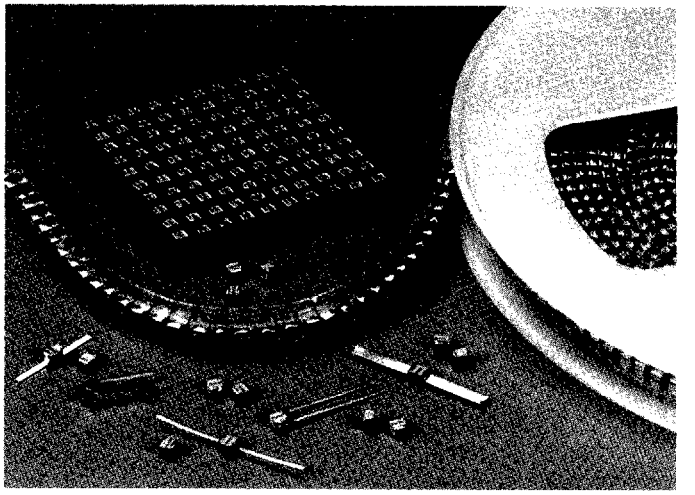
ATC 700 B Series NPO Porcelain and Ceramic Multilayer Capacitors



- **Case B Size (.110" x .110")**
- **Capacitance Range 0.1 pF to 5100 pF**
- **Low ESR/ESL**
- **Zero T.C.**
- **Low Noise**
- **High Self-Resonance**
- **Rugged Construction**
- **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:
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):
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 sur-face of the capacitor. Test per MIL-STD-202, method 211.

american technical ceramics
one norden lane, huntington station, n.y. 11746-2142 usa
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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
0R1	**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
0R2	**0.2**			**3R6**	**3.6**			**360**	**36**			361	360		
0R3	**0.3**	B, C		**3R9**	**3.9**			**390**	**39**			391	390		
0R4	**0.4**			**4R3**	**4.3**			**430**	**43**			431	430		
0R5	**0.5**	B, C, D		**4R7**	**4.7**			**470**	**47**			471	470		100
0R6	**0.6**			**5R1**	**5.1**			**510**	**51**			511	510		
0R7	**0.7**			**5R6**	**5.6**			**560**	**56**			561	560		
0R8	**0.8**			**6R2**	**6.2**			**620**	**62**			621	620		
0R9	**0.9**			**6R8**	**6.8**	B, C, J, K, M		**680**	**68**			681	680		50
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**	F, G, J, K, M		**101**	**100**		300	102	1000		
1R4	**1.4**			**110**	**11**			**111**	**110**			112	1100		
1R5	**1.5**			**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		200	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

ATC 700 B 33 1 J W 500 X B

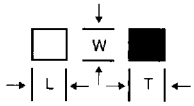
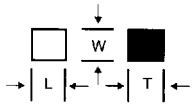
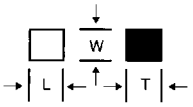
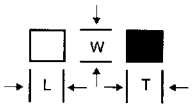
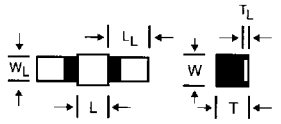
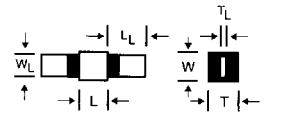
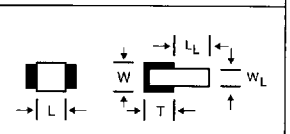
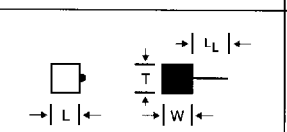
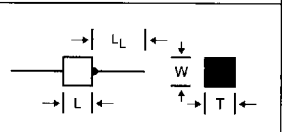
- Series
- Case Size
- Capacitance Code: First 2 significant digits for capacitance. R=Decimal Point
- Indicates number of zeros following digits of capacitance in picofarads except for decimal values.
- Capacitance Tolerance
- Termination Code
- WVDC
- Laser Marking
- Packaging
  - T - Tape and Reel (7" Reel) Available on non-leaded parts.
  - TV - Vertical Orientation of Product, Tape and Reel
  - B - Bulk Packaging (packed in plastic bags)
  - C - ATC Cap-Pac® (Waffle-pack)
  - I - Special Packaging. Consult Factory

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

ATC SERIES & CASE SIZE	ATC TERM. CODE	MIL-C-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
700B	W	CDR14BP	B Solder Plate		.110 +.020 -.010 (2.79 +0.51 -0.25)	.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 -0.25)	.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.
700B	CA	CDR13BP	B Gold Chip		.110 +.020 -.010 (2.79 +0.51 -0.25)	.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 -0.25)	.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					
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					

