

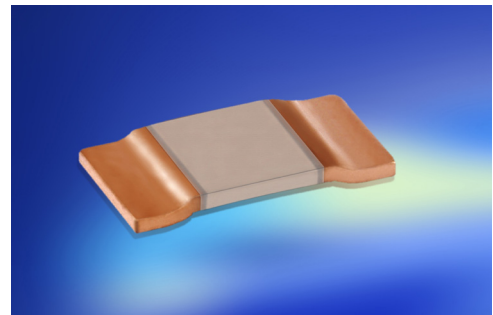
## ISA-WELD® - SMD Präzisionswiderstände / SMD precision resistors

TECHNISCHE DATEN / TECHNICAL DATA		
Widerstandswerte (mOhm)	Resistance values (mOhm)	0.2, 0.3, 0.5, 1, 1.5, 2, 2.5, 3, 4, 5 mOhm
Toleranz	Tolerance	1 %, 5 %
Temperaturkoeffizient	Temperature coefficient (tcr)	ab/from 50 ppm/K (20 °C - 60 °C) *
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 3 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) < 1.0 % nach/after 2000 h ( $T_K$ = 120 °C)

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

### MERKMALE / FEATURES

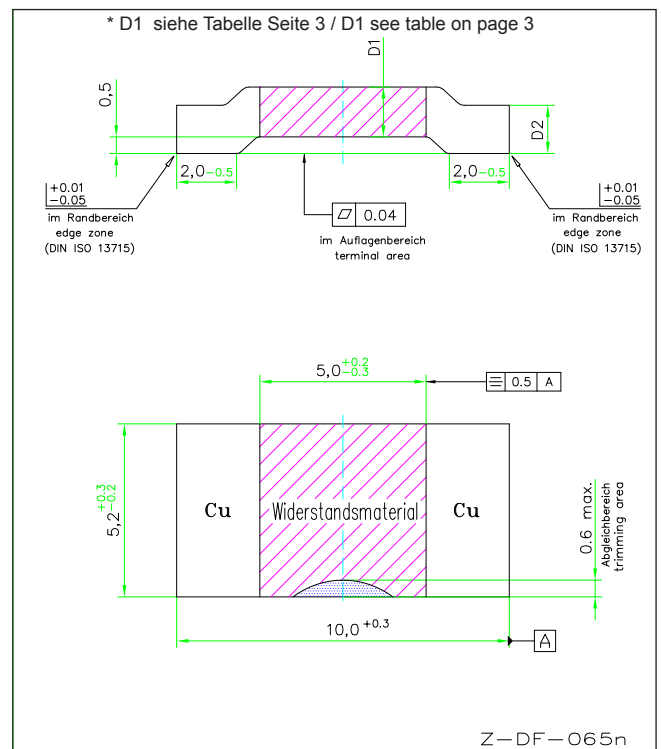
- 5 Watt Dauerleistung\*  
5 Watt permanent power\*
- Dauerströme bis 160 A (0,2 mOhm)  
Continuous current load up to 160 A (0.2 mOhm)
- Massive Kupferanschlüsse  
Heavy copper connectors
- Sehr gute Langzeitstabilität  
Excellent long term stability
- Ideal geeignet für die Montage auf DCB Keramik / IMS Substrat  
Ideal suited for mounting on DBC / IMS substrate
- Geeignet für Löttemperaturen bis 350 °C / 30 sek  
Max. solder temperature up to 350 °C / 30 sec
- AEC-Q200 qualifiziert  
AEC-Q200 qualification



