

# ATC 100 B Series Porcelain Superchip<sup>®</sup> Multilayer Capacitors

- Case B Size (.110" x .110")
- Capacitance Range 0.1 pF to 1000 pF
- High Q
- Ultra-Stable Performance
- Low ESR/ESL
- High Self-Resonance
- Low Noise
- Established Reliability (QPL)

ATC, the industry leader, is announcing 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.

Self-encapsulating porcelain construction provides a rugged, hermetic package without the need or liability of external encapsulants.

Typical functional applications: Bypass, Coupling, Tuning, Feedback, Impedance Matching and D.C. Blocking.

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

## ENVIRONMENTAL TESTS

ATC 100 B Series Capacitors are designed and manufactured to meet and exceed the requirements of EIA-198, MIL-C-55681 and MIL-C-123.

### THERMAL SHOCK:

MIL-STD-202, Method 107, Condition A.

### MOISTURE RESISTANCE:

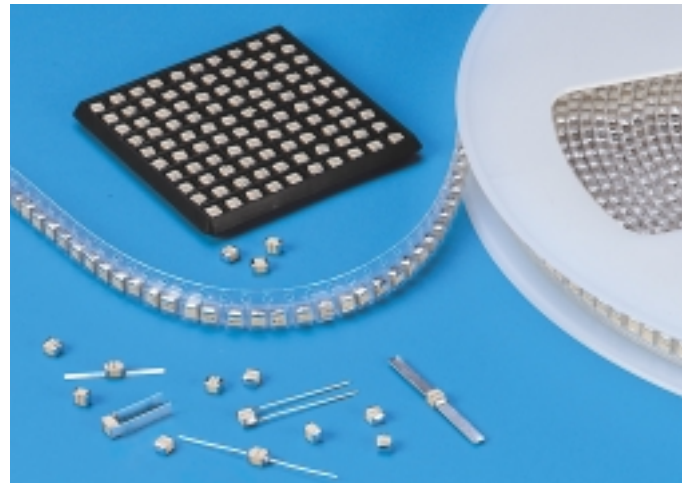
MIL-STD-202, Method 106.

### LOW VOLTAGE HUMIDITY:

MIL-STD-202, Method 103, Condition A, with 1.5 Volts D.C. 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 at 1 MHz.

**TEMPERATURE COEFFICIENT OF CAPACITANCE (T.C.):**

+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:

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.

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

**WORKING VOLTAGE (WVDC):**

See Capacitance Values Table, page 2.

**DIELECTRIC WITHSTANDING VOLTAGE (DWV):**

Case B: 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:**

0.1 to 330 pF: from -55°C to +175°C

360 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.



