

**ISA-WELD® - Präzisionswiderstände für Hochstromanwendungen**  
**ISA-WELD® - precision resistors for high current applications**

TECHNISCHE DATEN / TECHNICAL DATA		
Widerstandswerte (mOhm)	Resistance values (mOhm)	0.1, 0.2, 0.3, 0.5 mOhm
Toleranz	Tolerance	5 %
Temperaturkoeffizient	Temperature coefficient (tcr)	< 50 ppm/K (20 °C - 60 °C)
Temperaturbereich	Applicable temperature range	-55 °C to +140 °C
Belastbarkeit	Load capacity	5 W
Innerer Wärmewiderstand ( $R_{thi}$ )	Internal heat resistance ( $R_{thi}$ )	< 10 K/W
Induktivität	Inductance	< 3 nH
Stabilität (Nennlast) Abweichung $T_K =$ Kontaktstellentemperatur Stability (nominal load) deviation $T_K =$ Terminal temperature		< 0.5 % nach/after 2000 h ( $T_K = 90 °C$ )

**MERKMALE / FEATURES**

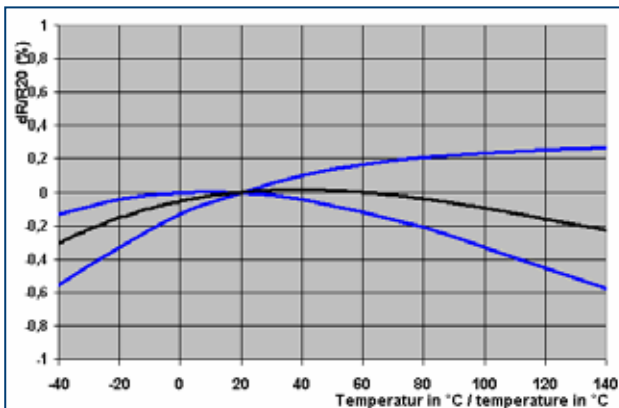
- 5 Watt Dauerleistung
- 5 Watt permanent power
- Dauerströme bis 200 A (0.1 mOhm)
- Continuous current load up to 200 Amps (0.1 mOhm)
- Massive Kupferanschlüsse
- Heavy copper connectors
- Sehr gute Langzeitstabilität
- Excellent long term stability
- Niedrige Induktivität
- Low inductance value
- Bauteilmontage: Reflow löten, schweißen oder verschrauben
- Mounting: reflow soldering, welding on copper or screwed on cable or bus bar
- Geeignet für Löttemperaturen bis 350 °C / 30 sek oder 250 °C / 10 min
- Max. solder temperature up to 350 °C / 30 sec or 250 °C / 10 min
- AEC-Q 200 konform
- AEC-Q 200 conform



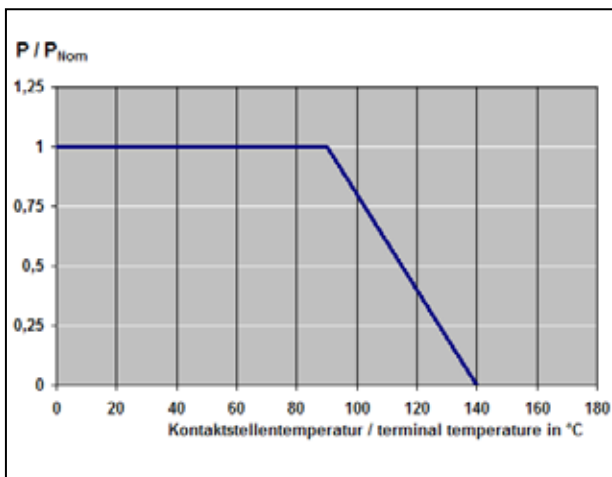
**APPLIKATIONEN / APPLICATIONS**

- Einsatz in Elektrizitätszählern (kWh-Zähler)
- kWh-meters, energy metering
- Batteriestrommessung in Kfz und Elektrofahrzeugen
- Battery current sensing
- Hochstromanwendungen in der Automobiltechnik
- High current sensing in automotive applications
- Strommessung in Schweissgeräten
- High current measurement in welding machines

