Hall Effect Base Linear Current Sensor

Features:

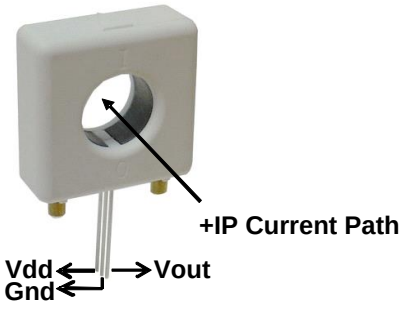
- Temperature-stable quiescent voltage output and sensitivity
- Immune to mechanical stress
- High output driving ability
- Diameter 9.0mm conductor through hole
- Output voltage proportional to AC and DC current
- Wide sensing current range 0~25 A at 5V volt
- High sensitivity 70mV/A
- Operating voltage range 3.3~5.5 V
- Operating current 9mA
- Isolation voltage 4000V
- Ratiometric output from supply voltage
- 20KHz Bandwidth
- Two bronze sticks for easy soldering on PCB

Functional Description:

The Winson WCSA800 current sensor features enhanced output stability across a wide range of operating temperatures and demonstrates immunity to mechanical stress. Additionally, its consistent output sensitivity simplifies calibration, making it ideal for industrial applications that demand high accuracy and operation over an extended temperature range.

The WCSA800 consists of a precise, low-temperature drift linear hall sensor IC with temperature compensation circuit and a diameter 9.0mm through hole. Users can use system's own electric wire by pass it through this hole to measure passing current. This design allows system designers to monitor any current path without breaking or changing original system layout at all. Any current flowing through this hole will generate a magnetic field which is sensed by the integrated Hall IC and converted into a proportional voltage.

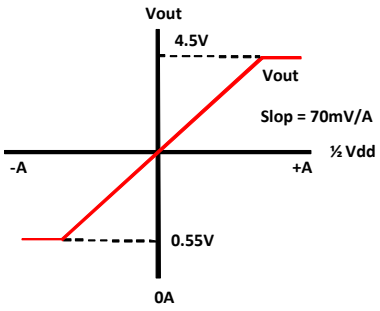
The terminals of the conductive path are electrically isolated from the sensor leads. This allows the WCSA800 current sensor to be used in applications requiring electrical isolation without the use of opto-isolators or other costly isolation techniques and make system more competitive in cost.



Absolute Maximum Range

Voltage applied at Vdd to Vss ----- **-0.1V to 8V**
Voltage applied at Vout to Vss ----- **-0.1V to 7V**
Pass Through Wire Diameter---------- **9.0mm**
Output Current Sink ---------- **10mA**
Output Current Source ---------- **2mA**
Basic Isolation Voltage ---------- **4000V**
Operating Temperature Range ,Ta ----------
---------- **-40ºC to +125ºC**
Storage Temperature Range,Ts ----------
---------- **-65ºC to +170ºC**

