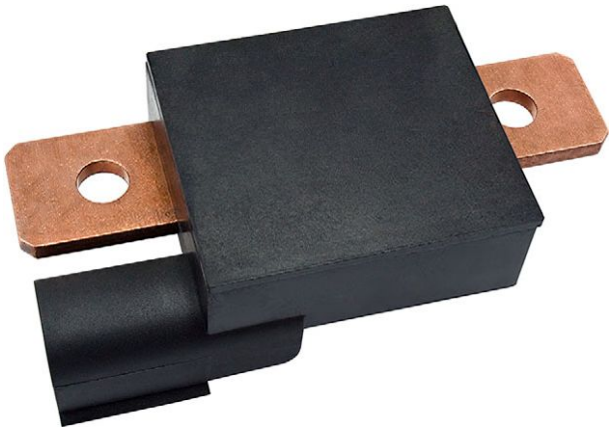
Power Metal Strip® Intelligent Battery Sensor
Very Low Value (100 µΩ)



FEATURES

- High voltage, current, and temperature range
- Can be ordered preprogrammed or blank
- Proprietary processing technique produces extremely low resistance value
- Operates as a LIN 2.1 or 2.0 slave
- Circuit sealed for all weather use
- Variable sampling rate
- Capable of withstanding harsh automotive environments
- Integral 4-pin male connector (Molex # MX33482-4001)
- Very low inductance (< 5 nH)
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Pb-free

RoHS COMPLIANT

APPLICATIONS

- Automotive battery management systems
- Lead acid battery monitoring
- Uninterrupted power supplies
- Golf carts
- Electric forklifts
- Personal mobility vehicles
- Medical beds
- Solar chargers
- Renewable energy inverter systems
- Recreational vehicles
- Emergency lighting

PRODUCT SUMMARY	
Resistance	100 µΩ
Voltage range	4 V to 18 V
Current range (continuous)	± 600 A
Current range (pulsed)	± 2000 A
Temperature range	-40 °C to +115 °C

GLOBAL PART NUMBER INFORMATION

GLOBAL PART NUMBERING: WBPK600L0A00010001 (WBP, 600 A, 0.000100 Ω, A chipset, bulk pack)

W	B	P	K	6	0	0	L	0	A	0	0	0	1	0	0	0	1

GLOBAL MODEL (3 digits)	PACKAGING CODE (1 digits)	MAXIMUM CONTINUOUS CURRENT (3 digit)	COMMUNICATION (1 digit)	SPECIAL CHARACTER (1 digit)	CHIPSET CONTROLLER (1 digit)	DESIGN (4 digits)	SOFTWARE (4 digits)
WBP	**K** = bulk pack **T** = tray pack	**001 thru 99K** as applicable	**I** = LIN	From **0** to **9** as applicable	**A**	**0000** to **9999** as applicable	From **0** to **9999** as applicable

ABSOLUTE MAXIMUM RATINGS (all voltages referenced to GND = 0 V)		
PARAMETER	**UNIT**	**RATING**
V_{sup} / V_{meas}	V	-22 to +40
LIN	V	-16 to +40
LIN short-circuit current	mA	200
IN+	mV	-200 to +300
IN-	mV	-200 to +300
Operating temperature (1)	°C	-40 to +115
Storage temperature	°C	+150

Note

- Stresses beyond those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability

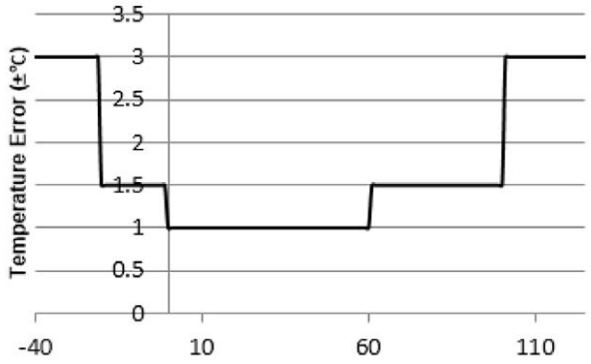
RECOMMENDED OPERATING RANGE (all voltages referenced to GND = 0 V)		
PARAMETER	**UNIT**	**RATING**
V_{sup} (1) / V_{meas}	V	4 to 18
IN+	mV	± 200
IN-	mV	± 5
Operating temperature (2)(3)	°C	-40 to +105

Notes

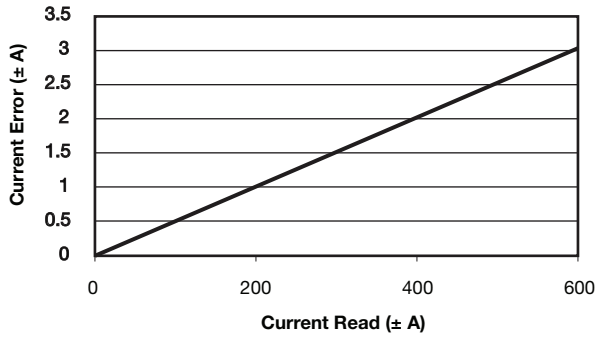
(1) LIN interface requires at least 7 V for functionality
(2) Temperature as measured by WBP output
(3) Reduced functionality above 105 °C may be experienced

