

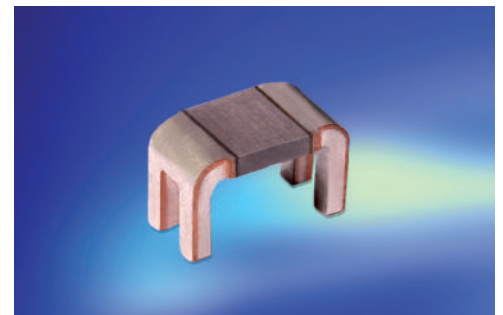
## ISA-WELD® - Präzisionswiderstände / Precision resistors

| TECHNISCHE DATEN / TECHNICAL DATA                                                                                                      |                                        |                                                                                            |
|----------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|--------------------------------------------------------------------------------------------|
| Widerstandswerte                                                                                                                       | Resistance values                      | 0.3, 0.5, 1, 2 mOhm                                                                        |
| Toleranz                                                                                                                               | Tolerance                              | 3 %, 5 %                                                                                   |
| Temperaturkoeffizient                                                                                                                  | Temperature coefficient                | siehe Tabelle/see table                                                                    |
| Temperaturbereich                                                                                                                      | Applicable temperature range           | -55 °C bis/to +170 °C                                                                      |
| Belastbarkeit                                                                                                                          | Load capacity                          | 5 W                                                                                        |
| Innerer Widerstand ( $R_{thi}$ )                                                                                                       | Internal heat resistance ( $R_{thi}$ ) | ab/from 4 K/W *                                                                            |
| Induktivität                                                                                                                           | Inductance                             | < 3 nH                                                                                     |
| Stabilität (Nennlast) Abweichung $T_K$ = Kontaktstellentemperatur /<br>Stability (Nominal load) deviation $T_K$ = Terminal temperature |                                        | < 0.5 % nach/after 2000 h ( $T_K$ = 105 °C)<br>< 1.0 % nach/after 2000 h ( $T_K$ = 135 °C) |

\* siehe Tabelle Seite 3 / see table on page 3

### MERKMALE / FEATURES

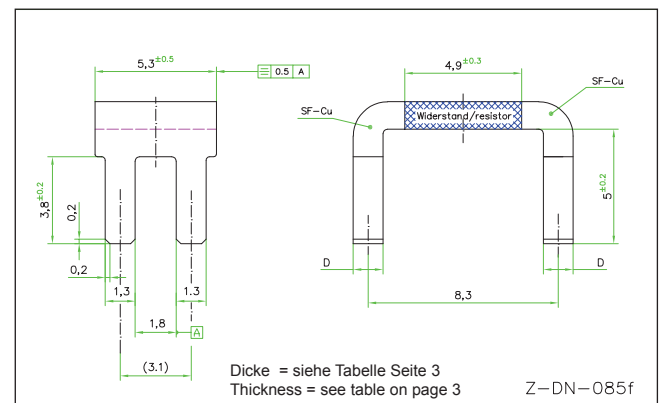
- 5 W Dauerleistung  
5 W permanent power
- Dauerströme bis 100 A (0,3 mOhm)  
Continuous current load up to 100 A (0.3 mOhm)
- Sehr gute Langzeitstabilität  
Excellent long term stability
- Massive Kupferanschlüsse  
Heavy copper connectors
- Geeignet für Löttemperaturen bis 350 °C / 30 sek  
Max. solder temperature up to 350 °C / 30 sec
- AEC-Q200 qualifiziert  
AEC-Q200 qualified