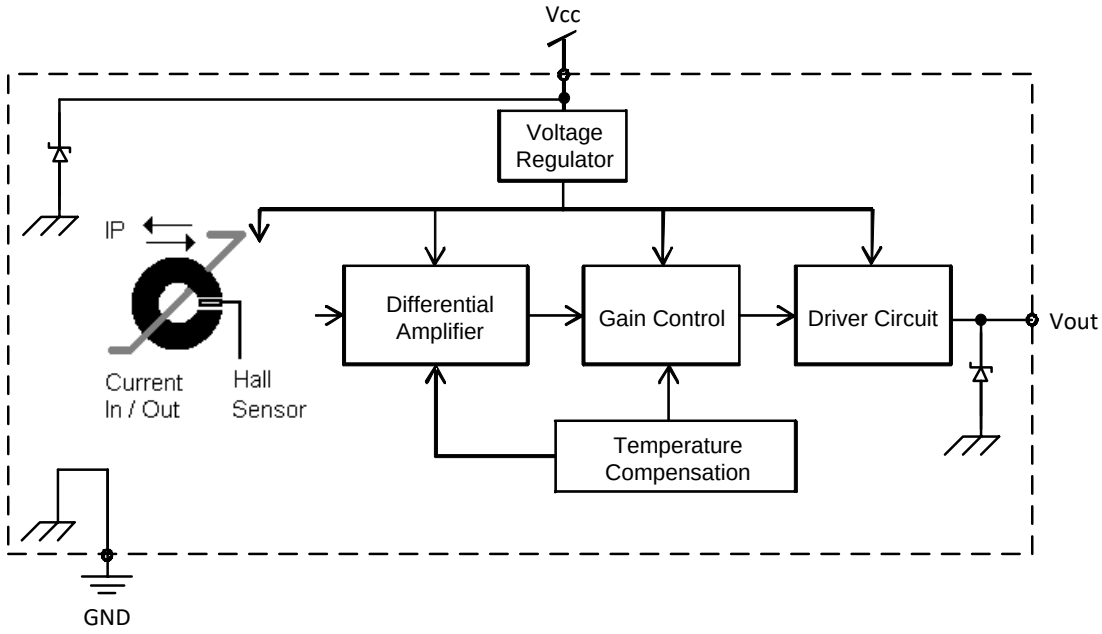
Vout vs. Primary Current



Order Information **(Vdd = 5V)**

Part No.	Sensitivity	Current range
WCSA800	70mV/A	DC:± 0 ~ 25A
		AC: rms 17A

Function Block:



Winson reserves the right to make changes to improve reliability or manufacturability.

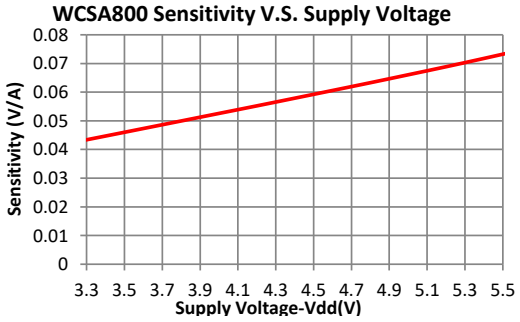
Electrical Characteristics: (T=+25˚C, Vdd=5.0V)

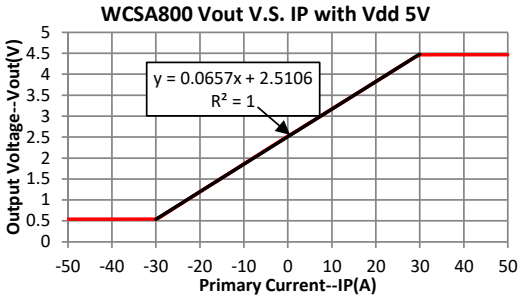
Characteristic	Symbol	Test Conditions	Min	Typ	Max	Units
Supply Voltage	Vdd	—	3.3	—	5.5	V
Supply Current	Isupply	IP =0 A	—	9	11.5	mA
Zero Current Vout	VOG	IP =0 A(DC Mode)	2.45	2.5	2.55	V
Conductor Through Hole	—	—	—	9.0	—	mm²
Sensitivity	Sens	IP= +-10 A	65	70	75	mV/A
Bandwidth	BW	—	—	20	—	kHz
Measurable Current Range	MR	Vdd=5V (DC Mode)	—	±25	—	A
		Vdd=5V (AC RMS)	—	17	—	
Temperature Drift	△Vout	Ip =0 A	—	±0.1	—	mV/℃
Output Noise	V_{Np-p}	Ip =0 A	—	20	—	mV

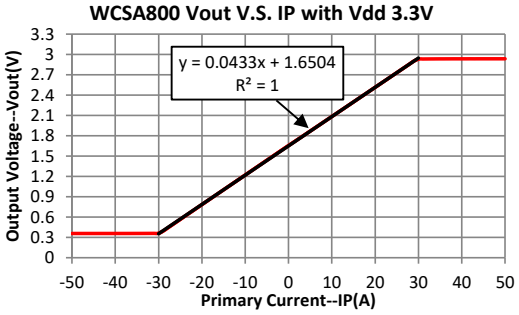
1. All output-voltage measurements are made with a voltmeter having an input impedance of at least 100kΩ

