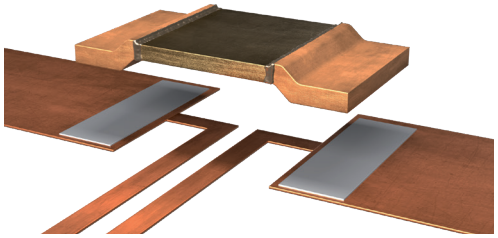
ISABELLENHÜTTE
Innovation by Tradition

# ISA-WELD® // PRECISION RESISTORS

## **BVT** (2512)



### Features

- Power rating up to 6 W [1]
- Continuous current load up to 100 A (0.3 mOhm)
- Heavy copper connectors
- Excellent long-term stability
- High application temperature range -65 to +170 °C due to special design
- RoHS 2011/65/EU compliant
- AEC-Q200 qualification

RoHS

### Applications

- Current sensor for power hybrid applications
- High current applications for the automotive market
- Frequency converters
- Power modules

**Technical data** [1]

| | | |
|---|---|---|
| Resistance values | **mOhm** | **0.3 to 6.8** |
| Tolerance | **%** | 1 / 5 |
| Temperature coefficient (20-60 °C) | **ppm/K** | from 50 |
| Applicable temperature range | **°C** | -65 to +170 |
| Power rating $P_{100\,°C}$ | **W** | up to 3 |
| Power rating $P_{70\,°C}$ | **W** | up to 6 |
| Internal heat resistance ($R_{thi}$) | **K/W** | from 4 |
| Inductance | **nH** | <2 |
| Stability (at rated power) deviation after 2000h, $T_K$ = Terminal temperature | | <0.5% ($T_K$=110 °C)<br><1.0% ($T_K$=140 °C) |

[1] For detailed information see table on page 4

**Ordering code**

BVT - Z - R0003 - 1.0

- Tolerance
- Resistance value [Ohm] / „R“ represents decimal point
- Material (ZERANIN®30)
- Type

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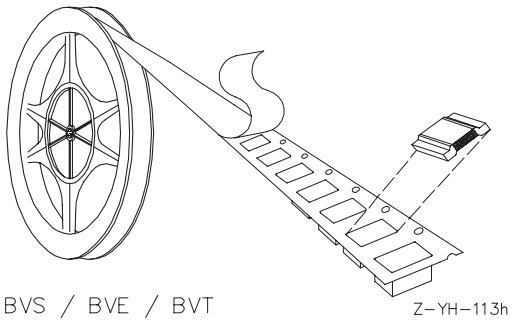
**Tape and reel information**

| | | |
|---|---|---|
| Specification | | DIN EN 60286-3 |
| Tape width | **mm** | 12 |
| Reel size | **inch** | 13 |
| Parts per reel | **pcs** | 5000 |
| Packaging weight | **g** | 453 |

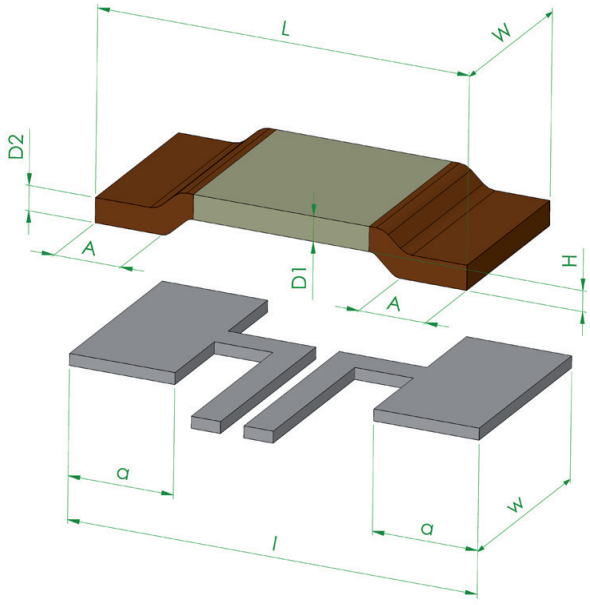



**Specification**

| **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 | n.a. |
| Moisture Resistance | MIL-STD-202 method 106 | ±0.2% |
| 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 | ±1.0%, $T_K$ = 140 °C |
| High Temperature Exposure | 2000 h / 170 °C | ±1.0% (in covered condition)* |
| Bias Humidity | +85 °C, 85 r.F., 1000 h | ±0.5% |

