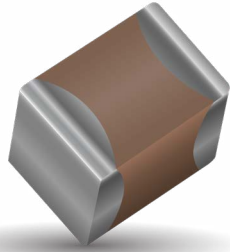


# RF/Microwave Capacitors

## RF/Microwave Multilayer Capacitors (MLC)

### 900C Series X7R Ceramic RF Power Multilayer Capacitors



#### GENERAL DESCRIPTION

KYOCERA AVX, the industry leader, offers new improved ESR/ESL performance for the 900 C Series RF Capacitors. This Series exhibits superior volumetric efficiency, providing high levels of capacitance for HF/ RF power applications. Ceramic construction provides a rugged, hermetic package.

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

#### FEATURES

- Case C Size (.250" x .250")
- Low ESR / ESL
- Rugged Construction
- Encapsulation Option Available \*
- Capacitance Range 0.01 $\mu$ F to 1  $\mu$ F
- Mid-K
- High Reliability

#### FUNCTIONAL APPLICATIONS

- Bypass
- DC Blocking
- Coupling

#### TYPICAL CIRCUIT APPLICATIONS

- HF/RF Power Amplifiers
- High Frequency Switch Mode Power Supplies
- Medical Electronics.

\*For leaded styles only.

#### ENVIRONMENTAL CHARACTERISTICS

|                             |  |
|-----------------------------|--|
| <b>Thermal Shock</b>        | MIL-STD-202, Method 107, Condition A.  |
| <b>Moisture Resistance</b>  | MIL-STD-202, Method 106.   |
| <b>Low Voltage Humidity</b> | 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.                    |
| <b>Life Test</b>            | MIL-STD-202, Method 108, for 2000 hours, at 125°C. 200% WVDC applied.  |
| <b>Solderability</b>        | Mil-STD-202, Method 208  |
| <b>Terminal Strength</b>    | Terminations for chips and pellets withstand a pull of 5 lbs. min., 10 lbs. typical, for 5 seconds in direction perpendicular to the termination surface of the capacitor. |

#### PACKAGING OPTIONS



Tape & Reel



Vertical Orientation Tape & Reel



Special Packaging Available



Cap-Pak® (100 pcs)



#### ELECTRICAL SPECIFICATIONS

|   |   |
|---|---|
| <b>Dissipation Factor (DF)</b>                      | 2.5% max. at 1 KHz  |
| <b>Temperature Coefficient of Capacitance (Tcc)</b> | Less than $\pm 15\%$ (-55°C to +125°C)  |
| <b>Insulation Resistance (IR)</b>                   | 0.01 MFd to 1 MFd<br>1000 megohms min. @ +25°C at rated WVDC.<br>100 megohms min. @ +125°C at rated WVDC.   |
| <b>Working Voltage (WVDC)</b>                       | See Capacitance Values Table  |
| <b>Dielectric Withstanding Voltage (DWV)</b>        | Case C: 250% of rated WVDC for 5 secs.  |
| <b>Aging Effects</b>                                | 3% maximum per decade hour  |
| <b>Piezoelectric Effects</b>                        | Negligible  |
| <b>Dielectric Absorption</b>                        | 2% typical  |
| <b>Operating Temperature Range</b>                  | -55°C to +125°C<br>(No derating of working voltage)   |
| <b>Termination Styles</b>                           | Available in various surface mount and leaded styles. See Mechanical Configurations   |
| <b>Terminal Strength</b>                            | Terminations for chips and pellets withstand a pull of 10 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. |

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### 900C Series X7R Ceramic RF Power Multilayer Capacitors



