

ISA-WELD® // PRECISION RESISTORS



BVS Size 3920



Features

- Power rating up to 12 W¹
- 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 ¹

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

¹ 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

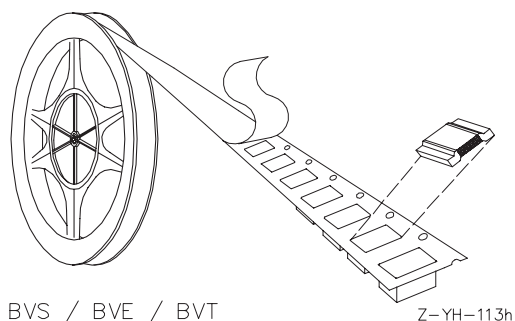
Alternative solder profile

H2 soldering under vacuum

Temperature	°C	350
Time	min	20

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	



BVS / BVE / BVT

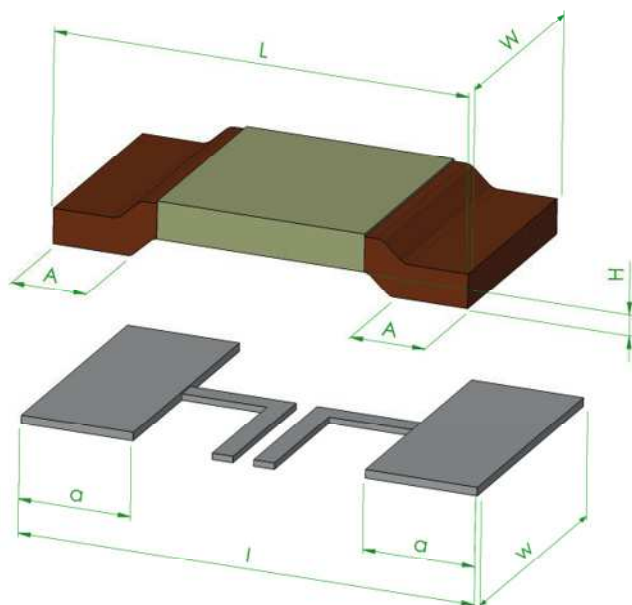
Z-YH-113h

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 _K max at rated power	±1.0 %, T _K = 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

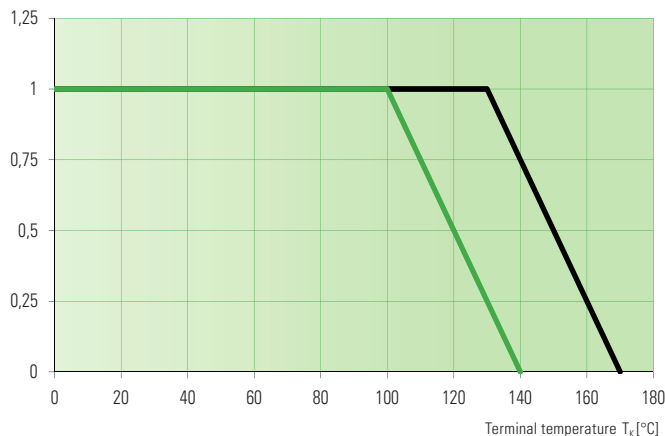
Solder pad type	l	w	a
BVS	11.0	6.2	2.7



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Power derating curve at 100 °C

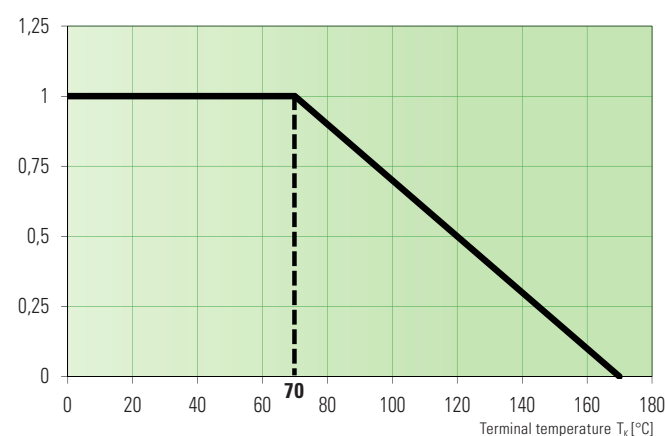
Example: BVS-M-R0005

 $P / P_{100\text{ °C}}$ 

— Stability < 1.0 %
 — Improved stability < 0.5 %

Power derating curve at 70 °C

Example: BVS-M-R001

 $P / P_{70\text{ °C}}$ 

Type	Value [mΩ]	R_{thi} [K/W]	TCR [ppm/K]	$P_{70\text{ °C}}$ [W]	$P_{T_K > 100\text{ °C}}$ $T_K = 170\text{ °C} - (R_{thi} \times P)$	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-R001	1	9	<50	8	5	Samples available, qualification in process
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			$I_{max} = 160\text{ A}$		

Abbreviation type:

