

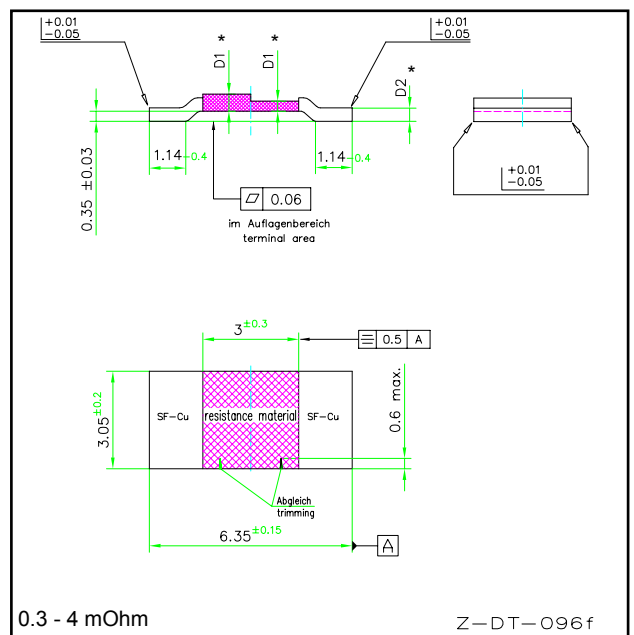
ISA-WELD® - SMD Präzisionswiderstände / SMD precision resistors

TECHNISCHE DATEN / TECHNICAL DATA		
Widerstandswerte (mOhm)	Resistance values (mOhm)	0, 0.3, 0.5, 1, 1.3, 2, 3, 4, 5, 6.8, 10 mOhm
Toleranz	Tolerance	1 %, 5 %
Temperaturkoeffizient	Temperature coefficient (tcr)	< 50 ppm/K (20 °C to 60 °C) *
Temperaturbereich	Applicable temperature range	-55 °C to +170 °C
Belastbarkeit	Load capacity	bis/up to 3 W*
Innerer Wärmewiderstand (R _{thi})	Internal heat resistance (R _{thi})	ab/from 4 K/W*
Induktivität	Inductance	< 2 nH
Stabilität (Nennlast) Abweichung T _K = Kontaktstellentemperatur Stability (nominal load) deviation T _K = Terminal temperature		< 0.5 % nach/after 2000 h (T _K = 110 °C) < 1.0 % nach/after 2000 h (T _K = 140 °C)

* siehe Tabelle Seite 3 / see table page 3

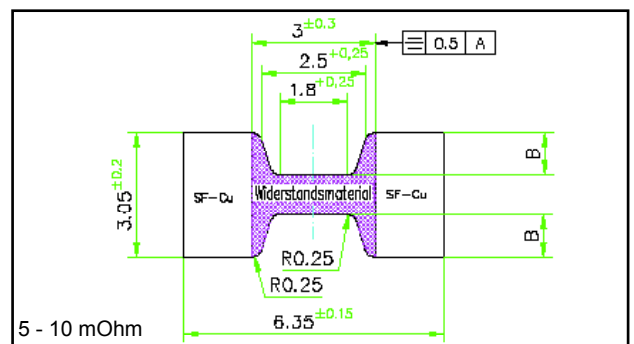
MERKMALE / FEATURES

- 3 Watt Dauerleistung
- 3 Watt permanent power
- Dauerströme bis 77 A (0.5 mOhm)
- Continuous current load up to 77 Amps (0.5 mOhm)
- Massive Kupferanschlüsse
- Heavy copper connectors
- Sehr gute Langzeitstabilität
- Excellent long term stability
- Ideal geeignet für die Montage auf DCB Keramik/IMS Substrat
- Ideal suited for mounting on DCB / IMS substrate
- Hoher Temperaturbereich -55 bis +170 °C durch spezielle Bauform
- High application temperature range - 55 to +170 °C due to special design
- Geeignet für Löttemperaturen bis 350 °C / 30 sek
- Max. solder temperature up to 350 °C / 30 sec
- AEC-Q200 qualifiziert
- AEC-Q200 qualification

