

ATC 700 B Series NPO Porcelain and Ceramic Multilayer Capacitors

- Case B Size (.110" x .110")
- Low ESR/ESL
- Low Noise
- Rugged Construction
- Capacitance Range 0.1 pF to 5100 pF
- Zero T.C.
- High Self-Resonance
- Established Reliability (QPL)

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 T.C. characteristic of this Series provide excellent performance over a broad range of RF and microwave applications requiring minimum drift, including RF power.

Self-encapsulating porcelain and ceramic constructions provide a rugged, hermetic package without the need or liability of external encapsulants.

Typical functional applications: Bypass, Coupling, Tuning and D.C. 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-C-55681 and MIL-C-123.

THERMAL SHOCK:

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

MOISTURE RESISTANCE:

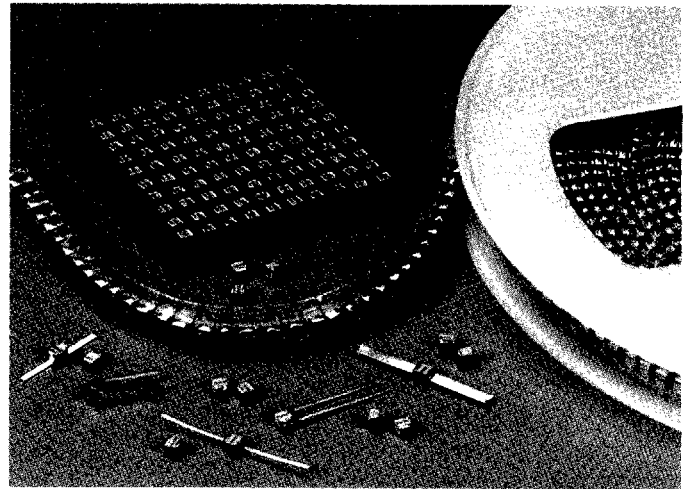
MIL-STD-202, Method 106.

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 (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 (T.C.):

0 ±30 PPM/°C (-55°C to +125°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 5100 pF:
10⁵ Megohms min. @ +25°C at rated WVDC.
10⁴ Megohms min. @ +125°C at rated WVDC.

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 5100 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 700 B Capacitance Values

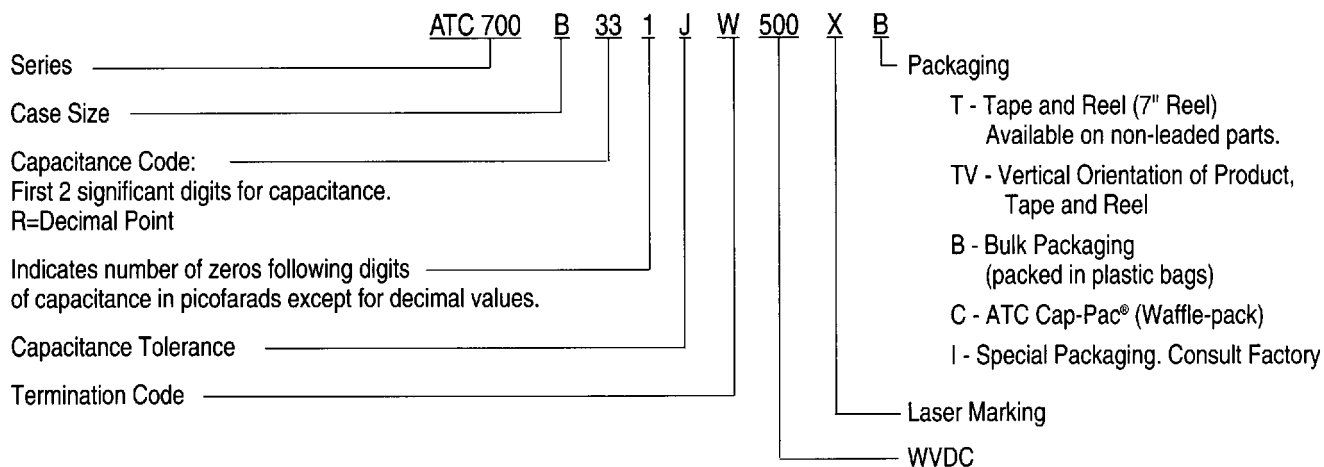
CAP. CODE	CAP. (pF)	TOL.	RATED WVDC	CAP. CODE	CAP. (pF)	TOL.	RATED WVDC	CAP. CODE	CAP. (pF)	TOL.	RATED WVDC	CAP. CODE	CAP. (pF)	TOL.	RATED WVDC
OR1	0.1	B	500	3R3	3.3	B, C, D	500	330	33	F, G, J, K, M	500	331	330	F, G, J, K, M	200
OR2	0.2			3R6	3.6			360	36			361	360		
OR3	0.3			3R9	3.9			390	39			391	390		
OR4	0.4	B, C		4R3	4.3			430	43			431	430		
OR5	0.5			4R7	4.7			470	47			471	470		
OR6	0.6			5R1	5.1			510	51			511	510		
OR7	0.7			5R6	5.6			560	56			561	560		
OR8	0.8			6R2	6.2			620	62			621	620		
OR9	0.9			6R8	6.8			680	68			681	680		
1R0	1.0			7R5	7.5			750	75			751	750		
1R1	1.1			8R2	8.2			820	82			821	820		
1R2	1.2			9R1	9.1			910	91			911	910		
1R3	1.3			100	10			101	100			102	1000		
1R4	1.4			110	11			111	110			112	1100		
1R5	1.5	B, C, D		120	12			121	120			122	1200		
1R6	1.6			130	13			131	130			152	1500		
1R7	1.7			150	15			151	150			182	1800		
1R8	1.8			160	16			161	160			222	2200		
1R9	1.9			180	18			181	180			272	2700		
2R0	2.0			200	20			201	200			302	3000		
2R1	2.1			220	22			221	220			332	3300		
2R2	2.2			240	24			241	240			392	3900		
2R4	2.4			270	27			271	270			472	4700		
2R7	2.7			300	30			301	300			512	5100		
3R0	3.0														

