

heynen 

Heynen works for innovators



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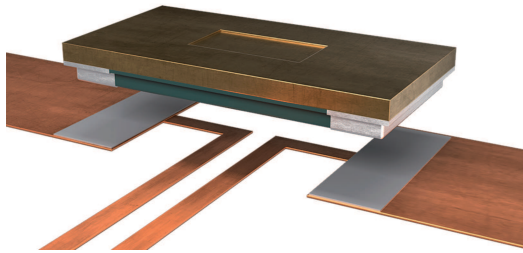
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ISA-PLAN® // PRECISION RESISTORS

FMS // Size 2512

PRELIMINARY VERSION



Features

- Power rating up to 4 W at 70°C (1.5 mOhm)
- Constant current up to 50 A (1.5 mOhm)
- Standard pad size (2512)
- High pulse power rating
- Excellent long-term stability
- Mounting: Reflow- and IR-soldering
- AEC-Q200 qualification in preparation
- 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

Preliminary technical data

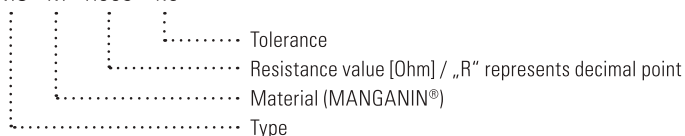
Resistance values	mOhm	1.5 / 2 / 3 / 4 / 5 / 6
Tolerance	%	1 / 5
Temperature coefficient (20-60 °C)	ppm/K	<50
Applicable temperature range	°C	-65 to +170
Power rating	W	up to 4
Dielectric withstanding voltage	V AC/DC	200
Inductance	nH	<3
Stability (at rated power) deviation after 2000h, T _K = Terminal temperature		< 0.5 % (TK=80 °C) < 1.0 % (TK=110 °C)

Type	Value [mΩ]	R _{thi} [K/W]	TCR [ppm/K]	P _{70 °C}	P _{110 °C}
FMS-Z-R0015*	1.5	20	<50	4	3
FMS-M-R002*	2	25	<50	3.5	2
FMS-M-R003*	3	40	<50	2.5	1.5
FMS-V-R004*	4	50	<50	2	1
FMS-V-R005*	5	55	<50	1.5	1
FMS-V-R006*	6	67	<50	1.5	1

* values in preparation

Ordering code

FMS - M - R003 - 1.0





FMS // Size 2512

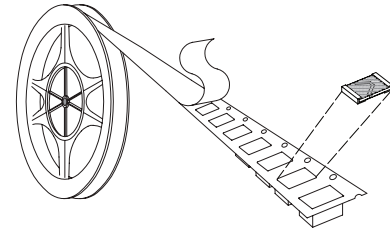
Recommended solder profile

Reflow- and IR-soldering

Temperature	°C	260	255	217
Time	sec	peak	40	90

Tape and reel information

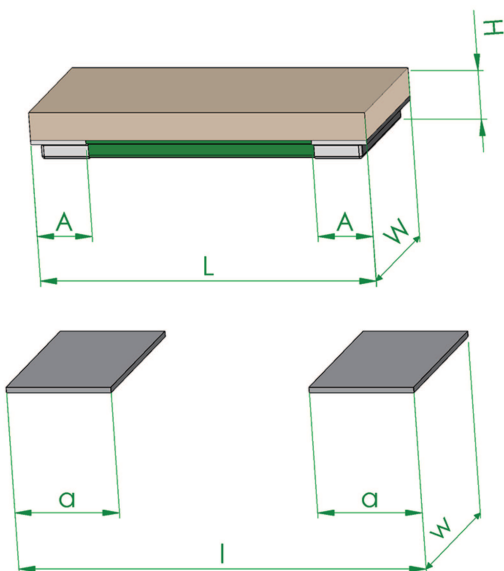
Specification	DIN EN 60286-3		
Tape width	mm	12	
Reel size	inch	13	
Parts per reel	pcs	9000	
Packaging weight net	g	539	



Information

Product status	under development
Sample availability	B-samples
Qualification release acc. AEC-Q200	Q2/2020
Mass production availability	Q4/2020

Mechanical dimensions and pcb-layout proposal (Reflow-soldering) [mm] / Drawing Z-YL-256