Bauform / Size 3820

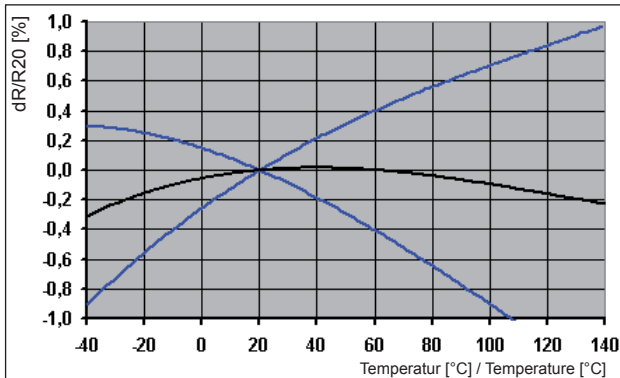
### APPLIKATIONEN / APPLICATION

- Hochstromanwendungen in der Automobiltechnik  
High current applications for the automotive market
- Frequenzumrichter  
Frequency converters
- Leistungsmodule  
Power modules
- Elektrowerkzeuge  
Power tools



Abmessungen [mm] / Dimensions [mm]

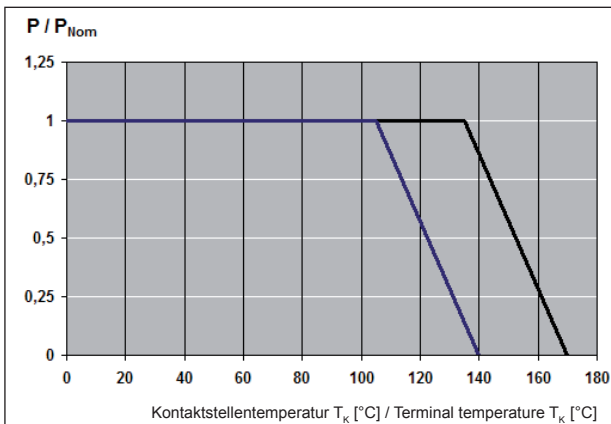
## TK, Lastminderung und Langzeitstabilität / TCR, power derating and long term stability



Temperaturabhängigkeit des elektrischen Widerstandes von MANGANIN®-Widerständen /  
Temperature dependence of the electrical resistance of MANGANIN®-resistors

— Grenzkurve  
Limiting curve

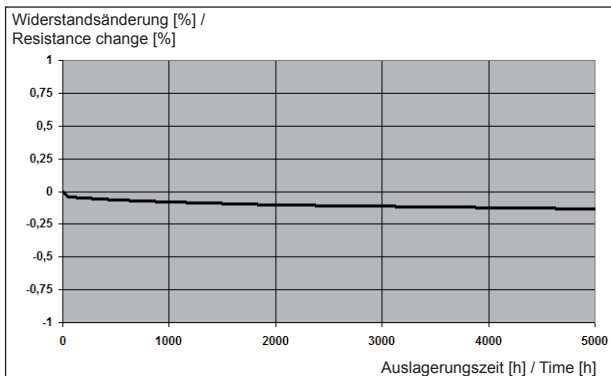
— Typische Temperaturabhängigkeit eines BVH Widerstandes  
Typical temperature dependence of a BVH resistor



Lastminderungskurve (BVH-M-R0005) /  
Power derating curve (BVH-M-R0005)

— Verbesserte Stabilität / Improved stability 0.5 %

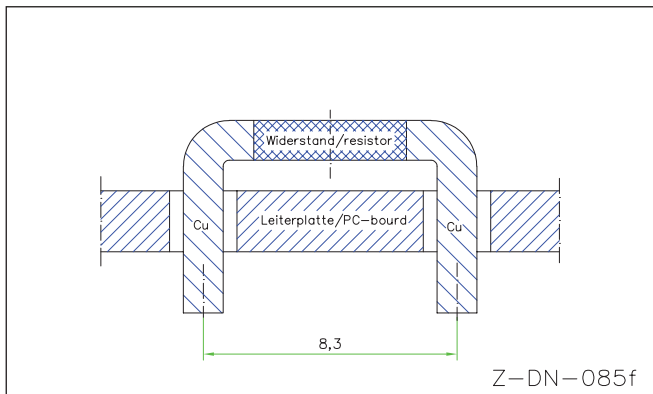
— Stabilität / Stability 1.0 %



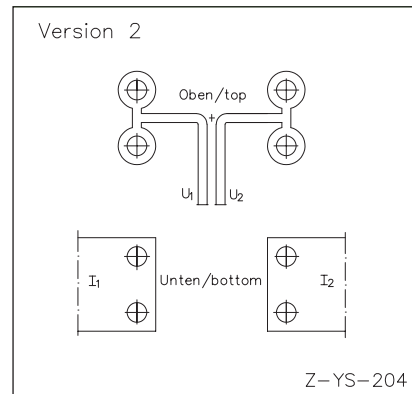
Langzeitstabilität von MANGANIN®-Widerständen bei 140 °C  
Typischer Kurvenverlauf /

