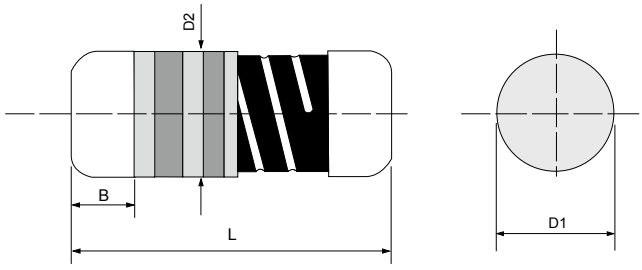
PVM – Pulse Load High Voltage MELF Resistor



Specifications Per

- IEC 60115-1
- EN 140401-803

Features

- SMD enabled structure
- Anti-sulfuration test qualified
- Anti-surge feature available
- Pure tin-plated termination for excellent solderabillity
- Proprietary thin film handles much higher working voltage than general purpose resistors
- Excellent in heat dissipation than chip resistor
- Stronger mechanical structure to endure vibration and thermal shock
- Products meet RoHS requirements and do not contain substances of very high concern identified by European Chemicals Agency

DIMENSIONS

Type	Body Length (L, mm)	Cap Diameter (D1, mm)	Body Diameter (D2, mm)	Soldering Spot (B, mm)	Net Weight Per 1000 pcs
PVM204	3.52 ± 0.15	1.35 ± 0.1	D1+0.02/ -0.15	0.6 Min.	17 grams
PVM101	5.90 ± 0.20	2.20 ± 0.1	D1+0.02/ -0.15	1.0 Min.	80 grams

GENERAL SPECIFICATIONS

Type	Power Rating At 70°C	Maximum Working Voltage*	Maximum Overload Voltage**	Minimum Resistance	Maximum Resistance	Resistance Tolerance	Available Resistance Values
PVM204	0.4W	600V	1,200V	300KΩ	30MΩ	±0.5%~±5%	E-192/E-24
PVM101	1W	1,000V	2,000V	300KΩ	39MΩ	±0.5%~±5%	E-192/E-24

For a better life cycle under normal usage, 50% of the rated power is recommended.

*** Rated Continuous Maximum Working Voltage (RCWV) should be determined from RCWV = $\sqrt{\text{Power Rating x Resistance Values}}$ Max. RCWV listed above.**

**** Short-time Overload (STOL) test should be determined from STOL=2.5 x $\sqrt{\text{Power Rating x Resistance Values}}$ or maximum overload voltage listed above, whichever is lower.**

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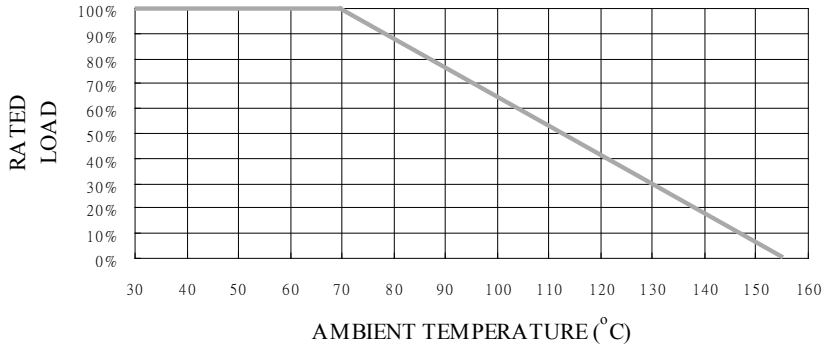
PART NUMBER

Example: PVM204F1M00TKZTR3K0

PVM204	F	1M00	TKZ	TR3K0
Type	Tolerance	Resistance	TCR	Packaging
	D (0.5%) F (1%) G (2%) J (5%)	1KΩ **4-character code** containing - 3 significant digits 1 letter multiplier OHM MULTIPLIER R = 1 K = 10^3 M = 10^6 G = 10^9	**3-character code** TKZ = Default Product Temperature Coefficient. Information of typical product temperature coefficient can be found in the Technical Summary section of the datasheet.	**5-character code** TR = Tape Reel (pieces per reel) PVM204 3K0 = 3,000 pcs 6K0 = 6,000 pcs*** 10K = 10,000 pcs*** PVM101 2K0 = 2,000 pcs 6K0 = 6,000 pcs*** 10K = 10,000 pcs***

*** Listed values may not be applicable across product types or to all resistance values. Please check with us before placing order.**
**** For the availabilities of non-default temperature coefficient, please check with us. Reference for TCR letter codes can be found in section (4) of Part Number Construction in the Appendices.**
***** upon request**

POWER DERATING CURVE



TECHNICAL SUMMARY

Characteristics	Limits
Dielectric Withstanding Voltage, VAC or DC	300
Temperature Coefficient, PPM /°C*	±50, ±100
Operating Temperature Range,°C	-55 ~ +155
Insulation Resistance, MΩ	>10^4
Failure Rate in Time, pcs / 10^9 device hours	<1
Tin Whisker (JESD201 Temperature Cycling & High Temp. /Humidity Storage), μm	<5