## CAPACITANCE VALUES

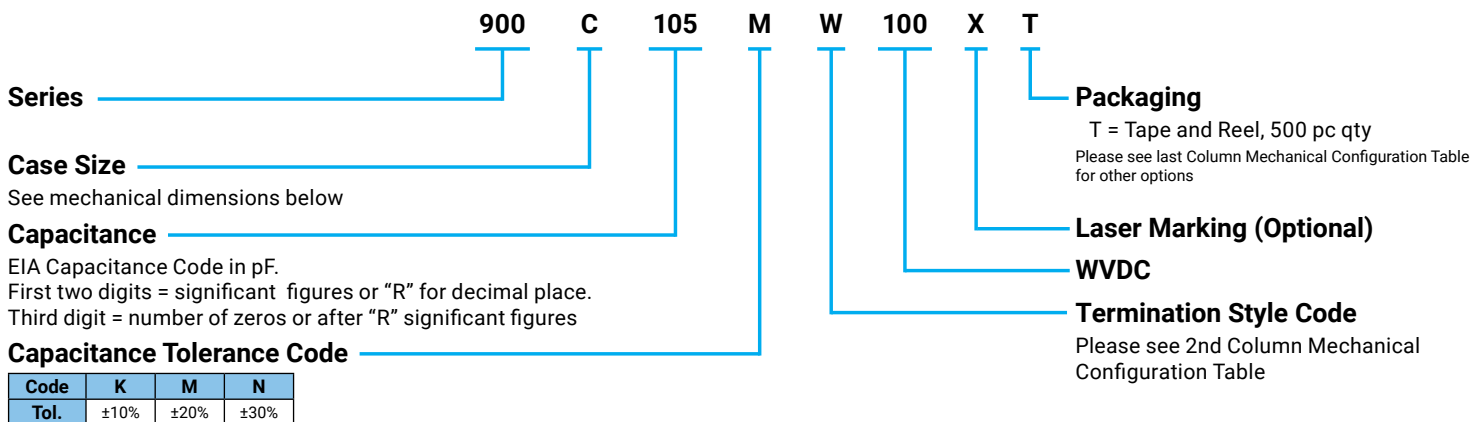
| Cap. Code | Cap. (Mfd) | Tol.    | Rated Wvdc |
|-----------|------------|---------|------------|
| 103       | .010       | K, M, N | 300        |
| 153       | .015       |         | 300        |
| 223       | .022       |         | 300        |
| 333       | .033       |         | 250        |
| 473       | .047       |         | 250        |
| 683       | .068       |         | 250        |
| 104       | .10        |         | 200        |
| 154       | .15        |         | 200        |
| 224       | .22        |         | 200        |
| 334       | .33        |         | 150        |
| 474       | .47        |         | 150        |
| 684       | .68        |         | 150        |
| 824       | .82        |         | 100        |
| 105       | 1.0        |         | 100        |

| Code | K    | M    | N    |
|------|------|------|------|
| Tol. | ±10% | ±20% | ±30% |

VRMS = 0.707 X WVDC

- SPECIAL VALUES, TOLERANCES, HIGHER WVDC AND MATCHING AVAILABLE.
- ENCAPSULATION OPTION AVAILABLE. PLEASE CONSULT FACTORY.

## HOW TO ORDER



The above part number refers to a 900 C Series (case size C) 1.0 MFd capacitor, M tolerance (±20%), 100 WVDC, with W termination (Tin/Lead, Solder Plated over Nickel Barrier), laser marking and ATC Matrix Tray packaging.

# RF/Microwave Capacitors

## RF/Microwave Multilayer Capacitors (MLC)

### 900C Series X7R Ceramic RF Power Multilayer Capacitors



#### 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   |   | Pkg Type & Qty          | Pkg Code |
|--------------------|------------|---------------------------------|---------------------------------------|---|---|---|---|---|-------------------------|----------|
|                    |            |                                 |                                       | Length (L)                                | Width (W)   | Thickness (T)   | Overlap (Y)   | Materials   |                         |          |
| 900C               | W          | Solder Plate                    |                                       | .230+.020<br>-.010 (5.84<br>+0.51 -0.25)  | .250 ±.015<br>(6.35 ±0.38)                                      | .145 (3.68)<br>max. for<br>capacitance<br>values<br>< 0.82 MFd; | .040<br>(1.02)<br>max.  | Tin/Lead, Solder Plated over<br>Nickel Barrier Termination      | T & R 500<br>Cap PaK 36 | T<br>C36 |
| 900C               | P          | Pellet                          |                                       | .230+.025<br>-.010 (5.84<br>+0.64 -0.25)  |   |   |   | Heavy Tin/Lead Coated,<br>over Nickel Barrier Termination       | T & R 500<br>Cap PaK 36 | T<br>C36 |
| 900C               | T          | Solderable<br>Nickel<br>Barrier |                                       | .230 +.020<br>-.010 (5.84<br>+0.51 -0.25) |   |   |   | RoHS Compliant<br>Tin Plated over<br>Nickel Barrier Termination | T & R 500<br>Cap PaK 36 | T<br>C36 |
| 900C               | MS         | Microstrip                      |                                       | .245 ±.025<br>(6.22 ±0.64)                | .165 (4.19)<br>max. for<br>capacitance<br>values<br>≥ 0.82 MFd. | N/A   | High Purity<br>Silver Leads<br>LL = .500 (12.7) min.<br>WL = .240 ±.005<br>(6.10 ±.127)<br>TL = .004 ±.001<br>(.102 ±.025)<br>Leads are Attached with<br>High Temperature Solder. | Cap Pak<br>24   | C24                     |          |
| 900C               | AR         | Axial Ribbon                    |                                       |   |   |   | Silver-plated Copper Leads<br>LL = 1.0 (25.4) min.<br>Dia. = .032 ±.002 (0.81 ±0.05)  | Cap Pak<br>24   | C24                     |          |
| 900C               | AW         | Axial Wire                      |                                       | .245 ±.025<br>(6.22 ±0.64)                | .165 (4.19)<br>max. for<br>capacitance<br>values<br>≥ 0.82 MFd. | N/A   | Silver Leads<br>LL = .500 (12.7) min.<br>WL = * See below<br>TL = .004 ±.001 (.102 ±.025)   | Cap Pak<br>24   | C24                     |          |
| 900C               | VA         | Vertical<br>Axial Ribbon        |                                       |   |   |   | Silver-plated Copper Leads<br>LL = 1.0 (25.4) min.<br>Dia. = .032 ±.002 (0.81 ±0.05)  | Cap Pak<br>24   | C24                     |          |
| 900C               | RW         | Radial Wire                     |                                       |   |   |   |   |   |                         |          |

