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## Datasheet

Stock No: 9012692

# RS Pro



### Product Details:

Our RS Pro metal oxide varistors have been designed to meet the abnormal overvoltage requirements outlined in Section 39.4 of the UL1449 standard (4<sup>th</sup> edition). Under sustained voltage conditions, the Metal Oxide Varistor (MOV) lead that is connected to the thermal link opens. Meeting UL1449 4<sup>th</sup> edition requirements, these MOVs are ideal for surge protection devices without generating high cost or creating a complicated approach. When used above their rated specification, traditional MOVs can fail to short circuit conditions or fail to open when exposed to sustained steady state overvoltage. However, the integrated thermal link used in our RS Pro range responds to temperature and voltage. This response ensures that when the MOV exceeds a certain temperature or voltage, the MOV disconnects from the line.

Our range of thermally protected MOVs react instantly to unexpected overvoltage situations and offer an excellent level of protection to components downstream. RS Pro MOVs are wave solderable, helping you to reduce cost by eliminating the rework caused by hand soldering operations.

The thermal link in our MOVs must only be used to provide protection to the varistor in cases of abnormal overvoltage. Never use a thermally protected varistor in series with the load. Our metal oxide varistors are intended for use in UL 1449 compliant surge protection device modules. However, your module design should allow for the possibility that under extreme overvoltage conditions some units may exhibit heating, arcing and venting before opening. We recommend application testing for this range.

**Features:**

- Thermally protected
- Wave solderable
- At normal operating voltages, these MOVs have low leakage current
- High surge current rating up to 40 kA
- Operating temperature range of -55°C to +85°C
- Storage temperature range of -55°C to +125°C
- Three leaded options have a fuse on either the second lead or third lead
- Patented Products (U.S Patent #6636403 and IE010410)
- 94V-0 epoxy rating
- ISO and TS16949 certification
- UL1449, UL1414/CUL recognition

