

# High-Voltage Types Ordering Information, Mica Capacitors

## Ordering Information

Ordering Information: Order by complete part number, as below. For other options, write your requirements on your quote request or purchase order.

## Cast-Case Part Numbering System

271   CDE Type	30   Rated Peak Voltage 10 = 1000 30 = 3000 250 = 25000	B   Characteristic	470   Capacitance 470 = 47 pF 361 = 360 pF 122 = 1200 pF	J   Capacitance Tolerance G = ±2% J = ±5%	O   Temperature Range O = -55 °C to +125 °C	0   Mounting Style 0 = No mounting plate 1 = Mounting plate on bottom only 2 = Mounting plates on top and bottom
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	Temp. Coeff. ppm/°C	Capacitance Drift	Standard Cap. Range
B	Not specified	Not specified	
C	-200 to +200	±(0.5% +0.1pF)	1-18 pF
D	-100 to +100	±(0.3% +0.1pF)	
E	-20 to +100	±(0.1% +0.1pF)	20-82 pF

## Potted Case Styles

Transmitting mica capacitor type 272 is available in potted case package Type F2. To order this potted style use the part numbering below and contact us.

F2   CDE Type	30   Rated Peak Voltage (in hundreds of peak work- ing volts)	B   Characteristic	470   Capacitance 470 = 47 pF 361 = 360 pF 122 = 1200 pF	J   Capacitance Tolerance G = ±2% J = ±5% (standard)	M   Temperature Range M = -55 °C to +70 °C
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## Military Style Numbers

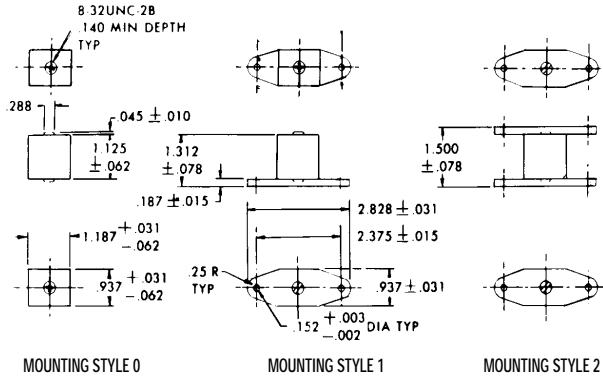
For the commercial equivalent to military style numbers CM66 through CM93 see the tables below.

Military Style No.	Equivalent CDE Type
CM66	271, Mounting Style 0
CM67	271, Mounting Style 1
CM68	271, Mounting Style 2
CM70	F2
CM71	272, Mounting Style 0
CM72	272, Mounting Style 1
CM73	272, Mounting Style 2
CM76	291, Mounting Style 0
CM77	291, Mounting Style 1
CM78	291, Mounting Style 2

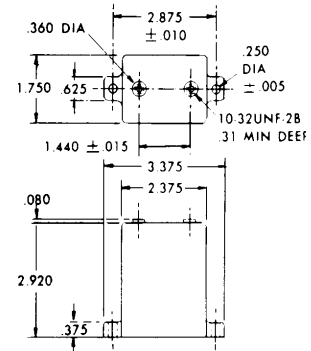
Military Style No.	Equivalent CDE Type
CM81	292, Mounting Style 0
CM82	292, Mounting Style 1
CM83	292, Mounting Style 2
CM86	293, Mounting Style 0
CM87	293, Mounting Style 1
CM88	293, Mounting Style 2
CM91	294, Mounting Style 0
CM92	294, Mounting Style 1
CM93	294, Mounting Style 2

