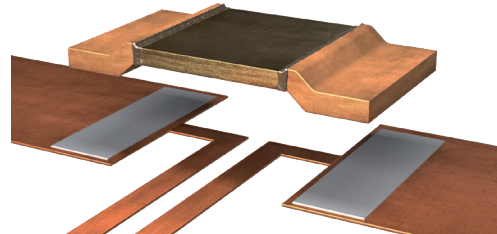


## BVT (2512)

### ISA-WELD® PRECISION RESISTOR



#### FEATURES

- Power rating up to 10 W
- 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
- AEC-Q200 qualified



#### APPLICATIONS

- High current applications for the automotive market
- Frequency converters
- Power modules

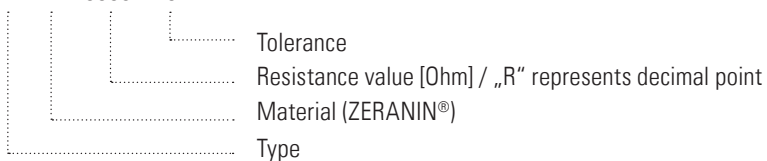
#### Technical data <sup>1</sup>

Resistance values	<b>mOhm</b>	<b>0.2 to 6.8</b>
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>70°C</sub></b>	<b>W</b>	up to 10
Internal heat resistance ( $R_{thi}$ )	<b>K/W</b>	from 3
Inductance	<b>nH</b>	<2
Stability (at rated power) deviation after 2000h	<b>%</b>	<0.5 ( $T_{max.} = 140\text{ °C}$ )
		<1.0 ( $T_{max.} = 170\text{ °C}$ )

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

#### Ordering code

BVT - Z - R0003 - 1.0

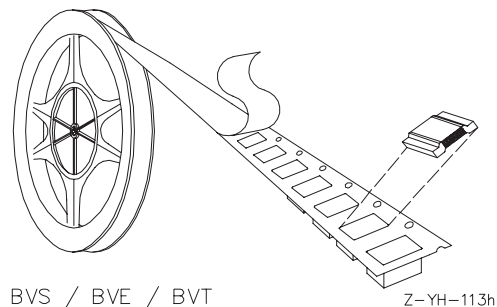


## Recommended surface mount soldering methods

Reflow-, IR- and vacuum soldering

## Tape and reel information

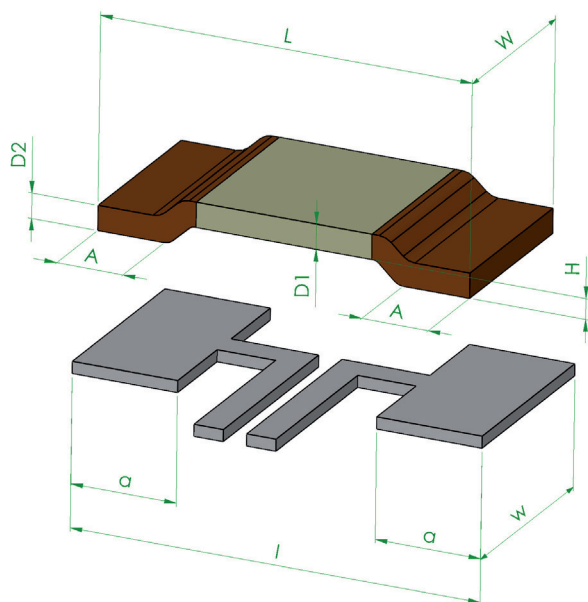
Specification	DIN EN 60286-3	
Tape width	<b>mm</b>	12
Reel size	<b>inch</b>	13
Parts per reel	<b>pcs</b>	5000
Packaging weight	<b>g</b>	453



BVS / BVE / BVT

Z-YH-113h

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



type	value / mΩ	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
BVT-Z-R0002	7	3.4	2.2