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

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

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




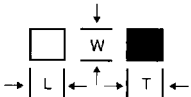

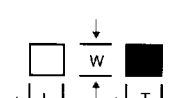

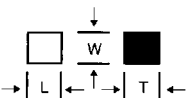

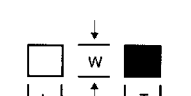
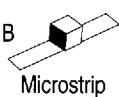
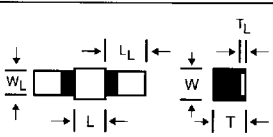
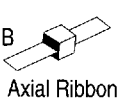
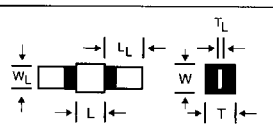

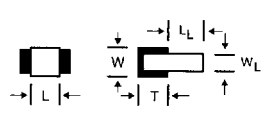

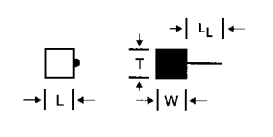
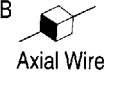
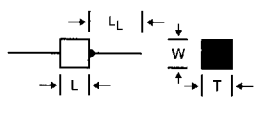
The above part number refers to a 700 B Series (case size B) 330 pF capacitor, J tolerance (±5%), 500 WVDC, with W termination (solder plate), laser marking and bulk packaging.

For additional information and catalogs contact your ATC representative or call direct at (516) 547-5700.

Consult factory for additional performance data.

ATC 700 B Capacitors: Mechanical Configurations

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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)			
700B	W	CDR14BP	B  Solder Plate		.110 +.020 -.010 (2.79 +0.51 -.025)	.110 ±.020 (2.79 ±0.51)	.102 (2.6) max.	SOLDER PLATE Nickel barrier, solder plated. Rugged, high performance termination for lower cost, high volume, tape & reel applications.		
700B	P	CDR14BP	B  Pellet		.110 +.035 -.010 (2.79 +0.89 -.025)	.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.		
700B	CA	CDR13BP	B  Gold Chip		.110 +.020 -.010 (2.79 +0.51 -.025)	.110 ±.020 (2.79 ±0.51)		UNI-TERM® NICKEL BARRIER, GOLD PLATED TERMINATIONS		
700B	C	CDR13BP	B  Chip		.110 +.020 -.010 (2.79 +0.51 -.025)	.110 ±.020 (2.79 ±0.51)		CHIP PALLADIUM SILVER TERMINATIONS		
700B	MS	CDR21BP	B  Microstrip		.135 ±.015 (3.43 ±0.38)	.110 ±.015 (2.79 ±0.38)	.100 (2.54) max.	LENGTH (L _L)	WIDTH (W _L)	THICKNESS (T _L)
700B	AR	CDR22BP	B  Axial Ribbon					.250 (6.35) min.	.093 ±.005 (2.36 ±0.13)	.004 ±.001 (.102 ±.025)
700B	RR	CDR24BP	B  Radial Ribbon					.145 ±.020 (3.68 ±0.51)	.500 (12.7) min.	#26 AWG., .016 (.406) dia. nominal
700B	RW	CDR23BP	B  Radial Wire							
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 and are attached with high temperature solder.

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

Tape and Reel packaging is available. W Termination is Recommended.

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

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ATC 700 B Capacitors: Non-Magnetic 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)	LENGTH (L _L)	WIDTH (W _L)	THICKNESS (T _L)
700B	WN	Meets Requirements	B Non-Mag Solder Plate		.110 +.025 -.010 (2.79 +0.64 -.025)	.110 ±.015 (2.79 ±0.38)	.102 (2.6) max.	NON-MAGNETIC Copper barrier, solder plated. Rugged, high performance termination for lower cost, high volume, tape & reel applications.		
700B	PN	Meets Requirements	B Non-Mag Pellet		.110 +.035 -.010 (2.79 +0.89 -.025)	.110 ±.020 (2.79 ±0.51)	.102 (2.6) max.	NON-MAGNETIC Copper barrier plated with the addition of hot solder dip process. Solder melting temperature is 355°F, 179°C.		
700B	CN	Meets Requirements	B Non-Mag Chip		.110 +.025 -.010 (2.79 +0.64 -.025)	.110 ±.015 (2.79 ±0.38)	.102 (2.6) max.	NON-MAGNETIC PALLADIUM SILVER TERMINATIONS		
700B	MN	Meets Requirements	B Non-Mag Microstrip		.135 ±.015 (3.43 ±0.38)	.110 ±.015 (2.79 ±0.38)	.100 (2.54) max.	LENGTH (L _L)	WIDTH (W _L)	THICKNESS (T _L)
700B	AN	Meets Requirements	B Non-Mag Axial Ribbon					.250 (6.35) min.	.093 ±.005 (2.36 ±0.13)	.004 ±.001 (.102 ±.025)
700B	FN	Meets Requirements	B Non-Mag Radial Ribbon					.500 (12.7) min.	#26 AWG., .016 (.406) dia. nominal	
700B	RN	Meets Requirements	B Non-Mag Radial Wire							
700B	BN	Meets Requirements	B Non-Mag Axial Wire							

