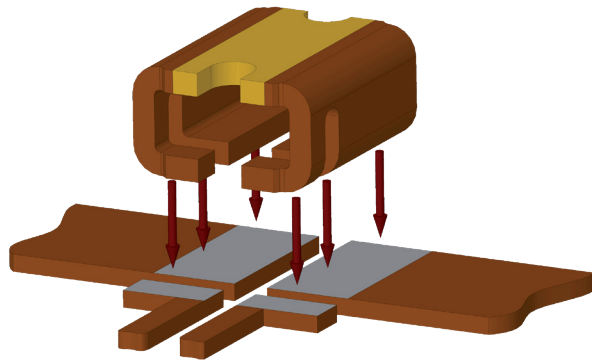




## ISA-WELD® // PRECISION RESISTORS



### BVN (1216)



#### Features

- Constant current up to 100 A (0.5 mOhm)
- 5 W power rating up to 130 °C
- 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
- 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 <sup>1</sup>

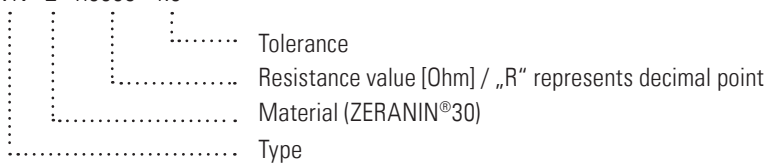
Resistance values	<b>mOhm</b>	0.4 <sup>2</sup> / 0.5 / 1 / 2 / 3
Tolerance	<b>%</b>	1 / 5
Temperature coefficient (20-60 °C)	<b>ppm/K</b>	<50
Applicable temperature range	<b>°C</b>	-65 to +170
Power rating <b>P<sub>70°C</sub></b>	<b>W</b>	up to 10
Internal heat resistance (R <sub>thi</sub> )	<b>K/W</b>	from 8
Inductance	<b>nH</b>	<2
Stability (at rated power) deviation after 2000h, T <sub>k</sub> = Terminal temperature		<0.5% (T <sub>k</sub> =100 °C) <1.0% (T <sub>k</sub> =130 °C)

