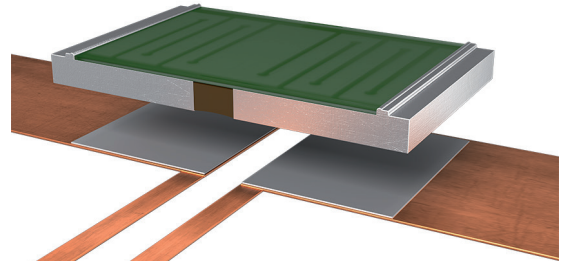


SMP (2010)

ISA-PLAN® PRECISION RESISTOR



FEATURES

- 3 W power rating at 70 °C
- Constant current up to 24 A (5 mOhm)
- Excellent long-term stability
- High pulse power rating
- Massive copper terminals serve as heat sinks
- Mounting: Reflow-, and IR-soldering
- AEC-Q200 qualified



APPLICATIONS

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

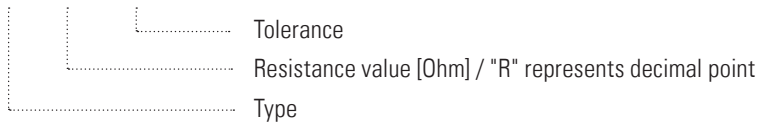
Technical data

Resistance values	Ohm	0.005 to 1*
Tolerance	%	0.5 / 1*
Temperature coefficient (20-60 °C)	ppm/K	<50
Applicable temperature range	°C	-65 to +170
Power rating P_{110°C}	W	2
Power rating P_{70°C}	W	3
Internal heat resistance (R_{thi})	K/W	<30
Dielectric withstanding voltage (AC/DC)	V	200
Inductance	nH	<3
Stability (at rated power) deviation after 2000h	%	<0.5 ($T_K = 80\text{ °C}$)
T_K = Terminal temperature		<1.0 ($T_K = 110\text{ °C}$)

* for detailed information see table on page 3

Ordering code

SMP - R005 - 1.0

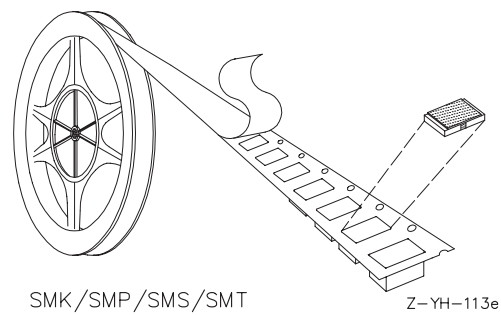


Recommended solder profile

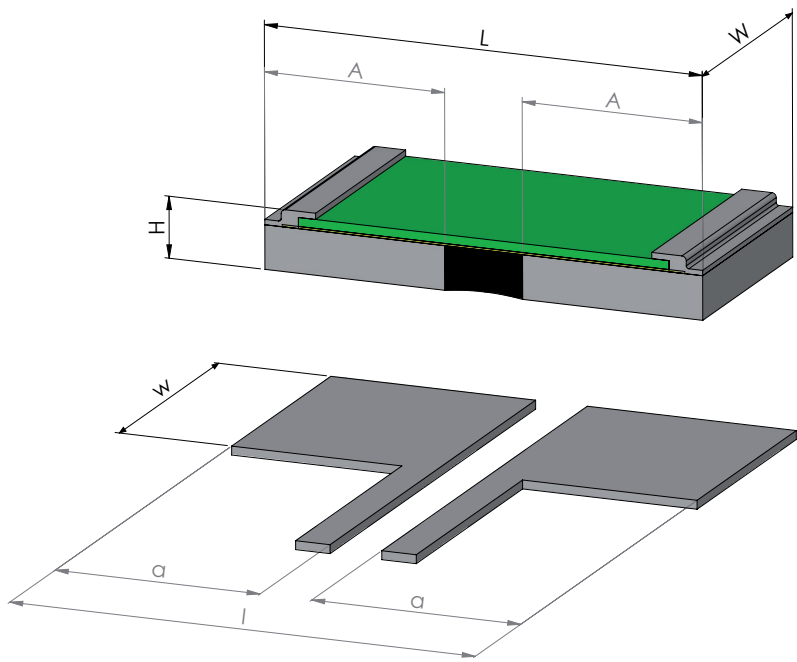
Reflow-, IR-soldering				
Temperature	°C	260	255	217
Time	sec	peak	40	90