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<http://www.atceramics.com>

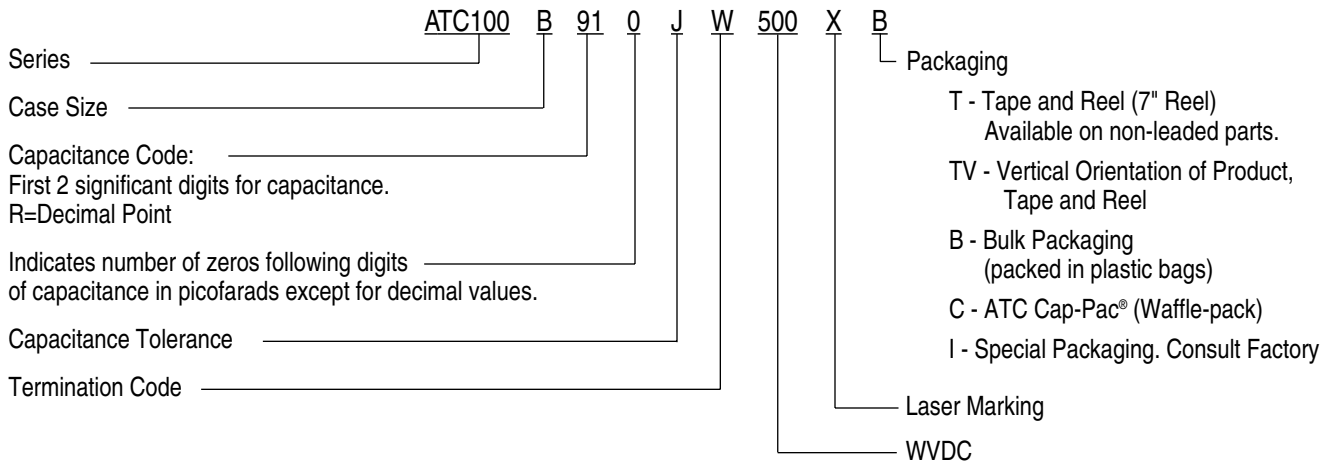
# ATC 100 B Capacitance Values

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						
0R1	0.1	B	500	2R4	2.4	B, C, D	500	200	20	F, G, J, K, M	500	151	150	F, G, J, K, M	300						
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			3R6	3.6			300	30			221	220								
0R6	0.6	B, C, D		3R9	3.9			330	33			241	240		500	F, G, J, K, M	500	271	270	F, G, J, K, M	200
0R7	0.7			4R3	4.3			360	36			301	300								
0R8	0.8			4R7	4.7			390	39			331	330								
0R9	0.9			5R1	5.1			430	43			361	360								
1R0	1.0			5R6	5.6			470	47			391	390								
1R1	1.1		6R2	6.2	510	51	431	430													
1R2	1.2		B, C, D	6R8	6.8	560	56	471	470	500	F, G, J, K, M	500	511	510				F, G, J, K, M	100		
1R3	1.3			7R5	7.5	620	62	561	560												
1R4	1.4			8R2	8.2	680	68	621	620												
1R5	1.5			9R1	9.1	750	75	681	680												
1R6	1.6	F, G, J, K, M	100	10	820	82	751	750	300	F, G, J, K, M	300	821	820	F, G, J, K, M	50						
1R7	1.7		110	11	910	91	911	910													
1R8	1.8		120	12	101	100	911	910													
1R9	1.9		130	13	111	110	102	1000													
2R0	2.0		150	15	121	120															
2R1	2.1		160	16	131	130															
2R2	2.2		180	18																	

**SPECIAL VALUES, TOLERANCES, HIGHER WVDC AND MATCHING AVAILABLE. PLEASE CONSULT FACTORY.**  
**VRMS = 0.707 X WVDC**

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


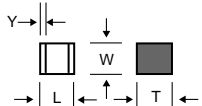

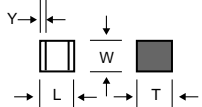

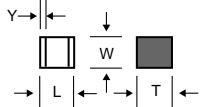

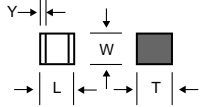

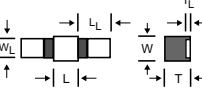
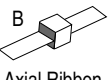
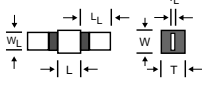

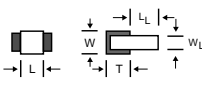

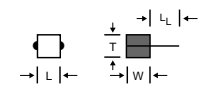
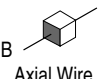
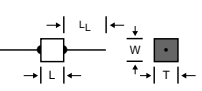


The above part number refers to a 100 B Series (case size B) 91 pF capacitor,  
 J tolerance (±5%), 500 WVDC, with W termination (solder plate), laser marking and bulk packaging.

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.

# ATC 100 B Capacitors: Mechanical Configurations

ATC SERIES & CASE SIZE	ATC TERM. CODE	MIL-C-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	B  Solder Plate		.110 +0.020 -0.010 (2.79 +0.51 -0.25)	.110 ±.020 (2.79 ±0.51)	.102 (2.6) max.	.015 (0.38) ±.010 (0.25) max.	<b>SOLDER PLATE</b> Nickel barrier, solder plated. Rugged, high performance termination for lower cost, high volume, tape & reel applications.		
100B	P	CDR14BG	B  Pellet		.110 +0.035 -0.010 (2.79 +0.89 -0.25)	.110 ±.020 (2.79 ±0.51)			<b>BARRIER/CAP®</b> Nickel barrier, solder plated with the addition of hot solder dip process. Solder melting temperature is 355°F, 179°C.		
100B	CA	CDR13BG	B  Gold Chip		.110 +0.020 -0.010 (2.79 +0.51 -0.25)	.110 ±.020 (2.79 ±0.51)			<b>UNI-TERM®</b> NICKEL BARRIER, GOLD PLATED TERMINATIONS		
100B	C	CDR13BG	B  Chip		.110 +0.020 -0.010 (2.79 +0.51 -0.25)	.110 ±.020 (2.79 ±0.51)			<b>CHIP</b> PALLADIUM SILVER TERMINATIONS		
100B	MS	CDR21BG	B  Microstrip		.135 ±.015 (3.43 ±0.38)	110 ±.015 (2.79 ±0.38)	.100 (2.54) max.	N/A	LENGTH (L <sub>L</sub> )	WIDTH (W <sub>L</sub> )	THICKNESS (T <sub>L</sub> )
100B	AR	CDR22BG	B  Axial Ribbon						.250 (6.35) min.	.093 ±.005 (2.36 ±0.13)	.004 ±.001 (.102 ±.025)
100B	RR	CDR24BG	B  Radial Ribbon		.145 ±.020 (3.68 ±0.51)	110 ±.015 (2.79 ±0.38)	.100 (2.54) max.	N/A	.500 (12.7) min.	#26 AWG., .016 (.406) dia. nominal	
100B	RW	CDR23BG	B  Radial Wire								
100B	AW	CDR25G	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 and are attached with high temperature solder.  
 All 100 B Capacitors are available laser marked with ATC's identification, capacitance code and tolerance.  
 Tape and Reel packaging is available.

