



**MAIDA STYLE NUMBER** D7780ZOV681RA1800

**MAIDA ITEM NUMBER** 01-1083

The High Energy Series is our large tab-leaded and wire-leaded varistors. They are available in round and square shapes. These varistors are available in 25mm, 32mm, 34mm, 40mm, and 53mm configurations including single and dual designs. They are available with maximum continuous operating voltages (MCOV) ranging from 130VAC to 1000VAC (up to 1500VAC upon request). The High Energy Series is designed for pulse repetition and/or very large surge current environments. Numerous tab forms are available for all sizes, with limited wire ledged options.

The Maida Style Number is the typical means to identify our components when ordered. The style number identifies several parameters that are important for the characteristics of the device. An alternative ordering method, if known, is by our Item Number. The following example is the standard part numbering system when ordering our HE Series components by the Maida Style Number:

**D 78 80 ZOV 131 RA 21**

**Coating Designation**

- D – Standard Epoxy Coating
- P – Phenolic Coating
- S – Square Disc Epoxy Coating
- PS – Square Disc Phenolic Coating
- None – Denotes no conformal coating.

**Nominal Sizes**

- S66 - 25mm Square
- 78 - 32mm
- S75 - 34mm Square
- 75 - 40mm
- 77 - 53mm

**Lead Configuration**

**Material Identifier**

Zinc Oxide Varistor

**AC Voltage Rating**

Two significant figures plus number of zeroes that follow, i.e. 131 is 130VAC

**Special Instructions**

RA is standard

**Rating Code**

Up to four numbers

**Electrical Specifications**

Continuous AC Voltage	680 VAC
Continuous DC Voltage	860 VDC
Maximum DC Leakage @ 860 VDC	200 uA
Low Varistor Voltage Limit	962 VDC
High Varistor Voltage Limit	1175 VDC
Nominal Varistor Voltage	1069 VDC
Current for Varistor Voltage	1 mA
Maximum Clamp Voltage	1800 V
Maximum Clamp Voltage Test Current	500 A
Peak Current Rating (1 Pulse)	70000 A
Peak Current Rating (2 Pulse)	52000 A
Energy Rating (8X20us)	2500 J
Typical Capacitance	1700 pF
Impulse Response Time	< 50 ns
Minimum Hipot of Coating	2500 VDC
Minimum I.R. of Coating	1000 MΩ
Current/Energy Derating Above 85°C	-2.5 %/°C

**Special Notes:**

**Safety Agency Recognitions**

UL 1449 File Number	E321173
- Tested to Type:	5-5kA
C-UL File Number	E321173
VDE File Number	
CSA File Number	
SEV File Number	