**Electrical specification**

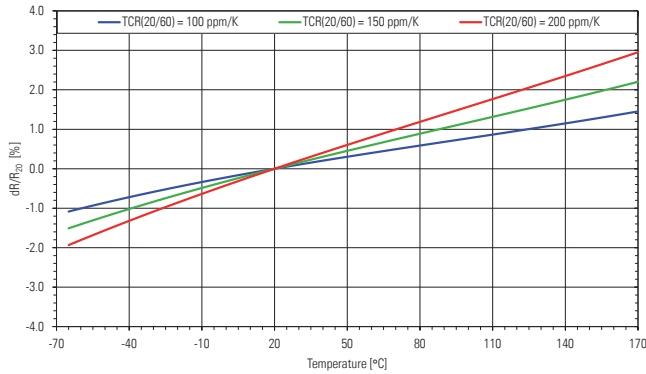
Type	Material	Value [mΩ]	$R_{thi}$ [K/W]	TCR [ppm/K]	$P_{70\text{°C}^*}$ [W]	$P_{>100\text{°C}^*}$ [W]	Note
BVT-K-R000	Copper	0			$I_{max} = 100\text{ A}$		
BVT-Z-R0002	ZERANIN®30	0.2	3	$350 \pm 50$	10	7	C-samples available, series delivery Q2/25
BVT-Z-R0003	ZERANIN®30	0.3	4	$150 \pm 50$	10	5	
BVT-M-R0005	MANGANIN®	0.5	8	$70 \pm 50$	10	4	
BVT-M-R001	MANGANIN®	1.0	14	$50 \pm 50$	6	4.5	
BVT-M-R00136	MANGANIN®	1.36	16	$30 \pm 50$	5.5	4	
BVT-V-R002	NOVENTIN®	2.0	20	$0 \pm 50$	5	3.5	
BVT-I-R002	ISAOHM®	2.0	16	$0 \pm 50$	6	4.5	
BVT-I-R003	ISAOHM®	3.0	24	$0 \pm 50$	4	2.5	
BVT-I-R004	ISAOHM®	4.0	32	$0 \pm 50$	3	2	
BVT-I-R0045	ISAOHM®	4.5	36	$0 \pm 50$	2.5	1.5	
BVT-I-R005	ISAOHM®	5.0	40	$0 \pm 50$	2.5	1.5	
BVT-I-R0068	ISAOHM®	6.8	60	$0 \pm 50$	1.5	1	

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

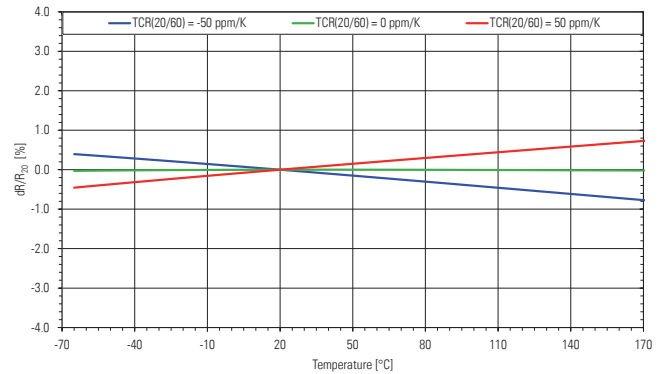
**Note:** For calculation of the maximum derating terminal temperature ( $T_K$ ) the following formula can be used:  $T_K = T_{max} - (R_{thi} \times P)$ .

Example for BVT-M-R0005:  $T_K = 170\text{°C} - (8\text{ K/W} \times 4\text{ W}) = 138\text{°C}$ .

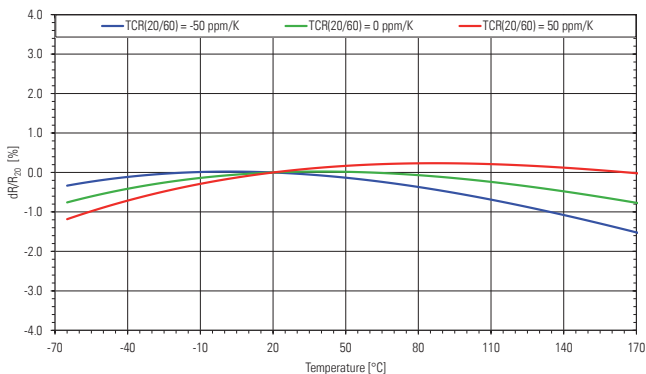
**Temperature dependence of the electrical resistance of ZERANIN® resistors. Example: BVT-Z-R0003**



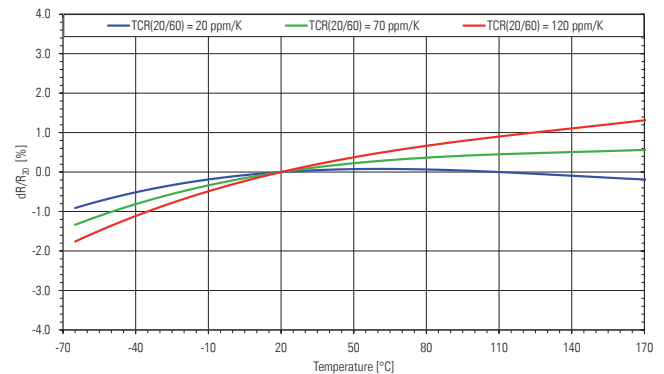
**Temperature dependence of the electrical resistance of ISAOHM® resistors. Example: BVT-I-R002**



