Type 297, High-Voltage Mica Capacitors

Corona-free Mica Coupling Capacitors for Medium-Voltage PDA's

Designed for Partial Discharge Analyzers (PDA's) monitoring rotating machinery or other medium-voltage equipment from 1 to 35 kVAC RMS at power-line frequencies of 10 Hz to 1 kHz, Mica Capacitor Type 297 is optimized for corona-free performance and coupling of partial discharge pulse waveforms with frequency content as high as 300 MHz. Cast in green, void-free, tracking-resistant epoxy, these capacitors are available in both standard and custom surface profiles due to Cornell Dubilier's proprietary CNC (computer numerical control) lathe and casting process. The internal construction features mica splittings for unrivaled dielectric performance and reliability in these critical applications.

Highlights

- Cylindrical casting comprises proven, tracking-resistant epoxy
- Surface sheds achieve large creepage distance
- Highly shock and vibration resistant
- Convenient mounting grooves
- Many custom options available

Specifications

Temperature Range	–55 °C to +125 °C, Insulation Resistance is no less than 7500 MΩ when measured at 100 Vdc, 25 ± 5 °C.
Rated Voltage Range	1 to 35 kv RMS
Capacitance Range	40 pF to 1 nF
Capacitance Tolerance	±5% (J), 1–1000 pF @ 1 MHz
Dissipation Factor	Typically less than 0.05% when measured as above. Dissipation factor (DF) equals 2πfRC, where f is the test frequency, R is the equivalent series resistance (Ω), and C is nominal capacitance (F). Q is the reciprocal of the dissipation factor.
Insulation Resistance	Insulation Resistance is no less than 7500 MΩ when measured at 100 Vdc, 25 ± 5 °C.
Rated Corona-Free Voltage	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 2,000 meters or atmospheric pressure of 80 kPa. 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 AC Hipot test 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 and a maximum of 65 seconds.

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Case Insulation	Capacitor cases will withstand, without damage, arcing or breakdown through the case material, an AC potential equal to the rated AC Hipot test voltage at a frequency of 100 Hz or less applied between the parallel connection of the two terminals and a metal electrode touching the side of the case. Apply this potential for 1 to 5 seconds. To avoid arcing of air around the capacitor, immersion of the capacitor and test electrode may be necessary during this test.
Vibration	Capacitors will withstand vibrational forces occurring at rates from 10 to 55 Hz for 4½ 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 MΩ. 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 MΩ. 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 ºC •Temp. of cold bath: 25 –0 +10 ºC
Life Test	Subject all capacitors to a temperature of 85 °C for 48 hours. Then subject units to a 60-Hz rms voltage equal to 1.25 times the PDEV voltage rating for 1000 hours in an ambient temperature of 85 °C. After test, the capacitors will meet these requirements: Withstanding Voltage: As speciified under Withstanding Voltage. Insulation Resistance: No less than 7500 MΩ. Capacitance Change: Change not to exceed 8% of the nominal value or one picofarad, whichever is greater. In addition, the capacitor must show no visual damage and the markings must be legible.

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Ordering Information

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

Part Numbering System

297	300	B	102	J	O	0
CDE Type	**Internal Code**	**Internal Code**	**Capacitance** **800** = 80 pF **301** = 300 pF **102** = 1000 pF	**Capacitance Tolerance** **J** = ±5%	**Temperature Range** **O =** –55 °C to +125 °C	**Shed Style** Assigned by CDE

Voltage Withstand Ratings Table

Voltage Phase-to-Ground (kV RMS)	**Nominal Voltage Designation (kV)**	**PD Extinction Voltage (kV RMS)** (PDEV at 25 ± 5 °C, min. <2pC threshhold detection limit)	**AC HiPot Test Voltage (kV)** (kV rms, 1 min. 25 ± 5 °C)	**Lightning Impulse Voltage** (BIL per IEC 60060-1 1.2 µs x 50 µs)	**AC Endurance Test (hours)** (1.25 x PDEV applied at 85 °C)
4	6.9	8	20	80	1000
9.3	16	18.6	40	125	1000
14.5	25	29	50	150	1000

