

Specifications Per

- IEC 60115-1

Features

- Handles much higher working voltage than general purpose resistors
- Pure tin-plated termination for excellent solderability
- SMD enabled structure
- Anti-surge feature available
- Products meet RoHS requirements and do not contain substances of very high concern identified by European Chemicals Agency

■ DIMENSIONS

Type	Body Length (L, mm)	Body Diameter (D, mm)	Soldering Spot (B, mm)	Net Weight Per 1000 pcs
HVM16	3.52 ± 0.08	1.35 ± 0.1	0.6 Min.	17 grams
HVM25	5.90 ± 0.20	2.20 ± 0.1	1.0 Min.	66 grams
HVM50	8.50 ± 1.00	3.00 ± 0.2	1.3 Min.	186 grams
HVM100	10.5 ± 1.00	4.00 ± 0.5	1.6 Min.	446 grams
HVM200	12.6 ± 1.50	4.60 ± 0.7	1.8 Min.	750 grams
HVM300	14.6 ± 2.00	5.10 ± 1.0	2.0 Min.	1000 grams

■ GENERAL SPECIFICATIONS

Type	Power Rating (at 70°C)	Maximum Working Voltage	Maximum Overload Voltage	Minimum Resistance	Maximum Resistance	Resistance Tolerance	Available Resistance Values
HVM16	1/6W	600V	1,250V DC 900V RMS	56KΩ	22MΩ	±1%~±5%	E-24/E-96
HVM25	1/4W	1,250V DC 900V RMS	2,400V DC 1,800V RMS	91KΩ	24MΩ	±1%~±5%	E-24/E-96
HVM50	1/2W	2,800V DC 2,000V RMS	5,600V DC 4,000V RMS	100KΩ	33MΩ	±1%~±5%	E-24/E-96
HVM100	1W	4,200V DC 3,000V RMS	8,400V DC 6,000V RMS	100KΩ	68MΩ	±1%~±5%	E-24/E-96
HVM200	2W	6,300V DC 4,500V RMS	11,200V DC 8,000V RMS	100KΩ	68MΩ	±1%~±5%	E-24/E-96
HVM300	3W	8,400V DC 6,000V RMS	14,000V DC 10,000V RMS	100KΩ	68MΩ	±1%~±5%	E-24/E-96

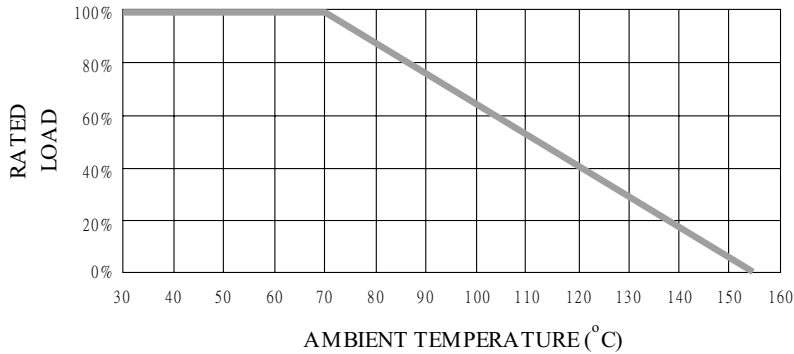
Special sizes, values, and specifications not listed available on special order.

HVM High Voltage MELF Resistor

Quality • Reliability
Cost-Down via Technology

HVM

POWER DERATING CURVE



PART NUMBER

Example: HVM100J910KTKZTR2K0

HVM100	J	910K	TKZ	TR2K0
Type	Tolerance*	Resistance	TCR	Packaging
	F (1%) G (2%) J (5%)	910KΩ 4-character code containing - 3 significant digits 1 letter multiplier 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) HVM16 3K0 = 3,000 6K0 = 6,000*** 10K = 10,000*** HVM25 2K0 = 2,000 6K0 = 6,000*** 10K = 10,000*** HVM50 2K5 = 2,500 HVM100 2K0 = 2,000 BK = Bulk HVM200/HVM300 BK + Quantity

