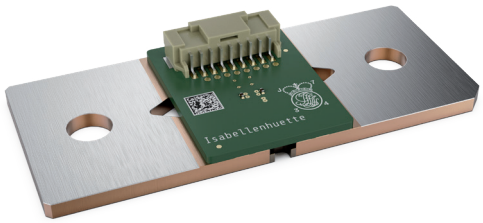
ISABELLENHÜTTE

PRELIMINARY VERSION

BSN (8436 metric)

ISA-WELD® PRECISION RESISTOR



FEATURES

- Analog sensor with connector and thermistor (NTC)
- Up to 36 W permanent power
- High pulse power rating
- High temperature measurement stability (improved temperature coefficient of resistance, TCR)
- Shunt with partial nickel-tin-plating
- Data Matrix Code (DMC) containing resistance value and polynominal fitting function of TCR-curve
- AEC-Q200 qualification

RoHS

APPLICATIONS

- Current sensor for BMS (Battery Management Systems)

Technical data		**BSN-L025-003**	**BSN-L025-009***
Resistance value	**µOhm**	25	
Resistance tolerance (manufactured)	**%**	±5	
Tolerance 1&2 on DMC (measured)	**%**	DMC ±0.2 (4σ)	
TCR 1&2 (20-60 °C)	**ppm/K**	DMC ±15 (4σ)	0 ± 10 (4σ)
Applicable temperature range for continuous operation	**°C**	-40 to 125 (limited by connector)	
Power rating (nominal load, P_{nom}) at T_K = 95°C	**W**	36	
Load for continuous operation at T_K = 95°C	**A**	1,200	
Load** for pulse operation with following boundary conditions:	**time**	**current**	
- Maximum resistance temperature 200 °C	10 s	±1,750 A	
- Maximum PCB temperature 130 °C	5 s	±1,850 A	
- Maximum connector temperature 125 °C	1 s	±2,800 A	
- Terminal temperature T_K = 95°C	100 ms	±5,200 A	
Internal heat resistance (R_{thi})	**K/W**	≤0.8	
Inductance	**nH**	<3	
Maximum resistance drift at P_{nom} after 2,000 h of continuous operation at maximum temperature T_{max} = 125 °C	**%**	<0.3	
Packaging information		12 pcs./tray, material PS-ESD, 4 trays plus 1 empty tray on top in ESD bag	

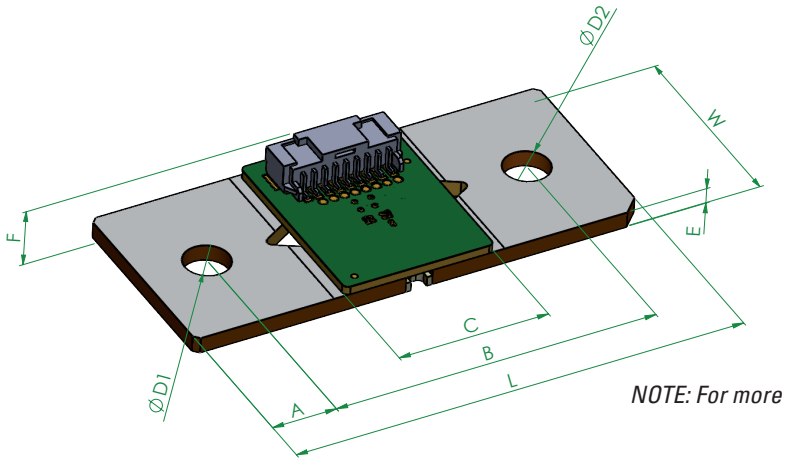
*Under development // ** Sample loads. Please feel free to contact us in case of differing currents or pulse profiles.
Note: For calculation of the maximum derating terminal temperature (T_K) the following formula can be used: $T_K = T_{max} - (R_{thi} \times P_{nom})$.

Ordering code example

BSN - L025 - 003

- 003 ..... Version
- L025 ..... Resistance value [mOhm] / „L" represents decimal point
- BSN ..... Type

Mechanical specification [mm]



NOTE: For more detailed information, please refer to the customer drawing.

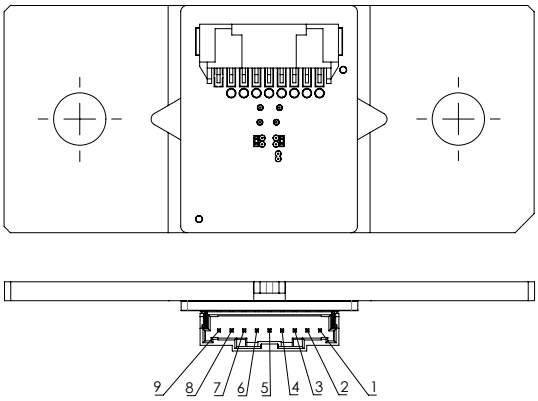
Type / Ordering code	A	B	C	D1/D2	E	F
BSN-L025-003	12 ± 0.2	60 ± 0.3	28 ± 0.3	ø 8.3 ± 0.1	3 ± 0.1	11 ± 0.2