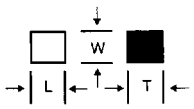
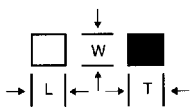
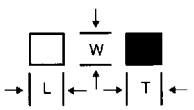
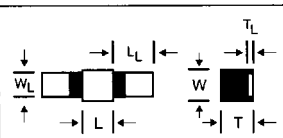
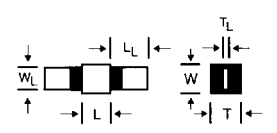
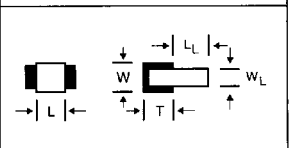
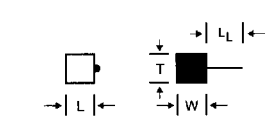
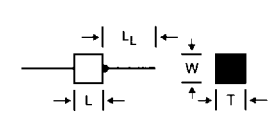
Additional lead styles available: Narrow Microstrip (NM), Narrow Axial Ribbon (NA) and Vertical Narrow Microstrip (H). Other lead lengths are available; consult factory. All leads are high purity silver and are attached with high temperature solder.

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.

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) LENGTH (L)	WIDTH (W)	THICKNESS (T)	LEAD AND TERMINATION DIMENSIONS AND 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 (2.6) max.	**NON-MAGNETIC** Copper barrier, solder plated. Rugged, high performance termination for lower cost, high volume, tape & reel applications.
700B	PN	Meets Require-ments	B Non-Mag Pellet		.110 +.035 -.010 (2.79 +0.89 -0.25)	.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 Require-ments	B Non-Mag Chip		.110 +.025 -.010 (2.79 +0.64 -0.25)	.110 ±.015 (2.79 ±0.38)	.102 (2.6) max.	**NON-MAGNETIC** PALLADIUM SILVER TERMINATIONS
700B	MN	Meets Require-ments	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 Require-ments	B Non-Mag Axial Ribbon					.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					

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.

