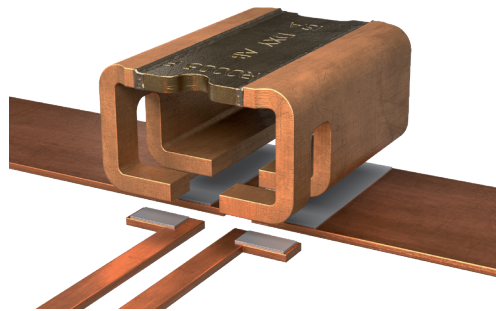




ISA-WELD® // PRECISION RESISTORS



BVN (1216)



Features

- Constant current up to 100 A (0.5 mOhm)
- Power rating up to 10 W¹
- 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 data¹

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 2

Ordering code

BVN - Z - R0005 - 1.0

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

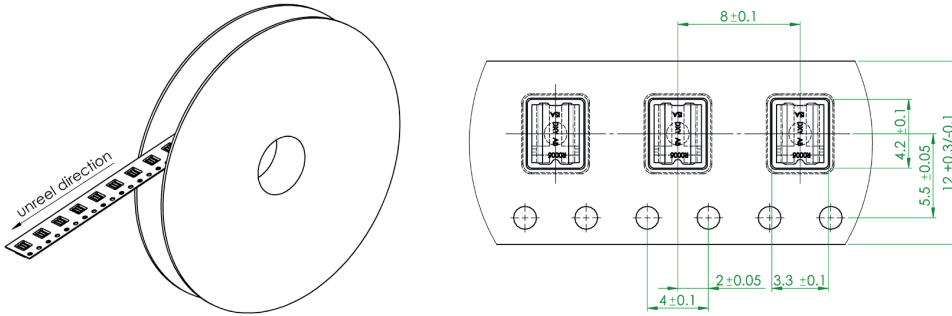
Tape and reel information

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

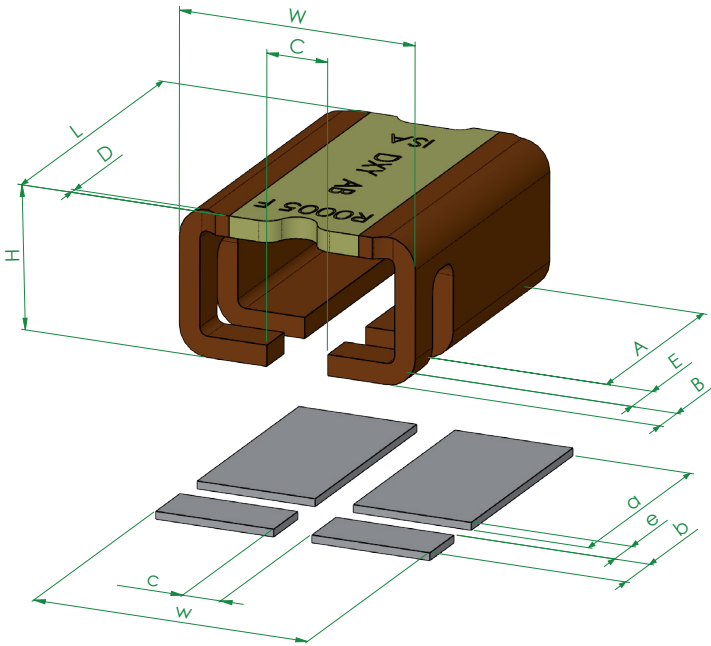
Recommended solder profile

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

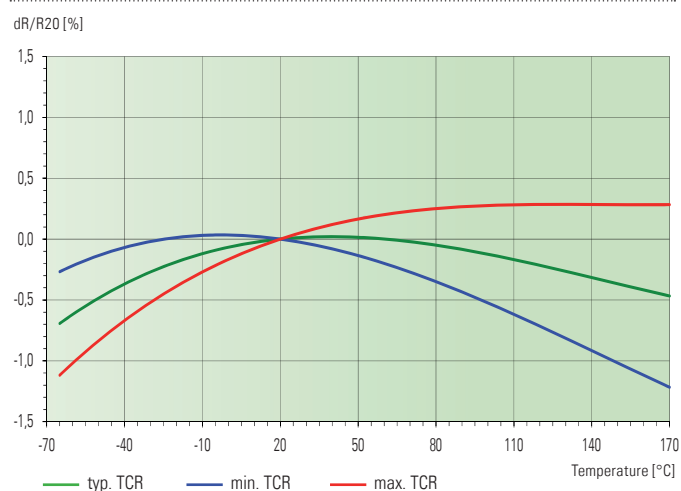
Type	Material	Value [mΩ]	R_{th} [K/W]	TCR [ppm/K]	$P_{70^{\circ}\text{C}^*}$ [W]	$P_{>100^{\circ}\text{C}^*}$ [W]	Notes
BVN-Z-R0003	ZERANIN®	0.3	6	50 ± 50	10 W	5 W	available standard resistance value
BVN-Z-R0004	ZERANIN®	0.4	7	25 ± 50	10 W	5 W	C-samples available, series delivery Q3/24
BVN-Z-R0005	ZERANIN®	0.5	8	0 ± 50	9 W	5 W	available standard resistance value
BVN-M-L750	MANGANIN®	0.75	11	0 ± 50	8 W	4 W	C-samples available, series delivery Q4/24
BVN-M-R001	MANGANIN®	1.0	13	0 ± 50	7 W	3 W	available standard resistance value
BVN-V-R002	NOENTIN®	2.0	20	0 ± 50	5 W	2 W	available standard resistance value
BVN-V-R003	NOENTIN®	3.0	35	0 ± 50	3 W	2 W	available standard resistance value

