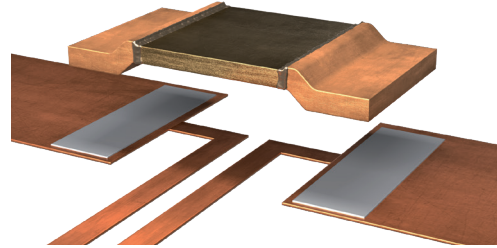


BVT (2512)

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

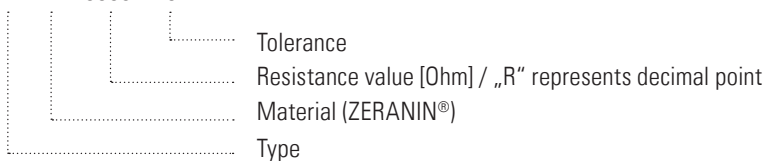
Technical data ¹

Resistance values	mOhm	0.2 to 6.8
Tolerance	%	1 / 5
Temperature coefficient (20-60 °C)	ppm/K	from 0 ± 50
Applicable temperature range	°C	-65 to +170
Power rating P_{100 °C}	W	up to 7
Power rating P_{70 °C}	W	up to 10
Internal heat resistance (R_{thi})	K/W	from 3
Inductance	nH	<2
Stability (at rated power) deviation after 2000h	%	<0.5 ($T_{max.} = 140 \text{ °C}$) <1.0 ($T_{max.} = 170 \text{ °C}$)

¹ For detailed information see table on page 3

Ordering code

BVT - Z - R0003 - 1.0



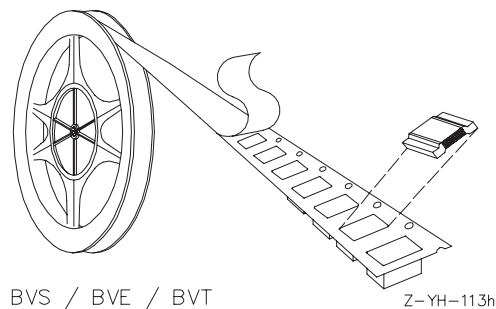
Recommended surface mount soldering methods

Reflow-, IR- and vacuum soldering

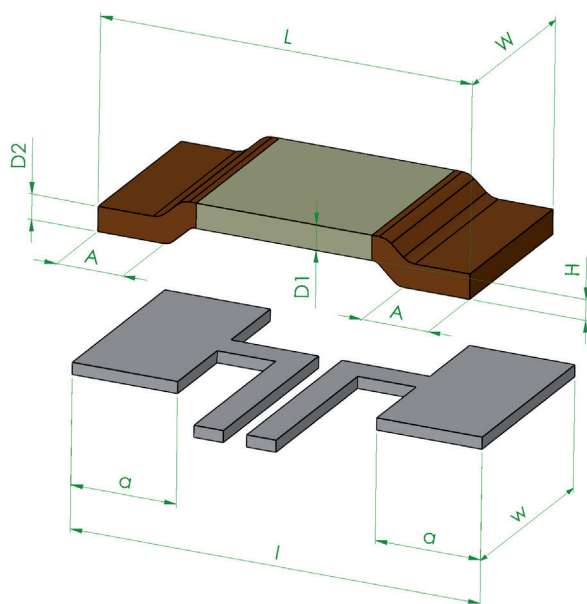
Temperature	°C	260	255	217
Time	sec	peak	40	90

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 / mΩ	L	W	H	A	D1	D2
BVT-K-R000					1.14 -0.4	0.42 ± 0.05	0.42 ± 0.05
BVT-Z-R0002	0.2				1.00 ± 0.4	0.92 ± 0.1	0.92 ± 0.1
BVT-Z-R0003	0.3				1.14 -0.4	1.00 ± 0.1	1.00 ± 0.1
BVT-M-R0005	0.5				1.14 -0.4	0.85 ± 0.1	0.84 ± 0.1
BVT-M-R001	1				1.14 -0.4	0.42 ± 0.05	0.42 ± 0.05
BVT-M-R00136	1.36				1.14 -0.4	0.31 ± 0.05	0.42 ± 0.05
BVT-V-R002	2				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				1.14 -0.4	0.48 ± 0.05	0.42 ± 0.05
BVT-A-R003	3				1.14 -0.4	0.48 ± 0.05	0.42 ± 0.05
BVT-I-R004	4				1.14 -0.4	0.36 ± 0.05	0.42 ± 0.05
BVT-I-R0045	4.5				1.14 -0.4	0.36 ± 0.05	0.42 ± 0.05
BVT-I-R005	5				1.14 -0.4	0.36 ± 0.05	0.42 ± 0.05
BVT-I-R0068	6.8				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

