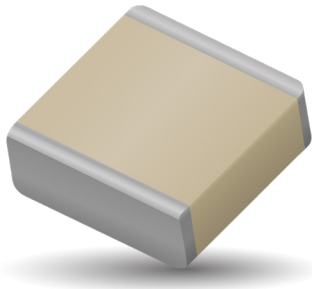


# RF/Microwave Capacitors

## RF/Microwave Multilayer Capacitors (MLC)

### 700E Series NPO Porcelain High RF Power Multilayer Capacitors



#### GENERAL DESCRIPTION

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

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

#### FUNCTIONAL APPLICATIONS

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

#### CIRCUIT APPLICATIONS

- HF/RF Power Amplifiers
- Plasma Chambers
- Transmitters
- Medical (MRI coils)
- Antenna Tuning

#### 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. Voltage applied.<br>120% of WVDC for capacitors rated at 1250 volts DC or less. 100% of WVDC for capacitors rated above 1250 volts DC                      |
| <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., 25 lbs. typical, for 5 seconds in direction perpendicular to the termination surface of the capacitor. Test per MIL-STD-202, method 211. |

#### FEATURES

- Case E Size (.380" x .380")
- Capacitance Range 1pF to 2200pF
- Extended WVDC up to 7200 VDC
- Low ESR/ESL
- High Q
- High RF Power
- Ultra-Stable Performance
- High RF Current/Voltage
- Available with Encapsulation Option\*

\* For leaded styles only

#### PACKAGING OPTIONS



Tape & Reel



Tray  
(96 pcs)



#### ELECTRICAL SPECIFICATIONS

|                                              |                                                                                                                                               |
|----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Temperature Coefficient (TCC)</b>         | 0 ±30 PPM/°C (-55°C to +125°C)                                                                                                                |
| <b>Capacitance Range</b>                     | 1 pF to 2200 pF                                                                                                                               |
| <b>Operating Temperature</b>                 | -55°C to +125°C<br>(No derating of working voltage).                                                                                          |
| <b>Quality Factor</b>                        | Greater than 10,000<br>(1 pF to 1000 pF) @ 1 MHz.<br>Greater than 10,000<br>(1100 pF to 2200 pF) @ 1 KHz.                                     |
| <b>Insulation Resistance (IR)</b>            | 1 pF to 2200 pF<br>10 <sup>5</sup> Megohms min. @ 25°C at 500 VDC<br>10 <sup>4</sup> Megohms min. @ 125°C at 500 VDC                          |
| <b>Working Voltage (WVDC)</b>                | See Capacitance Values table                                                                                                                  |
| <b>Dielectric Withstanding Voltage (DWV)</b> | 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 |
| <b>Aging Effects</b>                         | None                                                                                                                                          |
| <b>Piezoelectric Effects</b>                 | None                                                                                                                                          |
| <b>Capacitance Drift</b>                     | ± (0.02% or 0.02 pF), whichever is greater                                                                                                    |
| <b>Retrace</b>                               | Less than ±(0.02% or 0.02 pF), whichever is greater.                                                                                          |