* for MANGANIN® and ZERANIN®30

**Mechanical dimensions and pcb-layout proposal (Reflow-soldering) [mm] // Drawing no. Z-YE-968a**




| **Type** | **L** | **W** | **H** | **A** |
|---|---|---|---|---|
| BVT | 6.35 ±0.15 | 3.05 ±0.2 | 0.35 ±0.03 | 1.14 -0.4 |

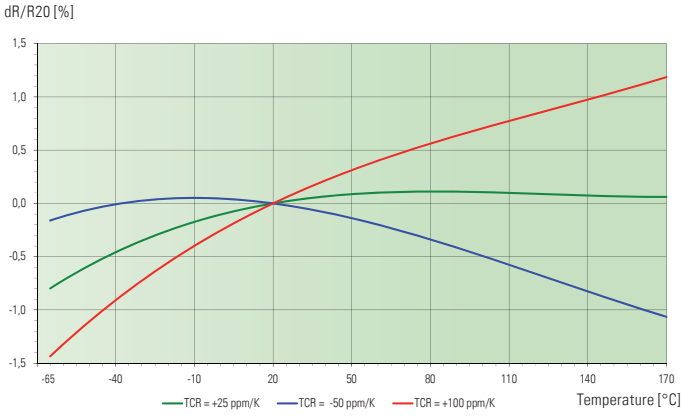
| **Solder pad type** | **l** | **w** | **a** |
|---|---|---|---|
| BVT | 7.0 | 3.4 | 1.8 |

**Recommended surface mount soldering methods**

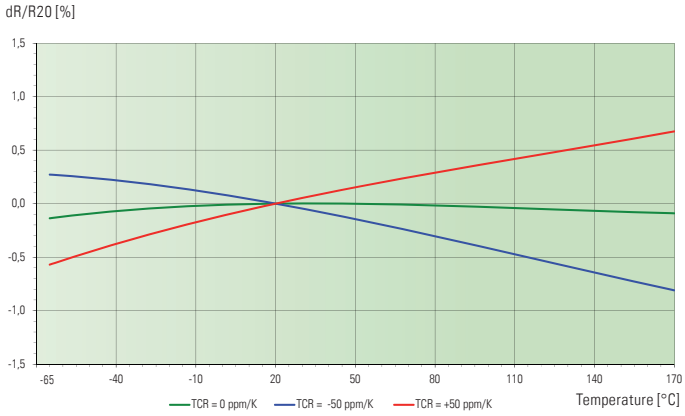
Reflow-, IR- and vacuum soldering

# **BVT** (2512)

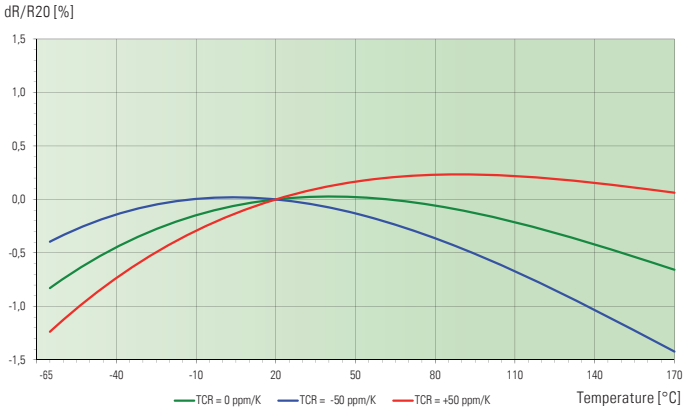
### Temperature dependence of the electrical resistance of MANGANIN® resistors. Example: BVT-M-R001