CURRENT VALUE PER GAIN RANGE			
RANGE	**LOWEST I (± A)**	**HIGHEST I (± A)**	**RESOLUTION (mA)**
1	0.0000	23.0718	0.7153
2	23.0719	46.1436	1.4305
3	46.1437	92.2873	2.8611
4	92.2874	184.5747	5.7222
5	184.5748	369.1495	11.4444
6	369.1496	738.2992	22.8887
7	738.2993	1476.5984	45.7775
8	1476.5985	2000.0000	91.5550

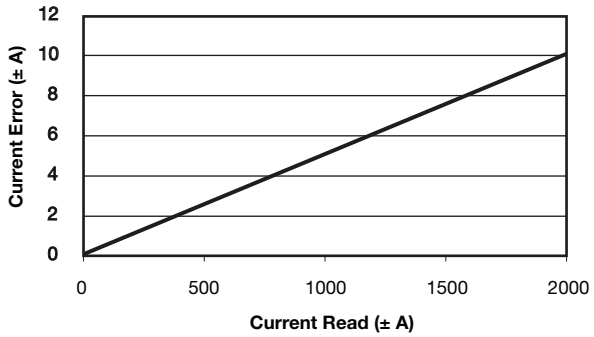
TEMPERATURE ACCURACY



MAXIMUM CURRENT ERROR (CONTINUOUS)



MAXIMUM CURRENT ERROR (FULL RANGE)