# RF/Microwave Capacitors

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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. |     |
| 1R0       | 1.0       | B, C, D | 3600       | EXTENDED VOLTAGE | 5R1              | 5.1       | B, C, D | 3600       | EXTENDED VOLTAGE | 390           | 39        | F, G, J, K, M | 3600       | VOTAGE | 271      | 270       | F, G, J, K, M | 3600       | N/A  |     |
| 1R1       | 1.1       |         |            |                  | 5R6              | 5.6       |         |            |                  | 430           | 4         |               |            |        | 301      | 300       |               |            |      |     |
| 1R2       | 1.2       |         |            |                  | 6R2              | 6.2       |         |            |                  | 470           | 47        |               |            |        | 331      | 330       |               |            |      |     |
| 1R3       | 1.3       |         |            |                  | 6R8              | 6.8       |         |            |                  | 510           | 51        |               |            |        | 361      | 360       |               |            |      |     |
| 1R4       | 1.4       |         |            |                  | 7R5              | 7.5       |         |            |                  | 560           | 56        |               |            |        | 391      | 390       |               |            |      |     |
| 1R5       | 1.5       |         |            |                  | 8R2              | 8.2       |         |            |                  | 620           | 62        |               |            |        | 431      | 430       |               |            |      |     |
| 1R6       | 1.6       |         |            |                  | 9R1              | 9.1       |         |            |                  | 680           | 68        |               |            |        | 471      | 470       |               |            |      |     |
| 1R7       | 1.7       |         |            |                  | EXTENDED VOLTAGE | 10        |         |            |                  | F, G, J, K, M | 750       |               |            |        | 75       | 511       |               |            |      | 510 |
| 1R8       | 1.8       |         |            |                  |                  |           |         |            |                  |               | 820       |               |            |        | 82       | 561       |               |            |      | 560 |
| 1R9       | 1.9       |         |            | 910              |                  |           | 91      |            | 621              |               | 620       |               |            |        |          |           |               |            |      |     |
| 2R0       | 2.0       |         |            | 101              |                  |           | 100     |            | 681              |               | 680       |               |            |        |          |           |               |            |      |     |
| 2R1       | 2.1       |         |            | 111              |                  |           | 110     |            | 751              |               | 750       |               |            |        |          |           |               |            |      |     |
| 2R2       | 2.2       |         |            | 121              |                  |           | 120     |            | 821              |               | 820       |               |            |        |          |           |               |            |      |     |
| 2R4       | 2.4       |         |            | 131              |                  |           | 130     |            | 911              |               | 910       |               |            |        |          |           |               |            |      |     |
| 2R7       | 2.7       |         |            | 151              |                  |           | 150     |            | 102              |               | 1000      |               |            |        |          |           |               |            |      |     |
| 3R0       | 3.0       |         |            | 161              |                  |           | 160     |            | 112              |               | 1100      |               |            |        |          |           |               |            |      |     |
| 3R3       | 3.3       |         |            | 181              | 180              | 122       | 1200    |            |                  |               |           |               |            |        |          |           |               |            |      |     |
| 3R6       | 3.6       |         |            | 201              | 200              | 152       | 1500    |            |                  |               |           |               |            |        |          |           |               |            |      |     |
| 3R9       | 3.9       |         |            | 221              | 220              | 182       | 1800    |            |                  |               |           |               |            |        |          |           |               |            |      |     |
| 4R3       | 4.3       |         |            | 241              | 240              | 222       | 2200    |            |                  |               |           |               |            |        |          |           |               |            |      |     |
| 4R7       | 4.7       |         |            |                  |                  |           |         |            |                  |               |           |               |            |        |          |           |               |            |      |     |

VRMS = 0.707 X WVDC

• SPECIAL VALUES, TOLERANCES, MATCHING, AND CAPACITOR ASSEMBLIES ARE AVAILABLE. • AVX'S CUSTOM POWER CAPACITOR ASSEMBLY CATALOG, LISTS ASSEMBLY OPTIONS. • DIFFERENT WORKING VOLTAGES ARE AVAILABLE • ENCAPSULATION OPTION AVAILABLE. PLEASE CONSULT FACTORY.

#### HOW TO ORDER

**Series** 700

**Case Size** E  
See mechanical dimensions below

**Capacitance** 391  
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** K

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

**W** 3600

**X\*\***

**T**

**Packaging**  
T = Tape and Reel, 250 pc qty. Please see last Column Mechanical Configuration Table for Box and Tray Options

**Laser Marking (Optional)**

**Voltage Rating**

**Termination Style Code**  
Please see 2nd Column Mechanical Configuration Table

\*\*Optional

The above part number refers to a 700 E Series (case size E) 390 pF capacitor, K tolerance (±10%), 3600 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)