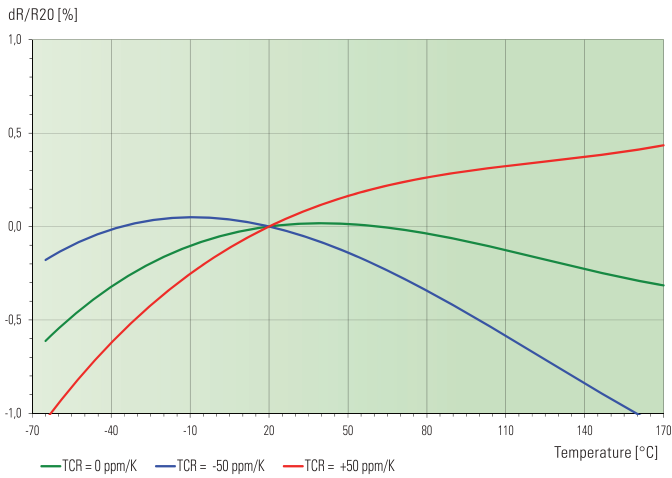
type:	L	W	H	A
FMS	6.35 ±0.3	3.05 ±0.2	0.4 ±0.2	0.9 ±0.2

solder pad type:	l	w	a
FMS	7.5	3.6	1.55

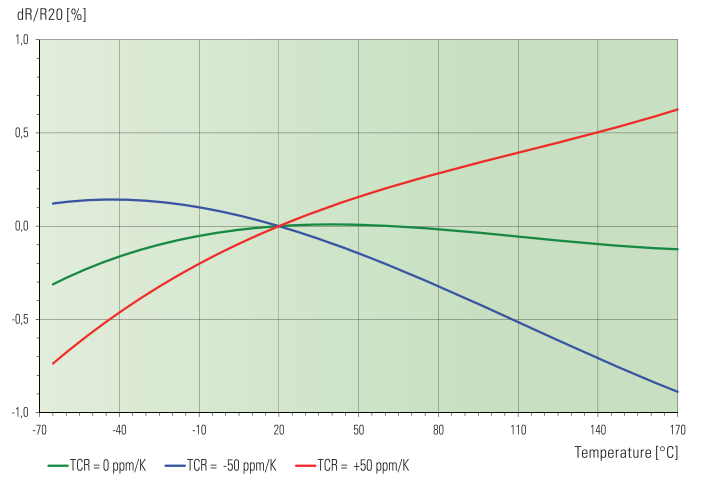


FMS // Size 2512

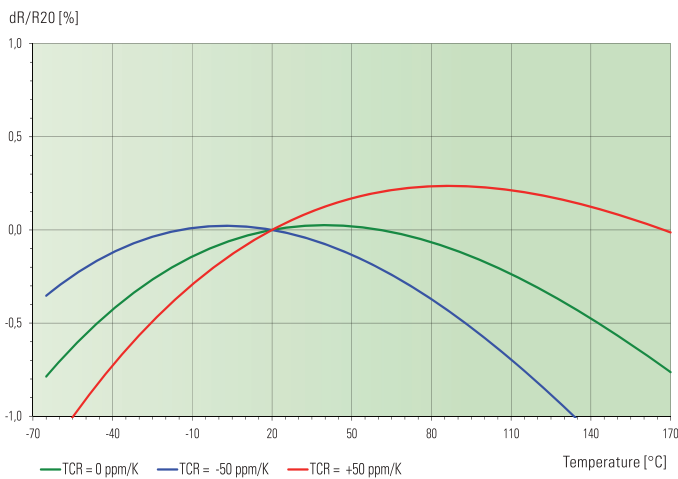
Temperature dependence of the electrical resistance of MANGANIN® resistors