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

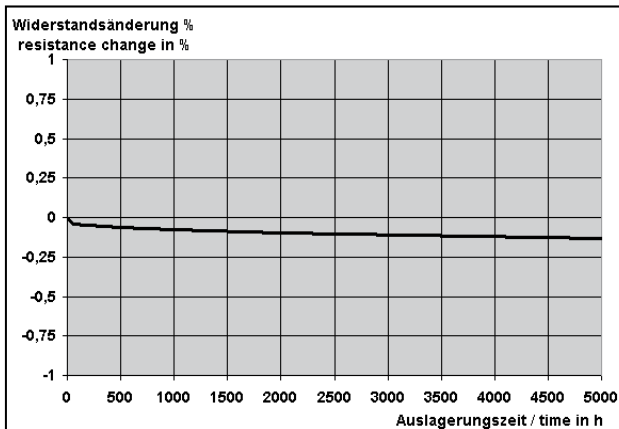


Temperaturabhängigkeit des elektrischen Widerstandes von MANGANIN®-Widerständen  
 Temperature dependence of the electrical resistance of MANGANIN®-resistors

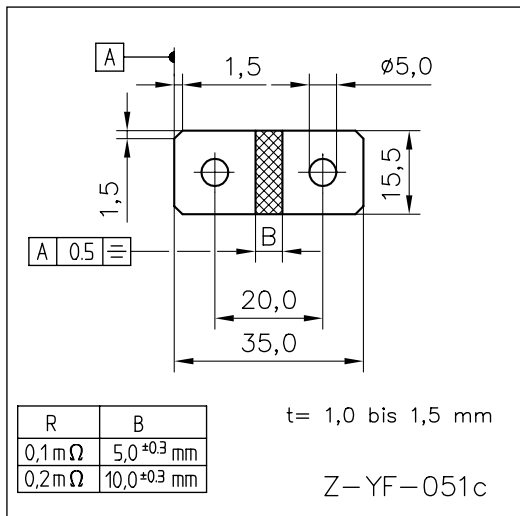


Lastminderungskurve  
 Power derating curve

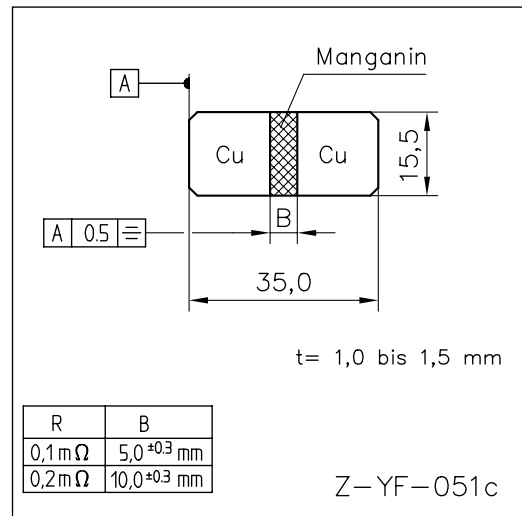
— Stabilität / Stability 0.5 %



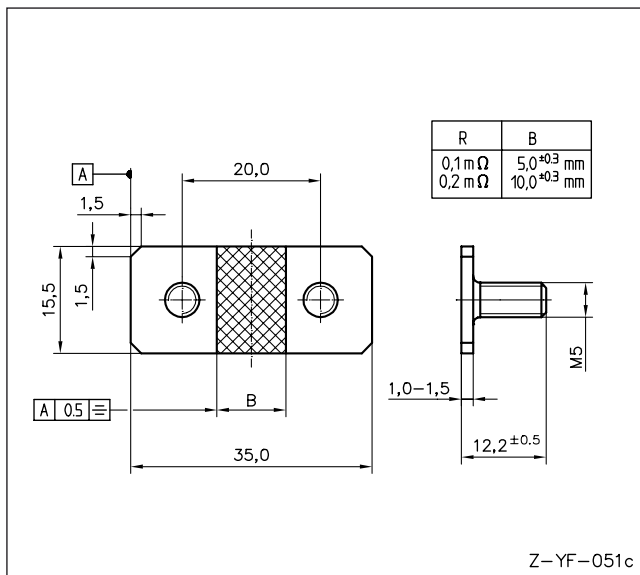
Langzeitstabilität von MANGANIN®-Widerständen bei 140 °C  
 Long term stability of MANGANIN®-resistors at 140 °C