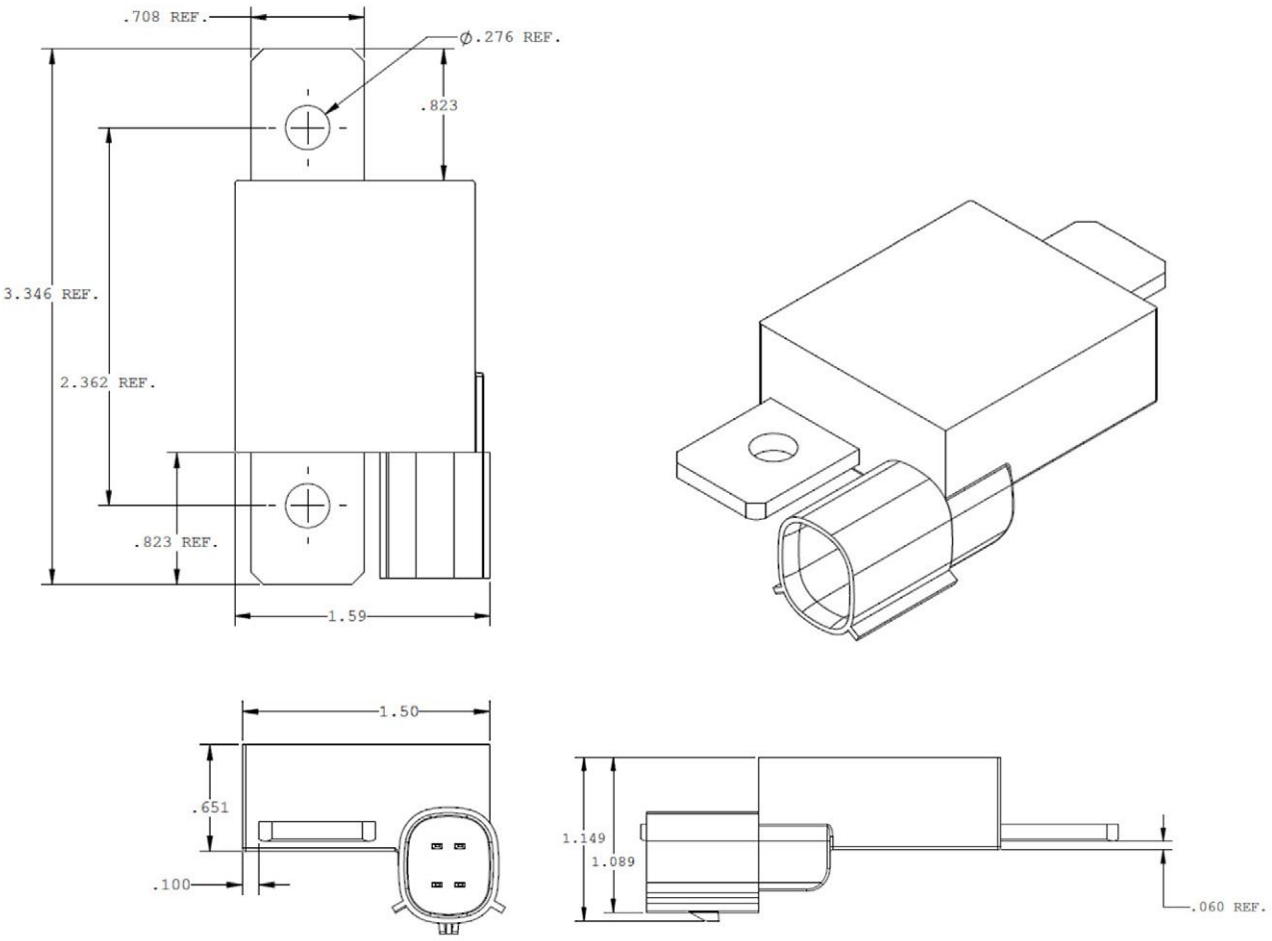


SPECIFICATIONS				
PARAMETER	**UNIT**	**MIN.**	**TYP.**	**MAX.**
POWER REQUIREMENTS				
Supply voltage (V_{sup})	V	4	12	18
Supply current (1)	mA	10	15	20
CURRENT MEASUREMENT				
Resistance	µΩ	95	100	105
Current measurement range (continuous)	A		± 600	
Current measurement range (pulsed) (2)	A	-2000		2000
Maximum pulse energy (2)	J		900	
Current measurement accuracy	A		± 0.5 % + offset	
Current measurement offset error max.	mA	-30	0	30
Current measurement resolution (see Table)	mA	0.715		91.5
VOLTAGE MEASUREMENT				
Voltage measurement range	V	4		18
Voltage measurement accuracy	mV	-50		50
Voltage measurement resolution	mV		0.88	
TEMPERATURE MEASUREMENT				
Temperature measurement range	°C	-40		125
Temperature measurement accuracy (0 °C to 60 °C)	°C		± 1	
Temperature measurement accuracy (-20 °C to 100 °C)	°C		± 1.5	
Temperature measurement accuracy (-40 °C to 115 °C)	°C		± 3.0	
Temperature measurement resolution	°C		0.055	
COMMUNICATION				
LIN specification			LIN 2.1, 2.0	
LIN baud rate	bits/s	2000		20000
Data transfer rate (max.) (3)	Hz		50	
ADC sample rate (I, V, T)	Hz	10	200	1000
CONNECTIONS				
Resistor mounting holes	0.276" dia, centered widthwise, 0.492" from end of shunt			
Four pin connector	Integral connector mates to standard Molex 33472-4001 female connector			

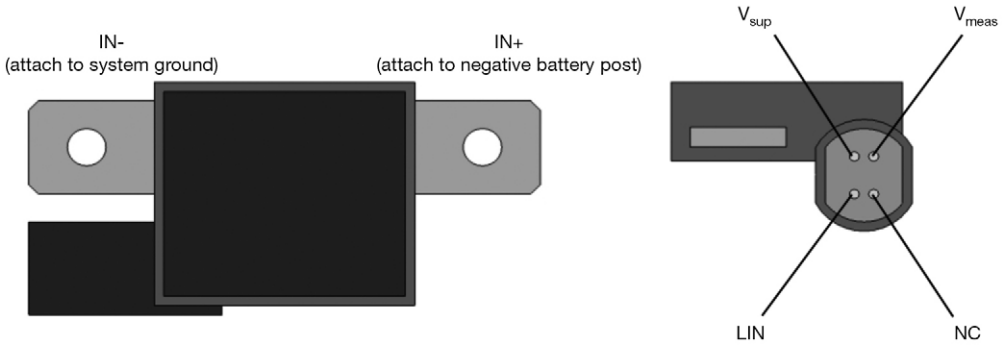
Notes

(1) Typical depends on LIN transfer rate
(2) Temperature as measured by the IBS may not exceed 115 °C
(3) LIN bus constrained

DIMENSIONS in inches



PIN CONFIGURATION AND APPLICATION RECOMMENDATION



PERFORMANCE	
TEST	**CONDITIONS OF TEST**
Thermal shock (1)	-40 °C to + 85 °C, 500 cycles, 30 min at each extreme
High temperature exposure	+115 °C for 1000 h
High temperature operation	1000 h at +115 °C, 20 A at 1.5 h "ON", 0.5 h "OFF"
Low temperature operation	1000 h at -40 °C, 20 A at 1.5 h "ON", 0.5 h "OFF
Biased humidity	+85 °C, 85% RH, 1000 h (2)
Mechanical shock	100 *g*'s for 6 ms, 5 pulses
Vibration	Frequency varied 10 Hz to 2000 Hz in 1 min, 3 directions, 12 h
Moisture resistance	MIL-STD-202, method 106, 0 % power, 7b not required
Jump start test	26 V, 1 min overvoltage jump start simulation
Reverse polarity test	-13.5 V, 2 min reverse polarity jump start simulation
Over voltage test	18 V, 60 min overvoltage simulation
State change waveform test	State change susceptibility (on / off)
Ground path inductance sensitivity	State change susceptibility (on / off) due to ground path inductance

Notes

- All test are completed on a pass-fail basis, judged by compliance with the datasheet specifications

(1) 250 cycles unpowered, 250 powered

(2) Circuit powered

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