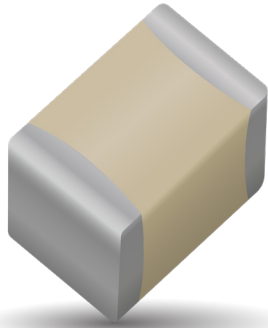


RF/Microwave Capacitors

RF/Microwave Multilayer Capacitors (MLC)

700C Series NPO Porcelain and Ceramic Multilayer Capacitors



GENERAL DESCRIPTION

KYOCERA AVX, the industry leader, offers new improved ESR/ESL performance for the 700C Series RF Capacitors. This high Q multilayer capacitor is ultra-stable under high RF current and voltage applications. High density porcelain construction provides a rugged, hermetic package.

KYOCERA AVX offers an encapsulation option for applications requiring extended protection against arc-over and corona

FUNCTIONAL APPLICATIONS

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

CIRCUIT APPLICATIONS

- VHF/UHF RF Power Amplifiers
- Antenna Tuning
- Plasma Chambers
- Medical (MRI coils)

*For leaded styles only

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 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. |
| Termination Styles | Available in various surface mount and leaded styles. See Mechanical Configurations |
| Terminal Strength | Terminations for chips and pellets withstand a pull of 10 lbs. min., 20 lbs. typical, for 5 seconds in direction perpendicular to the termination surface of the capacitor. Test per MIL-STD-202, method 211. |

FEATURES

- Case C Size (.250" x .250")
- High Q
- Low ESR/ESL
- High RF Power
- Available with Encapsulation Options*
- Capacitance Range 1 pF to 2700 pF
- Ultra-Stable Performance
- High RF Current/Voltage
- High Reliability

PACKAGING OPTIONS



Tape & Reel



Tray
(180 pcs)



ELECTRICAL SPECIFICATIONS

| | |
|---|---|
| Quality Factor (Q) | Greater than 10,000 (1.0 pF to 1000 pF) @ 1 MHz. Greater than 10,000 (1100 pF to 2700 pF) @ 1 KHz. |
| Temperature Coefficient of Capacitance (TCC) | 0 ±30 PPM/°C (-55°C to +125°C) |
| Insulation Resistance (IR) | 1 pF to 2700 pF: 10 ⁵ Megohms min. @ +25°C at rated WVDC. 10 ⁴ Megohms min. @ +125°C at rated WVDC. Max. test voltage is 500 VDC. |
| 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. |
| Retrace | Less than ±(0.02% or 0.02 pF), whichever is greater |
| Aging Effects | None |
| Piezoelectric Effects | None |
| Capacitance Drift | ±(0.02% or 0.02 pF), whichever is greater |
| Operating Temperature Range | From -55°C to +125°C (No derating of working voltage) |

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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 |
|-----------|-----------|---------|------------|-----------|-----------|-----------------|------------|-----------|-----------|-----------------|------------|-----------|-----------|-----------------|------------|
| 1R0 | 1.0 | B, C, D | 2500 | 5R1 | 5.1 | B, C, D | 2500 | 390 | 39 | F, G, J K, M | 2500 | 301 | 300 | F, G, J K, M | 1500 |
| 1R1 | 1.1 | | | 5R6 | 5.6 | | | 430 | 43 | | | 331 | 330 | | |
| 1R2 | 1.2 | | | 6R2 | 6.2 | | | 470 | 47 | | | 361 | 360 | | |
| 1R3 | 1.3 | | | 6R8 | 6.8 | | | 510 | 51 | | | 391 | 390 | | |
| 1R4 | 1.4 | | | 7R5 | 7.5 | | | 560 | 56 | | | 431 | 430 | | |
| 1R5 | 1.5 | | | 8R2 | 8.2 | | | 620 | 62 | | | 471 | 470 | | |
| 1R6 | 1.6 | | | 9R1 | 9.1 | | | 680 | 68 | | | 511 | 510 | | |
| 1R7 | 1.7 | | | 100 | 10 | | | 750 | 75 | | | 561 | 560 | | |
| 1R8 | 1.8 | | | 110 | 11 | | | 820 | 82 | | | 621 | 620 | | |
| 1R9 | 1.9 | | | 120 | 12 | | | 910 | 91 | | | 681 | 680 | | |
| 2R0 | 2.0 | B, C, D | 2500 | 130 | 13 | F, G, J K, M | 2500 | 101 | 100 | F, G, J K, M | 2500 | 751 | 750 | F, G, J K, M | 1000 |
| 2R1 | 2.1 | | | 150 | 15 | | | 111 | 110 | | | 821 | 820 | | |
| 2R2 | 2.2 | | | 160 | 16 | | | 121 | 120 | | | 911 | 910 | | |
| 2R4 | 2.4 | | | 180 | 18 | | | 131 | 130 | | | 102 | 1000 | | |
| 2R7 | 2.7 | | | 200 | 20 | | | 151 | 150 | | | 112 | 1100 | | |
| 3R0 | 3.0 | | | 220 | 22 | | | 161 | 160 | | | 122 | 1200 | | |
| 3R3 | 3.3 | | | 240 | 24 | | | 181 | 180 | | | 152 | 1500 | | |
| 3R6 | 3.6 | | | 270 | 27 | | | 201 | 200 | | | 182 | 1800 | | |
| 3R9 | 3.9 | | | 300 | 30 | | | 221 | 220 | | | 222 | 2200 | | |
| 4R3 | 4.3 | | | 330 | 33 | | | 241 | 240 | | | 242 | 2400 | | |
| 4R7 | 4.7 | 360 | 36 | 271 | 270 | 272 | 2700 | | | | | | | | |

