REYNOLDS
INDUSTRIES INCORPORATED

Electronic Products Division
Santa Maria, California

Micapacitors

MICA
RELIABILITY

HIGH VOLTAGE MICA CAPACITORS

- Temperature Stability (-65°C to 125°C)
- High Reliability (Proven Rel-testing)
- 100% Inspection (Capacitance, Voltage, Dissipation Factor and Burn-in)
- Capacitance Stability (Temperature, Voltage and Frequency)
- Low Inductance Capability (EFI Applications)
- Mechanical Durability (Military Shock and Vibration Environments)

HIGH VOLTAGE
Micapacitors
From Reynolds Industries
Electronic Products Division

A sample of mica "paper." When properly impregnated, each 0.001" thick layer will operate at 1,300 volts DC for over 1 million hours and is used to make Micapacitors with energy densities ranging from 0.2 to 1.5 joules per cubic inch.

MICA: Mineral silicates $H_2KA1_3(Si0_4)_3$ naturally occurring. An excellent insulator resistant to temperatures. Used as a dielectric in capacitors and as insulation in high voltage, high temperature environments.

REYNOLDS **Mica**pacitors are manufactured with reliability as the prime consideration. Reynolds engineers have developed and implemented an extensive reliability proofing program consisting of thermoset epoxy impregnated **MICA** dielectric systems over a period of 540,000 unit hours of operation. (consult the factory for reliability data)

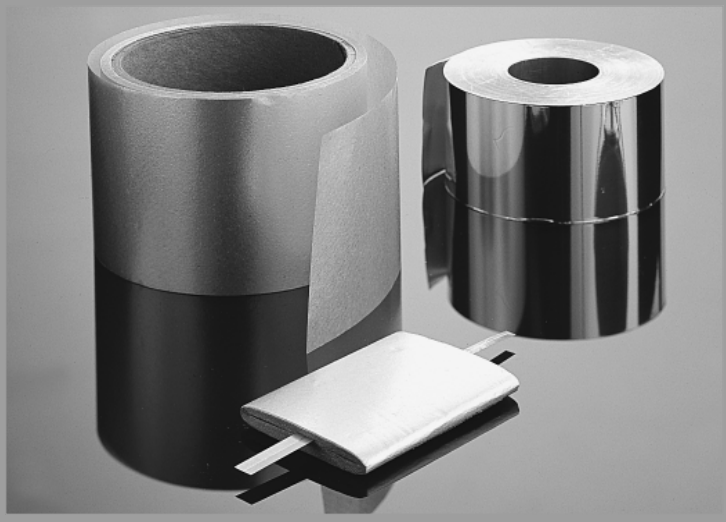
REYNOLDS **Mica**pacitors are available in a variety of configurations:

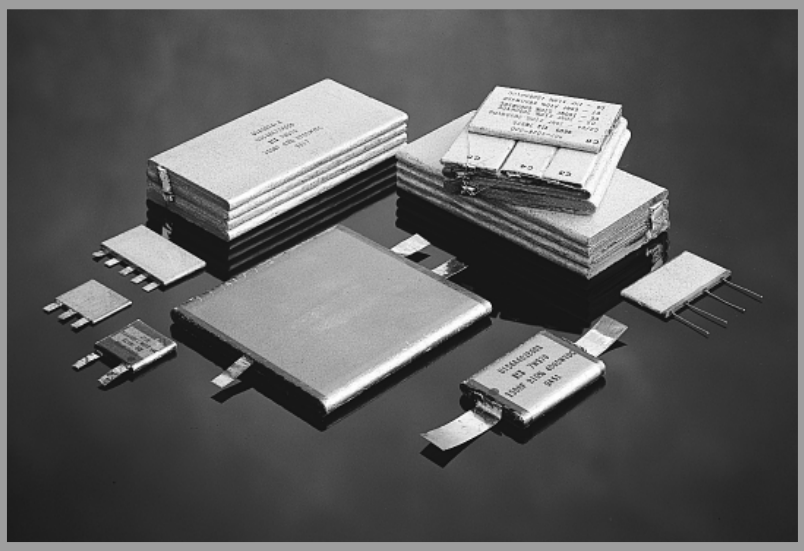
- *Raw Sections*: For use in potted/embedded next higher assemblies.
- *Wrapped and End Capped*: For stand alone applications requiring no subsequent potting or embedment processes. Wrap material is Mylar® or woven glass.
- *Fiberglass Encased Epoxy-filled Construction*: Provides the attributes of the epoxy molded configuration with no hard tooling required.
- *Low Inductance/High Current:* Ideal for Exploding Foil Initiators (EFI). **Mica**pacitors designed for very low inductance (6nH) and high currents (3 to 10 kA) are available in any of the above configurations. Similar low inductance, high current designs are available for Exploding BridgeWire initiators (EBW).
- *MONOBLOC Construction:* A unique method of construction used in Reynolds **Mica**plier high voltage multipliers.

