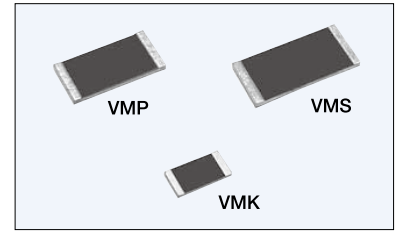


ISA-PLAN PRECISION SHUNT CHIP RESISTORS

VMK, VMP, VMS

Features

Metal foil shunt chip resistors with low TCR, ideal for precise current sensing

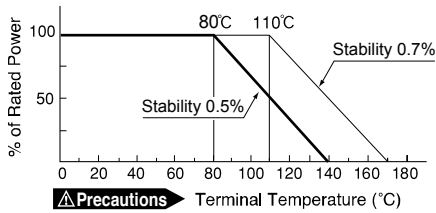


Type	Load Capacity (W)* [Free air]	Resistance Range (Ω)	Resistance Tolerance (%)	Temp. Coefficient (20°C ~ 60°C)	Operating Temp.(°C)	Solder Reflow	Internal Thermal Resistance (foil / contacts)
VMK	1 [0.1]	0.01~0.47	±1	±20ppm/°C	-55~+170	MAX.255°C (t<40sec)	60°C/W
VMP	2 [0.2]	0.005~1					30°C/W
VMS	3 [0.5]	0.005~1					25°C/W

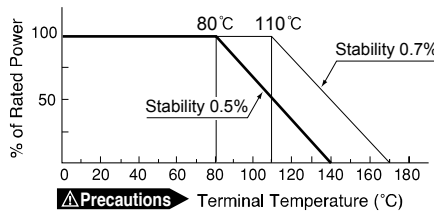
*Refer to the power derating curve. Proper measures for heat radiation should be taken.

⚠️Precautions

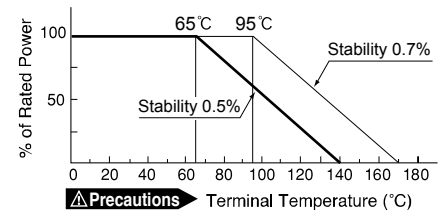
Power Derating Curve VMK



Power Derating Curve VMP

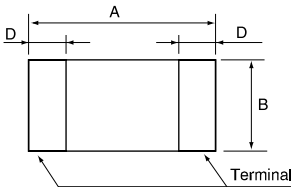


Power Derating Curve VMS



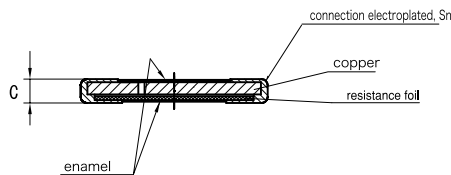
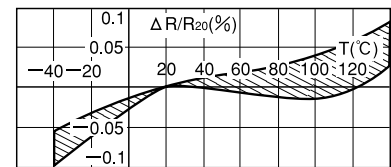
Dimensions

VMK, VMP, VMS



Type	Dimensions (mm)				Weight (g)
	A	B	C	D	
VMK	3.05	1.52	0.4	0.3	0.05
VMP	5.08	2.54	0.4	0.7	0.08
VMS	6.35	3.05	0.4	0.9	0.1

Resistance Change Versus Temp.(Zeratin)



■ Performance

Parameters	Test Condition	Specification	Typical Test Data
Thermal Shock	-65°C, 25°C, 125°C, 25°C 25cycles	±0.1%	±0.05%
Over Load	5 × Wattage Rating (Free Air) 5sec	±0.2%	±0.05%
Resistance to Solvents	IPA 3min	No Damage	No Damage
Low Temp. Storage and Operation	MIL-R-26E	±0.1%	±0.05%
Resistance to Soldering Heat	260°C 10sec	±0.1%	±0.05%
Moisture Resistance	Near 100%RH, +25°C, +65°C, -10°C 10cycles (10days)	±0.1%	±0.05%
Shock	50g's, 11ms	±0.2%	±0.05%
Vibration, High Frequency	MIL-STD-202 Method 204D-B	±0.2%	±0.1%
Load Life (Terminal Temp. Max.80°C ※2)	Wattage Rating(1.5Hr ON-0.5Hr OFF) 2000Hr	±0.5%	
Load Life (Terminal Temp. Max.110°C ※3)	Wattage Rating(1.5Hr ON-0.5Hr OFF) 2000Hr	±0.7%	
Storage Life at Elevated Temp.	MIL-STD-202 method 108A-F	±0.5%	±0.3%
High Temperature Exposure	140°C 2000Hr	±0.3%	±0.1%
Current Noise	MIL-STD-202 method 308	±0.01%	none
Voltage Coefficient	MIL-STD-202 method 309	linearity error less than 120dB	
Thermal EMF	0~100°C	2μV/°C MAX	0.5μV/°C
Frequency Characteristic	Inductance (R<20mΩ)	<2nH	<0.5nH

※2 VMS:Terminal Temp. Max.65°C
 ※3 VMS:Terminal Temp. Max.95°C

How to order

VMS 5 mΩ ±0.5%
 Type Resistance Tolerance

● Taping Specification

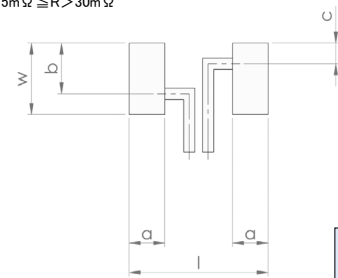
VMK : DIN EN 60286-3 Tape width 8mm 12500 pcs
 VMP : DIN EN 60286-3 Tape width 12mm 12500 pcs
 VMS : DIN EN 60286-3 Tape width 12mm 9000 pcs

● Standard Resistance E-06 Series

● Order for a single piece of standard in-stock items accepted
 ● AEC-Q200 Qualified

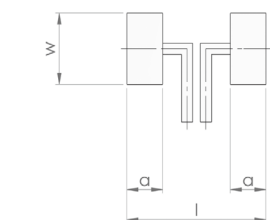
Recommended PCB layout

5mΩ ≤ R < 30mΩ



Type	Dimensions				
	I	w	a	b	c
VMK	3.7	1.9	0.95	1.35	0.55
VMP	6	3	1.25	2.05	0.95
VMS	7.5	3.6	1.55	2.6	1.00

30mΩ ≤ R ≤ 80mΩ



Standard Resistance (Stock)

5 10 47 100 (mΩ) ±1%



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