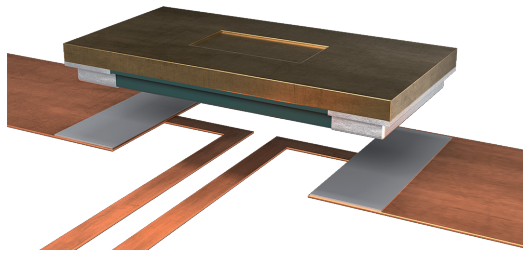




ISA-PLAN® // PRECISION RESISTORS

FMK // Size 1206

PRELIMINARY VERSION



Features

- Power rating up to 4 W at 70°C (1 mOhm)
- Constant current up to 60 A (1 mOhm)
- Small size (1206)
- 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 / 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)

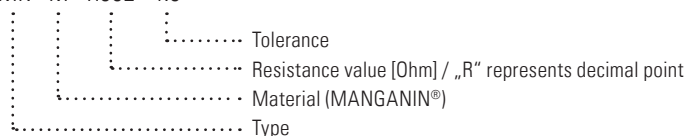
Type	Value [mΩ]	R _{thi} [K/W]	TCR [ppm/K]	P _{70 °C} [W]	P _{110 °C} [W]
FMK-Z-R001	1	20	<50	4	3
FMK-M-R002*	2	25	<50	3.5	2
FMK-M-R003*	3	24	<50	2.5	1.5
FMK-V-R004*	4	50	<50	2	1
FMK-V-R005	5	60	<50	1.5	1
FMK-V-R006	6	65	<50	1.5	1

Abbreviation type M=MANGANIN®, V=NOVENTIN®, Z=ZERANIN®30

* values in preparation

Ordering code

FMK - M - R002 - 1.0

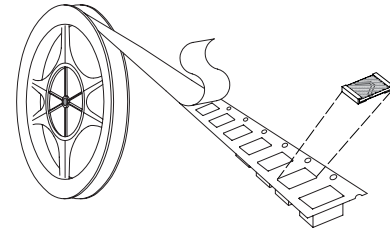




FMK // Size 1206

Recommended solder profile

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



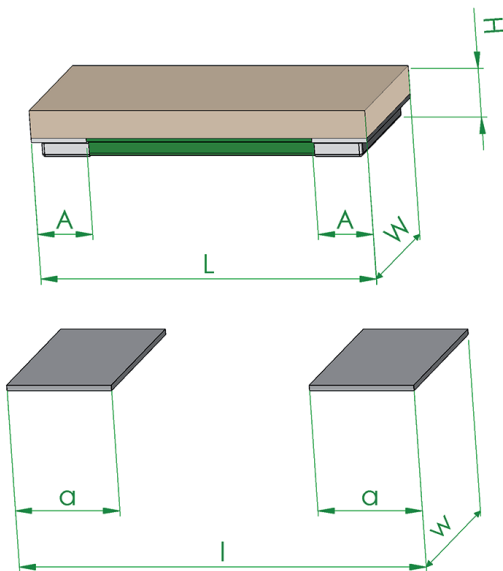
Tape and reel information

Specification		DIN EN 60286-3		
Tape width	mm	8		
Reel size	inch	13		
Parts per reel	pcs	12500		
Packaging weight net	g	454		

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-258



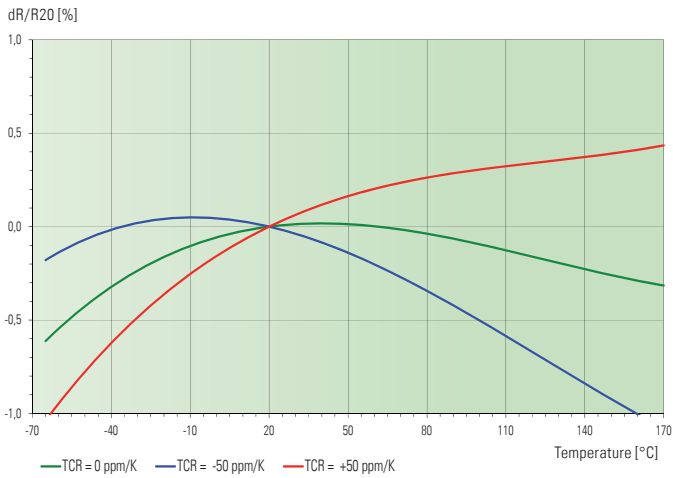
type:	L	W	H	A
FMK	3.05 ±0.2	1.52 ±0.2	0.4 ±0.2	0.5 ±0.2

