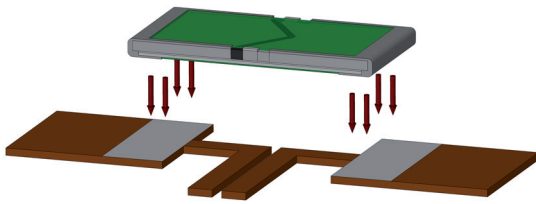




ISA-PLAN® // PRECISION RESISTORS



VMS // Size 2512



Features

- 3 W power rating at 95 °C
- Constant current up to 25 A (5 mOhm)
- Standard pad size (2512)
- High pulse power rating
- Excellent long-term stability
- Mounting: Reflow- and IR-soldering
- AEC-Q200 qualified
- 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

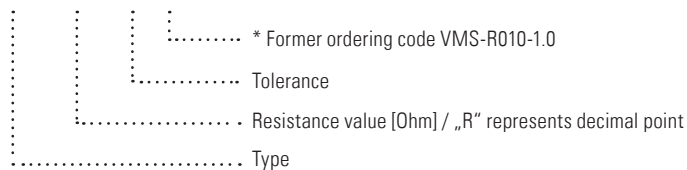
Technical data

| | | |
|---|----------------|--|
| Resistance values ¹ | Ohm | 0.005 to 1 |
| Tolerance ¹ | % | 1 / 2 / 5 |
| Temperature coefficient (20-60 °C) | ppm/K | <20 |
| Applicable temperature range | °C | -65 to +170 |
| Power rating P_{95°C} | W | 3 |
| Power rating P_{70°C} | W | 4 |
| Internal heat resistance (R _{thi}) | K/W | <25 |
| Dielectric withstanding voltage | V AC/DC | 200 |
| Inductance | nH | <3 |
| Stability (at rated power) deviation after 2000h, T _K = Terminal temperature | | <0.5 % (T _K =65 °C) <0.7 % (T _K =95 °C) |

¹ See all standard values and tolerances on page 2

Ordering code

VMS - R010 - 1.0 - U*





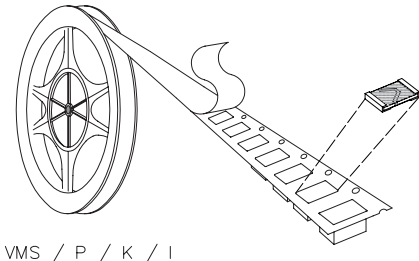
VMS // Size 2512

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 | | |



VMS / P / K / I

Available standard resistance values and tolerances*

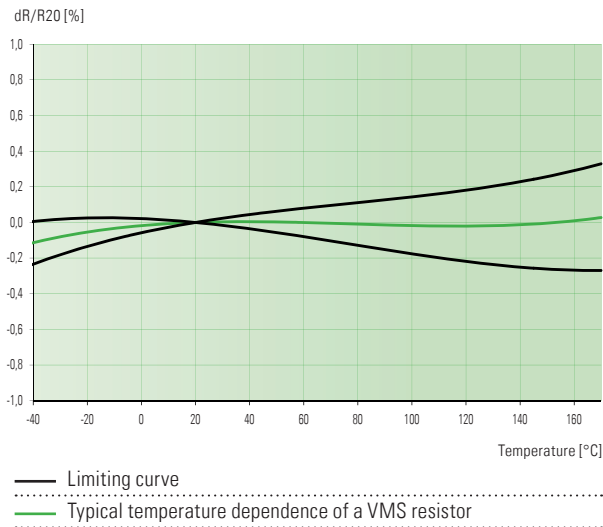
| Resistance values | Tolerance 1% | Tolerance 2% | Tolerance 5% |
|-------------------|--------------|--------------|--------------|
| R005 | ✓ | | |
| R0068 | | | ✓ |
| R010 | ✓ | | ✓ |
| R012 | ✓ | | |
| R015 | ✓ | | |
| R020 | ✓ | ✓ | |
| R022 | ✓ | | |
| R025 | ✓ | | |
| R027 | ✓ | | |
| R030 | ✓ | | |
| R033 | ✓ | | |
| R039 | ✓ | | |
| R040 | ✓ | | |
| R047 | ✓ | | |
| R050 | ✓ | | |
| R056 | ✓ | | |
| R068 | ✓ | | |
| R082 | ✓ | | |
| R100 | ✓ | | |
| R120 | ✓ | | |
| R150 | ✓ | | |
| R180 | ✓ | | |
| R200 | ✓ | | |
| R220 | ✓ | | |
| R240 | ✓ | | |
| R270 | | ✓ | |
| R300 | ✓ | | |
| R330 | ✓ | | |
| R470 | ✓ | | |
| R500 | ✓ | | |
| R680 | ✓ | | |
| 1R00 | ✓ | | |