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Ratings

Part Number	Nominal Capacitance (pF)	Outer Diameter (in) (mm) min/max	Length (in) (mm) min/max	Minimum Creepage Distance (in) (mm)	Inductance (nH)	Mass (lb) (kg)
4 kV rms Phase-to-Ground (10-1000 Hz)						
297200B800JO7	80	3.375 /3.500 in 85.7 / 88.9 mm	3.688 / 3.812 in 93.7 / 96.8 mm	7.875 in 200 mm	200	2.4 lbs 1.1 kg
297200B101JO7	100	3.375 /3.500 in 85.7 / 88.9 mm	3.688 / 3.812 in 93.7 / 96.8 mm	7.875 in 200 mm	200	2.4 lbs 1.1 kg
297200B301JO7	300	4.600 / 4.750 in 116.8 / 120.7 mm	4.938 / 5.062 in 125.4 / 128.6 mm	7.875 in 200 mm	300	7.5 lbs 3.4 kg
297200B501JO7	500	4.600 / 4.750 in 116.8 / 120.7 mm	4.938 / 5.062 in 125.4 / 128.6 mm	7.875 in 200 mm	300	7.5 lbs 3.4 kg
297200B102JO7	1000	4.600 / 4.750 in 116.8 / 120.7 mm	5.376 / 5.500 in 136.6/ 139.7 mm	7.875 in 200 mm	300	8.4 lbs 3.8 kg
9.3 kV rms Phase-to-Ground (10-1000 Hz)						
297300B800JO7	80	3.375 /3.500 in 85.7 / 88.9 mm	4.938 / 5.062 in 125.4 / 128.6 mm	11.811 in 300 mm	300	3.3 lbs 1.5 kg
297300B101JO7	100	3.375 /3.500 in 85.7 / 88.9 mm	4.938 / 5.062 in 125.4 / 128.6 mm	11.811 in 300 mm	300	3.3 lbs 1.5 kg
297300B301JO7	300	4.600 / 4.750 in 116.8 / 120.7 mm	6.615 / 6.740 in 168.0 / 171.2 mm	11.811 in 300 mm	300	9.7 lbs 4.4 kg
297300B501JO7	500	4.600 / 4.750 in 116.8 / 120.7 mm	7.615 / 7.740 in 193.4 / 196.6 mm	11.811 in 300 mm	300	8.6 lbs 3.9 kg
297300B102JO7	1000	4.600 / 4.750 in 116.8 / 120.7 mm	8.000 / 8.124 in 203.2 / 206.3 mm	11.811 in 300 mm	300	11.0 lbs 5.0 kg
14.5 kV rms Phase-to-Ground (10-1000 Hz)						
297400B800JO7	80	3.375 /3.500 in 85.7 / 88.9 mm	8.063 / 8.187 in 204.8 / 207.9 mm	17.716 in 450 mm	400	5.3 lbs 2.4 kg
297400B101JO7	100	3.375 /3.500 in 85.7 / 88.9 mm	8.063 / 8.187 in 204.8 / 207.9 mm	17.716 in 450 mm	400	5.3 lbs 2.4 kg
297400B301JO7	300	4.600 / 4.750 in 116.8 / 120.7 mm	10.350 / 10.625 in 262.9 / 269.9 mm	17.716 in 450 mm	500	15.6 lbs 7.1 kg
297400B501JO7	500	4.600 / 4.750 in 116.8 / 120.7 mm	11.350 / 11.625 in 288.3 / 295.3 mm	17.716 in 450 mm	500	17.4 lbs 7.9 kg
297400B102JO7	1000	4.600 / 4.750 in 116.8 / 120.7 mm	11.350 / 11.625 in 288.3 / 295.3 mm	17.716 in 450 mm	500	19.4 lbs 8.8 kg