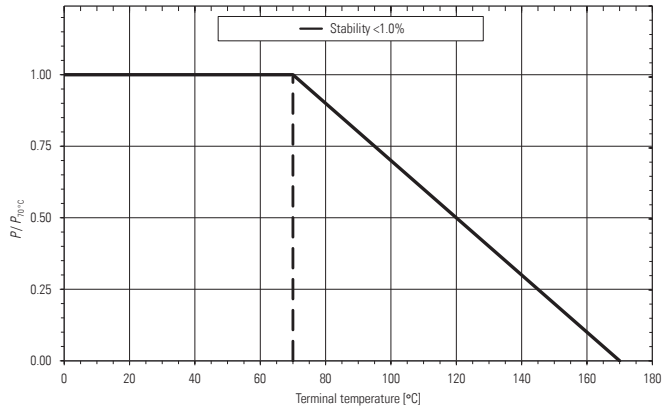
**Temperature dependence of the electrical resistance of NOVENTIN® resistors. Example: BVT-V-R002**



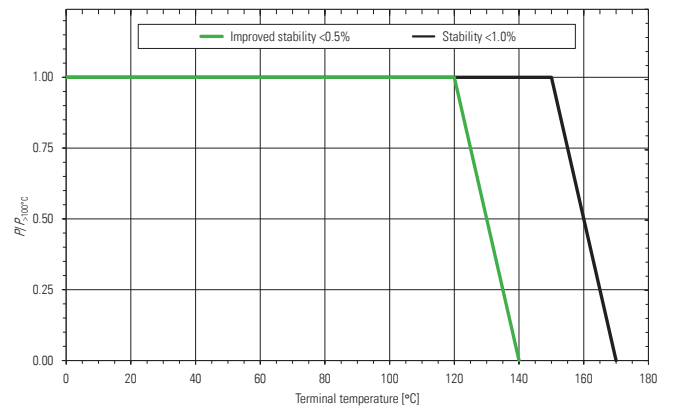
**Temperature dependence of the electrical resistance of MANGANIN® resistors. Example: BVT-M-R0005**



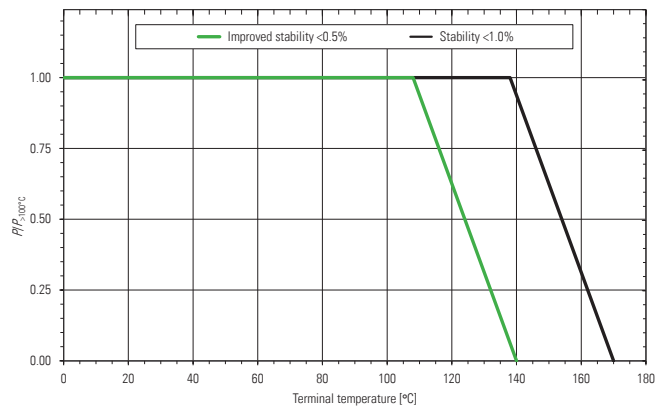
**Power derating curve at 70 °C.** (see table on page 3)



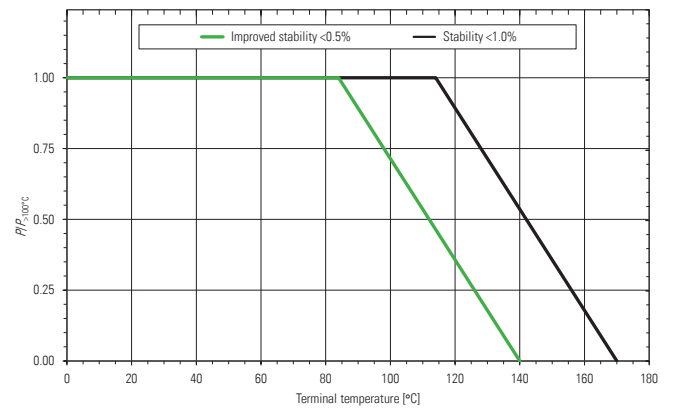
**Power derating curve BVT-Z-R0003/BVT-Z-R0002**



