

ATC 100 B Series Porcelain Superchip® 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:

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.

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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ATC 100 B Capacitance Values

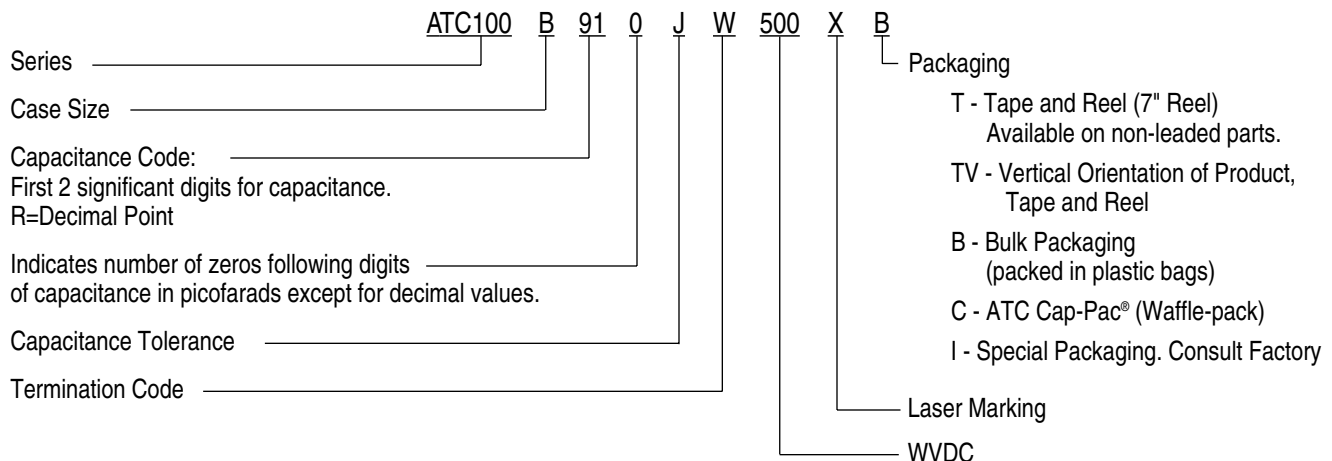
CAP. CODE	CAP. (pF)	TOL.	RATED WVDC	CAP. CODE	CAP. (pF)	TOL.	RATED WVDC	CAP. CODE	CAP. (pF)	TOL.	RATED WVDC	CAP. CODE	CAP. (pF)	TOL.	RATED WVDC
0R1	0.1	B	500	2R4	2.4	B, C, D	500	200	20	F, G, J, K, M	500	151	150	F, G, J, K, M	300
0R2	0.2	B, C		2R7	2.7			220	22			161	160		
0R3	0.3			3R0	3.0			240	24			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	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	B, C, D		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										
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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

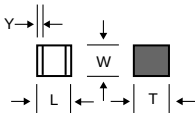
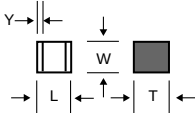
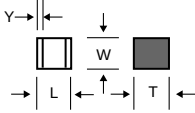
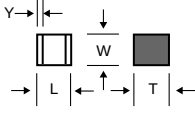
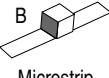
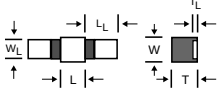
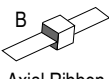
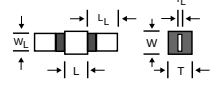
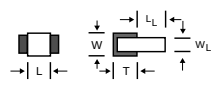
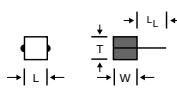
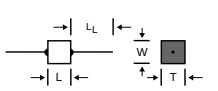


The above part number refers to a 100 B Series (case size B) 91 pF capacitor,
J tolerance (±5%), 500 WVDC, with W termination (solder plate), laser marking and bulk packaging.