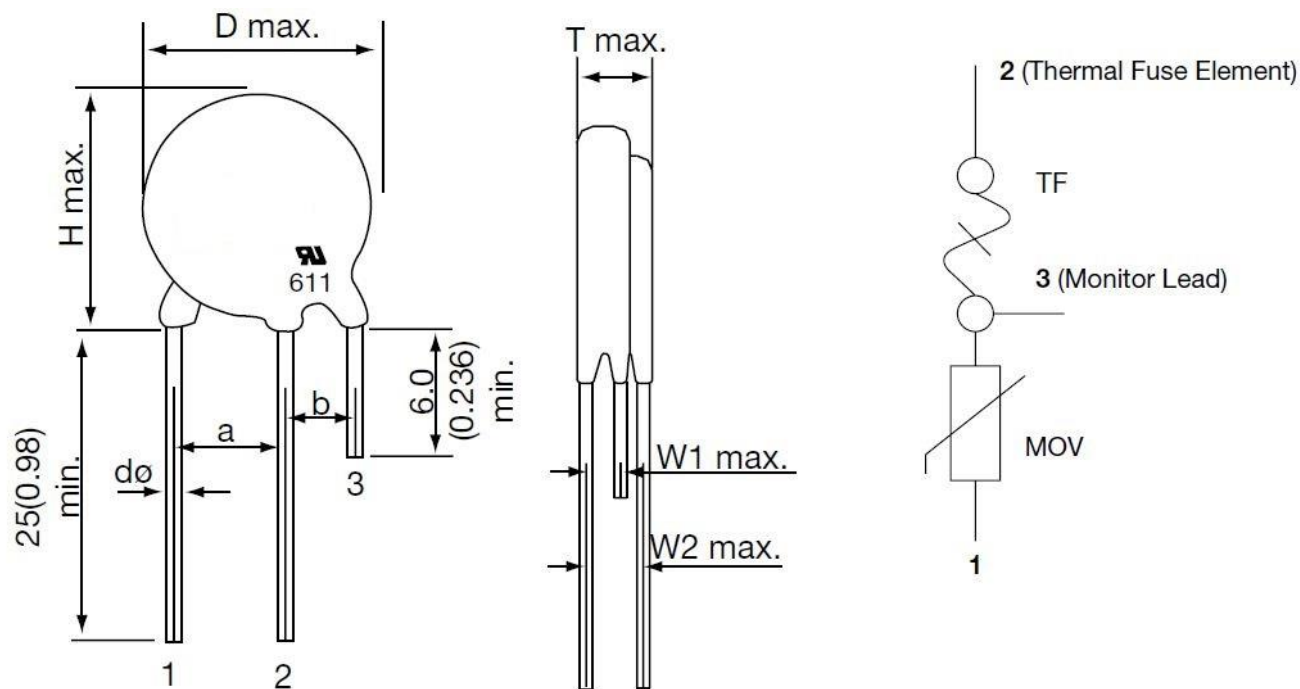
**Suitable applications:**

- AC line power supplies
- AC panel protection modules
- AC power meters
- AC-DC power supplies
- Transient Voltage Surge Suppressor (TVSS) Products
- Surge protected strips
- Uninterruptible power supplies
- DIN Rails
- White goods
- Inverters

**Specifications:**

Maximum Continuous Voltage VM(AC) RMS	320 V
Maximum Continuous Voltage VM(DC)	420 V
Maximum Non- Repetitive Surge Current (8/20us)	6000 A
Maximum Non-Repetitive Surge Energy (2ms)	136 J
Maximum Clamping Voltage at Specified Current (8/20us)/50A	840 V
Nominal Voltage at 1mA(DC) Current (min)	459 V
Nominal Voltage at 1mA(DC) Current (max)	561 V
Typical Capacitance at 1MHz	370 pF

**Product Drawing and Dimensions:**

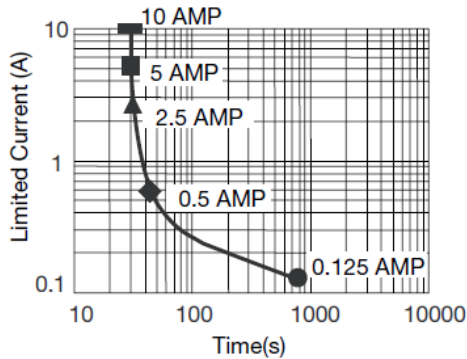


Size	D Max	H Max	dø nom.	a	b	T Max	W1 Max	W2 Max
14 mm	17.5 mm	22 mm	0.8 mm	7.5 mm ± 1 mm	5 mm ± 1 mm	10.5 mm	3.4 mm	5.2 mm



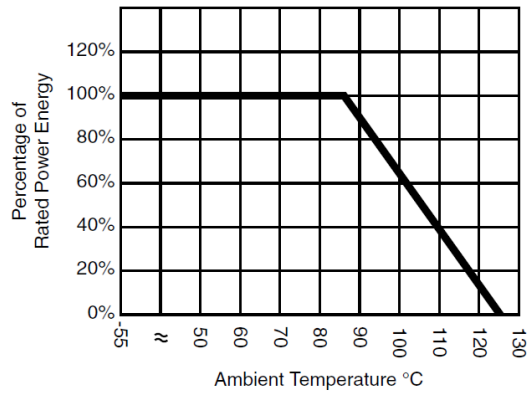
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## Thermal Characteristics and Soldering Profile:



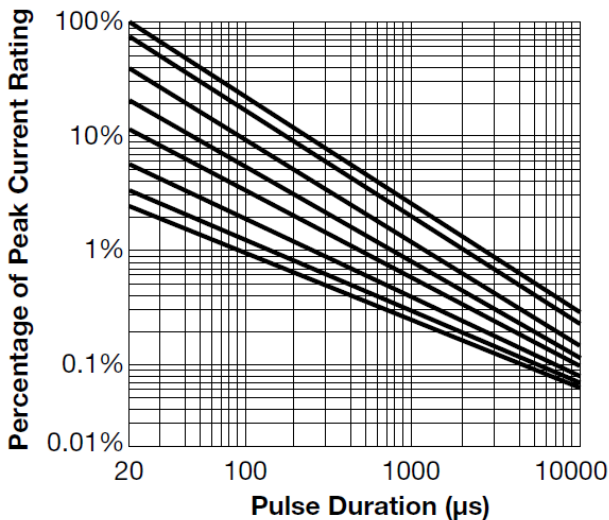
(Typical time to open according to UL1449 Abnormal Overvoltage Limited Current Test.)