Abmessungen BVM-F (mm) Ausführung A  
Dimensions BVM-F (mm) version A

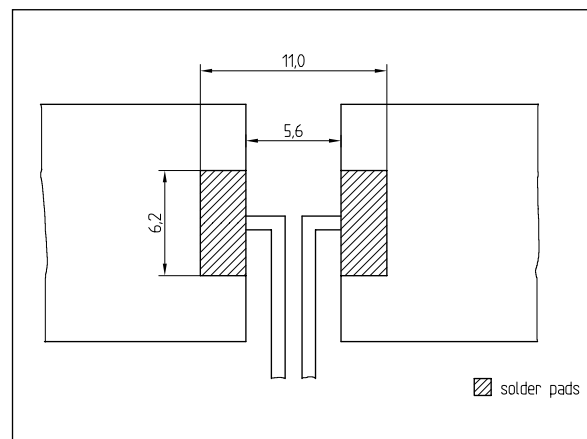


Abmessungen BVM-F (mm) Ausführung B  
Dimensions BVM-F (mm) version B



Abmessungen BVM-F (mm) Ausführung D  
Dimensions BVM-F (mm) version D

**Vorschlag für Leiterplatten Layout (Reflowlöten)**  
**Proposal for pcb-layout (reflow soldering)**



BESTELLBEZEICHNUNG / ORDERING CODE			
BVM-F-R0001-5.0-A			
Typ	Widerstandswert	Toleranz	Ausführung
Type	Resistance value	Tolerance	Version
BVM-F	0.1 mOhm	5.0 %	A

VERPACKUNG / PACKAGING
Schüttgut in Folienbeuteln 1000 St. evakuiert und rückbegast
1000 pcs. in plastic bags sealed filled with dry Nitrogen