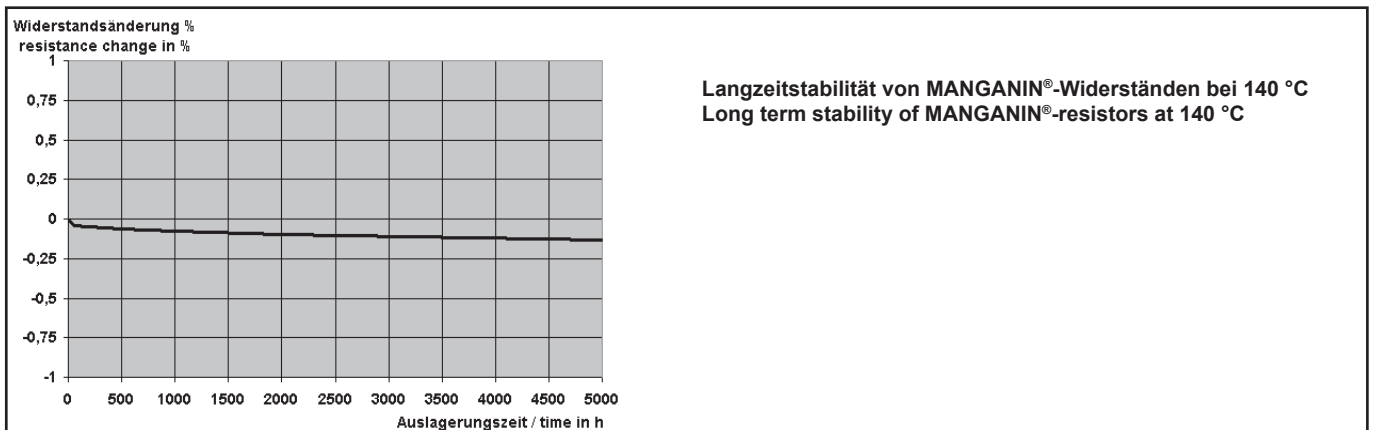
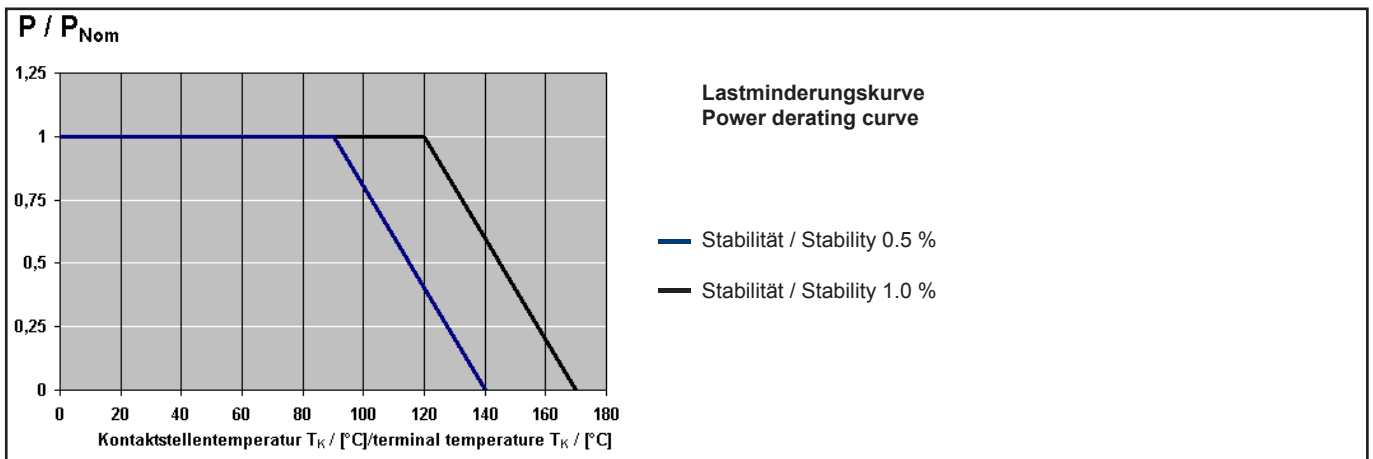