Type / Ordering code	L	W	shunt plating	underlayer	alloy	weight	tightening torque
BSN-L025-003	84 ± 0.2	36 ± 0.3	Sn	Ni	ZERANIN®	115 g	15 - 25 Nm

PCB Specification

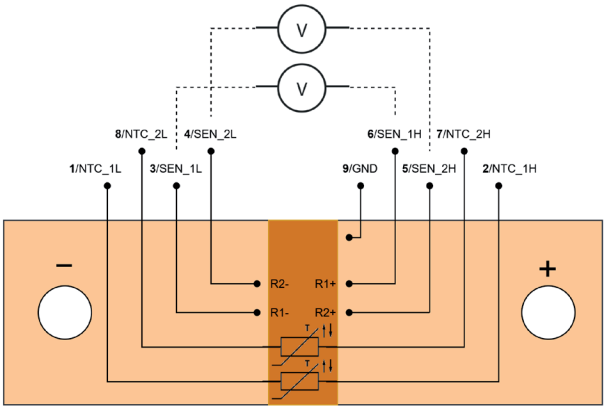
Type / Ordering code	Connector	Part no.	Orientation	Positions	NTC quantity	NTC part no.	Receptacle	Crimp contacts
BSN-L025-003	Molex	5023520900	horizontal	9	2	B57232V5103F360	5051510900 (example)	5051538000

PIN specification BSN-L025-003



Connector Pin	Signal
1	NTC_1L
2	NTC_1H
3	SEN_1L
4	SEN_2L
5	SEN_2H
6	SEN_1H
7	NTC_2H
8	NTC_2L
9	GND

PIN Routing

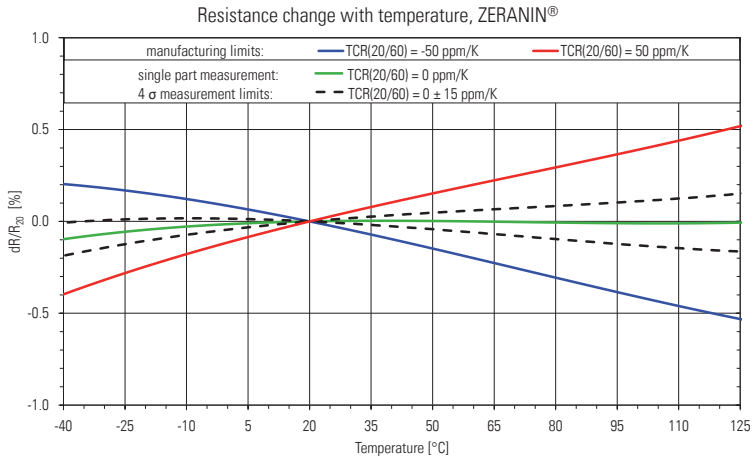


DMC specification (standard)

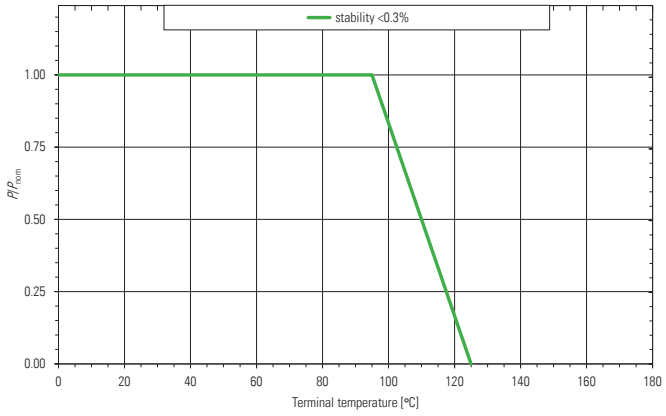
Name	Explanation	Start position	Number of Digits	Meaning	Code*
PPPPPP	ERP-system part number	1	6	BSN-L025-003	164935
XXX	manufacturing plant code	7	3	Dillenburg	000
YY	manufacturing year (Gregorian calendar)	10	2	2023	23
JJJ	day of manufacturing (Gregorian calendar)	12	3	25.08.2023	237
vvvvvvvvv	production batch number	15	10	1000907226	1000907226
nnnnnn	starting consecutive number per month each	25	6	000013	000013
RRRRRR1	resistance value 1 in nano ohms @20°C	31	6	024997	024997
RRRRRR2	resistance value 2 in nano ohms @20°C	37	6	024998	024998
±a','aaa'e-'x	cubic polynom coefficient sign (+/-)**	43	6	9,952E-08	199528
±b','bbb'e-'y	quadratic polynom coefficient sign (+/-)**	49	6	-1,712E-05	017125
±c','ccc'e-'z	linear polynom coefficient 1 sign (+/-)**	55	6	9,602E-04	196024
±c','ccc'e-'z	linear polynom coefficient 2 sign (+/-)**	61	6	9,385E-04	193854

*not applicable or used digits will have only zeros at their digit numbers
** Prefix „+" = „1"; Prefix „-" = „0"
Note: TCR formular: $dR/R20\ [\%] = a \cdot (T\text{-}20)^3 + b \cdot (T\text{-}20)^2 + c^*(T\text{-}20)$

Example temperature dependence of the electrical resistance of one manufactured sensor (DMC)



Power derating curve



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