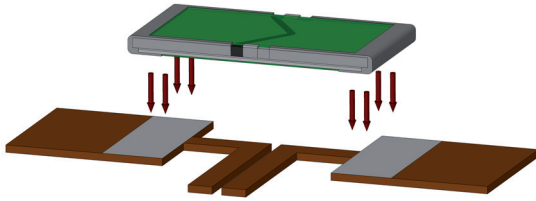




## ISA-PLAN® // PRECISION RESISTORS



### 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

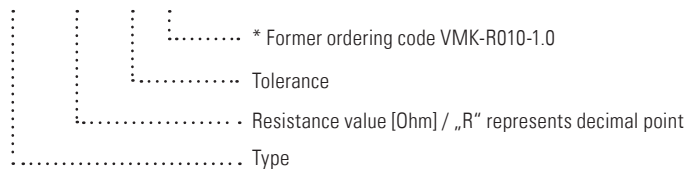
#### Technical data

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

<sup>1</sup> See all standard values and tolerances on page 2

#### Ordering code

VMK - R010 - 1.0 - U\*





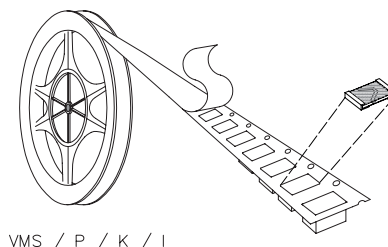
**VMK // Size 1206**

**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	✓		✓
R030	✓		
R033	✓		
R039	✓		
R047	✓		
R050	✓	✓	
R062	✓		
R068	✓		
R100	✓		✓
R120	✓		
R140	✓		
R150	✓		
R180	✓		
R200	✓		
R220	✓		
R300	✓		
R330	✓		
R360	✓	✓	
R470	✓		

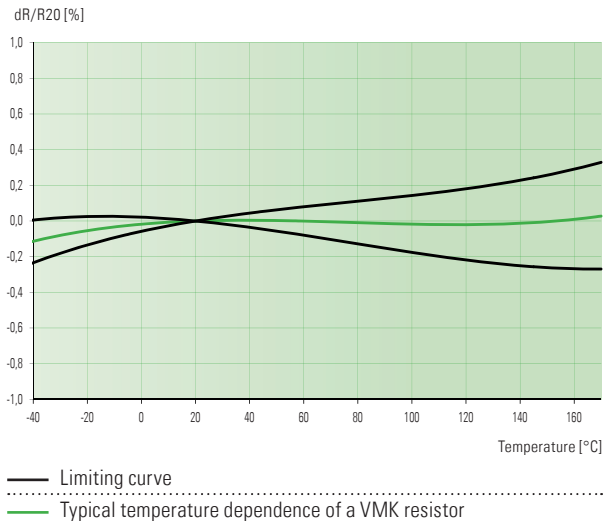
\* Further values and tolerances on request

✓ = available

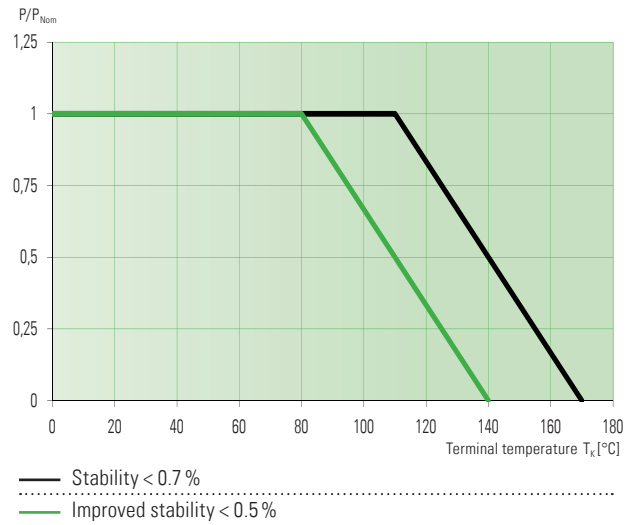


**VMK // Size 1206**

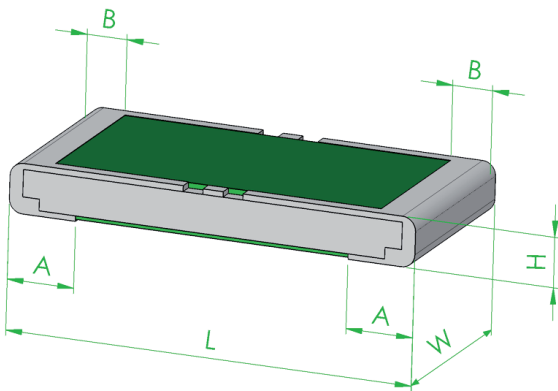
**Temperature dependence of the electrical resistance**



