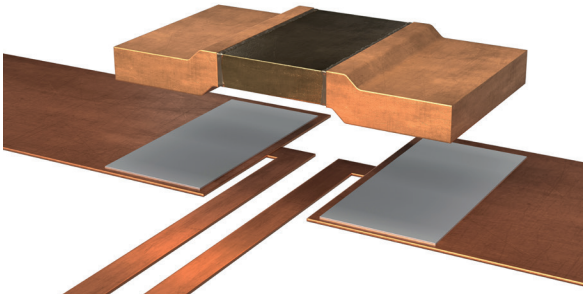
ISABELLENHÜTTE
Innovation by Tradition

ISA-WELD® // PRECISION RESISTORS

BVE // Size 5930



Features

- Power rating up to 15 W
- Continuous current load up to 315 A (0.1 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

RoHS

Applications

- Current sensor for power hybrid applications
- For welding on bus bars
- High current applications for the automotive market
- Frequency converters
- Power modules

Technical data [1]

Resistance values	**mOhm**	0.1 to 3
Tolerance	**%**	1 / 5
Temperature coefficient (20-60 °C)	**ppm/K**	nominal value ±50
Applicable temperature range	**°C**	-55 to +170
Power rating $P_{70\,°C}$	**W**	up to 15
Internal heat resistance (R_{thi})	**K/W**	from 2
Inductance	**nH**	<3
Stability (at rated power) deviation after 2000h	**%**	<0.5 ($T_{max.}$ = 140 °C) <1.0 ($T_{max.}$ = 170 °C)

[1] For detailed information see table on page 4

Ordering code

BVE - M - R0005 - 1.0

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

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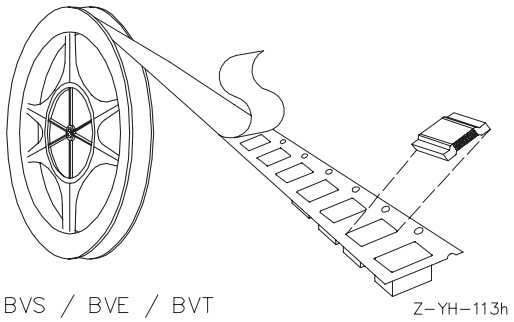
Recommended solder profile

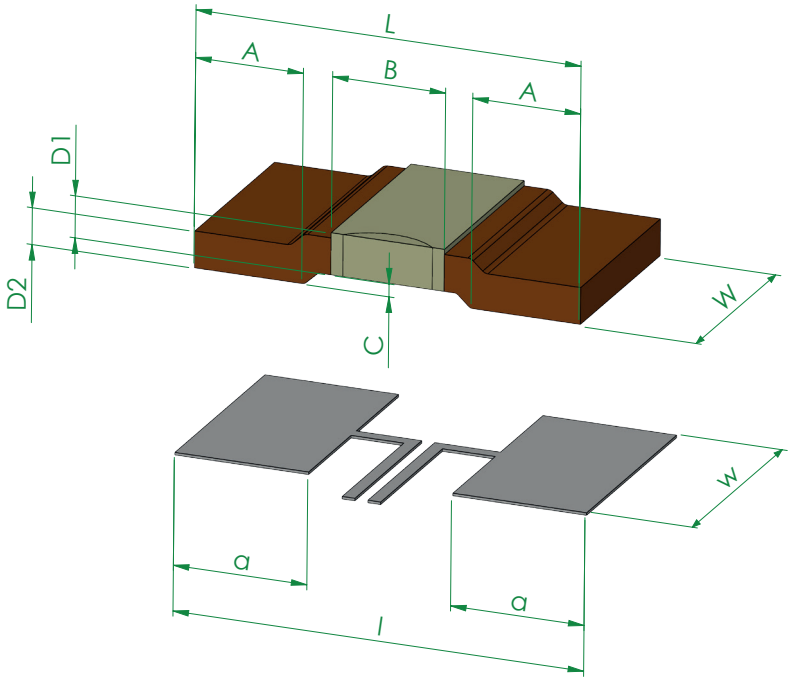
Reflow-, IR- and wave-soldering				
Temperature	**°C**	260	255	217
Time	**sec**	peak	40	90

Tape and reel information

Specification		DIN EN 60286-3
Tape width	**mm**	24
Reel size	**inch**	13
Parts per reel	**pcs**	2000
Packaging weight	**g**	563