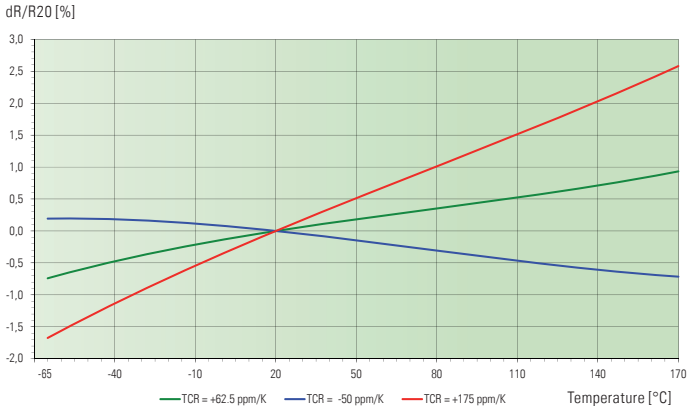

### Temperature dependence of the electrical resistance of ISAOHM® resistors



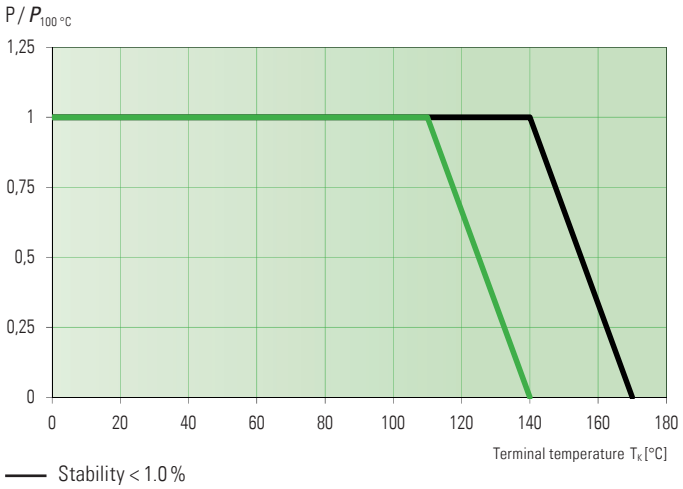

### Temperature dependence of the electrical resistance of NOVENTIN® resistors




### Temperature dependence of the electrical resistance of ZERANIN® 30 resistors




### Power derating curve at 100 °C
### Example: BVT-M-R0005

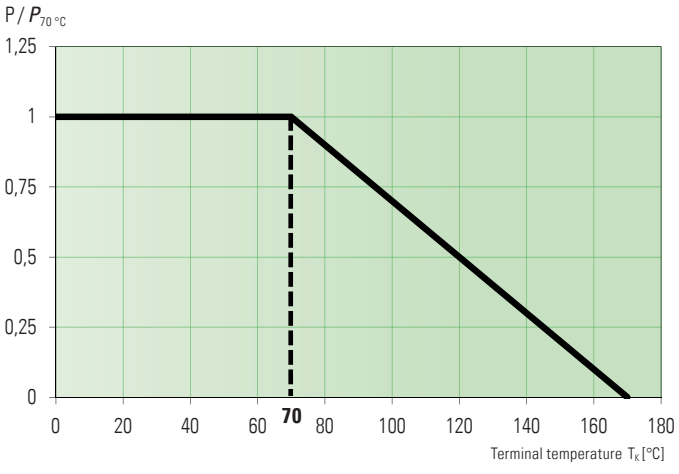



Stability < 1.0 %

Improved stability < 0.5 %

### Power derating curve at 70 °C

For detailed information see table on page 4

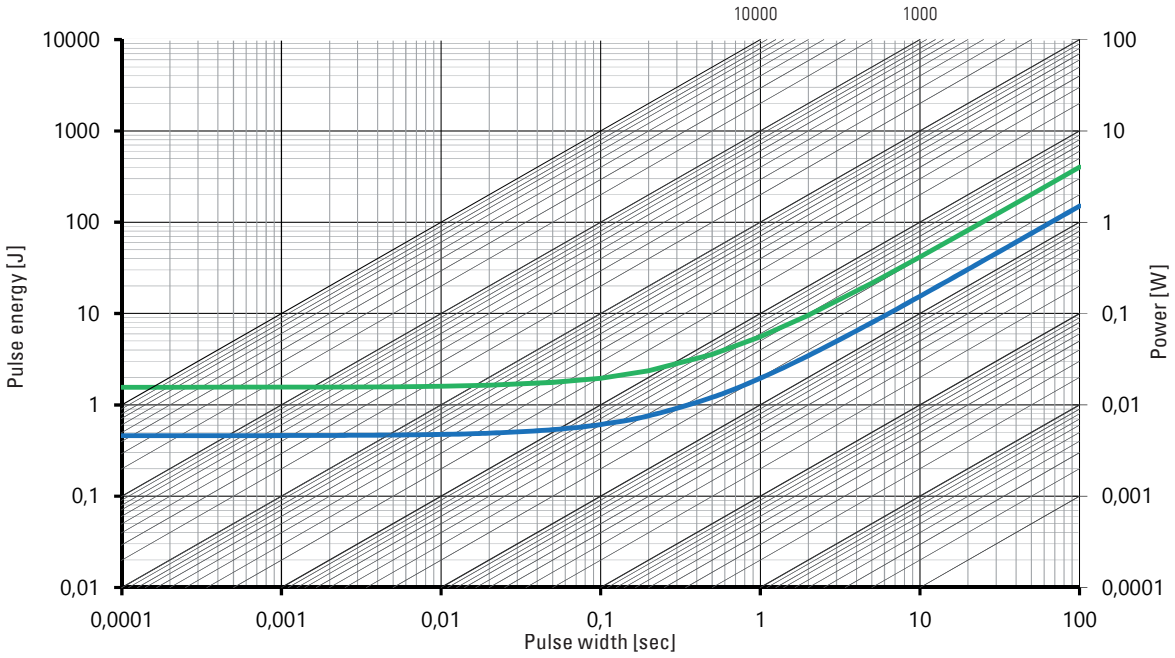


# **BVT** (2512)

| Type | Value [mΩ] | Thickness [mm] | | $R_{thi}$ [K/W] | TC [ppm/K] | $P_{100\,°C}$ [W] | $P_{70\,°C}$ [W] |
|---|---|---|---|---|---|---|---|
| | | D1 | D2 | | | | |
| BVT-K-R000 | 0 | 0.42 | 0.42 | | | $I_{max}$ = 100 A | |