**MAIDA DEVELOPMENT COMPANY**

P.O. Box 3529

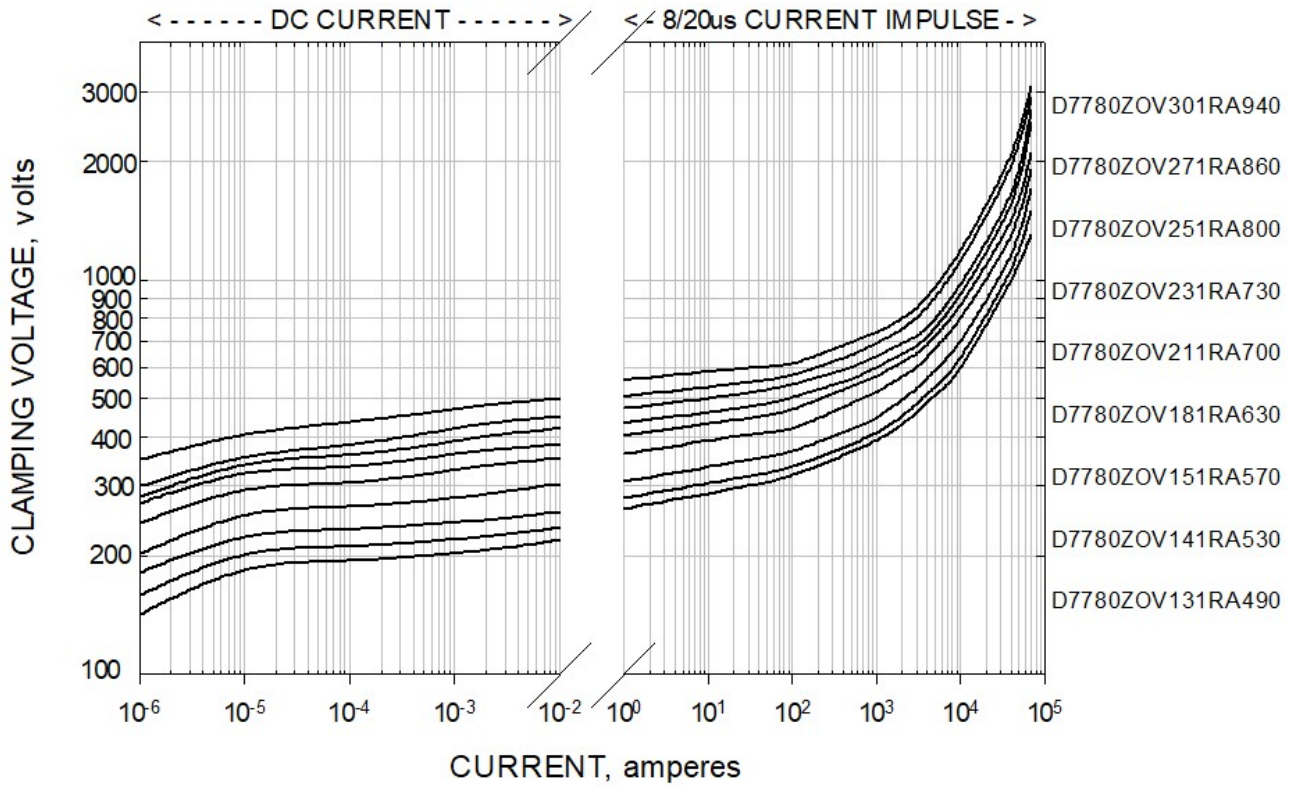
Hampton, Virginia 23663

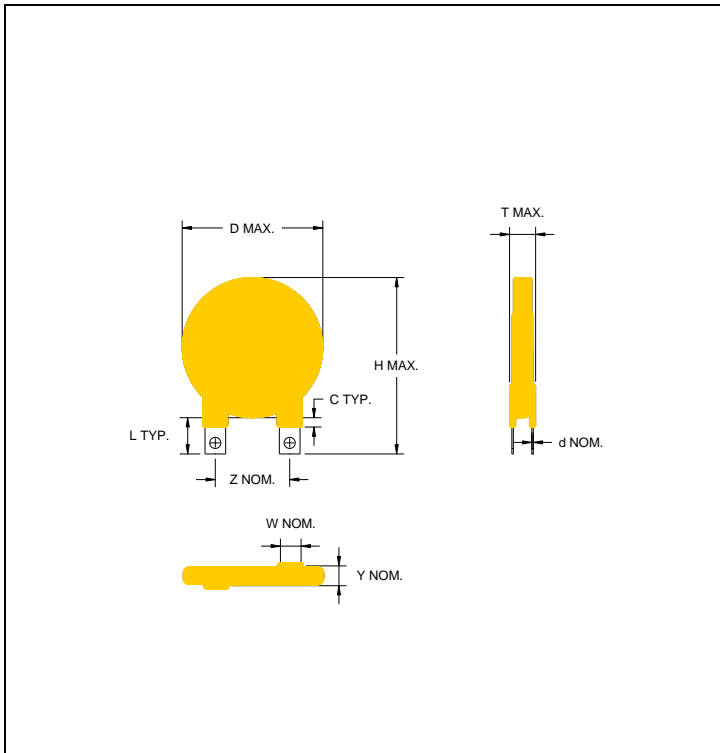
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## Characteristic Graphs

### D77 (53mm) SERIES





\* Contact Maida for a more detailed configuration drawing.

