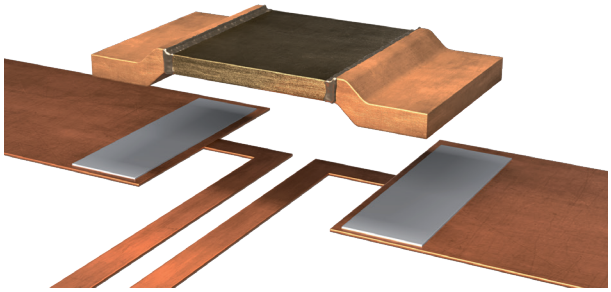
ISABELLENHÜTTE
Innovation by Tradition

ISA-WELD® // PRECISION RESISTORS

BVT (2512)



Features

- Power rating up to 10 W [1]
- Continuous current load up to 182 A (0.3 mOhm)
- Heavy copper connectors
- Excellent long-term stability
- High application temperature range -65 to +170 °C
- RoHS 2011/65/EU compliant
- AEC-Q200 qualified

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 6.8**
Tolerance	**%**	1 / 5
Temperature coefficient (20-60 °C)	**ppm/K**	from ±50
Applicable temperature range	**°C**	-65 to +170
Power rating $P_{70°C}$	**W**	up to 10
Internal heat resistance (R_{thi})	**K/W**	from 4
Inductance	**nH**	<2
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 3

Ordering code

BVT - Z - R0003 - 1.0

- Tolerance
- Resistance value [Ohm] / „R“ represents decimal point
- Material (ZERANIN®30)
- Type

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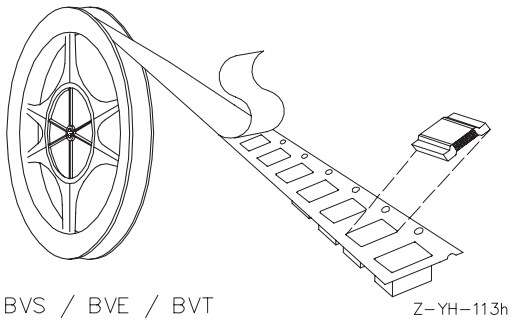
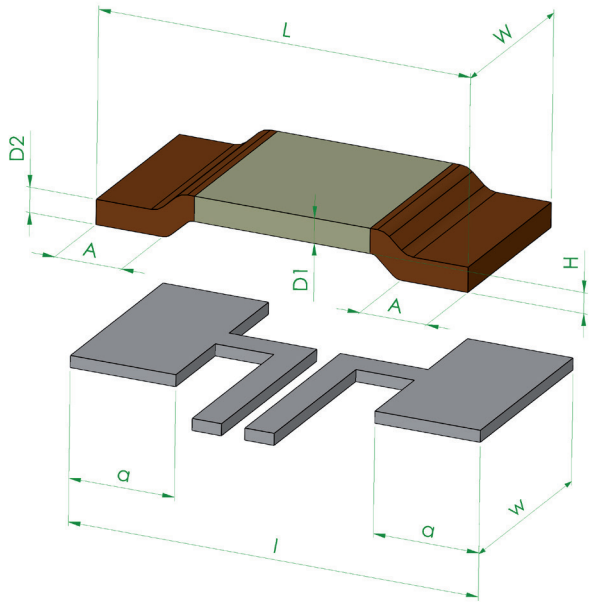
Tape and reel information

Specification		DIN EN 60286-3
Tape width	**mm**	12
Reel size	**inch**	13
Parts per reel	**pcs**	5000
Packaging weight	**g**	453