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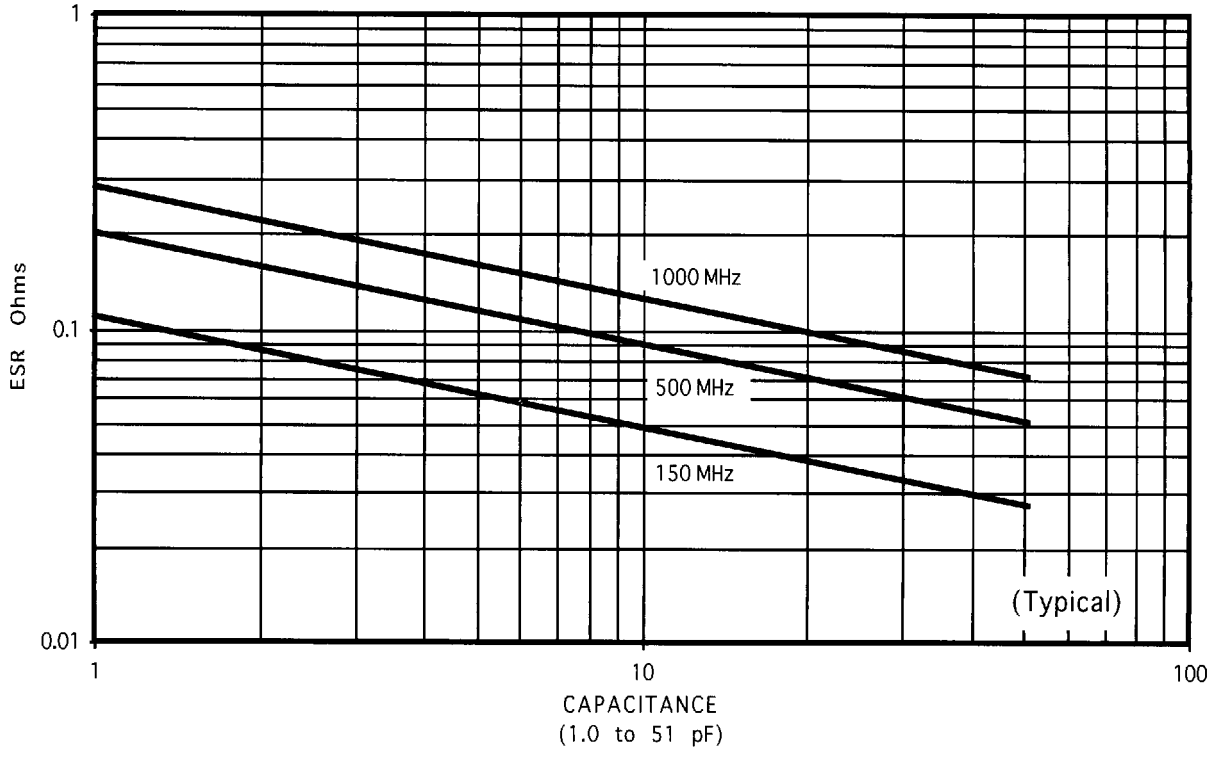
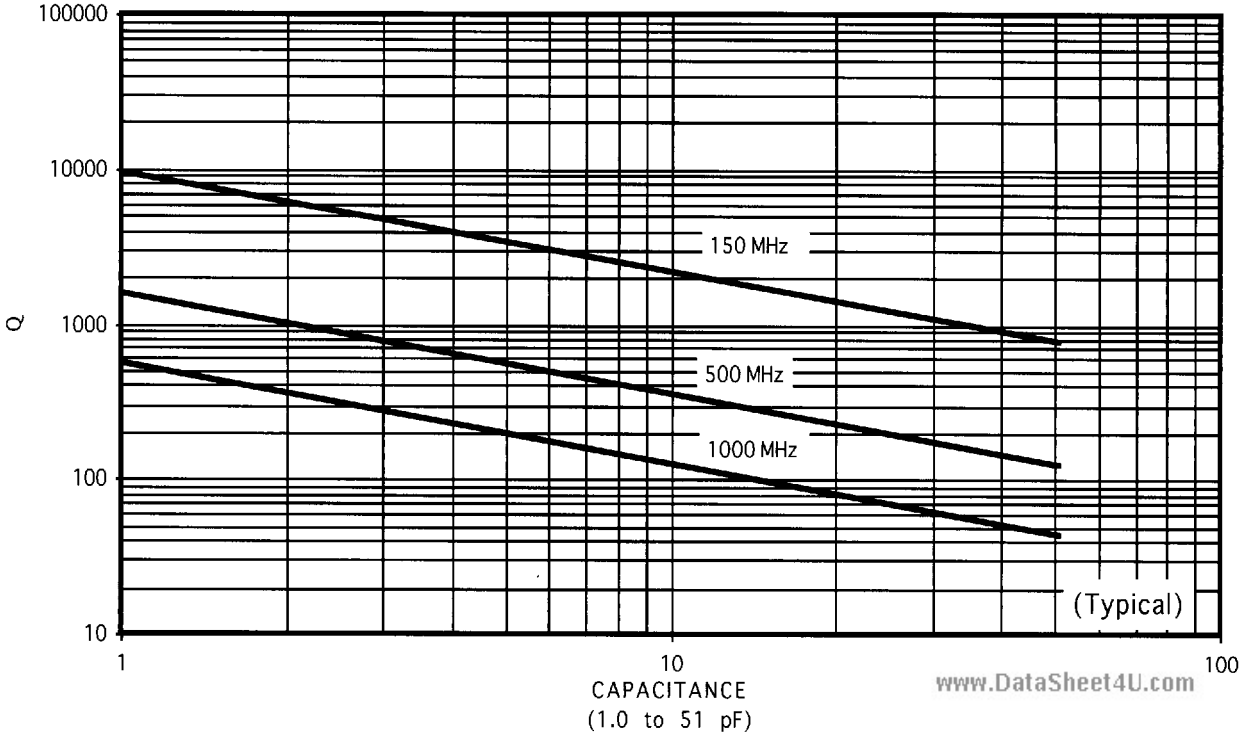
Tape and Reel packaging is available. W Termination is Recommended.

