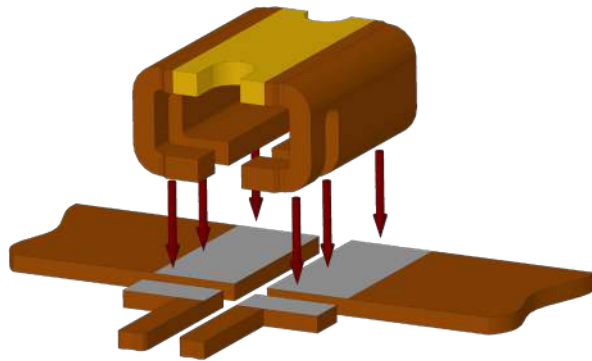




## ISA-WELD® // PRECISION RESISTORS



### 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>	0.3 / 0.4 / 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 6
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)

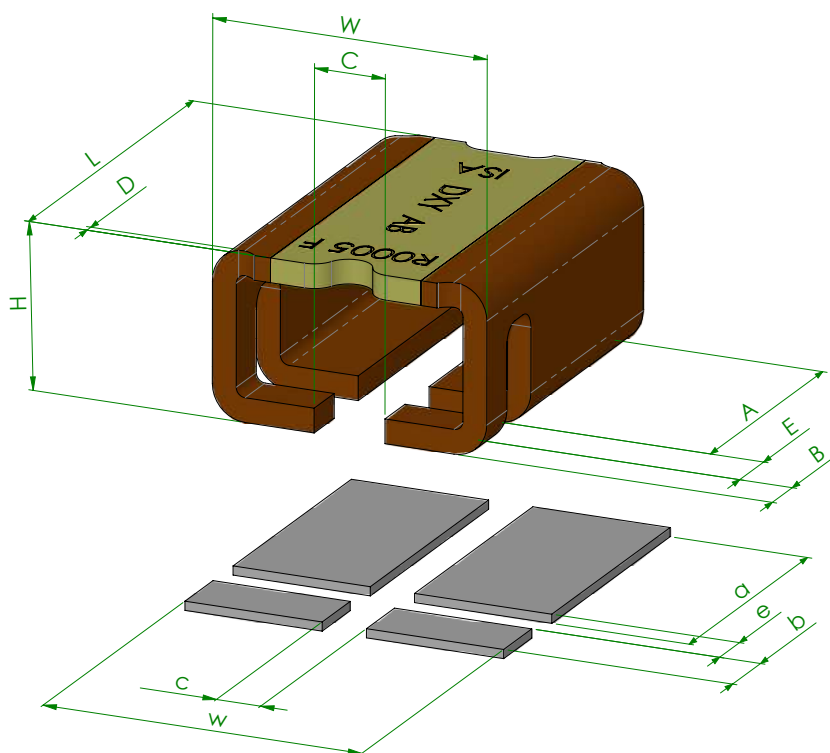
<sup>1</sup> For detailed information see table on page 2

#### Ordering code

BVN - Z - R0005 - 1.0

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

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



type:	value / mOhm	L	W	H	A	B	C	D	E
BVN-Z-R0003	0.3	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
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

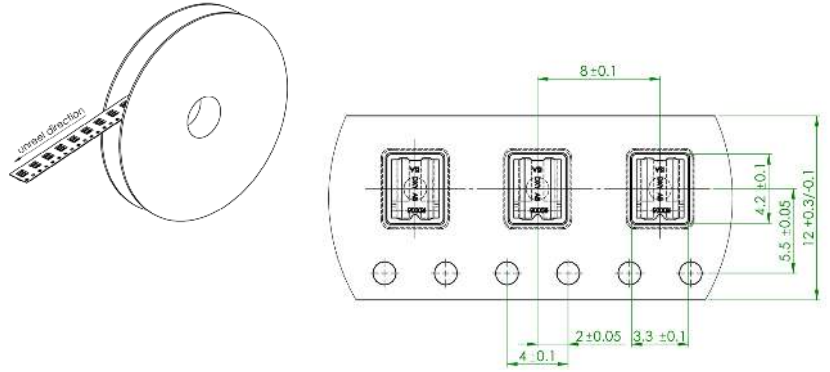
solder pad type:	w	a	b	c	e
BVN	3.6	2.95	0.7	0.6	0.5