Tape and reel information

Specification	DIN EN 60286-3			
Tape width	mm	12		
Reel size	inch	13		
Parts per reel	pcs	10,000		
Packaging weight	g	453		



Mechanical dimensions and pcb-layout proposal (Reflow-soldering) [mm]



type:	L	W	A	H
SMP	5.08 ± 0.1	2.54 ± 0.1	(2.14)	0.7 ± 0.2

solder pad type:	l	w	a
SMP	5.4	2.8	2.4

Available standard resistance values and tolerances*

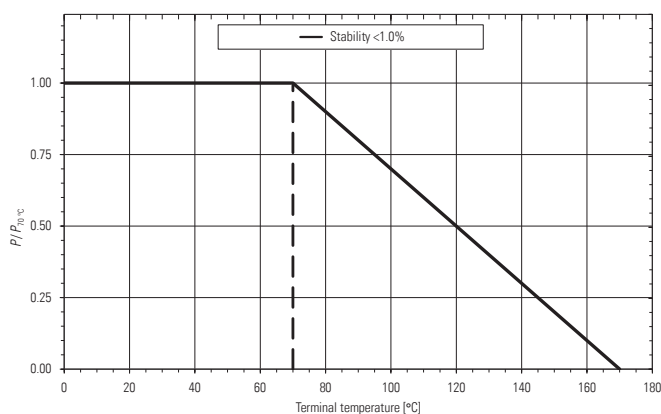
Resistance values	Tolerance	
	0.5	1.0
R005		✓
R010		✓
R015		✓
R018		✓
R020	✓	✓
R022		✓
R025		✓
R027		✓
R033	✓	✓
R039		✓
R047		✓
R050		✓

* Further values and tolerances on request

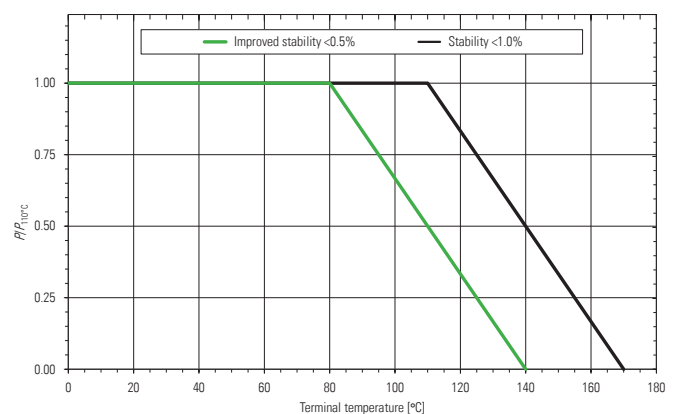
✓ = available

Resistance values	Tolerance	
	0.5	1.0
R068		✓
R082		✓
R100		✓
R150		✓
R160		✓
R180		✓
R200	✓	✓
R250		✓
R330		✓
R390		✓
R470		✓
R500		✓
1R00	✓	✓