<sup>1</sup> For detailed information see table on page 2

<sup>2</sup> New value, qualification in process

#### Ordering code

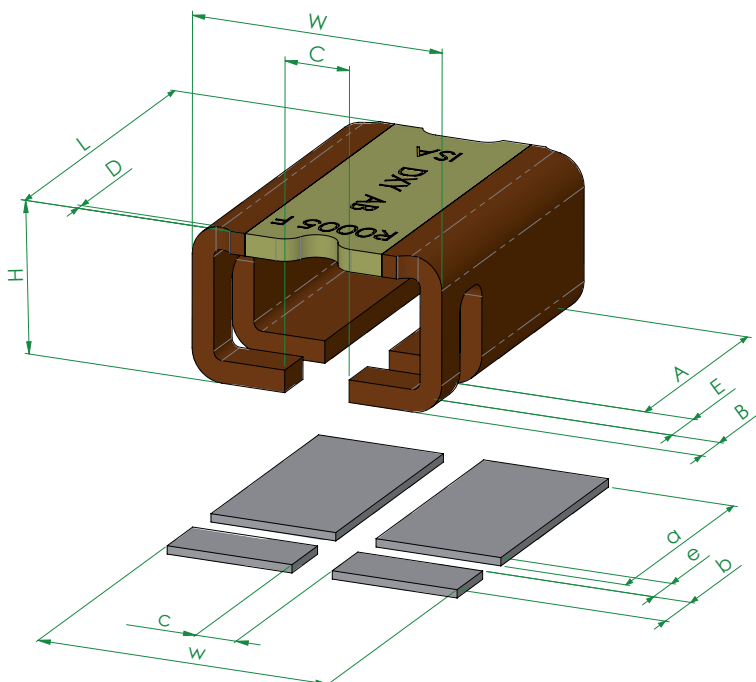
BVN - Z - R0005 - 1.0





## BVN (1216)

### Mechanical dimensions and pcb-layout proposal (Reflow-soldering) [mm] // Z-YE-846d



type:	value / mOhm	L	W	H	A	B	C	D	E
BVN-Z-R0004	0.4	4.1 <sup>-0.3</sup>	3.1 <sup>-0.35</sup>	1.9 <sup>-0.35</sup>	2.7±0.1	0.5±0.1	(0.8)	0.1	0.6±0.15
BVN-Z-R0005	0.5	4.1 <sup>-0.3</sup>	3.1 <sup>-0.35</sup>	1.9 <sup>-0.35</sup>	2.7±0.1	0.5±0.1	0.8 <sup>+0.3</sup>	0.1	0.6 <sup>+0.15</sup>
BVN-M-R001	1	4.1 <sup>-0.3</sup>	3.1 <sup>-0.35</sup>	1.9 <sup>-0.35</sup>	2.7±0.1	0.5±0.1	0.8 <sup>+0.3</sup>	0.1	0.6 <sup>+0.15</sup>
BVN-V-R002	2	4.1 <sup>-0.3</sup>	3.1 <sup>-0.35</sup>	1.9 <sup>-0.35</sup>	2.7±0.1	0.5±0.1	(0.8)	0.1	0.6±0.15
BVN-V-R003	3	4.1 <sup>-0.3</sup>	3.1 <sup>-0.35</sup>	1.9 <sup>-0.35</sup>	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

Type	Value [mΩ]	R <sub>thi</sub> [K/W]	TCR [ppm/K]	P <sub>70 °C</sub>	P <sub>T<sub>K</sub> &gt; 100 °C</sub> T <sub>K</sub> = 170 °C - (R <sub>thi</sub> x P)	Notes
BVN-Z-R0004	0.4	≈ 6.5	<50	10 W	5 W	in process
BVN-Z-R0005	0.5	8	<50	9 W	5 W	available standard resistance value
BVN-M-R001	1.0	15	<50	7 W	3 W	available standard resistance value
BVN-V-R002	2.0	17	<50	5 W	2 W	in process, samples available
BVN-V-R003	3.0	35	<50	4 W	2 W	in process, samples available

Abbreviation type M=MANGANIN®, V=NOVENTIN®, Z=ZERANIN®30  
 T<sub>K</sub>: terminal temperature (Kontaktstellentemperatur)



