# 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)**
- **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.

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.

## 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:**
MIL-STD-202, Method 108, for 2000 hours, at 125°C.
Voltage Applied:
200% of WVDC for capacitors rated at 500 volts DC or less.
120% of WVDC for capacitors rated at 1250 volts DC or less.
100% of WVDC for capacitors rated above 1250 volts DC.

## 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:
$10^6$ Megohms min. @ +25°C at rated WVDC.
$10^5$ Megohms min. @ +125°C at rated WVDC.
510 pF to 1000 pF:
$10^5$ Megohms min. @ +25°C at rated WVDC.
$10^4$ 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% of WVDC for capacitors rated at 500 volts DC or less for 5 seconds.
150% of WVDC for capacitors rated at 1250 volts DC or less for 5 seconds.
120% of WVDC for capacitors rated above 1250 volts DC for 5 seconds.

**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

**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.

# ATC 100 B Capacitance Values

| CAP. CODE | CAP. (pF) | TOL. | RATED WVDC STD. | RATED WVDC EXT. | CAP. CODE | CAP. (pF) | TOL. | RATED WVDC STD. | RATED WVDC EXT. | CAP. CODE | CAP. (pF) | TOL. | RATED WVDC STD. | RATED WVDC EXT. | CAP. CODE | CAP. (pF) | TOL. | RATED WVDC STD. | RATED WVDC EXT. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0R1 | 0.1 | B | 500 | EXTENDED VOLTAGE 1500 EXTENDED VOLTAGE | 2R4 | 2.4 | B, C, D | 500 | EXTENDED VOLTAGE 1500 EXTENDED VOLTAGE | 200 | 20 | F, G, J, K, M | 500 | EXTENDED VOLTAGE 1500 EXTENDED VOLTAGE 1000 | 151 | 150 | F, G, J, K, M | 300 | EXT VOLT 1000 EXT VOLT 600 EXT VOLT 300 |
| 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 | | 200 | |
| 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 | B, C, J, K, M | | | 620 | 62 | | | | 471 | 470 | | | |
| 1R4 | 1.4 | | | | 8R2 | 8.2 | | | | 680 | 68 | | | | 511 | 510 | | 100 | |
| 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 | | 50 | |
| 1R8 | 1.8 | | | | 120 | 12 | | | | 101 | 100 | | | | 751 | 750 | | | |
| 1R9 | 1.9 | | | | 130 | 13 | F, G, J, K, M | | | 111 | 110 | | | | 821 | 820 | | | |
| 2R0 | 2.0 | | | | 150 | 15 | | | | 121 | 120 | | 300 | | 911 | 910 | | | |
| 2R1 | 2.1 | | | | 160 | 16 | | | | 131 | 130 | | | 1000 | 102 | 1000 | | | |
| 2R2 | 2.2 | | | | 180 | 18 | | | | | | | | | | | | | |

**VRMS = 0.707 X WVDC**

**• SPECIAL VALUES, TOLERANCES, HIGHER WVDC AND MATCHING AVAILABLE. PLEASE CONSULT FACTORY.**

**NOTE: EXTENDED WVDC DOES NOT APPLY TO CDR PRODUCTS.**

## ATC PART NUMBER CODE

ATC100 B 91 0 J W 500 X T

- 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, 1000 pc. qty.*
  - TV - Vertical Orientation of Product, Tape and Reel, 1000 pc. qty.*
  - I - Special Packaging. Consult Factory.

  *Consult ATC for other quantities

  ATC Cap-Pac® packaging (100 pc. qty. std.) is also available. For this option, leave last field blank.

