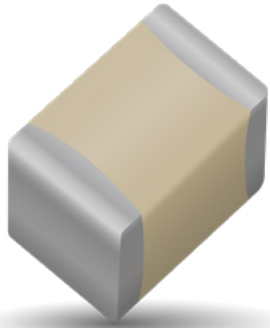


RF/Microwave Capacitors

RF/Microwave Multilayer Capacitors (MLC)

100B Series Porcelain Superchip® Multilayer Capacitors



FEATURES

- Case B Size (.110" x .110")
- Capacitance Range 0.1pF to 1000pF
- Extended WVDC up to 1500 VDC
- Low ESR/ESL
- High Q
- Low Noise
- Ultra-Stable Performance
- High Self-Resonance
- Established Reliability (QPL)

GENERAL DESCRIPTION

KYOCERA AVX, 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.

FUNCTIONAL APPLICATIONS

- Bypass
- Impedance Matching
- Coupling
- DC Blocking
- Tuning

CIRCUIT APPLICATIONS

- UHF/Microwave RF Power Amplifiers
- Low Noise Amplifiers
- Filter Networks
- Oscillators
- Timing Circuits

ENVIRONMENTAL CHARACTERISTICS

| | |
|-----------------------------|--|
| 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 VDC applied while subjected to an environment of 85°C with 85% relative humidity for 240 hours |
| 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 |
| Termination Styles | Available in various surface mount and leaded styles. See Mechanical Configurations |
| 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. |

PACKAGING OPTIONS



Tape & Reel



Vertical Orientation Tape & Reel



Cap Pac® (100 pcs)



ELECTRICAL SPECIFICATIONS

| | |
|--|---|
| Temperature Coefficient (TCC) | +90 ±20 PPM/°C (-55°C to +125°C) +90 ±30 PPM/°C (+125°C to +175°C) |
| Capacitance Range | 0.1pF to 1000pF |
| Operating Temperature | -55°C to +125°C* |
| Quality Factor | greater than 10,000 at 1 MHz |
| 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. |
| Working Voltage (WVDC) | See Capacitance Values table |
| 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 |
| Aging Effects | None |
| Piezoelectric Effects | None |
| Capacitance Drift | ± (0.02% or 0.02 pF), whichever is greater |
| Retrace | Less than ±(0.02% or 0.02 pF), whichever is greater. |

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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 | | | | | |
|-----------|-----------|---------|------------|------|------------------|------------------|---------|------------|------|-----------|-----------|---------------|------------|------|-----------|-----------|---------------|------------|------|------|------|-------|-------|
| | | | STD. | EXT. | | | | STD. | EXT. | | | | STD. | EXT. | | | | STD. | EXT. | STD. | EXT. | | |
| 0R1 | 0.1 | B | 500 | 1500 | 2R4 | 2.4 | B, C, D | 500 | 1500 | 200 | 20 | F, G, J, K, M | 500 | 1500 | 151 | 150 | F, G, J, K, M | 300 | EXT. | | | | |
| 0R2 | 0.2 | | | | 2R7 | 2.7 | | | | 220 | 22 | | | | 161 | 160 | | | | | | | |
| 0R3 | 0.3 | B, C | | | EXTENDED VOLTAGE | 3R0 | | | | 3.0 | 240 | | | | 24 | 181 | | | | 180 | 1000 | | |
| 0R4 | 0.4 | | | | | 3R3 | | | | 3.3 | 270 | | | | 27 | 201 | | | | 200 | | | |
| 0R5 | 0.5 | B, C, D | | | | EXTENDED VOLTAGE | | | | 3R6 | 3.6 | | | | 300 | 30 | | | | 221 | | 220 | VOLT. |
| 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 | 200 | 600 | | | |
| 1R1 | 1.1 | 6R2 | | | 6.2 | | | | | 510 | 51 | | | | 391 | 390 | | | | | | | |
| 1R2 | 1.2 | B, C, D | | | EXTENDED VOLTAGE | | | | | 6R8 | 6.8 | | | | 560 | 56 | | 431 | | | 430 | VOLT. | |
| 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 | | 100 | 10 | | | 820 | 82 | 621 | 620 | | | | | | | | | | | | | |
| 1R7 | 1.7 | | 110 | 11 | | 910 | 91 | 681 | 680 | 100 | EXT. | | | | | | | | | | | | |
| 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 | | | | | | 50 | | | 300 | VOLT | | | | | | | | | | |

VRMS = 0.707 X WVDC

• SPECIAL VALUES, TOLERANCES, DIFFERENT WVDC AND MATCHING AVAILABLE. • ENCAPSULATION OPTION AVAILABLE. PLEASE CONSULT FACTORY. NOTE: EXTENDED WVDC DOES NOT APPLY TO CDR PRODUCTS.