A=Aluchrom

I=ISA0HM®

K=SF-copper tinned

M=MANGANIN®

V=NOVENTIN®

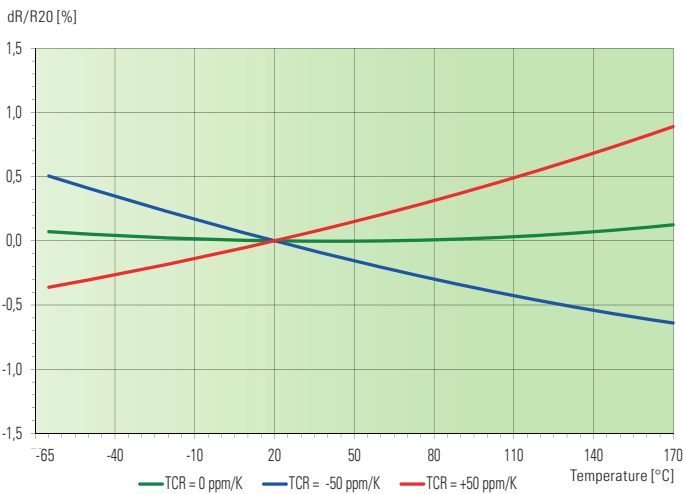
Z=ZERANIN®30

 T_K : terminal temperature (Kontaktstellentemperatur)

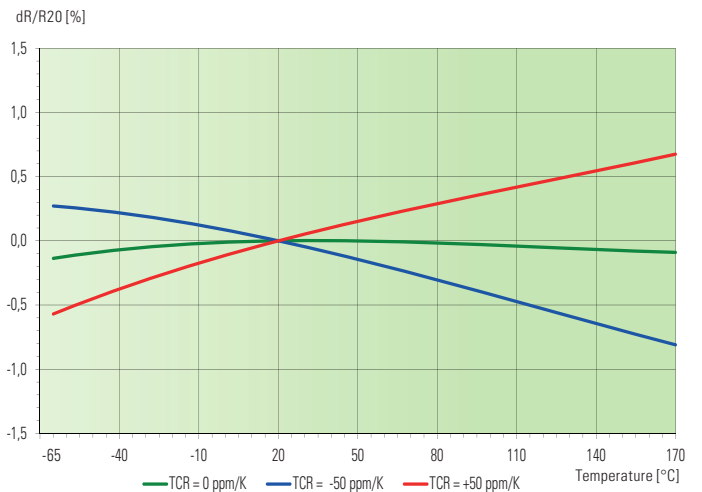


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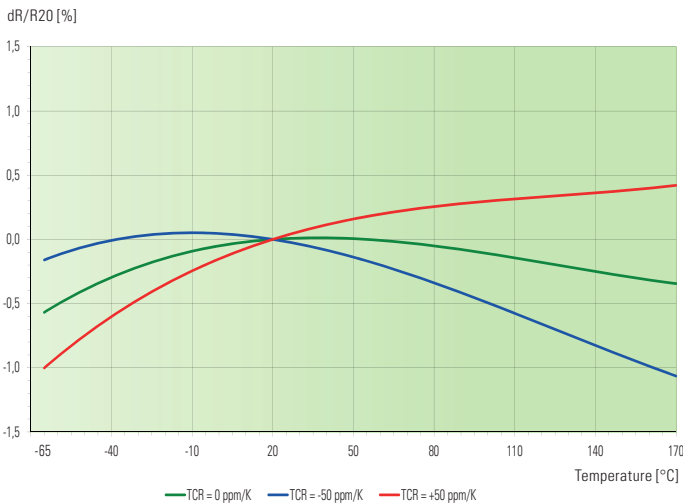
Temperature dependence of the electrical resistance of Aluchrom resistors



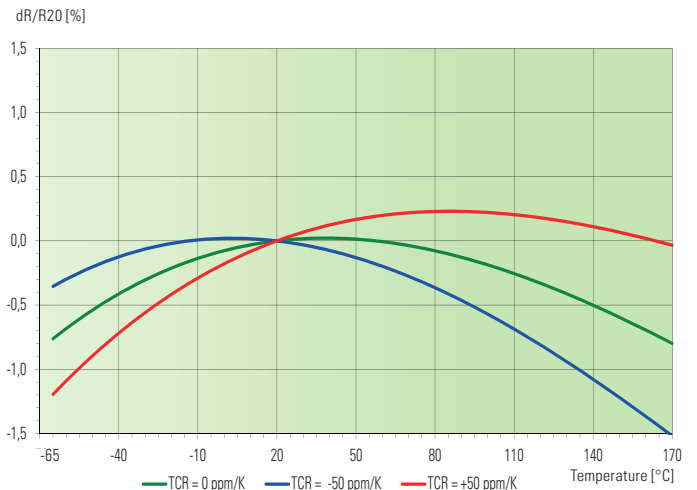
Temperature dependence of the electrical resistance of ISAOHM® resistors