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

\* Replaces C Termination

# ATC 100 B Non-Magnetic Capacitors: Mechanical Configurations

ATC SERIES & CASE SIZE	ATC TERM. CODE	MIL-C-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 Requirements	B Non-Mag Solder Plate		.110 +.025 -.010 (2.79 +.64 - 0.25)	.110 ±.015 (2.79 ±0.38)	.102 (2.6) max.	.015 (0.38) ±.010 (0.25) max.	<b>NON-MAGNETIC</b> Copper barrier, solder plated. Rugged, high performance termination for lower cost, high volume, tape & reel applications.		
100B	PN	Meets Requirements	B Non-Mag Pellet		.110 +.035 -.010 (2.79 +.89 - 0.25)	.010 +.010 - .005 (+0.25 - 0.13)			<b>NON-MAGNETIC</b> Copper barrier plated with the addition of hot solder dip process. Solder melting temperature is 355°F, 179°C.		
100B	CN	Meets Requirements	B Non-Mag Chip		.110 +.025 -.010 (2.79 +.64 - 0.25)	.110 ±.015 (2.79 ±0.38)			<b>NON-MAGNETIC</b> PALLADIUM SILVER TERMINATIONS		
100B	MN	Meets Requirements	Non-Mag Microstrip		.135 ±.015 (3.43 ±0.38)	.110 ±.015 (2.79 ±0.38)	.100 (2.54) max.	N/A	LENGTH (L <sub>L</sub> )	WIDTH (W <sub>L</sub> )	THICKNESS (T <sub>L</sub> )
100B	AN	Meets Requirements	Non-Mag Axial Ribbon						.250 (6.35) min.	.093 ±.005 (2.36 ±0.13)	.004 ±.001 (.102 ±.025)
100B	FN	Meets Requirements	B Non-Mag Radial Ribbon						.145 ±.020 (3.68 ±0.51)	.500 (12.7) min.	#26 AWG., .016 (.406) dia. nominal
100B	RN	Meets Requirements	B Non-Mag Radial Wire								
100B	BN	Meets Requirements	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 and are attached with high temperature solder.

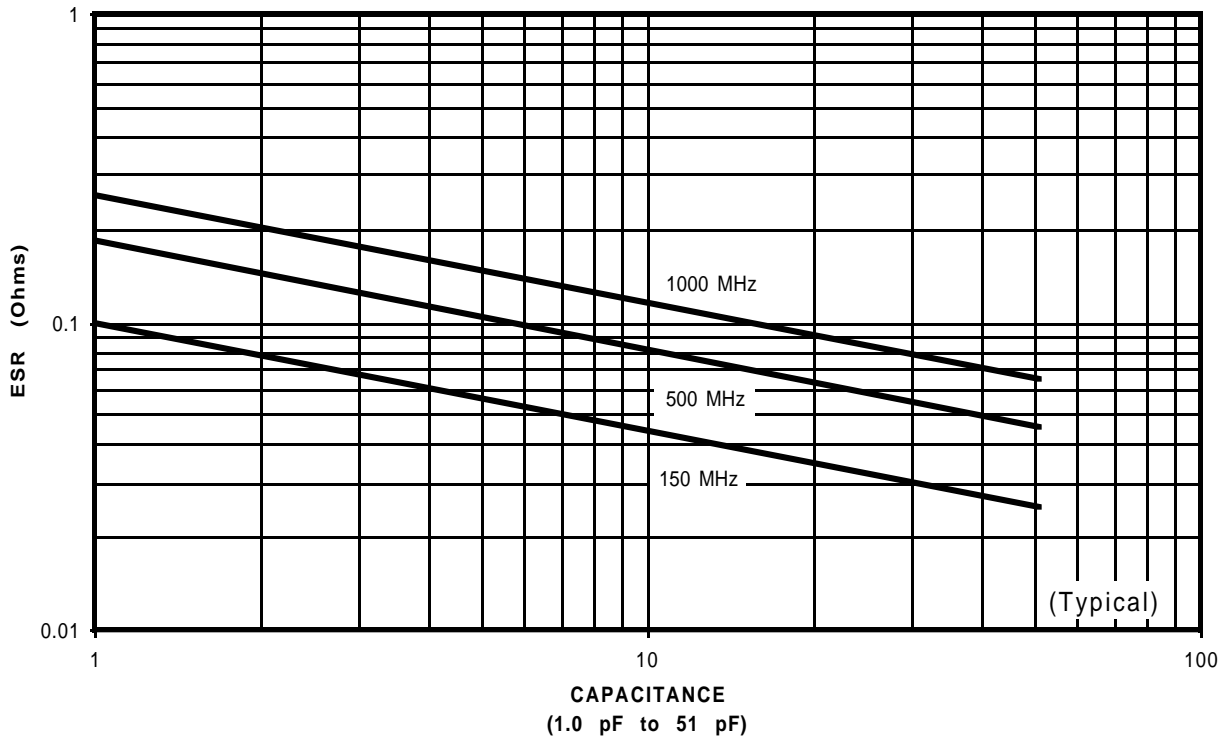
All 100 B Capacitors are available laser marked with ATC's identification, capacitance code and tolerance.