ATC 700 B Performance Data

ESR VS CAPACITANCE
ATC SERIES 700, CASE B

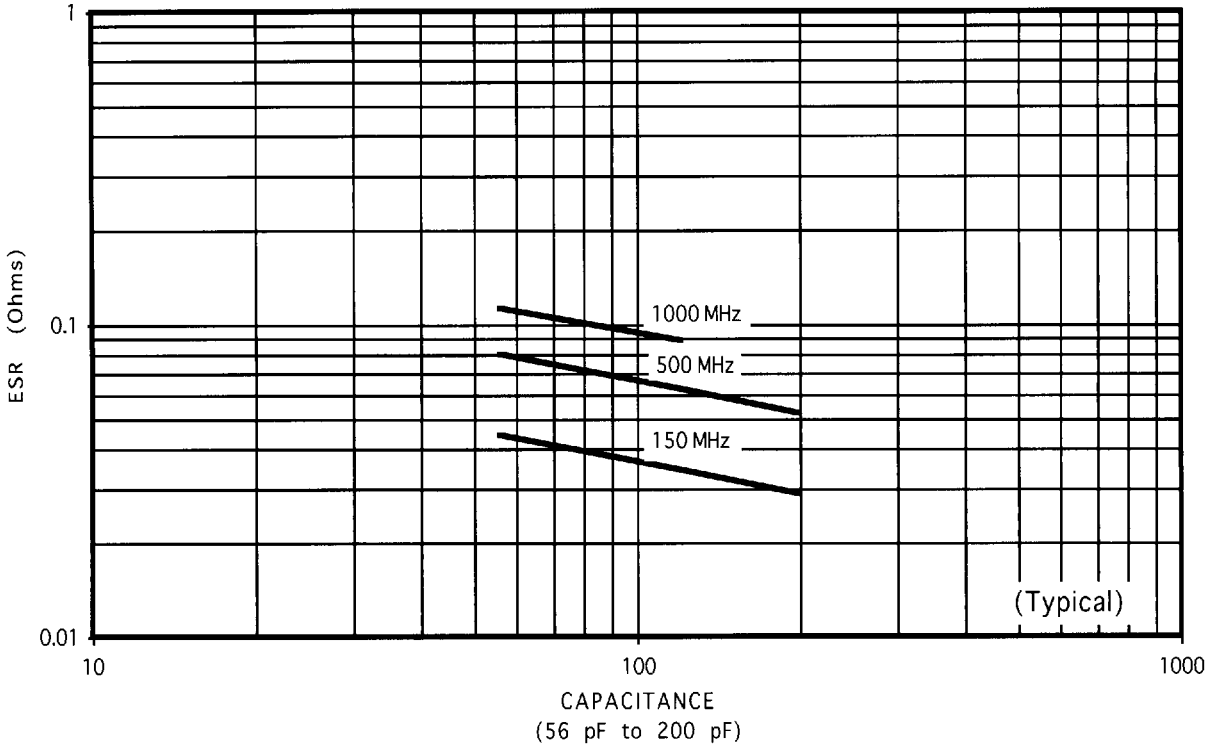


Q VS CAPACITANCE
ATC SERIES 700, CASE B