Mechanical dimensions and pcb-layout proposal (Reflow-soldering) [mm] // Z-YE-583b



type:	value / mOhm	L	W	A	B	C	D1	D2
BVE-Z-R0001	0.1	15 ±0.2	7.75 +0.3/-0.2	4.95 +0.1/-0.7	3.7 +0.2/-0.3	0.5 ±0.1	1.42 ±0.1	1.42 ±0.1
BVE-M-R0002	0.2	15 ±0.2	7.75 +0.3/-0.2	4.2 +0.1/-0.7	5 +0.2/-0.3	0.5 ±0.1	1.42 ±0.1	1.42 ±0.1
BVE-M-R0003	0.3	15 ±0.2	7.75 +0.3/-0.2	4.2 +0.1/-0.7	5 +0.2/-0.3	0.5 ±0.1	0.94 ±0.1	0.84 ±0.1
BVE-M-R0005	0.5	15 ±0.2	7.75 +0.3/-0.2	4.2 +0.1/-0.7	5 +0.2/-0.3	0.5 ±0.1	0.56 ±0.1	0.56 ±0.1
BVE-A-R0005	0.5	15 ±0.2	7.75 +0.3/-0.2	4.2 +0.1/-0.7	4.4 +0.2/-0.3	0.5 ±0.1	1.62 ±0.1	1.42 ±0.1
BVE-A-R001	1	15 ±0.2	7.75 +0.3/-0.2	4.2 +0.1/-0.7	4.9 +0.2/-0.3	0.5 ±0.1	0.91 ±0.1	0.84 ±0.1
BVE-A-R002	2	15 ±0.2	7.75 +0.3/-0.2	4.2 +0.1/-0.7	4.9 +0.2/-0.3	0.5 ±0.1	0.44 ±0.05	0.64 ±0.1
BVE-A-R003	3	15 ±0.2	7.75 +0.3/-0.2	4.2 +0.1/-0.7	5 +0.2/-0.3	0.5 ±0.1	0.31 ±0.05	0.4 ±0.1

solder pad type:	l	w	a
BVE	**16**	8.75	5.2

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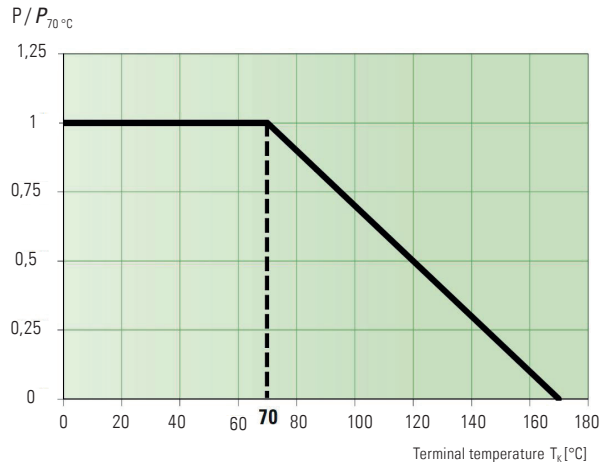
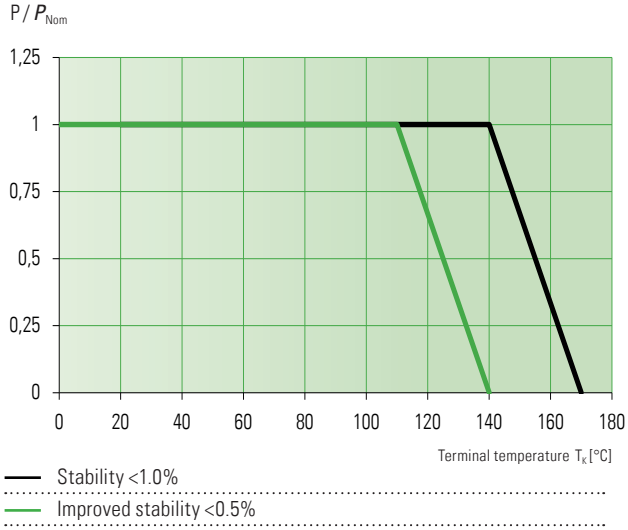
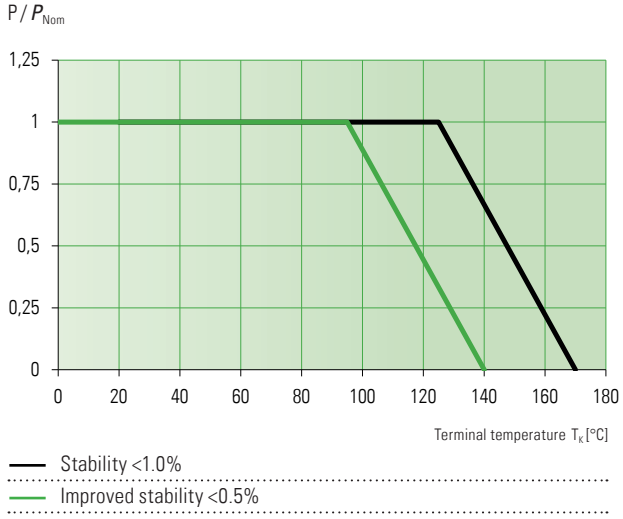
Power derating curve at $P_{70\,°C}$