### Physical Specifications

Lead Style	256
X Nominal	1 in.
X Tolerance	0.02 in.
Y Nominal	0.264 in.
Y Tolerance	0.04 in.
Z Nominal	in.
Z Tolerance	in.
Lead Length Nominal	in.
Lead Length Tolerance	in.
d Nominal	0.02 in.
Wire Gauge	24 AWG
Minimum Marking	Z681-1800UL
Nominal Disk Size	53 mm
D Maximum	2.4 in.
T Maximum	0.414 in.
H Maximum	3.075 in.
Coating Type	EPOXY

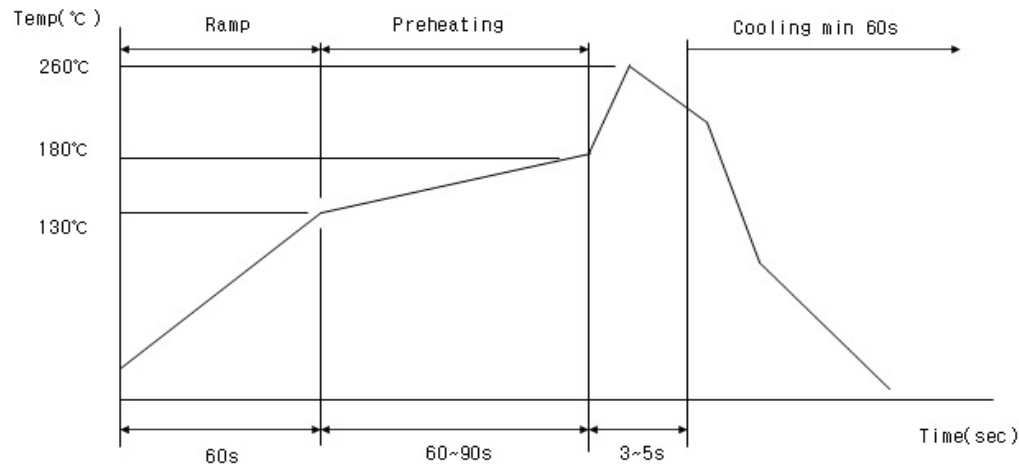
### Thermal Specifications

Minimum Operating Temperature	-40 °C
Maximum Operating Temperature	85 °C
Varistor Voltage Temperature Coeff	-0.05 %/°C
Minimum Storage Temperature	-50 °C
Maximum Storage Temperature	125 °C
Recommended Solder Temperature	260 °C
Recommended Reflow Temperature	260 °C

### Environmental Compliances



### Recommended Soldering Profile



## MOV Terminology

TECHNICAL TERM	DESCRIPTION
Operating Temperature	Operating Temperature Range without Derating.
Storage Temperature	Storage Temperature Range without Voltage Applied.
Curent / Energy Derating	Derating of maximum Values when Operated above +85°C
Varistor Voltage Temperature Coefficient	$\frac{V_v \text{ at } 85^\circ\text{C} - V_v \text{ at } 25^\circ\text{C}}{V_v \text{ at } 25^\circ\text{C}} \times \frac{1}{60} \times 100$ <p>Where Vv is varistor voltage at 1mADC</p>
Insulation Resistance	Minimum resistance between shorted terminals and varistor surface.
HiPot Encapsulation	Minimum voltage applied for one minute between shorted terminals and varistor surface.
Impulse Response Time	Time lag between application of surge and varistor's "turn-on" conduction state.
DC Leakage Current	Maximum current with specified DC voltage applied.
Applied Voltage - AC	Maximum continuous sinusoidal RMS voltage which may be applied (MCOV).
Applied Voltage - DC	Maximum continuous DC voltage which may be applied.
Transient Energy (Joules)	The maximum energy absorbed with a varistor voltage change of less than $\pm 10\%$ when one impulse of an 8x20us current waveform is applied.
Transient Peak Current	The maximum current with a varistor voltage change of less than $\pm 10\%$ when one impulse of an 8x20us current waveform is applied.
Varistor Voltage	Voltage across the varistor measured at 1mADC
Maximum Clamping Voltage	Peak voltage across the varistor with a specific peak impulse current applied (8x20us).
Capacitance	Typical value measured at 1Vrms and a test frequency of 1KHz.