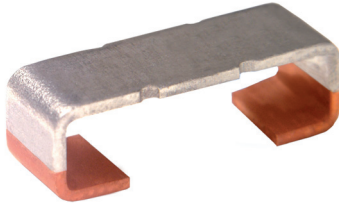




ISA-WELD® // PRECISION RESISTORS



BRS // Size 3812



Features

- 2 W power rating at 120 °C
- Constant current up to 32 A (2 mOhm)
- Copper connectors
- Solid metal precision resistance materials
- Excellent long-term stability
- Ideal suited for mounting on DBC / IMS substrate
- Max. solder temperature up to 350 °C / 30 sec or 250 °C / 10 min
- Mounting: Reflow-soldering
- AEC-Q200 qualified
- RoHS 2011/65/EU compliant



Applications

- Current sensor for power hybrid applications
- Frequency converters
- Power modules
- High current applications for the automotive market

Technical data

Resistance values	mOhm	2 / 3 / 10 / 25 *
Tolerance	%	1 / 2 / 3 / 5 *
Temperature coefficient (tcr)	ppm/K	from 100 **
Applicable temperature range	°C	-55 to +170
Power rating	W	2
Internal heat resistance (R _{thi})	K/W	from 25 **
Inductance	nH	<10
Stability (Nominal load) deviation after 2000h		<1.0 % (T _k =90 °C)
T _k = Terminal temperature		<2.0 % (T _k =120 °C)

* See all standard values and tolerances on page 2

** See table on page 2



BRS // SIZE 3812

Tape and reel information

Specification		DIN EN 60286-3
Tape width	mm	16
Reel size	inch	13
Parts per reel	pcs	2500
Packaging weight	g	447

Recommended solder profile

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

Available standard resistance values and tolerances*

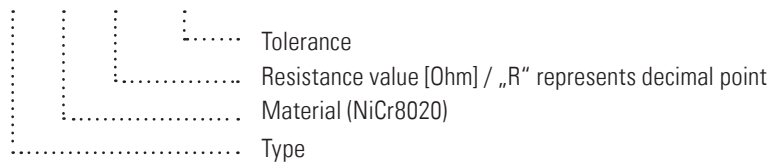
Resistance values	Tolerance			
	1.0	2.0	3.0	5.0
R002	✓			
R003	✓			
R010	✓	✓	✓	✓
R025		✓		

* Further values and tolerances on request
 ✓ = available

Type	Value [mΩ]	Thickness [mm]	R _{thi} [K/W]	TC [ppm/K]	P [W]
BRS-Z-R002	2	0.50	25	<130	2
BRS-M-R003	3	0.50	35	<100	2
BRS-N-R010	10	0.40	70	<100	2
BRS-A-R025	25	0.24	170	<100	1