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	 Solder Plate		.110 +.020 -.010 (2.79 +0.51 -.25)	.110 ±.020 (2.79 ±0.51)	.102 (2.6) max.	.015 (0.38) ±.010 (0.25) max.	SOLDER PLATE Nickel barrier, solder plated. Rugged, high performance termination for lower cost, high volume, tape & reel applications.			
100B	P	CDR14BG	 Pellet		.110 +.035 -.010 (2.79 +0.89 -.25)	.110 ±.020 (2.79 ±0.51)			BARRIER/CAP® Nickel barrier, solder plated with the addition of hot solder dip process. Solder melting temperature is 355°F, 179°C.			
100B	CA	CDR13BG	 Gold Chip		.110 +.020 -.010 (2.79 +0.51 -.25)	.110 ±.020 (2.79 ±0.51)			UNI-TERM® NICKEL BARRIER, GOLD PLATED TERMINATIONS			
100B	C	CDR13BG	 Chip		.110 +.020 -.010 (2.79 +0.51 -.25)	.110 ±.020 (2.79 ±0.51)			CHIP PALLADIUM SILVER TERMINATIONS			
100B	MS	CDR21BG	 Microstrip		.135 ±.015 (3.43 ±0.38)	.110 ±.015 (2.79 ±0.38)	.100 (2.54) max.	N/A	LENGTH (L _L)	WIDTH (W _L)	THICKNESS (T _L)	
100B	AR	CDR22BG	 Axial Ribbon						.250 (6.35) min.	.093 ±.005 (2.36 ±0.13)	.004 ±.001 (.102 ±0.025)	
100B	RR	CDR24BG	 Radial Ribbon									
100B	RW	CDR23BG	 Radial Wire		.145 ±.020 (3.68 ±0.51)							
100B	AW	CDR25G	 Axial Wire									
										.500 (12.7) min.		#26 AWG., .016 (.406) dia. nominal

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.

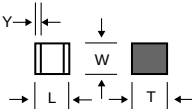
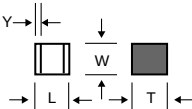
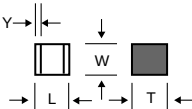
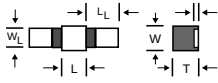
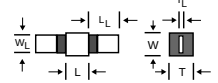
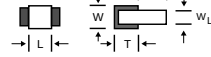
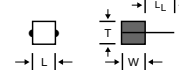
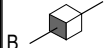
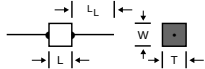
All 100 B Capacitors are available laser marked with ATC's identification, capacitance code and tolerance.

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	 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.	NON-MAGNETIC Copper barrier, solder plated. Rugged, high performance termination for lower cost, high volume, tape & reel applications.		
100B	PN	Meets Requirements	 Non-Mag Pellet		.110 +.035 -.010 (2.79 +.89 - 0.25)	.010 +.010 - .005 (+0.25 - 0.13)			NON-MAGNETIC Copper barrier plated with the addition of hot solder dip process. Solder melting temperature is 355°F, 179°C.		
100B	CN	Meets Requirements	 Non-Mag Chip		.110 +.025 -.010 (2.79 +.64 - 0.25)	.110 ±.015 (2.79 ±0.38)			NON-MAGNETIC 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 _L)	WIDTH (W _L)	THICKNESS (T _L)
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	 Non-Mag Radial Ribbon								
100B	RN	Meets Requirements	 Non-Mag Radial Wire		.145 ±.020 (3.68 ±0.51)				.500 (12.7) min.	#26 AWG., .016 (.406) dia. nominal	
100B	BN	Meets Requirements	 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.

