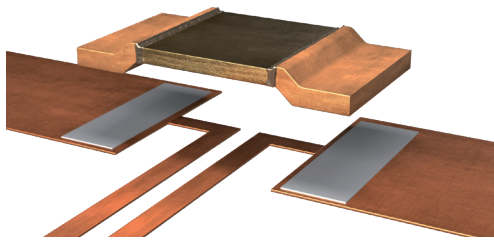




## ISA-WELD® // PRECISION RESISTORS



### BVT (2512)



#### Features

- Power rating up to 6 W <sup>1</sup>
- 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



#### Applications

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

#### Technical data <sup>1</sup>

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

<sup>1</sup> For detailed information see table on page 4

#### Ordering code

BVT - Z - R0003 - 1.0

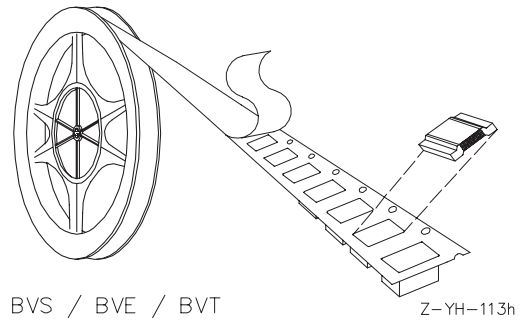
|       |   |
|-------|---|
| ..... | Tolerance   |
| ..... | Resistance value [Ohm] / „R“ represents decimal point |
| ..... | Material (ZERANIN®30)                                 |
| ..... | Type  |



## BVT (2512)

### Tape and reel information

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

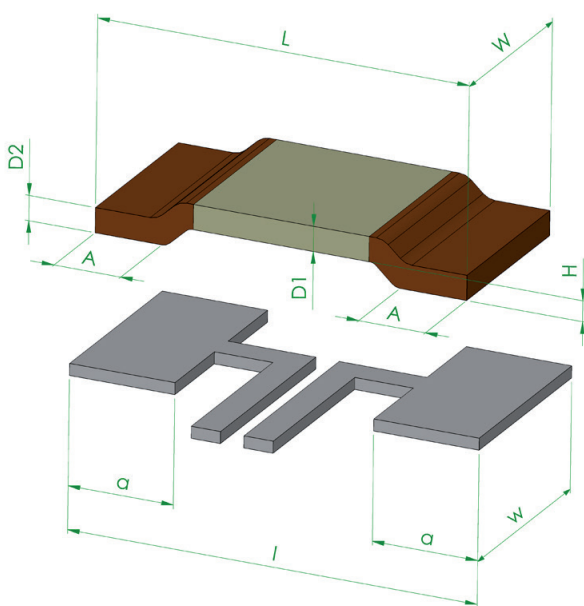


### Specification

| 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 <sub>k</sub> max at rated power | ±1.0%, T <sub>k</sub> = 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 |

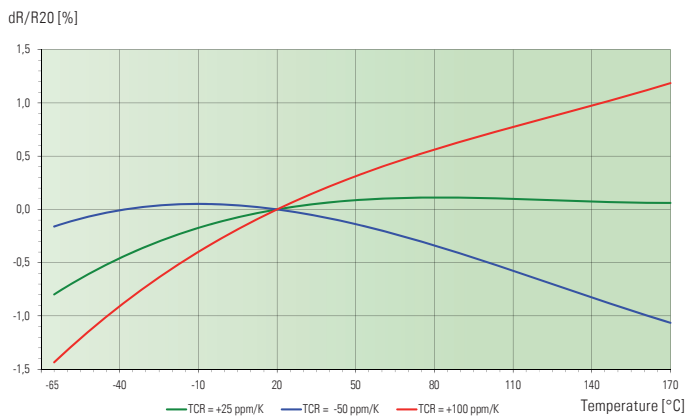
### Recommended surface mount soldering methods