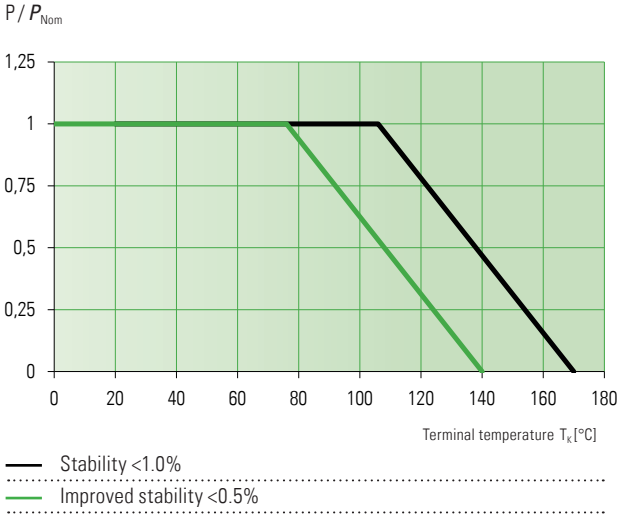
Power derating curve BVE-Z-R0001



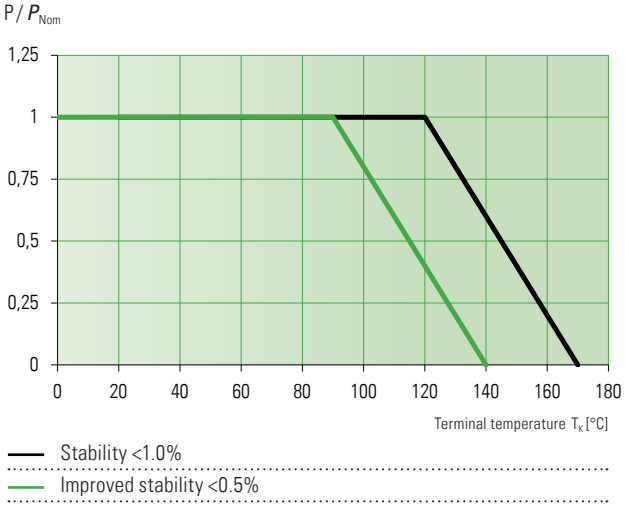
Power derating curve BVE-M-R0002 // BVE-M-R0003



