



## ISA-WELD® // PRECISION RESISTORS



### BVS

#### Size 3920



#### Features

- Power rating up to 12 W<sup>1</sup>
- Continuous current load up to 245 A (0.2 mOhm)
- Heavy copper connectors
- Excellent long-term stability
- Max. solder temperature up to 350 °C / 30 sec
- AEC-Q200 qualified
- RoHS 2011/65/EU compliant



#### Applications

- Current sensor for power hybrid applications
- High current applications for the automotive market
- Frequency converters
- Power modules

#### Technical data <sup>1</sup>

Resistance values	<b>mOhm</b>	0.2 to 5
Tolerance	<b>%</b>	1 / 5
Temperature coefficient (20-60 °C)	<b>ppm/K</b>	from 50
Applicable temperature range	<b>°C</b>	-65 to +170
Power rating <b>P<sub>100°C</sub></b>	<b>W</b>	up to 5
Power rating <b>P<sub>70°C</sub></b>	<b>W</b>	up to 12
Internal heat resistance (R <sub>thi</sub> )	<b>K/W</b>	from 3
Inductance	<b>nH</b>	<3
Stability (at rated power) deviation after 2000h, T <sub>K</sub> = Terminal temperature		<0.5 % (T <sub>K</sub> =100 °C) <1.0 % (T <sub>K</sub> =130 °C)

<sup>1</sup> For detailed information see table on page 3

#### Ordering code

BVS - M - R0005 - 1.0

.....	Tolerance
.....	Resistance value [Ohm] / „R“ represents decimal point
.....	Material (MANGANIN®)
.....	Type



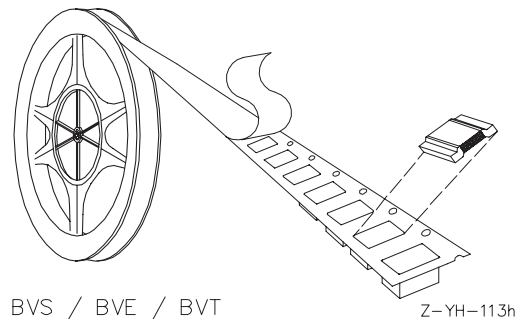
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**Recommended solder profile**

Reflow-, IR-soldering				
Temperature	°C	260	255	217
Time	sec	peak	40	90

**Tape and reel information**

Specification	DIN EN 60286-3			
Tape width	mm	16		
Reel size	inch	13		
Parts per reel	pcs	3000		
Packaging weight	g	474		

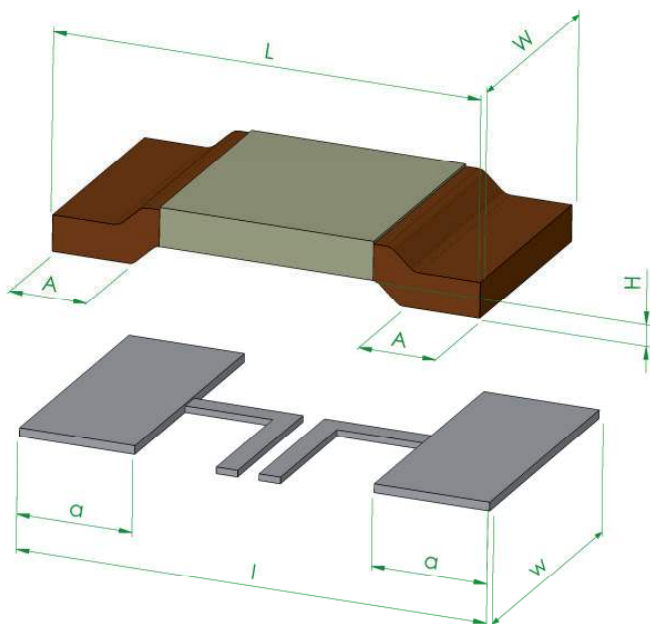


**Specification**

Parameters	Test conditions	Specified values
Temperature Cycling	2000 cycles (-55 °C to +150 °C)	±0.5 %
Low Temperature Storage and Operation	-65 °C for 250 h	±0.1 %
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	10 g, 10-2000 Hz, 24 h each axis	±0.2 %
Operational Life	2000 h, T <sub>k</sub> max at rated power	±1.0 %, T <sub>k</sub> = 130 °C
High Temperature Exposure	2000 h / 170 °C	±1.0 % (in covered condition)*
Bias Humidity	+85 °C, 85 r.F., 1000 h	±0.5 %

