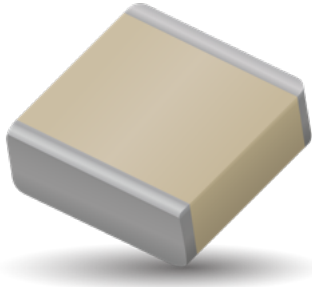


# RF/Microwave Capacitors

## RF/Microwave Multilayer Capacitors (MLC)

### 100E Series Porcelain High RF Power Multilayer Capacitors



#### GENERAL DESCRIPTION

KYOCERA AVX, the industry leader, offers new improved ESR/ESL performance for the 100 E 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
- 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. 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 |
| <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.                                                                      |

#### FEATURES

- Case E Size (.380" x .380")
- Capacitance Range 1pF to 5100pF
- 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>         | 90 ± 30 PPM/°C                                                                                                                                                                                                         |
| <b>Capacitance Range</b>                     | 1 pF to 5100 pF                                                                                                                                                                                                        |
| <b>Operating Temperature</b>                 | -55°C to +125°C*                                                                                                                                                                                                       |
| <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 5100 pF) @ 1 KHz.                                                                                                              |
| <b>Insulation Resistance (IR)</b>            | 1 pF to 5100 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> | 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 |
| <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 | 5R6       | 5.6       | B, C, D | 3600       | EXTENDED VOLTAGE | 470       | 47        | F, G, J, K, M | 3600       | 7200 | 391       | 390       | F, G, J, K, M | 3600       | N/A  |
| 1R1       | 1.1       |         |            |                  | 6R2       | 6.2       |         |            |                  | 510       | 51        |               |            |      | 431       | 430       |               | 2500       |      |
| 1R2       | 1.2       |         |            |                  | 6R8       | 6.8       |         |            |                  | 560       | 56        |               |            |      | 471       | 470       |               |            |      |
| 1R3       | 1.3       |         |            |                  | 7R5       | 7.5       |         |            |                  | 620       | 62        |               |            |      | 511       | 510       |               |            |      |
| 1R4       | 1.4       |         |            |                  | 8R2       | 8.2       |         |            |                  | 680       | 68        |               |            |      | 561       | 560       |               |            |      |
| 1R5       | 1.5       |         |            |                  | 9R1       | 9.1       |         |            |                  | 750       | 75        |               |            |      | 621       | 620       |               |            |      |
| 1R6       | 1.6       |         |            |                  | 100       | 10        |         |            |                  | 820       | 82        |               |            |      | 681       | 680       |               |            |      |
| 1R7       | 1.7       |         |            |                  | 110       | 11        |         |            |                  | 910       | 91        |               |            |      | 751       | 750       |               |            |      |
| 1R8       | 1.8       |         |            |                  | 120       | 12        |         |            |                  | 101       | 100       |               |            |      | 821       | 820       |               |            |      |
| 1R8       | 1.9       |         |            |                  | 130       | 13        |         |            |                  | 111       | 110       |               |            |      | 911       | 910       |               |            |      |
| 2R0       | 2.0       |         | 150        | 15               | 121       | 120       | 102     | 1000       |                  |           |           |               |            |      |           |           |               |            |      |
| 2R1       | 2.1       |         | 160        | 16               | 131       | 130       | 112     | 1100       |                  |           |           |               |            |      |           |           |               |            |      |
| 2R2       | 2.2       |         | 180        | 18               | 151       | 150       | 122     | 1200       |                  |           |           |               |            |      |           |           |               |            |      |
| 2R3       | 2.3       |         | 200        | 20               | 161       | 160       | 152     | 1500       |                  |           |           |               |            |      |           |           |               |            |      |
| 2R4       | 2.4       |         | 220        | 22               | 181       | 180       | 182     | 1800       |                  |           |           |               |            |      |           |           |               |            |      |
| 3R0       | 3.0       |         | 240        | 24               | 201       | 200       | 222     | 2200       |                  |           |           |               |            |      |           |           |               |            |      |
| 3R3       | 3.3       |         | 270        | 27               | 221       | 220       | 272     | 2700       |                  |           |           |               |            |      |           |           |               |            |      |
| 3R6       | 3.6       |         | 300        | 30               | 241       | 240       | 302     | 3000       |                  |           |           |               |            |      |           |           |               |            |      |
| 3R9       | 3.9       |         | 330        | 33               | 271       | 270       | 332     | 3300       |                  |           |           |               |            |      |           |           |               |            |      |
| 4R3       | 4.3       |         | 360        | 36               | 301       | 300       | 392     | 3900       |                  |           |           |               |            |      |           |           |               |            |      |
| 4R7       | 4.7       | 390     | 39         | 331              | 330       | 472       | 4700    |            |                  |           |           |               |            |      |           |           |               |            |      |
| 5R1       | 5.1       | 430     | 43         | 361              | 360       | 512       | 5100    | 500        |                  |           |           |               |            |      |           |           |               |            |      |