Tape and Reel packaging is available.

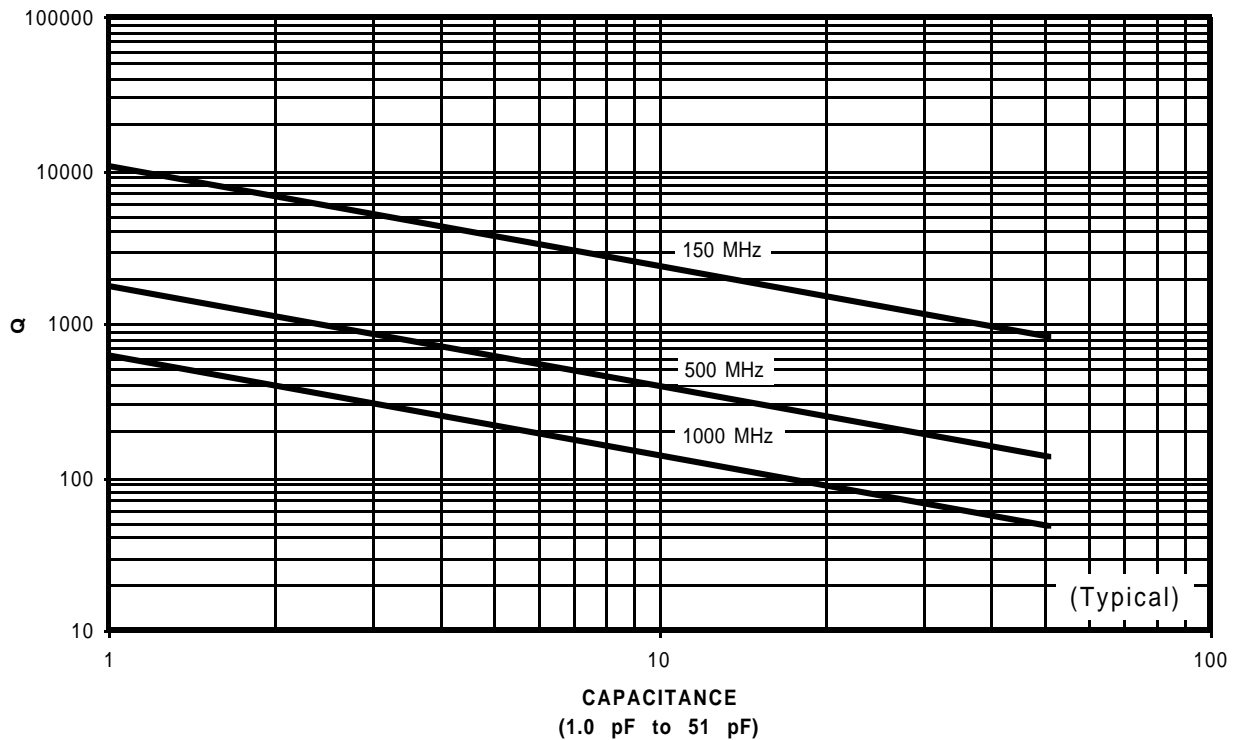
\* Replaces CN Termination

# ATC 100 B Performance Data

## ESR VS CAPACITANCE ATC SERIES 100, CASE B