\* for MANGANIN® and ZERANIN®30

**Mechanical dimensions and pcb-layout proposal (Reflow-soldering) [mm]**



Type	L	W	H	A
BVS	10.0 +0.3	5.2 +0.3/-0.2	0.5 ±0.1	2.0 -0.5

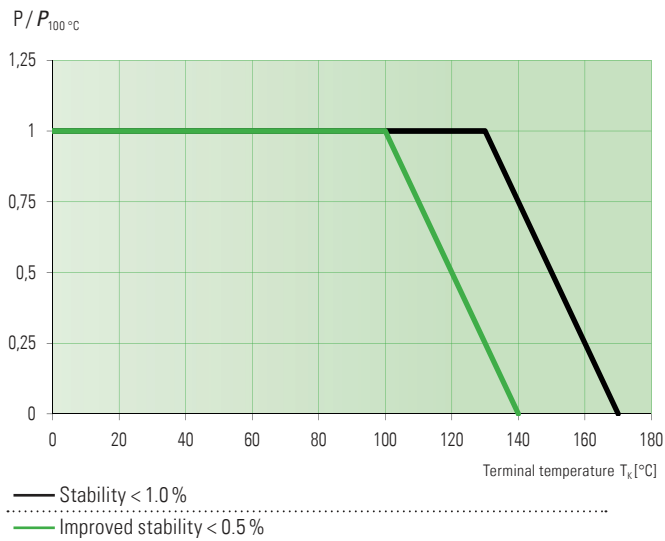
  

Solder pad type	l	w	a
BVS	11.0	6.2	2.7

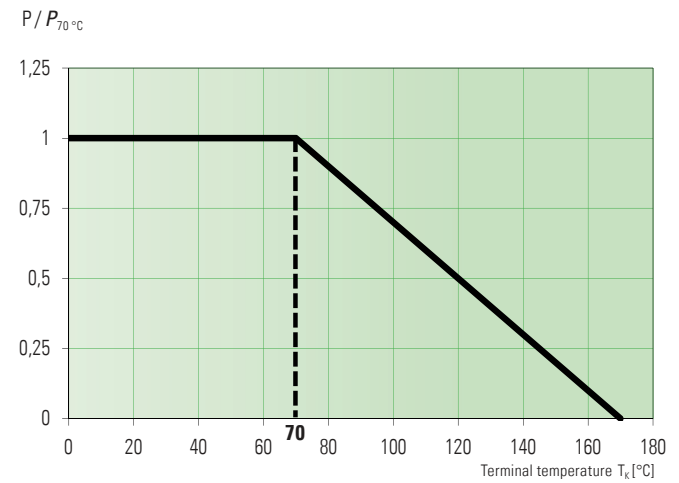


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**Power derating curve at 100 °C**  
Example: BVS-M-R0005



**Power derating curve at 70 °C**  
Example: BVS-M-R001



Type	Value [mΩ]	R <sub>thi</sub> [K/W]	TCR [ppm/K]	P <sub>70 °C</sub> [W]	P <sub>T<sub>K</sub> &gt; 100 °C</sub> T <sub>K</sub> = 170 °C - (R <sub>thi</sub> × P)	Note
BVS-Z-R0002	0.2	3	200	12	5	
BVS-M-R0003	0.3	4.5	150	10	5	
BVS-M-R0005	0.5	8	70	9	5	
BVS-M-R0007	0.7	11	60	8	5	
BVS-M-R001	1	15	<50	7	4	
BVS-A-R001	1	9	<50	8	5	
BVS-A-R0015	1.5	12	<50	7	4.5	
BVS-A-R002	2	16	<50	6	4	Aluchrom material has ferromagnetic properties and should not be used in AC-applications
BVS-A-R0028	2.8	21	<50	5	3	
BVS-A-R003	3	22	<50	5	3	
BVS-A-R004	4	30	<50	4	2.5	
BVS-I-R002	2	16	<50	6	4	
BVS-I-R003	3	22	<50	5	3	
BVS-I-R004	4	30	<50	4	2.5	
BVS-I-R005	5	38	<50	3	2	
BVS-V-R002	2	20	<50	5	3.5	
BVS-K-R000	<0.2 mΩhm			I <sub>max</sub> = 160 A		

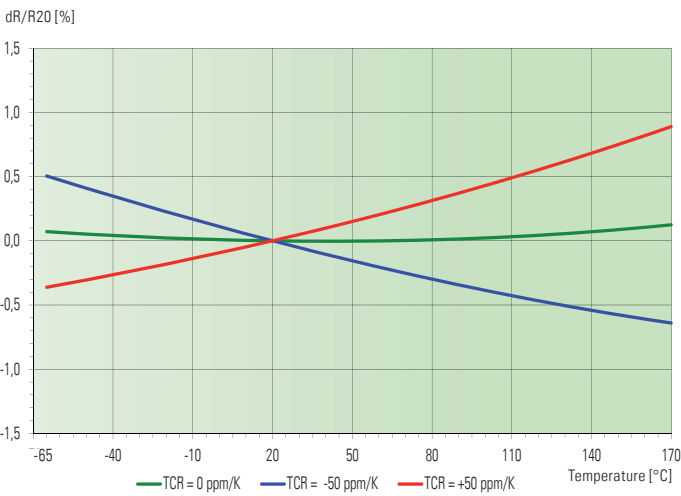
Abbreviation type:  
 A=Aluchrom  
 I=ISAOHM®  
 K=SF-copper tinned  
 M=MANGANIN®  
 V=NOVENTIN®  
 Z=ZERANIN®30