| BVT-Z-R0003 | 0.3 | 1.00 | 1.00 | 4 | <175 | 4 | 6 |
| BVT-M-R0005 | 0.5 | 0.85 | 0.84 | 7 | <115 | 4 | 6 |
| BVT-M-R001 | 1.0 | 0.42 | 0.42 | 14 | <100 | 4 | 6 |
| BVT-V-R002 | 2.0 | 0.46 | 0.64 | 20 | <50 | 3.5 | 5 |
| BVT-I-R002 | 2.0 | 0.72 | 0.64 | 16 | <50 | 4 | 6 |
| BVT-I-R003 | 3.0 | 0.48 | 0.42 | 24 | <50 | 3 | 4 |
| BVT-I-R004 | 4.0 | 0.36 | 0.42 | 32 | <50 | 2 | 3 |
| BVT-I-R005 | 5.0 | 0.36 | 0.42 | 40 | <50 | 1.5 | 2.5 |
| BVT-I-R0068 | 6.8 | 0.36 | 0.42 | 60 | <50 | 1.5 | 2 |

Material type I=ISAOHM®, K=SF-copper tinned, M=MANGANIN®, Z=ZERANIN®30, V=NOVENTIN®

## Maximum pulse energy respectively pulse power for permanent operation




This curve is valid for the resistance value BVT-Z-R0003 only.
This curve is valid for the resistance value R0068 only.





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