HOW TO ORDER

Series **700** Case Size **C** Capacitance **100** Tolerance Code **J** Termination Code **W** WVDC **2500** Laser Marking **X** Packaging **T**

Series 700C Series NPO Porcelain and Ceramic Multilayer Capacitors

Case Size See mechanical dimensions below

Capacitance 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

| Code | B | C | D | F | G | J | K | M |
|------|---------|----------|---------|-----|-----|-----|------|------|
| Tol. | ±0.1 pF | ±0.25 pF | ±0.5 pF | ±1% | ±2% | ±5% | ±10% | ±20% |

Packaging T = Tape and Reel, 500 pc. qty. Surface Mount Termination Only
Please see last column of mechanical configuration table for other options.

Laser Marking (Optional)

WVDC

Termination Code Please see 2nd Column Mechanical Configuration Table

The above part number refers to a 700C Series (case size C) 10 pF capacitor, J tolerance (±5%), 2500 WVDC, with W termination (Tin/Lead, Solder Plated over Nickel Barrier), laser marking and 500 pc T&R packaging.

MECHANICAL CONFIGURATIONS

| SERIES & CASE SIZE | TERM. CODE | 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 | Pkg Type | Pkg Code |
| 700C | W | Solder Plate | | .230+.020-.010 (5.84+0.51-0.25) | .250 ±.015 (6.35 ±0.38) | .145 (3.68) max. for capacitance values ≤ 680 pF; .165 (4.19) max. for capacitance values > 680 pF. | .040 (1.02) max. | Tin /Lead, Solder Plated over Nickel Barrier Termination | T&R, 250 or 500 pcs Tray, 36 or 180 pcs | T250 or T J36 or J180 |
| 700C | P | Pellet | | .230+.025-.010 (5.84+0.64-0.25) | | | | Heavy Tin/Lead Coated, over Nickel Barrier Termination | T&R, 250 or 500 pcs Tray, 36 or 180 pcs | T250 or T J36 or J180 |
| 700C | T | Solderable Nickel Barrier | | .230+.020-.010 (5.84+0.51-0.25) | | | | RoHS Compliant Tin Plated over Nickel Barrier Termination | T&R, 250 or 500 pcs Tray, 36 or 180 pcs | T250 or T J36 or J180 |
| 700C | MS | Microstrip | | .245 ±.025 (6.22 ±0.64) | | | N/A | High Purity Silver Leads LL = .500 (12.7) min. WL = .240 ±.005 (6.10 ±.127) TL = .004 ±.001 (.102 ±.025) Leads are Attached with High Temperature Solder. | Tray, 24 or 60 pcs | J24 or J60 |
| 700C | AR | Axial Ribbon | | | | | | | Tray, 24 or 60 pcs | J24 or J60 |

NON-MAGNETIC MECHANICAL CONFIGURATION

| SERIES & CASE SIZE | TERM. CODE | 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 | Pkg Type | Pkg Code |
| 700C | WN | Solder Plate | | .230+.020-.010 (5.84+0.51-0.25) | .250 ±.015 (6.35 ±0.38) | .145 (3.68) max. for capacitance values ≤ 680 pF; .165 (4.19) max. for capacitance values > 680 pF. | .040 (1.02) max. | Tin/Lead, Solder Plated over Non-Magnetic Barrier Termination | T&R, 250 or 500 pcs Tray, 36 or 180 pcs | T250 or T J36 or J180 |
| 700C | PN | Pellet | | .230+.025-.010 (5.84+0.64-0.25) | | | | Heavy Tin/Lead Coated, over Non-Magnetic Barrier Termination | T&R, 250 or 500 pcs Tray, 36 or 180 pcs | T250 or T J36 or J180 |
| 700C | TN | Solderable Nickel Barrier | | .230+.020-.010 (5.84+0.51-0.25) | | | | RoHS Compliant Tin Plated over Non-Magnetic Barrier Termination | T&R, 250 or 500 pcs Tray, 36 or 180 pcs | T250 or T J36 or J180 |
| 700C | MN | Microstrip | | .245 ±.025 (6.22 ±0.64) | | | N/A | High Purity Silver Leads L _L = .500 (12.7) min. W _L = .240 ±.005 (6.10 ±.127) T _L = .004 ±.001 (.102 ±.025) Leads are Attached with High Temperature Solder. | Tray, 24 or 60 pcs | J24 or J60 |
| 700C | AN | Axial Ribbon | | | | | | | Tray, 24 or 60 pcs | J24 or J60 |

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SUGGESTED MOUNTING PAD DIMENSIONS

Horizontal
Electrode Orientation

Vertical
Electrode Orientation

| Case C Vertical Mount | | | | | |
|-----------------------|--------------|--------|--------|--------|--------|
| Cap Value | Pad Size | A Min. | B Min. | C Min. | D Min. |
| < 680 pF | Normal | .150 | .050 | .200 | .300 |
| | High Density | .130 | .030 | .200 | .260 |
| > 680 pF | Normal | .185 | .050 | .200 | .300 |
| | High Density | .165 | .030 | .200 | .260 |

| Horizontal Mount | | | | | |
|------------------|--------------|--------|--------|--------|--------|
| All Values | Pad Size | A Min. | B Min. | C Min. | D Min. |
| All Values | Normal | .280 | .050 | .200 | .300 |
| | High Density | .260 | .030 | .200 | .260 |

PERFORMANCE DATA