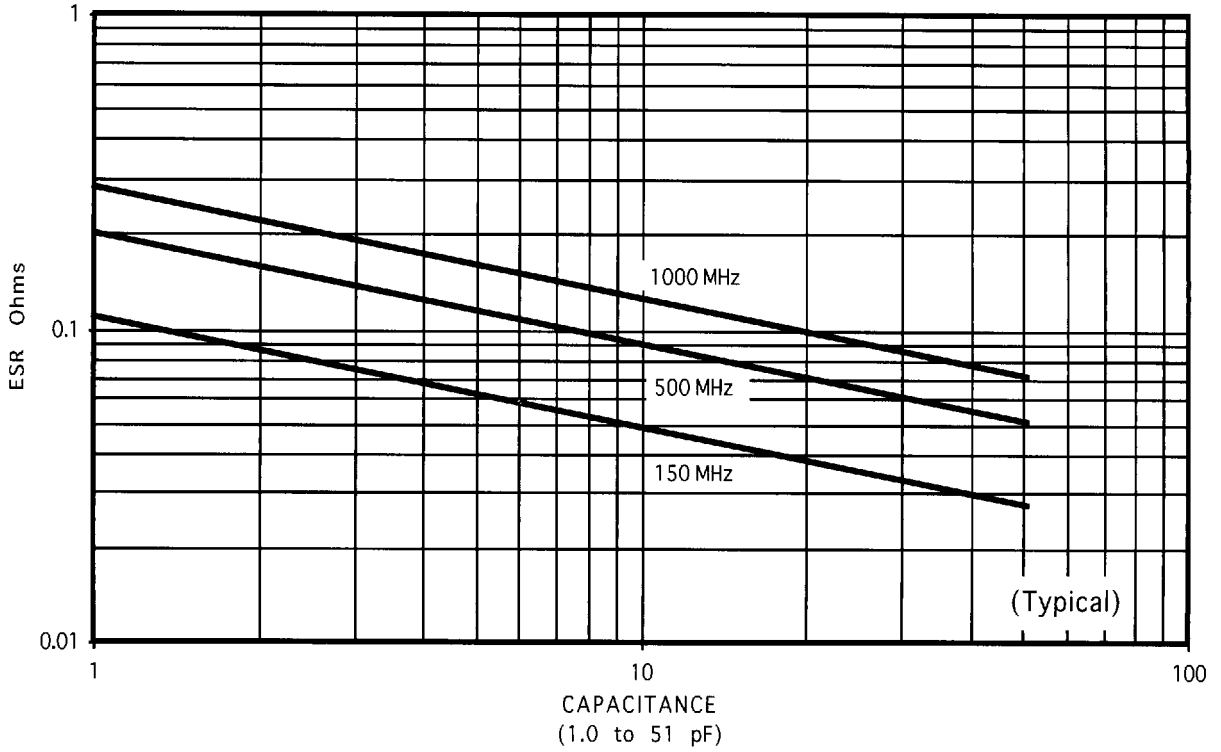
Additional lead styles available: Narrow Microstrip (DN), Narrow Axial Ribbon (GN) and Vertical Narrow Microstrip (VN). Other lead lengths are available; consult factory. All leads are high purity silver and are attached with high temperature solder.

