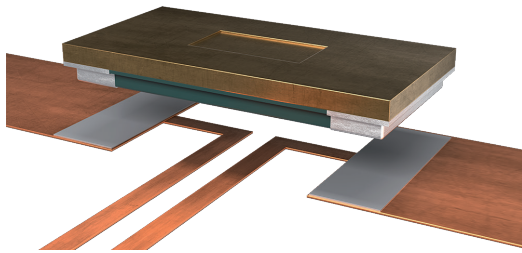




## ISA-PLAN® // PRECISION RESISTORS

### 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

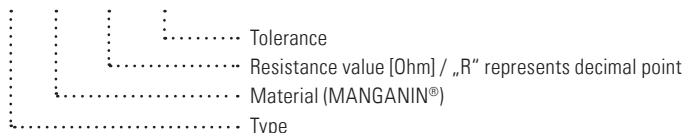
Resistance values	<b>mOhm</b>	2 / 3 / 4 / 5 / 6
Tolerance	<b>%</b>	1 / 5 / 10
Temperature coefficient (20-60 °C)	<b>ppm/K</b>	<50
Applicable temperature range	<b>°C</b>	-65 to +170
Power rating	<b>W</b>	up to 3.5
Dielectric withstanding voltage	<b>V AC/DC</b>	200
Inductance	<b>nH</b>	<1
Stability (at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

Type	Value [mΩ]	Rthi [K/W]	TCR (20-60 °C) [ppm/K]	P <sub>70°C</sub> [W]	P <sub>110°C</sub> [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**

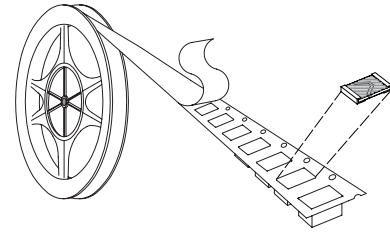
**Recommended solder profile**

Reflow- and vacuum soldering

Temperature	°C	260	255	217
Time	sec	peak	40	90

**Tape and reel information**

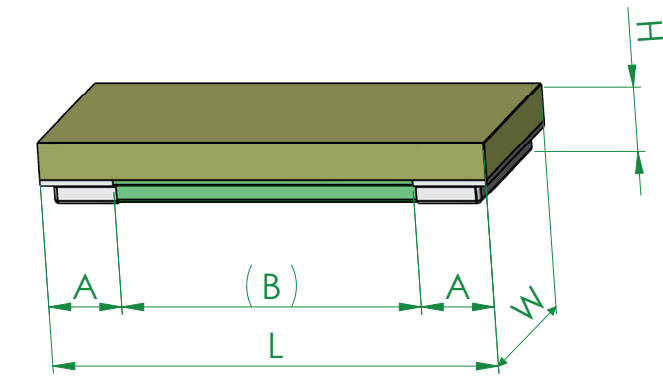
Specification	DIN EN 60286-3			
Tape width	mm	8		
Reel size	inch	13		
Parts per reel	pcs	12500		
Packaging weight net	g	454		



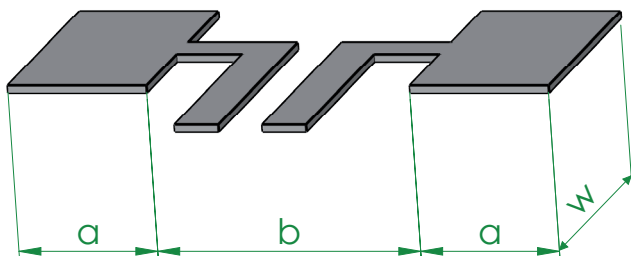
**Information**

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)