Micapacitors

Mica Paper

Only the finest Micapaper is used in the manufacture of Reynolds Micapacitors. The material comes in a roll of a specified width and thickness and undergoes a thorough incoming inspection before use. Precision winding machines are used to wind the Mica material into a custom, computer generated configuration.



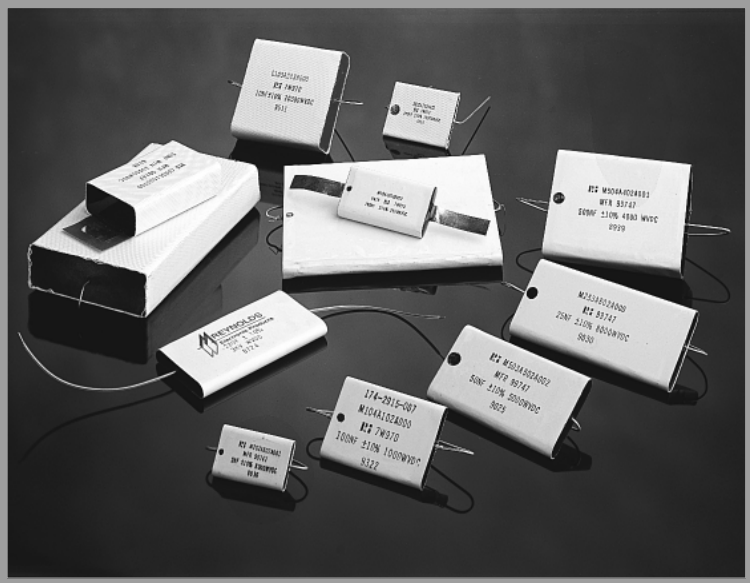


Raw Micapacitors

During the winding process, tabs are inserted to serve as termination points. The wound sections are then impregnated in a special epoxy and pressed to a specific density. The sections are then cured under pressure and post cured in an oven.
After extensive testing, the units are ready to be assembled into a next higher assembly by the customer or at Reynolds Santa Maria facility.

Wrapped & End Capped Micapacitors

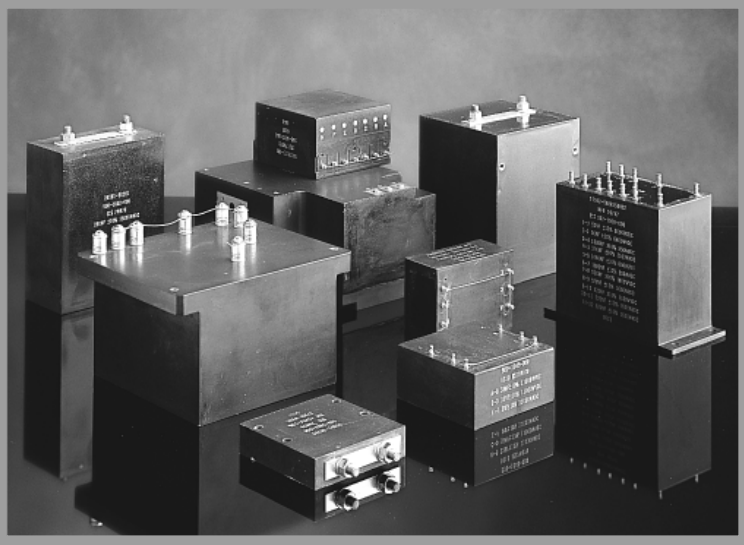
The raw Micapacitors are wrapped in Mylar® or woven glass, have lead wires attached and are end filled with epoxy. These units are a stand-alone configuration which require no subsequent potting or embedment processes.