HOW TO ORDER

100 B 910 J W 500 X T

Series — 100

Case Size — B
See mechanical dimensions below

Capacitance — 910
EIA Capacitance Code in pF.
First two digits = significant figures or "R" for decimal place.
Third digit = number of zeros or after "R" significant figures

Capacitance Tolerance Code — J W

| Code | B | C | D | F | G | J | K | M |
|------|-------|--------|-------|-----|-----|-----|------|------|
| Tol. | ±1 pF | ±25 pF | ±5 pF | ±1% | ±2% | ±5% | ±10% | ±20% |

500 — Voltage Rating

X — Termination Style Code
Please see 2nd Column Mechanical Configuration Table

T — Packaging
T = Tape and Reel, 500 pc qty
TV = Vertical Tape and Reel, 500 pc qty
Please see last column of mechanical configuration table for other options.

Laser Marking (Optional)

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.

RF/Microwave Capacitors

RF/Microwave Multilayer Capacitors (MLC)

100B Series Porcelain Superchip® Multilayer Capacitors



MECHANICAL CONFIGURATION

| Series & Case Size | Term. Code | MIL-PRF-55681 | Case Size & Type | Outline W/T is a Termination Surface | Body Dimensions inches (mm) | | | Lead and Termination Dimensions and Material | | | Pkg Type | Pkg Code | | |
|--------------------|------------|---------------|-------------------|--------------------------------------|--|----------------------------|----------------------------|--|--|----------------------------|---|--------------------------|--------------------|-------------|
| | | | | | Length (L) | Width (W) | Thickness (T) | Overlap (Y) | Materials | | | | | |
| 100B | W | CDR14BG | Solder Plate | | .110+ .020 - .01 (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 | | T&R, 1000 or 500 pcs Vertical T&R, 1000 or 500 pcs Cap Pac, 100 pcs | T1K or T TV1K or TV C100 | | |
| 100B | P | CDR14BG | Pellet | | .110+ .035 - .01 (2.79 + 0.89-0.25) | .110 ±.015 (2.79 ±0.38) | | | Heavy Tin/Lead Coated, over Nickel Barrier Termination | | T&R, 1000 or 500 pcs Vertical T&R, 1000 or 500 pcs Cap Pac, 100 pcs | T1K or T TV1K or TV C100 | | |
| 100B | T | N/A | Solderable Nickel | | .110+ .035 - .01 (2.79 + 0.51-0.25) | .110 ±.015 (2.79 ±0.38) | | | RoHS Compliant Tin Plated over Nickel Barrier Termination | | T&R, 1000 or 500 pcs Vertical T&R, 1000 or 500 pcs Cap Pac, 100 pcs | T1K or T TV1K or TV C100 | | |
| 100B | CA | CDR13BG | 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 | | T&R, 1000 or 500 pcs Vertical T&R, 1000 or 500 pcs Cap Pac, 100 pcs | T1K or T TV1K or TV C100 | | |
| 100B | MS | CDR21BG | 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) | Cap Pac, 20 pcs | C20 | |
| 100B | AR | CDR22BG | Axial Ribbon | | | | .250 (6.35) min. | | .093±.005 (2.36 ±0.13) | .004 ± .001 (.102±.025) | Box, 20 or 100 pcs | B20 or B100 | | |
| 100B | RR | CDR24BG | Radial Ribbon | | | | .145 ±.020 (3.68 ±0.51) | | .102 (2.59) max. | .500 (12.7) | #26 AWG, .016 (.406) dia. nominal | | Box, 20 or 100 pcs | B20 or B100 |
| 100B | AW | CDR25BG | Axial Wire | | | | | | | | Box, 20 or 100 pcs | B20 or B100 | | |

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.