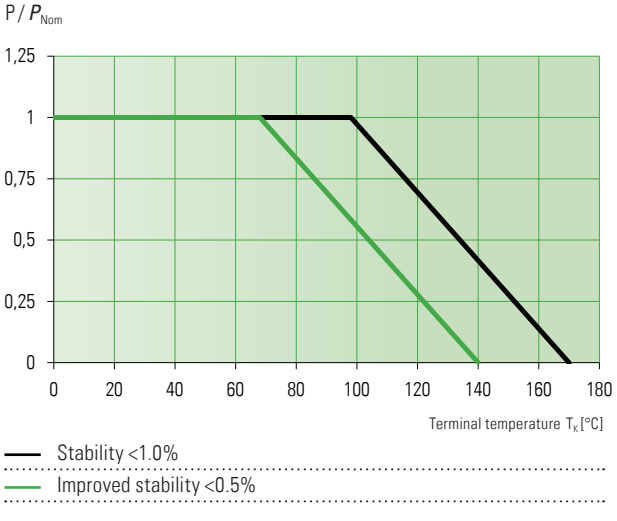
Power derating curve BVE-M-R0005



Power derating curve BVE-A-R0005



Power derating curve BVE-A-R001



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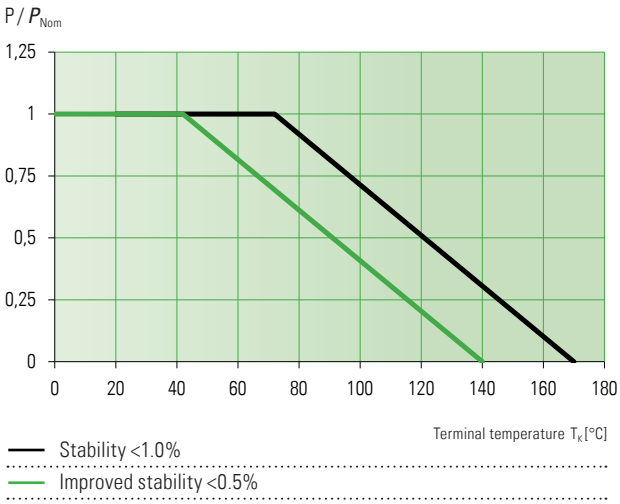
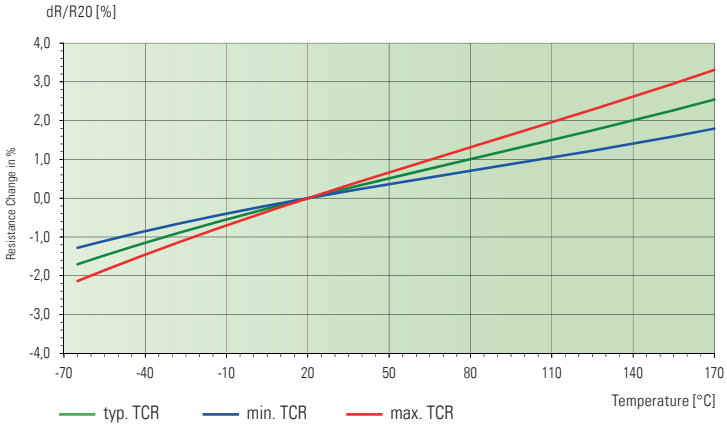
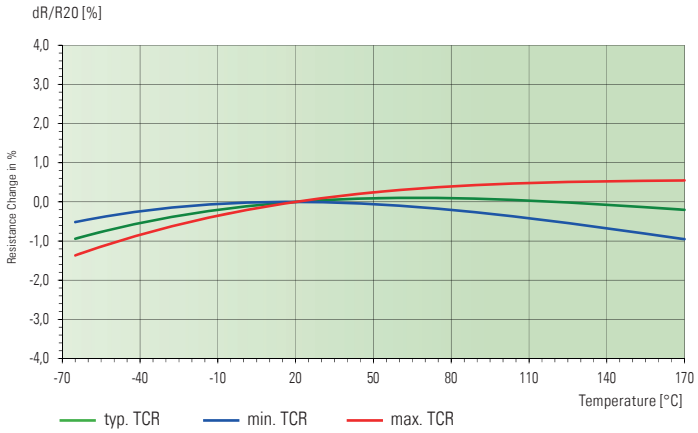
Power derating curve BVE-A-R002 // BVE-A-R003



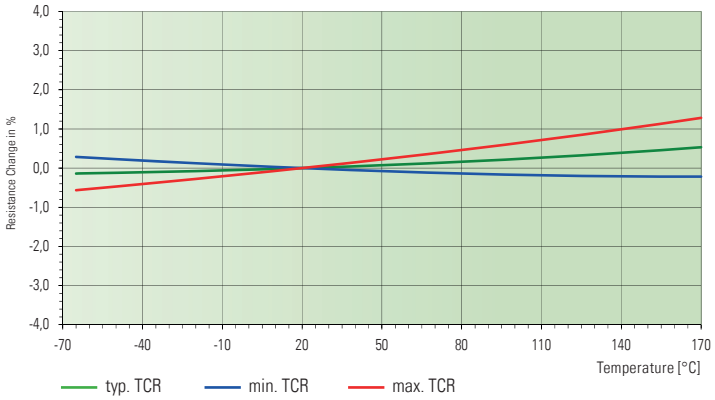
Temperature dependence of the electrical resistance of ZERANIN® for BVE-Z-R0001