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

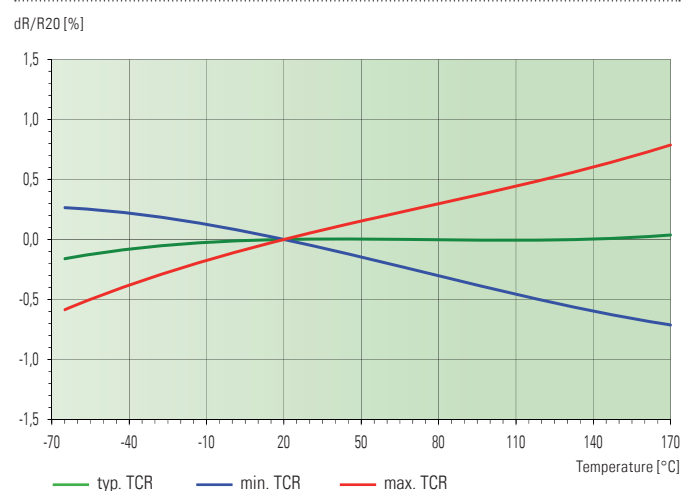
Note: For calculation of the maximum derating terminal temperature (T_k) the following formula can be used: $T_k = T_{max} - (R_{th} \times P)$.

Example for BVN-Z-R0005: $T_k = 170^{\circ}\text{C} - (8 \text{ K/W} \times 5 \text{ W}) = 130^{\circ}\text{C}$.

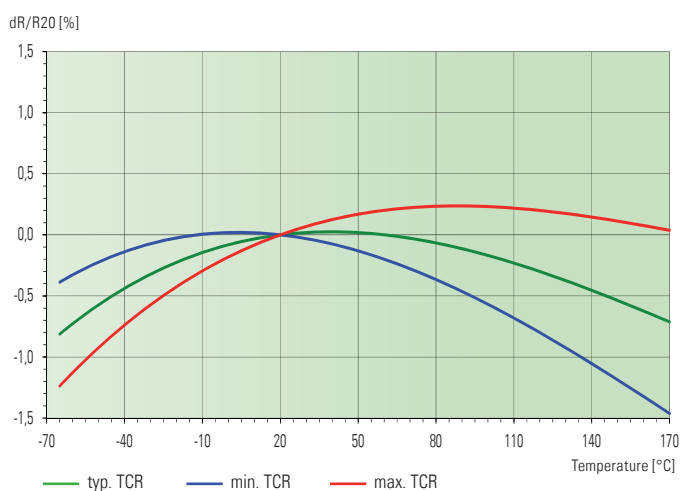
Temperature dependence of the electrical resistance of MANGANIN® resistors. Example: BVN-M-R001



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

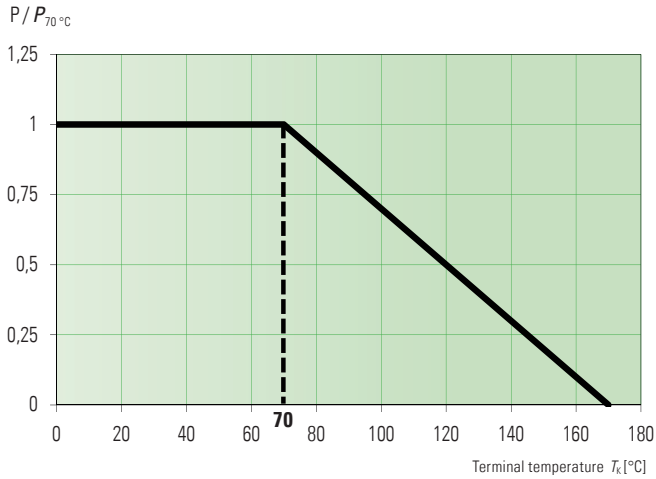


Temperature dependence of the electrical resistance of NOENTIN® resistors. Example: BVN-V-R002