solder pad type:	l	w	a
FMK	3.7	1.9	0.95

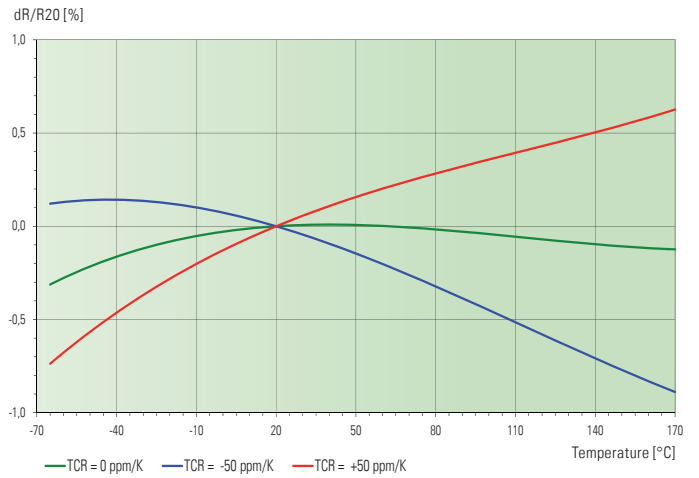


FMK // Size 1206

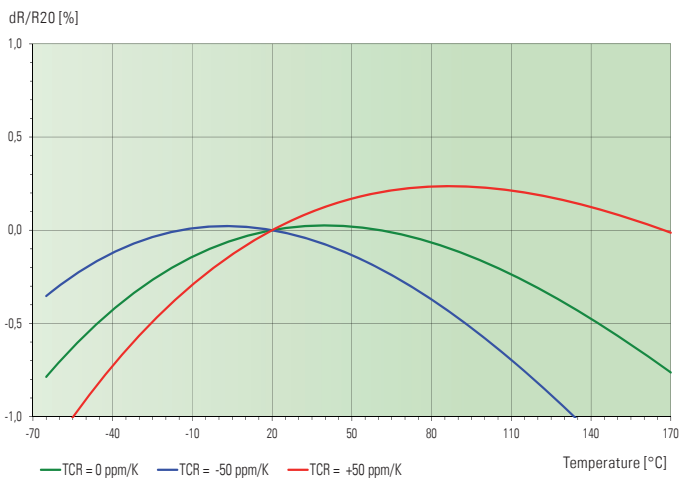
Temperature dependence of the electrical resistance of MANGANIN® resistors



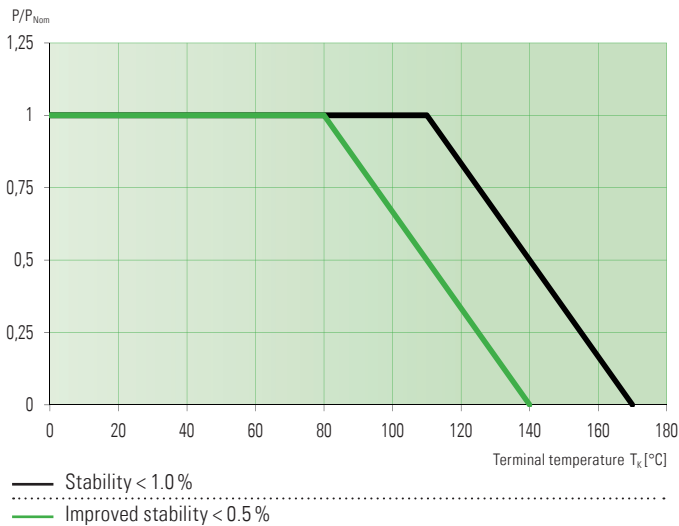
Temperature dependence of the electrical resistance of ZERANIN® resistors



Temperature dependence of the electrical resistance of NOVENTIN® resistors



Power derating curve

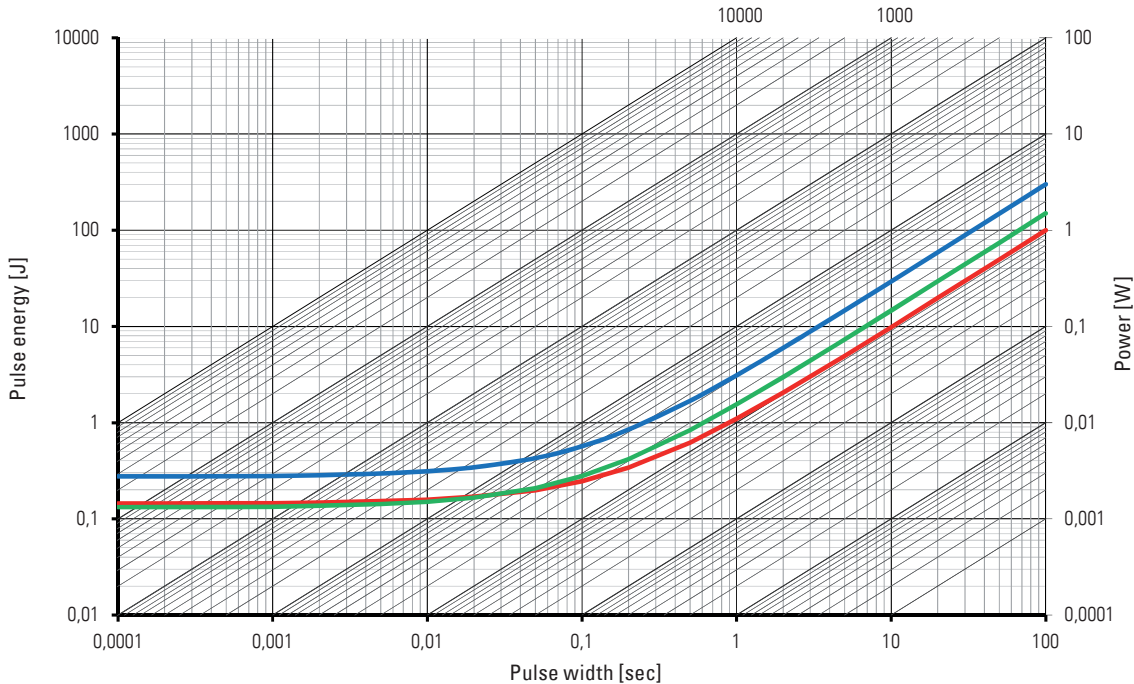




FMK // Size 1206

Maximum pulse energy respectively pulse power for permanent operation

FMK-Z-R001, FMK-M-R003, FMK-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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