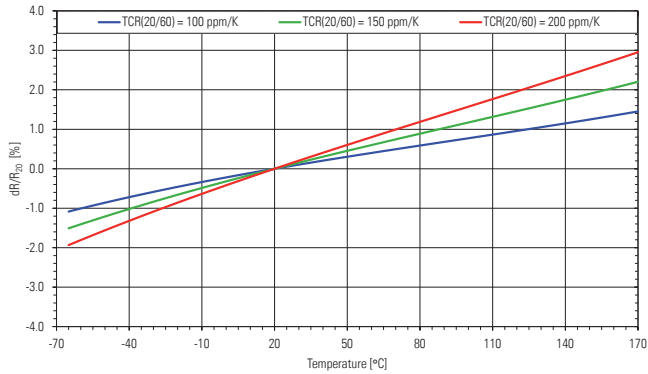
Electrical specification

Type	Material	Value [mΩ]	R_{thi} [K/W]	TCR [ppm/K]	$P_{70^{\circ}C^*}$ [W]	$P_{100^{\circ}C^*}$ [W]
BVT-K-R000	Copper	0			$I_{max} = 100$ A	
BVT-Z-R0002	ZERANIN®30	0.2	3	350 ± 50	10	10
BVT-Z-R0003	ZERANIN®30	0.3	4	150 ± 50	10	10
BVT-M-R0005	MANGANIN®	0.5	7	70 ± 50	10	6
BVT-M-R001	MANGANIN®	1.0	14	50 ± 50	7	5
BVT-M-R00136	MANGANIN®	1.36	16	30 ± 50	6	4.5
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	3
BVT-I-R004	ISAOHM®	4.0	32	0 ± 50	3	2
BVT-I-R0045	ISAOHM®	4.5	36	0 ± 50	2.5	2
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

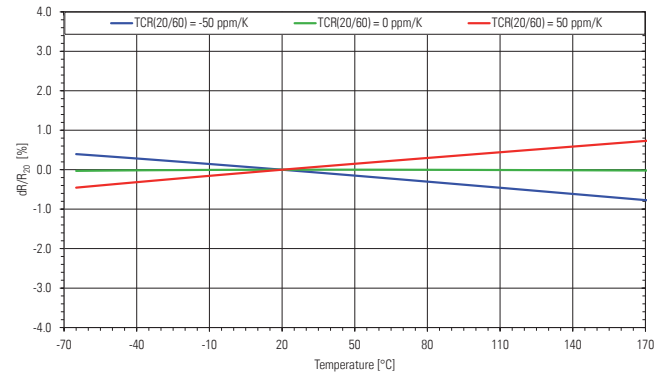
* Recommended max. power (limited by thermal conditions of the assembly)

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-Z-R0003: $T_K = 170^{\circ}C - (4 \text{ K/W} \times 10 \text{ W}) = 130^{\circ}C$.

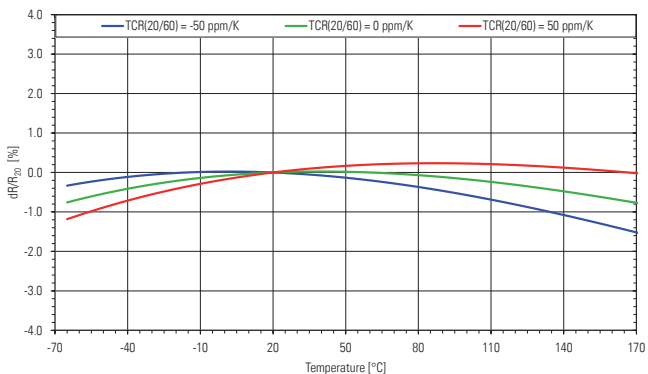
Temperature dependence of the electrical resistance of ZERANIN® resistors. Example: BVT-Z-R0003



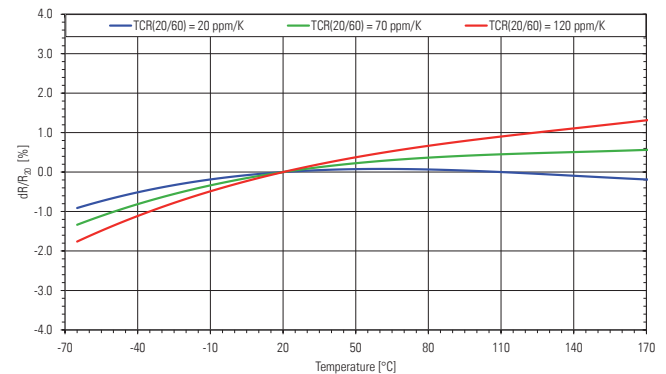
Temperature dependence of the electrical resistance of ISAOHM® resistors. Example: BVT-I-R002



