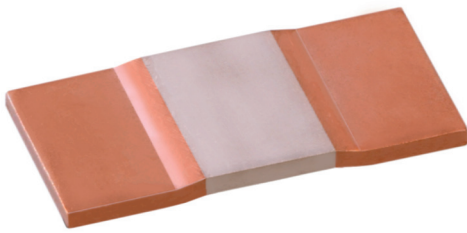




ISA-WELD® // PRECISION RESISTORS



BVE Size 5930



Features

- Power rating up to 15 W
- Continuous current load up to 220 A (0.2 mOhm)
- Heavy copper connectors
- Excellent long-term stability
- Ideal suited for mounting on DBC / IMS substrate
- Max. solder temperature up to 350 °C / 30 sec
- AEC-Q200 qualified
- RoHS 2011/65/EU compliant



Applications

- Current sensor for power hybrid applications
- For welding on bus bars
- High current applications for the automotive market
- Frequency converters
- Power modules

Technical data ¹

| | | |
|--|--------------|---|
| Resistance values | mOhm | 0.1 to 2 |
| Tolerance | % | 1 / 5 |
| Temperature coefficient (20-60 °C) | ppm/K | from 50 |
| Applicable temperature range | °C | -55 to +170 |
| Power rating P_{100°C} | W | up to 10 |
| Power rating P_{70°C} | W | up to 15 |
| Internal heat resistance (R _{thi}) | K/W | from 3 |
| Inductance | nH | <3 |
| Stability (at rated power) deviation after 2000h, T _K = Terminal temperature | | <0.5% (T _K =90 °C) <1.0% (T _K =120 °C) |

¹ For detailed information see table on page 3

Ordering code

BVE - M - R0005 - 1.0

| | |
|-------|---|
| | Tolerance |
| | Resistance value [Ohm] / „R” represents decimal point |
| | Material (MANGANIN®) |
| | Type |



BVE // 5930

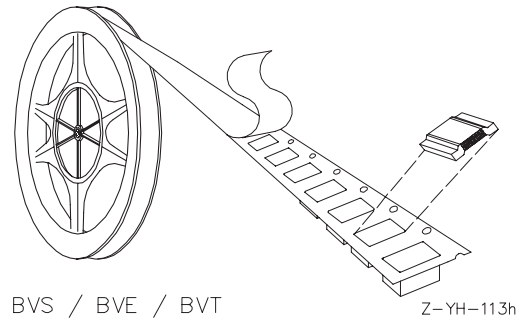
Recommended solder profile

Reflow-, IR- and wave-soldering

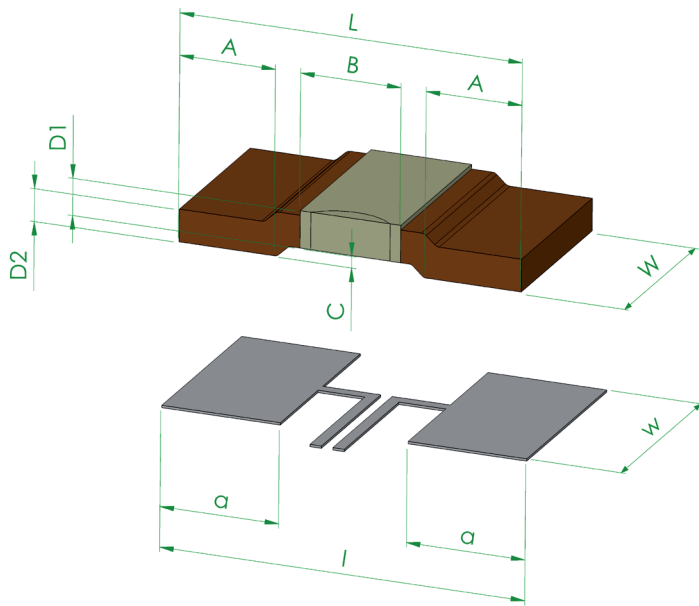
| | | | | |
|-------------|-----|------|-----|-----|
| Temperature | °C | 260 | 255 | 217 |
| Time | sec | peak | 40 | 90 |

Tape and reel information

| | | | | |
|------------------|----------------|------|--|--|
| Specification | DIN EN 60286-3 | | | |
| Tape width | mm | 24 | | |
| Reel size | inch | 13 | | |
| Parts per reel | pcs | 2000 | | |
| Packaging weight | g | 563 | | |