Reflow-, IR- and vacuum soldering

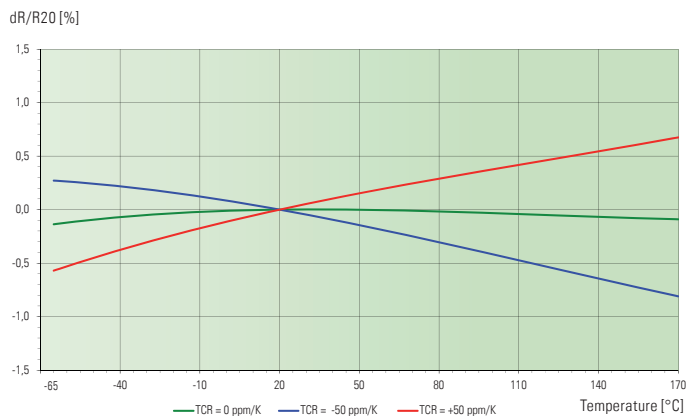


## BVT (2512)

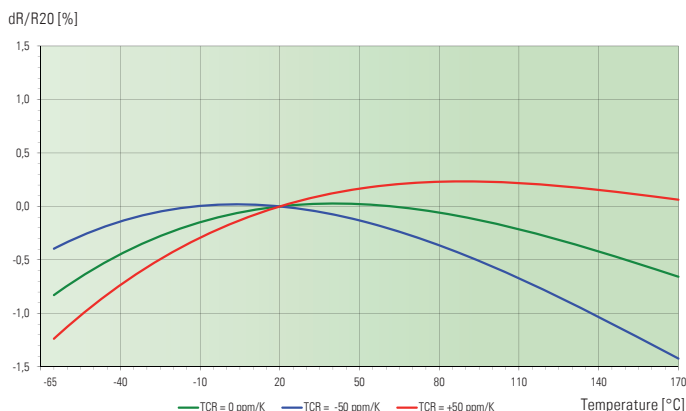
### Temperature dependence of the electrical resistance of MANGANIN® resistors. Example: BVT-M-R001



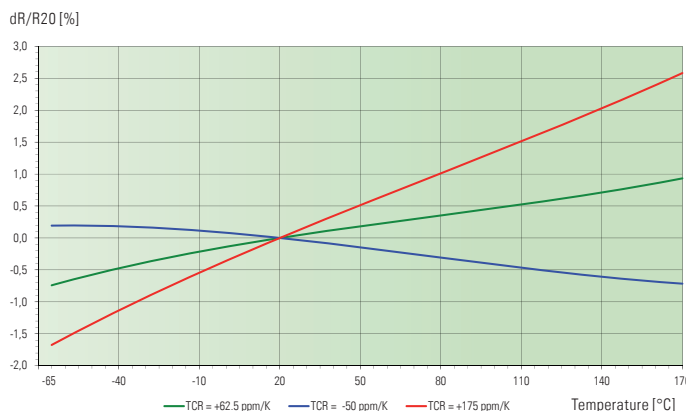
### Temperature dependence of the electrical resistance of ISAOHM® resistors