### 700E Series NPO Porcelain High RF Power Multilayer Capacitors



#### MECHANICAL CONFIGURATION

| AVX Series & Case Size | AVX Term. Code | Case Size & Type              | Outline<br>W/T is a Termination Surface | Body Dimensions<br>inches (mm)      |                            |                    | Lead and Termination<br>Dimensions and Material |                                                                                                                                                                                                           | Pkg Type                                                                                          | Pkg Code           |            |
|------------------------|----------------|-------------------------------|-----------------------------------------|-------------------------------------|----------------------------|--------------------|-------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|--------------------|------------|
|                        |                |                               |                                         | Length<br>(L)                       | Width<br>(W)               | Thickness<br>(T)   | Overlap<br>(Y)                                  | Materials                                                                                                                                                                                                 |                                                                                                   |                    |            |
| 700E                   | W              | <br>Solder Plate              |                                         | .380+.015 -.010<br>(9.65+0.38-0.25) | .380 ±.010<br>(9.65 ±0.25) | 170 (4.32)<br>max. | .040 (1.02)<br>max.                             | Tin/Lead, Solder Plated over Nickel Barrier Termination                                                                                                                                                   | T&R, 250 pcs<br>Tray, 96 pcs                                                                      | T<br>J96           |            |
| 700E                   | P              | <br>Pellet                    |                                         | .380+.040 -.010<br>(9.65+1.02-0.25) |                            |                    |                                                 | Heavy Tin/Lead Coated, over Nickel Barrier Termination                                                                                                                                                    | T&R, 250 pcs<br>Tray, 96 pcs                                                                      | T<br>J96           |            |
| 700E                   | T              | <br>Solderable Nickel Barrier |                                         | .380+.015 -.010<br>(9.65+0.38-0.25) |                            |                    |                                                 | <b>RoHS Compliant</b><br>Tin Plated over Nickel Barrier Termination                                                                                                                                       | T&R, 250 pcs<br>Tray, 96 pcs                                                                      | T<br>J96           |            |
| 700E                   | MS             | <br>Microstrip                |                                         | .380+.035-.010<br>(9.65+0.89-0.25)  |                            |                    | N/A                                             | High Purity Silver Leads<br>L <sub>L</sub> = .750 (19.05) min<br>W <sub>L</sub> = .350 ±.010 (8.89 ±0.25)<br>T <sub>L</sub> = .010 ±.005 (0.25 ±0.13)<br>Leads are Attached with High Temperature Solder. | Tray, 16 or 32 pcs                                                                                | J16<br>J32         |            |
| 700E                   | AR             | <br>Axial Ribbon              |                                         |                                     |                            |                    |                                                 |                                                                                                                                                                                                           | Tray, 16 or 32 pcs                                                                                | J16<br>J32         |            |
| 700E                   | AW             | <br>Axial Wire                |                                         |                                     |                            |                    |                                                 |                                                                                                                                                                                                           | Silver-plated Copper Leads<br>Dia. = .032 ±.002 (.813 ±.051)<br>L <sub>L</sub> = 2.25 (57.2) min. | Box, 20 pcs        | B20        |
| 700E                   | RW             | <br>Radial Wire               |                                         |                                     |                            |                    |                                                 |                                                                                                                                                                                                           | Silver-plated Copper Leads<br>Dia. = .032 ±.002 (.813 ±.051)<br>L <sub>L</sub> = 1.0 (25.4) min.  | Tray, 16 or 64 pcs | J16<br>J64 |

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

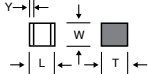
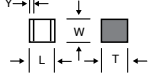
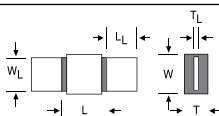
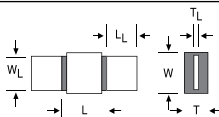
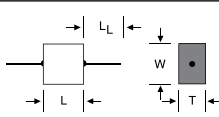
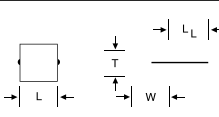
# RF/Microwave Capacitors

