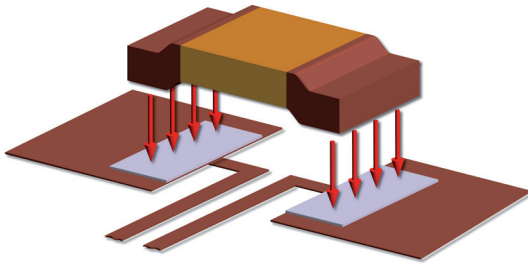




## ISA-WELD® // PRECISION RESISTORS



### BVS Size 3920



#### Features

- Power rating up to 12 W<sup>1</sup>
- Continuous current load up to 160 A (0.2 mOhm)
- Heavy copper connectors
- Excellent long-term stability
- Ideal suited for mounting on DBC / IMS substrate
- 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

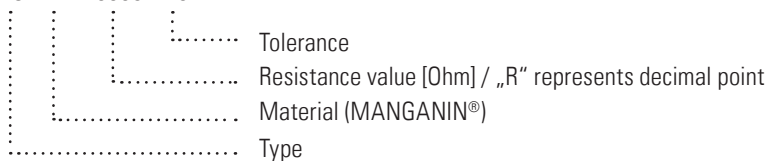
#### Technical data <sup>1</sup>

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>	-55 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





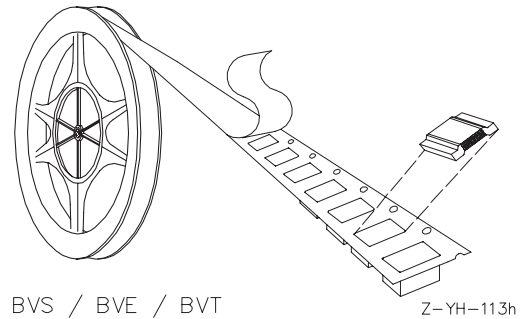
BVS // 3920

**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		

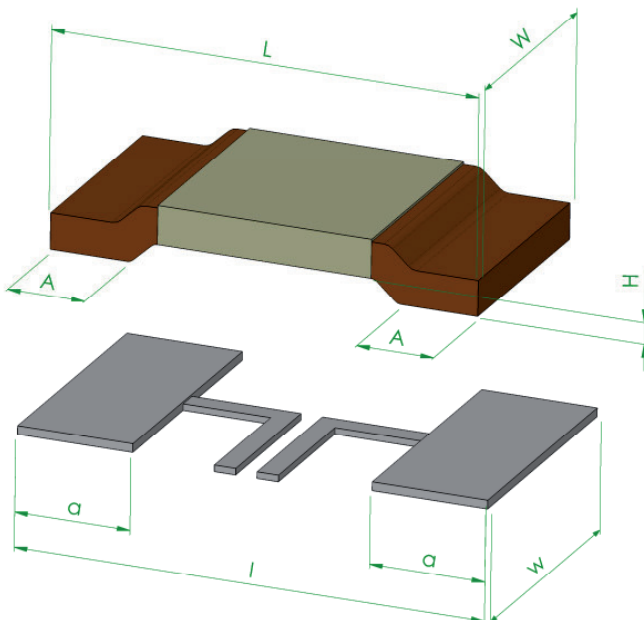


**Specification**

Parameters	Test conditions	Specified values
Temperature Cycling	2000 cycles (-55 °C to +150 °C)	±0.5 %
Low Temperature Storage and Operation	-65 °C for 24 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	20 g, 10-2000 Hz	±0.2 %
Operational Life	2000 h, TK max at nominal load	±1.0 %, TK = 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