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## Type 271

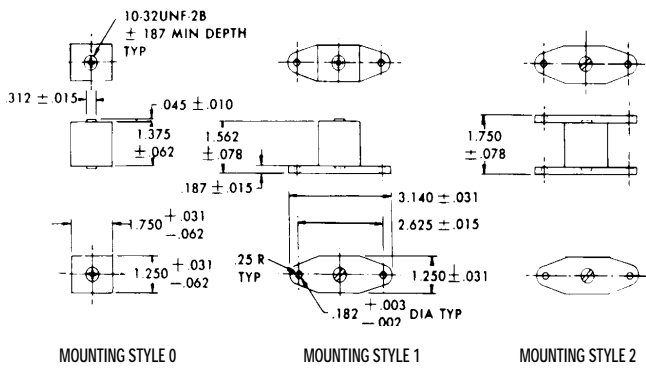


## Type 273



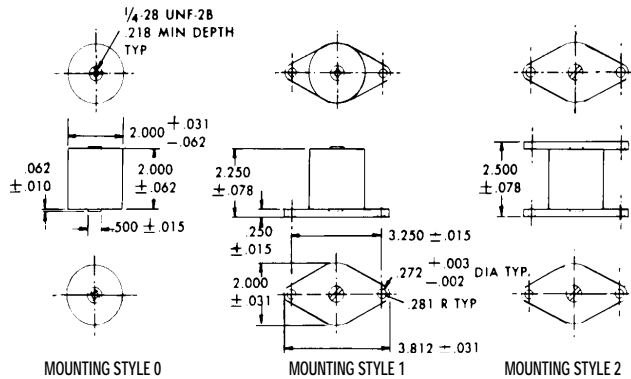
TOLERANCES UNLESS  
OTHERWISE SPECIFIED: ±0.031