## RF/Microwave Multilayer Capacitors (MLC)

### 700E Series NPO Porcelain High RF Power Multilayer Capacitors



#### MECHANICAL CONFIGURATION

| AVX Series & Case Size | AVX Term. Code | Case Size & Type                                                                                                | Outline<br>W/T is a Termination Surface                                             | Body Dimensions<br>inches (mm)      |                            |                     | Lead and Termination<br>Dimensions and Material |                                                                                                                                                                                                | Pkg Type                     | Pkg Code   |  |  |
|------------------------|----------------|-----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------|----------------------------|---------------------|-------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|------------|--|--|
|                        |                |                                                                                                                 |                                                                                     | Length<br>(L)                       | Width<br>(W)               | Thickness<br>(T)    | Overlap<br>(Y)                                  | Materials                                                                                                                                                                                      |                              |            |  |  |
| 700E                   | WN             | <br>Non-Mag Solder Plate       |    | .380+.015 -.010<br>(9.65+0.38-0.25) | .380 ±.010<br>(9.65 ±0.25) | .170 (4.32)<br>max. | .040 (1.02)<br>max.                             | Tin/Lead, Solder Plated over<br>Non-Magnetic<br>Barrier Termination                                                                                                                            | T&R, 250 pcs<br>Tray, 96 pcs | T<br>J96   |  |  |
| 700E                   | PN             | <br>Non-Mag Pellet             |    | .380+.040 -.010<br>(9.65+1.02-0.25) |                            |                     |                                                 | Heavy Tin/Lead Coated, over<br>Non-Magnetic<br>Barrier Termination                                                                                                                             | T&R, 250 pcs<br>Tray, 96 pcs | T<br>J96   |  |  |
| 700E                   | TN             | <br>Non-Mag Solderable Barrier |    | .380+.015 -.010<br>(9.65+0.38-0.25) |                            |                     |                                                 | <b>RoHS Compliant</b><br>Tin Plated over<br>Non-Magnetic<br>Barrier Termination                                                                                                                | T&R, 250 pcs<br>Tray, 96 pcs | T<br>J96   |  |  |
| 700E                   | MN             | <br>Non-Mag Microstrip         |    | .380+.035 -.010<br>(9.65+0.89-0.25) |                            |                     | N/A                                             | High Purity<br>Silver Leads<br><br>$L_L = .750$ (19.05) min<br>$W_L = .350 \pm .010$ (8.89 ±0.25)<br>$T_L = .010 \pm .005$ (0.25 ±0.13)<br>Leads are Attached with<br>High Temperature Solder. | Tray, 16 or<br>32 pcs        | J16<br>J32 |  |  |
| 700E                   | AN             | <br>Non-Mag Axial Ribbon       |    |                                     |                            |                     |                                                 |                                                                                                                                                                                                | Tray, 16 or<br>32 pcs        | J16<br>J32 |  |  |
| 700E                   | BN             | <br>Non-Mag Axial Wire       |   |                                     |                            |                     |                                                 | Silver-plated Copper Leads<br>Dia. = .032 ±.002 (.813 ±.051)<br>$L_L = 2.25$ (57.2) min.                                                                                                       | Box, 20 pcs                  | B20        |  |  |
| 700E                   | RN             | <br>Non-Mag Radial Wire      |  |                                     |                            |                     |                                                 | Silver-plated Copper Leads<br>Dia. = .032 ±.002 (.813 ±.051)<br>$L_L = 1.0$ (25.4) min.                                                                                                        | Tray, 16 or<br>64 pcs        | J16<br>J64 |  |  |

