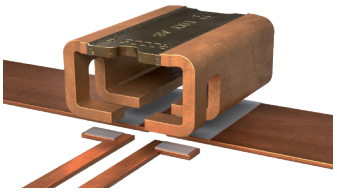
ISABELLENHÜTTE

BVN (1216)

ISA-WELD® PRECISION RESISTOR



FEATURES

- Constant current up to 100 A (0.5 mOhm)
- Power rating up to 10 W [1]
- Four terminal-configuration
- Excellent long-term stability
- Ideal suited for mounting on DBC / IMS substrate
- High application temperature range -65 to +170 °C
- Max. solder temperature up to 350 °C / 30 sec
- AEC-Q200 qualified

RoHS

APPLICATIONS

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

Technical data [1]

Resistance values	**mOhm**	0.3 / 0.4 / 0.5 / 0.75 / 1 / 2 / 3
Tolerance	**%**	1 / 5
Temperature coefficient (20-60 °C)	**ppm/K**	from 0 ± 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 6
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

BVN - Z - R0005 - 1.0

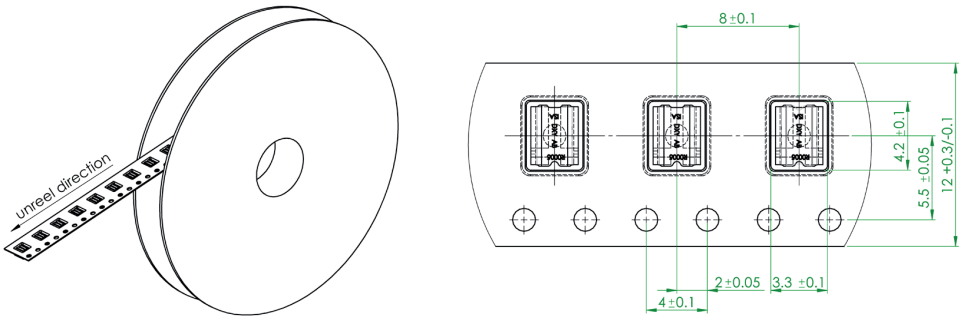
- Tolerance
- Resistance value [Ohm] / „R“ represents decimal point
- Material (ZERANIN®)
- Type

Tape and reel information

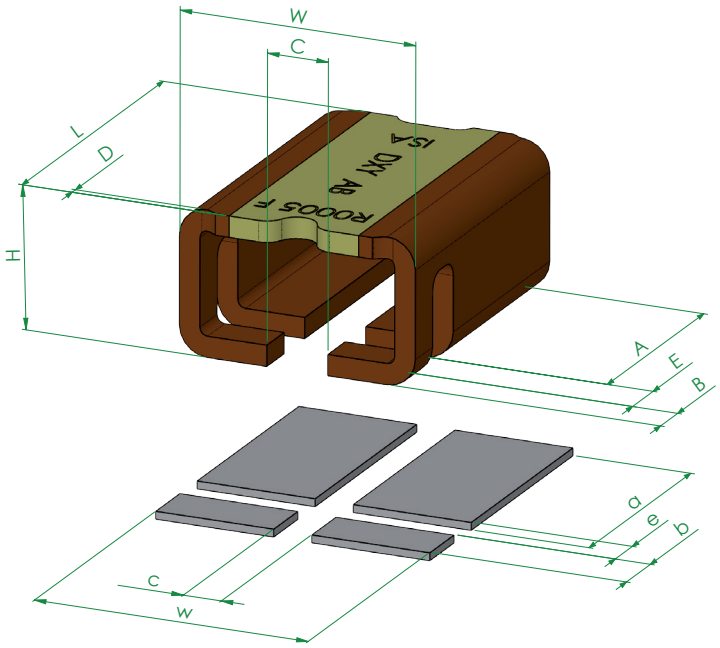
Specification		DIN EN 60286-3
Tape width	**mm**	12
Parts per reel	**pcs**	3000

