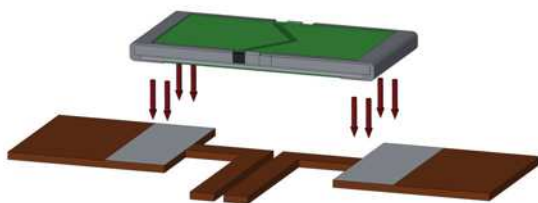




ISA-PLAN® // PRECISION RESISTORS

VMK // Size 1206



Features

- 1 W power rating at 110 °C
- Constant current up to 10 A (10 mOhm)
- Small size (1206)
- High pulse power rating
- Excellent long-term stability
- Mounting: Reflow- and IR-soldering
- AEC-Q200 qualified
- RoHS 2011/65/EU compliant



Applications

- Current sensor for power hybrid applications
- Control systems for the automotive market
- Power modules
- Frequency converters
- Switch mode power supplies

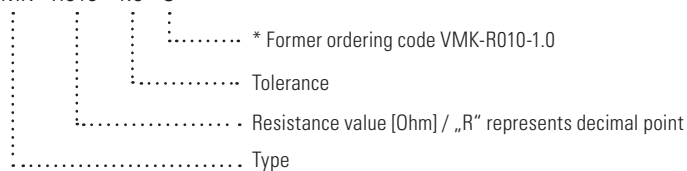
Technical data

Resistance values ¹	mOhm	10 to 470
Tolerance ¹	%	1 / 2 / 5
Temperature coefficient (20-60 °C)	ppm/K	<20
Applicable temperature range	°C	-65 to +170
Power rating P_{110°C}	W	1
Power rating P_{70°C}	W	1.5
Internal heat resistance (R _{thi})	K/W	<60
Dielectric withstanding voltage	V AC/DC	200
Inductance	nH	<3
Stability (at rated power) deviation after 2000h, T _K = Terminal temperature		<0.5 % (T _K =80 °C) <0.7 % (T _K =110 °C)

¹ See all standard values and tolerances on page 2

Ordering code

VMK - R010 - 1.0 - U*



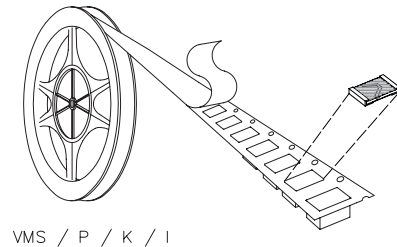
**VMK // Size 1206****Recommended solder profile**

Reflow- and IR-soldering

Temperature	°C	260	255	217
Time	sec	peak	40	90

Tape and reel information

Specification		DIN EN 60286-3
Tape width	mm	8
Reel size	inch	13
Parts per reel	pcs	12500
Packaging weight net	g	454

**Available standard resistance values and tolerances***

Resistance values	Tolerance 1 %	Tolerance 2 %	Tolerance 5 %
R010	✓		✓
R012	✓		
R015	✓		✓
R020	✓		✓
R022	✓		
R025	✓		✓
R027	✓		
R030	✓		
R033	✓		
R039	✓		
R047	✓		
R050	✓	✓	
R062	✓		
R068	✓		
R100	✓		✓
R120	✓		
R140	✓		
R150	✓		
R180	✓		
R200	✓		
R220	✓		
R300	✓		
R330	✓		
R360	✓	✓	
R470	✓		

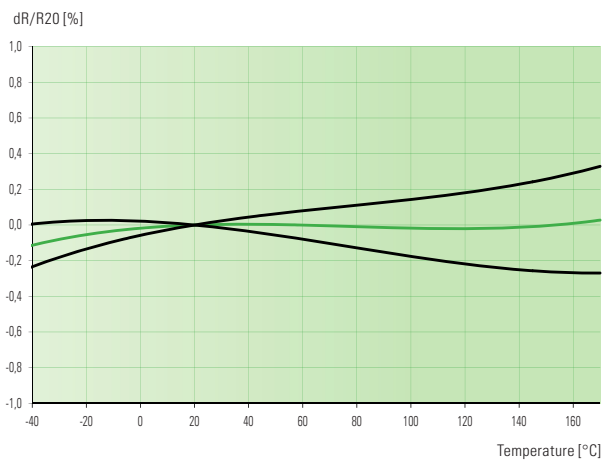
* Further values and tolerances on request