Long term stability of MANGANIN®-resistors at 140 °C  
Typical run of the curve

## Montagehinweis / Proposal for mounting



## Vorschlag für Leiterplatten Layout / Proposal for pcb-layout



### Lötprofil Vorschlag / Recommended solder profile

Reflow-, IR-löten / Reflow-, IR-soldering

|                                  |      |     |     |
|----------------------------------|------|-----|-----|
| Temperatur /<br>Temperature [°C] | 260  | 255 | 217 |
| Zeit / Time [s]                  | Peak | 40  | 90  |

### VERPACKUNG / PACKAGING

Schüttgut in Folienbeutel 3.000 St.  
evakuiert und rückbegast

3,000 pcs. sealed in plastic bags  
evacuated and refilled with dry nitrogen

### BESTELLBEZEICHNUNG / ORDERING CODE

**BVH-M-R0005-5.0**

| Typ /<br>Type | Material  | Widerstandswert /<br>Resistance value | Toleranz /<br>Tolerance |
|---------------|-----------|---------------------------------------|-------------------------|
| BVH           | MANGANIN® | 0.5 mOhm                              | 5 %                     |

| Typ /<br>Type | Wert / Value<br>[mΩ] | Material  | Dicke (D) /<br>Thickness (D) [mm] | R <sub>thi</sub> [K/W] | TK / TC<br>[ppm/K] | Power<br>[W] |
|---------------|----------------------|-----------|-----------------------------------|------------------------|--------------------|--------------|
| BVH-M-R0003   | 0.3                  | MANGANIN® | 1,42                              | 4                      | <300               | 5            |
| BVH-M-R0005   | 0.5                  | MANGANIN® | 0.86                              | 7                      | <300               | 5            |
| BVH-A-R001    | 1                    | Aluchrom  | 1.30                              | 8                      | <100               | 5            |
| BVH-A-R002    | 2                    | Aluchrom  | 0.64                              | 15                     | <100               | 4            |

### RoHS 2011/65/EU konform.

Ausführliche Informationen erhalten Sie auf unserer  
Homepage: [www.isabellenhuetten.de](http://www.isabellenhuetten.de)

### RoHS 2011/65/EU compliance.

For more information please visit our website:  
[www.isabellenhuetten.de](http://www.isabellenhuetten.de)