## Type 272

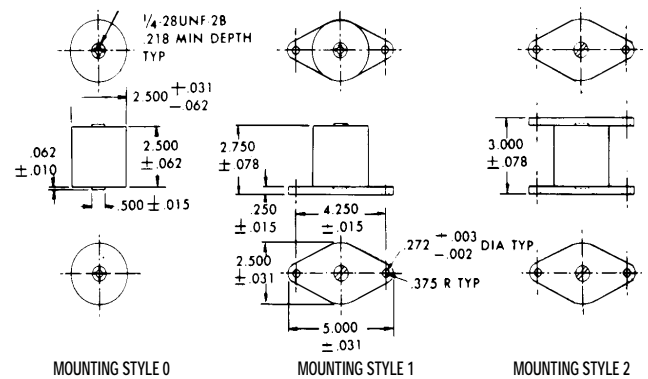


## Cast-Case Styles

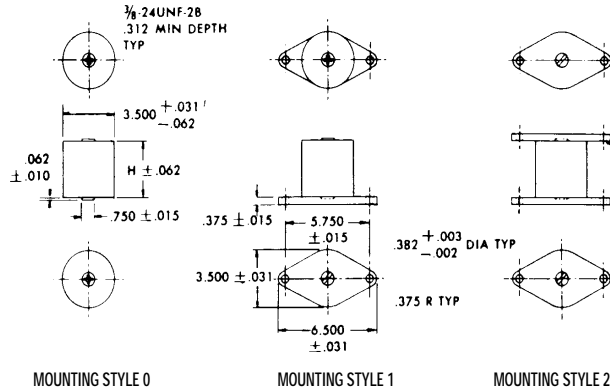
## Type 291



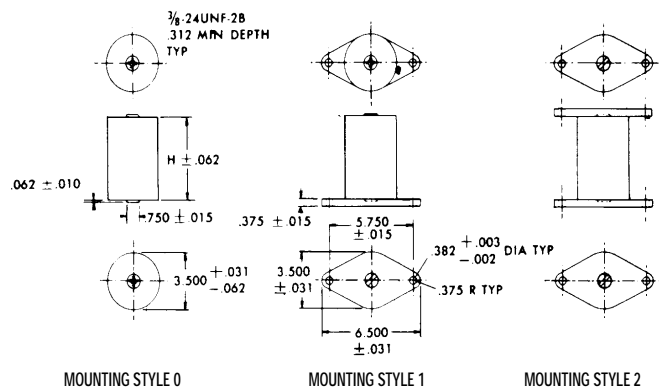
## Type 292



## Type 293

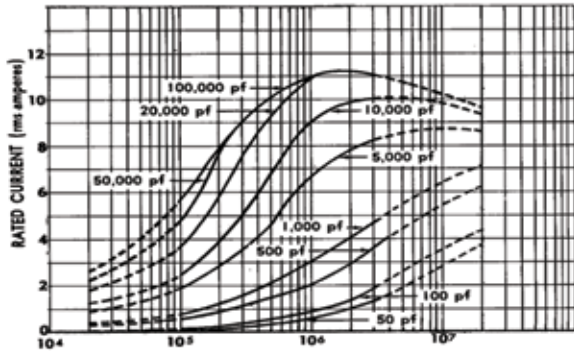


## Type 294

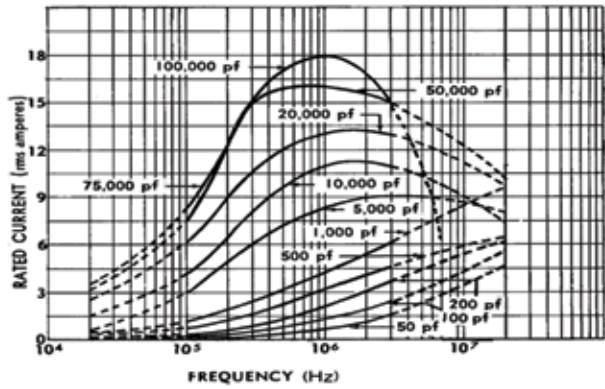


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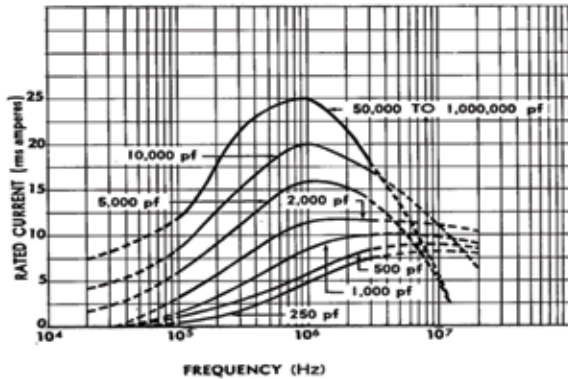
**Type 271 (CM 66)**  
Rated Current Versus Frequency



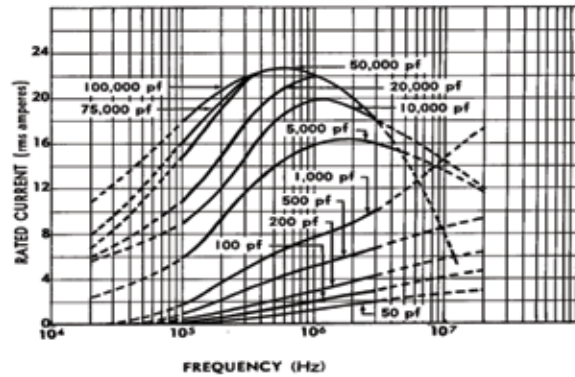
**Type 272 (CM 71)**  
Rated Current Versus Frequency



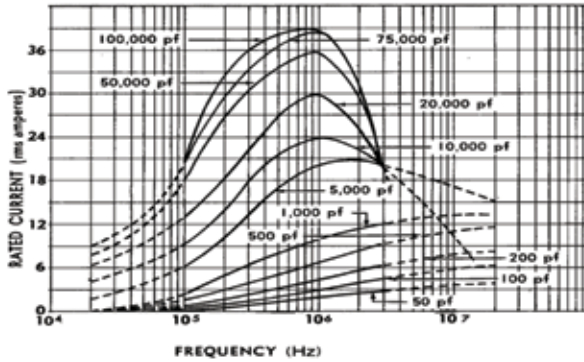
**Type 273**  
Rated Current Versus Frequency