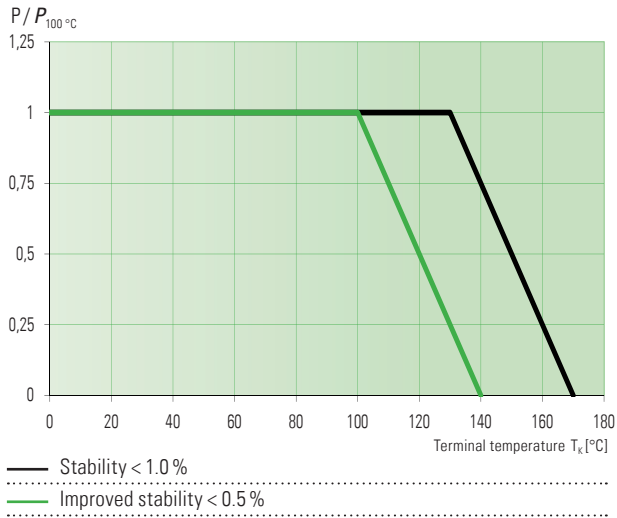
Solder pad type	l	w	a
BVS	11.0	6.2	2.7



BVS // 3920

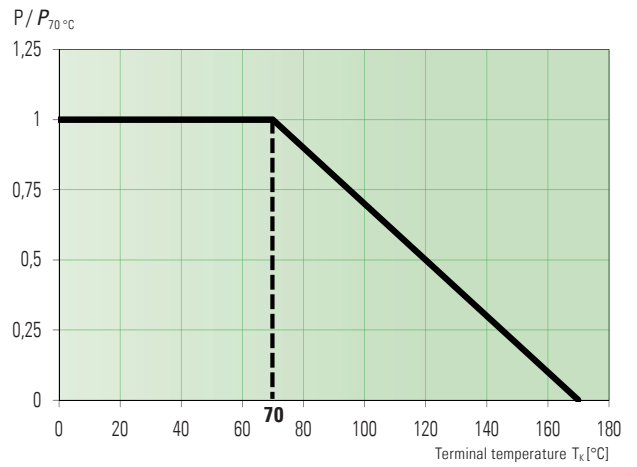
**Power derating curve at 100 °C**

Example: BVS-M-R0005



**Power derating curve at 70 °C**

Example: BVS-M-R001



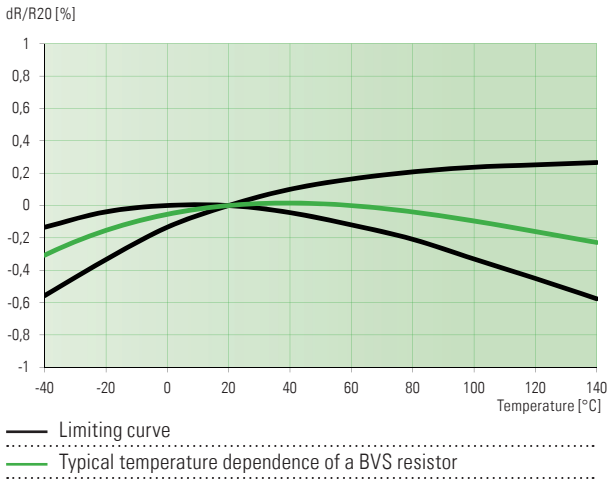
Type	Value [mΩ]	R <sub>thi</sub> [K/W]	TC [ppm/K]	P <sub>100 °C</sub> [W]	P <sub>70 °C</sub> [W]
BVS-Z-R0002	0.2	3.0	200	5.0	12.0
BVS-M-R0003	0.3	4.5	150	5.0	10.0
BVS-M-R0005	0.5	8.0	70	5.0	9.0
BVS-M-R0007	0.7	11.0	60	5.0	8.0
BVS-M-R001	1.0	15.0	<50	4.0	7.0
BVS-A-R001	1.0	9.0	<50	5.0	8.0
BVS-A-R0015	1.5	12.0	<50	4.5	7.0
BVS-A-R002	2.0	16.0	<50	4.0	6.0
BVS-A-R0028	2.8	21.0	<50	3.0	5.0
BVS-A-R003	3.0	22.0	<50	3.0	5.0
BVS-A-R004	4.0	30.0	<50	2.5	4.0
BVS-I-R002	2.0	16.0	<50	4.0	6.0
BVS-I-R003	3.0	24.0	<50	3.0	5.0
BVS-I-R004	4.0	32.0	<50	2.5	4.0
BVS-I-R005	5.0	50.0	<50	2.0	3.0
BVS-K-R000	< 0.2 mΩ		I <sub>max</sub> = 160 A		