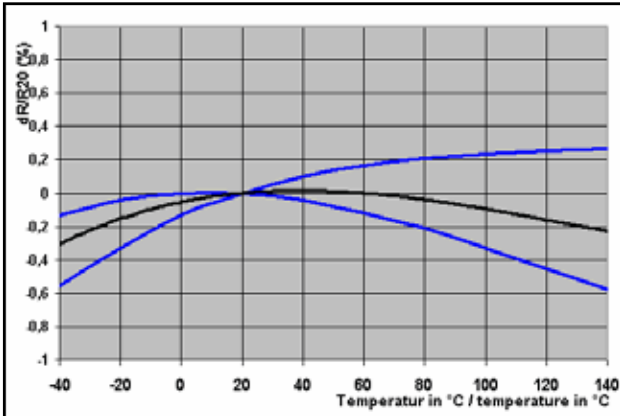


APPLIKATIONEN / APPLICATION

- Messwiderstand für Leistungshybride
- Current sensor for power hybrid applications
- Hochstromanwendungen in der Automobiltechnik
- High current applications for the automotive market
- Frequenzumrichter
- Frequency converters
- Leistungsmodul
- Power modules

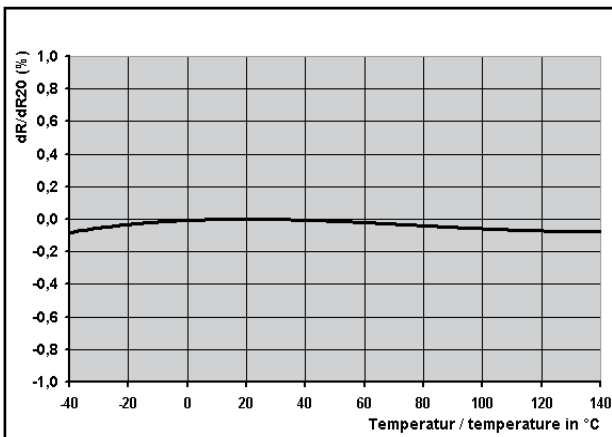


TK, Lastminderung und Langzeitstabilität / TCR, power derating and long term stability

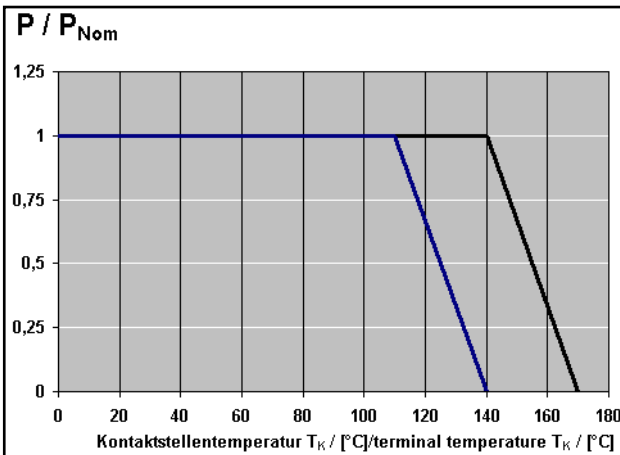


Temperaturabhängigkeit des elektrischen Widerstandes von MANGANIN®-Widerständen
Temperature dependence of the electrical resistance of MANGANIN®-resistors

- Grenzkurve
Limiting curve
- Typische Temperaturabhängigkeit eines BVT Widerstandes
Typical temperature dependence of a BVT resistor

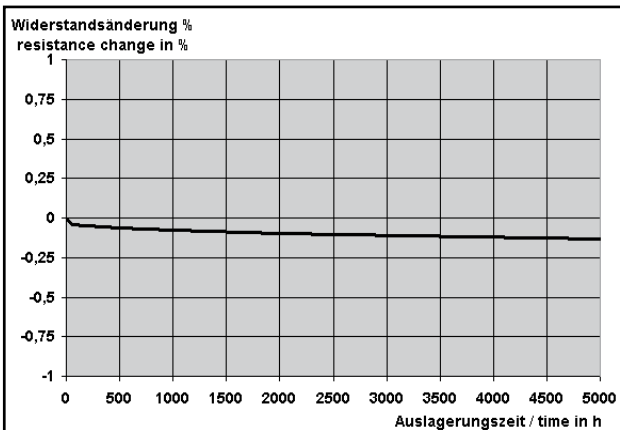


Typische Temperaturabhängigkeit des elektrischen Widerstandes von ZERANIN®30
Typical temperature dependence of the electrical resistance of ZERANIN®30



Lastminderungskurve (0.5 mOhm)
Power derating curve (0.5 mOhm)

