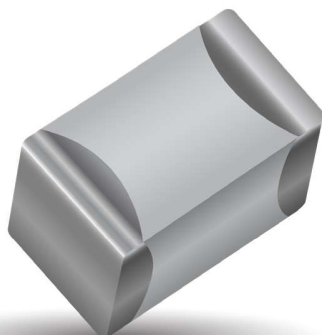


# RF/Microwave Capacitors

## RF/Microwave Multilayer Capacitors (MLC)

### 700A Series NP0 Porcelain and Ceramic Multilayer Capacitors



#### FEATURES

- Case A Size (.055" x .055")
- Low ESR / ESL
- High Q
- Low Noise
- Capacitance Range 0.1 pF to 1000 pF
- Extended WVDC up to 250 VDC
- Zero TCC
- High Self-Resonance
- Established Reliability (QPL)

#### GENERAL DESCRIPTION

KYOCERA AVX, the industry leader, offers new improved ESR/ESL performance for the 700 A Series RF/Microwave Capacitors. The superior high self-resonance and zero TCC characteristic of this Series provide excellent performance over a broad range of RF and microwave applications requiring minimum drift. High density porcelain and ceramic constructions provide a rugged, hermetic package.

Typical functional applications: Bypass, Coupling, Tuning and DC Blocking.

Typical circuit applications: Filters, Oscillators and Timing

#### PACKAGING OPTIONS



#### ELECTRICAL SPECIFICATIONS

|  |   |
|--|---|
| <b>Temperature Coefficient (TCC)</b>         | 0 ± 30 PPM/°C   |
| <b>Capacitance Range</b>                     | 0.1 pF to 1000 pF   |
| <b>Operating Temperature</b>                 | -55°C to +125°C*  |
| <b>Quality Factor</b>                        | Greater than 10,000 (0.1 pF to 100 pF) @ 1 MHz.<br>Greater than 2000 (110 pF to 1000 pF) @ 1 MHz.   |
| <b>Insulation Resistance (IR)</b>            | 0.1 pF to 470 pF<br>10 <sup>6</sup> Megohms min. @ 25°C at rated WVDC<br>10 <sup>5</sup> Megohms min. @ 125°C at rated WVDC<br>510 pF to 1000 pF<br>10 <sup>5</sup> Megohms min. @ 25°C at rated WVDC<br>10 <sup>4</sup> Megohms min. @ 125°C at rated WVDC |
| <b>Working Voltage (WVDC)</b>                | See Capacitance Values table  |
| <b>Dielectric Withstanding Voltage (DWV)</b> | 250% of rated WVDC for 5 seconds  |
| <b>Aging Effects</b>                         | None  |
| <b>Piezoelectric Effects</b>                 | None  |
| <b>Capacitance Drift</b>                     | ± (0.02% or 0.02 pF), whichever is greater  |

#### 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 VDC applied while subjected to an environment of 85°C with 85% relative humidity for 240 hours                              |
| <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. |



# RF/Microwave Capacitors

## RF/Microwave Multilayer Capacitors (MLC)

### 700A Series NP0 Porcelain and Ceramic Multilayer Capacitors



#### MECHANICAL CONFIGURATION

| Series & Case Size | Term. Code | MIL-PRF-55681 | Case Size & Type            | Outline ES W/T is a Termination Surface | Body Dimensions inches (mm)        |                            |                        | Lead and Termination Dimensions and Material |  |   |                          |
|--------------------|------------|---------------|-----------------------------|---|------------------------------------|----------------------------|------------------------|--|--|---|--------------------------|
|                    |            |               |                             |   | Length (L)                         | Width (W)                  | Thickness (T)          | Overlap (Y)                                  | Materials  | Pkg Type  | Pkg Code                 |
| 700A               | W          | CDR12BP       | A Solder Plate              |   | .055+.015-.010<br>(1.40+0.38-0.25) | .055 ±.015<br>(1.40 ±0.38) | .057<br>(1.45)<br>max. | .010+.010-.005<br>(0.25+0.25-0.13)           | 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 |
| 700A               | P          | CDR12BP       | A Pellet                    |   | .055+.025-.010<br>(1.40+0.64-0.25) | .055 ±.015<br>(1.40 ±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 |
| 700A               | T          | N/A           | A Solderable Nickel Barrier |   | .055+.015-.010<br>(1.40+0.38-0.25) | .055 ±.015<br>(1.40 ±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 |
| 700A               | CA         | CDR11BP       | A Gold Chip                 |   | .055+.015-.010<br>(1.40+0.38-0.25) | .055 ±.015<br>(1.40 ±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 |