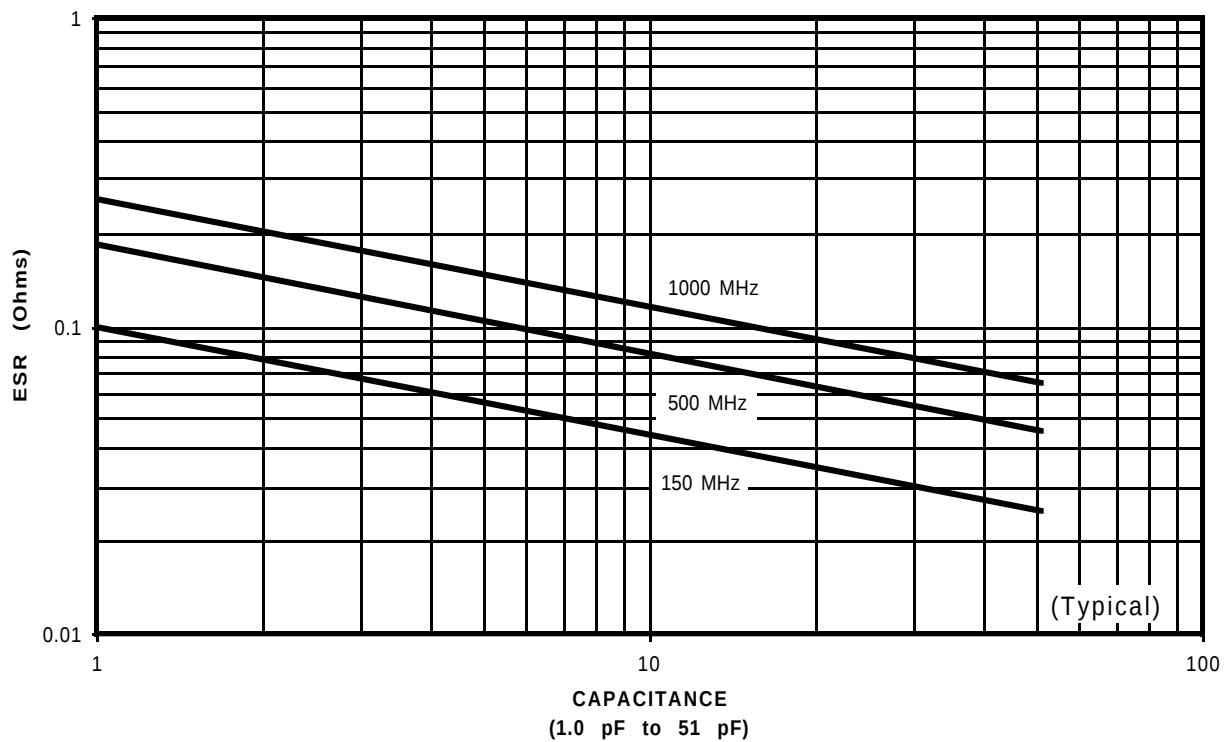
All 100 B Capacitors are available laser marked with ATC's identification, capacitance code and tolerance.

Tape and Reel packaging is available.