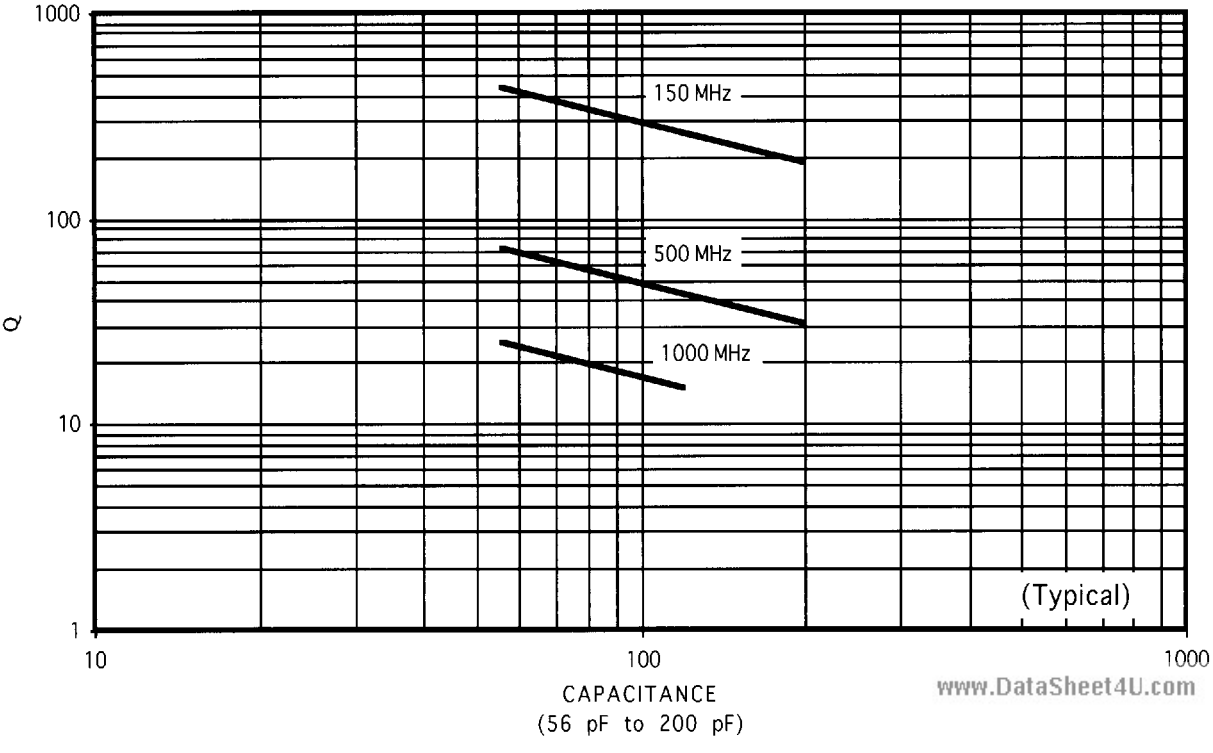


ATC 700 B Performance Data

ESR VS CAPACITANCE
ATC SERIES 700, CASE B

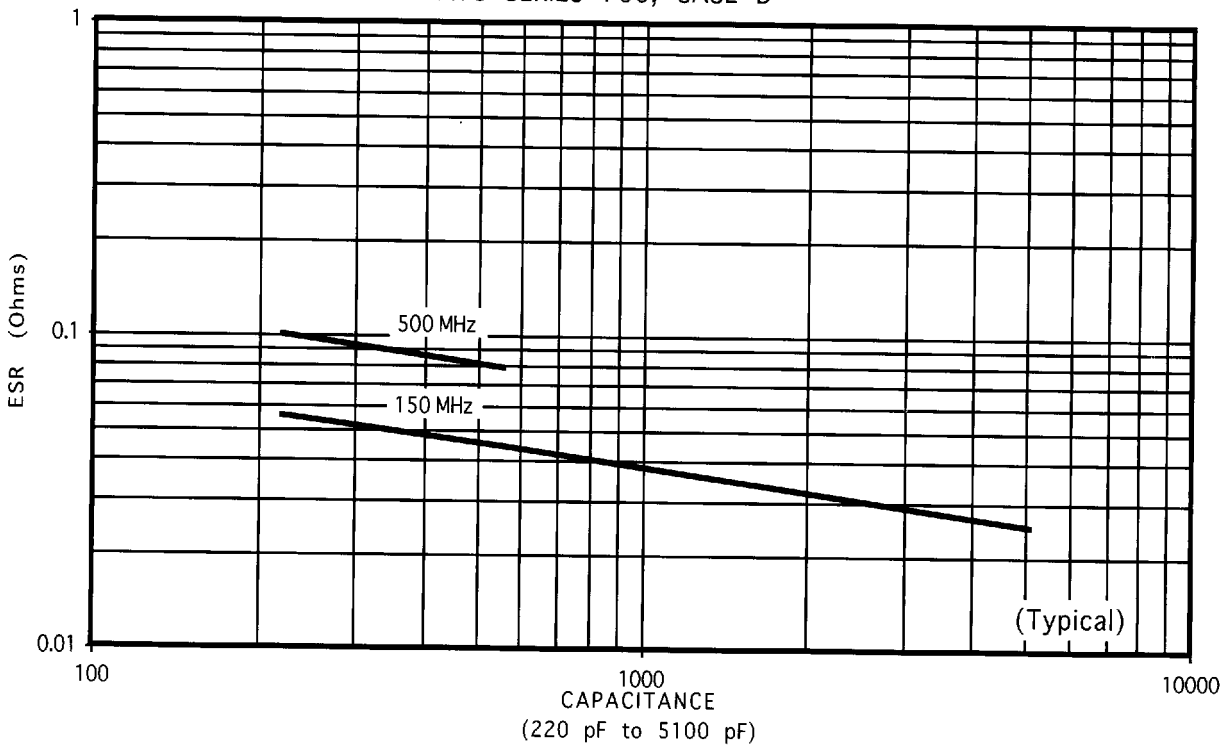


Q VS CAPACITANCE