#### NON-MAGNETIC CONFIGURATION

| Series & Case Size | Term. Code | MIL-PRF-55681      | Case Size & Type             | Non-Magnetic Configuration | Body Dimensions inches (mm)        |                            |                        | Lead and Termination Dimensions and Material |   |   |                          |
|--------------------|------------|--------------------|------------------------------|----------------------------|------------------------------------|----------------------------|------------------------|--|---|---|--------------------------|
|                    |            |                    |                              |                            | Length (L)                         | Width (W)                  | Thickness (T)          | Overlap (Y)                                  | Materials   | Pkg Type  | Pkg Code                 |
| 700A               | WN         | Meets Requirements | A Non-Mag Solder Plate       |                            | .055+.025-.010<br>(1.40+0.64-0.25) | .055 ±.015<br>(1.40 ±0.38) | .057<br>(1.45)<br>max. | .010+.010-.005<br>(0.25+0.25-0.13)           | Tin/ Lead, Solder 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 |
| 700A               | PN         | Meets Requirements | A Non-Mag Pellet             |                            | .055+.025-.010<br>(1.40+0.64-0.25) | .055 ±.015<br>(1.40 ±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 |
| 700A               | TN         | Meets Requirements | A Non-Mag Solderable Barrier |                            | .055+.015-.010<br>(1.40+0.38-0.25) | .055 ±.015<br>(1.40 ±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 |

\*Capacitors with values greater than 100 pF contain a trace magnetic element that may exhibit weak magnetic properties.