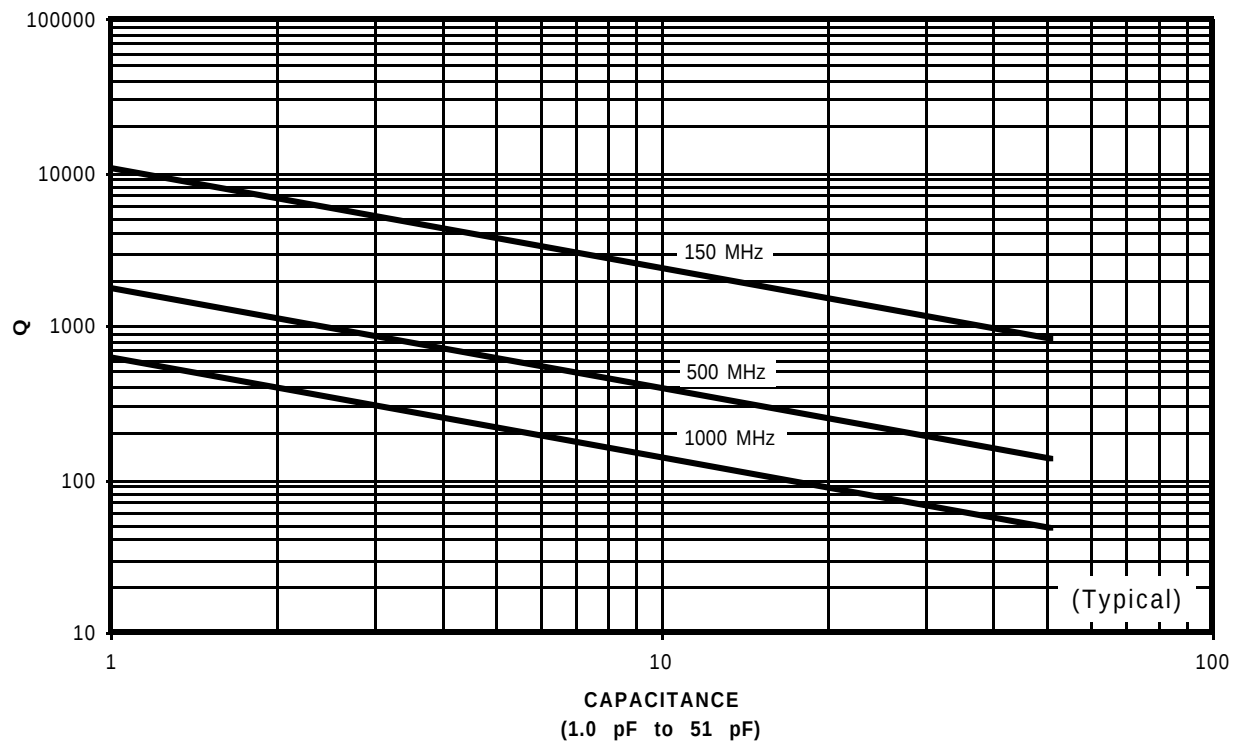
* Replaces CN Termination

ATC 100 B Performance Data