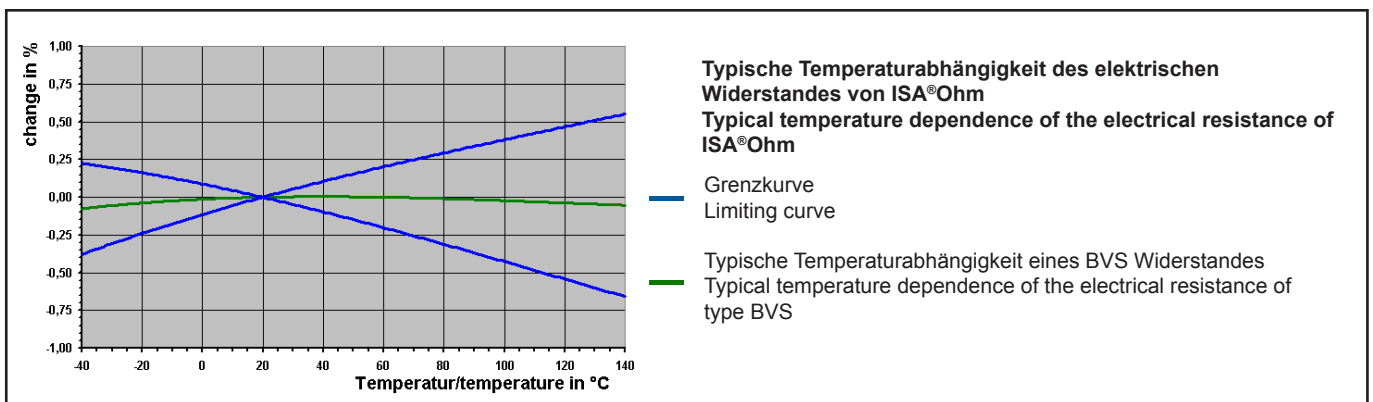
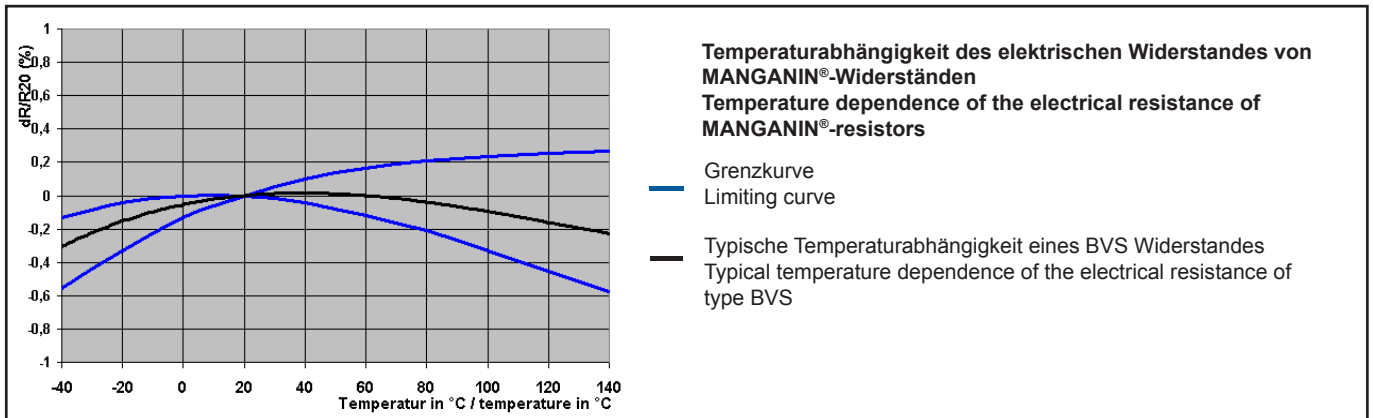
Bauform / Size 3920

