



**THE DATASHEET OF  
VMS-R050-1.0-U**

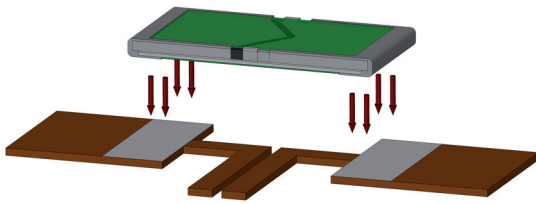




## ISA-PLAN® // PRECISION RESISTORS



### VMS // Size 2512



#### Features

- 3 W power rating at 95 °C
- Constant current up to 25 A (5 mOhm)
- Standard pad size (2512)
- 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

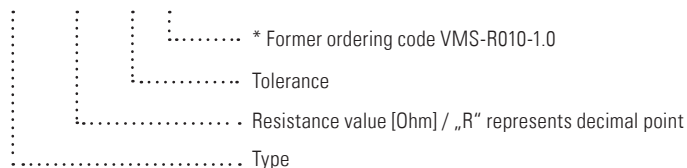
#### Technical data

Resistance values <sup>1</sup>	<b>Ohm</b>	0.005 to 1
Tolerance <sup>1</sup>	<b>%</b>	1 / 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>95°C</sub></b>	<b>W</b>	3
Power rating <b>P<sub>70°C</sub></b>	<b>W</b>	4
Internal heat resistance (R <sub>thi</sub> )	<b>K/W</b>	<25
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> =65 °C) <0.7 % (T <sub>K</sub> =95 °C)

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

#### Ordering code

VMS - R010 - 1.0 - U\*





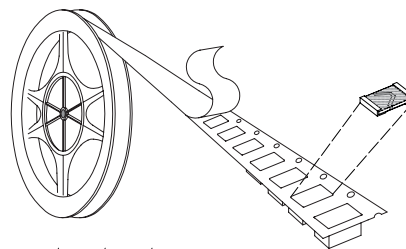
**VMS // Size 2512**

**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	9000		
Packaging weight net	g	539		



VMS / P / K / I

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

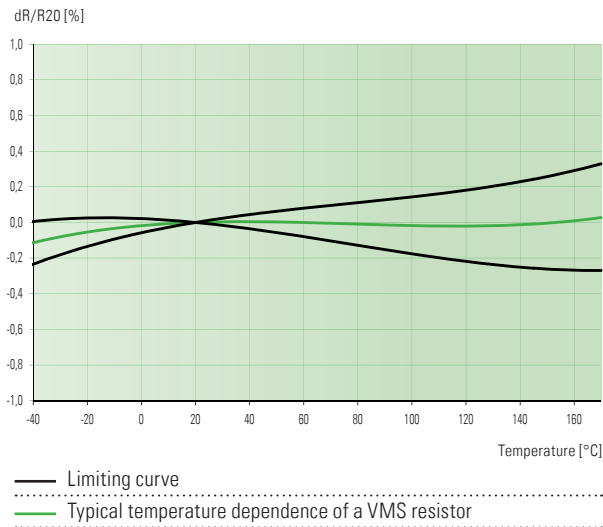
Resistance values	Tolerance 1%	Tolerance 2%	Tolerance 5%
R005	✓		
R0068			✓
R010	✓		✓
R012	✓		
R015	✓		
R020	✓	✓	
R022	✓		
R025	✓		
R027	✓		
R030	✓		
R033	✓		
R039	✓		
R040	✓		
R047	✓		
R050	✓		
R056	✓		
R068	✓		
R082	✓		
R100	✓		
R120	✓		
R150	✓		
R180	✓		
R200	✓		
R220	✓		
R240	✓		
R270		✓	
R300	✓		
R330	✓		
R470	✓		
R500	✓		
R680	✓		
1R00	✓		

\* Further values and tolerances on request  
 ✓ = available

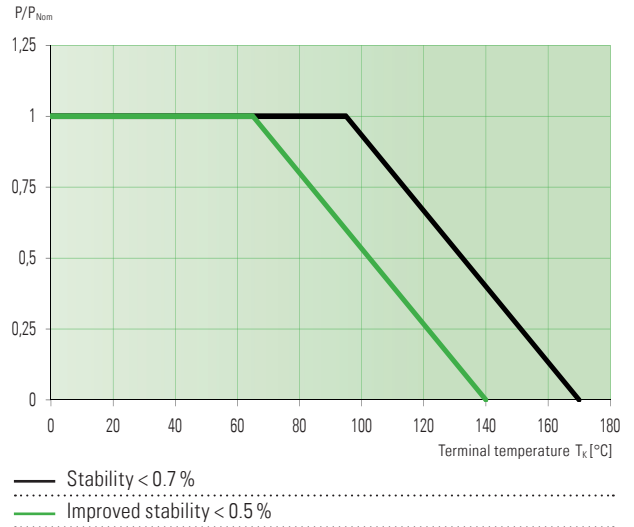


VMS // Size 2512

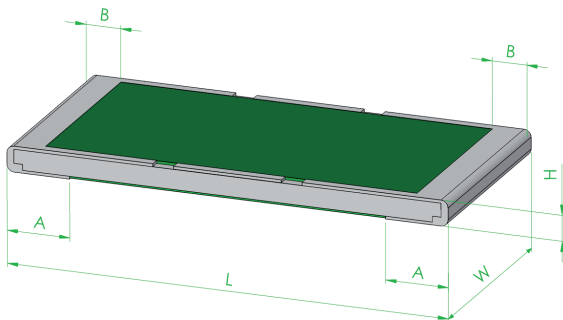
Temperature dependence of the electrical resistance