* Further values and tolerances on request
 ✓ = available

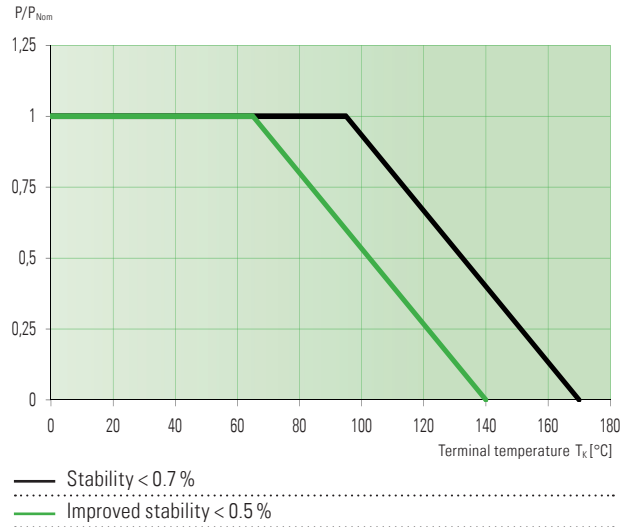


VMS // Size 2512

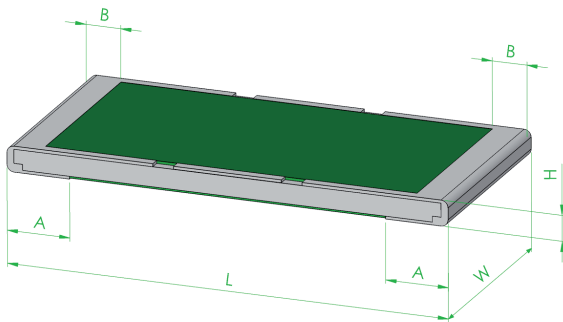
Temperature dependence of the electrical resistance



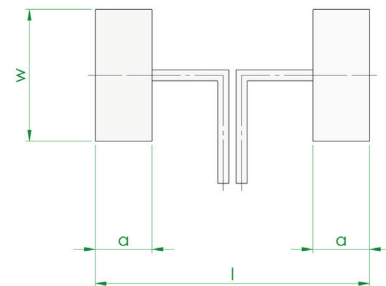
Power derating curve



Mechanical dimensions and pcb-layout proposal (Reflow-soldering) [mm] / Drawing Z-YE-497



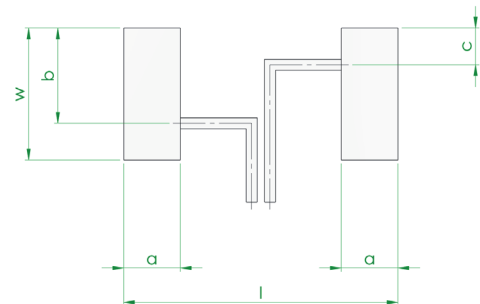
Layout 1



| Type | L | W | H | A | B |
|------|-----------|-----------|-----------|----------|----------|
| VMS | 6.35 ±0.3 | 3.05 ±0.2 | 0.4 ±0.15 | 0.9 ±0.2 | 0.5 ±0.2 |