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-R0003	0.3	6	<100	10 W	5 W	available standard resistance value
BVN-Z-R0004	0.4	≈ 6.5	<75	10 W	5 W	new value, qualification in process
BVN-Z-R0005	0.5	8	<50	9 W	5 W	available standard resistance value
BVN-M-R001	1.0	13	<50	7 W	3 W	available standard resistance value
BVN-V-R002	2.0	20	<50	5 W	2 W	available standard resistance value
BVN-V-R003	3.0	35	<50	3 W	2 W	available standard resistance value

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

## Recommended solder profile

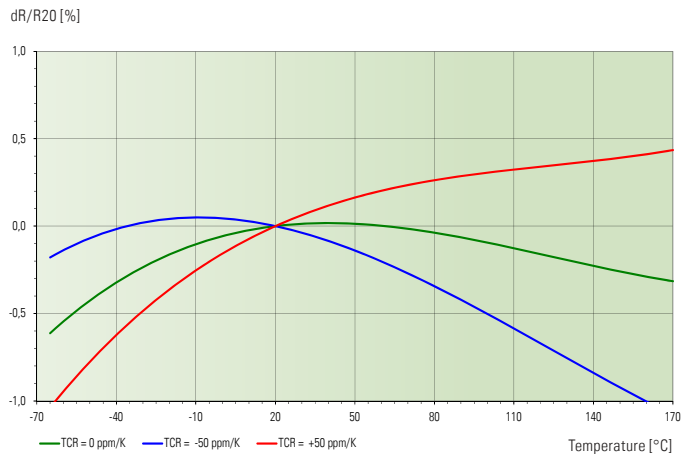
Reflow- and IR-soldering				
Temperature	°C	260	255	217
Time	sec	peak	40	90



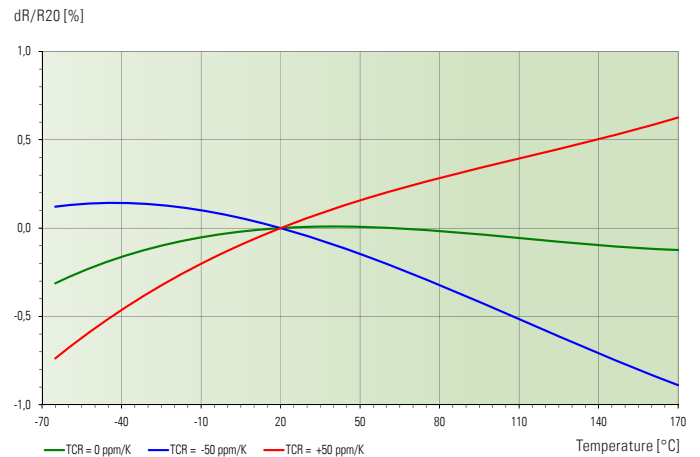
## Tape and reel information

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

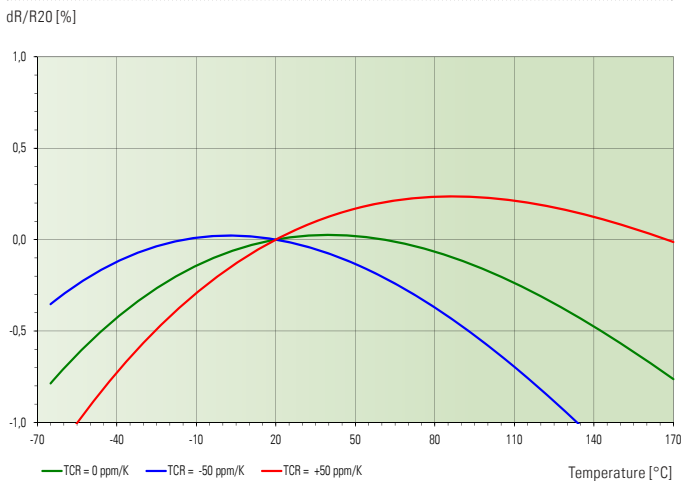
## Temperature dependence of the electrical resistance of MANGANIN® resistors



