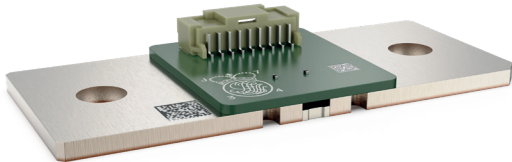




BSN // SIZE 8436 (METRIC)

PRELIMINARY VERSION



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, TCR)
- Shunt with nickel-tin-plating
- Data Matrix Code (DMC) containing resistance value, polynomial fitting function of TCR-curve and NTC-values
- AEC-Q200 qualification



Applications

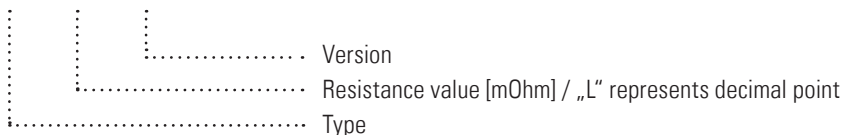
- Current sensor for BMS (Battery Management Systems)

Technical data		BSN-L025-001	BSN-L025-002	BSN-L025-003	BSN-L025-004
Product status		A-sample	A-sample	C-sample 07/2024	A-sample
Resistance value	μOhm	25			
Resistance tolerance (manufactured)	%	±5			
Tolerance 1 & 2 on DMC (measured)	%	DMC ±0.2* / ±0.2*			
Tolerance 3	%	±5			±5
Temperature coefficient 1&2 (20-60 °C)	ppm/K	DMC* ±20			
Temperature coefficient 3 (20-60 °C)	ppm/K	0 ± 50			0 ± 50
Applicable temperature range	°C	-40 to +125 (limited by connector)			
Power rating (nominal load, P_{nom})	W	36			
Load for continuous / pulse operation***		time		current	
		continuous		±1,100 A	
		10 s		±1,300 A	
		1 s		±2,500 A	
		100 ms		±5,200 A	
Internal heat resistance (R_{thi})	K/W	≤0.8			
Thermal EMF (35-60 °C)	μV/K	<0.6** (ZERANIN®30)			
Inductance	nH	<3			
Maximum resistance drift at nominal load after 2,000 h of continuous operation at maximum temperature T_{max}		<0.3 % ($T_{max} = 125 °C$)			
Packaging information		12 pcs./tray, material PS-ESD, 4 trays plus 1 empty tray on top in ESD bag			

*Measured value, under development 4σ // **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

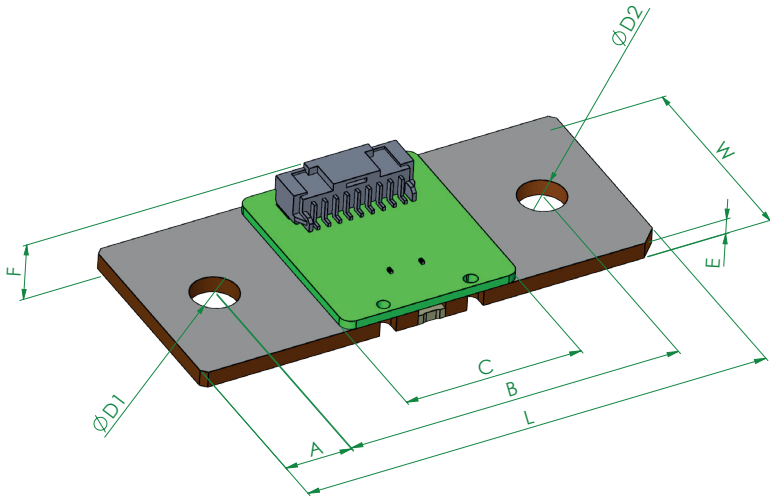
BSN - L025 - 00x





BSN // SIZE 8436 (METRIC)

Mechanical specification [mm]