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



type	value / mOhm	L	W	H	A	D1	D2
BVT-K-R000		6.35 ±0.15	3.05 ±0.2	0.35 ±0.05	1.14 -0.4	0.42 ±0.05	0.42 ±0.05
BVT-Z-R0002	0.2	6.35 ±0.15	3.05 ±0.2	0.35 ±0.05	1.39 -0.4	0.92 ±0.1	0.92 ±0.1
BVT-Z-R0003	0.3	6.35 ±0.15	3.05 ±0.2	0.35 ±0.05	1.14 -0.4	1 ±0.1	1 ±0.1
BVT-M-R0005	0.5	6.35 ±0.15	3.05 ±0.2	0.35 ±0.05	1.14 -0.4	0.85 ±0.1	0.84 ±0.1
BVT-M-R001	1	6.35 ±0.15	3.05 ±0.2	0.35 ±0.05	1.14 -0.4	0.42 ±0.05	0.42 ±0.05
BVT-M-R00136	1.36	6.35 ±0.15	3.05 ±0.2	0.35 ±0.05	1.14 -0.4	0.31 ±0.05	0.42 ±0.05
BVT-V-R002	2	6.35 ±0.15	3.05 ±0.2	0.35 ±0.05	1.14 -0.4	0.46 ±0.1	0.42 ±0.05
BVT-I-R002	2	6.35 ±0.15	3.05 ±0.2	0.35 ±0.05	1.14 -0.4	0.72 ±0.1	0.64 ±0.1
BVT-I-R003	3	6.35 ±0.15	3.05 ±0.2	0.35 ±0.05	1.14 -0.4	0.48 ±0.05	0.42 ±0.05
BVT-A-R003	3	6.35 ±0.15	3.05 ±0.2	0.35 ±0.05	1.14 -0.4	0.48 ±0.05	0.42 ±0.05
BVT-I-R004	4	6.35 ±0.15	3.05 ±0.2	0.35 ±0.05	1.14 -0.4	0.36 ±0.05	0.42 ±0.05
BVT-I-R0045	4.5	6.35 ±0.15	3.05 ±0.2	0.35 ±0.05	1.14 -0.4	0.36 ±0.05	0.42 ±0.05
BVT-I-R005	5	6.35 ±0.15	3.05 ±0.2	0.35 ±0.05	1.14 -0.4	0.36 ±0.05	0.42 ±0.05
BVT-I-R0068	6.8	6.35 ±0.15	3.05 ±0.2	0.35 ±0.05	1.14 -0.4	0.36 ±0.05	0.42 ±0.05

Solder pad type:	l	w	a
BVT	7	3.4	1.8

Recommended surface mount soldering methods

Reflow-, IR- and vacuum soldering

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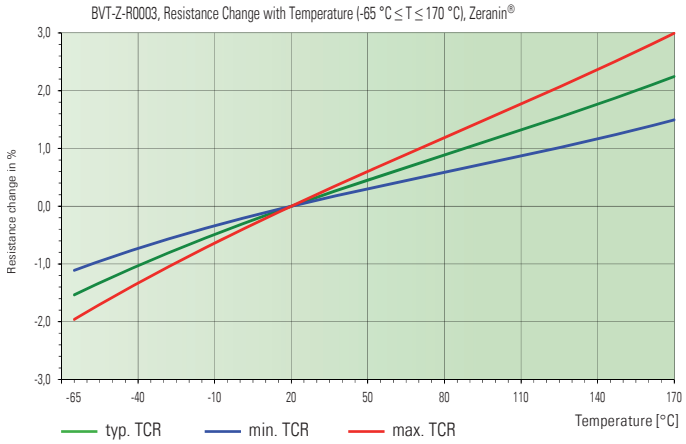
Electrical specification

Type	Material	Value [mΩ]	R_{thi} [K/W]	TCR [ppm/K]	$P_{70\,°C}$* [W]	$P_{>100\,°C}$* [W]	Note
BVT-K-R000	Copper	0	I_{max} = 100 A				
BVT-Z-R0002	ZERANIN®30	0.2	3	200 ±50	10	6.7	C-samples available, series delivery Q2/24
BVT-Z-R0003	ZERANIN®30	0.3	4	150 ±50	10	5	
BVT-M-R0005	MANGANIN®	0.5	8	70 ±50	10	4	
BVT-M-R001	MANGANIN®	1.0	14	50 ±50	6	4	
BVT-M-R00136	MANGANIN®	1.36	16	30 ±50	5.5	3.8	
BVT-V-R002	NOVENTIN®	2.0	20	0 ±50	5	3.5	
BVT-I-R002	ISAOHM®	2.0	16	0 ±50	6	4.5	
BVT-I-R003	ISAOHM®	3.0	24	0 ±50	4	2.5	
BVT-I-R004	ISAOHM®	4.0	32	0 ±50	3	2	
BVT-I-R0045	ISAOHM®	4.5	36	0 ±50	2.5	1.5	
BVT-I-R005	ISAOHM®	5.0	40	0 ±50	2.5	1.5	
BVT-I-R0068	ISAOHM®	6.8	60	0 ±50	1.5	1	