Ordering code

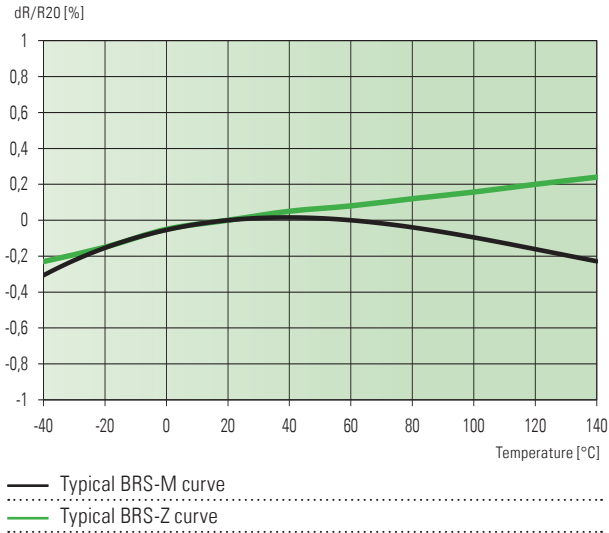
BRS - N - R010 - 2.0



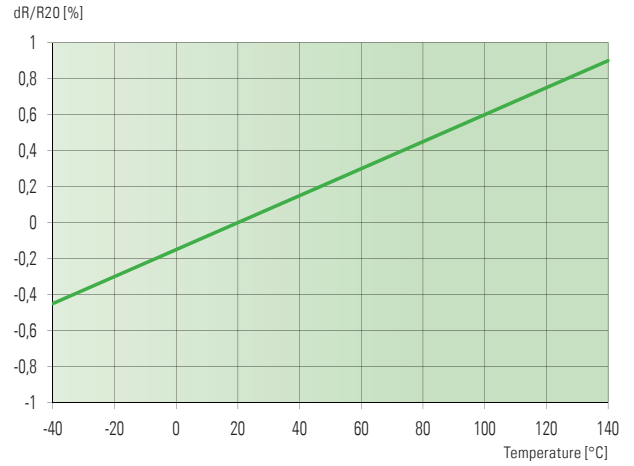


BRS // SIZE 3812

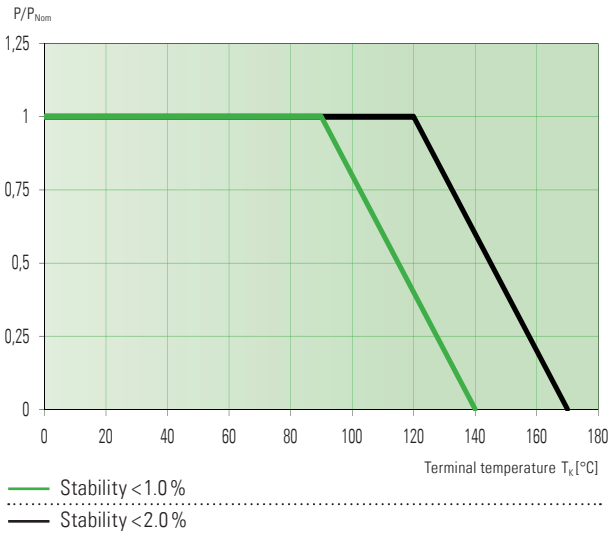
Temperature dependence of the electrical resistance of BRS-M and BRS-Z resistors



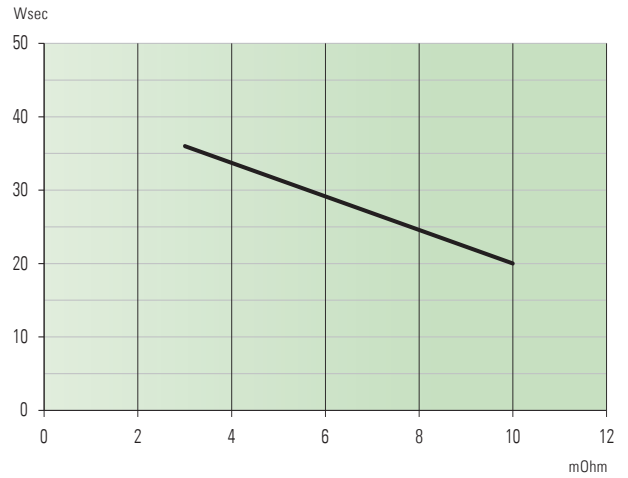
Temperature dependence of the electrical resistance of BRS-N resistors



Power derating curve (2 mOhm)



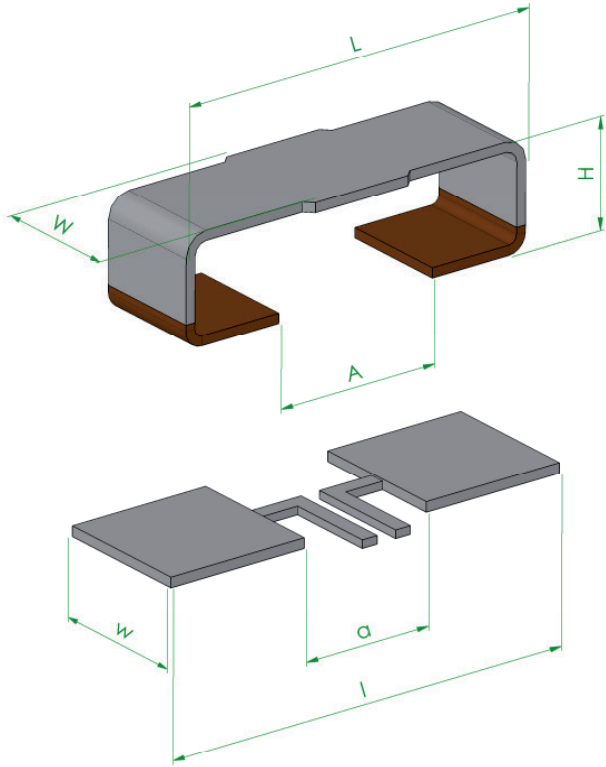
Single pulse surge curve < 10 ms





BRS // SIZE 3812

Mechanical dimensions and Pcb-layout proposal, (Reflow-soldering) [mm] // Drawing no. Z-YX-288a