✓ = available



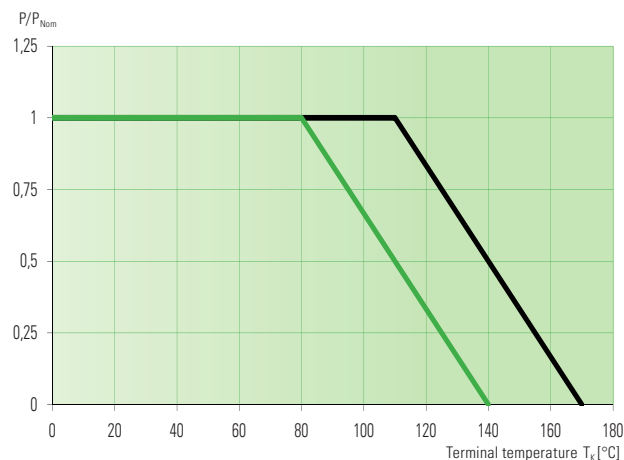
VMK // Size 1206

Temperature dependence of the electrical resistance



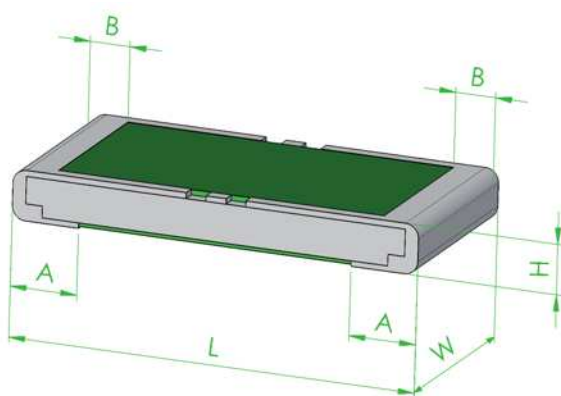
— Limiting curve
— Typical temperature dependence of a VMK resistor

Power derating curve



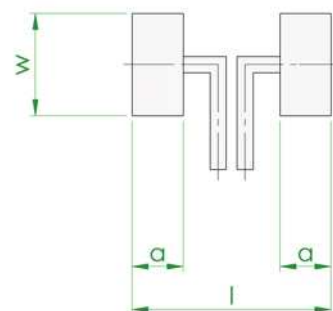
— Stability < 0.7 %
— Improved stability < 0.5 %

Mechanical dimensions and pcb-layout proposal (Reflow-soldering) [mm] / Drawing Z-YE-495



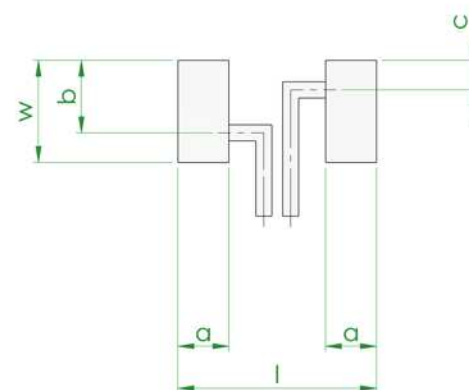
Type	L	W	H	A	B
VMK	3.05 ±0.2	1.52 ±0.2	0.4 ±0.15	0.5 ±0.15	0.3 ±0.15