VRMS = 0.707 X WVDC

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

#### HOW TO ORDER

**Series** 100

**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% |

**Voltage Rating** W

**Termination Style Code** 3600

Please see 2nd Column Mechanical Configuration Table

**Packaging** X

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

**Laser Marking (Optional)** T

The above part number refers to a 100 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.

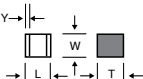
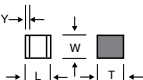
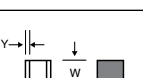
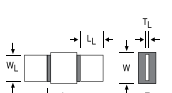
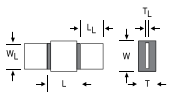
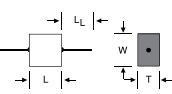
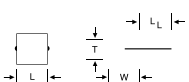
# RF/Microwave Capacitors

## RF/Microwave Multilayer Capacitors (MLC)

### 100E Series Porcelain High RF Power Multilayer Capacitors



#### MECHANICAL CONFIGURATION

| Series & Case Size | 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 & Qty                     | Pkg Code        |
|--------------------|------------|--------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------|----------------------------|------------------------|-------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|-----------------|
|                    |            |                                                                                                        |                                                                                     | Length<br>(L)                       | Width<br>(W)               | Thickness<br>(T)       | Overlap<br>(Y)                                  | Materials                                                                                                                                                                            |                                    |                 |
| 100E               | W          | <br>Solder Plate      |    | .380+.015 -.010<br>(9.65+0.38-0.25) | .380 ±.010<br>(9.65 ±0.25) | .170<br>(4.32)<br>max. | .040<br>(1.02)<br>max.                          | Tin/Lead, Solder Plated over Nickel Barrier Termination                                                                                                                              | T&R, 250 pcs<br>Tray, 24 or 96 pcs | T<br>J24<br>J96 |
| 100E               | P          | <br>Pellet            |    | .380+.040 -.010<br>(9.65+1.02-0.25) |                            |                        |                                                 | Heavy Tin/Lead Coated,<br>over Nickel Barrier Termination                                                                                                                            | T&R, 250 pcs<br>Tray, 24 or 96 pcs | T<br>J24<br>J96 |
| 100E               | T          | <br>Solderable Nickel |    | .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, 24 or 96 pcs | T<br>J24<br>J96 |
| 100E               | MS         | <br>Microstrip        |    | .380+.035 -.010<br>(9.65+0.89-0.25) |                            |                        | N/A                                             | High Purity Silver Leads<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 High Temperature Solder. | Tray, 16 or 32 pcs                 | J16<br>J32      |
| 100E               | AR         | <br>Axial Ribbon      |    |                                     |                            |                        |                                                 |                                                                                                                                                                                      | Tray, 16 or 32 pcs                 | J16<br>J32      |
| 100E               | AW         | <br>Axial Wire      |  |                                     |                            |                        |                                                 |                                                                                                                                                                                      | Box, 20 pcs                        | B20             |
| 100E               | RW         | <br>Radial Wire     |  |                                     |                            |                        |                                                 |                                                                                                                                                                                      | 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.

