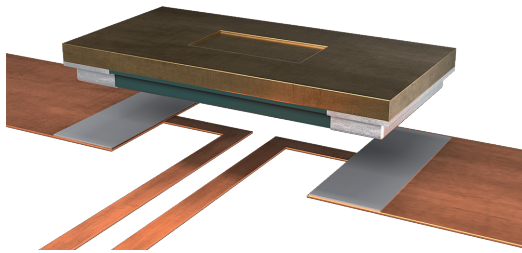




ISA-PLAN® // PRECISION RESISTORS



FMK // Size 1206



Features

- Power rating up to 3.5 W at 70 °C (2 mOhm)
- Constant current up to 41 A (2 mOhm)
- Small size (1206)
- High pulse power rating
- Excellent long-term stability
- Mounting: Reflow- and IR-soldering / vacuum soldering recommended
- AEC-Q200 qualification
- 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

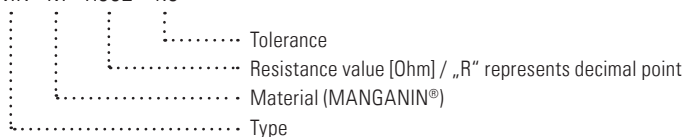
Resistance values	mOhm	2 / 3 / 4 / 5 / 6
Tolerance	%	1 / 5 / 10
Temperature coefficient (20-60 °C)	ppm/K	<50
Applicable temperature range	°C	-65 to +170
Power rating	W	up to 3.5
Dielectric withstanding voltage	V AC/DC	200
Inductance	nH	<1
Stability (at rated power) deviation after 2000h, T _K = Terminal temperature		< 0.5 % (TK=80 °C) < 1.0 % (TK=110 °C)

Type	Value [mΩ]	R _{thi} [K/W]	TCR (20-60 °C) [ppm/K]	P _{70°C} [W]	P _{110°C} [W]	Available tolerances		
						1 %	5 %	10 %
FMK-M-R002	2	<26	<50	3.5	2	✓	✓	
FMK-M-R003	3	<34	<50	3	1.5	✓	✓	
FMK-V-R004	4	<42	<50	2	1.5	✓	✓	✓
FMK-V-R005	5	<50	<50	2	1	✓	✓	
FMK-V-R006	6	<58	<50	1.5	1	✓	✓	

Abbreviation type M=MANGANIN®, V=NOVENTIN®

Ordering code

FMK - M - R002 - 1.0





FMK // Size 1206

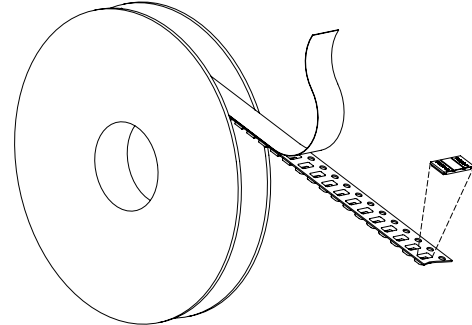
Recommended solder profile

Reflow- and vacuum soldering

Temperature	°C	260	255	217
Time	sec	peak	40	90

Tape and reel information

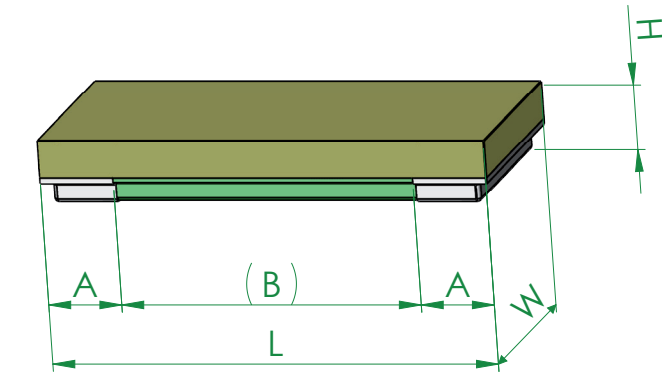
Specification	DIN EN 60286-3			
Tape width	mm	8		
Reel size	inch	13		
Parts per reel	pcs	12500		
Packaging weight net	g	454		