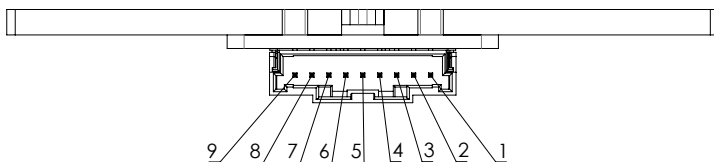
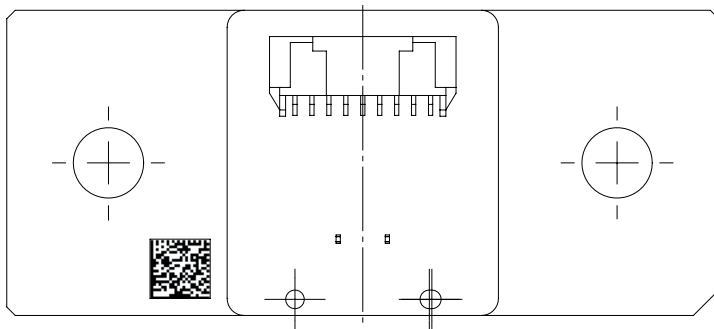
Type / Ordering code	A	B	C	D1/D2	E	F	G	H
BSN-L025-00x	12 ± 0.2	60 ± 0.3	32 ± 0.3	∅ 8.3 ± 0.1	3 ± 0.1	dimensions on request	18 ± 0.2	3 ± 0.1

Type / Ordering code	W	L	shunt plating	underlayer	alloy
BSN-L025-00x	36 ± 0.3	84 ± 0.2	Sn	Ni	ZERANIN®

PCB Specification

Type / Ordering code	Connector	Part no.	Orientation	Positions	NTC quantity	NTC part no.	Receptacle
BSN-L025-001	Molex	5023521100	horizontal	11	2	B57232V5103F360	5051510900 (example)
BSN-L025-002	Molex	5600200930	vertical	9			
BSN-L025-003	Molex	5023520900	horizontal	9			
BSN-L025-004	Hirose	ZE05H-8DP-2V	vertical	8			

PIN specification BSN-L025-003 (other pin-out drawings upon request)



Connector Pin	Signal
1	NTC1_2
2	NTC1_1
3	N1_L
4	N2_L
5	N1_H
6	N2_H
7	NTC2_1
8	NTC2_2
9	GND



BSN // SIZE 8436 (METRIC)

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
vvvvvvvv	production batch number	15	10	1000907226	1000907226
nnnnnn	starting consecutive number per month each	25	6	000013	000013
RR', 'RRRR1	resistance value 1 in nano ohms @20°C	31	6	024997	024997
RR', 'RRRR2	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
KKKKK1	NTC value 1 in kOhms	67	6	100050	100050
KKKKK2	NTC value 2 in kOhms	73	6	100100	100100

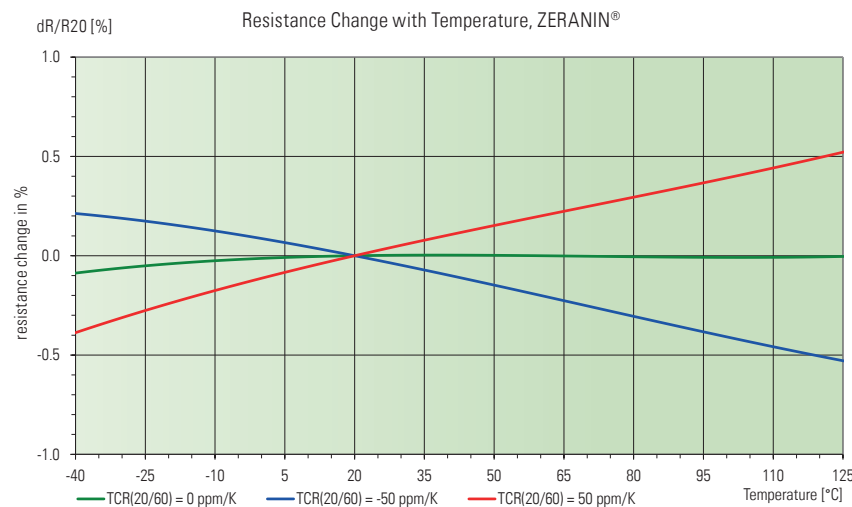
*not applicable or used digits will have only zeros at their digit numbers