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

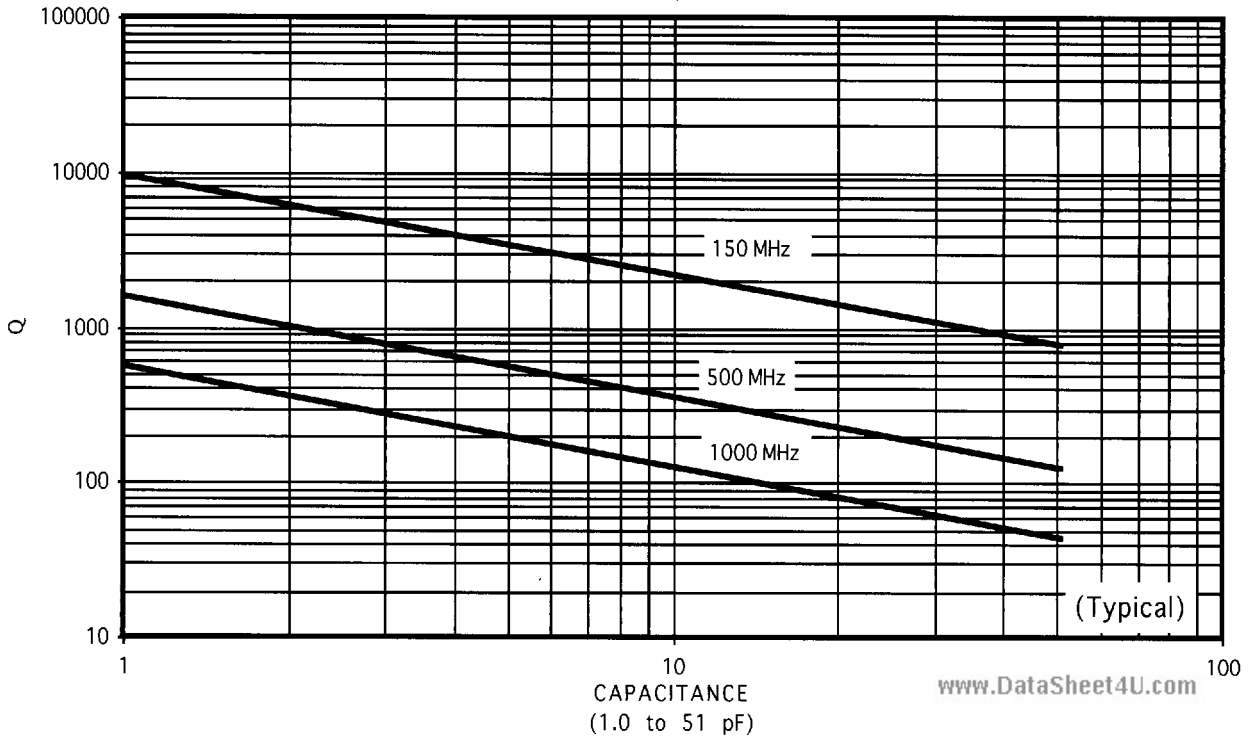
Tape and Reel packaging is available. W Termination is Recommended.