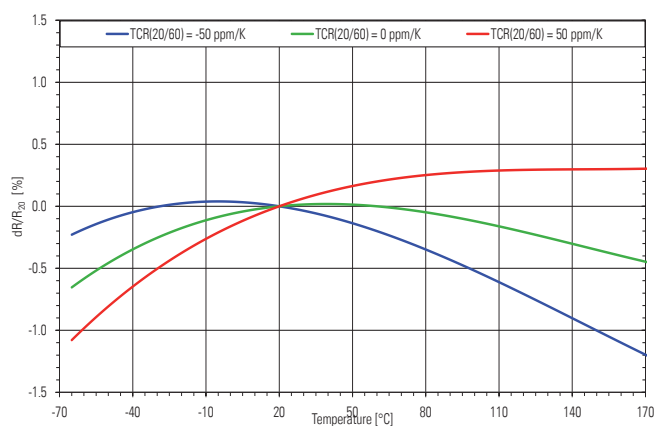
Power derating curve at 70 °C



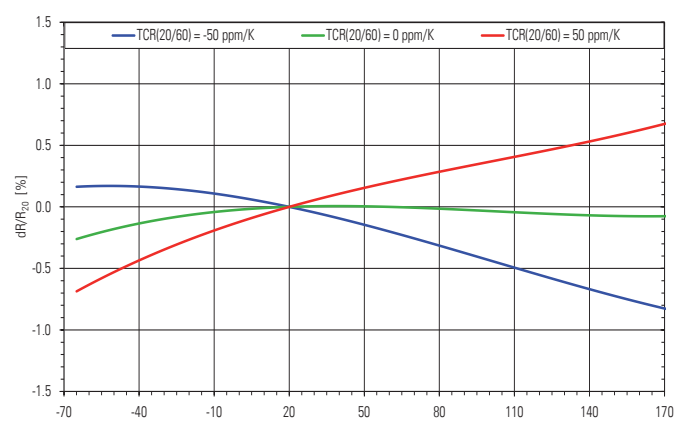
Power derating curve at 110 °C

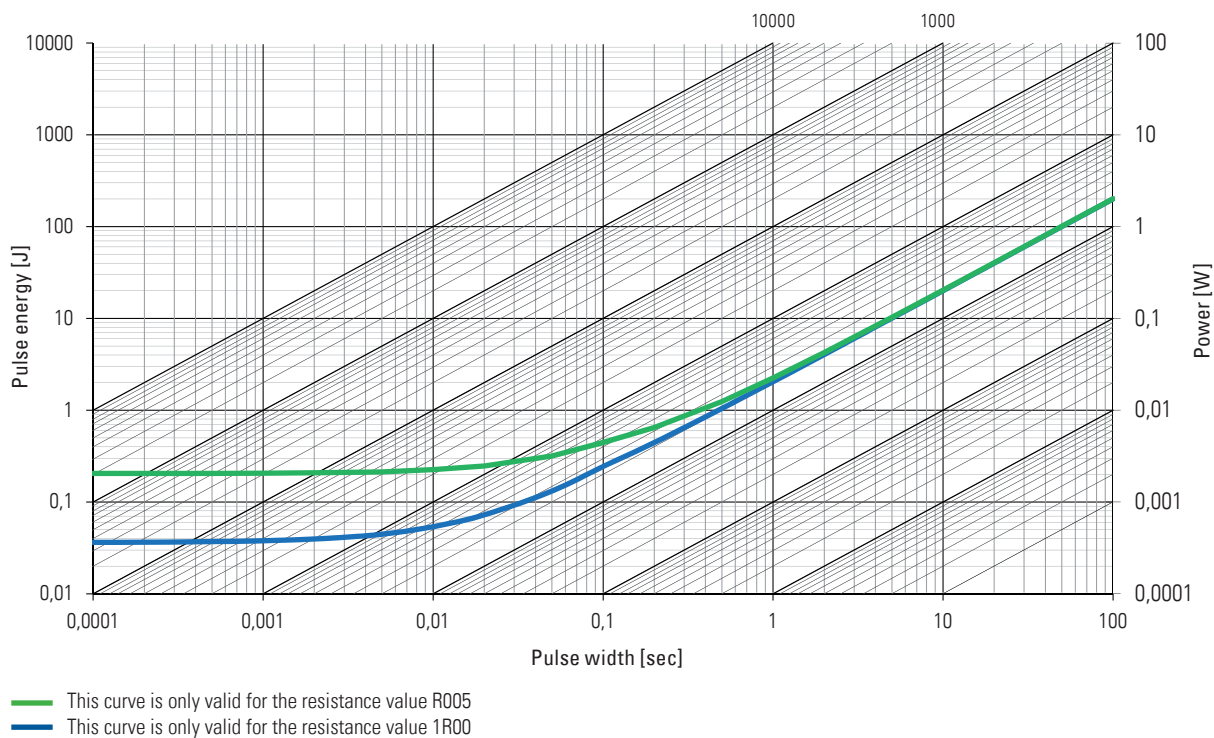


Temperature dependence of the electrical resistance of MANGANIN® resistors



Temperature dependence of the electrical resistance of ZERANIN® resistors



Maximum pulse energy respectively pulse power for permanent operation ($T_K=110^\circ\text{C}$)**Specification**

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

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