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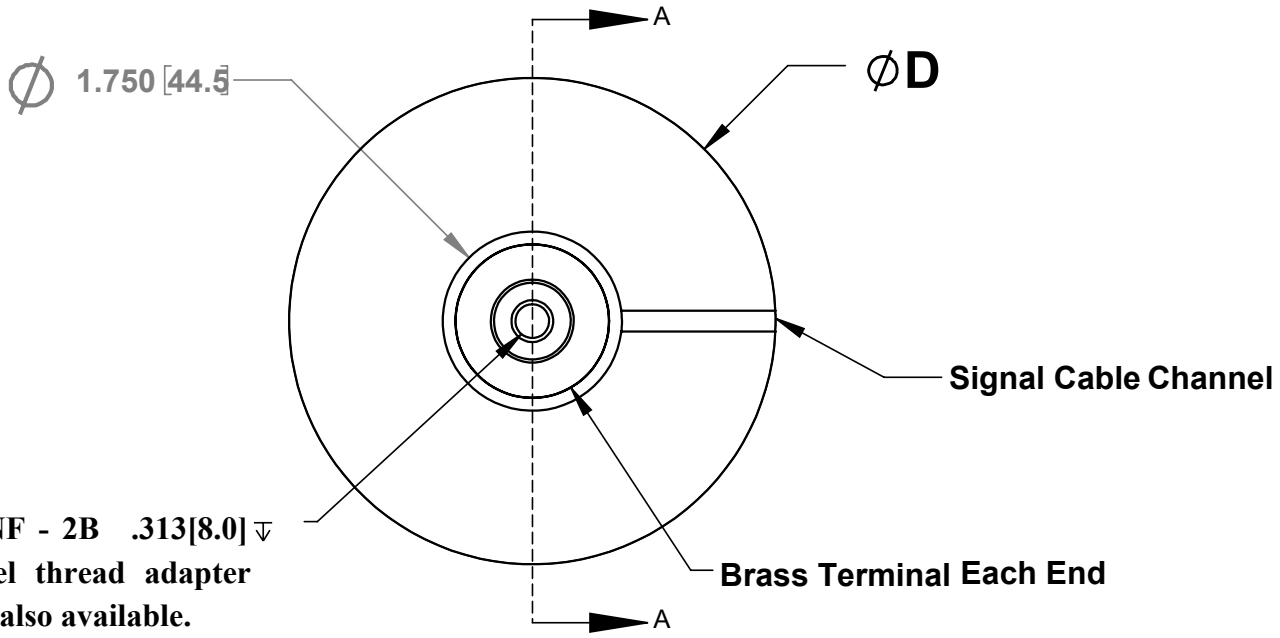
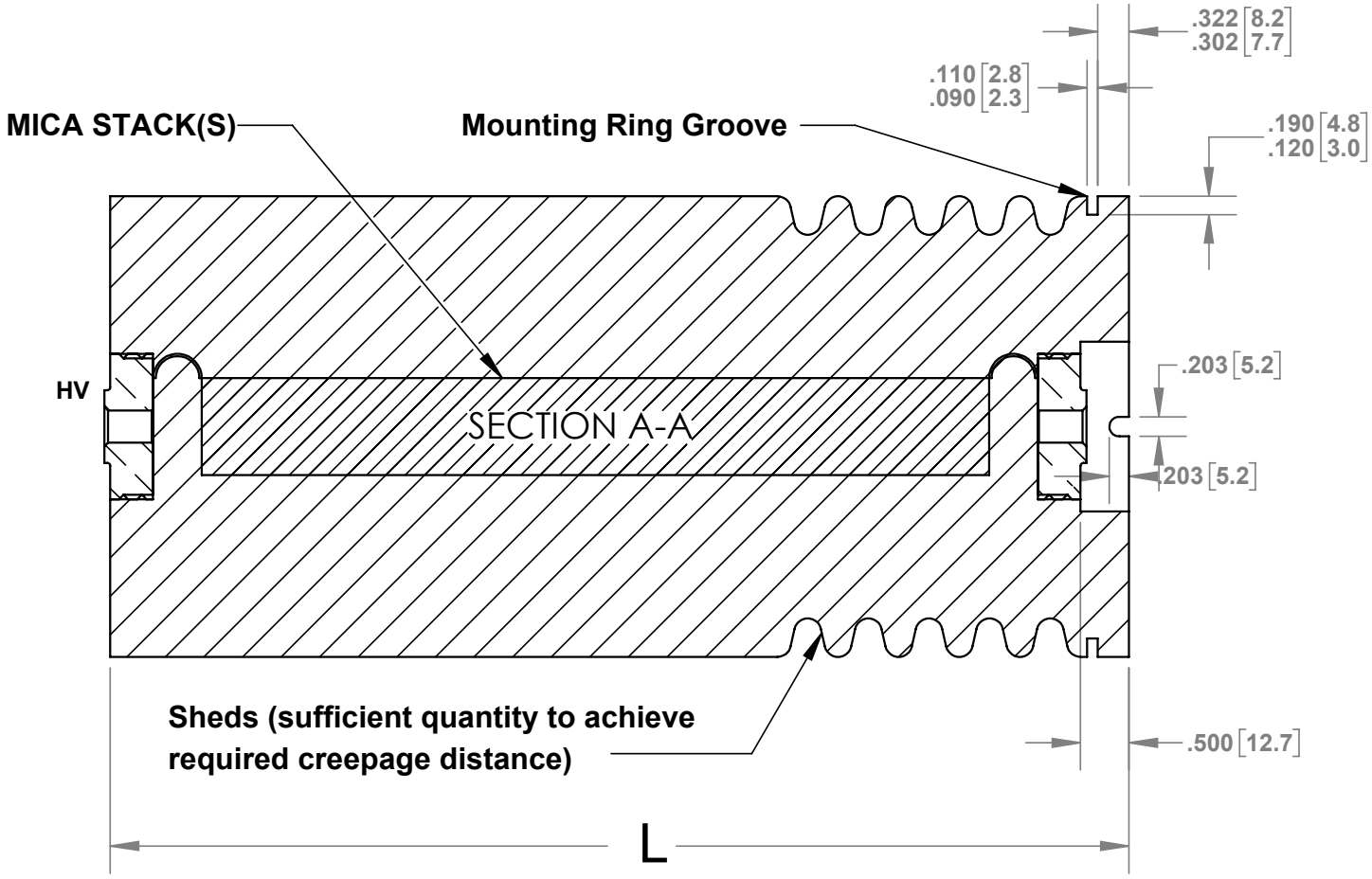
Outline Drawing



2x 3/8-24 UNF - 2B .313[8.0]↧
Stainless steel thread adapter bushings are also available.



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