# RF/Microwave Capacitors

## RF/Microwave Multilayer Capacitors (MLC)

### 700A Series NP0 Porcelain and Ceramic Multilayer Capacitors



#### SUGGESTED MOUNTING PAD DIMENSIONS

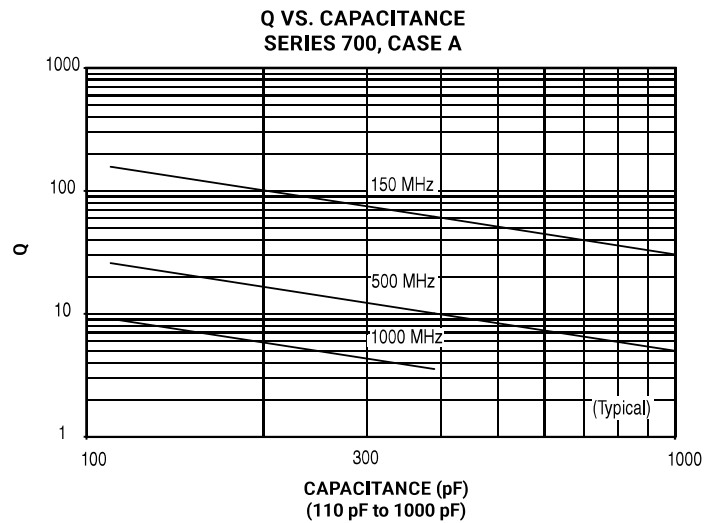
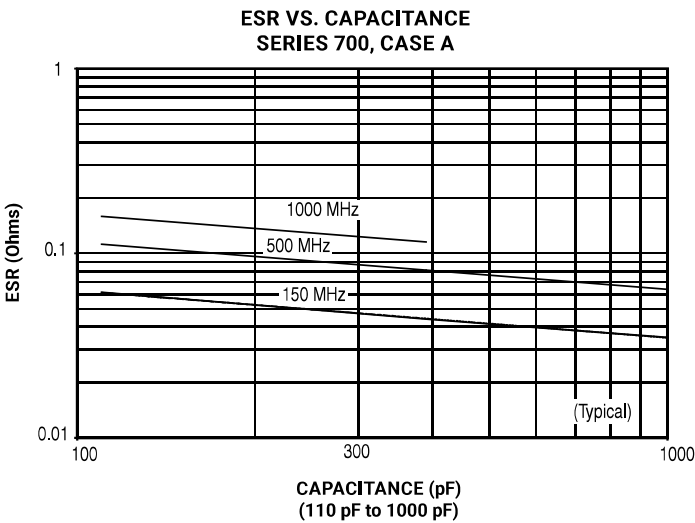
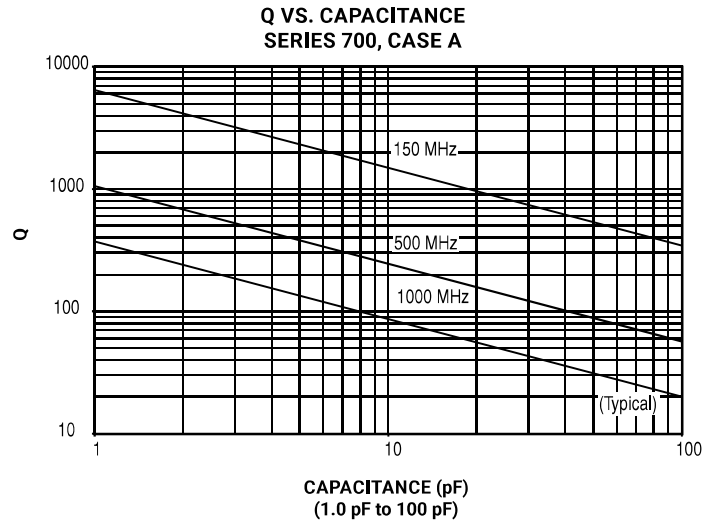
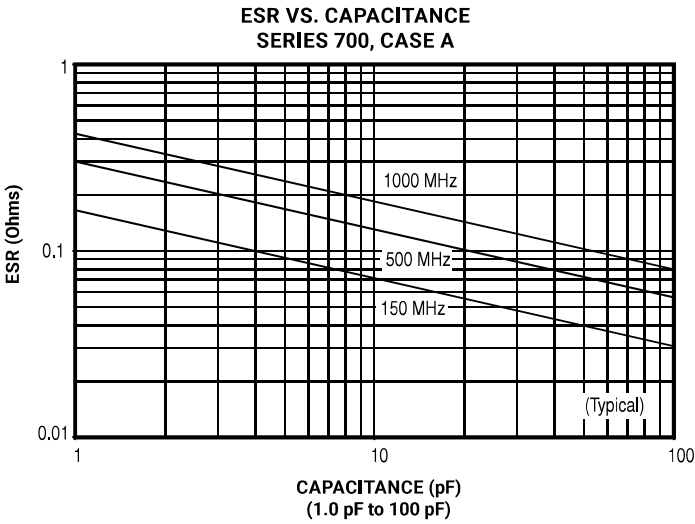
Horizontal Electrode Orientation

Vertical Electrode Orientation

| Case A           |              |        |        |        |        |
|------------------|--------------|--------|--------|--------|--------|
| Mount Type       | Pad Size     | A Min. | B Min. | C Min. | D Min. |
| Vertical Mount   | Normal       | .070   | .050   | .030   | .130   |
|                  | High Density | .050   | .030   | .030   | .090   |
| Horizontal Mount | Normal       | .080   | .050   | .030   | .130   |
|                  | High Density | .060   | .030   | .030   | .090   |

Dimensions are in inches.

#### PERFORMANCE DATA



# RF/Microwave Capacitors

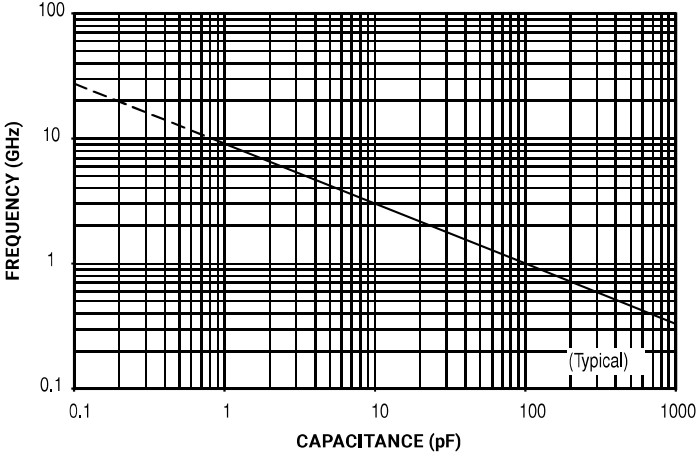
## RF/Microwave Multilayer Capacitors (MLC)