Layout 1

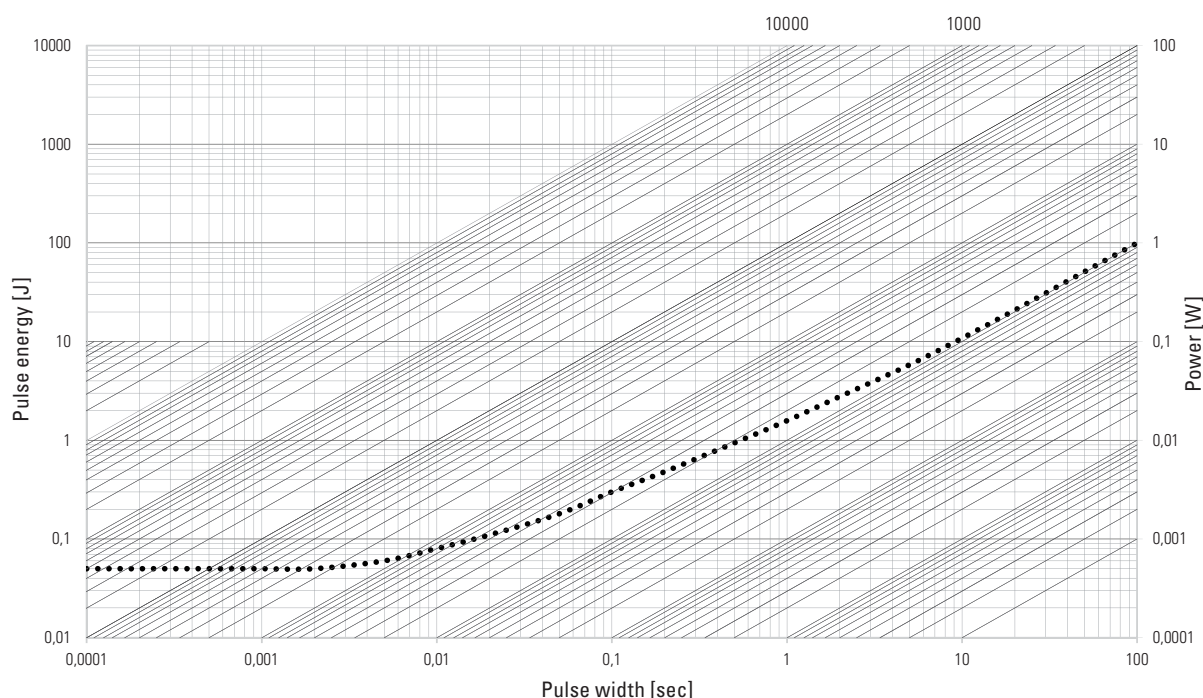


Layout 2

Layout for values >30 mOhm if TC < 20 ppm/K is required



Solder pad type	l	w	a	b	c
VMK	3.7	1.9	0.95	1.35	0.55

**VMK // Size 1206****Maximum pulse energy respectively pulse power for permanent operation**

This curve is only valid for the resistance value R010. The shape of the curve in the range below 0.1 sec will be different for other resistance values. Therefore a separate qualification should be made for pulse power close to the above curve.

Specification

Parameters	Test conditions	Specified values
Temperature Cycling	2000 cycles (-55 °C to +150 °C)	±0.5 %
Low Temperature Storage	-65 °C for 250 h	±0.1 %
Resistance to Soldering Heat	260 °C for 10 sec / 8h steam aging	±0.3 %
Moisture Resistance	MIL-STD-202 method 106	±0.5 %
Mechanical Shock	100 g, 6 ms half sine	±0.2 %
Vibration, High Frequency	10 g, 10-2000 Hz, 24 h each axis	±0.2 %
Operational Life	2000 h, T_K max at rated power	±0.7 %, $T_K = 110$ °C
High Temperature Exposure	2000 h / 170 °C	±1.0 %
Bias Humidity	+85 °C, 85 r.F., 1000 h, powered	±0.5 %

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