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

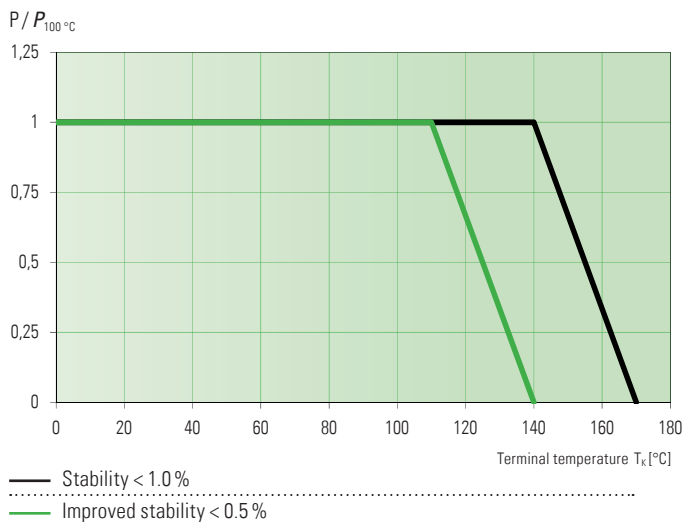


### Temperature dependence of the electrical resistance of ZERANIN® 30 resistors



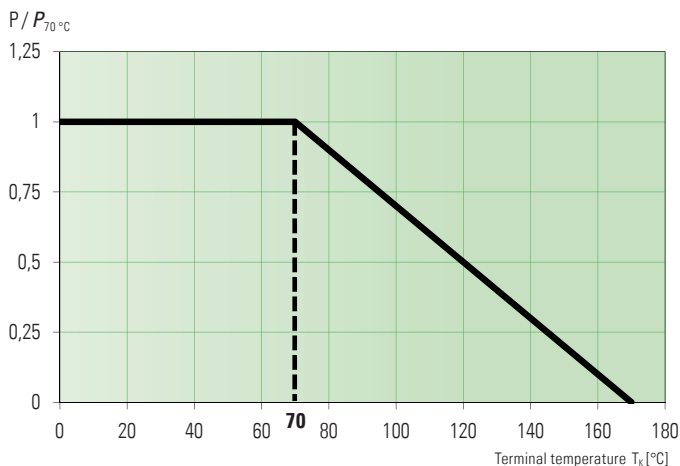
### Power derating curve at 100 °C

#### Example: BVT-M-R0005



### Power derating curve at 70 °C

For detailed information see table on page 4



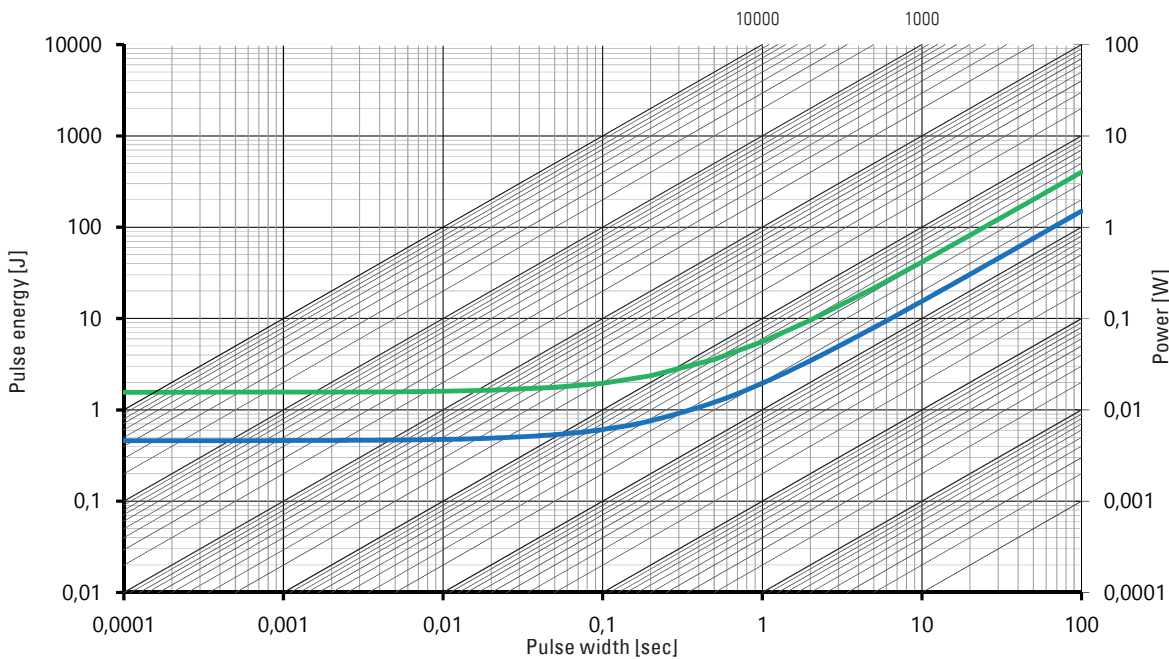


# BVT (2512)

| Type        | Value [mΩ] | Thickness [mm] |      | R <sub>thi</sub> [K/W] | TC [ppm/K] | P <sub>100°C</sub> [W]   | P <sub>70°C</sub> [W] |
|-------------|------------|----------------|------|------------------------|------------|--------------------------|-----------------------|
|             |            | D1             | D2   |                        |            |                          |                       |
| BVT-K-R000  | 0          | 0.42           | 0.42 |                        |            | I <sub>max</sub> = 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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