### 700A Series NP0 Porcelain and Ceramic Multilayer Capacitors

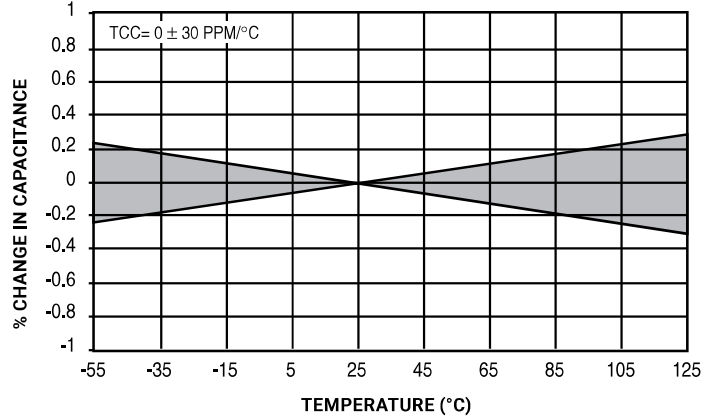


#### PERFORMANCE DATA

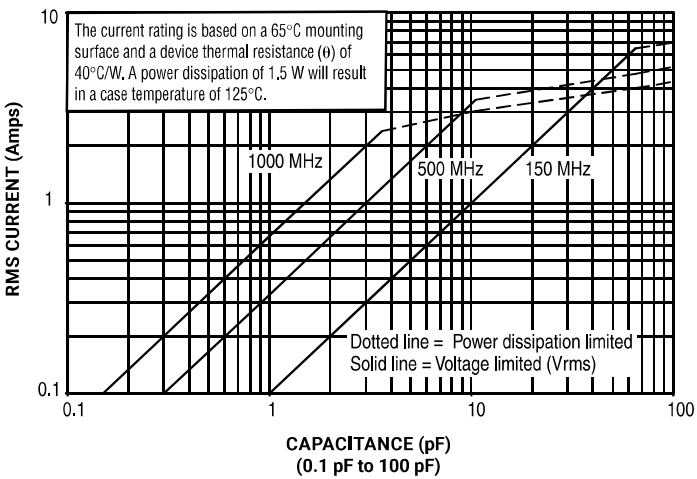
**SERIES RESONANCE VS. CAPACITANCE**  
SERIES 700, CASE A



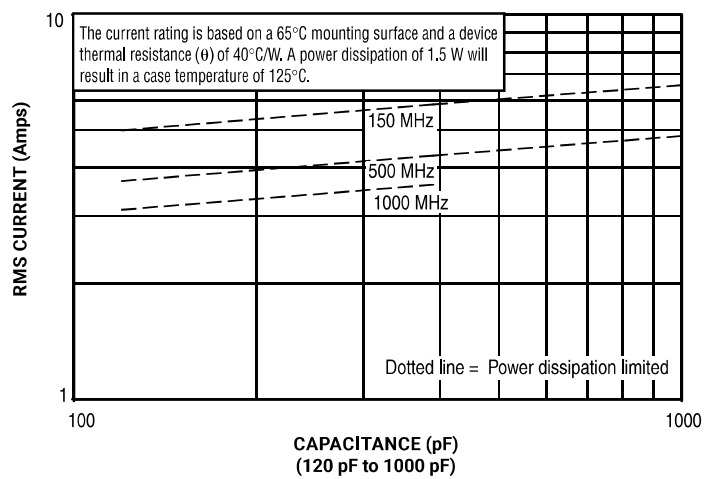
**CAPACITANCE CHANGE VS. TEMPERATURE**  
SERIES 700, CASE A