Temperature dependence of the electrical resistance of MANGANIN® for BVE-M-R0005



Temperature dependence of the electrical resistance of Aluchrom for BVE-A-R0005



Type	Material	Value [mΩ]	R_{thi} [K/W]	TCR (20-60 °C) [ppm/K]	$P_{70\,°C}$* [W]	Note
BVE-Z-R0001	ZERANIN®30	0.1	2.0	170 ±50	15	C-samples of 1% version available/ series delivery Q3/23
BVE-M-R0002	MANGANIN®	0.2	3.0	50 ±50	15	
BVE-M-R0003	MANGANIN®	0.3	4.5	50 ±50	10	
BVE-M-R0005	MANGANIN®	0.5	8.0	25 ±50	8	
BVE-A-R0005	Aluchrom	0.5	5.0	25 ±50	10	Material has ferromagnetic properties and should not be used in AC-applications
BVE-A-R001	Aluchrom	1.0	8.0	0 ±50	9	
BVE-A-R002	Aluchrom	2.0	14.5	0 ±50	7	
BVE-A-R003	Aluchrom	3.0	24	0 ±50	4	

* Recommended max. power (limited by thermal conditions of the assembly)

Note

For calculation of the maximum derating terminal temperature (T_K) the following formula can be used: $T_K = T_{max.} - (R_{thi} \times P_{70\,°C})$.

Example for BVE-M-R0005: T_K = 170 °C - (8 K/W x 8 W) = 106 °C.

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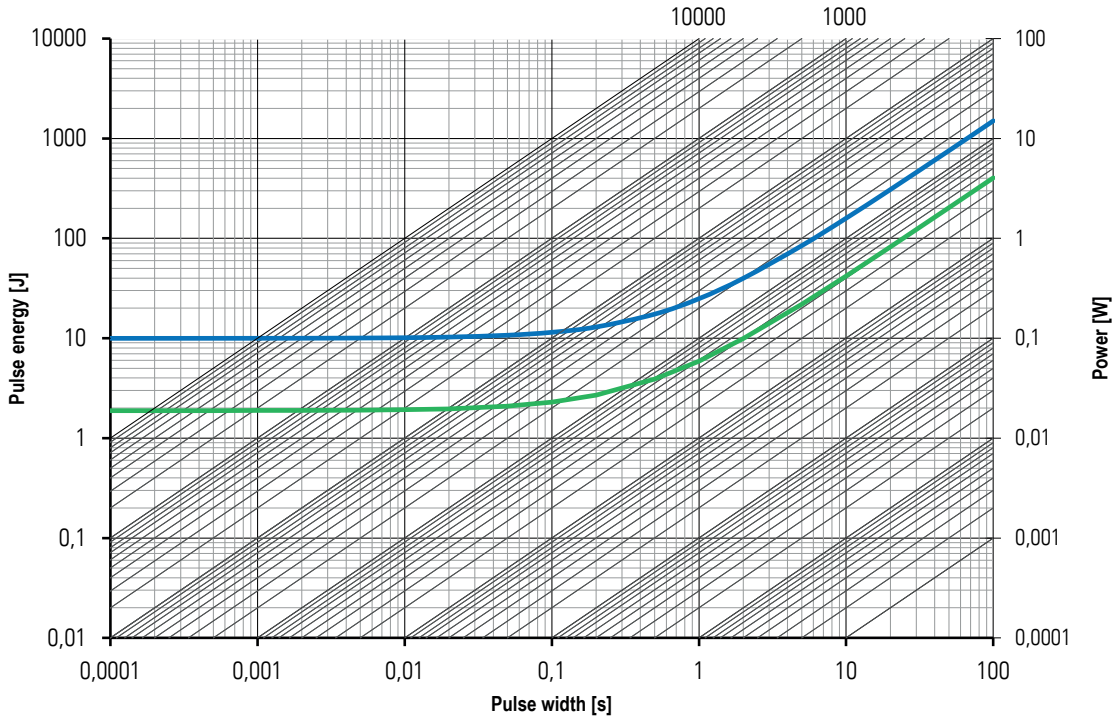
Maximum pulse energy respectively pulse power for permanent operation

BVE-Z-R0001; BVE-A-R003

Maximum pulse energy / power for continuous operation (T_K=70 °C)



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	10 g, 10-2000 Hz	±0.2%
Operational Life	2000 h, max. T_K at rated power	±1.0%
High Temperature Exposure	2000 h / 170 °C (in covered condition)*	±1.0%
Bias Humidity	+85 °C, 85 r.F., 1000 h	±0.5%

* for MANGANIN® and ZERANIN®30

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