## Temperature Derating Curve Power and Energy Rating Vs. Temperature



For applications exceeding 85°C ambient temperature, the peak surge current and energy ratings must be reduced as shown in above Figure.

## Peak Current Per Pulse Vs. Pulse Duration



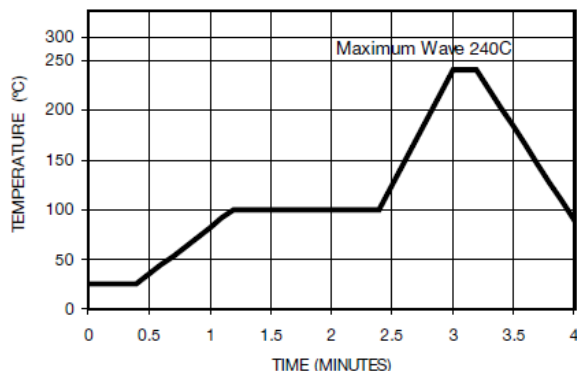
- 1 Repetition - (Top line on graph)
- 2 Repetitions
- 10 Repetitions
- 10<sup>2</sup> Repetitions
- 10<sup>3</sup> Repetitions
- 10<sup>4</sup> Repetitions
- 10<sup>5</sup> Repetitions
- 10<sup>6</sup> Repetitions - (Bottom line on graph)



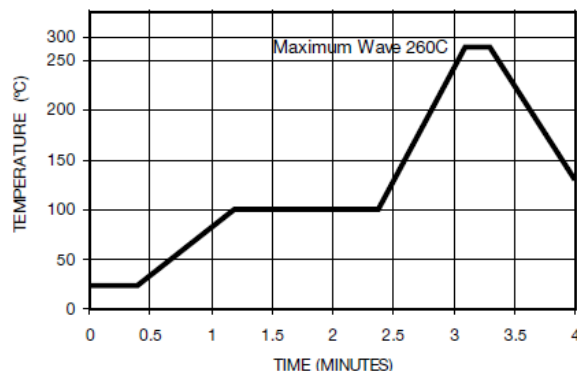
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## Thermal Characteristics and Soldering Profile:

### Non Lead Free Profile



### Lead Free Profile



### Physical Specifications

<b>Lead Material</b>	Non lead free parts: Solder coated copper wire, or tin coated copper wire Lead free parts: Tin coated copper wire
<b>Soldering Characteristics</b>	Solderability per MIL-STD-202, Method 208E
<b>Insulating Material</b>	Cured, flame retardant epoxy polymer meets UL94V-0 requirements

### Environmental Specifications

<b>Operating/Storage Temperature</b>	-40°C to +85°C
<b>Passive Aging</b>	+85°C, 1000 hours ±10% typical voltage change
<b>Humidity Aging</b>	+85°C, 85% R.H. 1000 hours ±10% typical voltage change
<b>Thermal Shock</b>	+85°C to -40°C 5 times ±10% typical voltage change
<b>Solvent Resistance</b>	MIL-STD-202, Method 215F
<b>Moisture Sensitivity</b>	Level 1

### Wave Solder Profile:

Our RS Pro metal oxide varistors have an integrated thermal protection device, so care must be taken when soldering the devices into place. These MOVs can be hand soldered or wave soldered. With hand soldering, we recommended heat sinking the leads of the device. With wave soldering, ensure that the preheat stage and solder bath temperatures are closely controlled.