ATC SERIES 700, CASE B

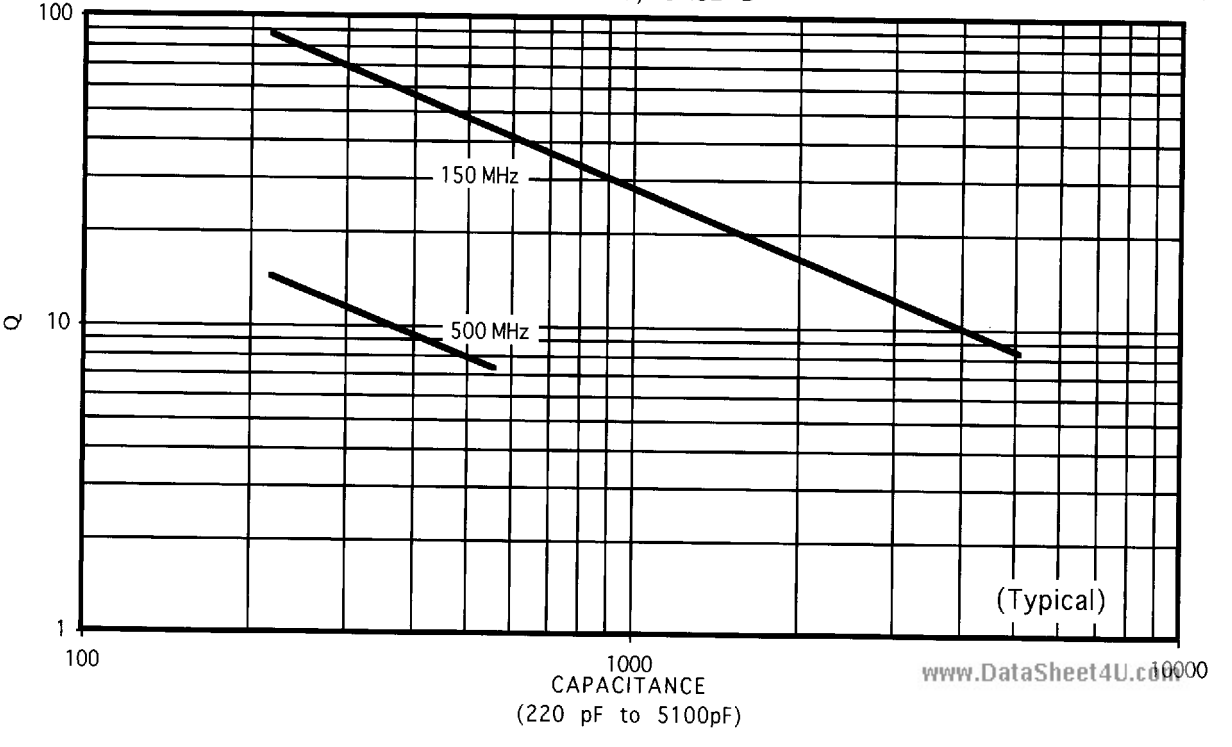


ATC 700 B Performance Data

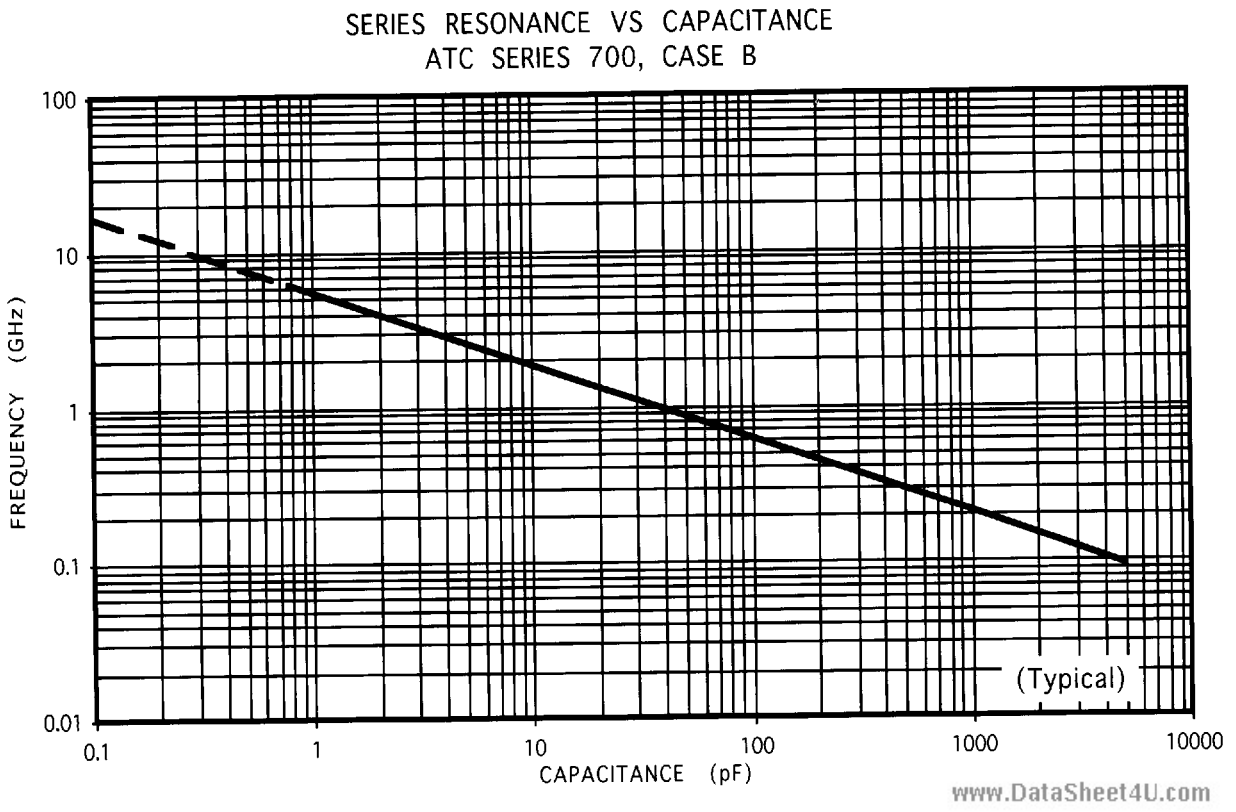
ESR VS CAPACITANCE
ATC SERIES 700, CASE B