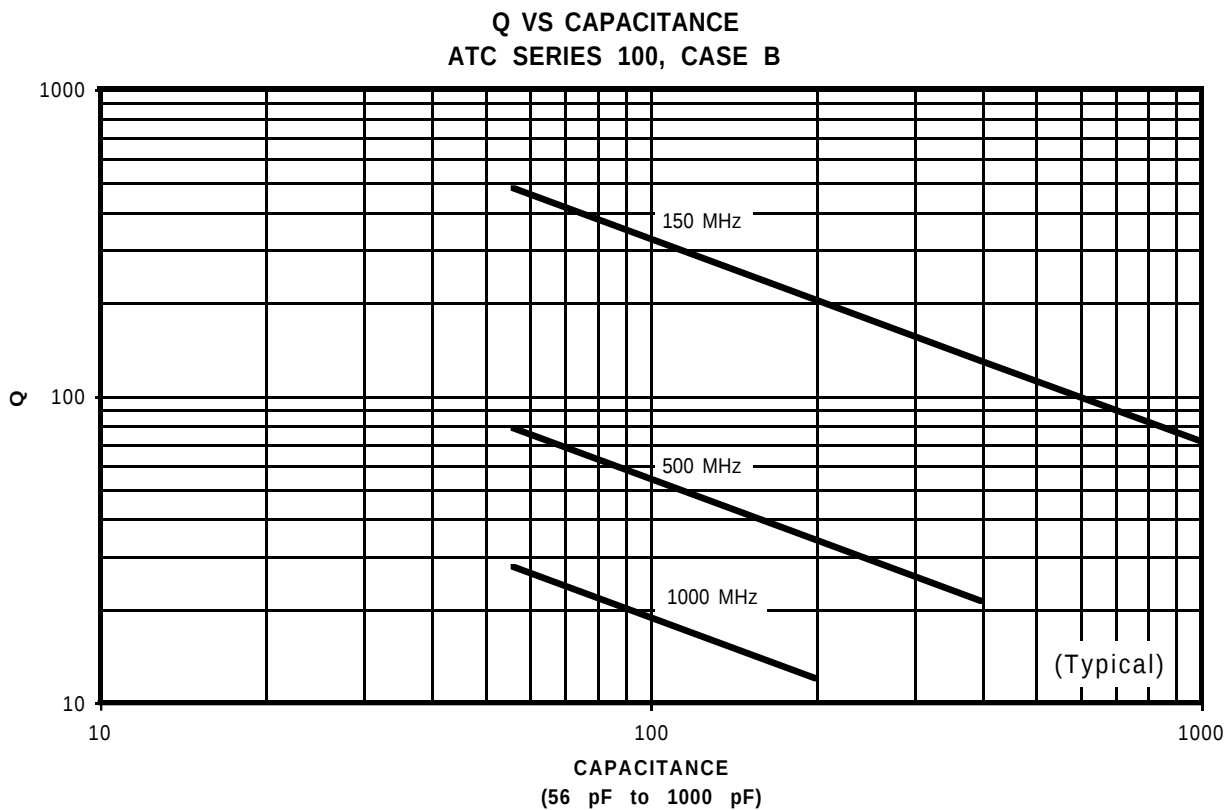
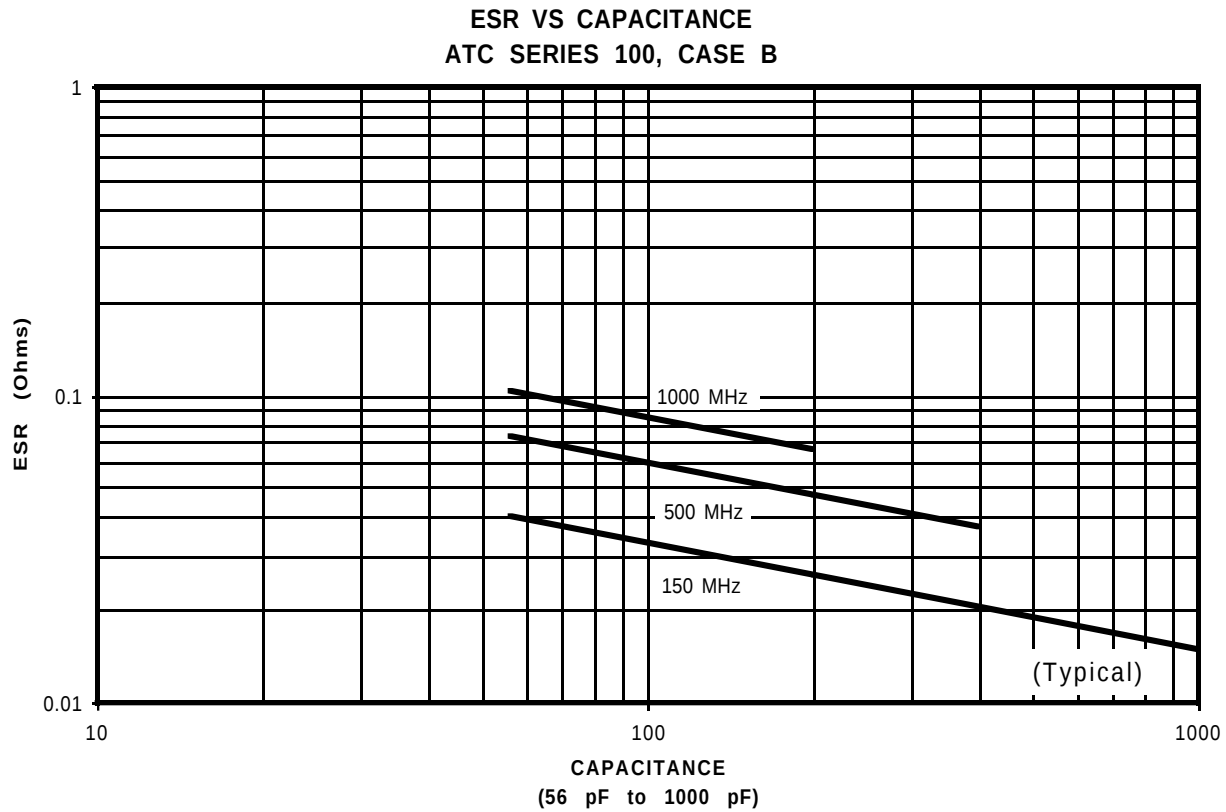
ESR VS CAPACITANCE
ATC SERIES 100, CASE B