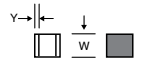
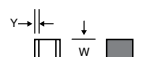
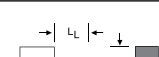
# RF/Microwave Capacitors

## RF/Microwave Multilayer Capacitors (MLC)

### 100E Series Porcelain High RF Power Multilayer Capacitors



#### MECHANICAL CONFIGURATION

| Series & Case Size | 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 & Qty                     | Pkg Code        |  |  |
|--------------------|------------|-----------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------|----------------------------|------------------------|-------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|-----------------|--|--|
|                    |            |                                                                                                                       |                                                                                     | Length<br>(L)                       | Width<br>(W)               | Thickness<br>(T)       | Overlap<br>(Y)                                  | Materials                                                                                                                                                                                  |                                    |                 |  |  |
| 100E               | WN         | <br>Non-Mag<br>Solder Plate          |    | .380+.015 -.010<br>(9.65+0.38-0.25) | .380 ±.010<br>(9.65 ±0.25) | .170<br>(4.32)<br>max. | .040<br>(1.02)<br>max.                          | Tin/Lead, Solder Plated over<br>Non-Magnetic<br>Barrier Termination                                                                                                                        | T&R, 250 pcs<br>Tray, 24 or 96 pcs | T<br>J24<br>J96 |  |  |
| 100E               | PN         | <br>Non-Mag<br>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, 24 or 96 pcs | T<br>J24<br>J96 |  |  |
| 100E               | TN         | <br>Non-Mag<br>Solderable<br>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, 24 or 96 pcs | T<br>J24<br>J96 |  |  |
| 100E               | MN         | <br>Non-Mag<br>Microstrip            |    | .380+.035 -.010<br>(9.65+0.89-0.25) |                            |                        | N/A                                             | High Purity<br>Silver Leads<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      |  |  |
| 100E               | AN         | <br>Non-Mag<br>Axial Ribbon          |    |                                     |                            |                        |                                                 |                                                                                                                                                                                            | Tray, 16 or<br>32 pcs              | J16<br>J32      |  |  |
| 100E               | BN         | <br>Non-Mag<br>Axial Wire           |   |                                     |                            |                        |                                                 | Silver-plated Copper Leads<br>Dia. = .032 ±.002 (.813<br>±.051)<br>$L_L = 2.25$ (57.2) min.                                                                                                | Box, 20 pcs                        | B20             |  |  |
| 100E               | RN         | <br>Non-Mag<br>Radial Wire         |  |                                     |                            |                        |                                                 | Silver-plated Copper Leads<br>Dia. = .032 ±.002 (.813<br>±.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)
100E Series Porcelain High RF Power Multilayer Capacitors