- Stabilität / Stability 0.5 %
- Stabilität / Stability 1.0 %



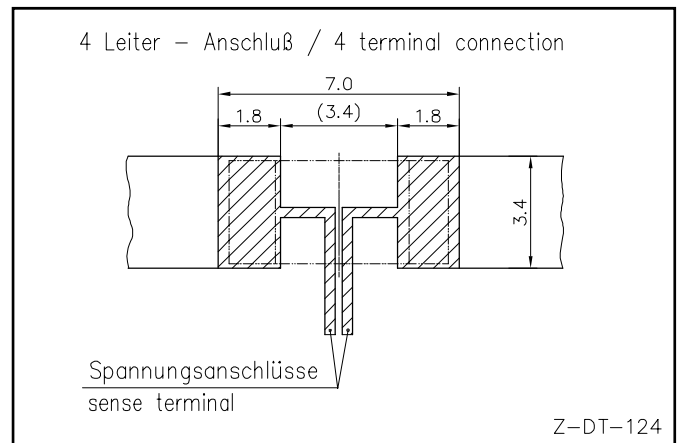
Langzeitstabilität von MANGANIN®-Widerständen bei 140 °C
Typischer Kurvenverlauf
Long term stability of MANGANIN®-resistors at 140 °C
Typical run of the curve

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

Typ	Wert mΩ	Material	Dicke D1	Dicke D2	Rthi K/W	TK	P/W
Type	Value mΩ	Material	Thick-ness D1	Thick-ness D2	Rthi K/W	TC	P/W
BVT-K	< 0.1 mΩ	Kupfer verzinkt tinned copper	0.42 mm	0.42 mm			
BVT-Z	0.3 mΩ	ZERANIN®30	0.95 mm	0.95 mm	4	<150	3
BVT-M	0.5 mΩ	MANGANIN®	0.85 mm	0.84 mm	7	<115	3
BVT-M	1 mΩ	MANGANIN®	0.42 mm	0.42 mm	14	<100	3
BVT-M	1.3 mΩ	MANGANIN®	0.33 mm	0.42 mm	16	<75	3
BVT-I	2 mΩ	ISA®-OHM	0.72 mm	0.64 mm	20	<50	3
BVT-I	3 mΩ	ISA®-OHM	0.48 mm	0.42 mm	30	<50	2
BVT-I	4 mΩ	ISA®-OHM	0.36 mm	0.42 mm	40	<50	2
BVT-I	5 mΩ	ISA®-OHM	0.36 mm	0.42 mm	50	<50	1.5
BVT-I	6.8 mΩ	ISA®-OHM	0.36 mm	0.42 mm	60	<50	1.5
BVT-I	10 mΩ	ISA®-OHM	0.36 mm	0.42 mm	70	<50	1

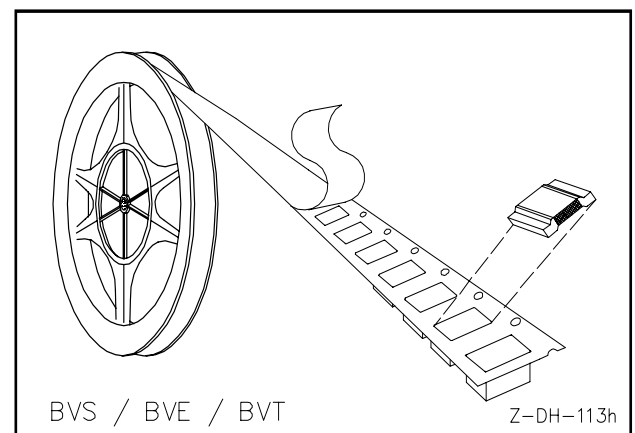
**Vorschlag für Leiterplatten Layout (Reflowlöten)
Proposal for pcb-layout (reflow soldering)**

Lötprofil Vorschlag / Recommended solder profile			
Reflow-, IR-Löten			
Reflow, infrared soldering			
Temperatur(e)	260 °C	255 °C	217 °C
Zeit/time (s)	Peak	40	90
<p>RoHS 2002/95/EG konform seit Produktstart. Ausführliche Informationen erhalten Sie auf unserer Homepage: www.isabellenhuette.de</p> <p>RoHS 2002/95/EC compliance since product launch. For more information please visit our website: www.isabellenhuette.de</p>			



GURTINFORMATIONEN / TAPE & REEL INFORMATION	
Norm / Specification	DIN EN 60286-3
Gurtbreite / Tape width	12 mm
Anzahl Bauteile / Parts per reel	5,000 Stk. / pcs

BESTELLBEZEICHNUNG / ORDERING CODE			
BVT-Z-R0003-1.0			
Typ	Material	Widerstandswert	Toleranz
Type	Material	Resistance value	Tolerance
BVT	ZERANIN®30	0.3 mΩ	1.0 %