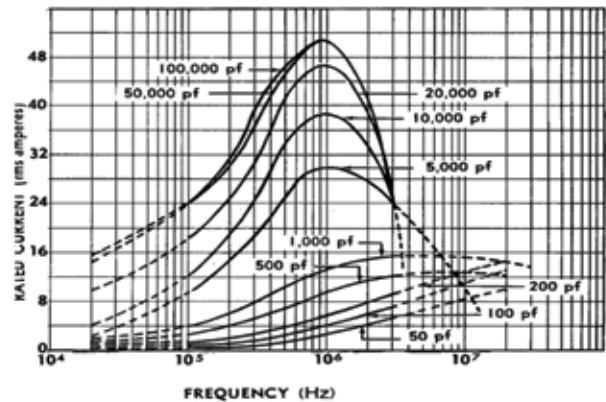
**Type 291 (CM 76)**  
Rated Current Versus Frequency



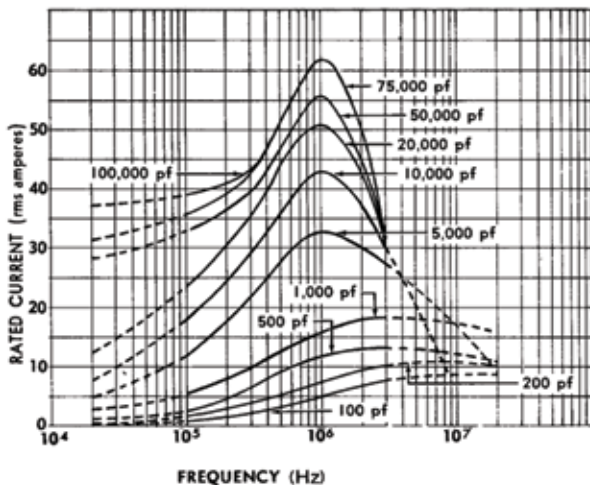
**Type 292 (CM 81)**  
Rated Current Versus Frequency



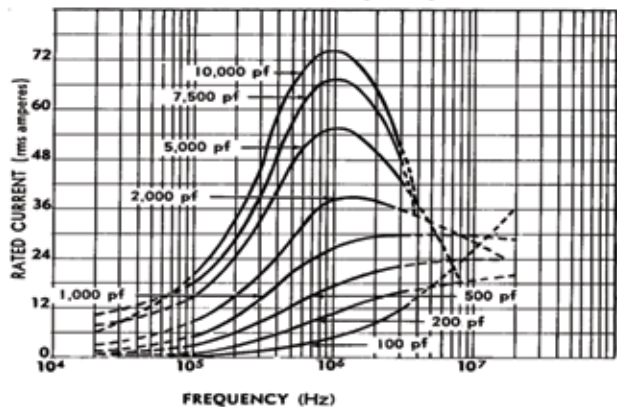
**Type 293 (CM 86)**  
Rated Current Versus Frequency



**Type 294 (CM 91)**  
Rated Current Versus Frequency



**Type G5 (CM 95)**  
Rated Current Versus Frequency



# High-Voltage Types Application Guide, Mica Capacitors

## Specifications

**Capacitance** is within tolerance when measured at these frequencies:

1–1000 pF @ 1 MHz

> 1000 pF @ 1 kHz

**Dissipation Factor** is typically less than 0.05% when measured as above. Dissipation factor (DF) equals  $2\pi fRC$ , where  $f$  is the test frequency,  $R$  is the equivalent series resistance ( $\Omega$ ), and  $C$  is nominal capacitance (F).  $Q$  is the reciprocal of the dissipation factor.

**Operating Temperature Range** is  $-55\text{ }^{\circ}\text{C}$  to  $+125\text{ }^{\circ}\text{C}$ . Insulation Resistance is no less than 7500 M $\Omega$  when measured at 100 Vdc.

**Temperature Coefficient and Capacitance Drift:** Measure the capacitors' capacitance at  $25\text{ }^{\circ}\text{C}$ ,  $55\text{ }^{\circ}\text{C}$ ,  $75\text{ }^{\circ}\text{C}$ ,  $125\text{ }^{\circ}\text{C}$ , and at  $25\text{ }^{\circ}\text{C}$  after stabilizing at each temperature. The capacitance will meet the limits of the Characteristic table shown in Ordering Information.