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



Z-YE-583

| type: | value / mOhm | L | W | A | B | C | D1 | D2 |
|-------------|--------------|---------|----------------|----------------|---------------|----------|------------|-----------|
| BVE-Z-R0001 | 0.1 | 15 ±0.2 | 7.75 +0.3/-0.2 | 4.95 +0.1/-0.7 | 3.7 +0.2/-0.3 | 0.5 ±0.1 | 1.42 ±0.1 | 1.42 ±0.1 |
| BVE-M-R0002 | 0.2 | 15 ±0.2 | 7.75 +0.3/-0.2 | 4.2 +0.1/-0.7 | 5 +0.2/-0.3 | 0.5 ±0.1 | 1.42 ±0.1 | 1.42 ±0.1 |
| BVE-M-R0003 | 0.3 | 15 ±0.2 | 7.75 +0.3/-0.2 | 4.2 +0.1/-0.7 | 5 +0.2/-0.3 | 0.5 ±0.1 | 0.94 ±0.1 | 0.4 ±0.1 |
| BVE-M-R0005 | 0.5 | 15 ±0.2 | 7.75 +0.3/-0.2 | 4.2 +0.1/-0.7 | 5 +0.2/-0.3 | 0.5 ±0.1 | 0.56 ±0.1 | 0.56 ±0.1 |
| BVE-A-R0005 | 0.5 | 15 ±0.2 | 7.75 +0.3/-0.2 | 4.2 +0.1/-0.7 | 4.4 +0.2/-0.3 | 0.5 ±0.1 | 1.62 ±0.1 | 1.42 ±0.1 |
| BVE-A-R001 | 1 | 15 ±0.2 | 7.75 +0.3/-0.2 | 4.2 +0.1/-0.7 | 4.9 +0.2/-0.3 | 0.5 ±0.1 | 0.91 ±0.1 | 0.84 ±0.1 |
| BVE-A-R002 | 2 | 15 ±0.2 | 7.75 +0.3/-0.2 | 4.2 +0.1/-0.7 | 4.9 +0.2/-0.3 | 0.5 ±0.1 | 0.44 ±0.05 | 0.64 ±0.1 |

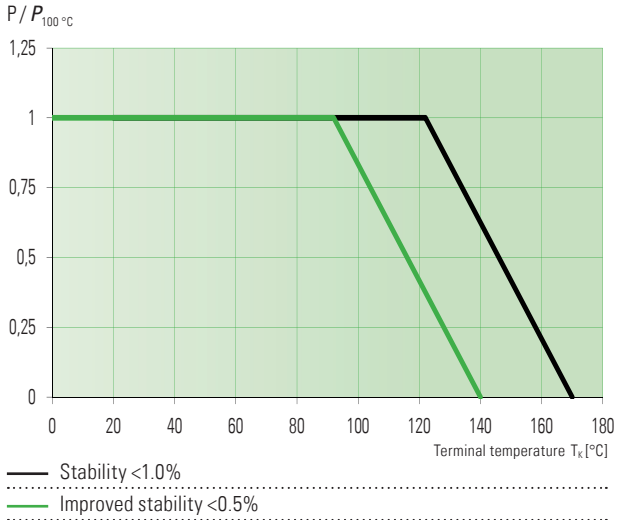
| solder pad type: | l | w | a |
|------------------|----|------|-----|
| BVE | 16 | 8.75 | 5.2 |