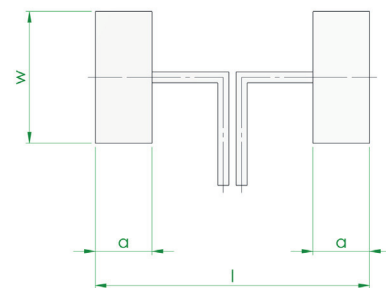
Power derating curve



Mechanical dimensions and pcb-layout proposal (Reflow-soldering) [mm] / Drawing Z-YE-497



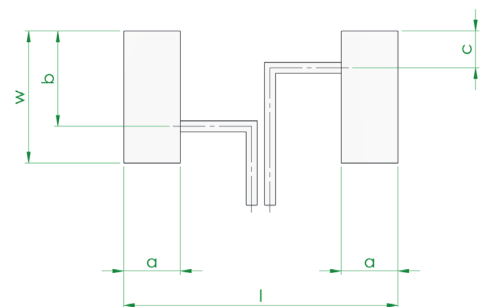
Layout 1



Type	L	W	H	A	B
VMS	6.35 ±0.3	3.05 ±0.2	0.4 ±0.15	0.9 ±0.2	0.5 ±0.2

Layout 2

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

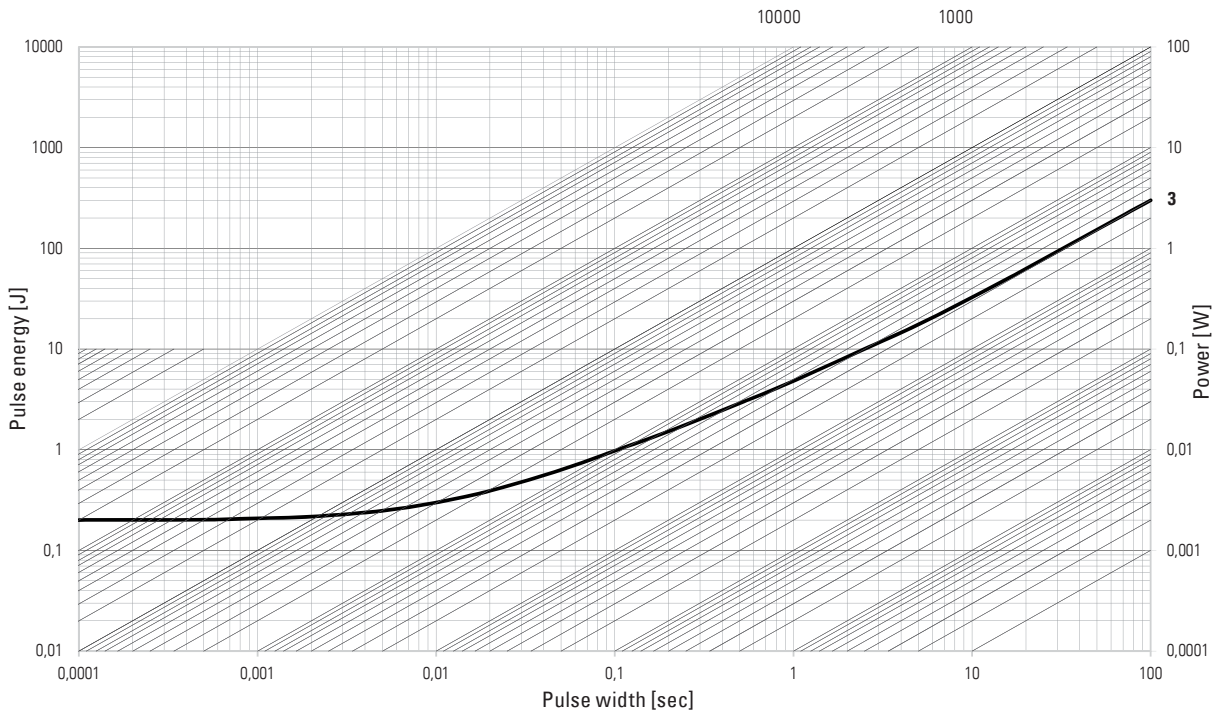


Solder pad type	l	w	a	b	c
VMS	7.5	3.6	1.55	2.6	1.0



**VMS // Size 2512**

**Maximum pulse energy respectively pulse power for permanent operation**



This curve is only valid for the resistance value R005. 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	±0.3 %
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, $T_K$ max at rated power	±0.7 %, $T_K = 95 °C$
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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