ATC 700 B Performance Data

ESR VS CAPACITANCE ATC SERIES 700, CASE B

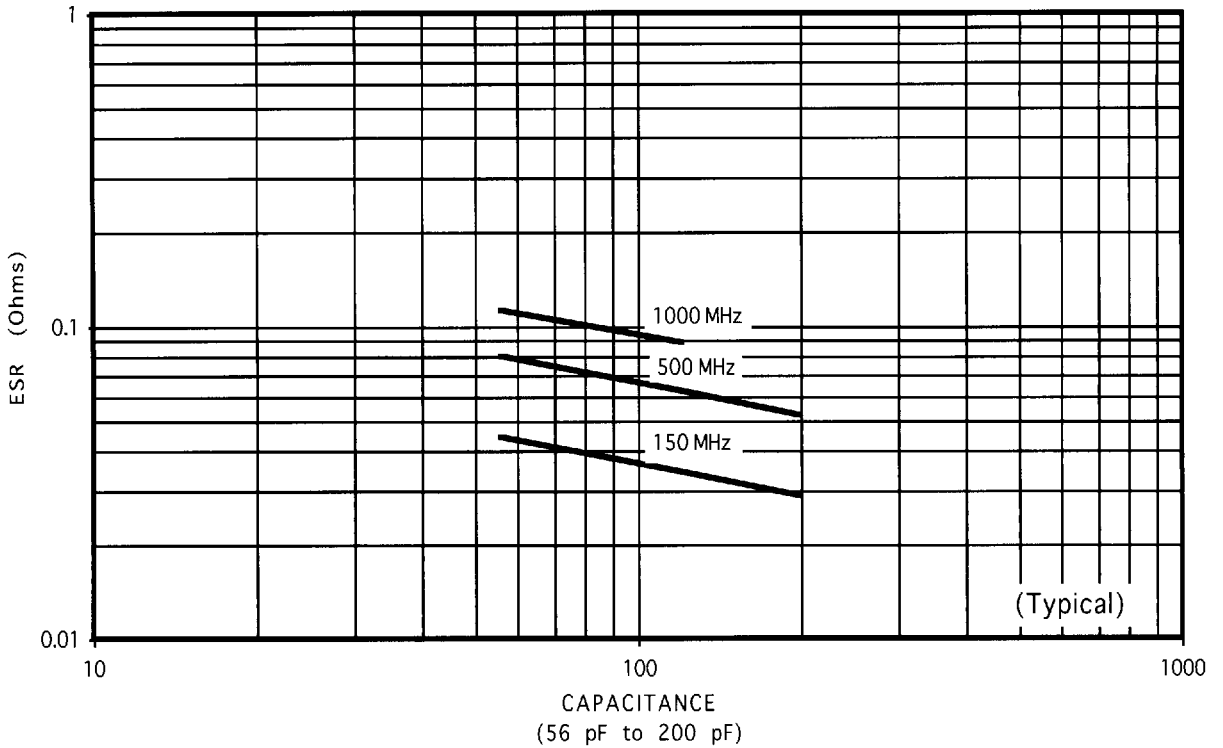


Q VS CAPACITANCE ATC SERIES 700, CASE B

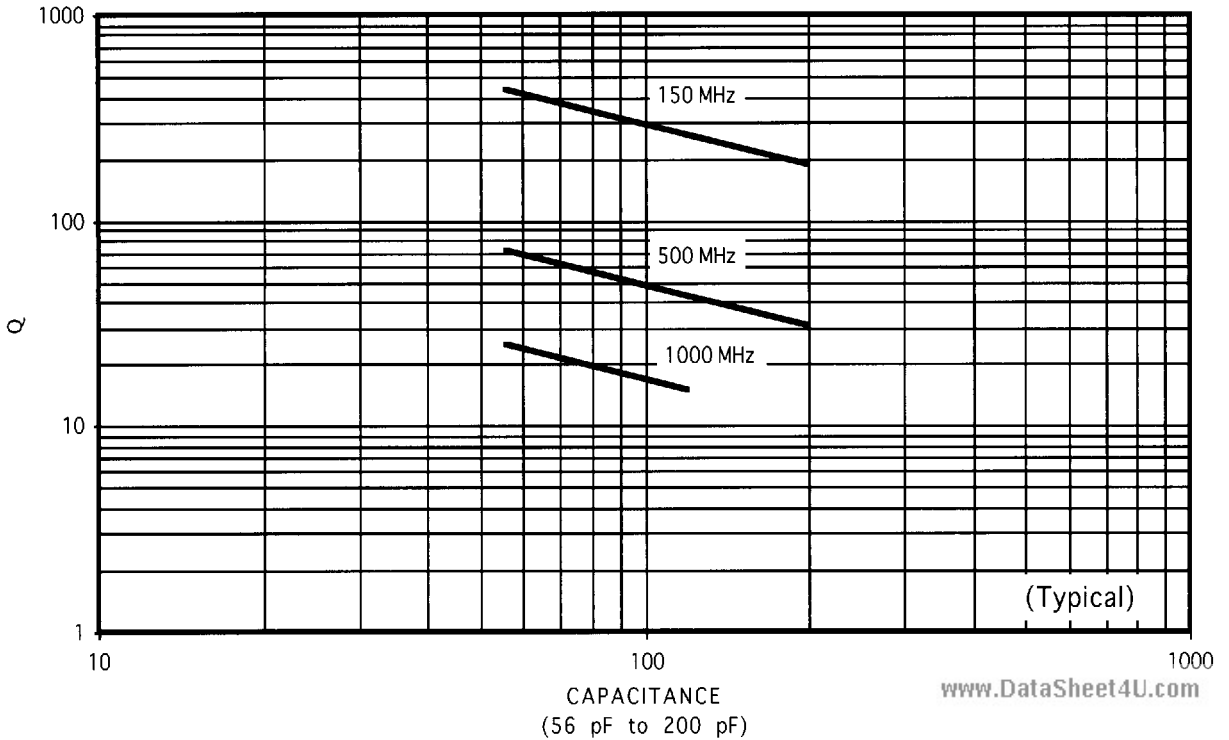


ATC 700 B Performance Data

ESR VS CAPACITANCE ATC SERIES 700, CASE B