# BVN (1216)

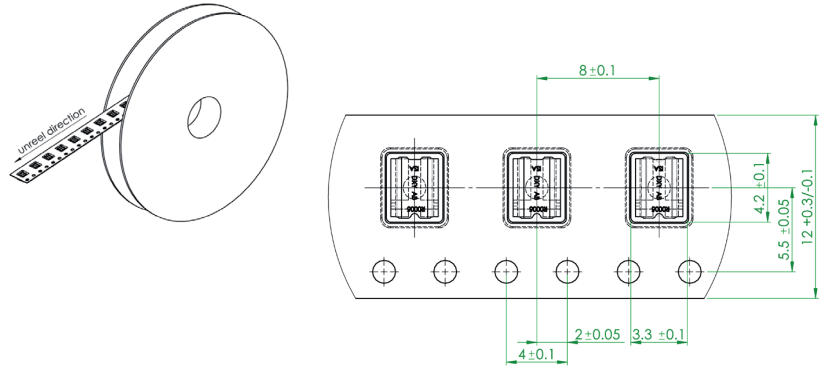
## Recommended solder profile

Reflow- and IR-soldering

Temperature	°C	260	255	217
Time	sec	peak	40	90

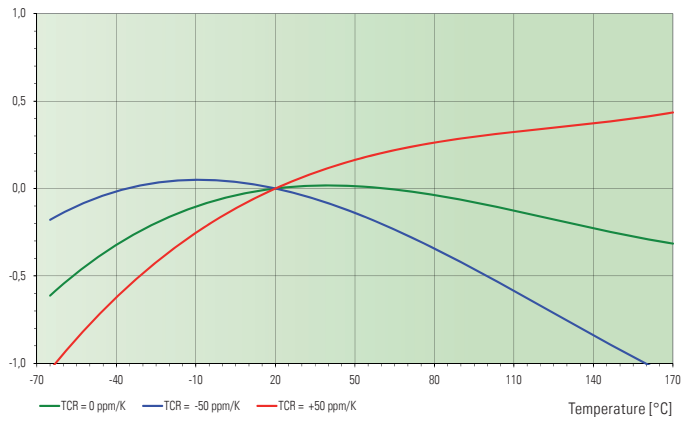
## Tape and reel information

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



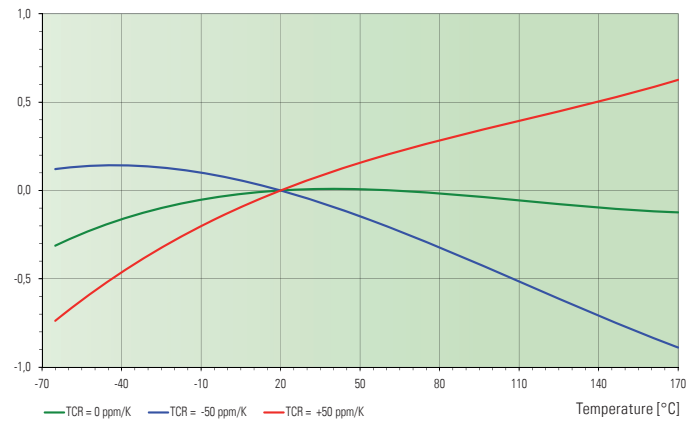
## Temperature dependence of the electrical resistance of MANGANIN® resistors

dR/R20 [%]



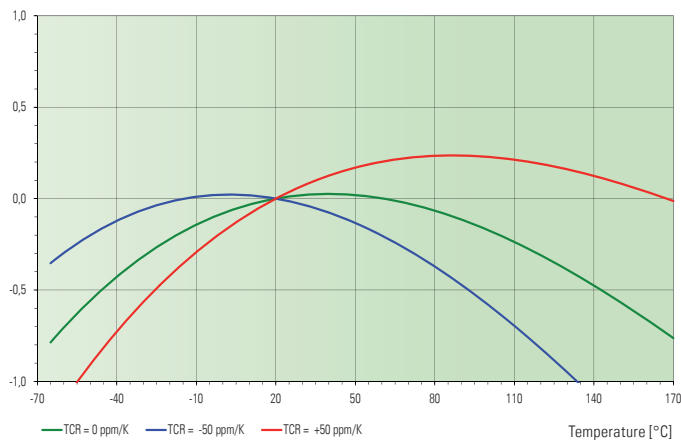
## Temperature dependence of the electrical resistance of ZERANIN® resistors

dR/R20 [%]



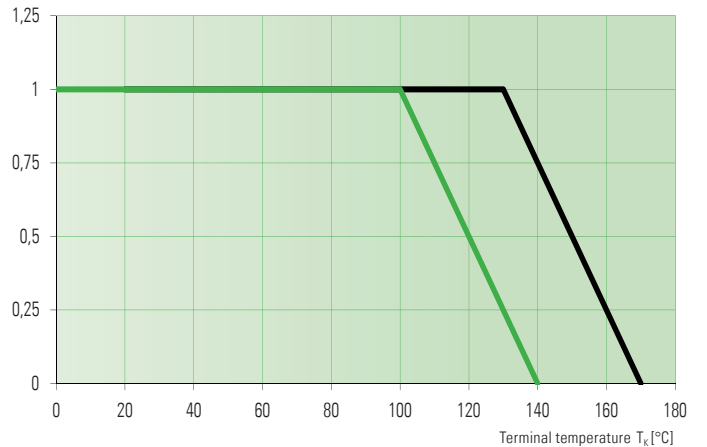
## Temperature dependence of the electrical resistance of NOVENTIN® resistors

dR/R20 [%]