### 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% |

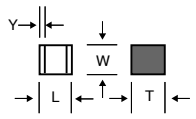
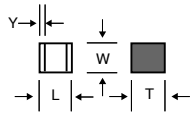
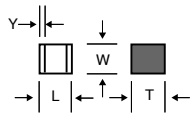
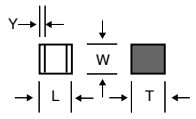
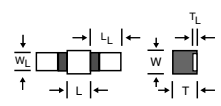
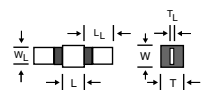
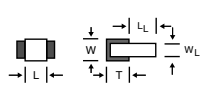
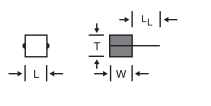
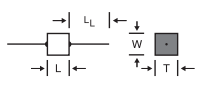
The above part number refers to a 100 B Series (case size B) 91 pF capacitor, J tolerance (±5%), 500 WVDC, with W termination (Tin/Lead, Solder Plated over Nickel Barrier), laser marking and Tape and Reel packaging.

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 (+1-631) 622-4700.

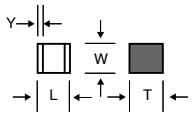
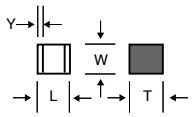
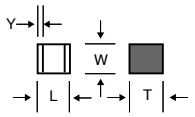
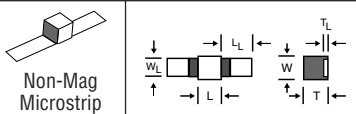
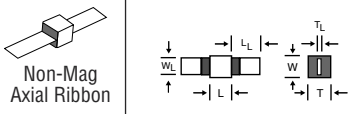
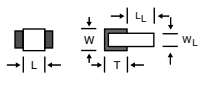
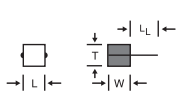
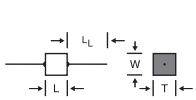
Consult factory for additional performance data.

# ATC 100 B Capacitors: Mechanical Configurations

| ATC SERIES & CASE SIZE | ATC TERM. CODE | MIL-PRF-55681 | CASE SIZE & TYPE | OUTLINES<br>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 +.020 -.010 (2.79 +0.51 -0.25) | .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 | B Pellet |  | .110 +.035 -.010 (2.79 +0.89 -0.25) | .110 ±.015 (2.79 ±0.38) | | | Heavy Tin/Lead Coated, over Nickel Barrier Termination | | |
| 100B | T | N/A | B Solderable Nickel Barrier |  | .110 +.020 -.010 (2.79 +0.51 -0.25) | .110 ±.015 (2.79 ±0.38) | | | ***RoHS Compliant*** Tin Plated over Nickel Barrier Termination | | |
| 100B | CA | CDR13BG | B Gold Chip |  | .110 +.020 -.010 (2.79 +0.51 -0.25) | .110 ±.015 (2.79 ±0.38) | | | ***RoHS Compliant*** Gold Plated over Nickel Barrier Termination | | |
| 100B | MS | CDR21BG | B 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 | B Axial Ribbon |  | | | .102 (2.59) max. | | .250 (6.35) min. | .093 ±.005 (2.36 ±0.13) | .004 ±.001 (.102 ±.025) |
| 100B | RR | CDR24BG | B Radial Ribbon |  | | | | | | | |
| 100B | RW | CDR23BG | B Radial Wire |  | .145 ±.020 (3.68 ±0.51) | | | | .500 (12.7) min. | #26 AWG., .016 (.406) dia. nominal | |
| 100B | AW | CDR25BG | B Axial Wire |  | | | | | | | |

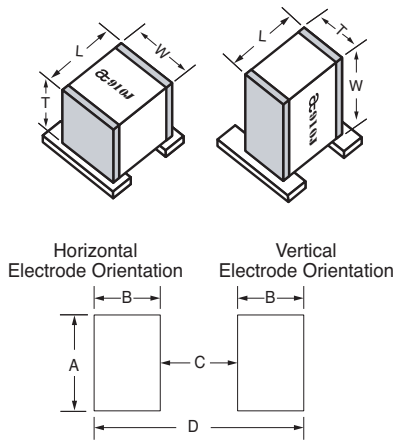
Additional lead styles available: Narrow Microstrip (NM), Narrow Axial Ribbon (NA) and Vertical Narrow Microstrip (H). Other lead lengths are available; consult factory. All leads are high purity silver attached with high temperature solder and are **RoHS** compliant. For a complete military catalog, request American Technical Ceramics document ATC 001-818.