### 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
- Leistungsmodulare  
Power modules



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

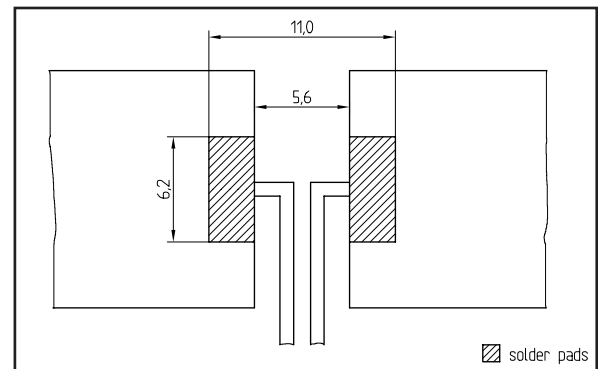


Typ	Wert / mΩ	Dicke D1 / mm	Rthi / K/W	TK / ppm/K	P / W
Type	Value mΩ	Thickness D1 / mm	Rthi / K/W	TC / ppm/K	P / W
BVS-Z-R0002	0.2	1.42	3	200	5
BVS-M-R0003	0.3	1.42	4.5	150	5
BVS-M-R0005	0.5	0.84	8	70	5
BVS-M-R0007	0.7	0.60	11	60	5
BVS-M-R001	1	0.42	15	<50	4
BVS-A-R0015	1.5	0.91	12	<50	4.5
BVS-A-R002	2	0.66	16	<50	4
BVS-A-R0025	2.5	0.52	20	<50	3.5
BVS-A-R003	3	(0.43 ±0.05)	22	<50	3
BVS-A-R004	4	(0.31 ±0.05)	30	<50	2.5
BVS-I-R001	1	1.32	8	<50	5
BVS-I-R002	2	0.66	16	<50	4
BVS-I-R003	3	0.44	24	<50	3
BVS-I-R004	4	0.35	32	<50	2.5
BVS-I-R005	5	0.35	50	<50	2
BVS-K-R000		1.00		$I_{max} = 160 A$	

Abkürzung Typ / Abbreviation type A=Aluchrom, M=MANGANIN®, Z=ZERANIN®30, I=ISAOHM®, K=SF-Kupfer verzinkt/tinned

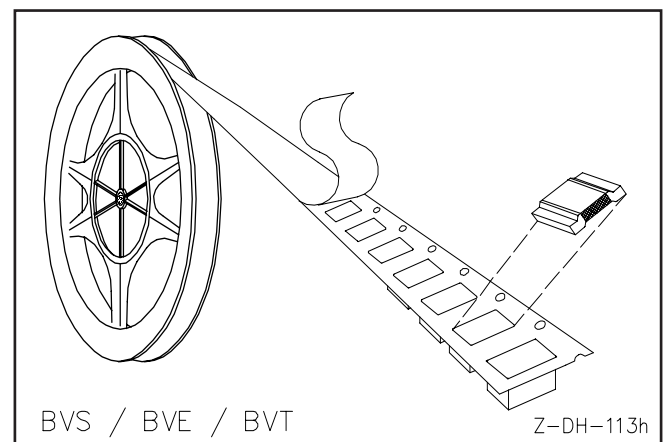
Lötprofil Vorschlag / Recommended solder profile			
Reflow-, IR-löten, Wellenlöten nach Rückfrage Reflow-, infrared-soldering, wave-soldering upon request			
Temperature	260 °C	255 °C	217 °C
Zeit / time (s)	Peak	40	90
<b>RoHS 2002/95/EG konform seit Produktstart.</b> Ausführliche Informationen erhalten Sie auf unserer Homepage: <a href="http://www.isabellenhuette.de">www.isabellenhuette.de</a> <b>RoHS 2002/95/EC compliance since product launch.</b> For more information please visit our website: <a href="http://www.isabellenhuette.de">www.isabellenhuette.de</a>			

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



GURTINFORMATIONEN / TAPE & REEL INFORMATION	
Norm / Specification	DIN EN 60286-3
Gurtbreite / Tape width	16 mm
Anzahl Bauteile / Parts per reel	3000 Stk. / pcs.