*** Not applicable to all resistance values. Please check with us regarding the PPM of specific resistance value(s).**

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PERFORMANCE SPECIFICATIONS

Characteristics	Test Conditions	Limits
Short Time Over Load	**IEC 60115-1 4.13** 5 seconds 2.5x rated voltage (not over max. overload voltage)	±(0.5%+0.01Ω)
Load Life In Humidity	**IEC 60115-1 4.24** 56 days rated load (not over max. working voltage) at (40±2)°C and (93±3)% relative humidity	±(2.5%+0.01Ω)
Load Life	**IEC 60115-1 4.25.1** Rated load (not over max. working voltage) 1,000 hours with 1.5 hours ON, 0.5 hours OFF, at (70±2)°C	±(2.5%+0.01Ω)
Periodic Electric Overload	**IEC 60115-1 4.39** 3.9x rated voltage (not over max. overload voltage) with 0.1s ON, 2.5s OFF for 1,000 cycles	±(2.5%+0.01Ω)
Resistance To Soldering Heat	**IEC 60115-1 4.18.2** Dip the resistor into a solder bath measured (260±5)°C and hold it for a 10±1 seconds	±(0.5%+0.01Ω)
Solderability	**IEC 60115-1 4.17.2** Solder area covered after (235±3)°C/(2±0.2) seconds with flux applied	95% min.coverage
Vibration	**IEC 60115-1 4.22** Six hours in each parallel and axial direction with a simple harmonic motion having an amplitude of 0.75mm and 10 to 500 Hz.	±(0.25%+0.01Ω)
Thermal Endurance	**IEC 60115-1 4.25.3** 1000 hours at 155°C without load	±(1.5%+0.01Ω)
Thermal Shock	**IEC 60115-1 4.19** -55°C 30minutes, +155°C 30minutes, 5 cycles	±(0.5%+0.01Ω)
Single pulse high voltage overload	**IEC 60115-1 4.27** 5 pulses of 12/50μs at 10x rated voltage (not over max. overload voltage) with interval of 12 sec.	±(1.5%+0.01Ω)
	10 pulses of 10/700μs at 10x rated voltage (not over max. overload voltage) with interval of 60 sec.	±(1.5%+0.01Ω)
Electrostatic discharge (Human body model)	**IEC 60115-1 4.38** 3 positive & 3 negative discharges with 2KV source	±(0.5%+0.01Ω)
Climatic test	**IEC 60115-1 4.23** **4.23.2 - dry heat:** 16 hours 155°C **4.23.3 - damp heat:** 24 hours 55°C with 95% relative humidity **4.23.4 - cold:** 2 hours -55°C **4.23.5 - negative air pressure:** 2 hour 8.5KPa at (25±10)°C **4.23.6 - damp heat cyclic:** 5 days 55°C with 95% relative humidity **4.23.7 - DC load:** rated voltage at -55°C and 155°C each 1 Min.	±(1%+0.01Ω)
Bending test	**IEC 60115-1 4.33** Pressing depth 2mm, 3 times	±(0.5%+0.01Ω)

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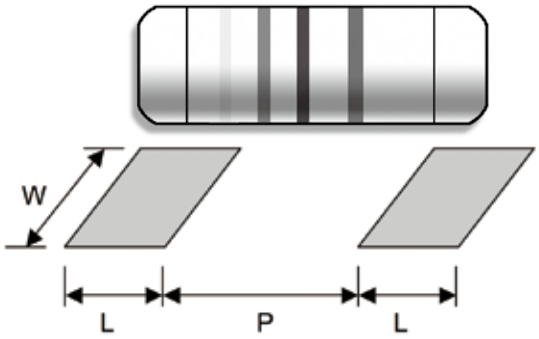
SUGGESTED PAD LAYOUT

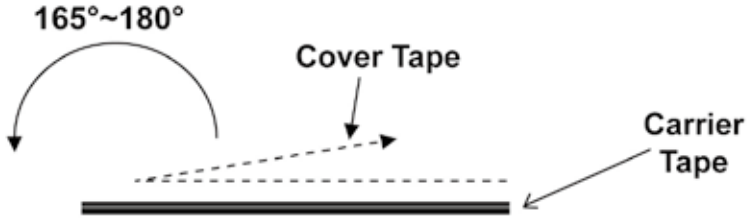


Type	Soldering Mode	Pad Length (L, mm, Min.)	Pad Spacing (P, mm)	Pad Width (W, mm, Min.)
PVM204	Reflow	1.3	1.6 ± 0.1	1.6
	Wave	1.5	1.5 ± 0.1	1.8
PVM101	Reflow	2.0	3.0 ± 0.1	3.0
	Wave	2.5	3.0 ± 0.1	3.0

For better heat dissipation / lower heat resistance, increase W & L.

COVER TAPE PEELING SPECIFICATION

Recommended peeling force: 50±5gf



SURGE PERFORMANCE