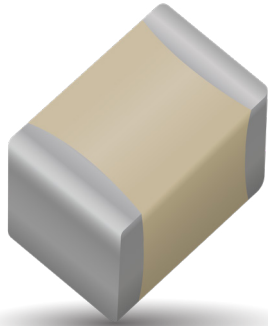


RF/Microwave Capacitors

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 ———— **700**

Case Size ———— **C**
See mechanical dimensions below

Capacitance ———— **100**
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**

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

Termination Code ———— **W**
Please see 2nd Column Mechanical Configuration Table

Laser Marking (Optional) ———— **X**

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

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