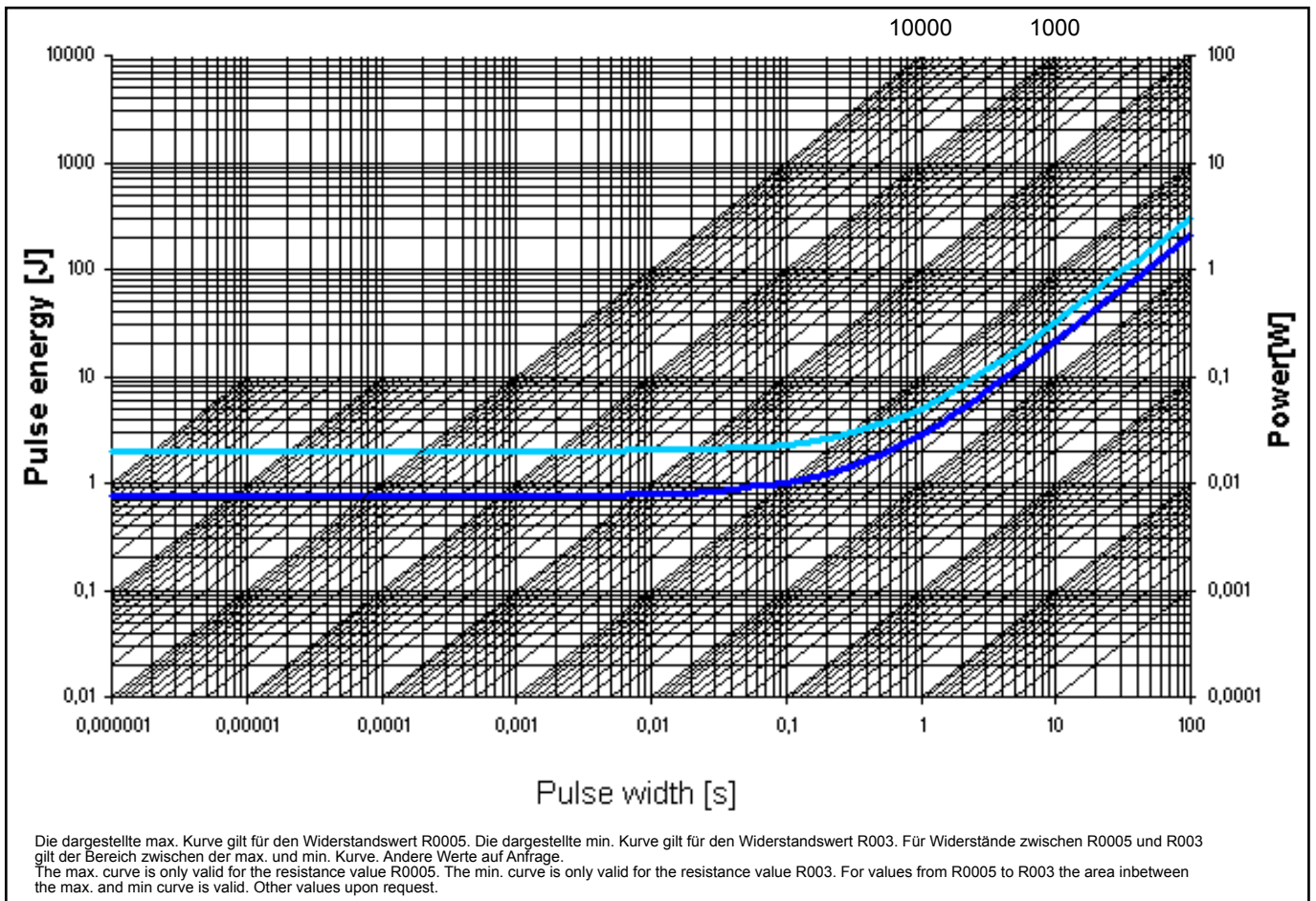
Gewährleistung

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 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 170 °C	-55 to 170 °C
Thermal Shock	MIL-STD-202 method 107-B1	0.1 %	0.05 %
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	0.2 %	0.1 %
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; R ≥ 1 mOhm	< 50 ppm/K; R ≥ 1 mOhm
Thermal EMF	0 - 100 °C	2 µV/ K max.	2 µV/ K
Frequency Characteristic	inductivity	< 2 nH	< 2 nH