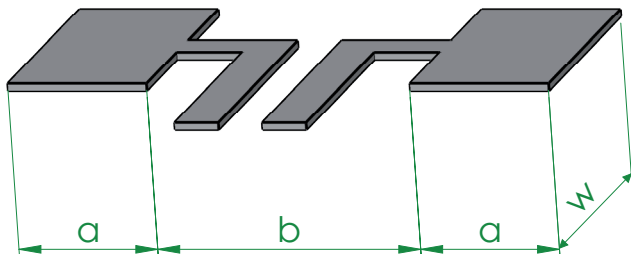
Information

Only components with 1% tolerance are trimmed and marked

Mechanical dimensions and pcb-layout proposal (Reflow-soldering) [mm] / Drawing Z-YL-258b



L	W	H	A	B
3.05 ±0.2	1.52 ±0.2	0.4 ±0.2	0.5 ±0.2	(2.05)



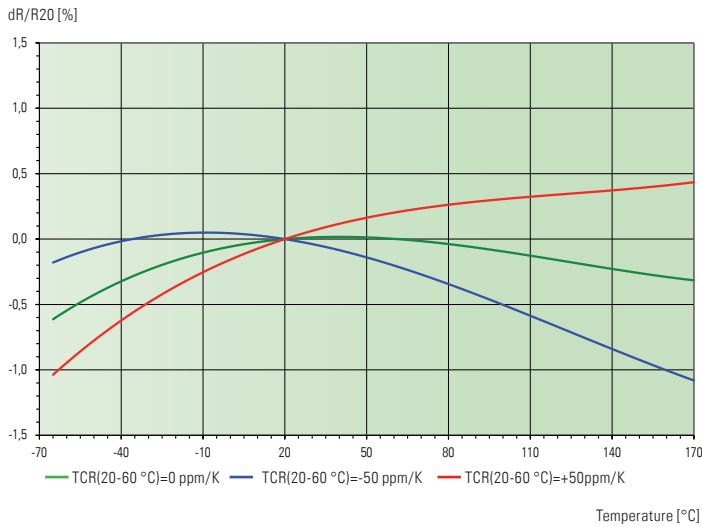
a	b	w
1.00	1.80	1.65

Recommended copper layer thickness 105µm

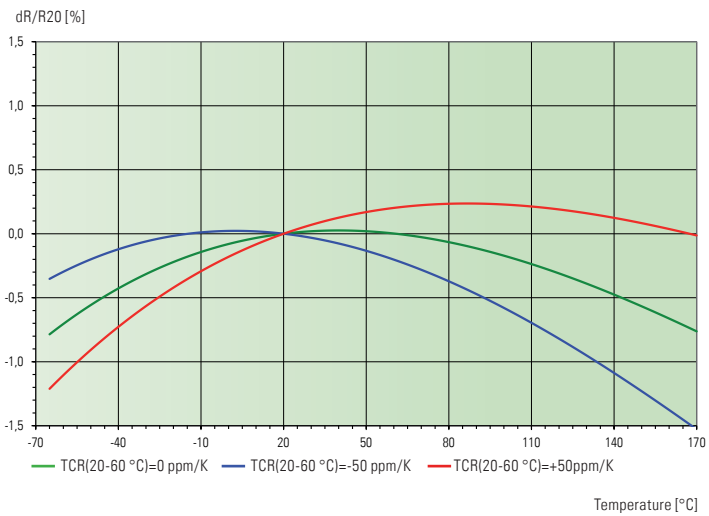


FMK // Size 1206

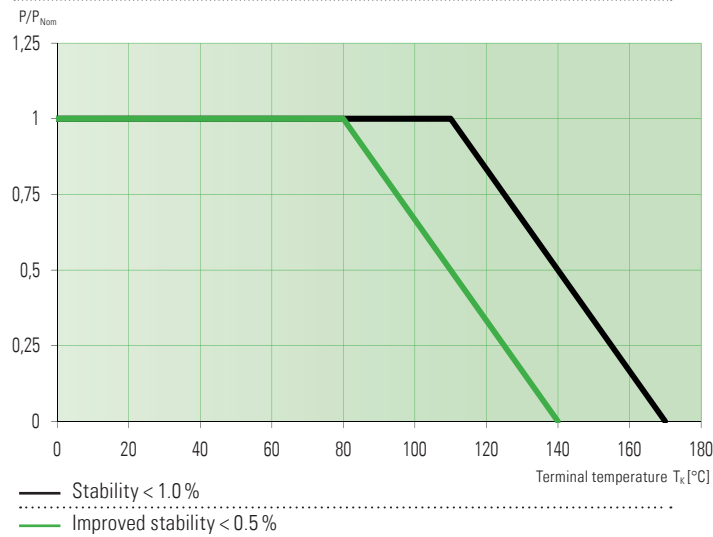
Temperature dependence of the electrical resistance of MANGANIN® resistors