Q VS CAPACITANCE
ATC SERIES 100, CASE B

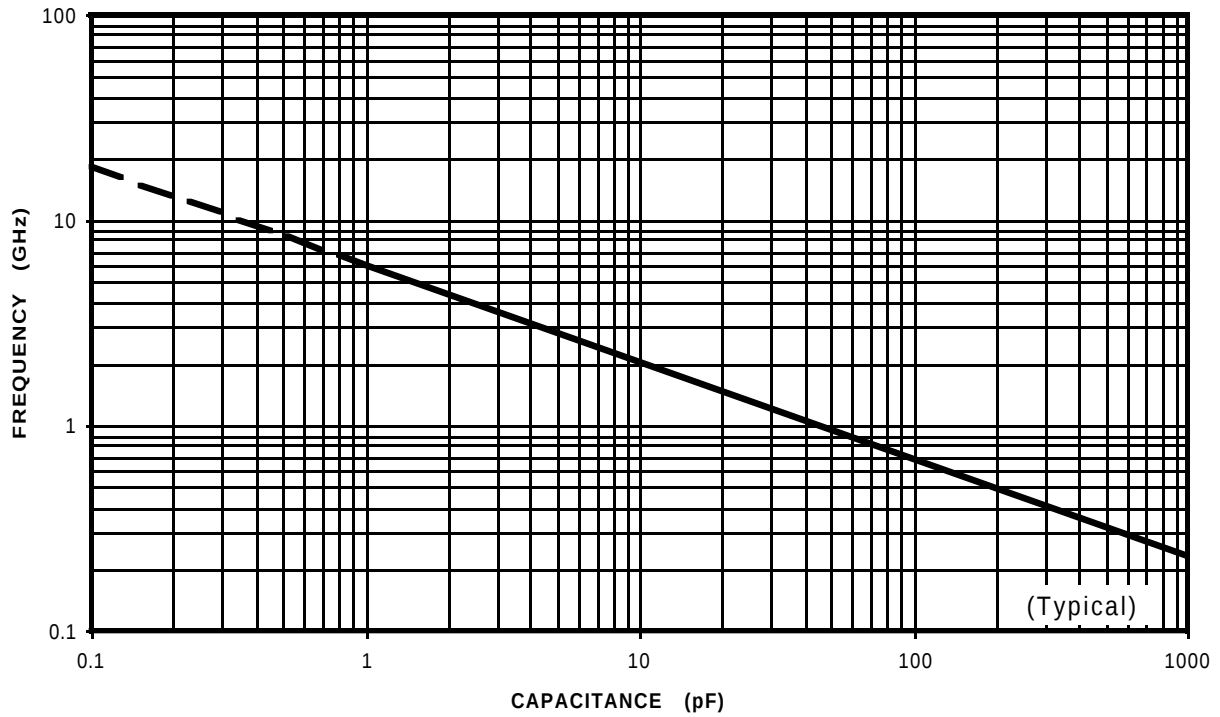


ATC 100 B Performance Data

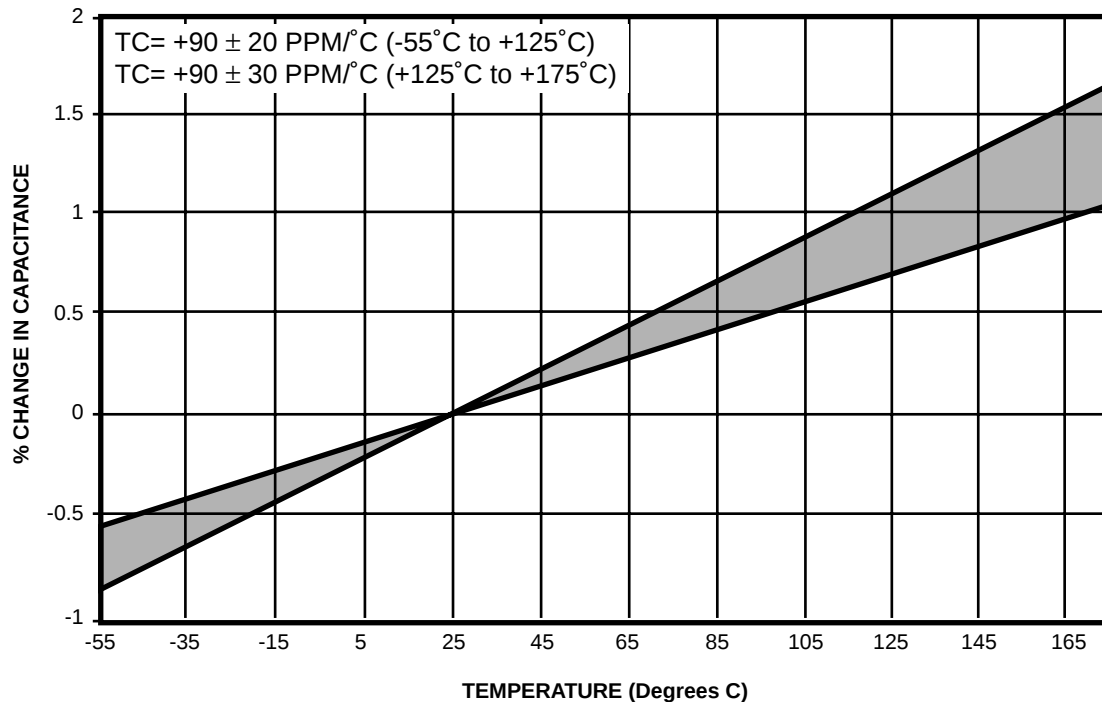


ATC 100 B Performance Data

