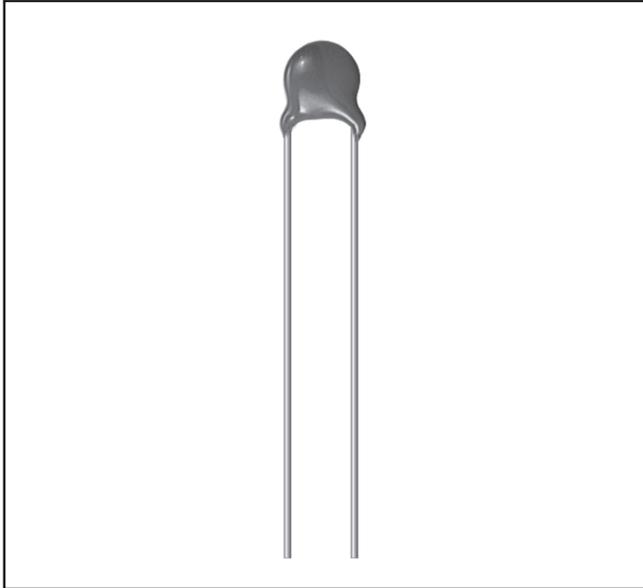


# Ceramic Disc Capacitors

## Cera-mite<sup>®</sup>, High Voltage



**APPLICATIONS**

Cera-Mite<sup>®</sup> high voltage capacitors have become the choice of discriminating designers throughout the world. This reputation for product quality and reliability is a result of continuous research in fine ceramic development and high temperature plastic coatings, combined with rigorous production testing and complete environmental test audits.

2kV and 3kV parts are widely used in demanding applications such as snubbers, EMI/RFI filters and switcher power supplies. The new high Q 2DFO series are especially designed for "lossless snubbers" at frequencies of 100kHz and above.

10kV and 15kV offerings have new N4700 values designed for AC currents.

High voltage capacitors are often specified for low voltage applications, such as telephones and lighting ballasts, to withstand transient voltage and energy surges in accord with FCC and IEEE standards.

See Ceramic Disc Capacitor Application Notes for additional application information.

See Electrical and Mechanical Options for other options.

**PERFORMANCE CHARACTERISTICS**

**Ambient Temperature Range:** - 25°C to + 85°C.

**Capacitance Tolerance:** ± 20% (X5F, Y5R, N4700), + 80%, - 20% (Y5U, Z5U).

**Dissipation Factor:** 1.5% maximum (Y5R, Y5U & Z5U), 1.5% (X5F), 0.2% (N4700).

**Dielectric Strength:** 150% of rated voltage (in dielectric fluid) with charging current limited to 50 milliamps.

**Insulation Resistance:** 200,000 Megohm minimum at 180 VDC, 1000 ohmfarad.

**Corona Limit:** 100 picocoulombs at rated AC voltage.

**Power Dissipation:** Limit to + 25°C temperature rise on case. Limit to maximum case temperature of + 105°C.

Examples:

- + 70°C ambient + 25°C case temperature rise = + 95°C case.
- + 85°C ambient + 20°C case temperature rise = + 105°C case.

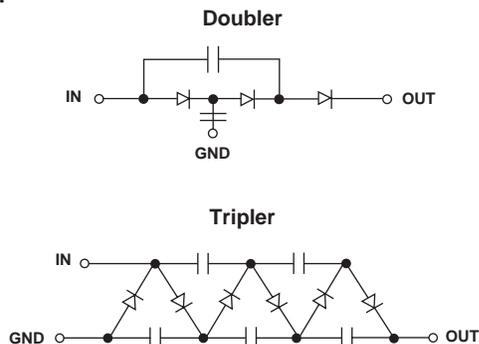
**Peak Current:** dv/dt limit of approximately 2000 V/ microsecond.

Applications to be tested and confirmed by user.

**APPLICATION NOTES**

1. For high voltage power source of Color TV and B/W TV.
  - Doubler, Tripler.
  - Tuning capacitor of focus coil.
2. For high voltage power source of x-ray tube, gas laser, copy machine (ppc), air cleaner, oscilloscope, etc.