# 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) LENGTH (L) | WIDTH (W) | THICKNESS (T) | LEAD AND TERMINATION DIMENSIONS AND MATERIALS OVERLAP (Y) | MATERIALS |
|---|---|---|---|---|---|---|---|---|---|
| 100B | 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 (2.59) 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 +0.89 -0.25) | .110 ±.015 (2.79 ±0.38) | | | Heavy Tin/Lead Coated, over Non-Magnetic Barrier Termination |
| 100B | TN | Meets Require-ments | B Non-Mag Solderable Barrier |  | .110 +.025 -.010 (2.79 +0.64 -0.25) | .110 ±.015 (2.79 ±0.38) | | | ***RoHS Compliant*** Tin Plated over Non-Magnetic Barrier Termination |
| 100B | MN | Meets Require-ments | Non-Mag Microstrip |  | 135 ±.015 (3.43 ±0.38) | .110 ±.015 (2.79 ±0.38) | .120 (3.05) max. | N/A | Length ($L_L$) .250 (6.35) min. / Width ($W_L$) .093 ±.005 (2.36 ±0.13) / Thickness ($T_L$) .004 ±.001 (.102 ±.025) |
| 100B | AN | Meets Require-ments | Non-Mag Axial Ribbon |  | | | .102 (2.59) max. | | |
| 100B | FN | Meets Require-ments | B Non-Mag Radial Ribbon |  | | | | | |
| 100B | 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 |
| 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




Case B Vertical Mount — Dimensions are in inches

| 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 — Dimensions are in inches

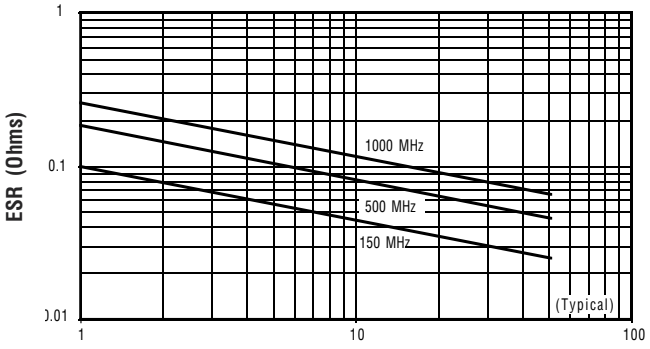
| | | | | | |
|---|---|---|---|---|---|
| All values | Normal | .130 | .050 | .075 | .175 |
| | High Density | .110 | .030 | .075 | .135 |