T<sub>K</sub>: terminal temperature (Kontaktstellentemperatur)

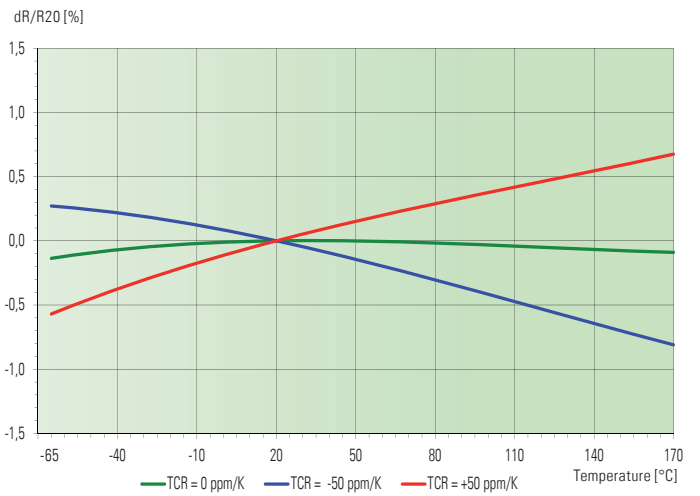


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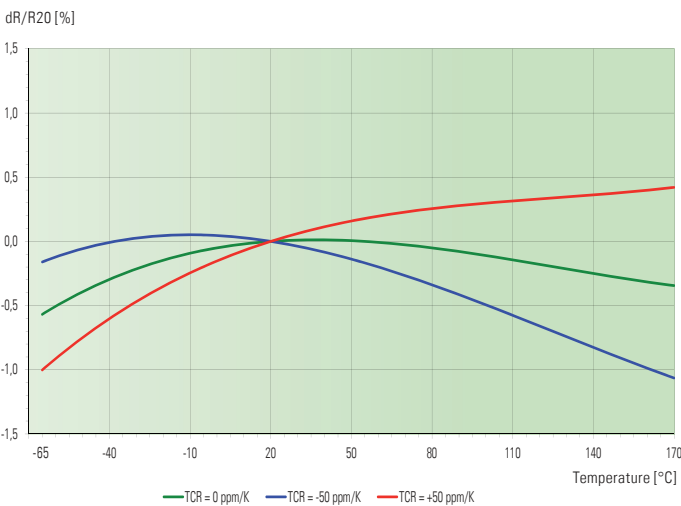
**Temperature dependence of the electrical resistance of Aluchrom resistors**



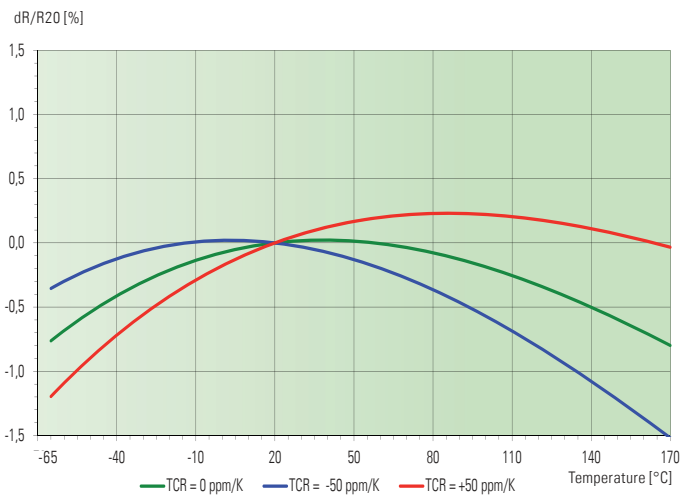
**Temperature dependence of the electrical resistance of ISAOHM® resistors**