** Prefix „+“ = „1“; Prefix „-“ = „0“

B-samples will have „0“ on these positions: XXX, vvvvvvvvv, nnnnnn, RR', 'RRRR2, KKKKKK1, KKKKKK2

B-samples will have Batch-R(t) curve instead of 100% measured value for each shunt, has to be measured in our lab

Temperature dependence of the electrical resistance (manufactured)



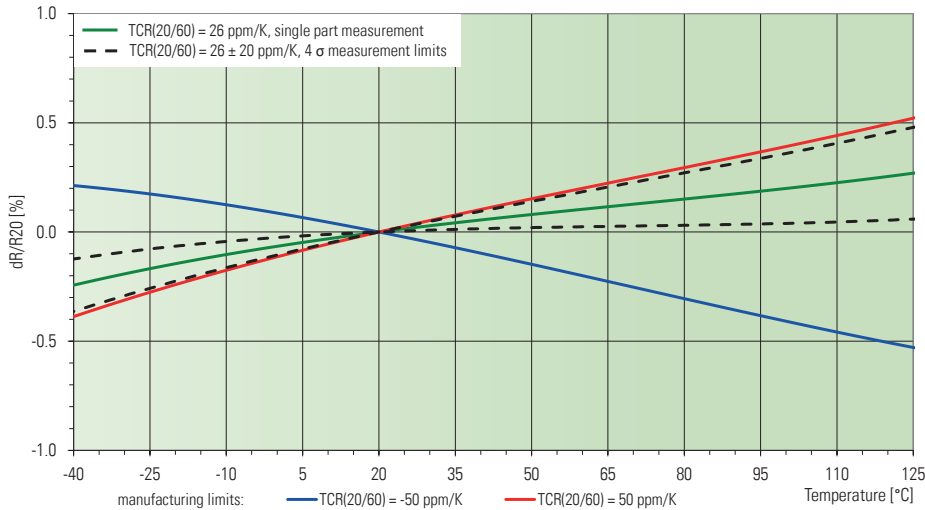
Note: The DMC specified TCR is within the manufactured limits.



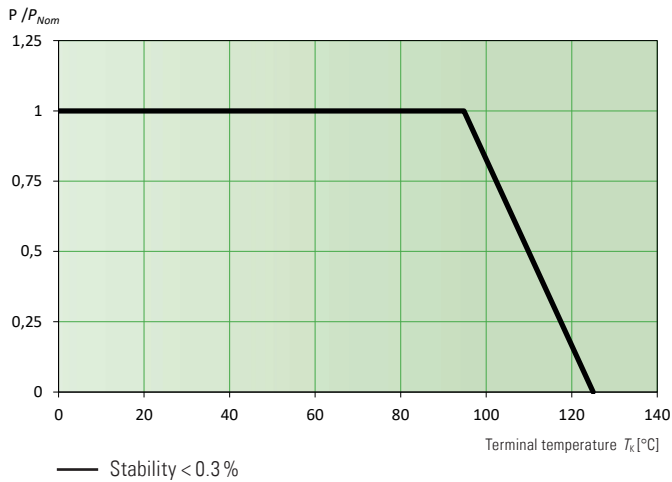
BSN // SIZE 8436 (METRIC)

Example temperature dependence of the electrical resistance of three manufactured sensors (DMC)

Resistance Change with Temperature, ZERANIN®



Power derating curve



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