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

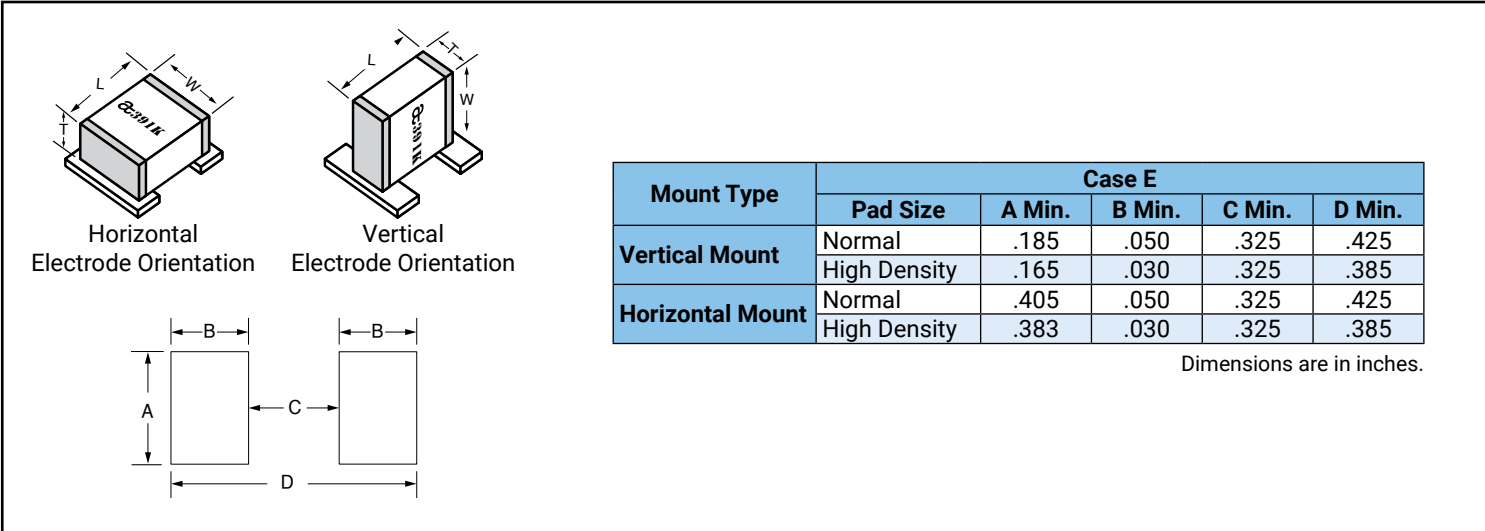
# RF/Microwave Capacitors

## RF/Microwave