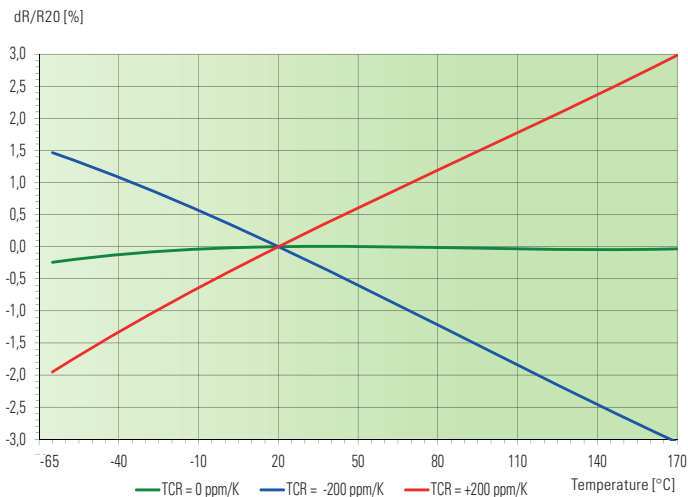
Temperature dependence of the electrical resistance of MANGANIN® resistors



Temperature dependence of the electrical resistance of NOVENTIN® resistors



Temperature dependence of the electrical resistance of ZERANIN® resistors

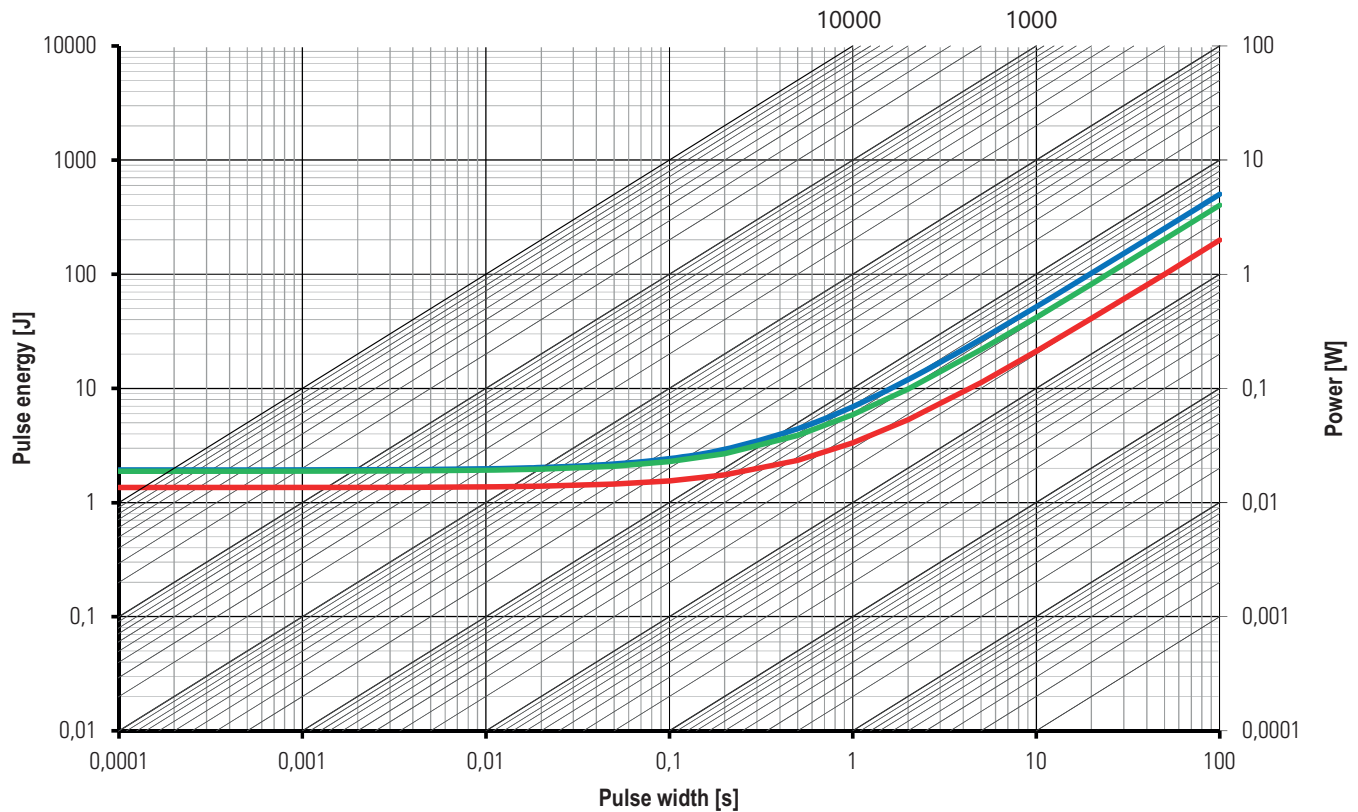




Maximum pulse energy respectively pulse power for permanent operation

BVS-Z-R0002; BVS-M-R001; BVS-I-R005

Maximum pulse energy / power continuous operation



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