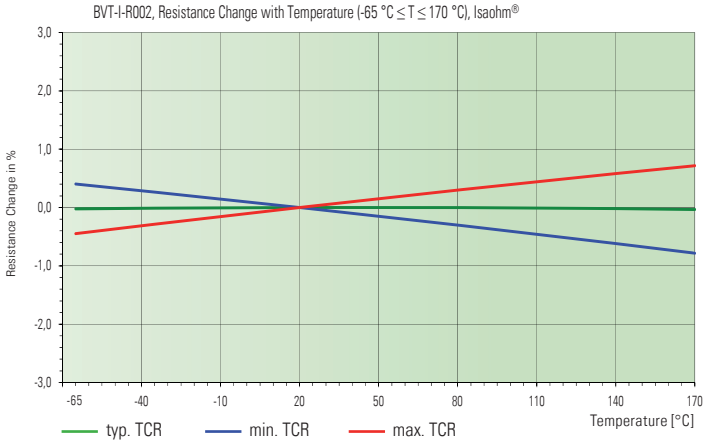
*Recommended max. power (limited by thermal conditions of the assembly)

Note: For calculation of the maximum derating terminal temperature (T_K) the following formula can be used: $T_K = T_{max.} - (R_{thi} \times P)$.
Example for BVT-M-R0005: T_K = 170 °C - (8 K/W x 4 W) = 138 °C.

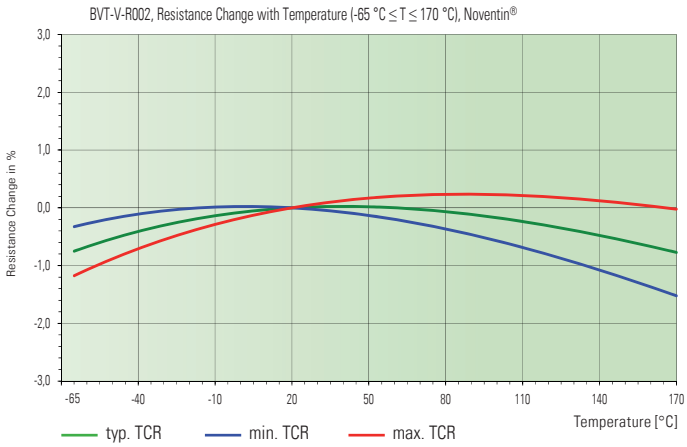
Temperature dependence of the electrical resistance of ZERANIN® resistors. Example: BVT-Z-R0003



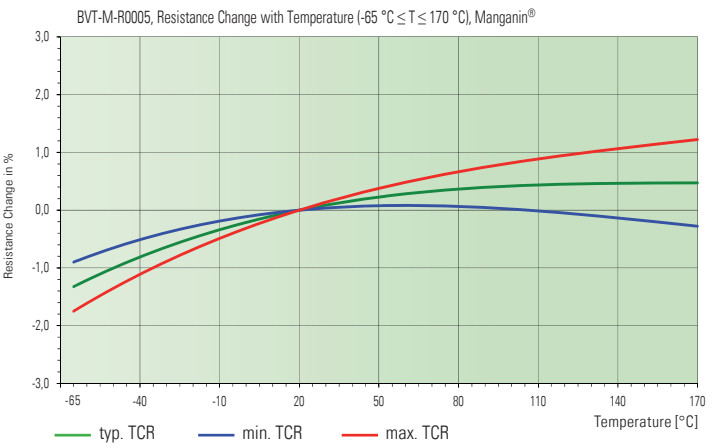
Temperature dependence of the electrical resistance of ISAOHM® resistors. Example: BVT-I-R002



Temperature dependence of the electrical resistance of NOVENTIN® resistors. Example: BVT-V-R002



Temperature dependence of the electrical resistance of MANGANIN® resistors. Example: BVT-M-R0005



