CSHI Series Current Sensor

Description

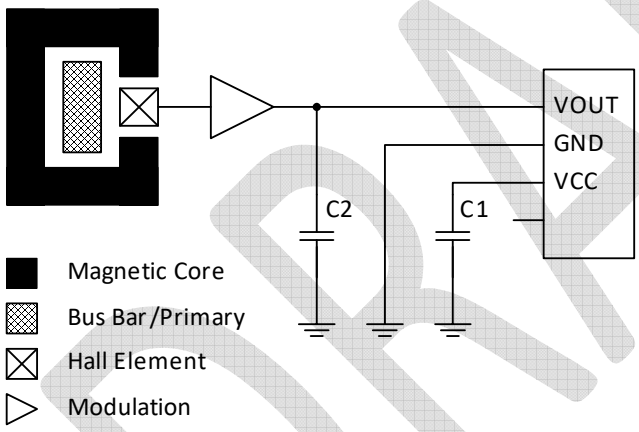
CSHI Series current sensor is based on open loop Hall technology. Using Hall effect integrated circuit, this product brings the best combination of performance and reliability.

- High accuracy, good linearity and low temperature drift.
- Excellent EMC performance.
- Non-intrusive solution.

Potential application

- Battery Management Systems
- Motor control
- Power Storage etc.

Electrical Diagram

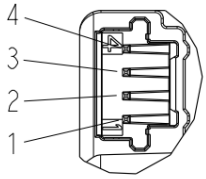


C1	100nF	Decoupling
C2	10nF	EMC protection

Mating Connector:

- TE MPN 1473672-1

Electrical Connection



Pin Out	
1	V_{OUT}
2	GND
3	U_C (5V)
4	No Connection

Product Number Definition

CS	H	I	900	A	-	0	0	1

Current Sensor

Principle

H	Hall Based

Product Grade

I	Industry

Rated Current

50	50A
100	100A
200	200A
300	300A
400	400A
500	500A
600	600A
700	700A
800	800A
900	900A
1000	1000A
1100	1100A
1200	1200A
1500	1500A

Shaping Type

A	One Channel

Product dimension (different housing)

0	40*38*32mm
1	40*35*29mm

Reserved

0	Reserved

Version

1	ASIC 1

Absolute ratings (Not operating)

Parameter	Symbol	Unit	Specification			Conditions
			Min	Typ	Max	
Maximum supply voltage	$U_{C\,max}$	V			6	
Maximum reverse supply voltage	$U_{C\,max}$	V	-0.1			
Maximum output voltage	$V_{out\,max}$	V	-0.1		6	V_{OUT} Reverse / Forward voltage
Maximum output current	$I_{out\,max}$	mA	-10		2	
Ambient storage temperature		°C	-40		85	
Electrostatic discharge voltage	U_{ESD}	kV			8	
RMS voltage for AC insulation test	U_d	kV			2.5	50 Hz, 1 min
Creepage distance	d_{Cp}	mm	4.9			
Clearance	d_{Cl}	mm	4.9			
Comparative tracking index	CTI		PLC3			