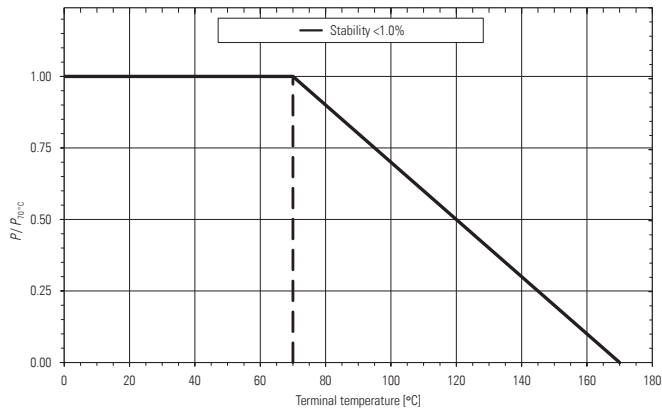
Temperature dependence of the electrical resistance of NOVENTIN® resistors. Example: BVT-V-R002



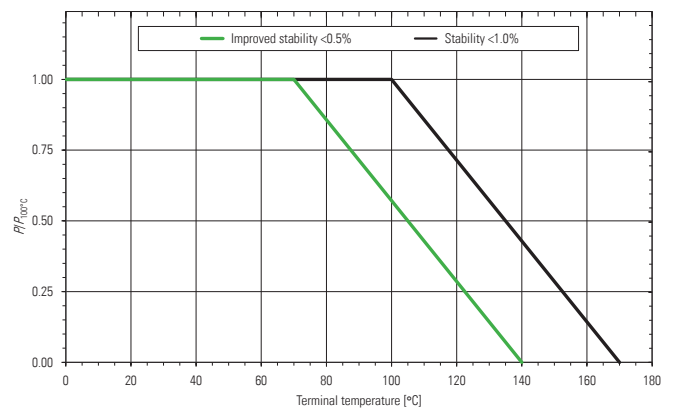
Temperature dependence of the electrical resistance of MANGANIN® resistors. Example: BVT-M-R0005



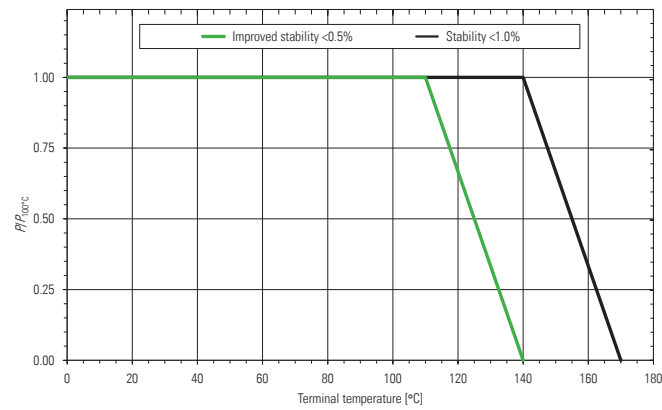
Power derating curve at 70°C. (see table on page 3)



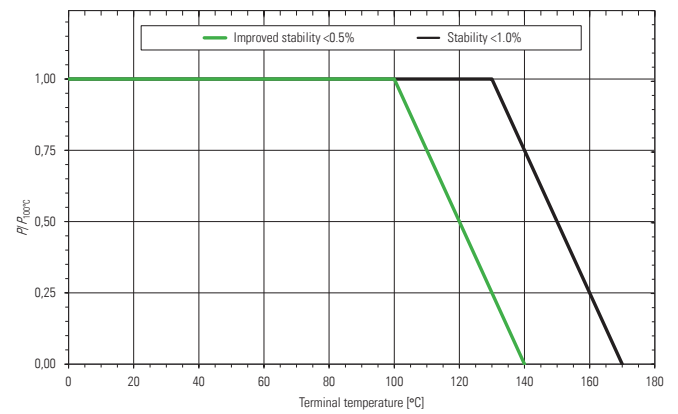
**Power derating curve BVT-M-R001/R00136/
V-R002/I-R002/I-R003/I-R0045**