Resistor type	L	W	H	A
BRS-Z-R002	9.7 ±0.3	3.15 ±0.5	3.1 ±0.3	4.15 ±0.25
BRS-M-R003	9.67 ±0.3	3.15 ±0.5	3.09 ±0.3	4.15 ±0.25
BRS-N-R010	9.5 ±0.3	3.15 ±0.5	3.8 ±0.3	4.15 ±0.25
BRS-A-R025	9.18 ±0.3	3.15 ±0.5	2.68 ±0.3	4.15 ±0.25

Solder pad type	l	w	a
BRS-Z-R002	10.5	3.5	3.7
BRS-M-R003	10.47	3.5	3.7
BRS-N-R010	10.3	3.5	3.7
BRS-A-R025	9.88	3.5	3.7

4 W type broaden layout upon request

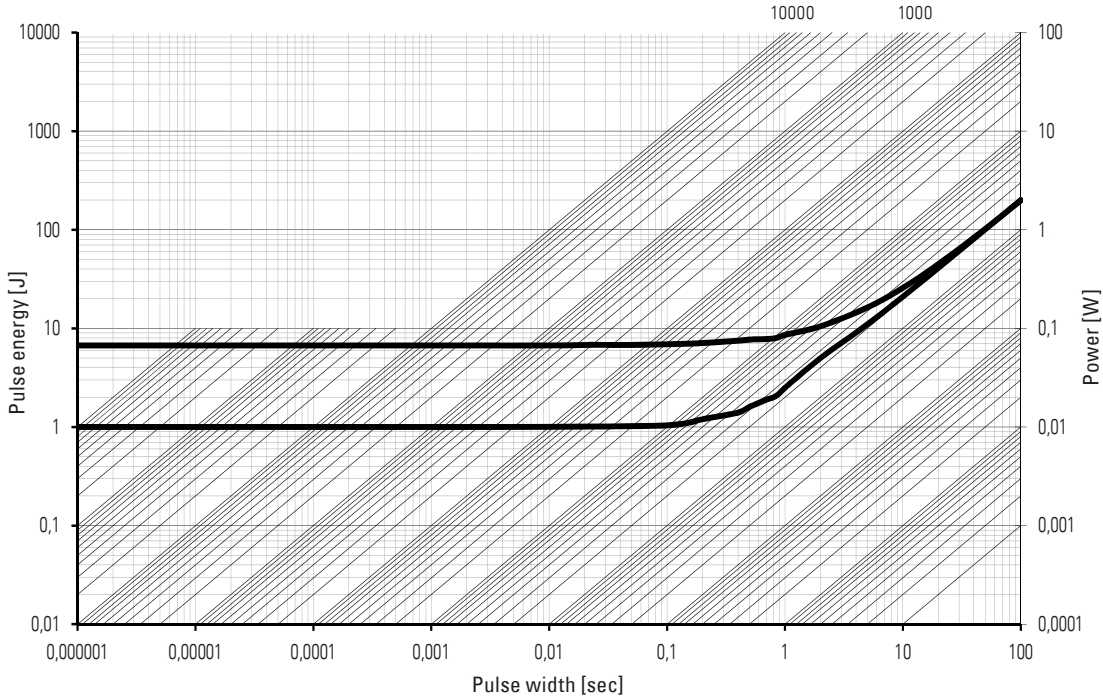
Specification

Parameters	Test conditions	Specified values
Temperature Cycling	2000 cycles (-55 °C to +150 °C)	±1.0 %
Low Temperature Storage and Operation	-65 °C for 24 h	±0.2 %
Resistance to Soldering Heat	260 °C for 10 sec / 8h steam aging	n.a.
Moisture Resistance	MIL-STD-202 method 106	±0.2 %
Mechanical Shock	100 g, 6 ms half sine	±0.5 %
Vibration, High Frequency	20 g, 10-2000 Hz	±0.5 %
Operational Life	2000 h, TK max at nominal load	±2.0 % (T _K = 120 °C)
High Temperature Exposure	2000 h / 170 °C	±2.0 %
Bias Humidity	+85 °C, 85 r.F., 1000 h	±0.5 %



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Maximum pulse energy respectively pulse power for permanent operation. Max. average power $P_{Nominal}$



This curve is only valid for the min. and max. resistance value. The shape of the curve in the range below 0.1 sec will be different for resistance values inbetween. Therefore a separate qualification should be made for pulse power close to the above curve.

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