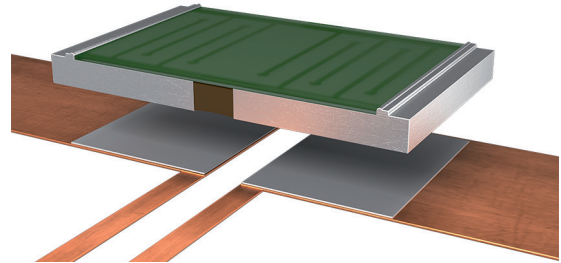


SMK (1206)

ISA-PLAN® PRECISION RESISTOR



FEATURES

- 1 W power rating at 110 °C
- Constant current up to 11 A (8 mOhm)
- Excellent long-term stability
- High pulse power rating
- Mounting: Reflow-, and IR-soldering
- AEC-Q200 qualified
- Available as Jumper, see "SMK-R000" data sheet



APPLICATIONS

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

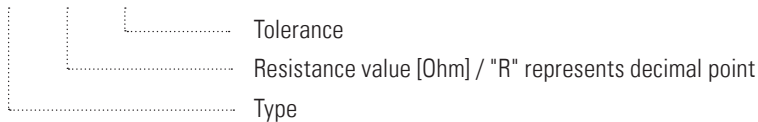
Technical data

| | | |
|--|--------------|---|
| Resistance values | mOhm | 8 to 500 |
| Tolerance | % | 1* / 5 |
| Temperature coefficient (20-60 °C) | ppm/K | R < 15 mΩ : <100 R ≥ 15 mΩ : <50 |
| Applicable temperature range | °C | -65 to +170 |
| Power rating P_{110°C} | W | 1 |
| Power rating P_{70°C} | | 1.5 |
| Internal heat resistance (R_{thi}) | K/W | <60 |
| Dielectric withstanding voltage (AC/DC) | V | 200 |
| Inductance | nH | <3 |
| Stability (at rated power) deviation after 2000h | % | <0.5 ($T_k = 80 °C$) <1.0 ($T_k = 110 °C$) |
| T_k = Terminal temperature | | |

* from 10 mOhm

Ordering code

SMK - R010 - 5.0



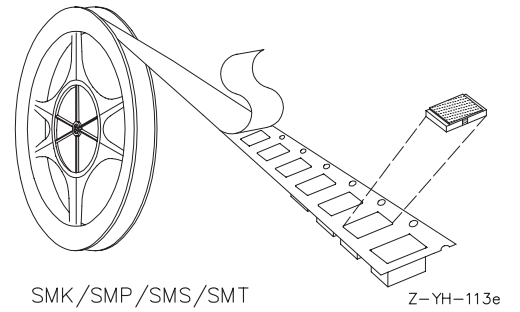
Recommended solder profile

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

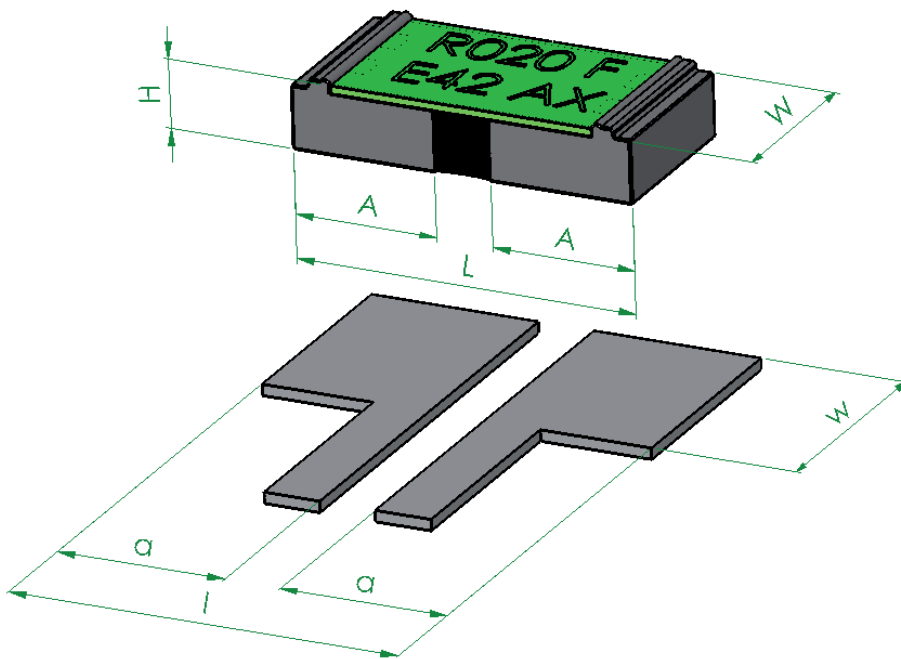
Tape and reel information

| | | | | |
|------------------|----------------|-------|--|--|
| Specification | DIN EN 60286-3 | | | |
| Tape width | mm | 8 | | |
| Reel size | inch | 13 | | |
| Parts per reel | pcs | 12500 | | |
| Packaging weight | g | 452 | | |

With differing pcb-layout geometry it is possible that the measured resistance value can vary. Slight deformations during soldering do not affect technical properties of the component.