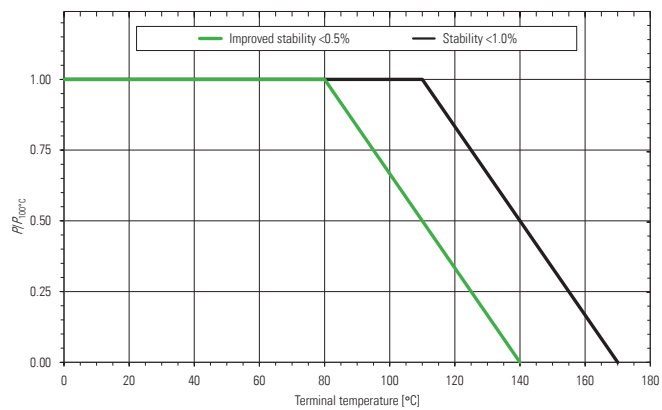
Power derating curve BVT-Z-R0002



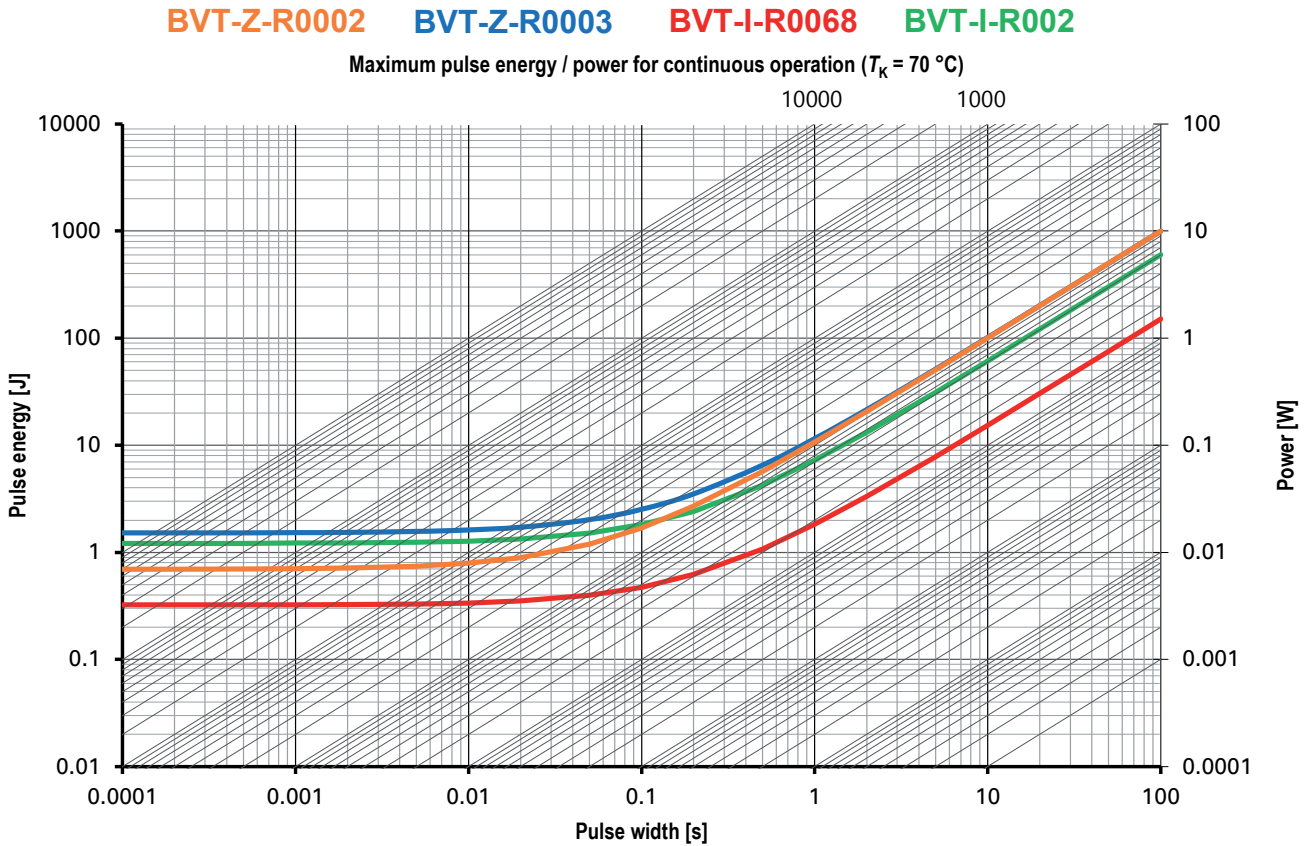
Power derating curve BVT-Z-R0003/M-R0005



Power derating curve BVT-I-R004/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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