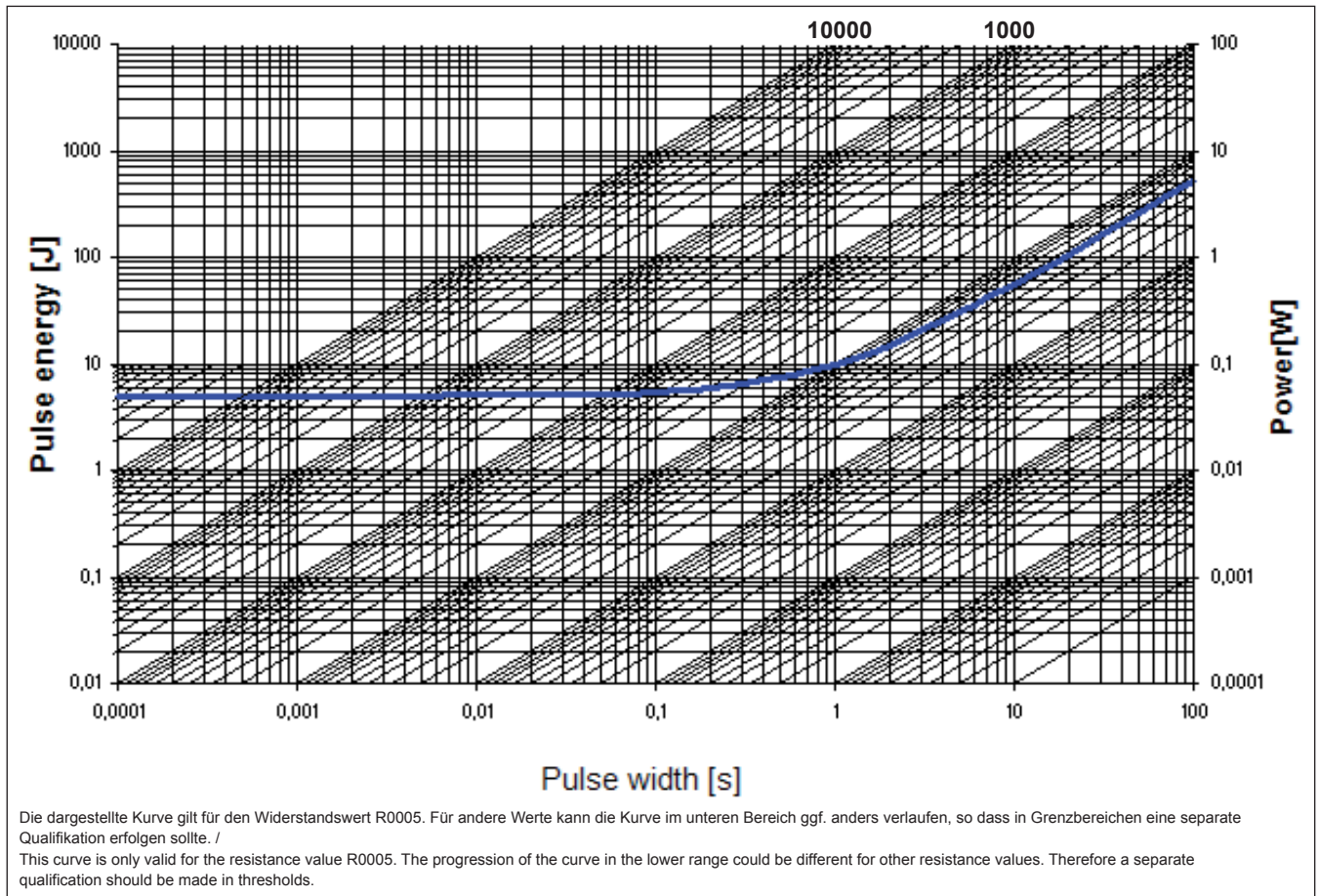
### Gewährleistung

Alle Angaben über Eignung, Verarbeitung und Anwendung unserer Produkte, technische Beratung und sonstige Angaben erfolgen nach bestem Wissen, befreien den Käufer jedoch nicht von eigenen Prüfungen und Versuchen.

### Warranty

All information regarding the suitability, workability and applicability of our products, all technical advice and other information are provided to the best of our knowledge and belief, but shall not discharge the buyer from his own examinations and tests.

**Grenzkurve für maximale Pulsenergie bzw. Pulsleistung für Dauerbetrieb /  
Maximum pulse energy respectively pulse power for permanent operation**



**Specification**

| Parameters                            | Test conditions                    | Specified values                 |
|---------------------------------------|------------------------------------|----------------------------------|
| Temperature Cycling                   | 2000 cycles (-55 °C to +150 °C)    | n.a.                             |
| Low Temperature Storage and Operation | -65 °C for 24 h                    | ±0.2 %                           |
| 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, TK max at nominal load     | ±1.0 % (T <sub>K</sub> = 135 °C) |
| High Temperature Exposure             | 2000 h / 170 °C                    | ±1.0 %                           |
| Bias Humidity                         | +85 °C, 85 r.F., 1000 h            | ±0.5 %                           |