**Rated Peak Voltage** is not to be exceeded in actual use. Voltage ratings are in the listings and apply under the following conditions:

Temperature: Within the specified operating temperature range.

Altitude: Up to 50,000 feet or 3.4 inches of mercury.

Relative Humidity: Up to 80%.

Frequency: As specified.

Where pulse conditions are encountered, contact us.

**Withstanding Voltage:** Capacitors will withstand application of an ac potential between terminals having an rms value equal to the rated peak voltage at a frequency of 100 Hz or less without damage, arcing or breakdown. Apply the potential by raising the voltage from zero to the specified value. Apply the full potential for a minimum of 5 seconds.

**Case Insulation:** Capacitor cases will withstand, without damage, arcing or breakdown, a 60-Hz peak ac potential equal to twice the rated peak voltage applied between the terminals connected together and a metal electrode touching the case. Apply this potential for 1 to 5 seconds.

**Current Ratings** at various frequencies are in the listings and apply under the following conditions:

Temperature:  $65\text{ }^{\circ}\text{C}$  maximum

Derating Factor: None

**Vibration:** Capacitors will withstand vibrational forces occurring at rates of from 10 to 55 Hz for  $4\frac{1}{2}$  hours. The total excursion during vibration is 0.06 inches. At the end of this period, make the following inspections and tests:

Visual and Mechanical Inspection: No perceptible deterioration. Withstanding Voltage: As specified under Withstanding Voltage.

Insulation Resistance: No less than 7500 M $\Omega$ .

Capacitance Change: Not to exceed 3% of the nominal value or one picofarad, whichever is greater.

**Temperature and Immersion Cycling:** Capacitors will withstand the temperature and immersion cycles indicated in the tables below. Follow three temperature cycles by two immersion cycles. Make the measurements listed below no more than 30 minutes following the final immersion cycle:

Withstanding Voltage: As specified under Withstanding Voltage.

Insulation Resistance: No less than 7500 M $\Omega$ .

Capacitance: Change not to exceed 4% of the nominal value or one picofarad, whichever is greater.

## Temperature Cycling Test Conditions

Steps	Temp (°C)	Interval (Minutes)
1	$-55 + 0$ $-3$	30
2	$25 + 10$ $-5$	10 to 15
3	$125 + 3$ $-0$	30
4	$25 + 10$ $-5$	10 to 15

## Immersion Test Conditions

•Number of cycles: 2

•Duration of each immersion: 15 minutes

•Immersion bath: Saturated solution of sodium chloride and water

•Temp. of hot bath:  $65 - 0 + 5\text{ }^{\circ}\text{C}$

•Temp. of cold bath:  $25 - 0 + 10\text{ }^{\circ}\text{C}$

**Life Test:** Subject all capacitors to a temperature of  $55\text{ }^{\circ}\text{C}$  for 48 hours. Then subject units cast in rectangular cases (Types 271, 272, and 273) to a 60-Hz rms voltage equal to the rated peak voltage for 250 hours. Subject units cast in cylindrical cases (Types 291, 292, 293, and 294) to a 60-Hz rms voltage equal to 90% of the rated peak voltage for 250 hours. In both tests, maintain the temperature at  $125\text{ }^{\circ}\text{C}$ . After test, the capacitors will meet these requirements:

Withstanding Voltage: As specified under Withstanding Voltage.

Insulation Resistance: No less than 7500 M $\Omega$ .

Capacitance Change: Within the limits given in the table below or one picofarad, whichever is greater.

## Characteristic Maximum Cap.

<b>B</b>	$\pm 8\%$
<b>C</b>	$\pm 3\%$
<b>D</b>	$\pm 3\%$
<b>E</b>	$\pm 3\%$

In addition, the capacitor must show no visual damage and the markings must be legible



## High-Voltage Types Application Guide, Mica Capacitors

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