Temperature dependence of the electrical resistance of NOVENTIN® resistors



Power derating curve

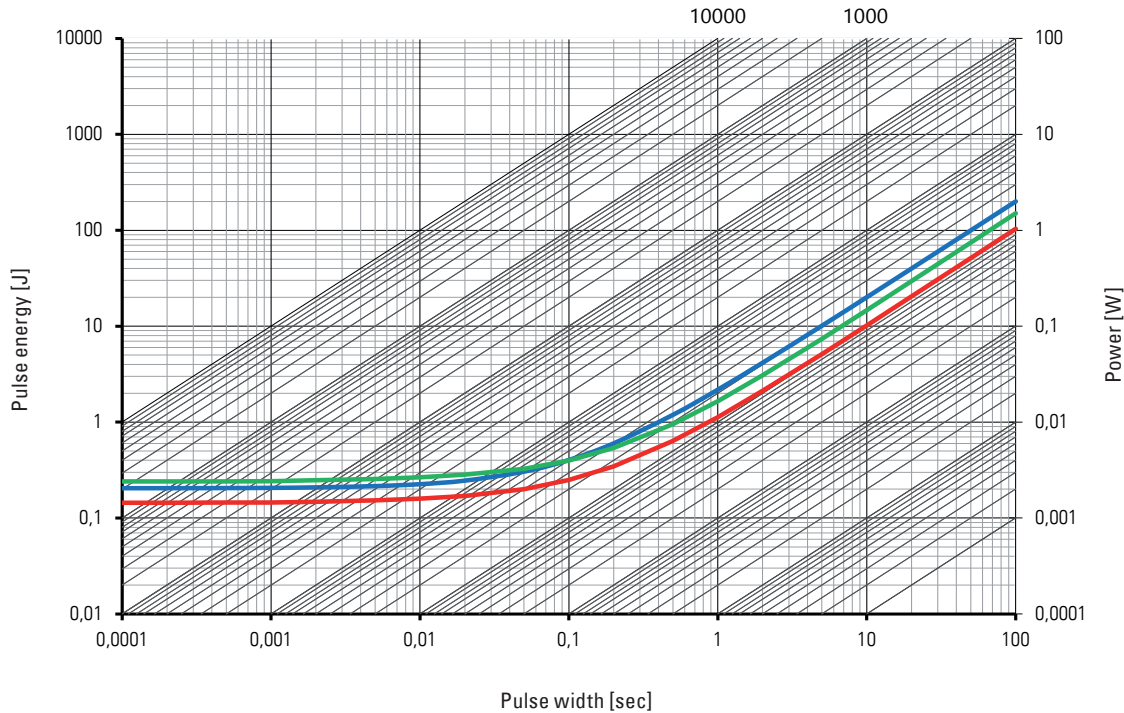




FMK // Size 1206

Maximum pulse energy respectively pulse power for permanent operation

FMK-M-R002; FMK-V-R004; FMK-V-R006
 Maximum pulse energy / power continuous operation ($T_K = 110\text{ °C}$)



Specification

Parameters	Test conditions	Specified values
Temperature Cycling	1000 cycles (-55 °C to +150 °C)	±0.5%
Low Temperature Storage	-65 °C for 250 h	±0.1%
Moisture Resistance	MIL-STD-202 method 106	±0.5%
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, $T_K = 110\text{ °C}$ at rated power	±1.0%
High Temperature Exposure	2000 h at 140 °C	±0.5%
	2000 h at 170 °C	±1.0%
Bias Humidity	+85 °C, 85 r.F., 1000 h, powered	±0.5%

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