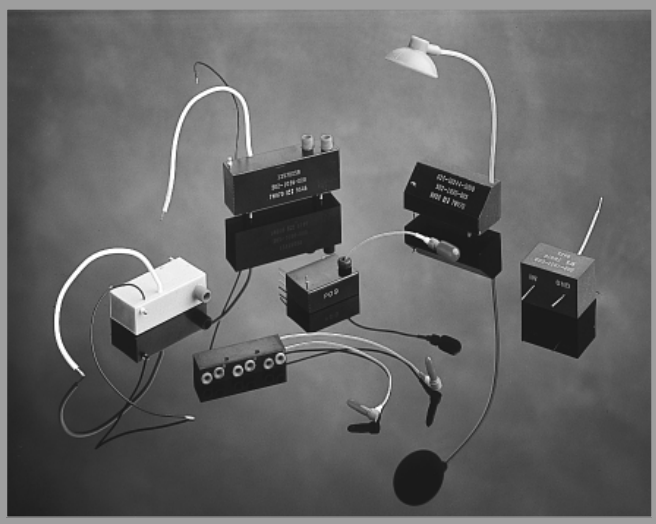


Micapacitor Applications

Epoxy Molded Micapacitors

Epoxy molded assemblies can be configured in solid complex shapes and mounting arrangements. Units can contain several voltage and capacity values and a variety of terminations. These configurations offer stand-alone shock, vibration and environmental security with Mica reliability. Epoxy molded Micapacitors are currently qualified for use on major military and commercial programs.





Micapacitors in Voltage Multipliers

Raw Micapacitors are used in Reynolds Micaplier voltage multipliers. These units have output voltages ranging to 160 kVDC. Micapliers are used in a wide range of military and commercial applications. Typical applications are: CRT anode and focus supplies for airborne EFIS (Electronic Flight Instrumentation Systems), X-Ray equipment and low power (mini) TWT's.

Micapacitor Variety

Shown are Micapacitors in various configurations: Epoxy molded, fiberglass encased with epoxy filling, wrapped and end capped. Also shown are capacitors attached to low inductance strip lines for use on EFI and EBW initiators and ESA&F systems.

Micapacitors

General specifications

Capacitance: 20 pF to 10 µF
Voltage Range: (operating)
1,000 to 60,000 D.C.
Temperature Range: (operating)
-65 to + 125 degrees C.
Energy Density:
0.2 to 1.5 joules per cubic inch.
(consult factory for application details)
Note: A two hour burn-in is performed on every capacitor manufactured.

Specifications

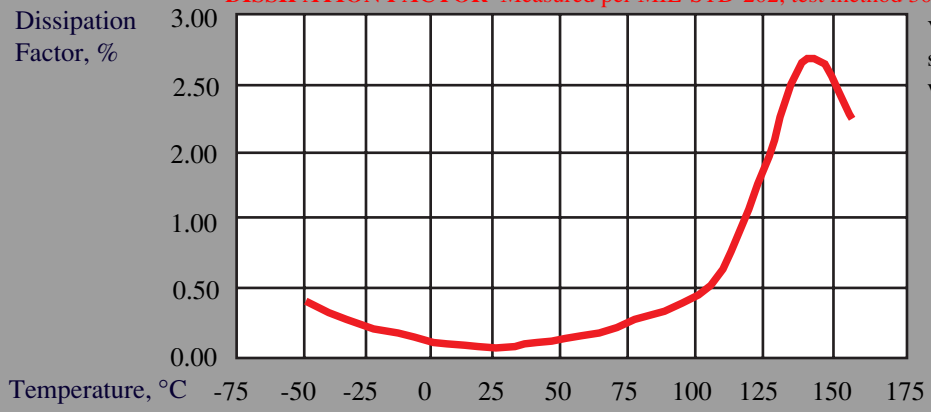
Capacitor Proof Voltage

A DC voltage, as listed below, shall be applied for a period of five seconds with charge and discharge current limited to one ampere.

Rated Voltage	Test Voltage
0 to 8.0 KV	200%
8.1 to 10.0 KV	175%
10.1 to 12.0 KV	150%
12.1 to 20.0 KV	140%
20.1 to 30.0 KV	130%
30.1 KV and up	120%

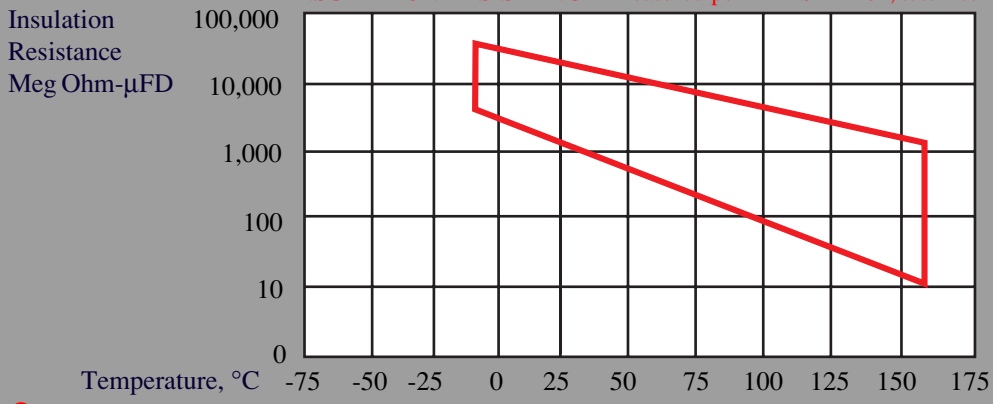
Capacitance tolerance is plus or minus 10%