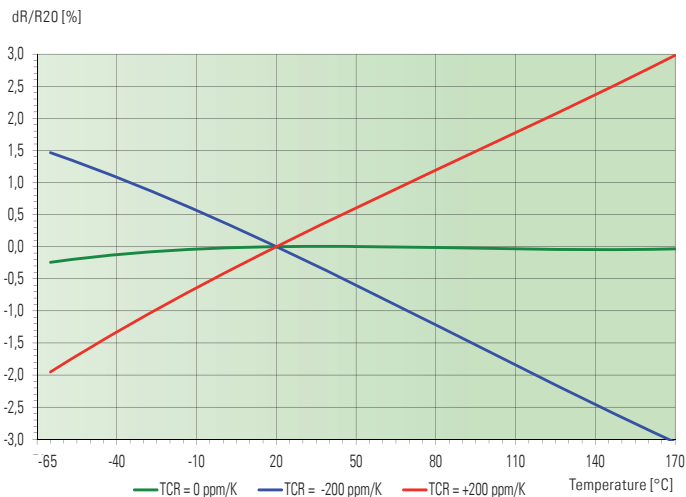
**Temperature dependence of the electrical resistance of MANGANIN® resistors**



**Temperature dependence of the electrical resistance of NOVENTIN® resistors**



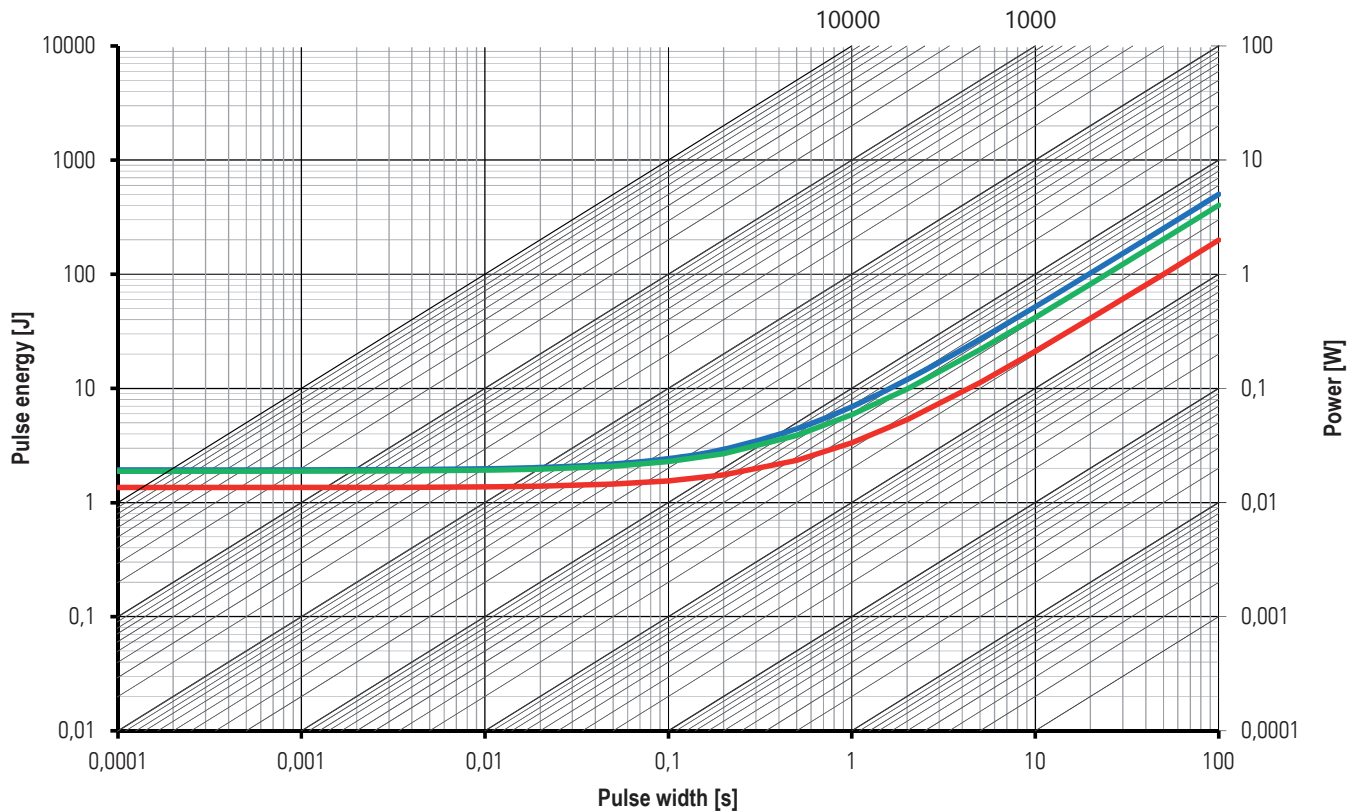
**Temperature dependence of the electrical resistance of ZERANIN® resistors**





**Maximum pulse energy respectively pulse power for permanent operation**

**BVS-Z-R0002; BVS-M-R001; BVS-I-R005**  
Maximum pulse energy / power continuous operation



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