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



| type: | L | W | A | H |
|-------|------------|------------|---------|-----------|
| SMK | 3.05 ± 0.1 | 1.52 ± 0.1 | (1.275) | 0.5 ± 0.2 |

| solder pad type: | l | w | a |
|------------------|-----|-----|-----|
| SMK | 3.5 | 2.0 | 1.5 |

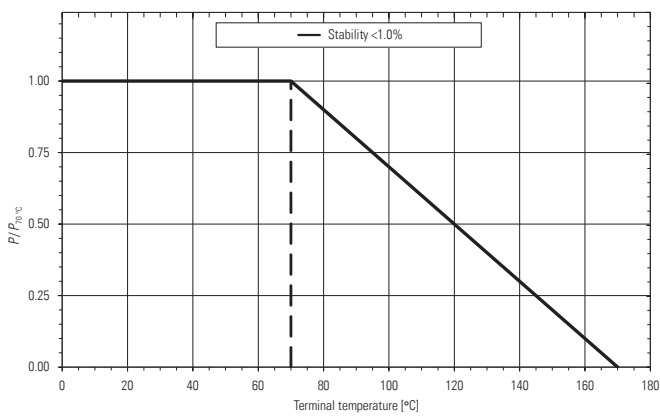
Available standard resistance values and tolerances*

| Resistance values | Tolerance | |
|-------------------|-----------|-----|
| | 1.0 | 5.0 |
| R008 | | ✓ |
| R010 | ✓ | ✓ |
| R020 | ✓ | ✓ |
| R025 | ✓ | |
| R033 | ✓ | |
| R050 | ✓ | ✓ |
| R100 | ✓ | |
| R170 | ✓ | |
| R200 | ✓ | |
| R220 | ✓ | |
| R500 | ✓ | |

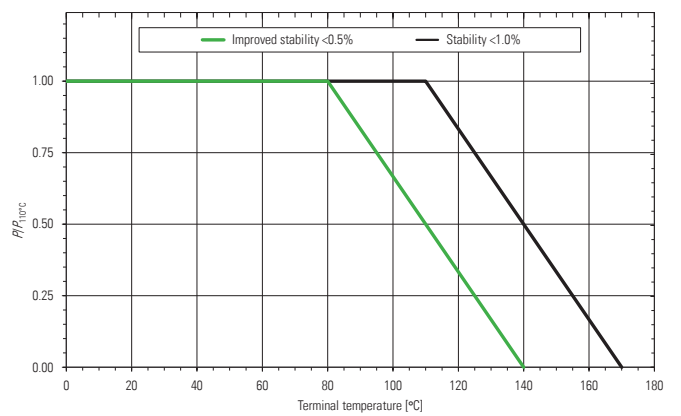
* Further values and tolerances on request