Layout 2

Layout for values > 30 mOhm if TC < 20 ppm/K is required

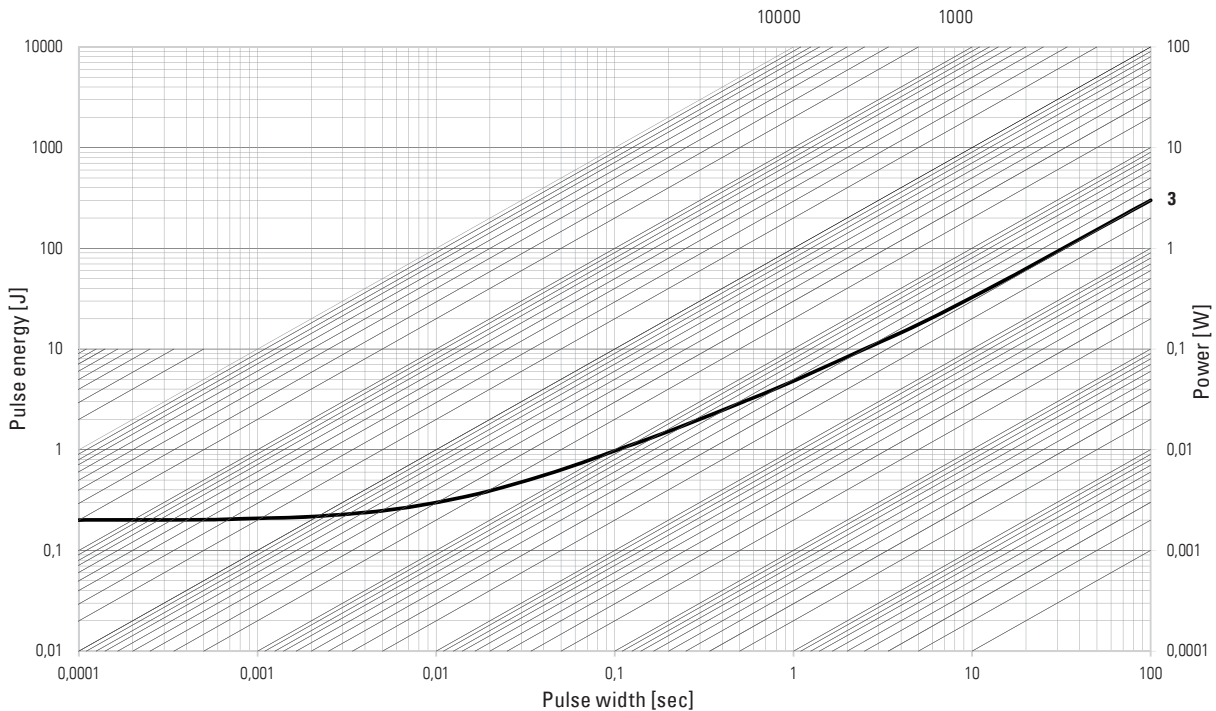


| Solder pad type | l | w | a | b | c |
|-----------------|-----|-----|------|-----|-----|
| VMS | 7.5 | 3.6 | 1.55 | 2.6 | 1.0 |



VMS // Size 2512

Maximum pulse energy respectively pulse power for permanent operation



This curve is only valid for the resistance value R005. The shape of the curve in the range below 0.1 sec will be different for other resistance values. Therefore a separate qualification should be made for pulse power close to the above curve.

Specification

| Parameters | Test conditions | Specified values |
|------------------------------|------------------------------------|-----------------------|
| Temperature Cycling | 2000 cycles (-55 °C to +150 °C) | ±0.5 % |
| Low Temperature Storage | -65 °C for 250 h | ±0.1 % |
| Resistance to Soldering Heat | 260 °C for 10 sec / 8h steam aging | ±0.3 % |
| Moisture Resistance | MIL-STD-202 method 106 | ±0.3 % |
| 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 max at rated power | ±0.7 %, $T_K = 95 °C$ |
| High Temperature Exposure | 2000 h / 170 °C | ±1.0 % |
| Bias Humidity | +85 °C, 85 r.F., 1000 h, powered | ±0.5 % |

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