE B



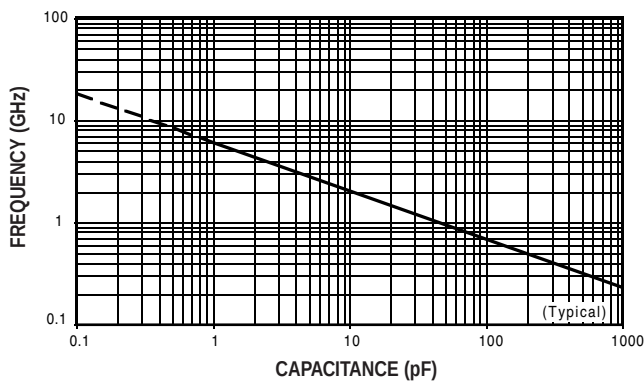
ESR VS. CAPACITANCE
ATC SERIES 100, CASE B



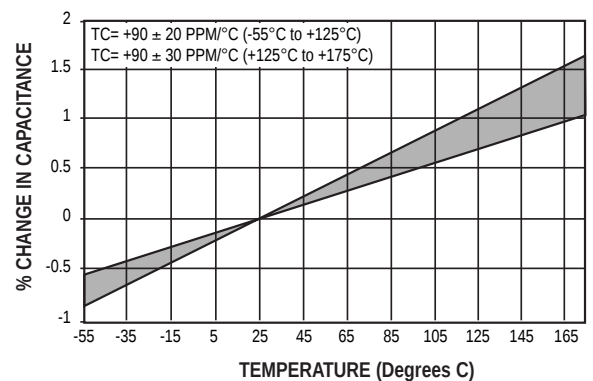
Q VS. CAPACITANCE
ATC SERIES 100, CASE B



SERIES RESONANCE VS. CAPACITANCE
ATC SERIES 100, CASE B



CAPACITANCE CHANGE VS. TEMPERATURE
ATC SERIES 100, CASE B



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

631-622-4700 • sales@atceramics.com

ATC Europe

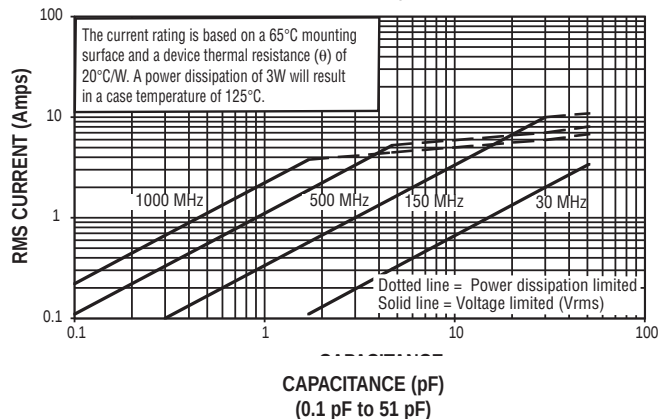
+46 8 6800410 • sales@atceramics-europe.com

ATC Asia

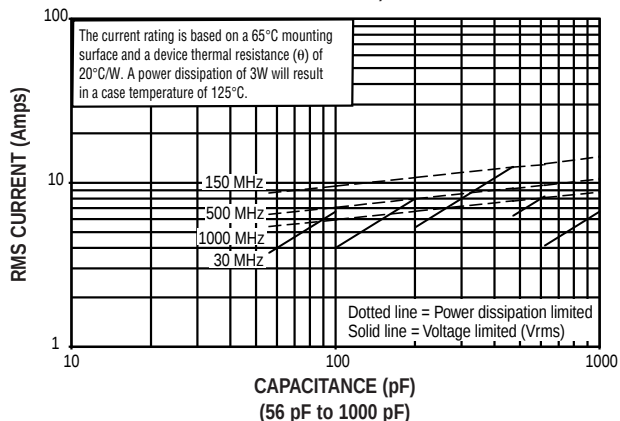
+86-755-8366-4318 • sales@atceramics-asia.com

ATC 100 B Performance Data

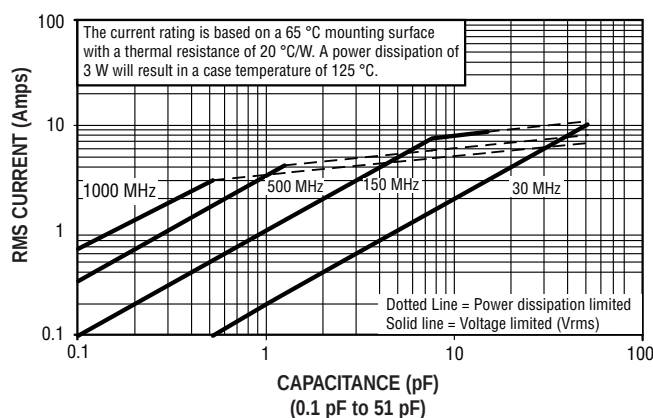
**CURRENT RATING VS. CAPACITANCE
ATC SERIES 100, CASE B**



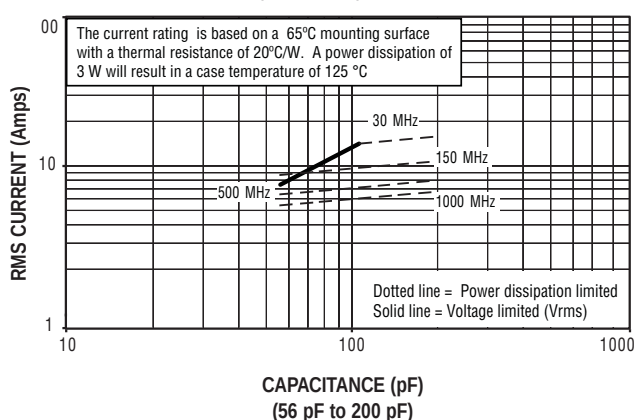
**CURRENT RATING VS. CAPACITANCE
ATC SERIES 100, CASE B**



**CURRENT RATING VS. CAPACITANCE
ATC SERIES 100, CASE B, EXTENDED VOLTAGE**



**CURRENT RATING VS. CAPACITANCE
ATC SERIES 100, CASE B, 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. A 10/03). 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 # 001-807 Rev. L 1/08



AMERICAN TECHNICAL CERAMICS

ATC North America

631-622-4700

sales@atceramics.com

ATC Europe

+46 8 6800410

sales@atceramics-europe.com

ATC Asia

+86-755-8366-4318

sales@atceramics-asia.com



ISO 9001 REGISTERED

www.atceramics.com