

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

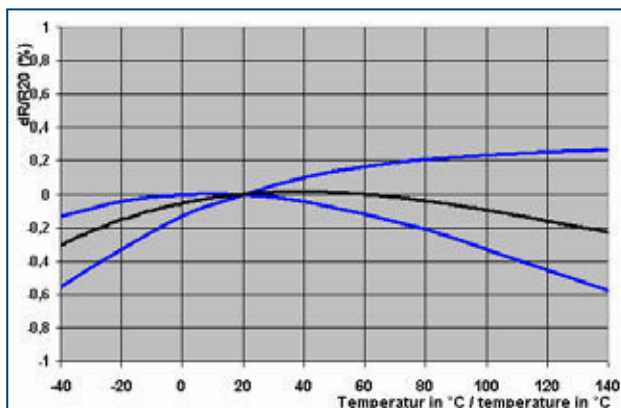
- 5 Watt Dauerleistung
- 5 Watt permanent power
- Dauerströme bis 200 A (0.1 mOhm)
- Continuous current load up to 200 Amps (0.1 mOhm)
- Massive Kupferanschlüsse
- Heavy copper connectors
- Sehr gute Langzeitstabilität
- Excellent long term stability
- Niedrige Induktivität
- Low inductance value
- Bauteilmontage: 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



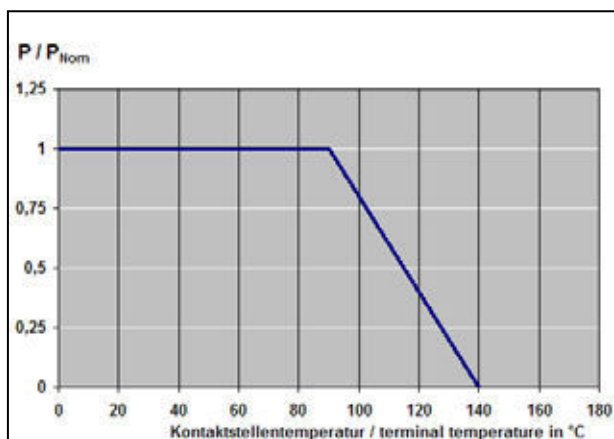
APPLIKATIONEN / APPLICATIONS

- 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

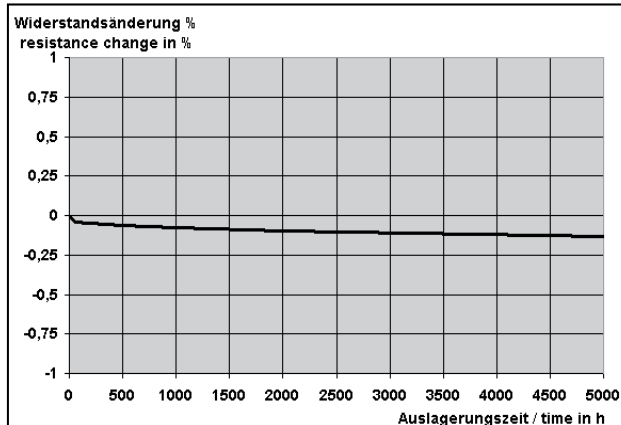


Temperaturabhängigkeit des elektrischen Widerstandes von MANGANIN®-Widerständen
Temperature dependence of the electrical resistance of MANGANIN®-resistors



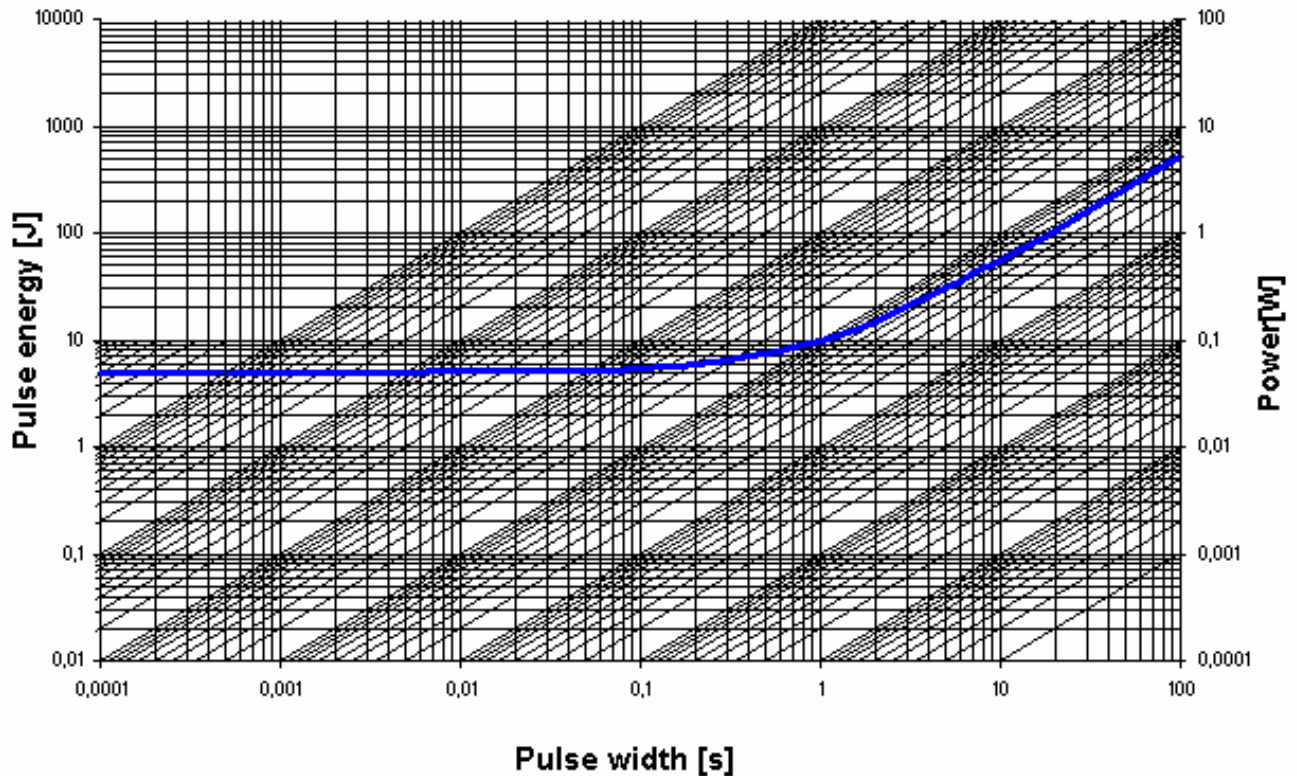
Lastminderungskurve
Power derating curve

— Stabilität / Stability 0.5 %



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

Grenzkurve für maximale Pulsenergie bzw. Pulsleistung für Dauerbetrieb
Maximum puls energy resp. pulse power for continous operation



Die dargestellte Kurve gilt für den Widerstandswert R0003.
Für andere Werte kann die Kurve im unteren Bereich ggf. anders verlaufen, so dass in Grenzbereichen eine separate Qualifikation erfolgen sollte.
This curve is only valid for the resistance value R0003. The progression of the curve in the lower range could be different for other resistance values.
Therefore a separate qualification should be made in thresholds.

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