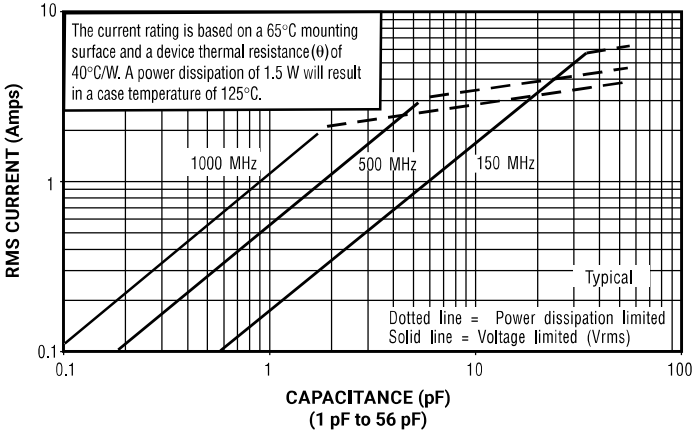
**CURRENT RATING VS. CAPACITANCE**  
SERIES 700, CASE A



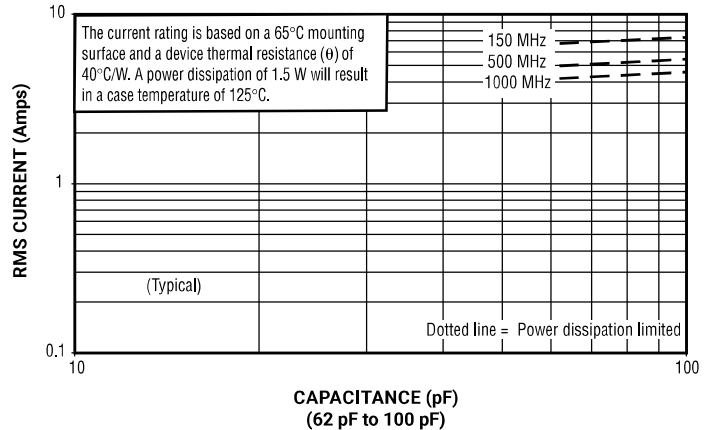
**CURRENT RATING VS. CAPACITANCE**  
SERIES 700, CASE A



**CURRENT RATING VS. CAPACITANCE**  
SERIES 700, CASE A, EXTENDED VOLTAGE



**CURRENT RATING VS. CAPACITANCE**  
SERIES 700, CASE A, EXTENDED VOLTAGE



# RF/Microwave Capacitors

## RF/Microwave Multilayer Capacitors (MLC)

### 700A Series NP0 Porcelain and Ceramic Multilayer Capacitors



#### SAMPLE KITS

| Kit #  | RoHS Compliant | Item Number | Description   | Cap. Value Range (pF) | Cap Value (pF)   | Tol.  | Price    |
|--------|----------------|-------------|---|-----------------------|--|-------|----------|
| Kit 4  | -              | DK0004      | 700A Porcelain and Ceramic<br>16 different values, 15 pc.<br>min. per value | 0.1 to 2.0            | 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9,<br>1.0, 1.1, 1.2, 1.5 ..... | ±0.1  | \$158.40 |
| Kit 4T |                | DK0004T     |   |                       | 1.5, 1.8, 2.0 .....  | ±0.25 |          |
| Kit 5  | -              | DK0005      | 700A Porcelain and Ceramic<br>16 different values, 15 pc.<br>min. per value | 1.0 to 10             | 1.0, 1.2, 1.5, 1.8, 2.0, 2.2, 2.4, 2.7, 3.0, 3.3, .....                  | ±0.1  | \$158.40 |
| Kit 5T |                | DK0005T     |   |                       | 3.9, 4.7, 5.6, 6.8, 8.2 .....  | ±0.25 |          |
| Kit 6  | -              | DK0006      | 700A Porcelain and Ceramic<br>16 different values, 15 pc.<br>min. per value | 10 to 100             | 10, 12, 15, 18, 20, 22, 24, 27, 30, 33, 39,<br>47, 56, 68, 82, 100 ..... | ± 5%  | \$158.40 |
| Kit 6T |                | DK0006T     |   |                       |  |       |          |
| Kit 7  | -              | DK0007      | 700A Porcelain and Ceramic<br>16 different values, 15 pc.<br>min. per value | 100 to 1000           | 100, 120, 150, 180, 200, 220, 240, 270<br>300, 330, 390, 470 .....       | ±5%   | \$158.40 |
| Kit 7T |                | DK0007T     |   |                       | 560, 680, 820, 1000 .....  | ±10   |          |