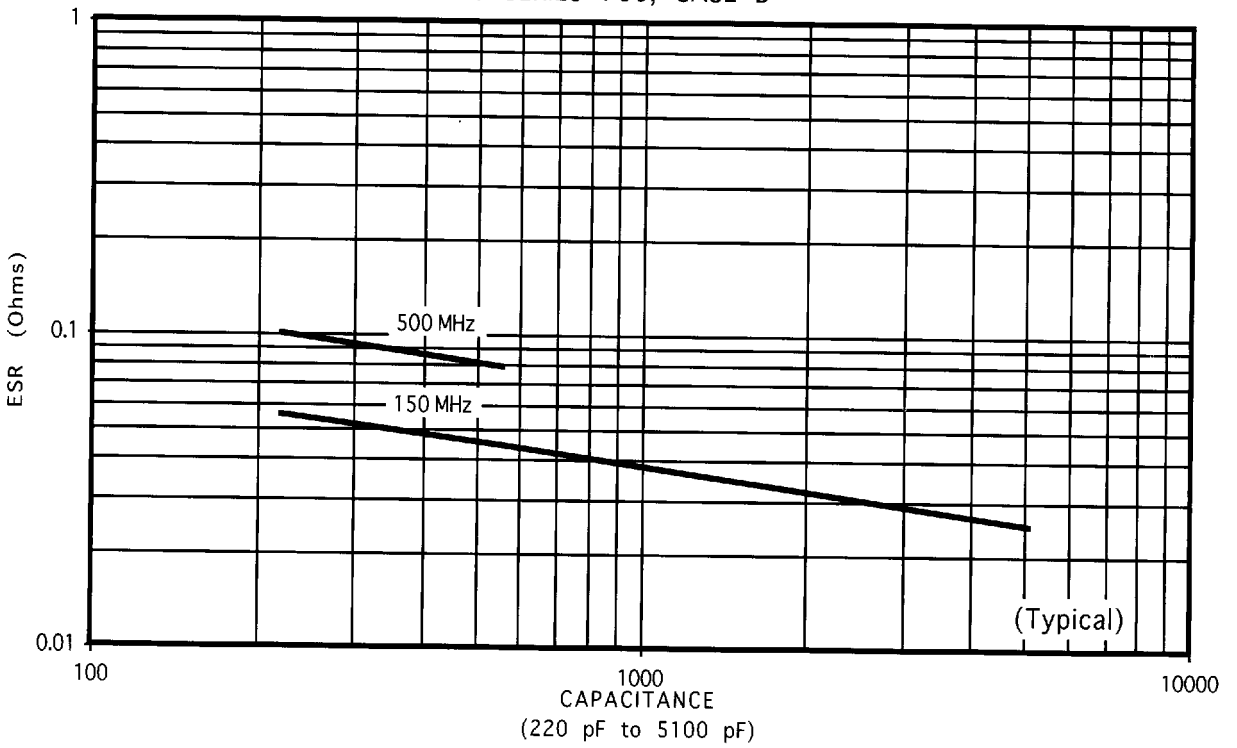


Q VS CAPACITANCE ATC SERIES 700, CASE B

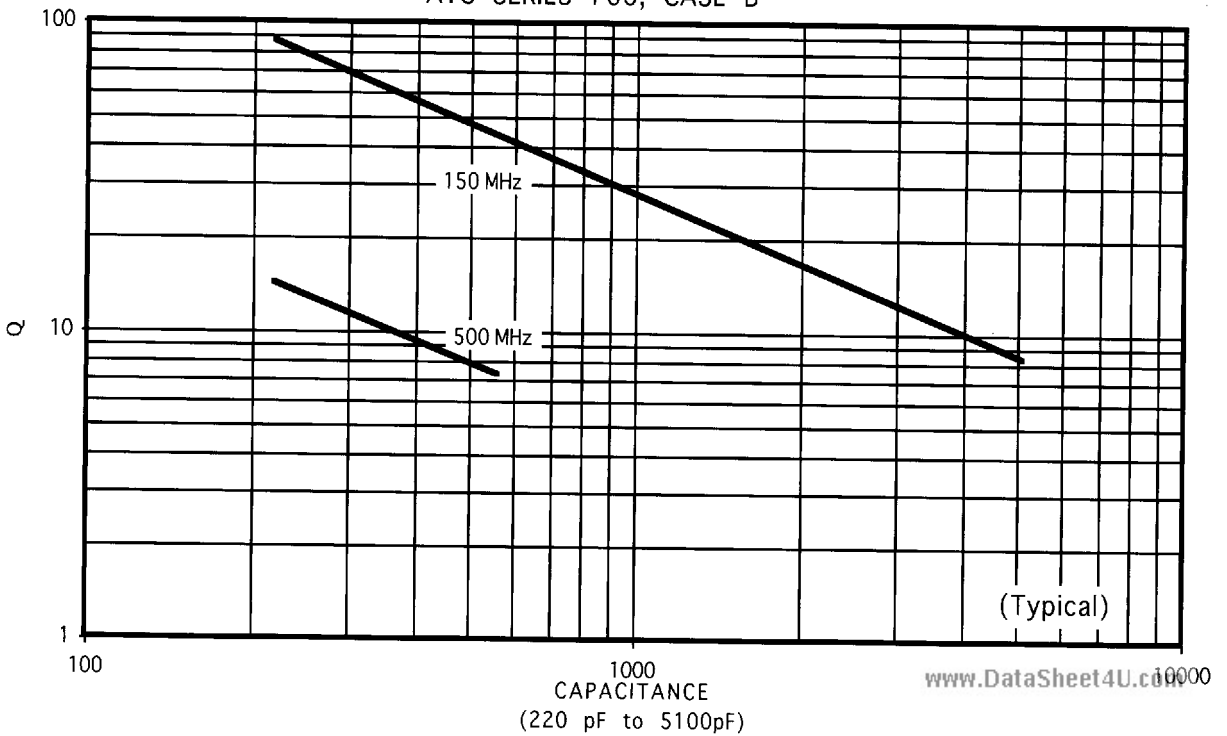


ATC 700 B Performance Data

ESR VS CAPACITANCE ATC SERIES 700, CASE B

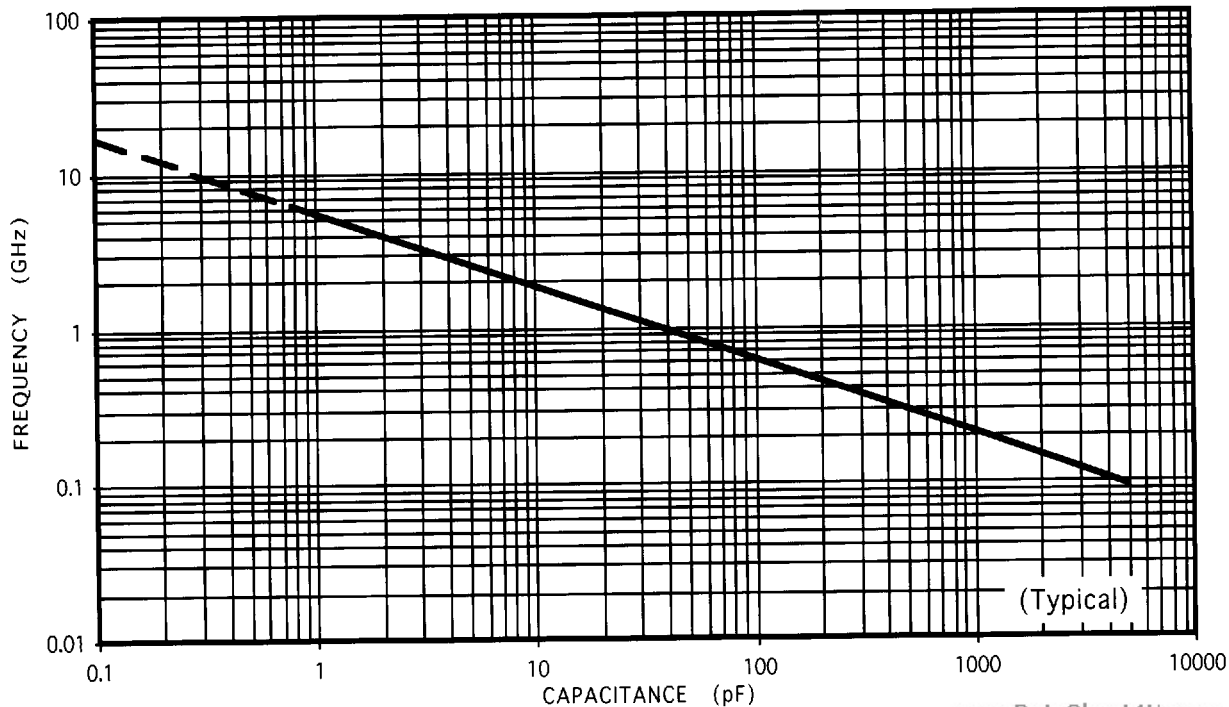