## Power derating curve

P/P<sub>nom</sub>



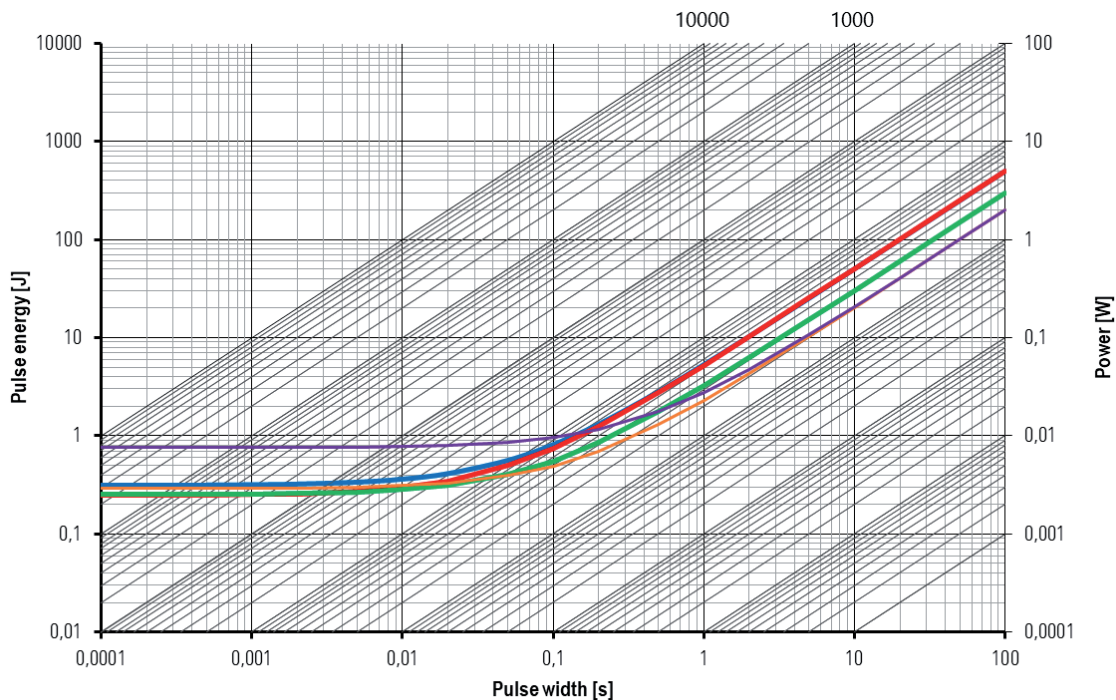
— Stability < 1.0 %

— Improved stability < 0.5 %



**BVN (1216)**

**Maximum pulse energy respectively pulse power for permanent operation**



- BVN-Z-R0004
- BVN-Z-R0005
- BVN-M-R001
- BVN-V-R002
- BVN-V-R003

**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	±0.1 %
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, T <sub>k</sub> max at rated power	±1.0 %, T <sub>k</sub> = 130 °C
High Temperature Exposure	2000 h / 170 °C	±1.0 % (in covered condition)*
Bias Humidity	+85 °C, 85 r.F., 1000 h	±0.5 %

\* for MANGANIN® and ZERANIN®30

**Disclaimer** // All products, product specifications and data are subject to change without notice.

The product specifications do not expand or otherwise modify Isabellenhütte's terms and conditions of sale, including but not limited to, the warranty expressed therein. Isabellenhütte makes no warranty, representation or guarantee other than as set forth in its terms and conditions of sale. Information provided in datasheets and/or specifications may vary from actual results in different applications. Any statements made by Isabellenhütte regarding the suitability of products for certain types of applications are based on its knowledge of typical requirements that are often placed on its products. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in the application intended. No license, express or implied, or otherwise, to any intellectual property rights is granted by this document. Any and all liability arising out of the application or use of any product shall be as set forth in Isabellenhütte's terms and conditions of sale.