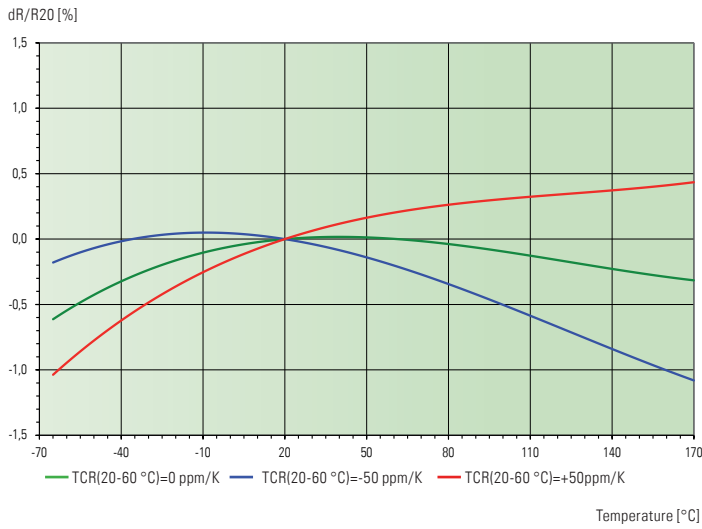
a	b	w
1.00	1.80	1.65

Recommended copper layer thickness 105µm

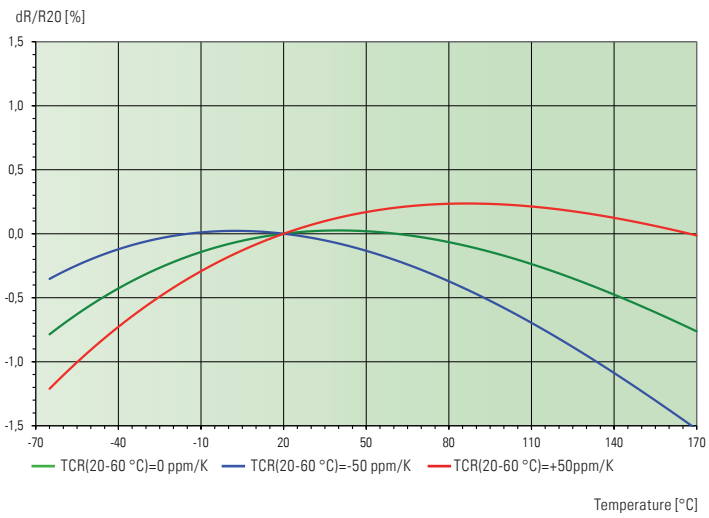


**FMK // Size 1206**

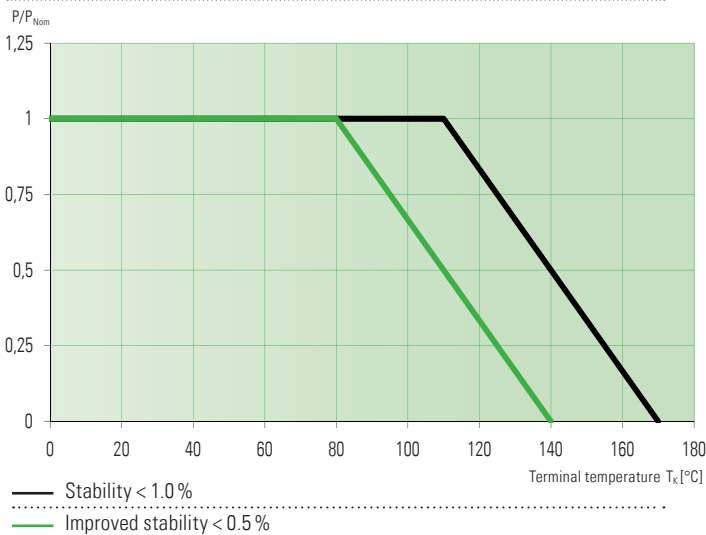
**Temperature dependence of the electrical resistance of MANGANIN® resistors**



**Temperature dependence of the electrical resistance of NOVENTIN® resistors**



**Power derating curve**

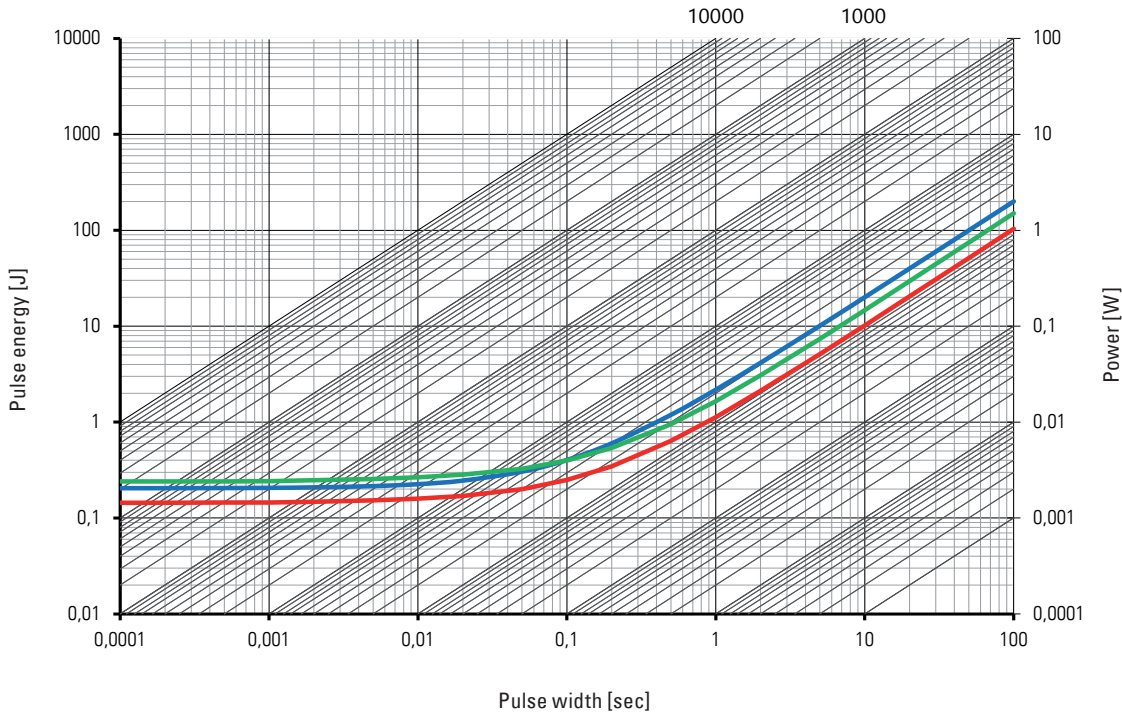




**FMK // Size 1206**

**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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