Multilayer Capacitors (MLC)

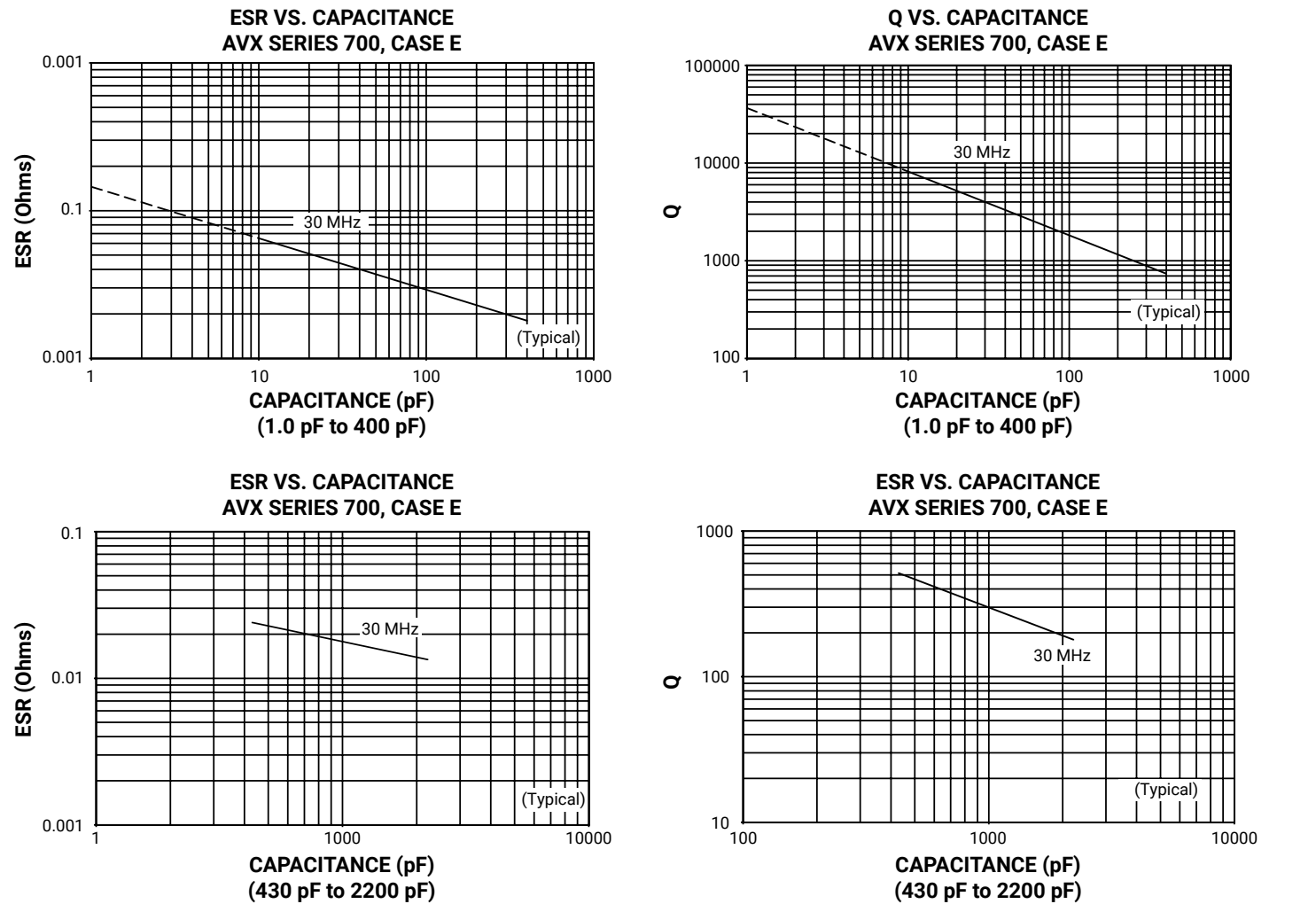
### 700E Series NPO Porcelain High RF Power Multilayer Capacitors