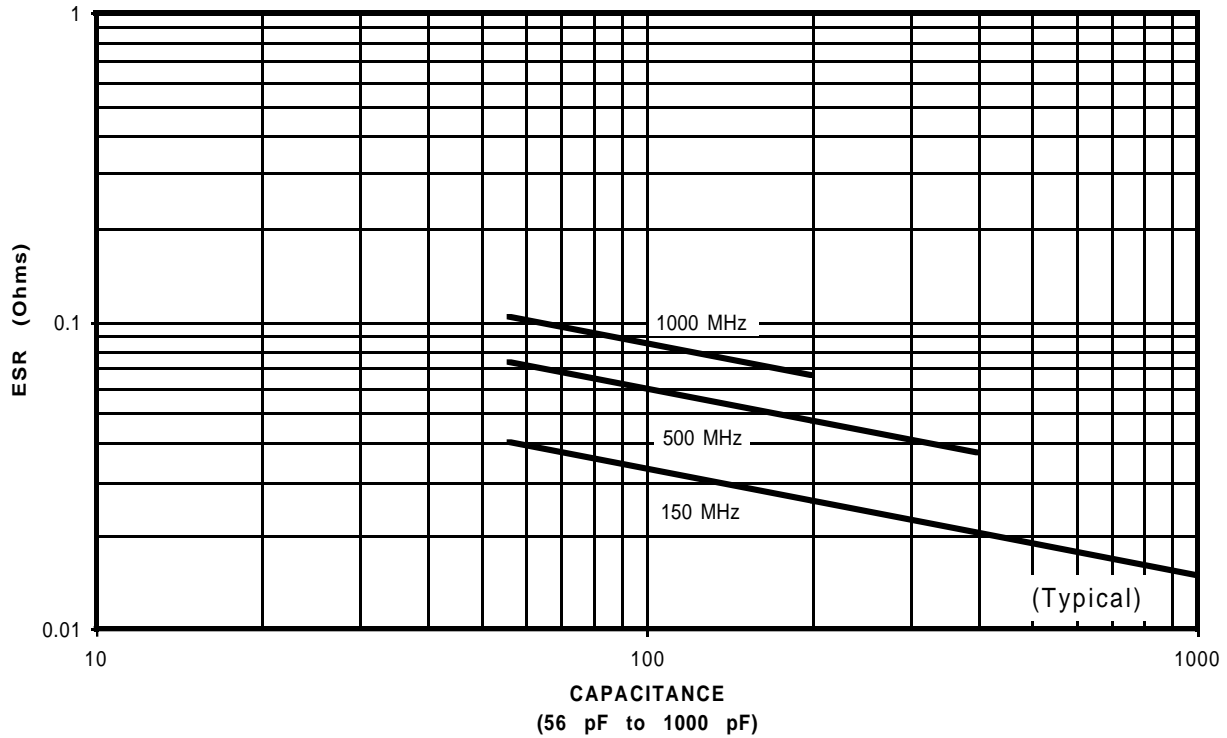


## Q VS CAPACITANCE ATC SERIES 100, CASE B

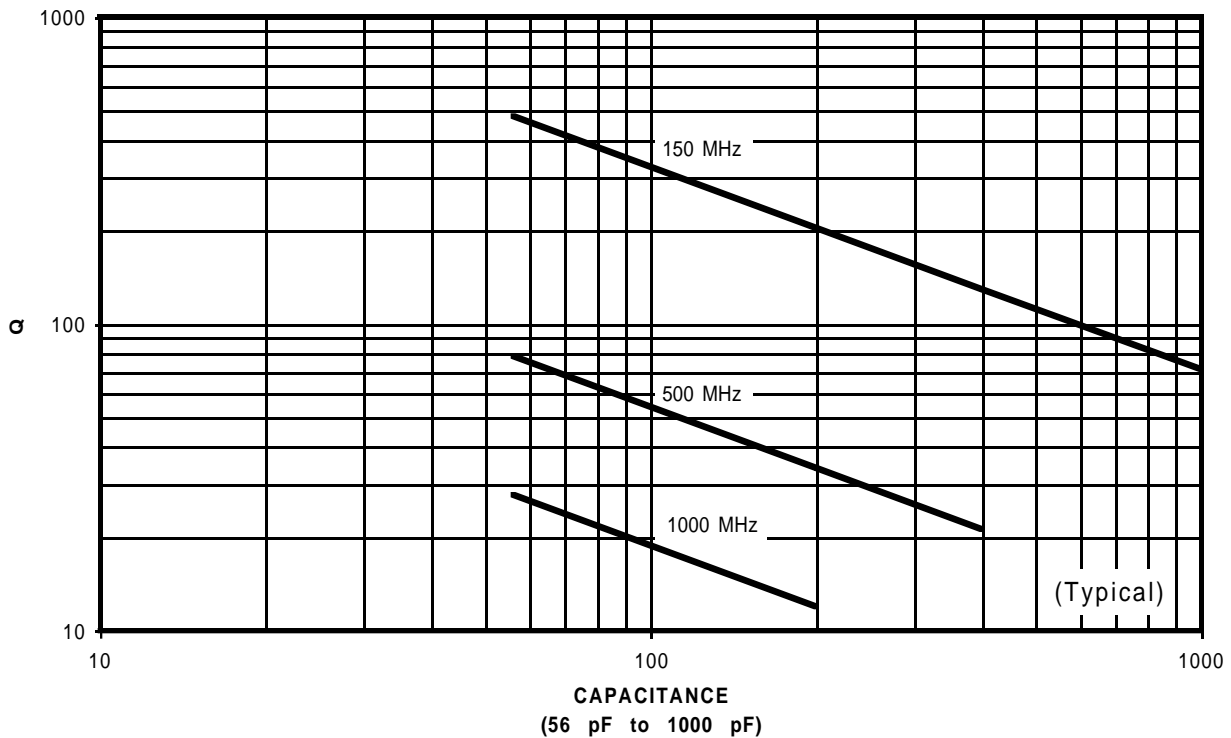


# ATC 100 B Performance Data

ESR VS CAPACITANCE  
ATC SERIES 100, CASE B