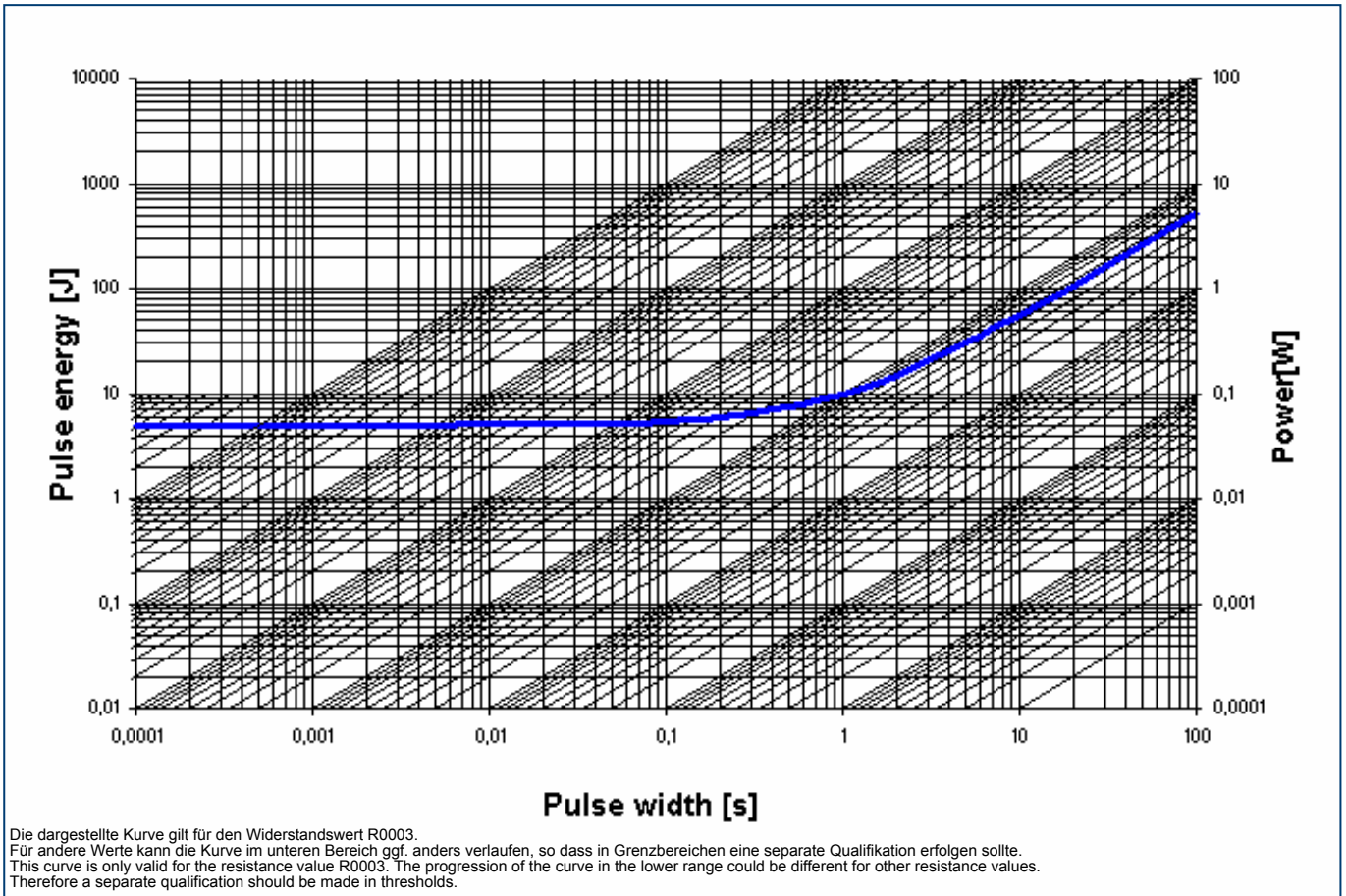
**Gewährleistung**

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 suitable, 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 puls energy resp. pulse power for continuous operation**



Spezifikation/Specification			
Parameters	Test Conditions	Specification	typical data
Maximum Temperature for full power operation	140 °C	140 °C	140 °C
Working Temperature	-55 to 170 °C	-55 to 140 °C	-55 to 140 °C
Thermal Shock	MIL-STD-202 method 107-B1	0.2 %	0.1 %
Overload	MIL-R-26E (5 times rated power, 5 sec)	0.2 %	0.1 %
Solderability	MIL-STD-202 method 208	> 95 % coverage	> 95 % coverage
Resistance to Solvents	MIL-STD-202 method 215, 2.1a, 2.1d	no damage	no damage
Low Temperature Storage and Operation	MIL-STD-26E	0.1 %	0.03 %
Resistance to Soldering Heat	MIL-STD-202 method 210	0.1 %	0.02 %
Moisture Resistance	MIL-STD-202 method 106	0.1 %	0.01 %
Shock	MIL-STD-202 method 213-A	0.2 %	0.1 %
Vibration, High Frequency	MIL-STD-202 method 204-B	0.2 %	0.05 %
Life	MIL-STD-26E	0.2 %	0.1 %
Storage Life at Elevated Temperature	MIL-STD-202 method 108-F	0.3 %	0.2 %
High Temperature Exposure	140 °C, 2000 h	0.3 %	0.2%
Current Noise	MIL-STD-202 method 308	0.01 %	0.001 %
Voltage Coefficient (%/V)	MIL-STD-202 method 309	linearity error less than 120dB	
Resistance Temperature Characteristic	MIL-STD-202 method 304 (20-60°C)	< 50 ppm/K	< 50 ppm/K
Thermal EMF	0 - 100 °C	2 µV/ °K max.	2 µV/ °K
Frequency Characteristic	inductivity	< 3 nH	< 3 nH