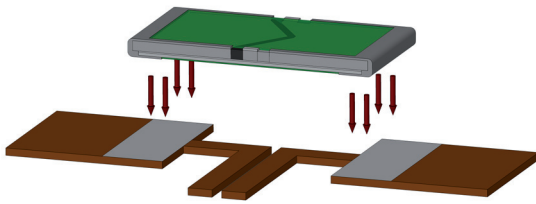




ISA-PLAN® // PRECISION RESISTORS



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

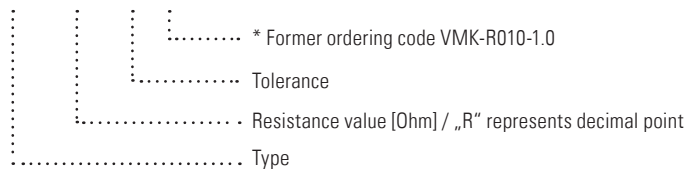
Technical data

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*





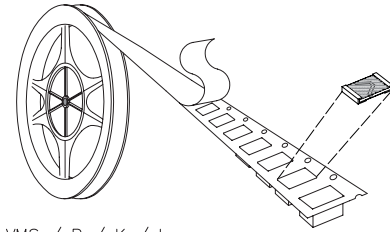
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Recommended solder profile

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		



VMS / P / K / I

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	✓		

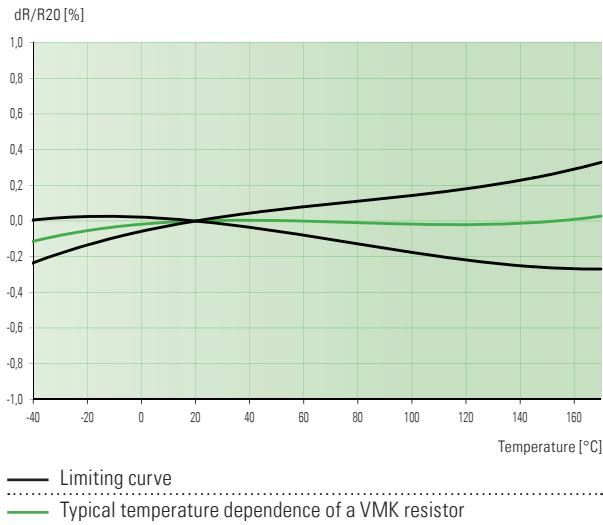
* Further values and tolerances on request

✓ = available

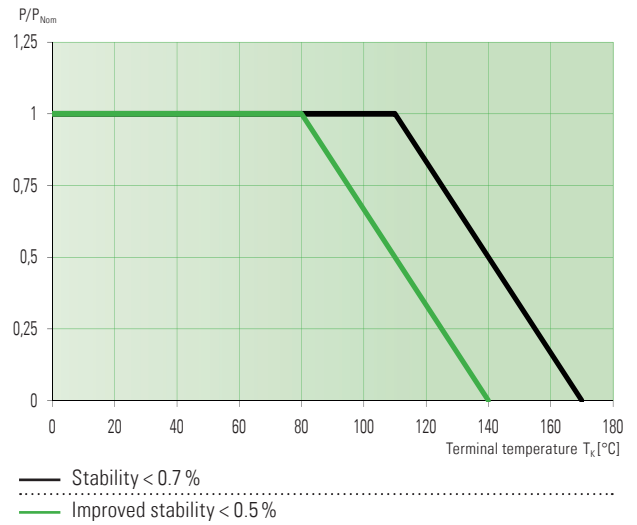


VMK // Size 1206

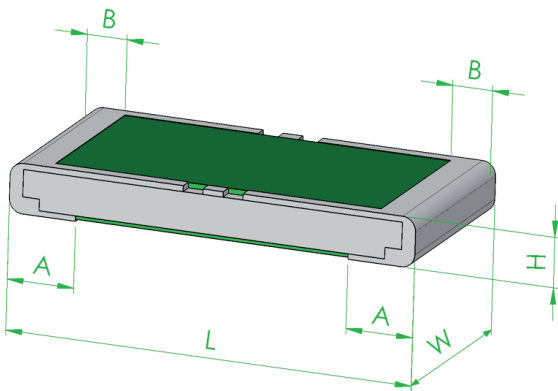
Temperature dependence of the electrical resistance