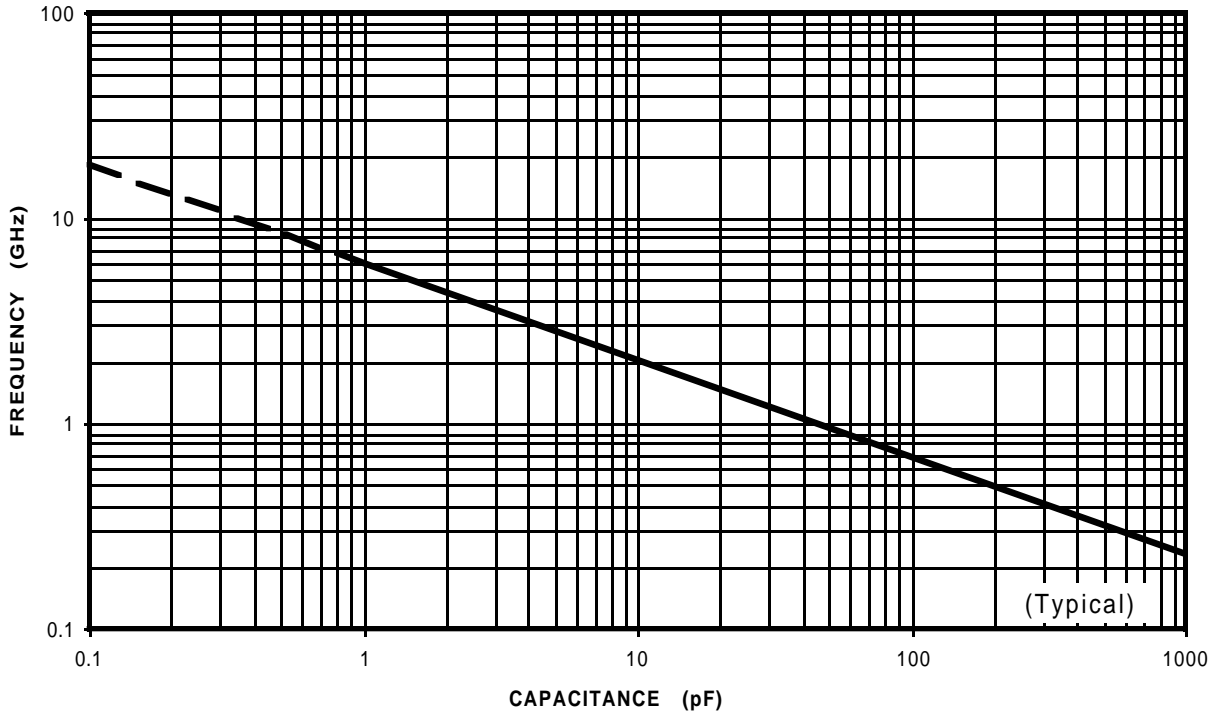


Q VS CAPACITANCE  
ATC SERIES 100, CASE B

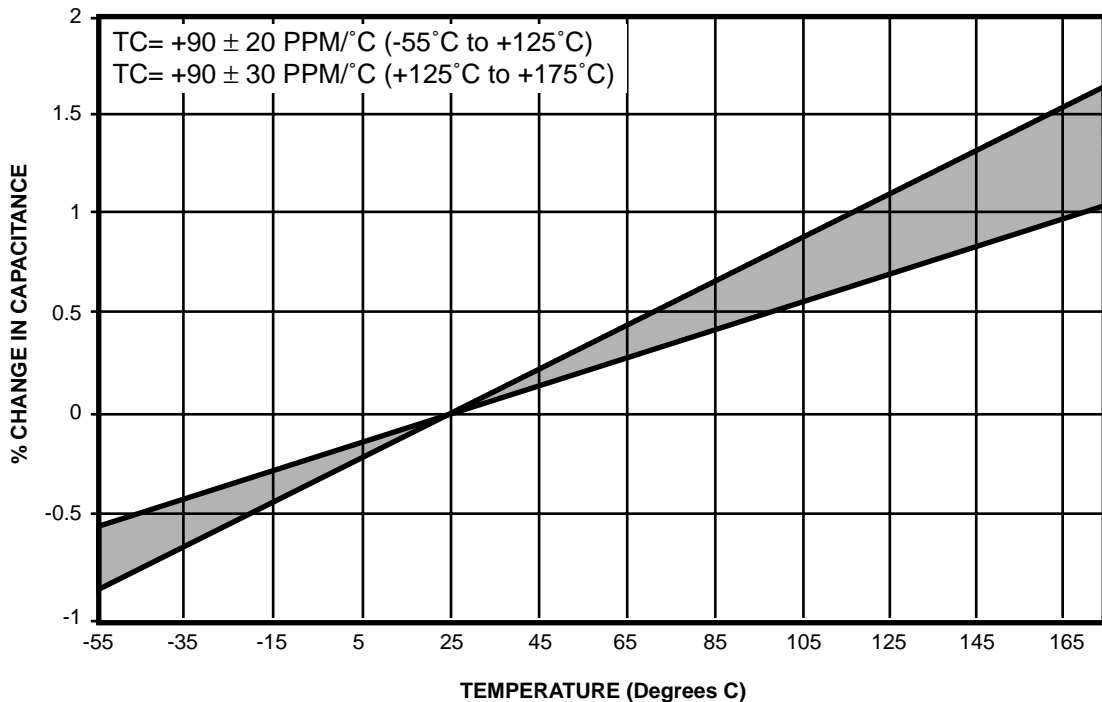


# ATC 100 B Performance Data

SERIES RESONANCE VS CAPACITANCE  