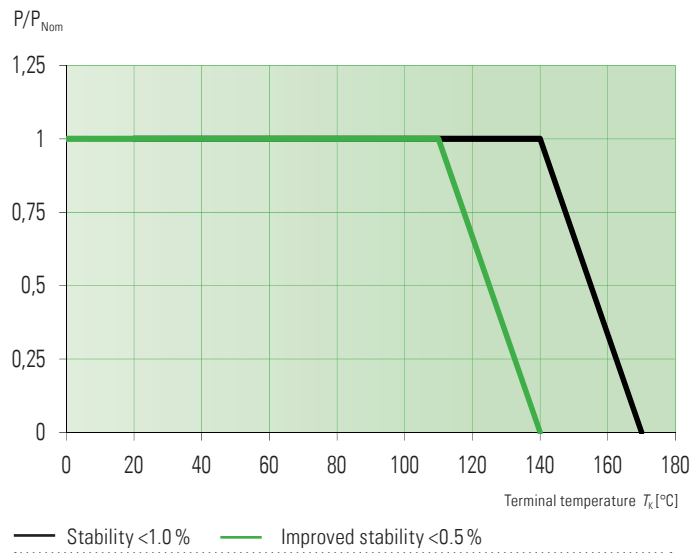
BVN (1216)

Power derating curve at 70 °C

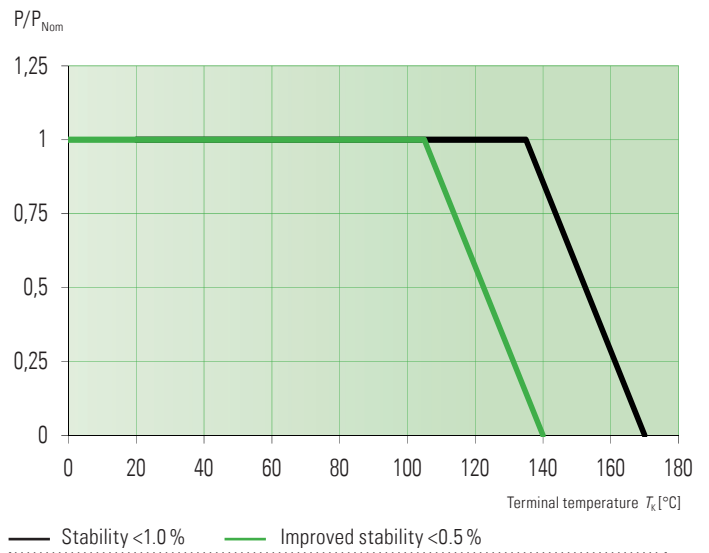


Power derating curve for higher temperature, $T_k = 170^\circ\text{C} - (R_{thi} \times P)$, for detailed information see table on page 2.