Q VS CAPACITANCE
ATC SERIES 700, CASE B

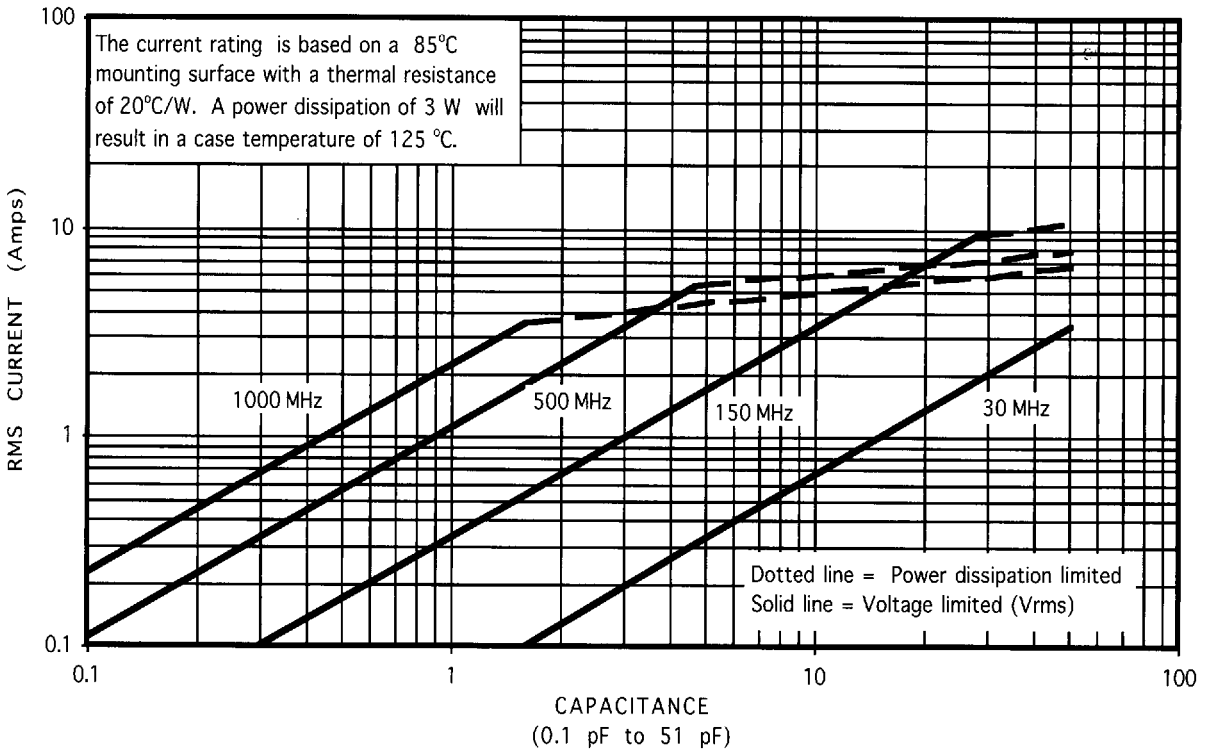


ATC 700 B Performance Data

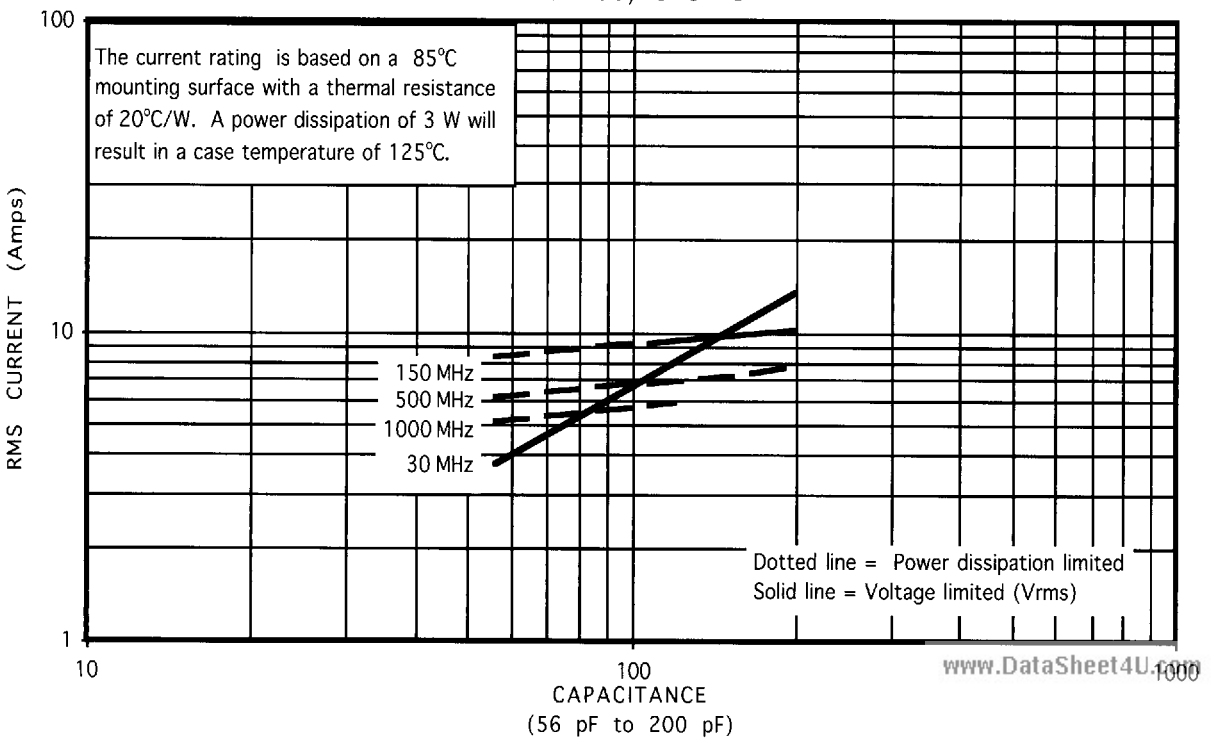


ATC 700 B Performance Data

CURRENT RATING VS CAPACITANCE
ATC SERIES 700, CASE B

