

Energy Discharge MLC

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Application Information on Energy Discharge MLC



Designed for Critical Energy Storage Requirements

High energy discharge multi-layer ceramic capacitors are designed for use in applications requiring small size, high insulation resistance, low ESR, high discharge currents and pulse rates. They are an excellent alternative for reduced size and weight to traditional energy storage capacitors such as mylar and reconstituted micas. Volumetric reduction of up to 1/20th can be obtained with MLC over these other types.

Available values are from 50 μ F

at 50V to 2.0 μ F at 1000V with current ratings of over 2100A.

Because of the highly specialized techniques required to obtain these characteristics, all units are manufactured to order by AVX Advanced Products. Separate manufacturing areas and stringent material control are an important part in the production of these parts.

Highly specialized electrical and reliability testing are also required during the production of these

Dielectric Formulation

	Formulation
Capacitance Tolerance (Minimum Available)	$\pm 5\%$
Aging Rate per decade	1.0%
D.F. at 1 KHZ, maximum	2.5%
Temp. Range	55°C to +100°C*
Temp. Characteristic of Capacitance	$\pm 15\%$
Insulation Resistance — +25°C	5000 meg Ω μ F
+100°C	500 meg Ω μ F

*For higher temperature operation consult Factory.

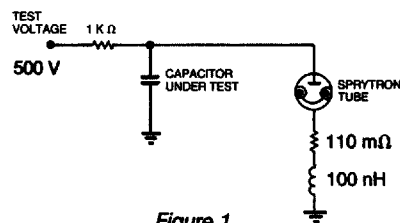


Figure 1

capacitors. For instance, the circuit shown in Fig. 1 is used to determine the discharge capabilities of the 4.0 μ F - 500V to withstand 100 discharge cycles of peak currents over 2100A. The MLC capacitor is charged to 500V and discharged into a 110 m Ω , 100nH load with typical peak currents of 2380A. This same 4 μ F - 500V unit exhibits typical breakdown voltages in excess 2000V and are tested to 100% screening for dielectric strength at 1800VDC. These are significant characteristics considering their high capacitance values and small size.

Other specialized testing includes 100% capacitance, DF, IR, X-Ray, dielectric strength at various temperatures, and visual and mechanical. Lot by lot sample testing includes temperature cycling, breakdown at various temperatures, discharge testing, accelerated life, humidity, and vibration and shock.

These specially designed MLCs have shown an excellent history of performance in the most critical of energy discharge applications.

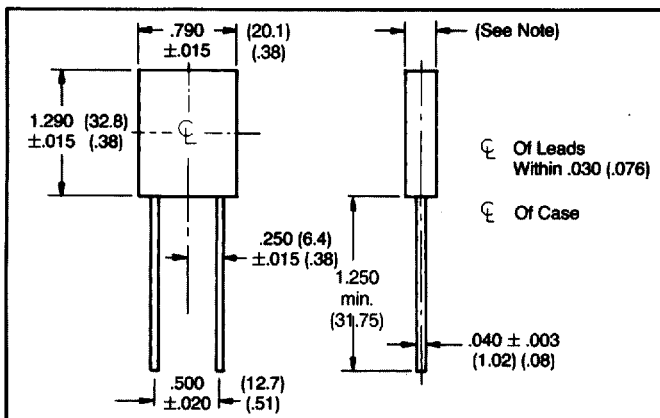
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Technical Information on Energy Discharge MLC

AVX Style: PR81 & PR80

How to Order:

PR81	1	C	805	K	A	A
AVX Style PR80 PR81	Voltage 50V = 5 100V = 1 200V = 2 500V = 7 400V = 8 1000V = A	Temperature Coefficient	Capacitance Code (2 significant digits + no. of zeros)** Examples: 10pF = 100 100pF = 101 1,000pF = 102 22,000pF = 223 220,000pF = 224 1μF = 105	Capacitance Tolerance J= ±5% K= ±10% M= ±20% Z= +80 -20%	Failure Rate (Not Applicable)	Leads (Standard) Note 3



NOTE:

1. Part No. PR81 - Case Size 1 Thickness (T) = .275 (7.0) ± .015 (.38)
Part No. PR80 - Case Size 2 Thickness (T) = .580 (14.7) ± .015 (.38)
2. All dimensions are in inches (mm).
3. Terminals shall be solder coated copper alloy.

Capacitance and Voltage Range:

The Chart below lists several popular ratings. For estimating other values use a CV product for Case 1 of 800 mfd-V maximum, and for Case 2 of 2500 mfd-V maximum.

Rated DC Volts	μF	Case Size 1 Part No. PR81	μF	Case Size 2 Part No. PR80
50	15.0	PR815 C 156 KAA	50.0	PR805 C 506 KAA
100	8.0	PR811 C 805 KAA	25.0	PR801 C 256 KAA
200	4.0	PR812 C 405 KAA	10.0	PR802 C 106 KAA
400	2.0	PR818 C 205 KAA	6.0	PR808 C 605 KAA
500	1.6	PR817 C 165 KAA	4.0	PR807 C 405 KAA
1000	.8	PR81A C 804 KAA	2.0	PR80A C 205 KAA