Q VS CAPACITANCE ATC SERIES 700, CASE B



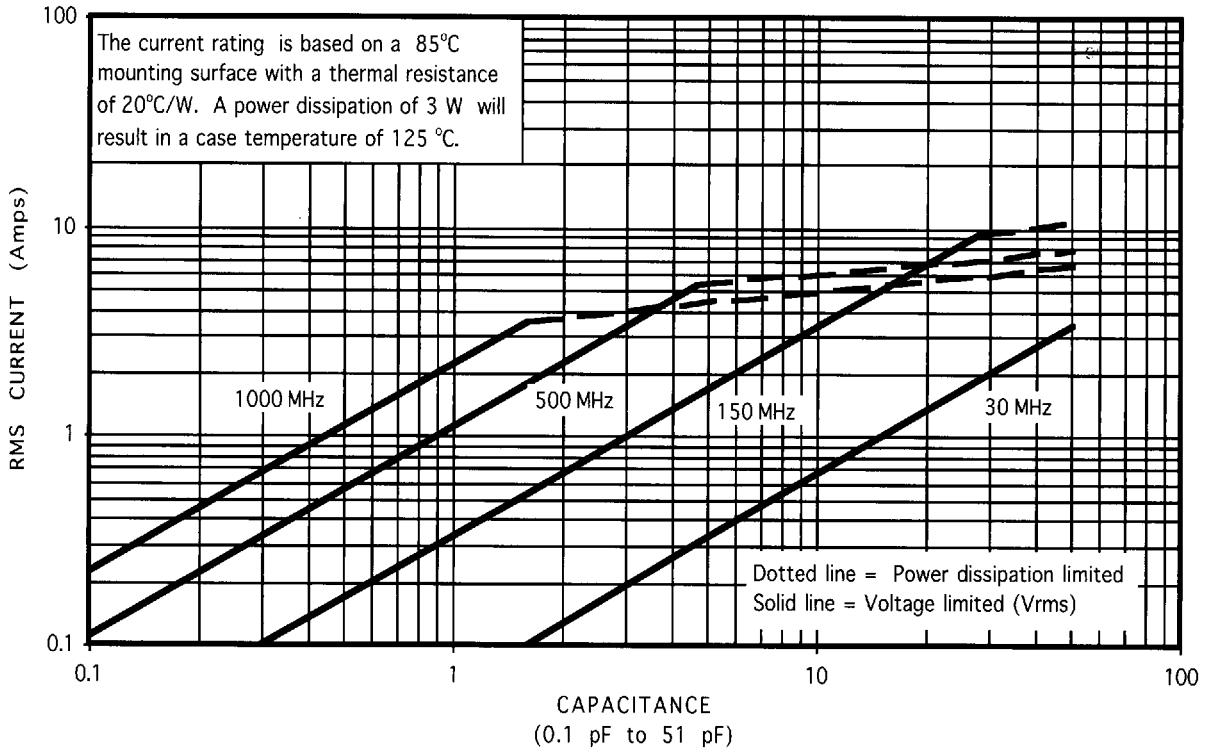
ATC 700 B Performance Data

SERIES RESONANCE VS CAPACITANCE
ATC SERIES 700, CASE B

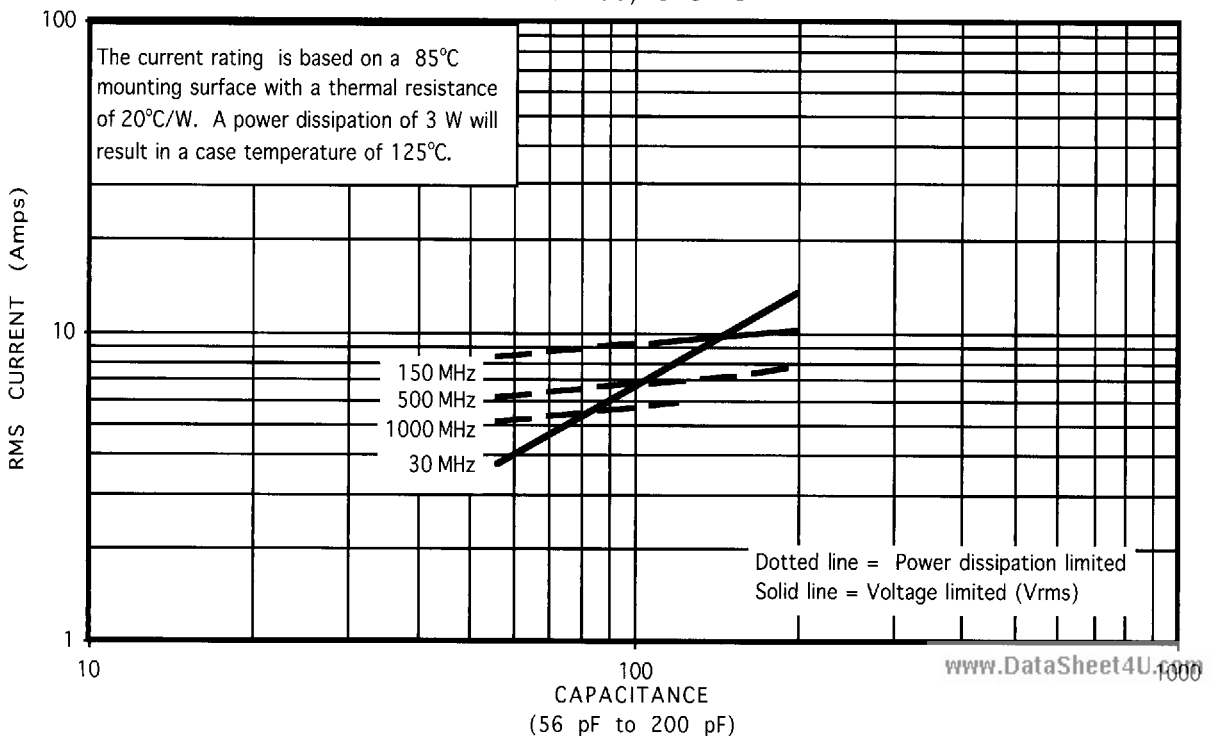


ATC 700 B Performance Data

CURRENT RATING VS CAPACITANCE