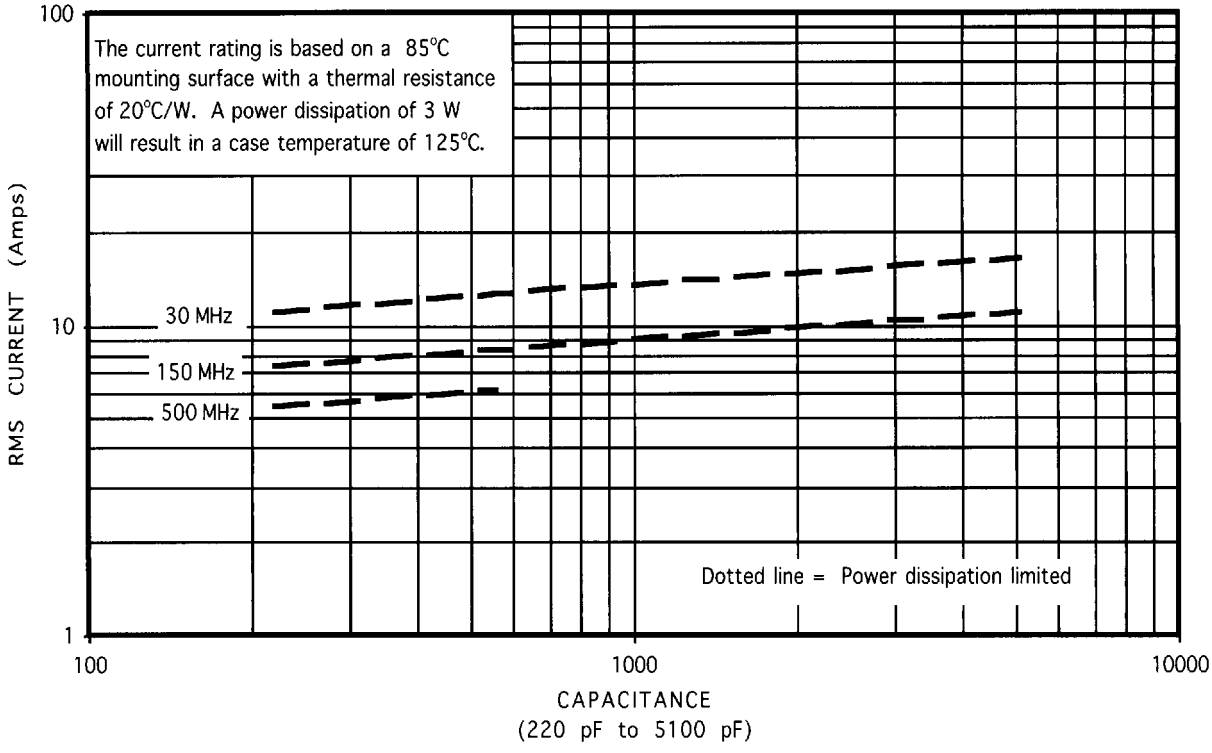


CURRENT RATING VS CAPACITANCE
ATC SERIES 700, CASE B



ATC 700 B Performance Data

CURRENT RATING VS CAPACITANCE
ATC SERIES 700, CASE B



CAPACITANCE CHANGE VS TEMPERATURE
ATC SERIES 700, CASE B