Recommended solder profile

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



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



type:	value / mOhm	L	W	H	A	B	C	D	E
BVN-Z-R0003	0.3	4.1 -0.3	3.1 -0.35	1.9 -0.35	2.7 ±0.1	0.5 ±0.1	(0.8)	0.1	0.6 ±0.15
BVN-Z-R0004	0.4	4.1 -0.3	3.1 -0.35	1.9 -0.35	2.7 ±0.1	0.5 ±0.1	(0.8)	0.1	0.6 ±0.15
BVN-Z-R0005	0.5	4.1 -0.3	3.1 -0.35	1.9 -0.35	2.7 ±0.1	0.5 ±0.1	0.8 +0.3	0.1	0.6 +0.15
BVN-M-L750	0.75	4.1 -0.3	3.1 -0.35	1.9 -0.35	2.7 ±0.1	0.5 ±0.1	(0.8)	0.1	0.6 +0.15
BVN-M-R001	1	4.1 -0.3	3.1 -0.35	1.9 -0.35	2.7 ±0.1	0.5 ±0.1	0.8 +0.3	0.1	0.6 +0.15
BVN-V-R002	2	4.1 -0.3	3.1 -0.35	1.9 -0.35	2.7 ±0.1	0.5 ±0.1	(0.8)	0.1	0.6 ±0.15

solder pad type:	w	a	b	c	e
BVN	3.6	2.95	0.7	0.6	0.5

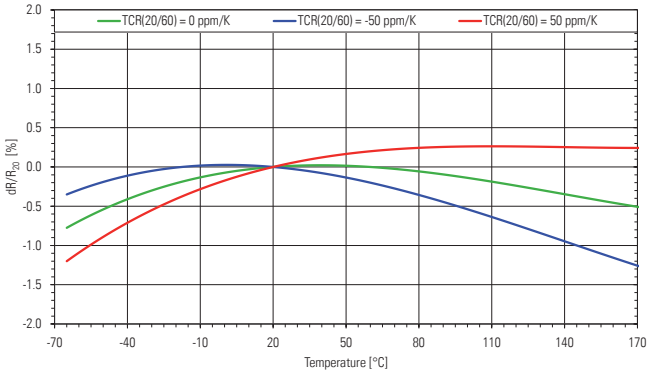
Electrical specification

Type	Material	Value [mΩ]	R_{thi} [K/W]	TCR [ppm/K]	$P_{70\,°C}$* [W]	$P_{>100\,°C}$* [W]	Notes
BVN-Z-R0003	ZERANIN®	0.3	6	50 ± 50	10 W	5 W	
BVN-Z-R0004	ZERANIN®	0.4	7	25 ± 50	10 W	5 W	C-samples available, series delivery Q1/25
BVN-Z-R0005	ZERANIN®	0.5	8	0 ± 50	9 W	5 W	
BVN-M-L750	MANGANIN®	0.75	11	0 ± 50	8 W	4 W	
BVN-M-R001	MANGANIN®	1.0	13	0 ± 50	7 W	3 W	
BVN-V-R002	NOVENTIN®	2.0	20	0 ± 50	5 W	2 W	
BVN-V-R003	NOVENTIN®	3.0	35	0 ± 50	3 W	2 W	

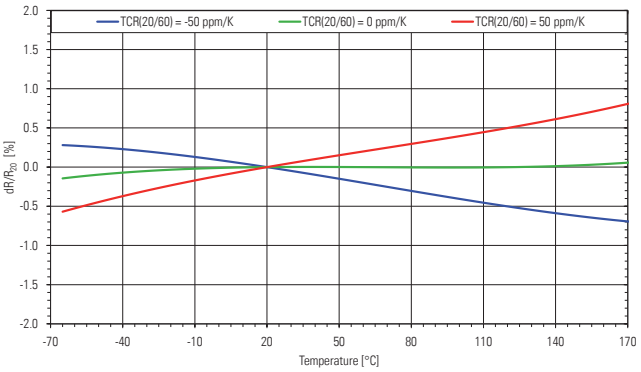
* Recommended max. power (limited by thermal conditions of the assembly)

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 BVN-Z-R0005: T_K = 170 °C - (8 K/W x 5 W) = 130 °C.

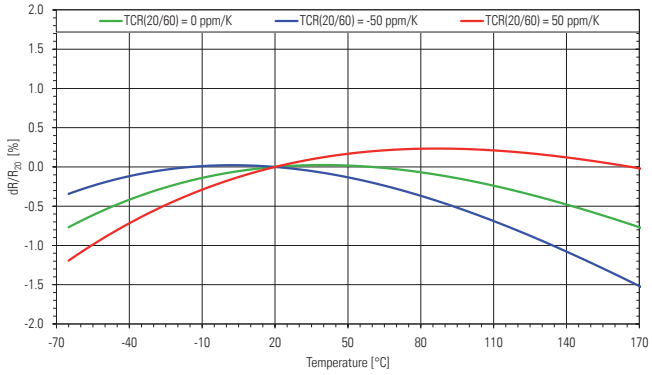
Temperature dependence of the electrical resistance of MANGANIN® resistors