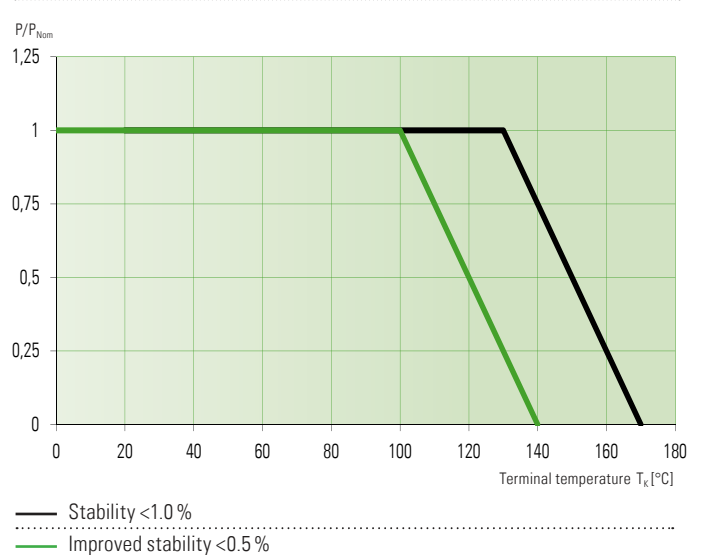
## Temperature dependence of the electrical resistance of ZERANIN® resistors



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



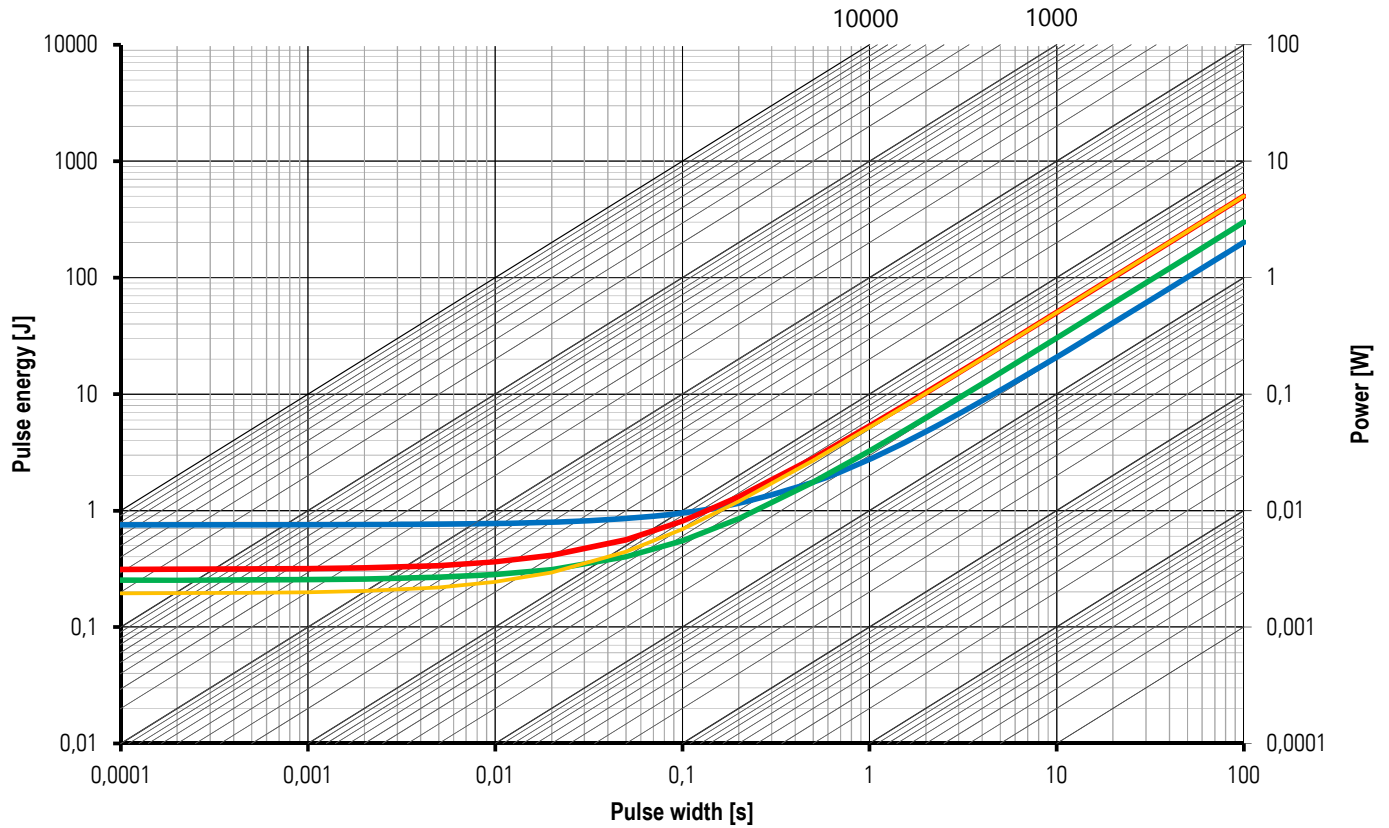
## Power derating curve



## 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



### 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

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