**Power derating curve**

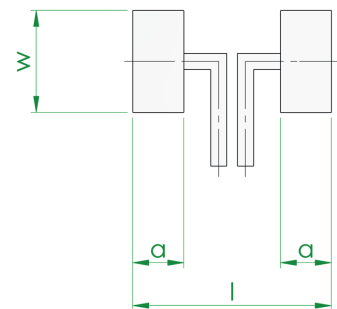
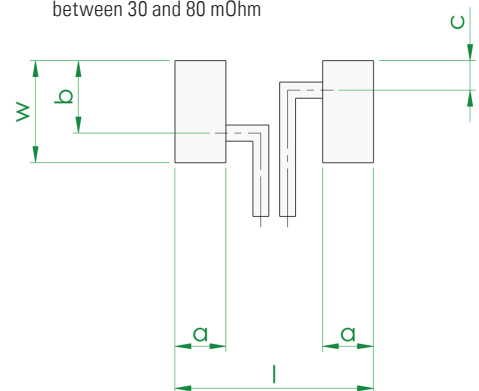


**Mechanical dimensions and pcb-layout proposal (Reflow-soldering) [mm] / Drawing Z-YE-495**



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 if TC < 20 ppm/K is required for R in between 30 and 80 mOhm

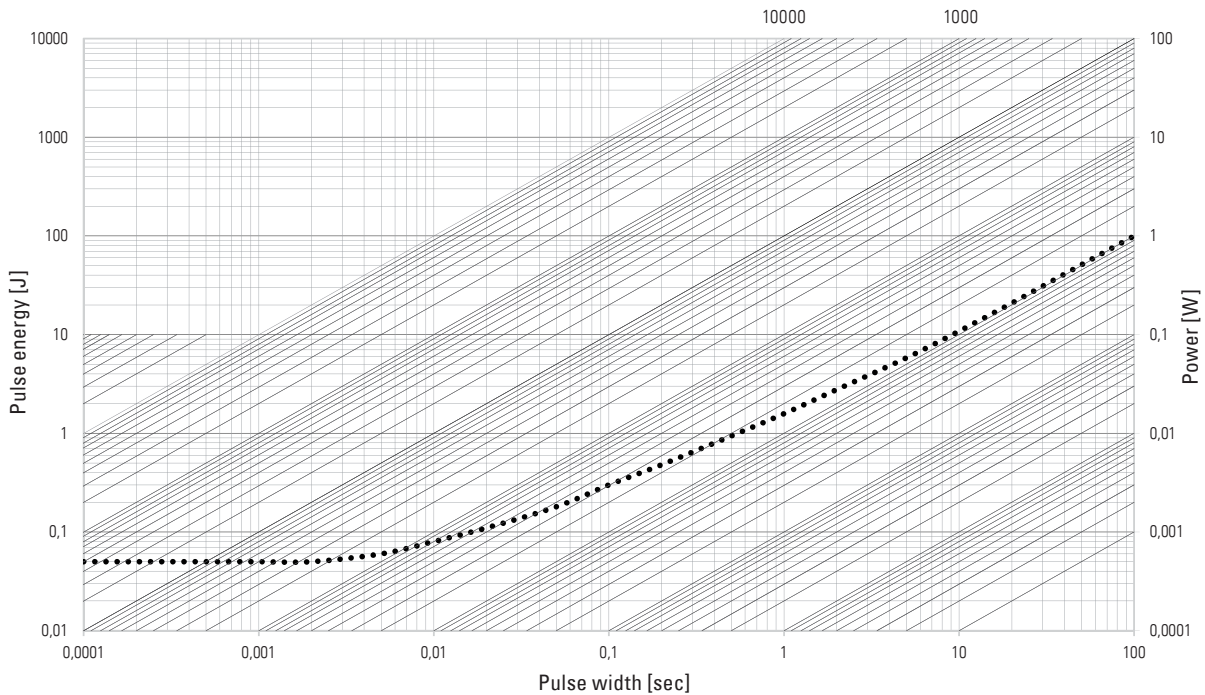


Solder pad type	l	w	a	b	c
VMK	3.7	1.9	0.95	1.35	0.55



**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 24 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	20 g, 10-2000 Hz	±0.2 %
Operational Life	2000 h, T <sub>K</sub> max at rated power	±0.7 %, T <sub>K</sub> = 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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