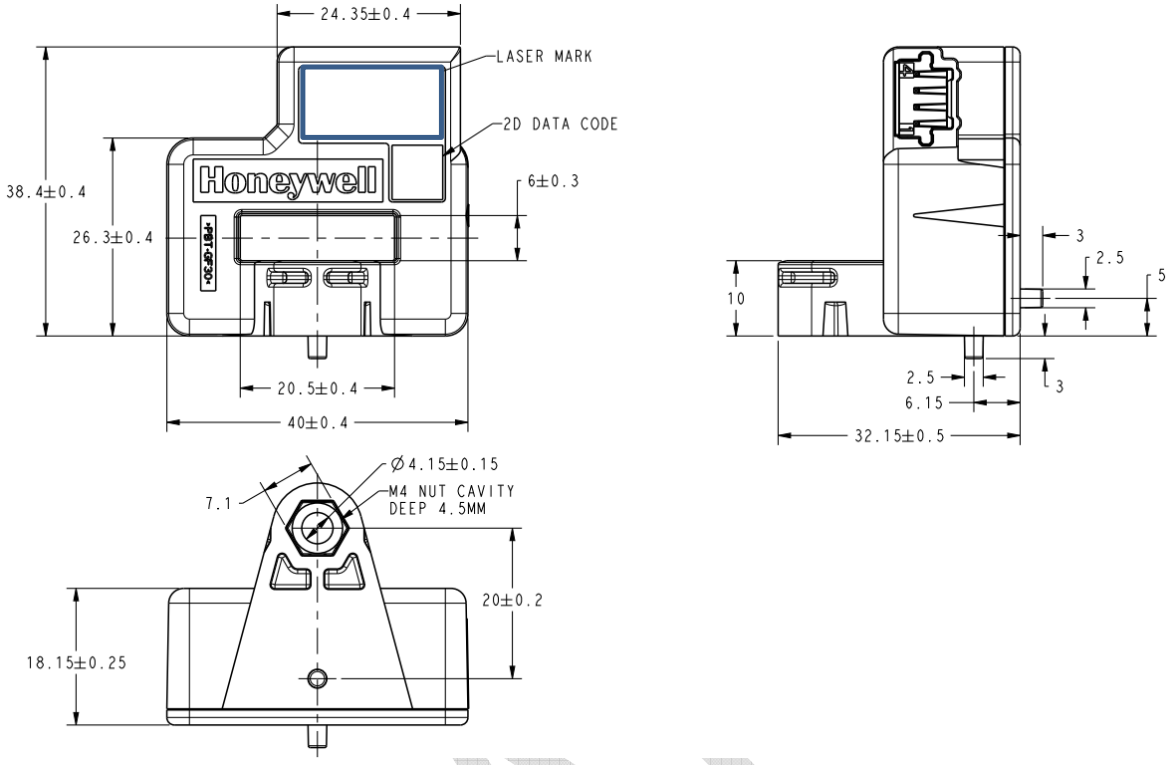
Operating characteristics in nominal range (I_{PN})

Parameter	Symbol	Unit	Specification			Conditions
			Min	Typ	Max	
Electrical Data						
Primary nominal RMS current	I_{PN}	A	$-I_{PN}$		I_{PN}	
Supply voltage	U_C	V	4.5	5	5.5	
Ambient operating temperature		°C	-40		85	
Output voltage	V_{OUT}	V	$V_{OUT} = \frac{U_C}{5}(G * I_P + V_o)$			$I_p = (V_{out} * \frac{5}{U_c} - V_o)/G$
Sensitivity	G	mV/A		2000/I_{PN}		@ TA = 25 °C
Offset voltage	V_O	V		2.5		
Current consumption	I_C	mA		8		@ TA = 25 °C, @ UC = 5 V
					10	
Load resistance	R_L	kΩ	10			
Output internal resistance	R_{out}	Ω		1		@ TA = 25 °C
					10	
Performance Data						
Ratio−metric error	ε_r	%		±0.5		
Sensitivity error	ε_G	%		±0.6		@ TA = 25 °C, @ UC = 5 V
Electrical offset voltage	V_{OE}	mV		±10		@ TA = 25 °C, @ UC = 5 V
Magnetic offset voltage	V_{OM}	mV		±2		@ TA = 25 °C, @ UC = 5 V
Linearity error	ε_L	%	-1		1	% of full scale
Average temperature coefficient of V_{OE}		mV/°C		±0.04		
Average temperature coefficient of G		%/°C		±0.02		
Step response time @ 90 %	t_r	us		2	6	
Frequency bandwidth	BW	kHz	45			@ -3 dB
Output RMS noise voltage		mV			2	

Overall Accuracy

I_P (A)	T_A = 25 °C, U_C = 5 V			−40 °C ≤ T_A ≤ 85 °C, U_C = 5 V		
$-I_{PN}$	±20 mV	±1%*I_{PN}	±1.00%	±40 mV	±2%*I_{PN}	±2.00%
0	±7 mV	±0.35%*I_{PN}	±0.35%	±10 mV	±0.5%*I_{PN}	±0.5%
I_{PN}	±20 mV	±1%*I_{PN}	±1.00%	±40 mv	±2%*I_{PN}	±2.00%

Installation Dimension (mm)



Mechanical characteristics and installation notes

1. Plastic housing material: PBT+ GF30%
2. Mounting screw M4, torque max 2.5 Nm
3. Product shall be built in closed cabinet and could not be accessed without special tools

Mechanical characteristics and installation notes

1. Mounting screw M4, torque max 1.5 Nm

I_p (Positive primary current direction)