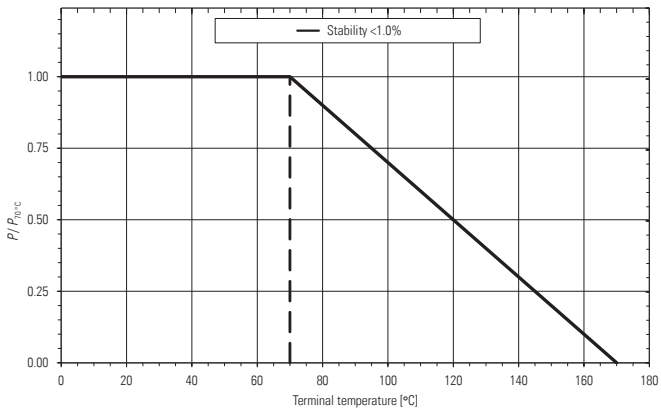
Temperature dependence of the electrical resistance of ZERANIN® resistors: Example BVN-Z-R0005



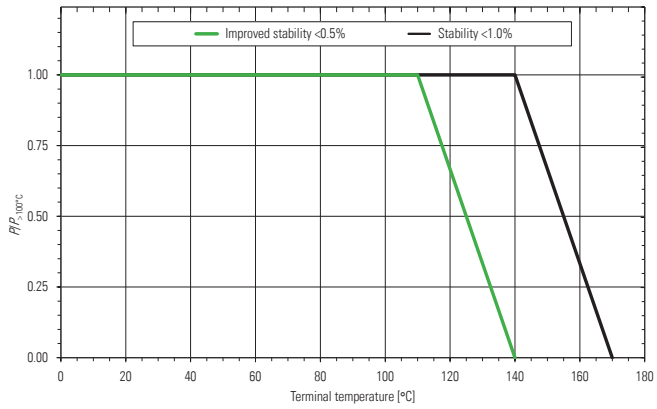
Temperature dependence of the electrical resistance of NOVENTIN® resistors



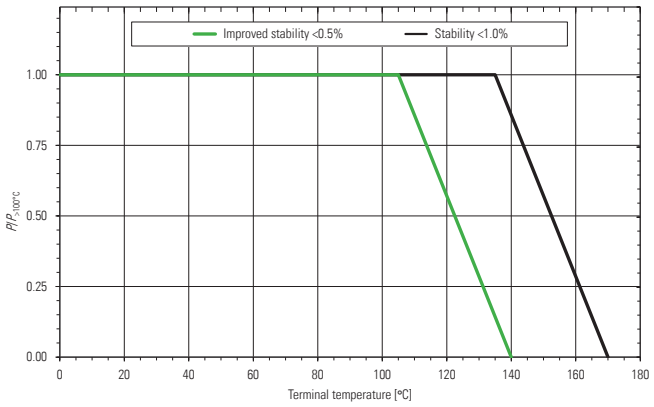
Power derating curve at 70 °C. (see table on page 3)