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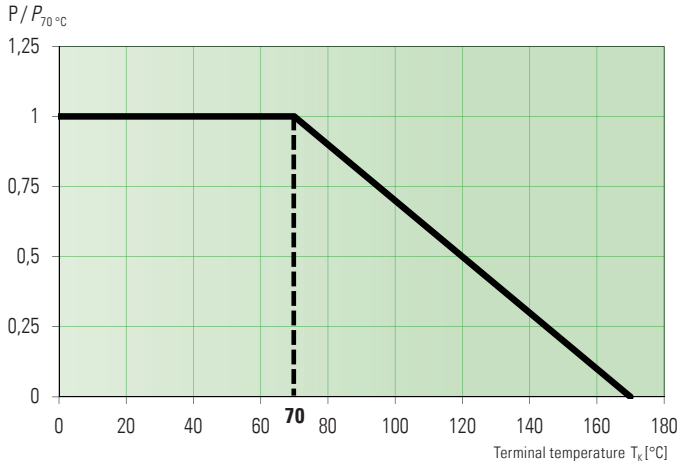
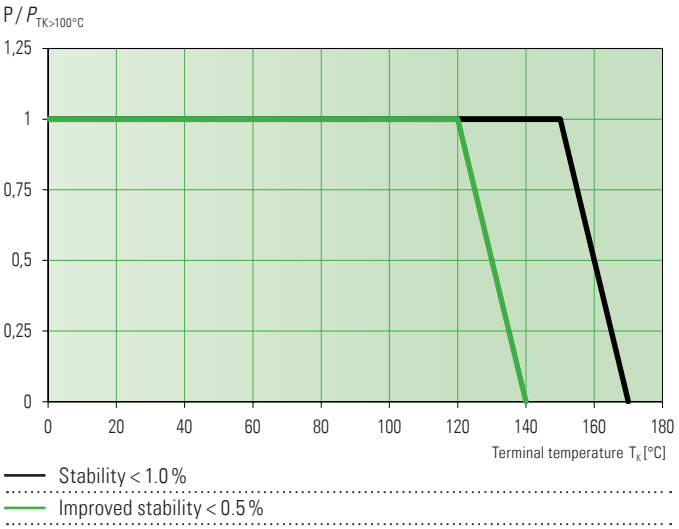
Power derating curve at 70 °C

For detailed information see table on page 4

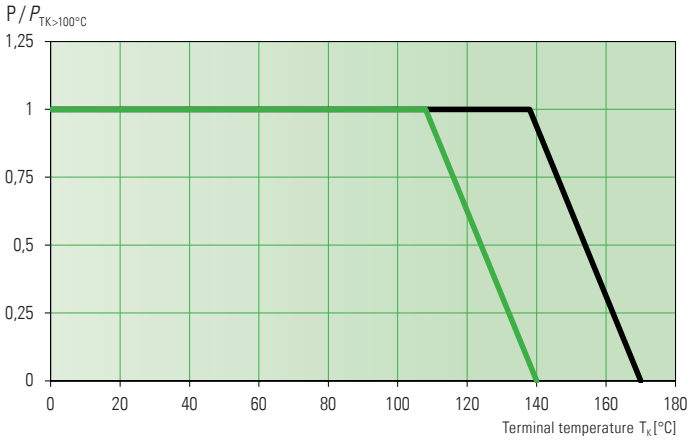


Power derating curve BVT-Z-R0003/BVT-Z-R0002



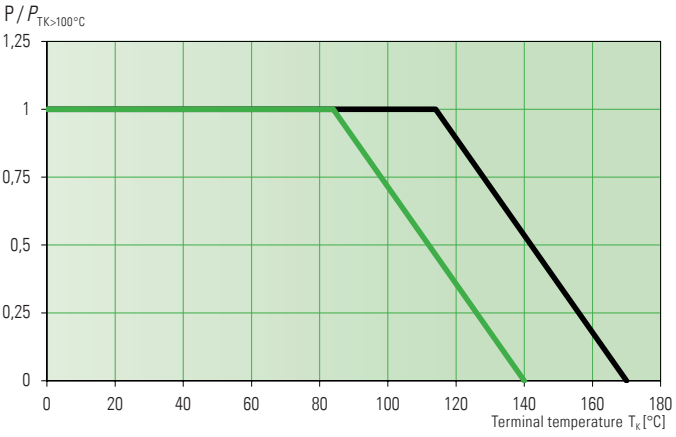
Stability < 1.0 %
Improved stability < 0.5 %

Power derating curve BVT-M-R0005



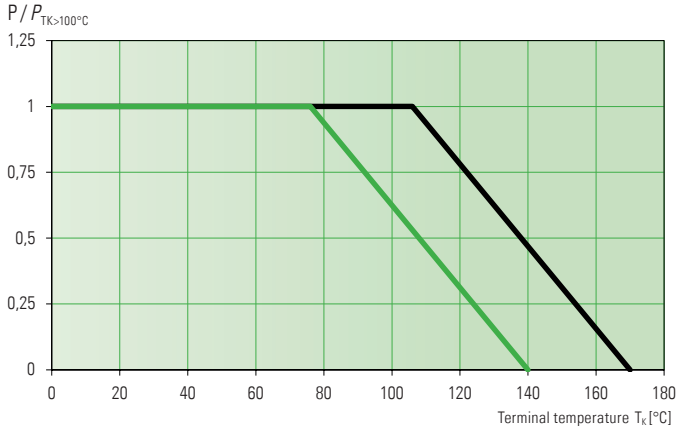
Stability < 1.0 %
Improved stability < 0.5 %

