

**Miniature Size**

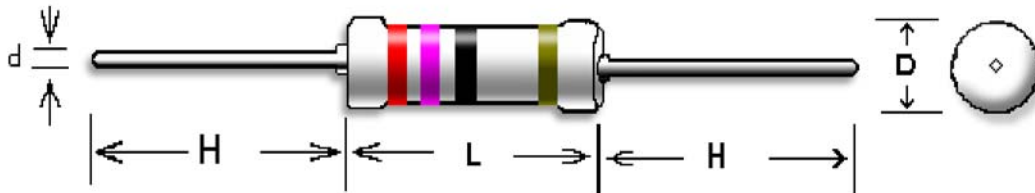
**MSD- Pulse Safety Resistor**

**Specifications Per**

- IEC-115-4
- MIL-11804
- DIN-44603

**Features**

- Special composite film on high grade ceramic substrate
- Flameproof coating meets UL-94V-0 and overload test UL-1412
- Excellent anti-surge capability
- Absorbs pulse from city power line, direct crossing or inductive coupling
- Protects electric equipment or parts from accidental shock
- Able to replace wire-wound resistor with lower cost



**Dimensions:**

Type	Body (mm) Length (L)	Body (mm) Diameter (D)	Lead Wire(mm) Length (H)	Lead Wire (mm) Diameter (d)	Net Weight Per 1000 Pcs
MSD051	6.2±0.5	2.7±0.2	28±3.0	0.6±0.03	300 Grams
MSD101	8.8±1.0	3.3±0.3	28±3.0	0.6±0.03	340 Grams
MSD201	10.5±1.0	4.0±0.5	28±3.0	0.7±0.03	500 Grams
MSD301	13.5±1.0	5.0±0.5	30±3.0	0.8±0.03	1050 Grams
MSD401	15.5±1.0	5.5±0.5	30±3.0	0.8±0.03	1200 Grams
MSD501	19.0±1.0	6.0±0.5	30±3.0	0.8±0.03	1620 Grams
MSD601	19.0±1.0	8.0±0.5	30±3.0	0.8±0.03	3100 Grams

**Specifications:**

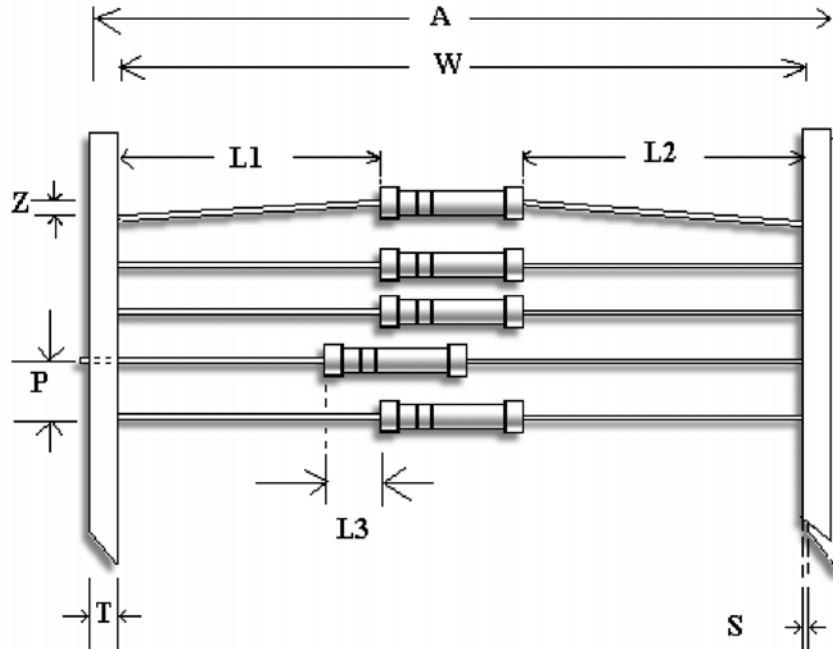
Type	Power Rating At 70°C	Max. Working Voltage	Max. Overload Voltage	Min. Resistance	Max. Resistance	Resistance Tolerance	Standard Resistance Values
MSD051	0.5W	350V	600V	0.1Ω	120K	±0.1~5%	E-24/96
MSD101	1W	350V	600V	0.1Ω	120K	±0.1~5%	E-24/96
MSD201	2W	350V	600V	0.1Ω	120K	±0.1~5%	E-24/96
MSD301	3W	350V	700V	0.1Ω	150K	±0.1~5%	E-24/96
MSD401	4W	350V	700V	0.1Ω	150K	±0.1~5%	E-24/96
MSD501	5W	450V	800V	0.1Ω	180K	±0.1~5%	E-24/96
MSD601	6W	500V	800V	0.1Ω	200K	±0.1~5%	E-24/96