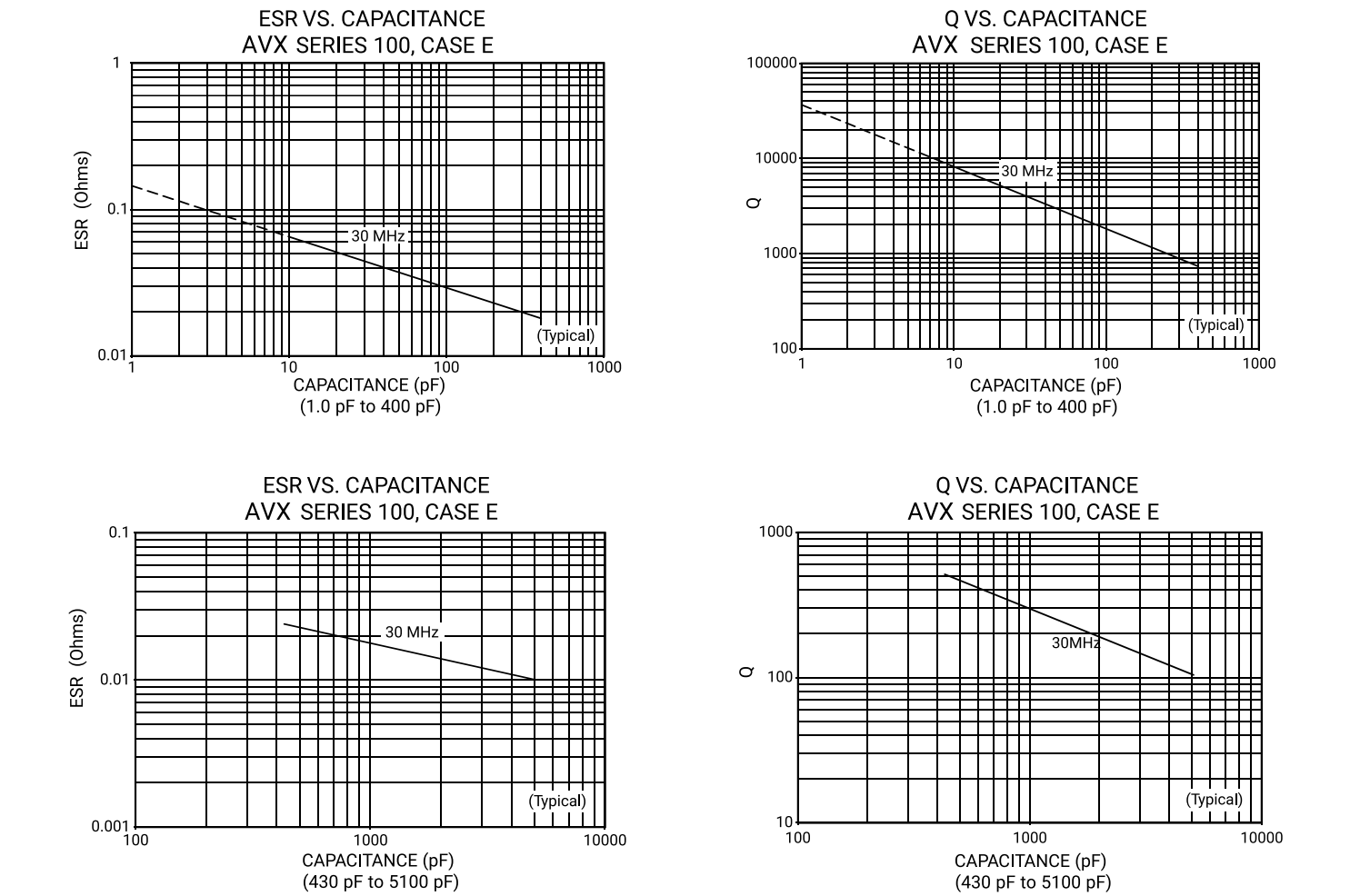
SUGGESTED MOUNTING PAD DIMENSIONS

Horizontal Electrode Orientation

| Mount Type       | Case E       |        |        |        |        |
|------------------|--------------|--------|--------|--------|--------|
|                  | Pad Size     | A Min. | B Min. | C Min. | D Min. |
| Horizontal Mount | Normal       | .405   | .050   | .325   | .425   |
|                  | High Density | .385   | .030   | .325   | .385   |

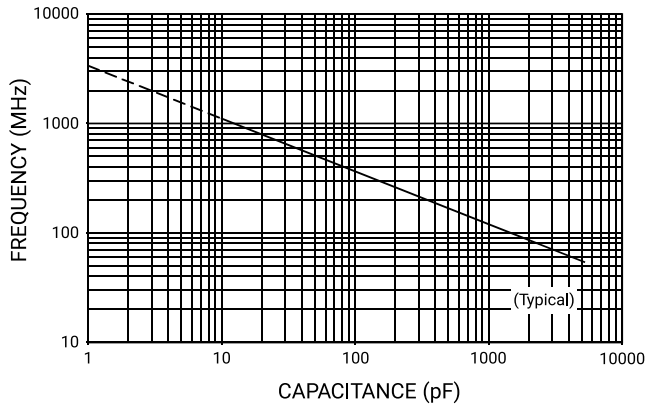
Dimensions are in inches.