Power derating curve BVT-M-R001



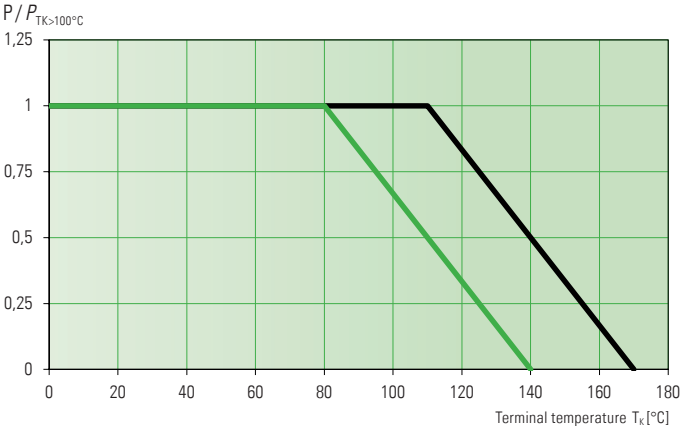
Stability < 1.0 %
Improved stability < 0.5 %

Power derating curve BVT-I-R002 / BVT-R002



Stability < 1.0 %
Improved stability < 0.5 %

Power derating curve BVT-I-R003 / R004 / R0045 / R005 / R0068



Stability < 1.0 %
Improved stability < 0.5 %

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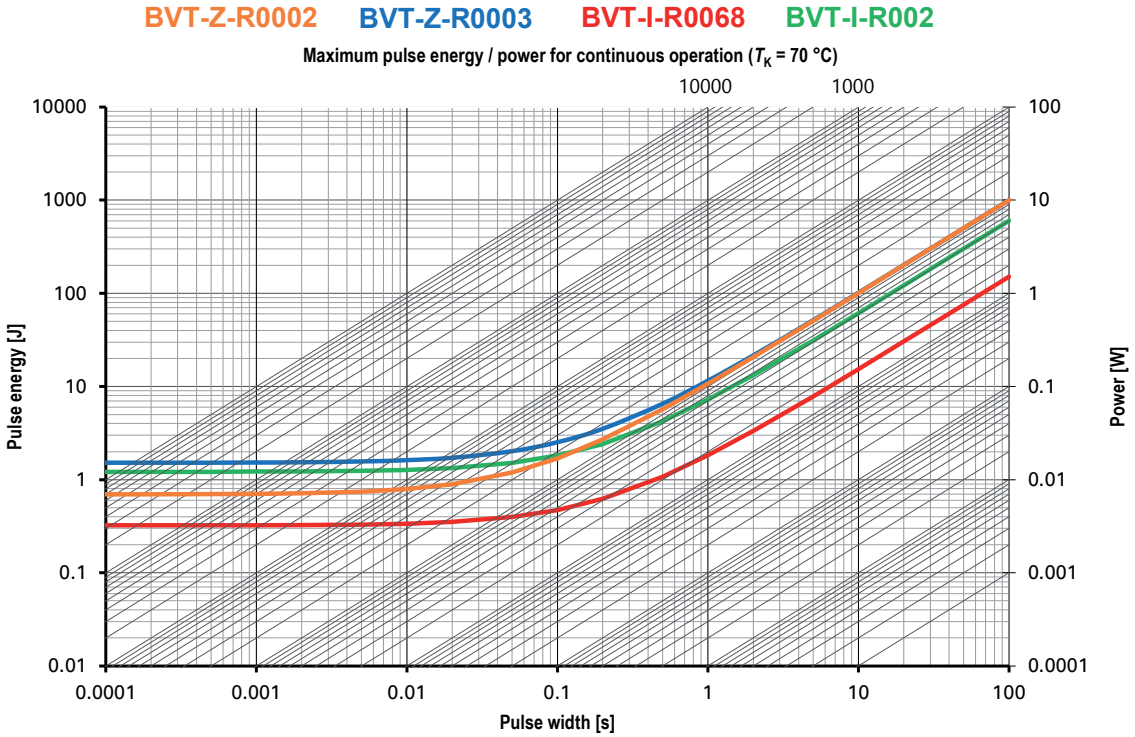
Maximum pulse energy respectively pulse power for permanent operation



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	±0.2%
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, 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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