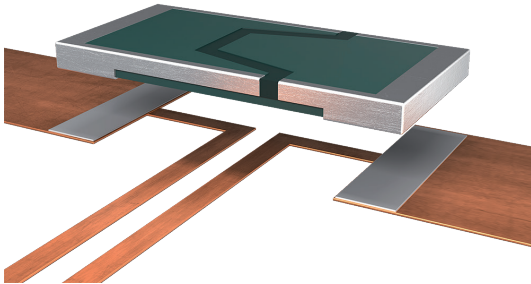




## ISA-PLAN® // PRECISION RESISTORS



### VMP // Size 2010



#### Features

- 2 W power rating at 110 °C
- Constant current up to 20 A (5 mOhm)
- Standard pad size (2010)
- 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

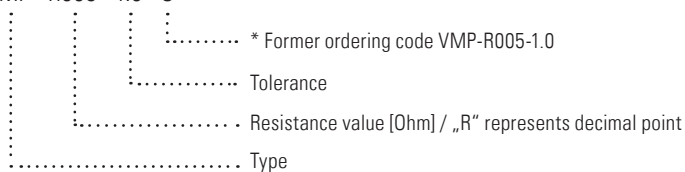
#### Technical data

Resistance values <sup>1</sup>	<b>Ohm</b>	0.005 to 1
Tolerance <sup>1</sup>	<b>%</b>	1 / 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>	2
Power rating <b>P<sub>70°C</sub></b>	<b>W</b>	3
Internal heat resistance (R <sub>thi</sub> )	<b>K/W</b>	<30
Dielectric withstanding voltage	<b>V AC/DC</b>	200
Inductance	<b>nH</b>	<2
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

VMP - R005 - 1.0 - U\*





**VMP // Size 2010**

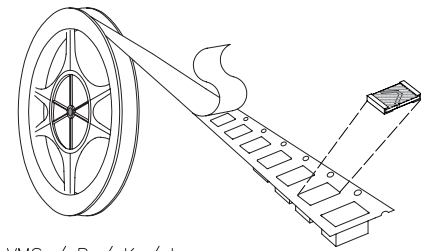
**Recommended solder profile**

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	12
Reel size	inch	13
Parts per reel	pcs	12500
Packaging weight net	g	481



VMS / P / K / I

**Available standard resistance values and tolerances\***

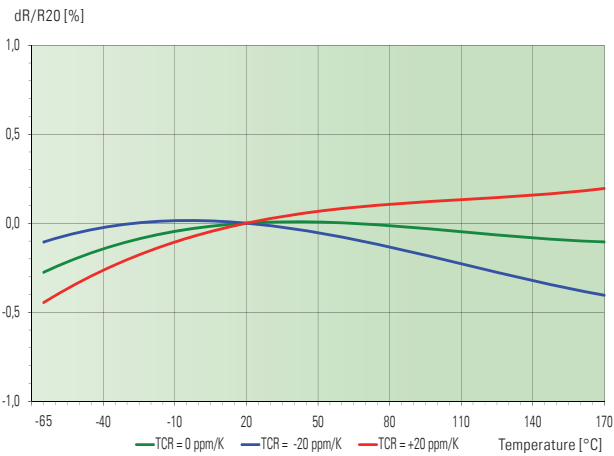
Resistance values	Tolerance 1%	Tolerance 5%
R005	✓	✓
R0068	✓	
R008	✓	
R010	✓	✓
R015	✓	
R020	✓	
R022	✓	
R025	✓	
R033	✓	
R039	✓	
R050	✓	✓
R068	✓	
R100	✓	
R120	✓	
R150	✓	
R160	✓	
R180	✓	
R200	✓	
R250	✓	
R270	✓	
R300	✓	
R390	✓	
R470	✓	
R500	✓	✓
R560	✓	
R820	✓	
1R00	✓	