SUGGESTED MOUNTING PAD DIMENSIONS



PERFORMANCE DATA

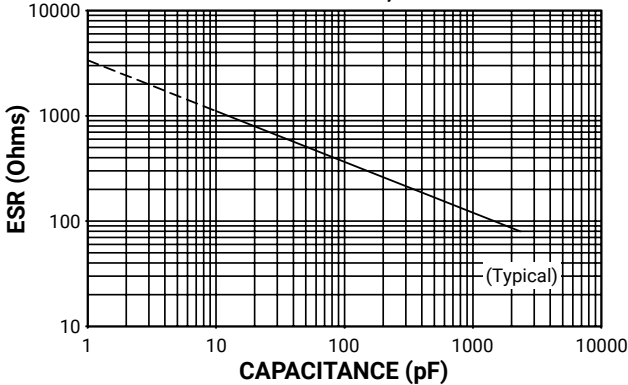


RF/Microwave Capacitors  
RF/Microwave Multilayer Capacitors (MLC)  
700E Series NPO Porcelain High RF Power Multilayer Capacitors

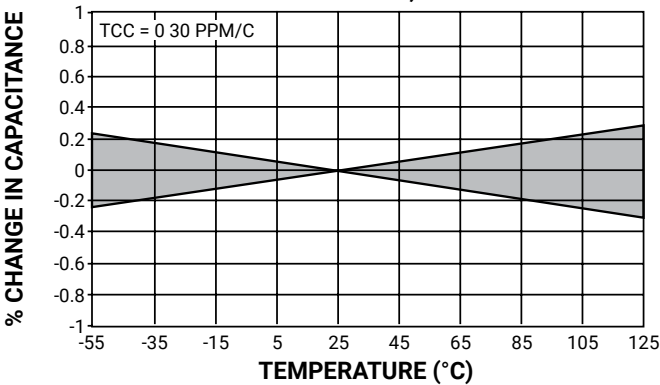


PERFORMANCE DATA

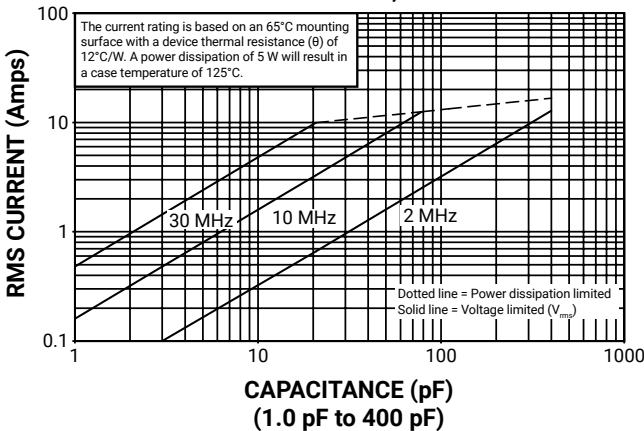
SERIES RESONANCE VS. CAPACITANCE  
AVX SERIES 700, CASE E



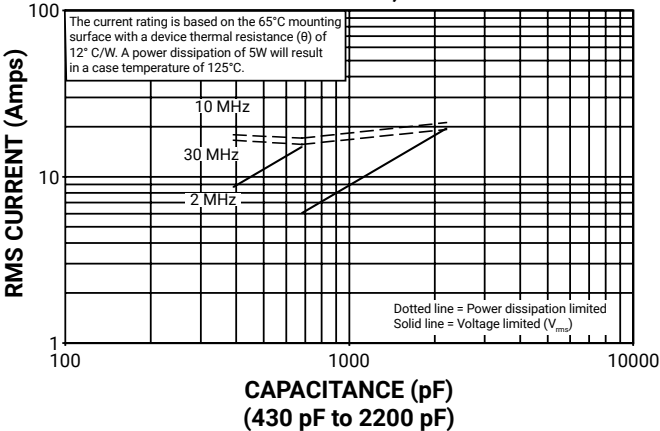
CAPACITANCE CHANGE VS. TEMPERATURE  
AVX SERIES 700, CASE E



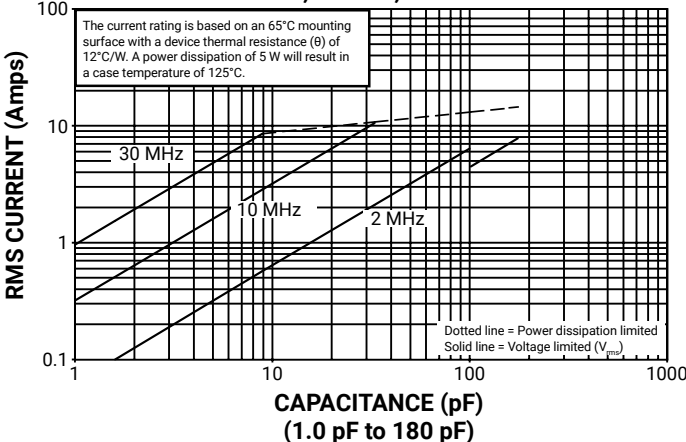
CURRENT RATING VS. CAPACITANCE  
AVX SERIES 700, CASE E



CURRENT RATING VS. CAPACITANCE  
AVX SERIES 700, CASE E



CURRENT RATING VS. CAPACITANCE  
AVX SERIES 700, CASE E, EXTENDED VOLTAGE



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[700E390GAR7200XC](#) [700E3R9CAR7200XC](#) [700E680GAR7200XC](#) [700E100GAR7200XC](#) [700E2R2CAR7200XC](#)  
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[700E820KAR7200](#) [700E750GAR3600](#) [700E750GT7200X](#) [700E820FAR7200](#) [700E820FMS7200](#) [700E820FT7200X](#)  
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[700E6R2DT7200X](#) [700E6R8CAR7200](#) [700E681JAR3600](#) [700E681JMS3000](#) [700E681JT2500X](#) [700E681JT3000X](#)  
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[700E680GW3600X](#) [700E680JAR7200](#) [700E620JT7200X](#) [700E620KAR7200](#) [700E620KMS7200](#) [700E620KT7200X](#)  
[700E680FAR7200](#) [700E680FMS7200](#) [700E620FMS7200](#)