SERIES RESONANCE VS CAPACITANCE
ATC SERIES 100, CASE B

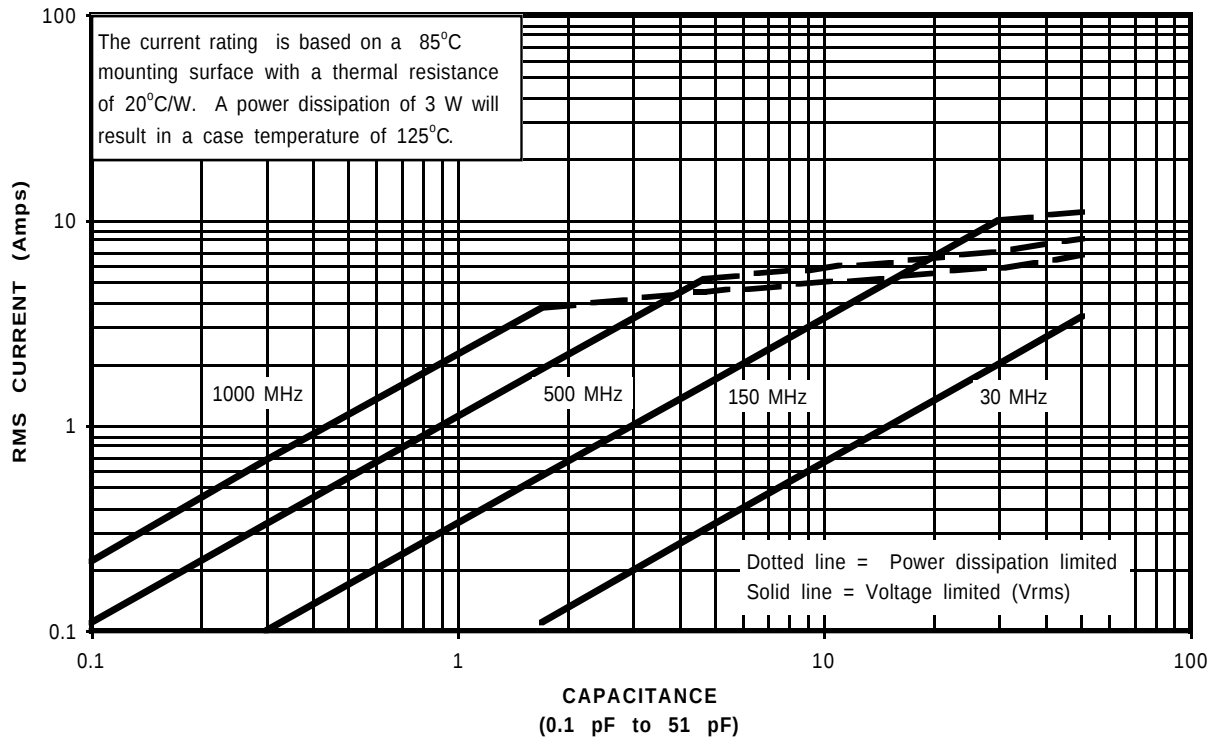


CAPACITANCE CHANGE VS TEMPERATURE
ATC SERIES 100, CASE B

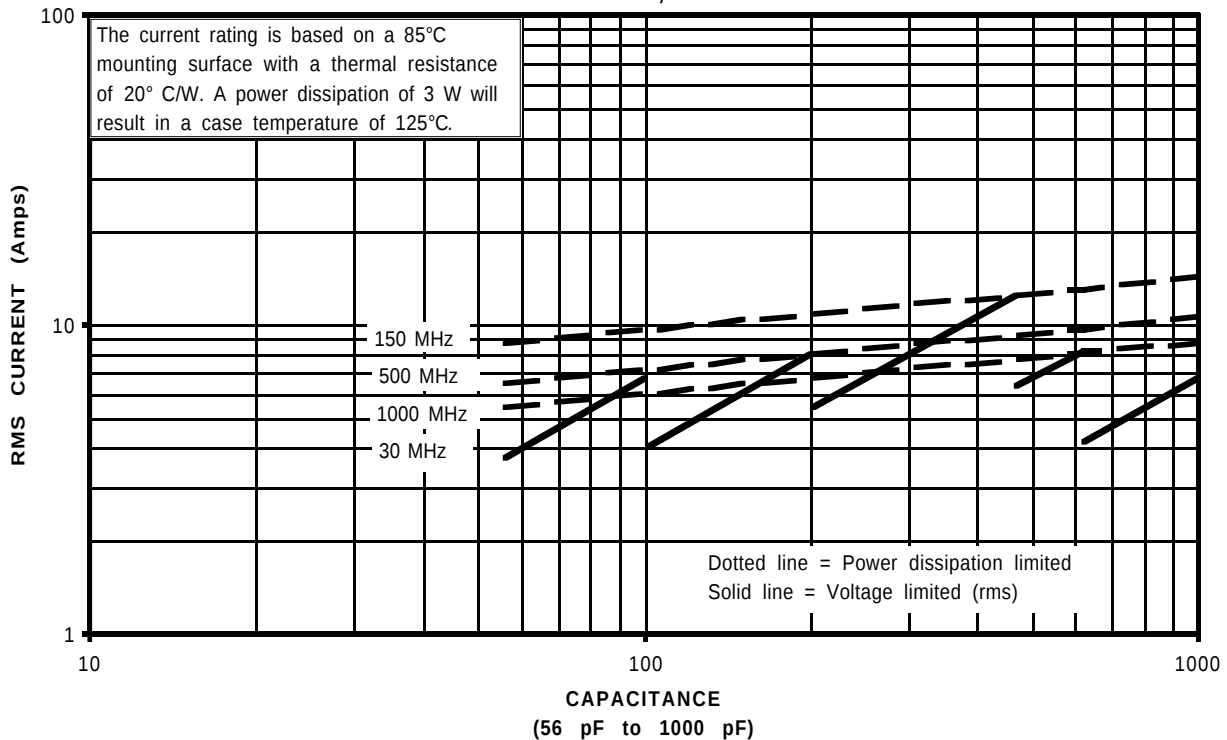


ATC 100 B Performance Data

CURRENT RATING VS CAPACITANCE
ATC SERIES 100, CASE B



CURRENT VS CAPACITANCE
ATC SERIES 100, CASE B



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