Custom lead styles and lengths are available; consult factory. All leads are high purity silver attached with high temperature solder and are RoHS compliant.

\*\* WL = .110 (2.79) for capacitance values < 0.82 MFd.; WL = .130 (3.30) for capacitance values ≥ 0.82 MFd.


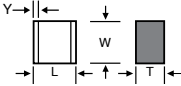

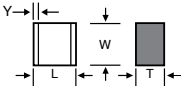
# RF/Microwave Capacitors

## RF/Microwave Multilayer Capacitors (MLC)

### 900C Series X7R Ceramic RF Power Multilayer Capacitors

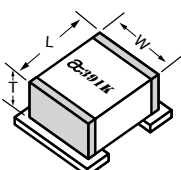


#### NON-MAGNETIC MECHANICAL CONFIGURATIONS

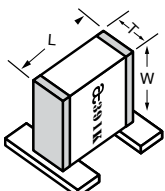
| Series & Case Size | Term. Code | Case Size & Type  | Outlines<br>W/T Is A<br>Termination Surface                                       | Body Dimensions<br>Inches (Mm)         |                            |  | Lead And Termination<br>Dimensions And Materials |   | Pkg Type & Qty       | Pkg Code |
|--------------------|------------|---|---|--|----------------------------|--|--|---|----------------------|----------|
|                    |            |   |   | Length (L)                             | Width (W)                  | Thickness (T)  | Overlap (Y)                                      | Materials   |                      |          |
| 900C               | WN         | <br>Non-Mag Solder Plate       |  | .230 +.025 -.010<br>(5.84 + 0.64-0.25) | .250 ±.015<br>(6.35 ±0.38) | .145 (3.68) max.<br>< 0.82 MFd<br>.165 (4.19)<br>max.<br>≥0.82 MFd | .040 (1.02)<br>max.                              | Tin/Lead, Solder Plated over Non-Magnetic Barrier Termination   | T & R 500 Cap PaK 36 | T<br>C36 |
| 900C               | TN         | <br>Non-Mag Solderable Barrier |  | .230 +.025 -.010<br>(5.84 + 0.64-0.25) |                            |  |  | RoHS Compliant Tin Plated over Non-Magnetic Barrier Termination | T & R 500 Cap PaK 36 | T<br>C36 |

Custom lead styles and lengths are available; consult factory. All leads are high purity silver attached with high temperature solder and are RoHS compliant. 105M 105M

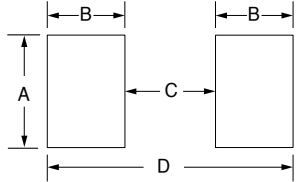
#### SUGGESTED MOUNTING PAD DIMENSIONS



Horizontal  
Electrode Orientation



Vertical  
Electrode Orientation



| Case C Vertical Mount |              |        |        |        |        |
|-----------------------|--------------|--------|--------|--------|--------|
| Cap Value             | Pad Size     | A Min. | B Min. | C Min. | D Min. |
| < .82 μF              | Normal       | .150   | .050   | .200   | .300   |
|                       | High Density | .130   | .030   | .200   | .260   |
| ≥ .82 μF              | 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       | .150   | .050   | .200   | .300   |
|                  | High Density | .130   | .030   | .200   | .260   |