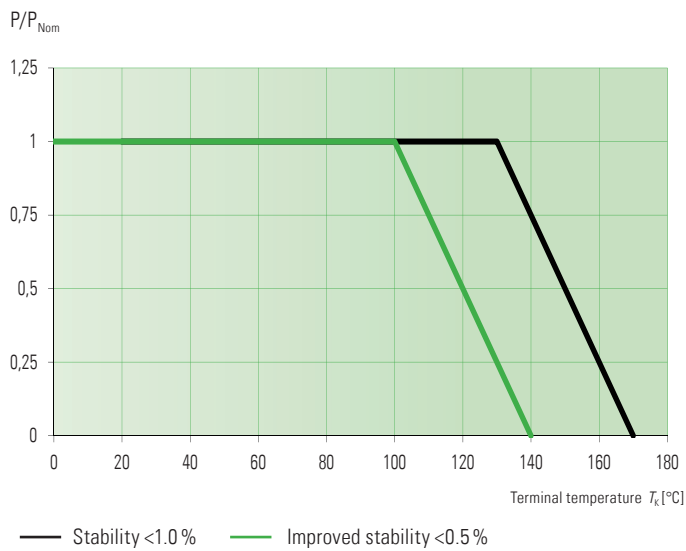
BVN-Z-R0003



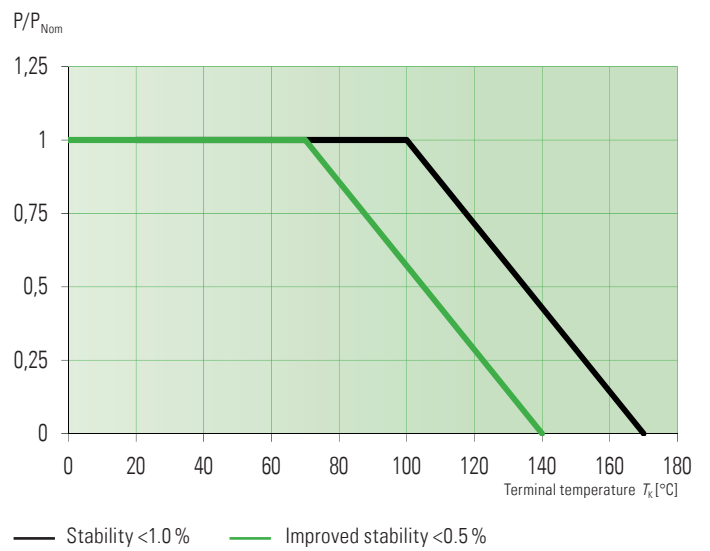
BVN-Z-R0004



BVN-Z-R0005, BVN-M-L750, BVN-M-R001, BVN-V-R002



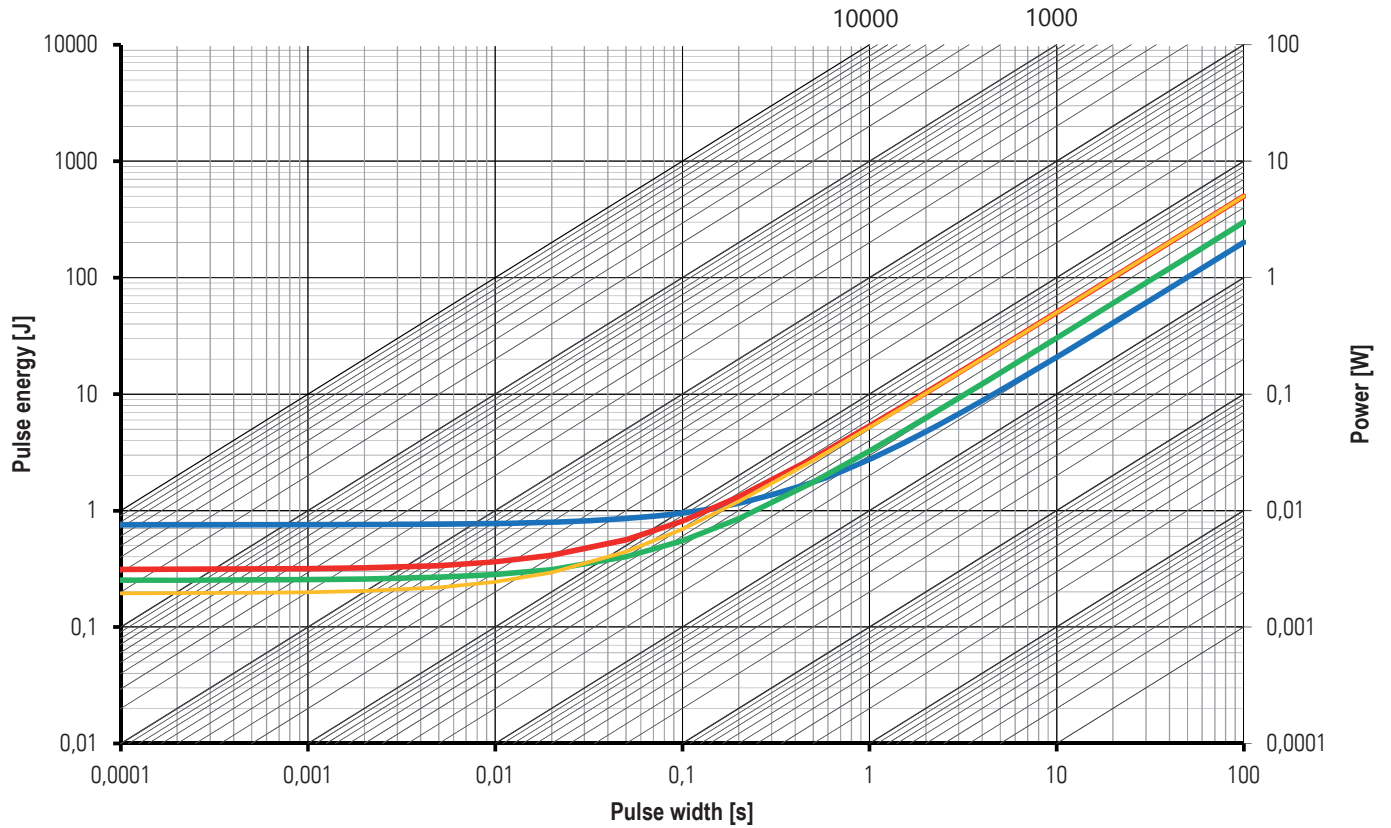
BVN-V-R003



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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