ATC SERIES 700, CASE B

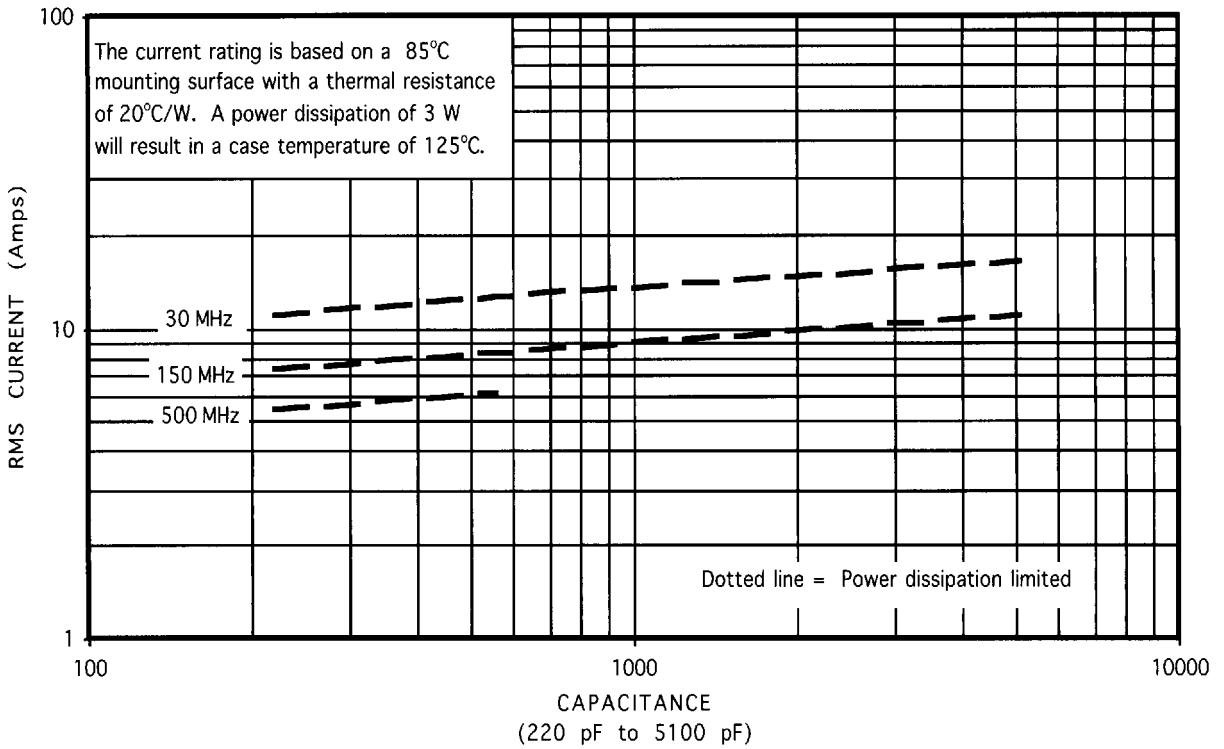


CURRENT RATING VS CAPACITANCE
ATC SERIES 700, CASE B



ATC 700 B Performance Data

CURRENT RATING VS CAPACITANCE ATC SERIES 700, CASE B



CAPACITANCE CHANGE VS TEMPERATURE ATC SERIES 700, CASE B