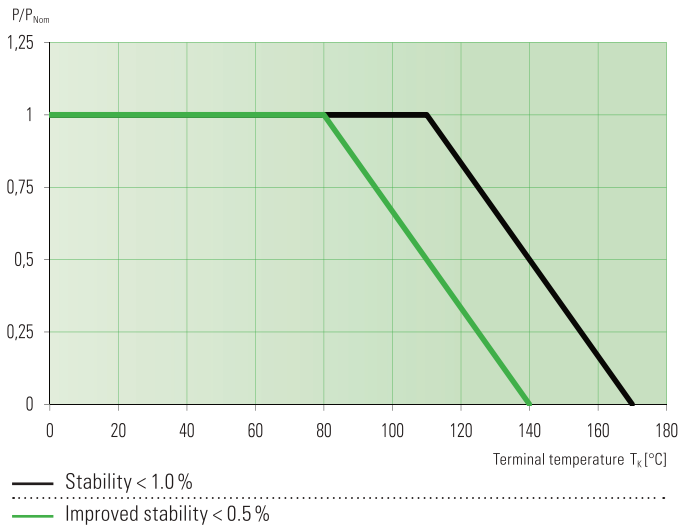
Temperature dependence of the electrical resistance of ZERANIN® resistors



Temperature dependence of the electrical resistance of NOVENTIN® resistors



Power derating curve

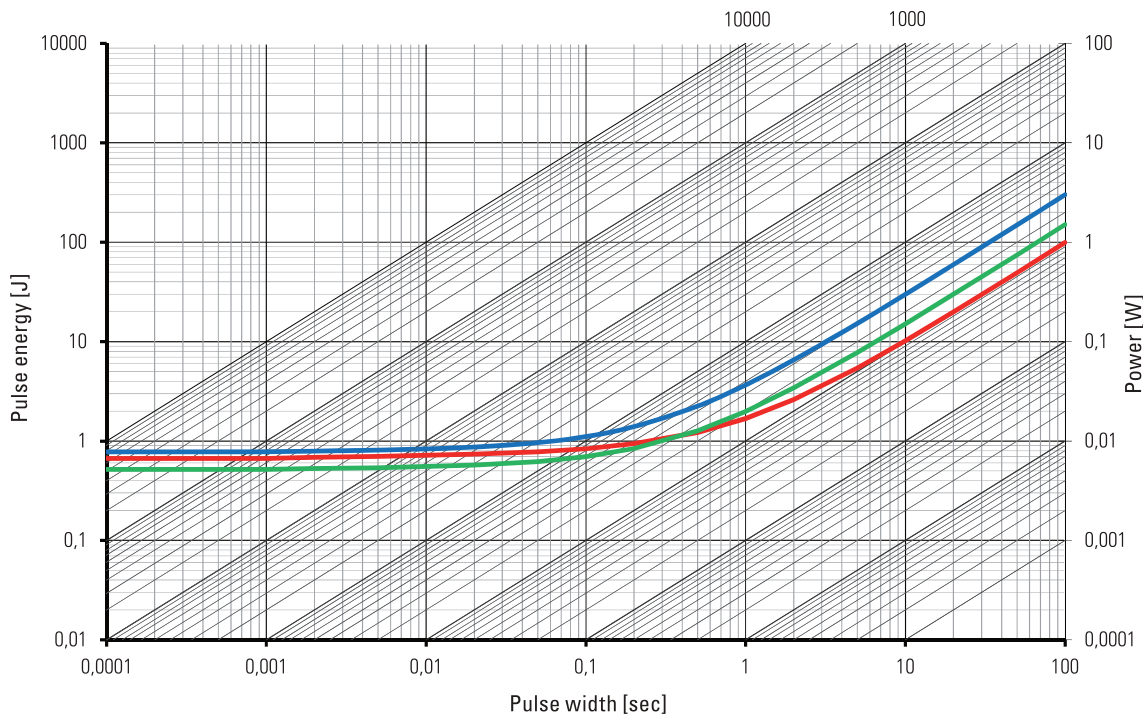




FMS // Size 2512

Maximum pulse energy respectively pulse power for permanent operation

FMS-Z-R0015, FMS-M-R003, FMS-V-R006
Maximum pulse energy / power continuous operation ($T_K = 110\text{ °C}$)



Specification

Parameters	Test conditions	Specified values
Temperature Cycling	2000 cycles (-55 °C to +150 °C)	in preparation
Low Temperature Storage	-65 °C for 250 h	
Moisture Resistance	MIL-STD-202 method 106	
Mechanical Shock	100 g, 6 ms half sine	
Vibration, High Frequency	10 g, 10-2000 Hz, 24 h each axis	
Operational Life	2000 h, T_K max at rated power	
High Temperature Exposure	2000 h / 170 °C	
Bias Humidity	+85 °C, 85 r.F., 1000 h, powered	

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