**Example:**



**DIMENSIONAL CONFIGURATIONS**

[Numbers in brackets indicate millimeters]

**Figure 6 - 6C**

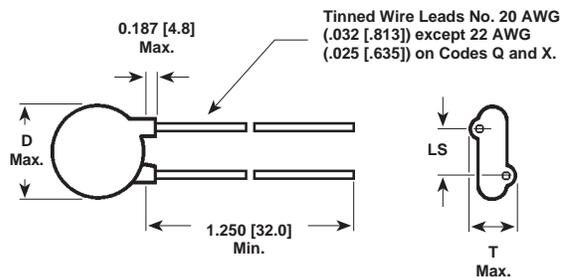


FIGURE	T Max.	FIGURE	T Max.
6	.165 [4.1]	6B	.240 [6.2]
6A	.187 [4.8]	6C	.280 [7.1]



<b>DIMENSIONS</b> [Numbers in brackets indicate millimeters]					
CASE CODE	MAXIMUM DIAMETER	BULK PACK LEAD SPACING	CASE CODE	MAXIMUM DIAMETER	BULK PACK LEAD SPACING
E	.330 [8.3]	.250 [6.3]	J	.620 [15.5]	.375 [9.4]
F	.400 [10.0]	.250 [6.3]	K	.680 [17.0]	.375 [9.4]
F <sup>3</sup>	.400 [10.0]	.375 [9.4]	L	.720 [18.0]	.375 [9.4]
G	.460 [11.5]	.250 [6.3]	M	.790 [19.8]	.375 [9.4]
G <sup>3</sup>	.460 [11.5]	.375 [9.4]	P	.900 [22.5]	.375 [9.4]
H	.530 [13.3]	.250 [6.3]	Q	.950 [24.1]	.375 [9.4]
H <sup>3</sup>	.530 [13.3]	.375 [9.4]	X	.890 [22.4]	.375 [9.4]

<b>STANDARD RATINGS</b> [Numbers in brackets indicate millimeters]						
<b>2000 Volt, All New</b>						
<ul style="list-style-type: none"> <li>Application range: Up to 2500 VDC, 600 VAC rms</li> <li>DFO: Up to 3kV; 1kVAC</li> </ul>		<ul style="list-style-type: none"> <li>Insulation Resistance: 1000 ohmfarad minimum</li> <li>Dissipation Factor: 2.0% maximum, except 2DFO 0.1% to 0.2%</li> </ul>		<ul style="list-style-type: none"> <li>Dielectric Strength: 3500 VDC, 1000 VAC rms</li> <li>DFO: 5kVDC; 20kVAC</li> </ul>		
CAPACITANCE	TOLERANCE CODE	PART NUMBER	T (Max.)	FIGURE	CASE CODE	TEMPERATURE COEFFICIENT
220.0pF	K	2DFOT22	.165 [4.1]	6	E	T3M
330.0pF	K	2DFOT33	.165 [4.1]	6	F	T3M
470.0pF	K	2DFOT47	.165 [4.1]	6	F	T3M
820.0pF	K	2DFOT82	.165 [4.1]	6	G	T3M
.001μF	K	2DFOD10	.165 [4.1]	6	H	T3M
.0022μF	K	2DFOD22	.165 [4.1]	6	K	T3M
.0033μF	K	2DFOD33	.165 [4.1]	6	M	T3M
.0047μF	K	2DFOD47	.165 [4.1]	6	P	T3M
.0010μF	M	20GAD10	.165 [4.1]	6	E	Y5U
.0010μF	K	20TSD10	.165 [4.1]	6	F	X7R
.0022μF	M	20GAD22	.165 [4.1]	6	F	Z5U
.0022μF	K	20TSD22	.165 [4.1]	6	G	X7R
.0033μF	M	20GAD33	.165 [4.1]	6	G	Z5U
.0033μF	K	20TSD33	.165 [4.1]	6	H	X7R
.0047μF	M	20GAD47	.165 [4.1]	6	H	Z5U
.0047μF	K	20TSD47	.165 [4.1]	6	K	X7R
.0068μF	M	20GAD68	.165 [4.1]	6	J	Z5U
.010μF	M	20GAS10	.165 [4.1]	6	K	Z5U
.010μF	M	20GASS10	.165 [4.1]	6	J	Y5V
.100μF	M	20GAP10	.240 [6.2]	6B	Q	Y5V

<b>3000 Volt</b>						
<ul style="list-style-type: none"> <li>Application range: Up to 4000 WVDC, 1000 VAC rms</li> </ul>		<ul style="list-style-type: none"> <li>Insulation Resistance: 50,000 Megohm minimum</li> <li>Dissipation Factor: 2.0% maximum</li> </ul>		<ul style="list-style-type: none"> <li>Dielectric Strength: 5250 WVDC, 1500 VAC rms</li> </ul>		
CAPACITANCE	TOLERANCE CODE	PART NUMBER	T (Max.)	FIGURE	CASE CODE	TEMPERATURE COEFFICIENT
10.0pF	M	30GAQ10	.187 [4.8]	6A	E	U2J
12.0pF	M	30GAQ12	.187 [4.8]	6A	E	U2J
15.0pF	M	30GAQ15	.187 [4.8]	6A	E	U2J
22.0pF	M	30GAQ22	.187 [4.8]	6A	E	R3L
27.0pF	M	30GAQ27	.187 [4.8]	6A	E	R3L
33.0pF	M	30GAQ33	.187 [4.8]	6A	E	R3L
47.0pF	M	30GAQ47	.187 [4.8]	6A	E	X5F
56.0pF	M	30GAQ56	.187 [4.8]	6A	E	X5F