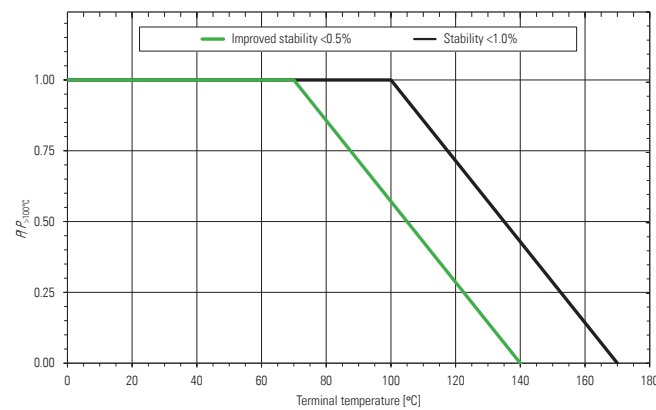
**Power derating curve BVT-M-R0005**



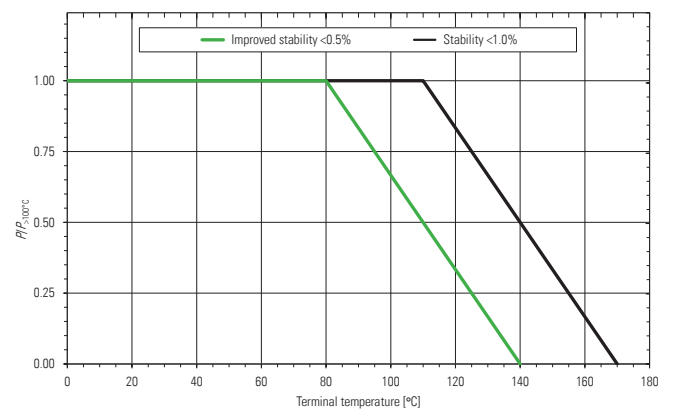
**Power derating curve BVT-M-R001**



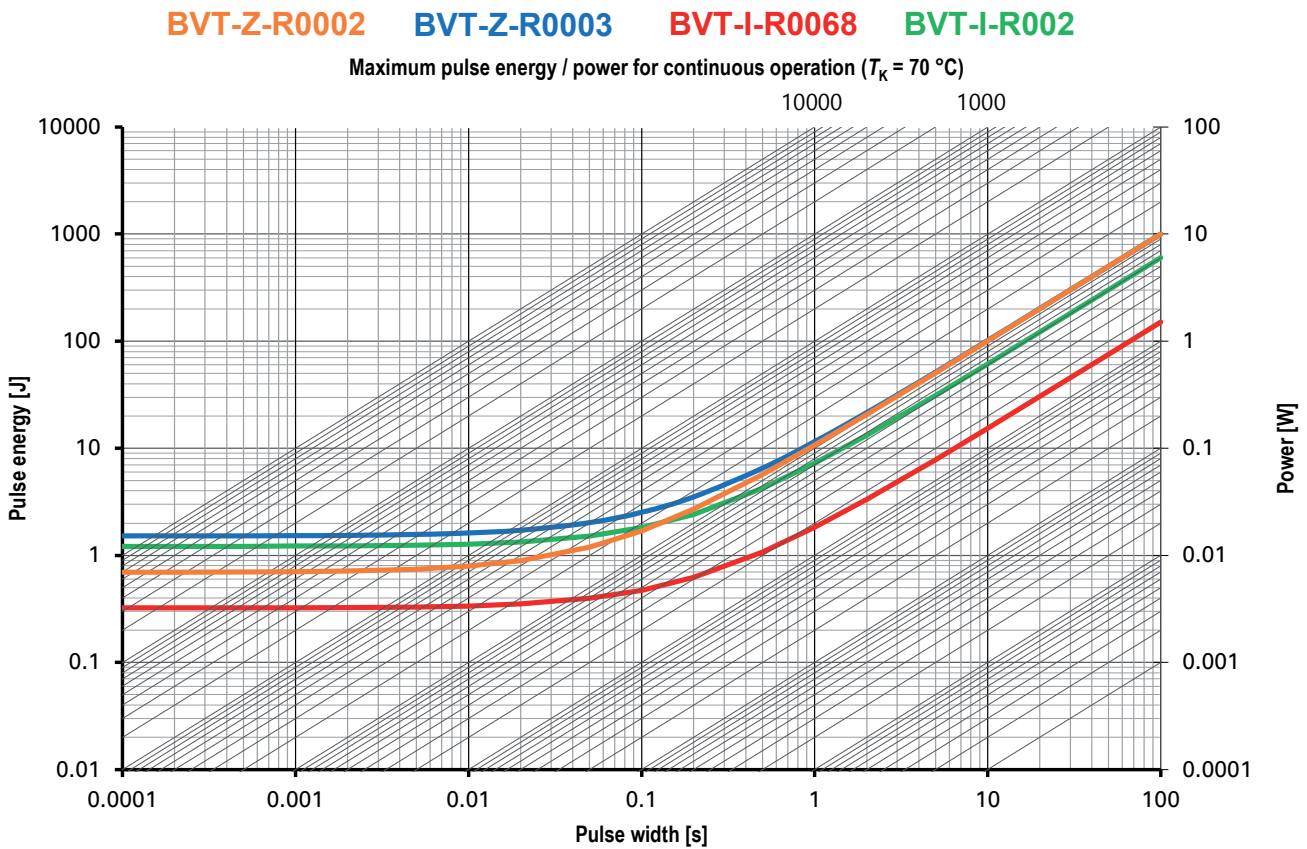
**Power derating curve BVT-I-R002 / BVT-V-R002**



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



Maximum pulse energy respectively pulse power for permanent operation



Test 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 %
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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