* Listed values may not be applicable 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

TECHNICAL SUMMARY

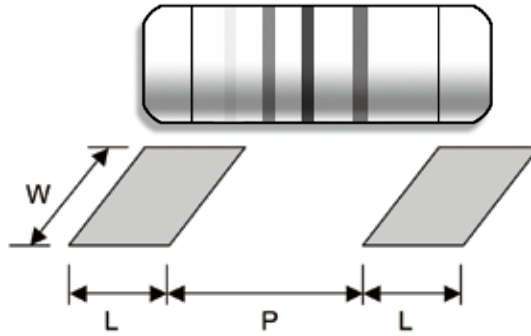
Characteristics	Limits
Dielectric Withstanding Voltage, VAC or DC	HVM16: 300 HVM25: 500 HVM50: 700 HVM100, HVM200, HVM300: 1000
Temperature Coefficient, PPM / °C*	±200, ±400, ±800, ±1200
Operating Temperature Range, °C	-55 ~ +155
Insulation Resistance, MΩ	>10 ⁴
Failure Rate in Time, pcs / 10 ⁹ device hours	< 5
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).

PERFORMANCE SPECIFICATIONS

Characteristics	Test Conditions	Limits
Short Time Overload	IEC 60115-1 4.13 2 seconds 2.5x rated voltage (not over max. overload voltage)	±2%
Load Life In Humidity	IEC 60115-1 4.24 56 days rated load at (40±2)°C and (93±3)% relative humidity	±3%
Load Life 1,000 hours	IEC 60115-1 4.25.1 Rated load with 1.5 hours ON, 0.5 hours OFF, at (70±2)°C	±3%
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%
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	±1%
Solderability	IEC 60115-1 4.17.2 Solder area covered after (235±3)°C/(2±0.2) seconds with flux applied	95% Min.
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.	±1%
Thermal Endurance	IEC 60115-1 4.25.3 1000 hours at 155°C without load	±1%
Thermal Shock	IEC 60115-1 4.19 -55°C 30minutes, +155°C 30minutes, 5 cycles	±2%
Single pulse high voltage overload	IEC 60115-1 4.27 10 pulses of 10/700μs at 10x rated voltage (not over max. overload voltage) with interval of 60 sec.	±2%
Electrostatic discharge (Human body model)	IEC 60115-1 4.38 3 positive & 3 negative discharges with 4KV source	±2.5%
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.	±2%
Bending test	IEC 60115-1 4.33 Pressing depth 2mm, 3 times	±1%
Flammability	IEC 60115-1 4.35 Needle flame test 10s	No burning after 30s

■ SUGGESTED PAD LAYOUT



Type	Soldering Mode	Pad Length (L, mm, Min.)	Pad Spacing (P, mm)	Pad Width (W, mm, Min.)
HVM16	Reflow	1.0	2.0 ± 0.2	1.6
	Wave	1.2	2.0 ± 0.2	1.6
HVM25	Reflow	2.0	3.0 ± 0.3	3.0
	Wave	2.5	3.0 ± 0.3	3.0
HVM50	Reflow	3.0	4.9 ± 0.3	3.7
	Wave	3.5	4.8 ± 0.3	4.0
HVM100	Reflow (Not recommended)	4.0	6.2 ± 0.4	4.5
	Wave	4.5	6.0 ± 0.4	5.0
HVM200	Reflow (Not recommended)	4.5	8.0 ± 0.4	5.0
	Wave	5.0	7.7 ± 0.4	5.5
HVM300	Reflow (Not recommended)	5.0	9.3 ± 0.4	5.5
	Wave	5.0	9.0 ± 0.4	5.5

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

■ COVER TAPE PEELING SPECIFICATION

Recommended peeling force:

HVM16, HVM25: 50±5gf HVM50, HVM100: 70±10gf