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

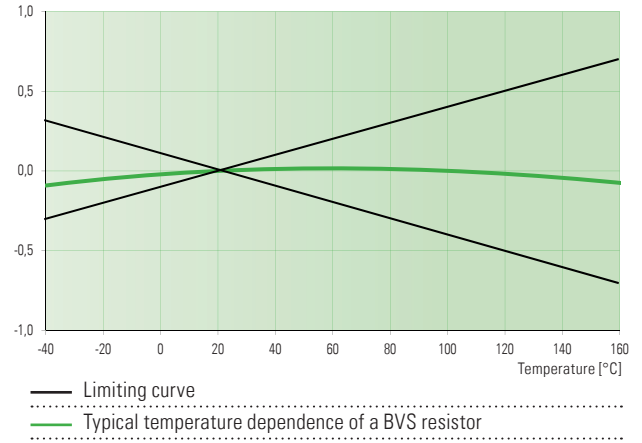


BVS // 3920

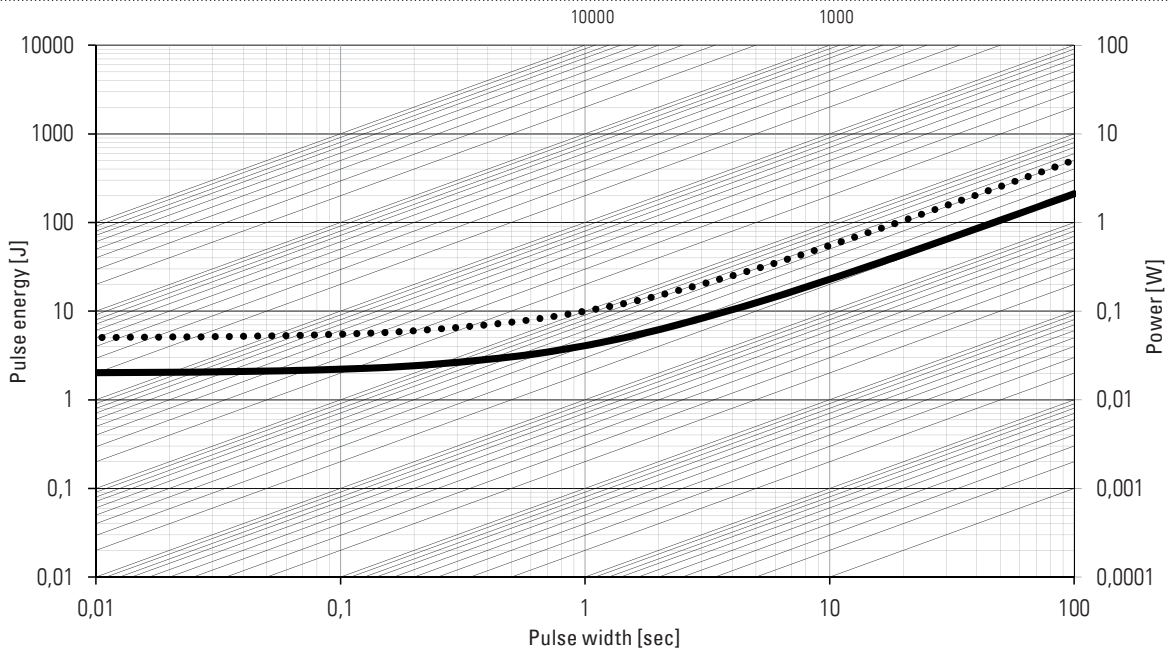
Temperature dependence of the electrical resistance of MANGANIN® resistors



Temperature dependence of the electrical resistance of ISA0HM® resistors



Maximum pulse energy respectively pulse power for permanent operation



- This curve is valid for the resistance value R0002 only.
- This curve is valid for the resistance value R005 only. For other values the area inbetween the max. and min curve is valid.

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