ATC SERIES 100, CASE B

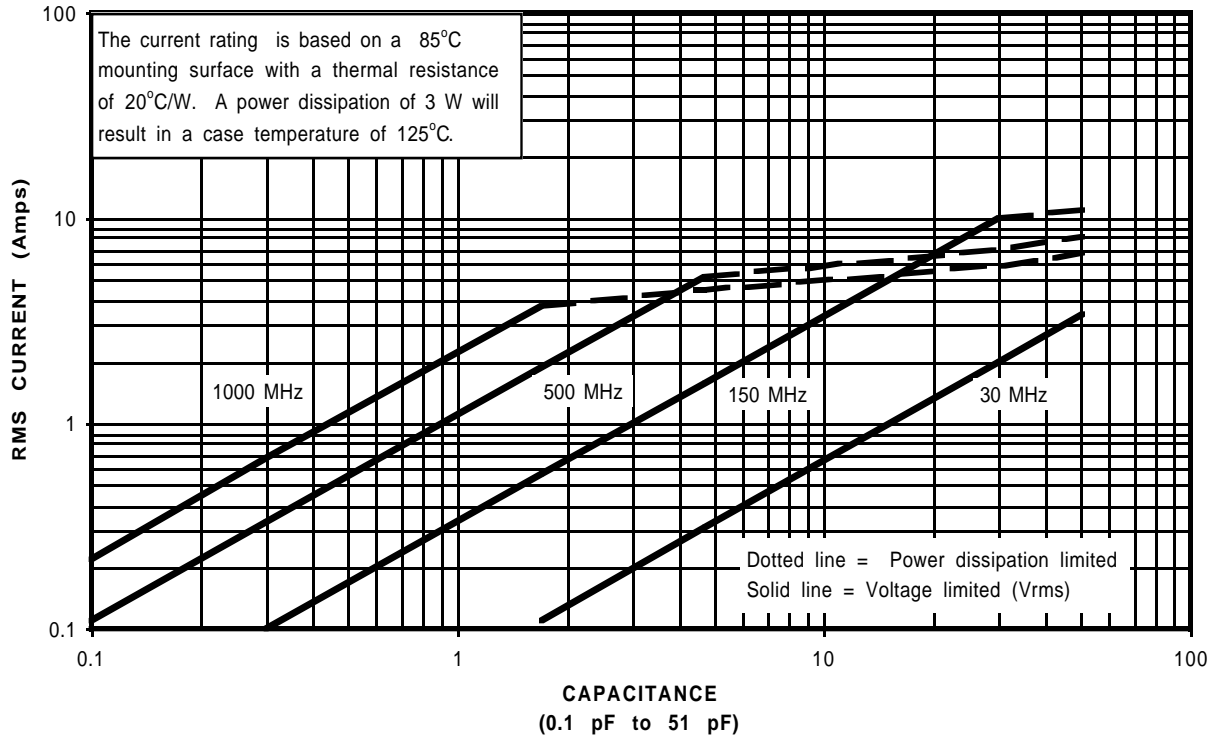


CAPACITANCE CHANGE VS TEMPERATURE  
ATC SERIES 100, CASE B

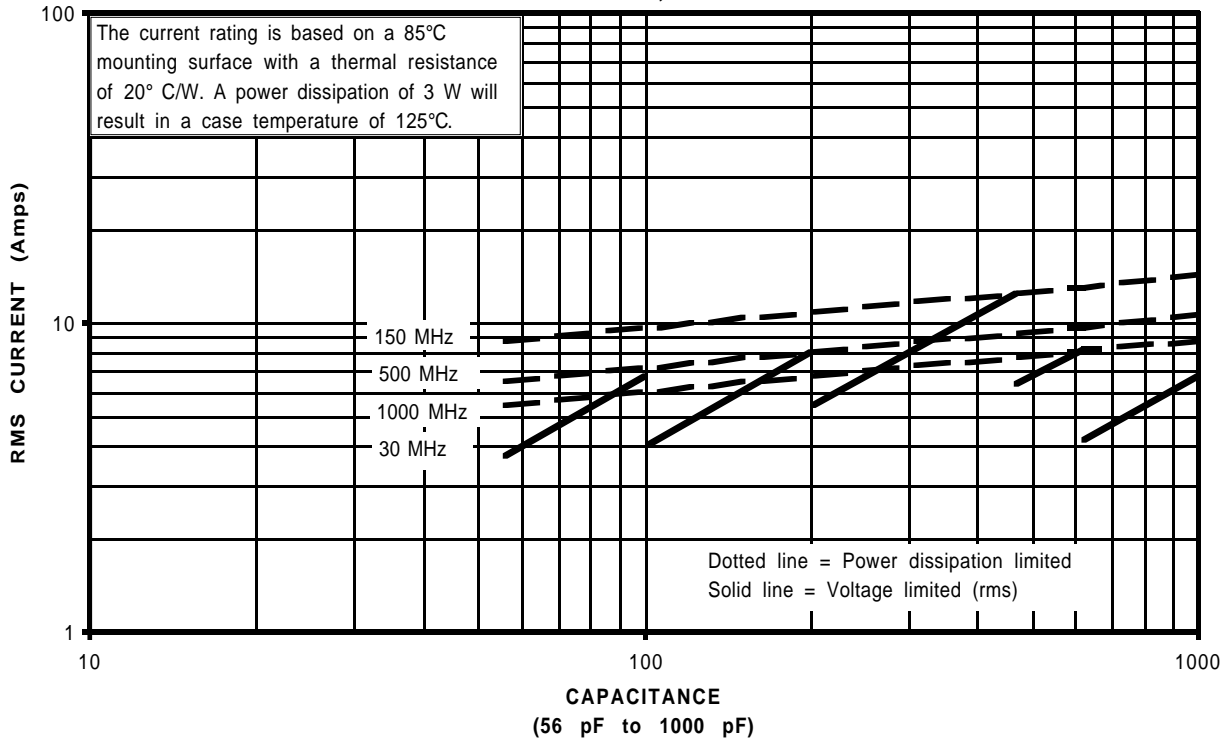


# ATC 100 B Performance Data

## CURRENT RATING VS CAPACITANCE ATC SERIES 100, CASE B



## CURRENT VS CAPACITANCE ATC SERIES 100, CASE B



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