✓ = available

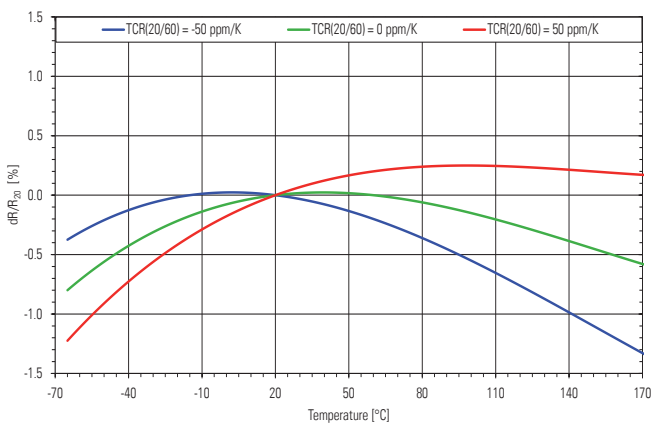
Power derating curve at 70 °C



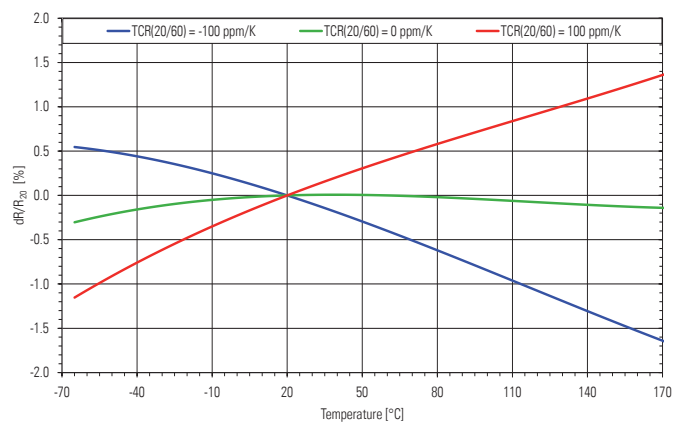
Power derating curve at 110 °C



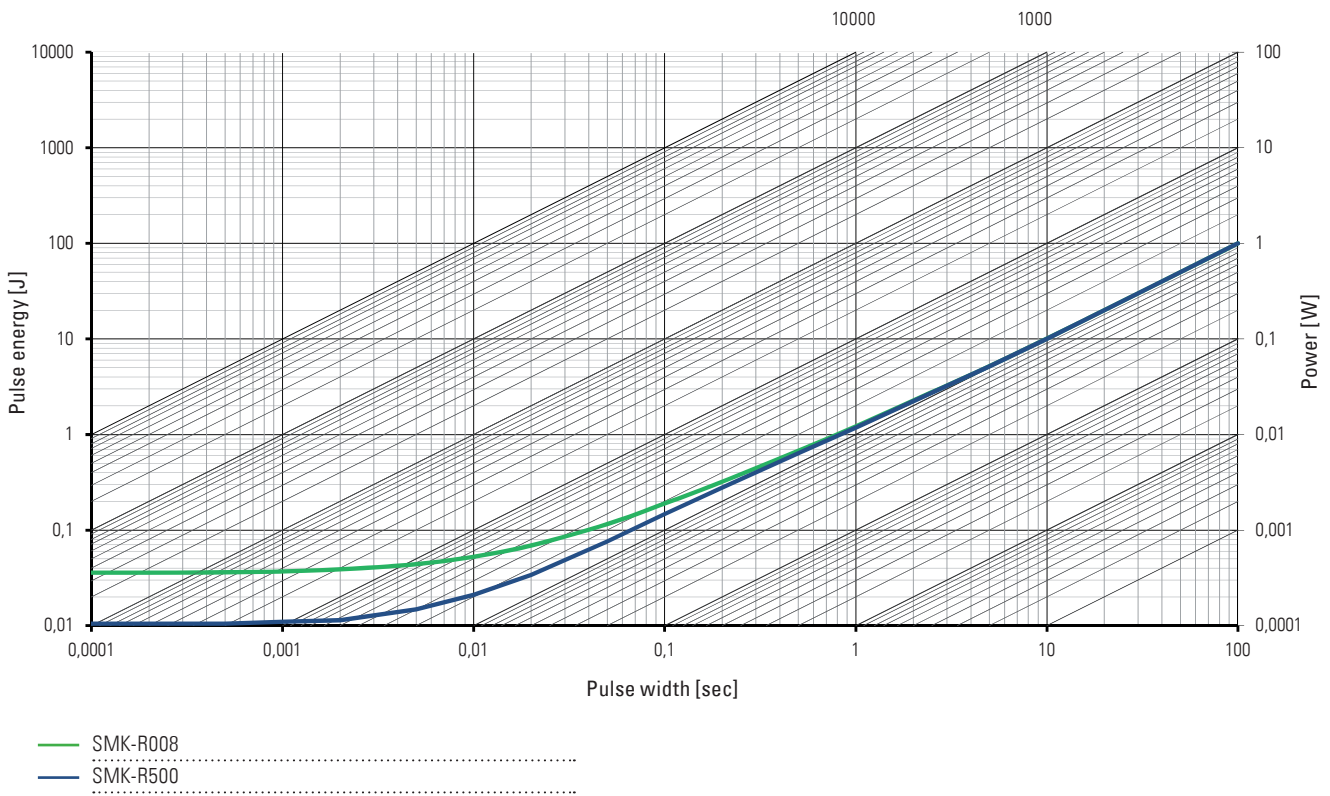
Temperature dependence of the electrical resistance of MANGANIN® resistors



Temperature dependence of the electrical resistance of ZERANIN® resistors



Maximum pulse energy respectively pulse power for permanent operation ($T_k=110\text{ °C}$)



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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