\* Further values and tolerances on request  
 ✓ = available

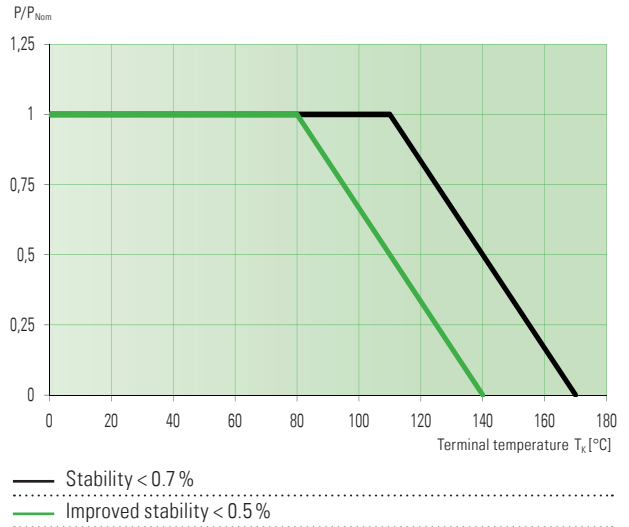


VMP // Size 2010

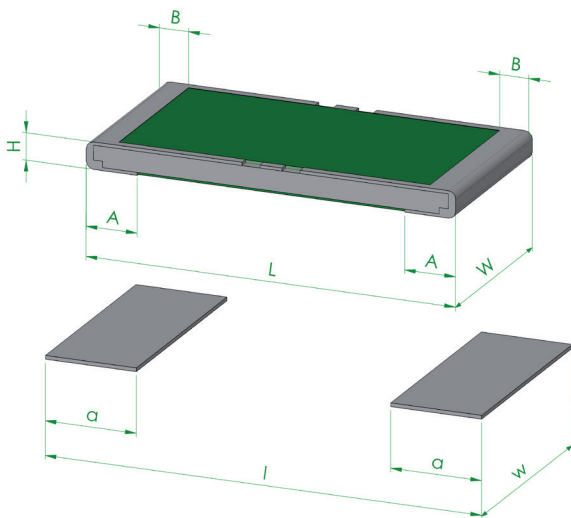
Temperature dependence of the electrical resistance



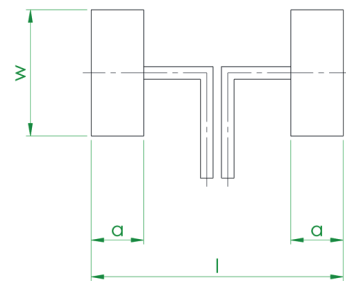
Power derating curve



Mechanical dimensions and pcb-layout proposal (Reflow-soldering) [mm] / Drawing Z-YE-496a

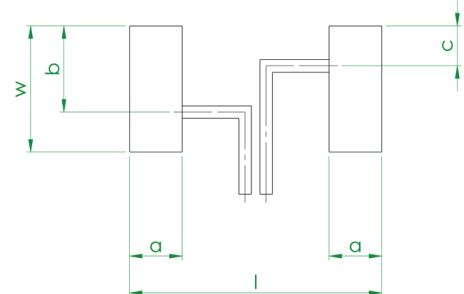


Layout 1



Layout 2

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



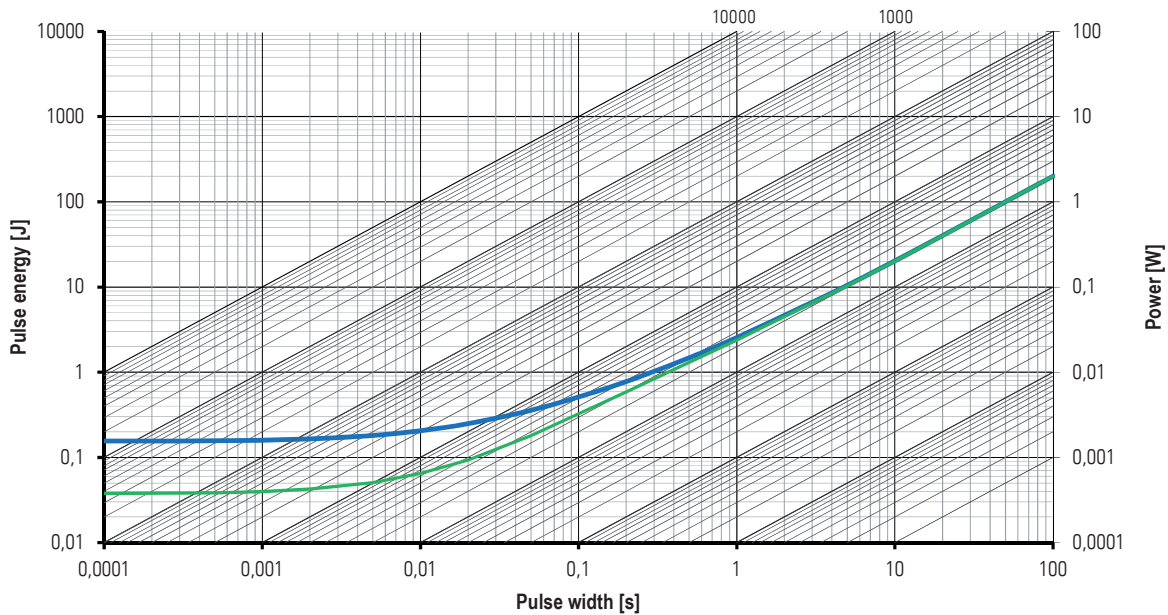
Type	L	W	H	A	B
VMP	5.08 ±0.2	2.54 ±0.2	0.4 ±0.15	0.7 ±0.2	0.4 ±0.15

Solder pad type	l	w	a	b	c
VMP	6	3	1.25	2.05	0.95



VMP // Size 2010

Maximum pulse energy respectively pulse power for permanent operation



— This curve is valid for the resistance value R005 only.  
 — This curve is valid for the resistance value R001 only.

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	±0.3 %
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 <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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