**AMERICAN TECHNICAL CERAMICS**

**ATC North America** sales@atceramics.com
**ATC Europe** saleseur@atceramics.com
**ATC Asia** sales@atceramics-asia.com

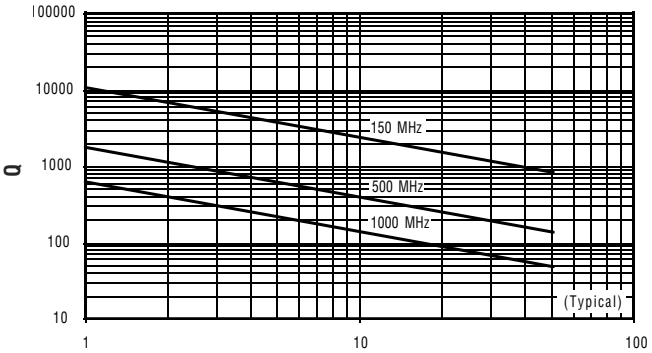
# ATC 100 B Performance Data

**ESR VS. CAPACITANCE**
**ATC SERIES 100, CASE B**



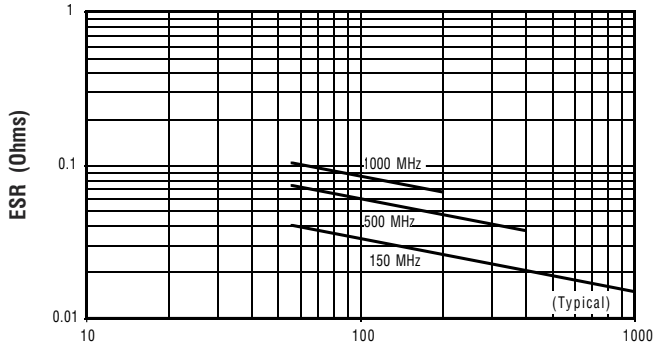

**CAPACITANCE (pF)**
**(1.0 pF to 51 pF)**

**Q VS. CAPACITANCE**
**ATC SERIES 100, CASE B**



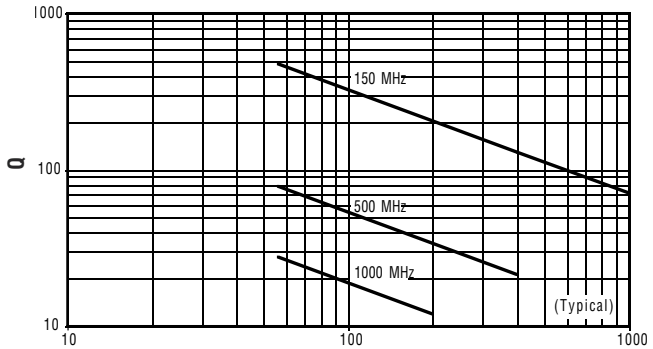

**CAPACITANCE (pF)**
**(1.0 pF to 51 pF)**

**ESR VS. CAPACITANCE**
**ATC SERIES 100, CASE B**



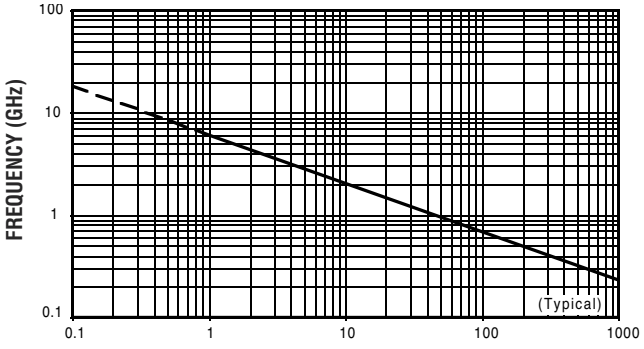

**CAPACITANCE (pF)**
**(56 pF to 1000 pF)**

**Q VS. CAPACITANCE**
**ATC SERIES 100, CASE B**



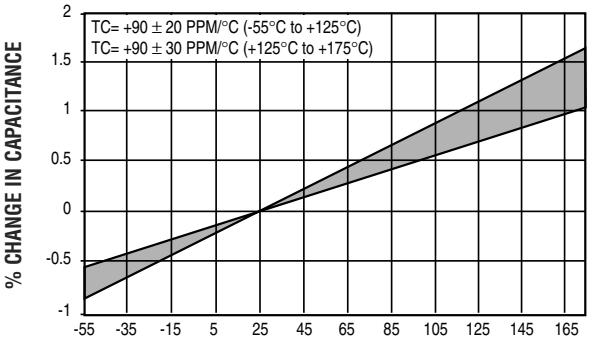

**CAPACITANCE (pF)**
**(56 pF to 1000 pF)**

**SERIES RESONANCE VS. CAPACITANCE**
**ATC SERIES 100, CASE B**




**CAPACITANCE (pF)**

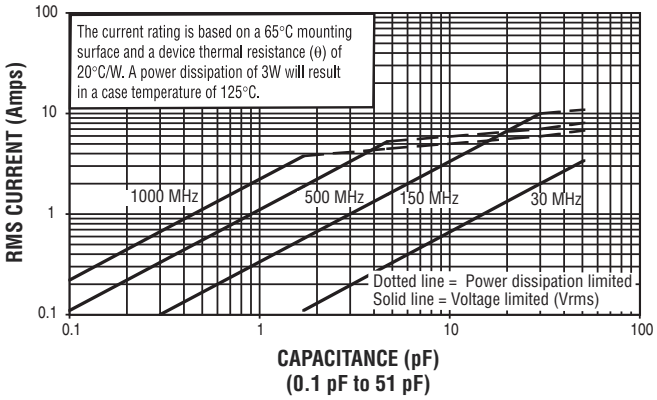