Power derating curve

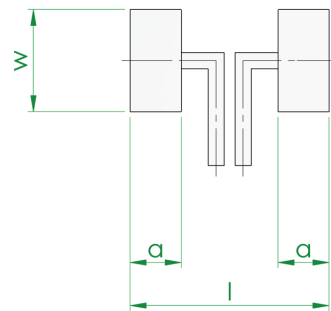


Mechanical dimensions and pcb-layout proposal (Reflow-soldering) [mm] / Drawing Z-YE-495



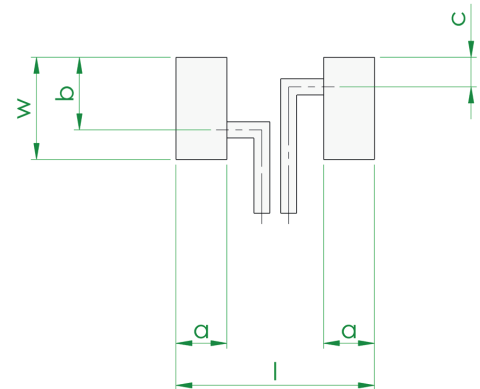
Type	L	W	H	A	B
VMK	3.05 ±0.2	1.52 ±0.2	0.4 ±0.15	0.5 ±0.15	0.3 ±0.15

Layout 1



Layout 2

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

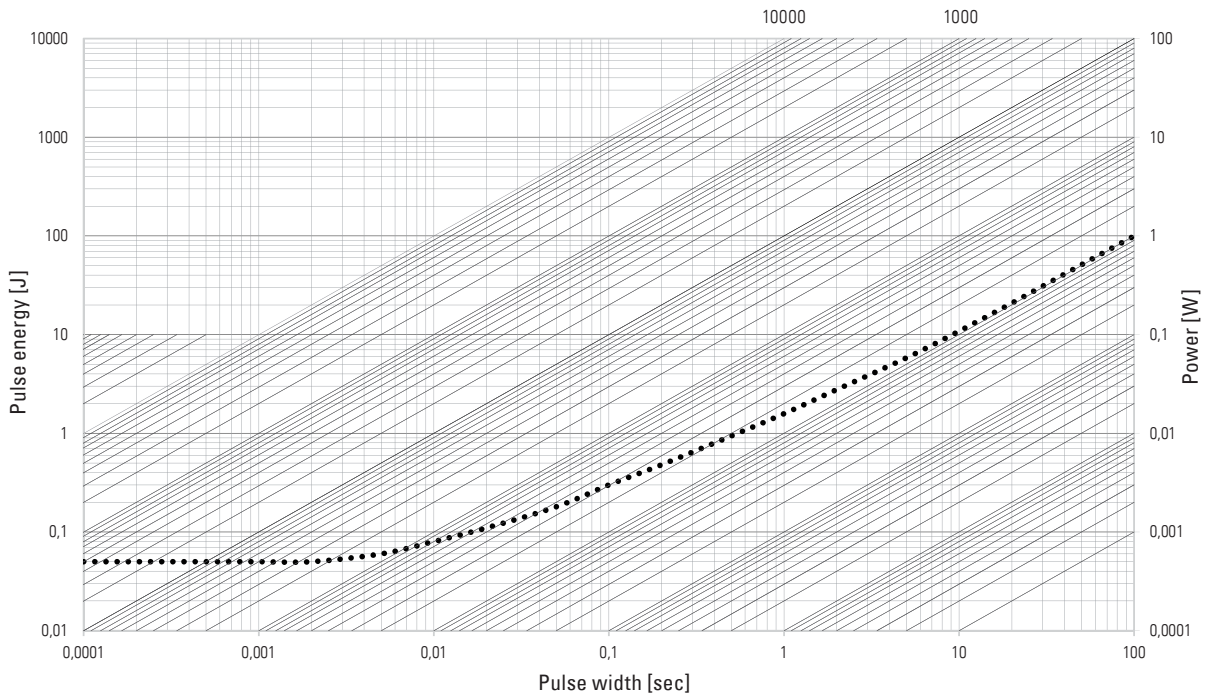


Solder pad type	l	w	a	b	c
VMK	3.7	1.9	0.95	1.35	0.55



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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