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RF/Microwave Multilayer Capacitors (MLC)

100B Series Porcelain Superchip® Multilayer Capacitors



NON-MAGNETIC MECHANICAL CONFIGURATION

| Series & Case Size | Term. Code | MIL-PRF-55681 | Case Size & Type | Outline W/T is a Termination Surface | Body Dimensions inches (mm) | | | Lead and Termination Dimensions and Material | | | Pkg Type | Pkg Code | |
|--------------------|------------|--------------------|----------------------------|--------------------------------------|--|----------------------------|------------------------|--|---|--|---|--------------------------------|-------------|
| | | | | | Length (L) | Width (W) | Thickness (T) | Overlap (Y) | Materials | | | | |
| 100B | WN | Meets Requirements | Non-Mag | | .110+ .020 - .01 (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 | | T&R, 1000 or 500 pcs Vertical T&R, 1000 or 500 pcs Cap Pac, 100 pcs | T1K or T TV1K or TV C100 | |
| 100B | PN | Meets Requirements | Solderable Nickel | | .110+ .035 - .01 (2.79 + 0.51-0.25) | .110 ±.015 (2.79 ±0.38) | | | Heavy Tin / Lead, Coated over Non-Magnetic Barrier Termination | | T&R, 1000 or 500 pcs Vertical T&R, 1000 or 500 pcs Cap Pac, 100 pcs | T1K or T TV1K or TV C100 | |
| 100B | TN | Meets Requirements | Non-Mag Solderable Barrier | | .110+.020 - .010 (2.79 + 0.51-0.25) | .110 ±.015 (2.79 ±0.38) | | | RoHS Compliant Tin Plated over Non-Magnetic Barrier Termination | | T&R, 1000 or 500 pcs Vertical T&R, 1000 or 500 pcs Cap Pac, 100 pcs | T1K or T TV1K or TV C100 | |
| 100B | MN | Meets Requirements | 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) | Cap Pac, 20 pcs | C20 |
| 100B | AN | Meets Requirements | Axial Ribbon | | | | | | .250 (6.35) (6.35) min. | .093±.005 (2.36 ±0.13) | .004 ± .001 (.102±.025) | Box, 20 or 100 pcs | B20 or B100 |
| 100B | FN | Meets Requirements | Radial Ribbon | | .145 ±.020 (3.68 ±0.51) | .110 ±.015 (2.79 ±0.38) | .102 (2.59) max. | N/A | .500 (12.7) | #26 AWG., .016 (.406) dia. nominal | Box, 20 or 100 pcs | B20 or B100 | |
| 100B | RN | Meets Requirements | Radial Wire | | | | | | | | Box, 20 or 100 pcs | B20 or B100 | |
| 100B | BN | Meets Requirements | Axial Wire | | | | | | | | Box, 20 or 100 pcs | B20 or B100 | |

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.

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SUGGESTED MOUNTING PAD DIMENSIONS