**CAPACITANCE CHANGE VS. TEMPERATURE**
**ATC SERIES 100, CASE B**



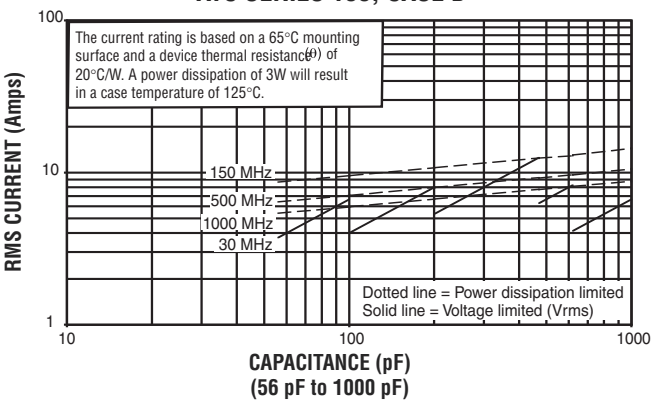

**TEMPERATURE (Degrees C)**

# ATC 100 B Performance Data

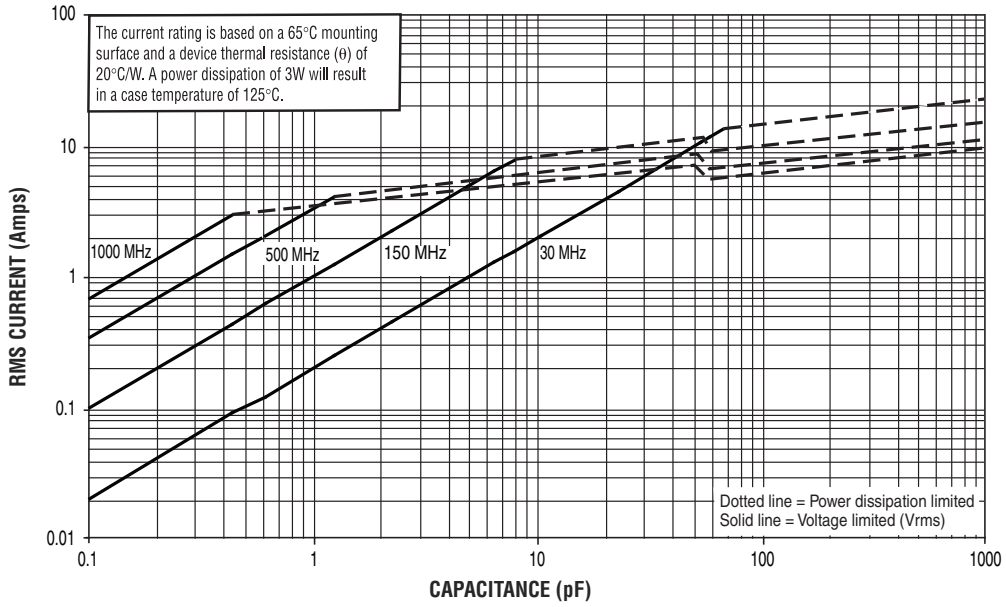
**CURRENT RATING VS. CAPACITANCE**
**ATC SERIES 100, CASE B**




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




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

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AMERICAN TECHNICAL CERAMICS

ATC North America
sales@atceramics.com

ATC Europe
saleseur@atceramics.com

ATC Asia
sales@atceramics-asia.com

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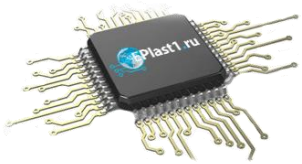
Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits,General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.




**Как с нами связаться**

**Телефон:** 8 (812) 309 58 32 (многоканальный)
**Факс:** 8 (812) 320-02-42
**Электронная почта:** org@eplast1.ru
**Адрес:** 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.