**STANDARD RATINGS** [Numbers in brackets indicate millimeters]

**3000 Volt (Continued)**

- Application range: Up to 4000 WVDC, 1000 VAC rms
- Insulation Resistance: 50,000 Megohm minimum
- Dielectric Strength: 5250 WVDC, 1500 VAC rms
- Dissipation Factor: 2.0% maximum

CAPACITANCE	TOLERANCE CODE	PART NUMBER	T (Max.)	FIGURE	CASE CODE	TEMPERATURE COEFFICIENT
68.0pF	M	30GAQ68	.187 [4.8]	6A	E	X5F
100.0pF	M	30GAT10	.187 [4.8]	6A	E	X5F
150.0pF	M	30GAT15	.187 [4.8]	6A	E	X5F
220.0pF	M	30GAT22	.187 [4.8]	6A	E	X5F
270.0pF	M	30GAT27	.187 [4.8]	6A	E	X5F
330.0pF	M	30GAT33	.187 [4.8]	6A	E	X5R
390.0pF	M	30GAT39	.187 [4.8]	6A	E	X5R
470.0pF	M	30GAT47	.187 [4.8]	6A	E	X5S
680.0pF	M	30GAT68	.187 [4.8]	6A	E	Y5U
680.0pF	M	30TST68	.187 [4.8]	6A	E	X7R
.0010μF	M	30GAD10	.187 [4.8]	6A	E	Z5U
.0010μF	M	30TSD10	.187 [4.8]	6A	F	X7R
.0015μF	M	30GAD15	.187 [4.8]	6A	E	Z5U
.0022μF	M	30GAD22	.187 [4.8]	6A	F	Z5U
.0022μF	M	30TSD22	.187 [4.8]	6A	H	X7R
.0027μF	M	30GAD27	.187 [4.8]	6A	G	Z5U
.0033μF	M	30GAD33	.187 [4.8]	6A	H	Z5U
.0033μF	M	30TSD33	.187 [4.8]	6A	J	X7R
.0039μF	M	30GAD39	.187 [4.8]	6A	J	Z5U
.0047μF	M	30GAD47	.187 [4.8]	6A	J	Z5U
.0047μF	M	30TSD47	.187 [4.8]	6A	L	X7R
.0068μF	M	30GAD68	.187 [4.8]	6A	L	Z5U
.0068μF	M	30TSD68	.187 [4.8]	6A	M	X7R
.0082μF	M	30GAD82	.187 [4.8]	6A	M	Z5U
.01μF	M	30GAS10	.187 [4.8]	6A	M	Z5U
.01μF	M	30GASS10	.187 [4.8]	6A	L	Y5V
.02μF	M	30GASS20	.240 [6.2]	6B	X	Z5U
.033μF	M	30GASS33	.240 [6.2]	6B	Q	Z5U

**6000 Volt**

- Application range: Up to 6000 WVDC, 1500 VAC rms
- Insulation Resistance: 75,000 Megohm minimum
- Dielectric Strength: 10,500 WVDC, 3000 VAC rms
- Dissipation Factor: 2.0% maximum

CAPACITANCE	TOLERANCE CODE	PART NUMBER	T (Max.)	FIGURE	CASE CODE	TEMPERATURE COEFFICIENT
10.0pF	M	60GAQ10	.280 [7.1]	6C	F <sup>3</sup>	NPO
22.0pF	M	60GAQ22	.280 [7.1]	6C	F <sup>3</sup>	U2J
33.0pF	M	60GAQ33	.280 [7.1]	6C	F <sup>3</sup>	R3L
47.0pF	M	60GAQ47	.280 [7.1]	6C	F <sup>3</sup>	R3L
100.0pF	M	60GAT10	.280 [7.1]	6C	F <sup>3</sup>	X5F
220.0pF	M	60GAT22	.280 [7.1]	6C	F <sup>3</sup>	X5F
330.0pF	M	60GAT33	.280 [7.1]	6C	F <sup>3</sup>	X5S
470.0pF	M	60GAT47	.280 [7.1]	6C	F <sup>3</sup>	Y5U
560.0pF	M	60GAT56	.280 [7.1]	6C	F <sup>3</sup>	Y5U
.001μF	M	60GAD10	.280 [7.1]	6C	F <sup>3</sup>	Z5U
.0022μF	M	60GAD22	.280 [7.1]	6C	H <sup>3</sup>	Z5U
.0033μF	M	60GAD33	.280 [7.1]	6C	K	Z5U
.0047μF	M	60GAD47	.280 [7.1]	6C	M	Z5U
.010μF	M	60GAS10	.280 [7.1]	6C	P	Z5U