Horizontal
Electrode Orientation

Vertical
Electrode Orientation

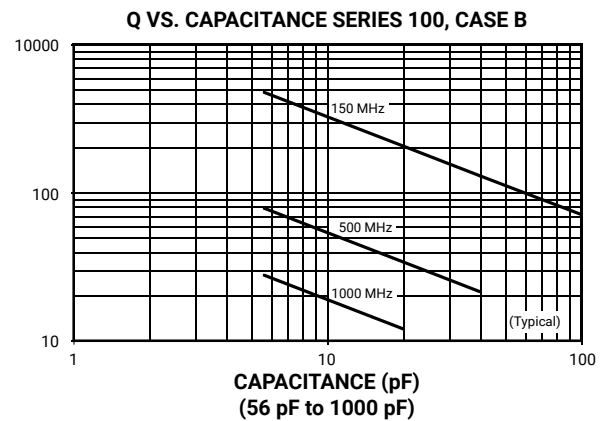
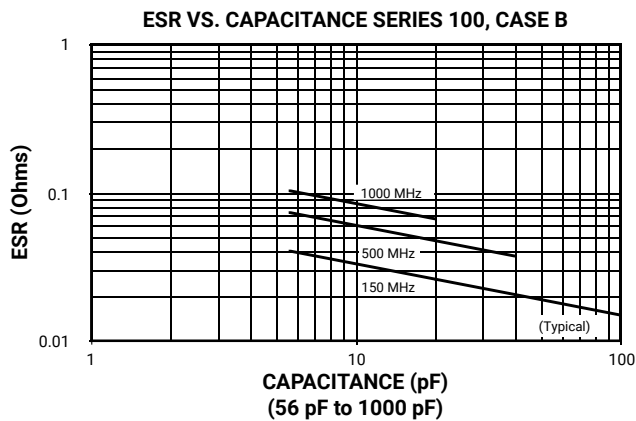
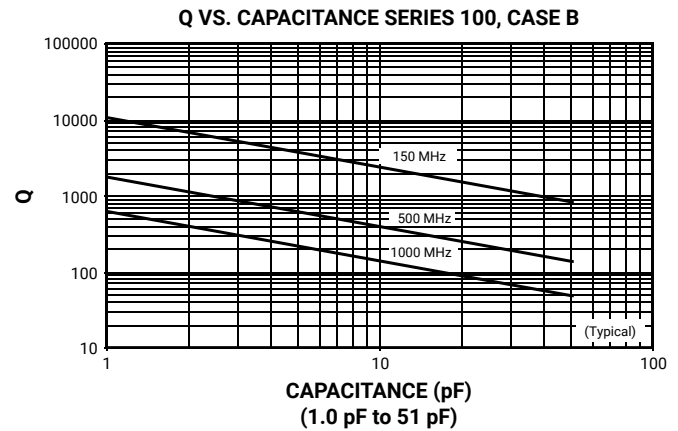
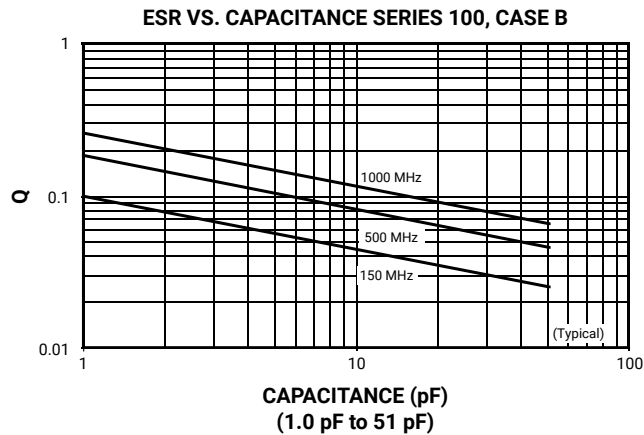
Case B Vertical Mount

| 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

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

PERFORMANCE DATA



RF/Microwave Capacitors

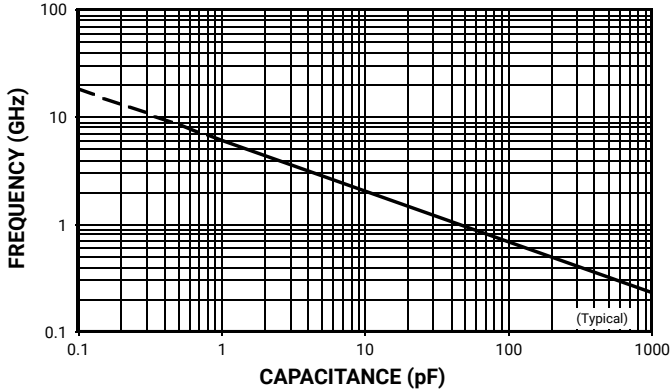
RF/Microwave Multilayer Capacitors (MLC)

100B Series Porcelain Superchip® Multilayer Capacitors



PERFORMANCE DATA

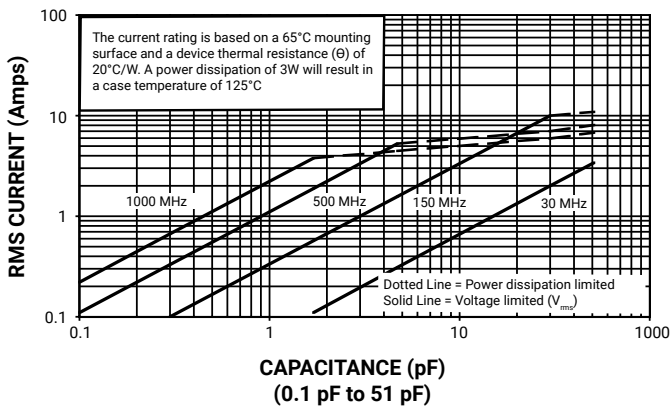
SERIES RESONANCE VS. CAPACITANCE
SERIES 100, CASE B



CAPACITANCE CHANGE VS. TEMPERATURE
SERIES 100, CASE B



CURRENT RATING VS. CAPACITANCE
SERIES 100, CASE B



CURRENT RATING VS. CAPACITANCE
SERIES 100, CASE B