DISSIPATION FACTOR Measured per MIL-STD-202, test method 306 @ 1 KHz



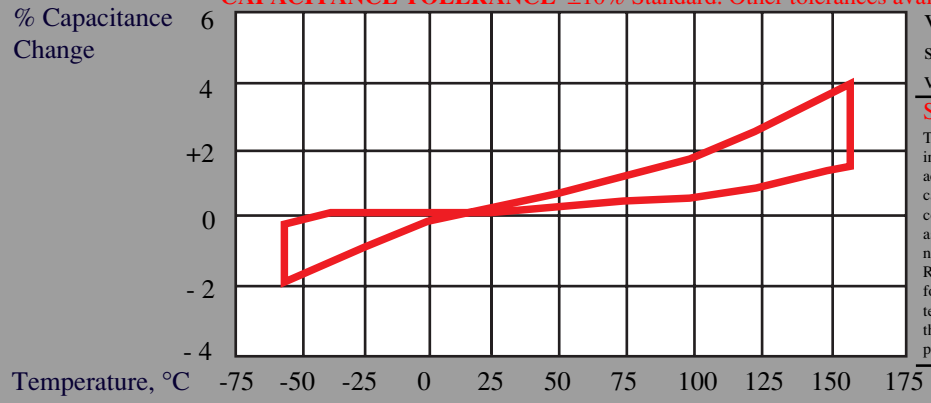
Values dependent upon specific component value and size

INSULATION RESISTANCE Measured per MIL-STD-202, test method 302-B



Values dependent upon specific component value and size

CAPACITANCE TOLERANCE ±10% Standard. Other tolerances available



Values dependent upon specific component value and size

Statement of Warranty

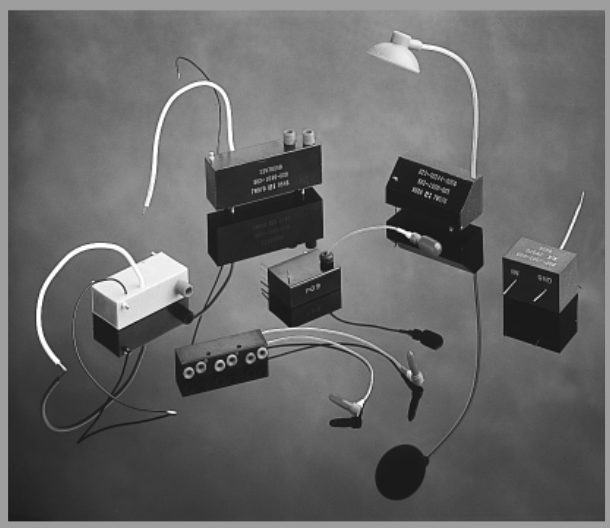
Other Products by Reynolds Industries

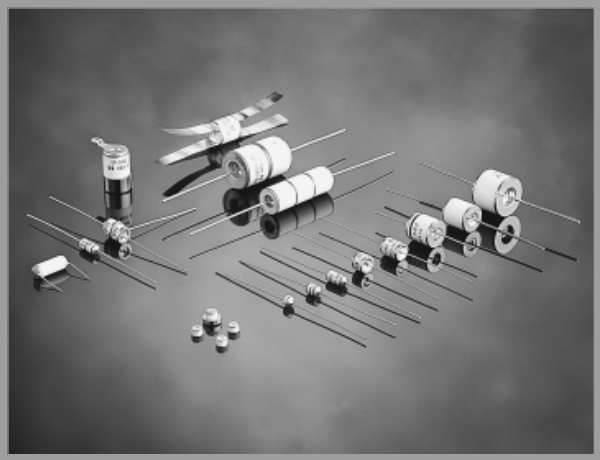
Electronic Products Division

HIGH VOLTAGE MULTIPLIERS

Featuring:

- Reynolds MONOBLOC MICA construction
- Voltage range from 3kVDC to 160kVDC
- Operation from -55°C to +125°C
- Wide selection of termination Methods
- Optional burn-in and stress screening





GAS DISCHARGE TUBES (Spark Gaps)

Featuring:

- High Alumina Ceramic (92%-96%)
- Rugged 835°C braze interfaces
- OFHC Electrodes
- Standard product lines for quick delivery
- Mil-Standard testing/screening available

REYNOLDS INDUSTRIES INCORPORATED

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