PERFORMANCE DATA

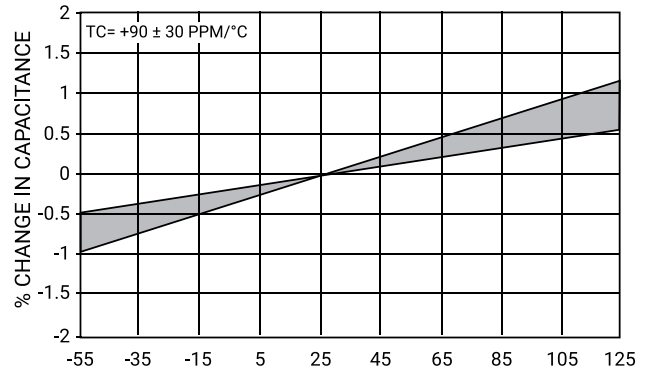


#### PERFORMANCE DATA

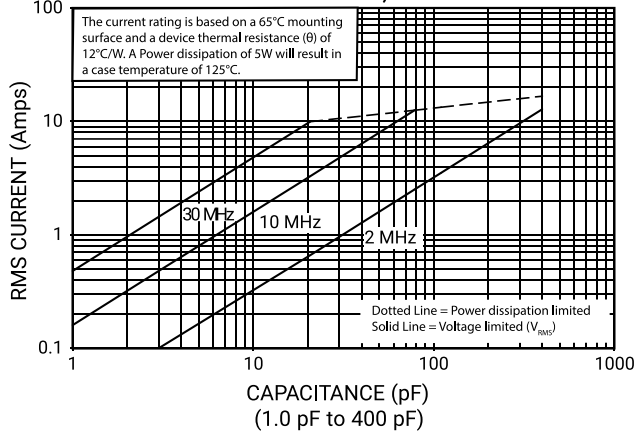
SERIES RESONANCE VS. CAPACITANCE  
AVX SERIES 100, CASE E



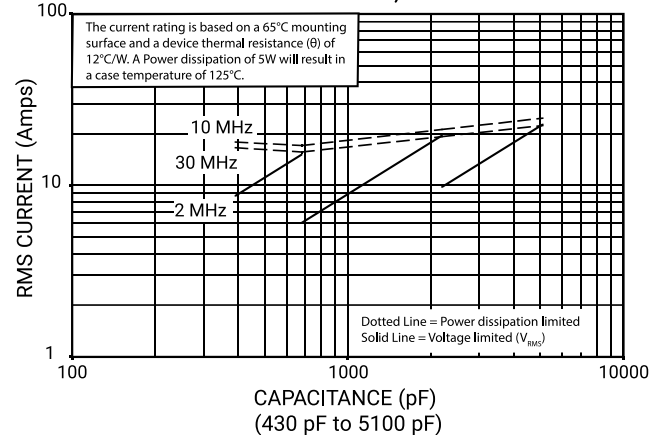
CAPACITANCE CHANGE VS. TEMPERATURE  
AVX SERIES 100, CASE E



CURRENT RATING VS. CAPACITANCE  
AVX SERIES 100, CASE E



CURRENT RATING VS. CAPACITANCE  
AVX Series 100, CASE E



CURRENT RATING VS. CAPACITANCE  
AVX SERIES 100, CASE E, EXTENDED VOLTAGE