*Special sizes, values, and specifications not listed available on special order.*

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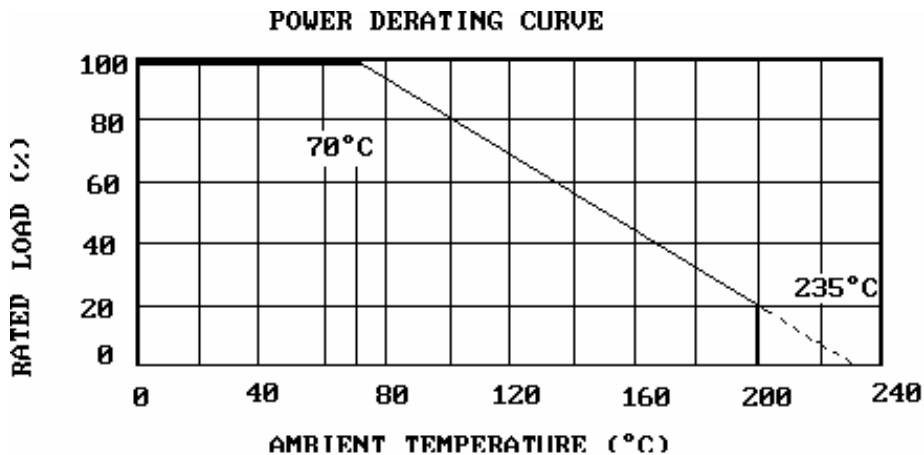
**MSD- Pulse Safety Resistor**

Taping Specification:



Unit (mm)

Type No.	A (Max.)	L1-L2 (Max.)	L3 (Max.)	P ±0.5	S (Max.)	T ±0.5	W ±1.5	Z (Max.)
MSD051	65	±1.0	0.5	5.0	0.8	6.0	52.5	1.2
MSD101	65	±1.0	0.5	5.0	0.8	6.0	52.5	1.2
MSD201	76	±1.5	1.0	10.0	0.8	6.0	63.5	1.2
MSD301	76	±1.5	1.0	10.0	0.8	6.0	63.5	1.2
MSD401	76	±1.5	1.0	10.0	0.8	6.0	63.5	1.2
MSD501	76	±1.5	1.0	10.0	0.8	6.0	63.5	1.2
MSD601	76	±1.5	1.0	10.0	0.8	6.0	63.5	1.2



Jul. 02, 2004

## Miniature Size

# MSD- Pulse Safety Resistor

Performance Specifications:

Characteristics	Limits
Dielectric Withstanding Voltage, VAC or DC	1/2W 350
	1W to 2W 600
	3W to 6W 1000
Temperature Coefficient, PPM / °C	±20~300 (Typical 300)
Operating Temperature Range, °C	-55~200
Insulation Resistance, MΩ	10 <sup>4</sup>
Voltage Coefficient, PPM / V	25

## Performance Specifications

Tests Characteristics	Test Conditions	Limit
Short Time Over Load	IEC 60115-1 4.13 5 seconds 2.5x rated voltage (not over max. overload voltage)	±(1%+0.05R)
Load Life In Humidity	IEC 60115-1 4.24 56 days at 40°C and 93% relative humidity	±5%
Load Life 1,000 hours	IEC 60115-1 4.25.1 Rated load 1.5 hours ON, 0.5 hours OFF, at 70°C	±5%
Resistance To Soldering Heat	IEC 60115-1 4.18 10 seconds at 260°C solder bath temperature	±(1%+0.05R)
Solderability	MIL-STD-202 Method 208 Solder area covered after 230±5°C/5±0.5 seconds w/ flux applied	90% Min.
Vibration	MIL-STD-202 Method 204 Six hours in each parallel and axial direction w/ a simple harmonic motion having an amplitude of 1.52mm and 10 to 20,000 Hz.	±(1%+0.05R)
Terminal Endurance	IEC 60115-1 4.25.3 1000 hours at 125°C without load	±(1%+0.05R)
Thermal Shock	IEC 60115-1 4.19 -55°C 30minutes, +125°C 30minutes, 5 cycles	±(1%+0.05R)

## Ordering Information

Type	Tolerance	Resistance Value	Packaging	Special Request (Optional)
MSD101 MSD201	J (5%), F (1%) D (0.5%), B (0.1%)	10K	TB (Tape/Box) TR (Tape/Reel)	LV (Low value) TK50 (T.C. 50ppm)

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