BVE // 5930

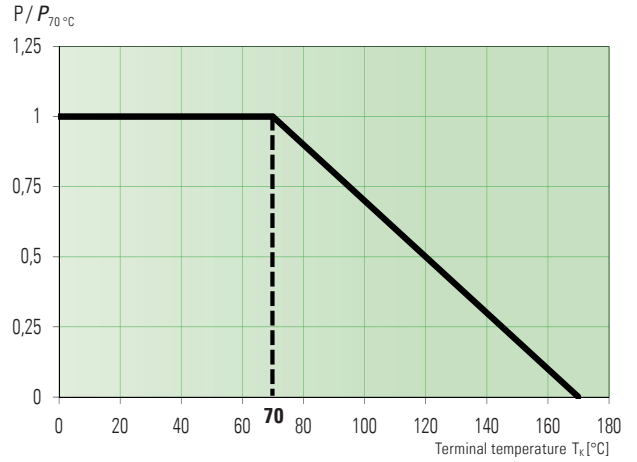
Power derating curve at 100 °C

Example: BVE-M-R0005



Power derating curve at 70 °C

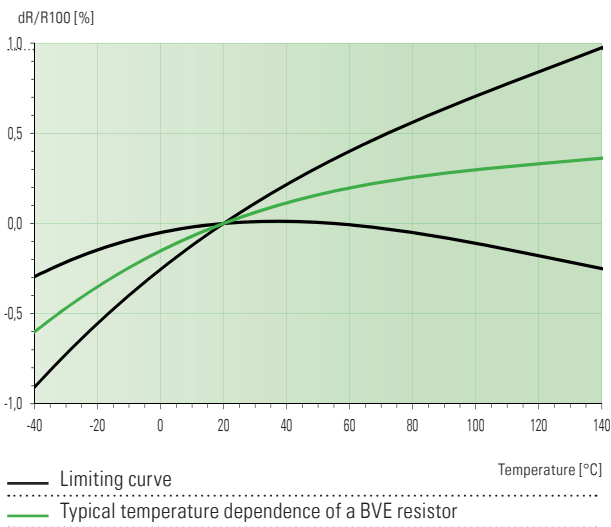
Example: BVE-A-R002



| Type | Value [mΩ] | R _{thi} [K/W] | TC [ppm/K] | P _{100°C} [W] | P _{70°C} [W] |
|-------------|------------|------------------------|------------|------------------------|-----------------------|
| BVE-Z-R0001 | 0.1 | 2.0 | <200 | 10 | 15 |
| BVE-M-R0002 | 0.2 | 3.0 | <100 | 10 | 15 |
| BVE-M-R0003 | 0.3 | 4.5 | <100 | 7 | 10 |
| BVE-M-R0005 | 0.5 | 8.0 | <75 | 6 | 8 |
| BVE-A-R0005 | 0.5 | 5.0 | <75 | 7 | 10 |
| BVE-A-R001 | 1.0 | 8.0 | <50 | 6 | 9 |
| BVE-A-R002 | 2.0 | 14.5 | <50 | 4 | 7 |

Abbreviation type A=Aluchrom, M=MANGANIN®, Z=ZERANIN®30

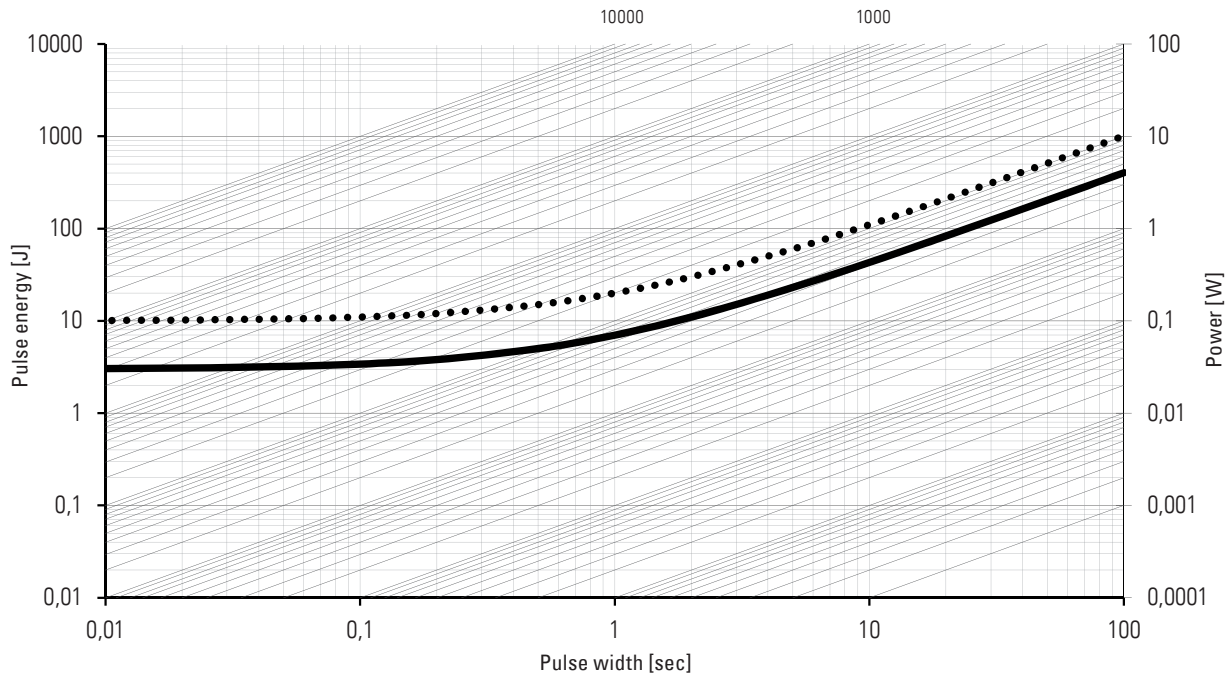
Temperature dependence of the electrical resistance





BVE // 5930

Maximum pulse energy respectively pulse power for permanent operation



- • • This curve is valid for the resistance value R0001 only.
- This curve is valid for the resistance value R002 only.
- For other values the area inbetween the max. and min curve is valid.

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 24 h | ±0.1% |
| Resistance to Soldering Heat | 260 °C for 10 sec / 8h steam aging | n.a. |
| Moisture Resistance | MIL-STD-202 method 106 | ±0.1% |
| Mechanical Shock | 100 g, 6 ms half sine | ±0.2% |
| Vibration, High Frequency | 20 g, 10-2000 Hz | ±0.2% |
| Operational Life | 2000 h, T _k max at rated power | ±1.0%, T _k = 120 °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

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