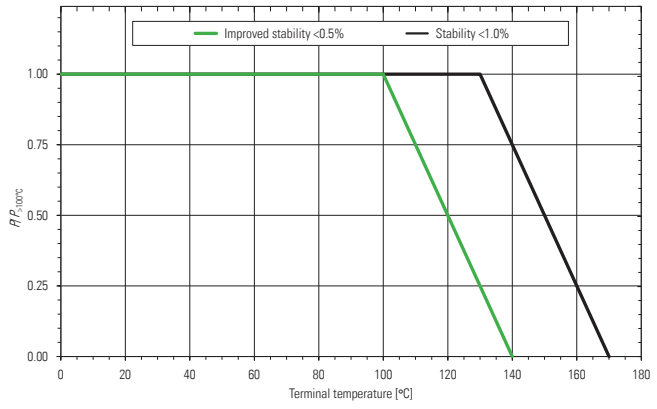
Power derating curve BVN-Z-R0003



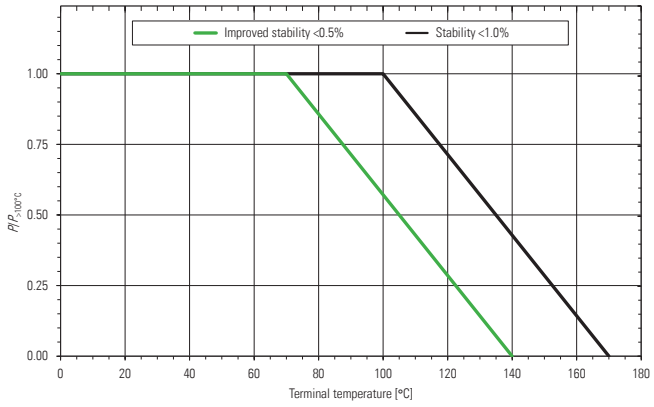
Power derating curve BVN-Z-R0004



Power derating curve BVN-Z-R0005/M-L750/M-R001/V-R002



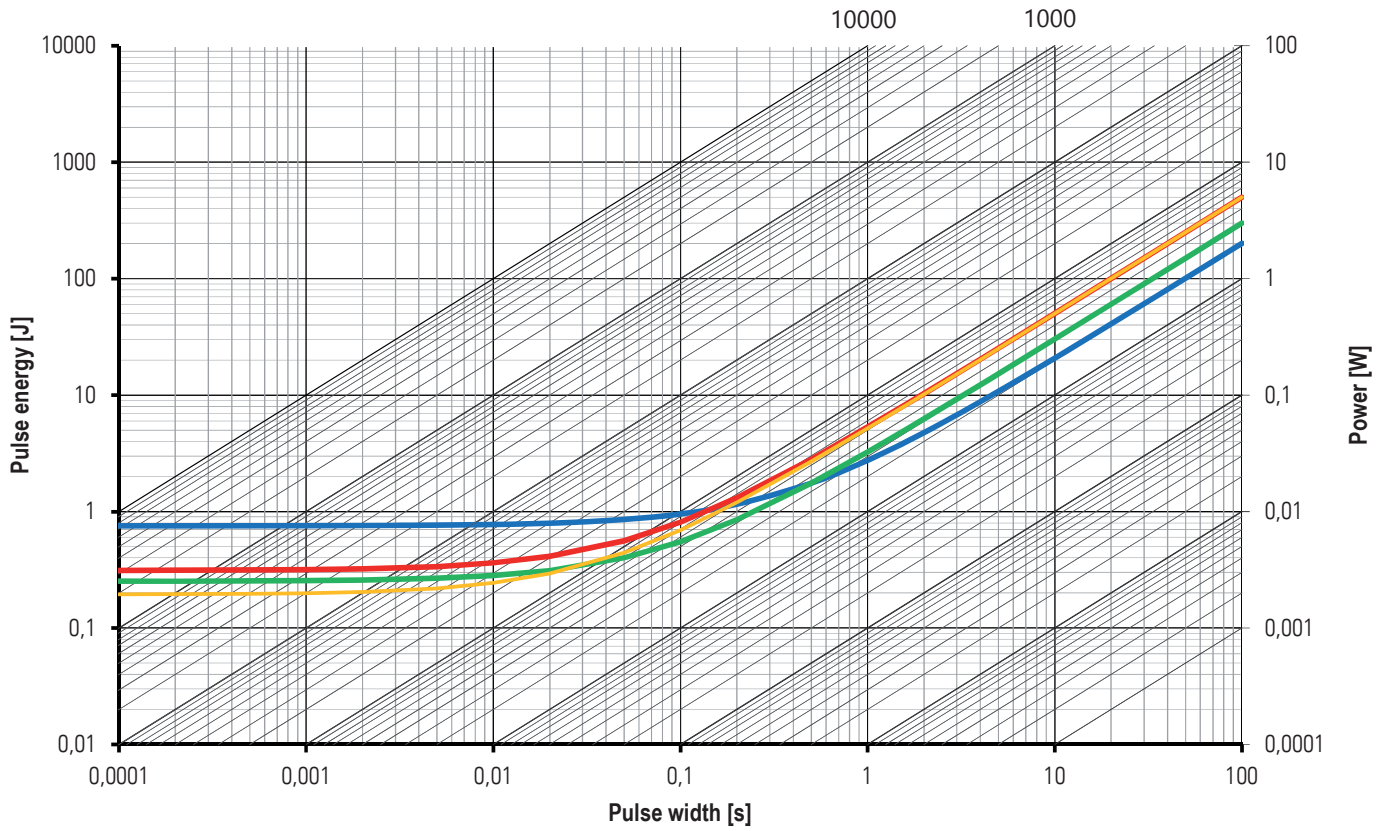
Power derating curve BVN-V-R003



Maximum pulse energy respectively pulse power for permanent operation

BVN-V-R003, BVN-M-R001, BVN-Z-R0005, BVN-Z-R0003

Maximum pulse energy / power continuous 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 %
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, 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 %

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