BESTELLBEZEICHNUNG / ORDERING CODE			
<b>BVS-M-R0005-1.0</b>			
Typ	Material	Widerstandswert	Toleranz
Type	Material	Resistance value	Tolerance
BVS	MANGANIN®	0.5 mΩ	1.0 %



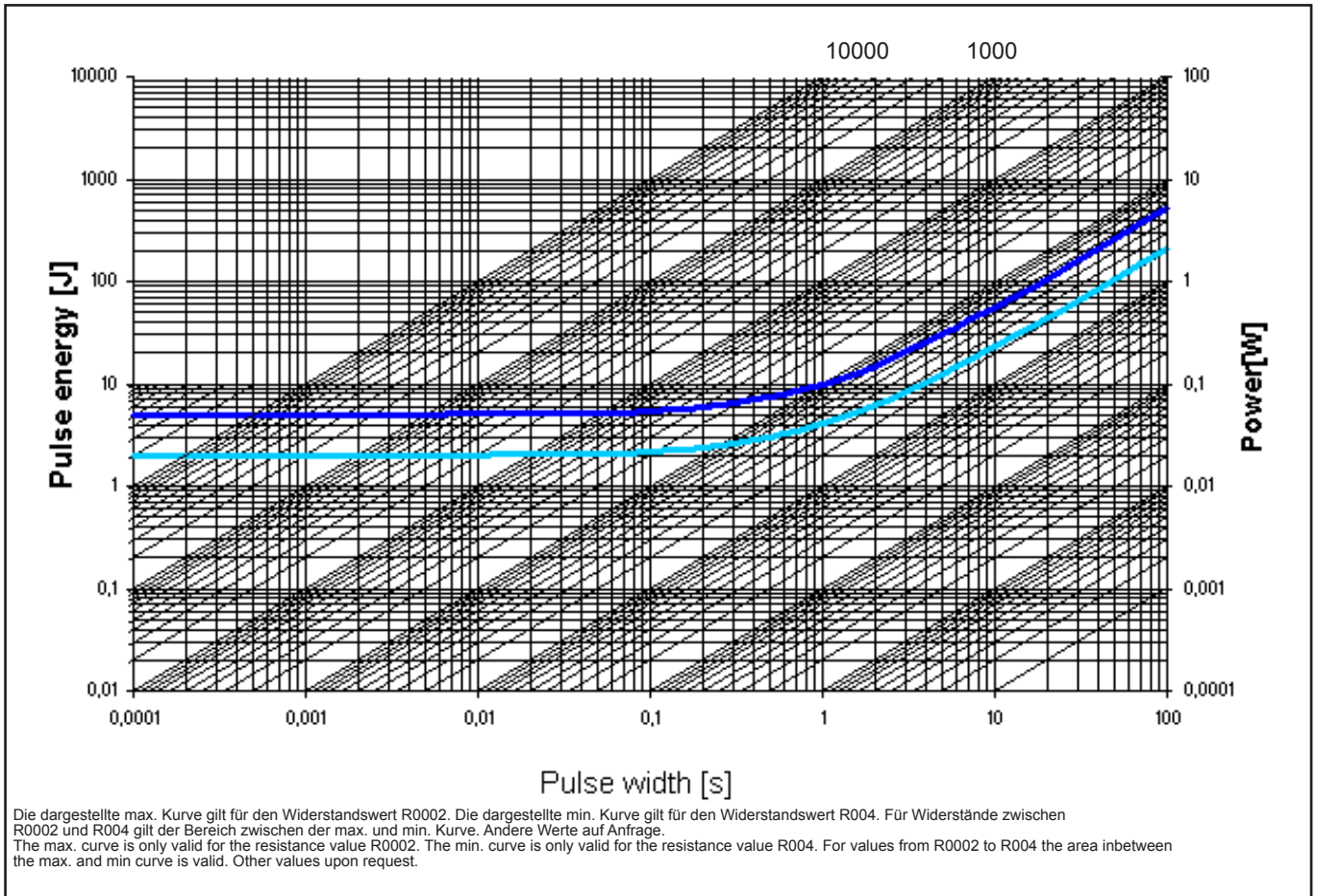
### Gewährleistung

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	0.2 %	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 R ≥ 1 mOhm	< 50 ppm/K R ≥ 1 mOhm
Thermal EMF	0 - 100 °C	2 µV/ °K max.	2 µV/ °K
Frequency Characteristic	inductivity	< 3 nH	< 3 nH