2. Do not apply any 'resistor load' on output pin, it will degrade IC's performance.

Characteristic Diagrams:







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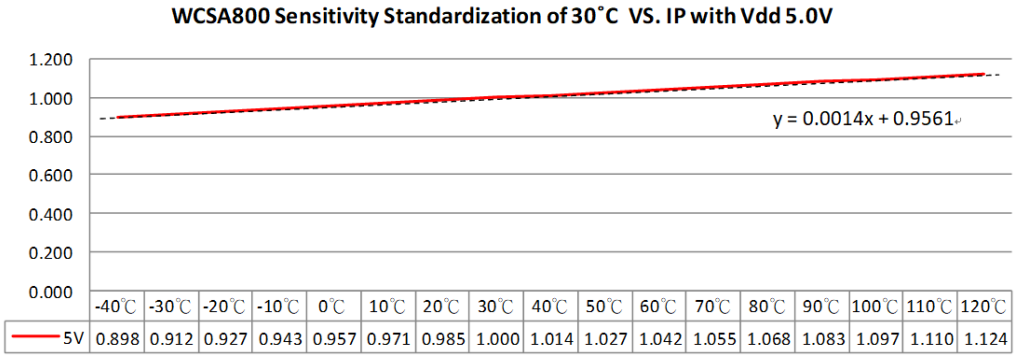
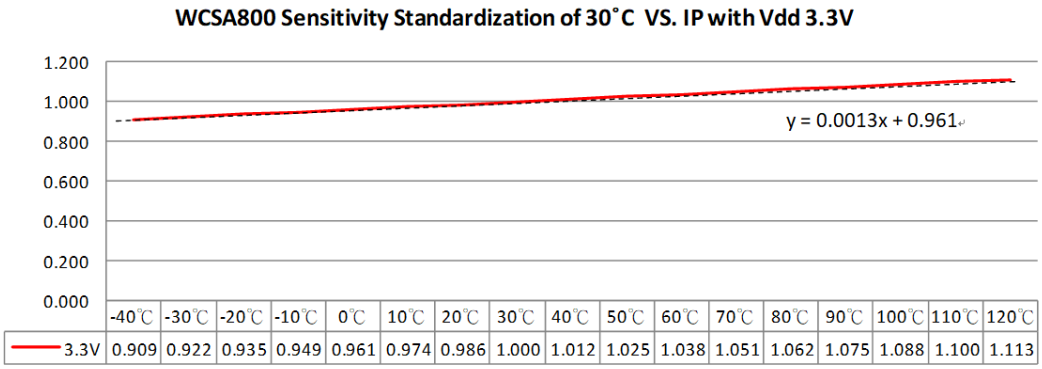
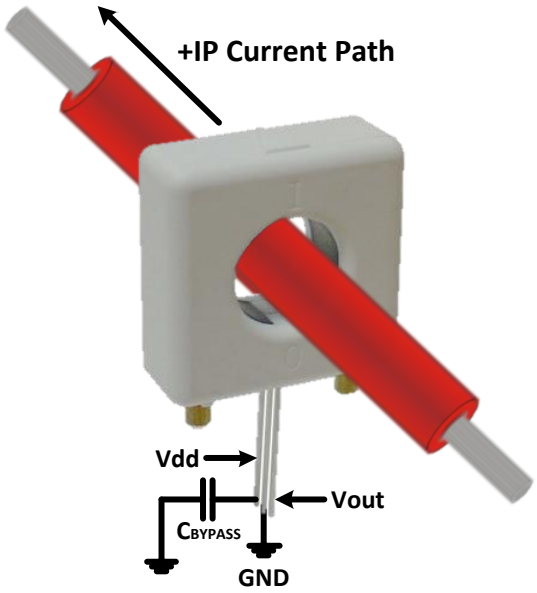




Application Circuit:



Capacitor C_{BYPASS}(0.1uF)is recommend to be connected between Vdd and GND to reduce output noise.

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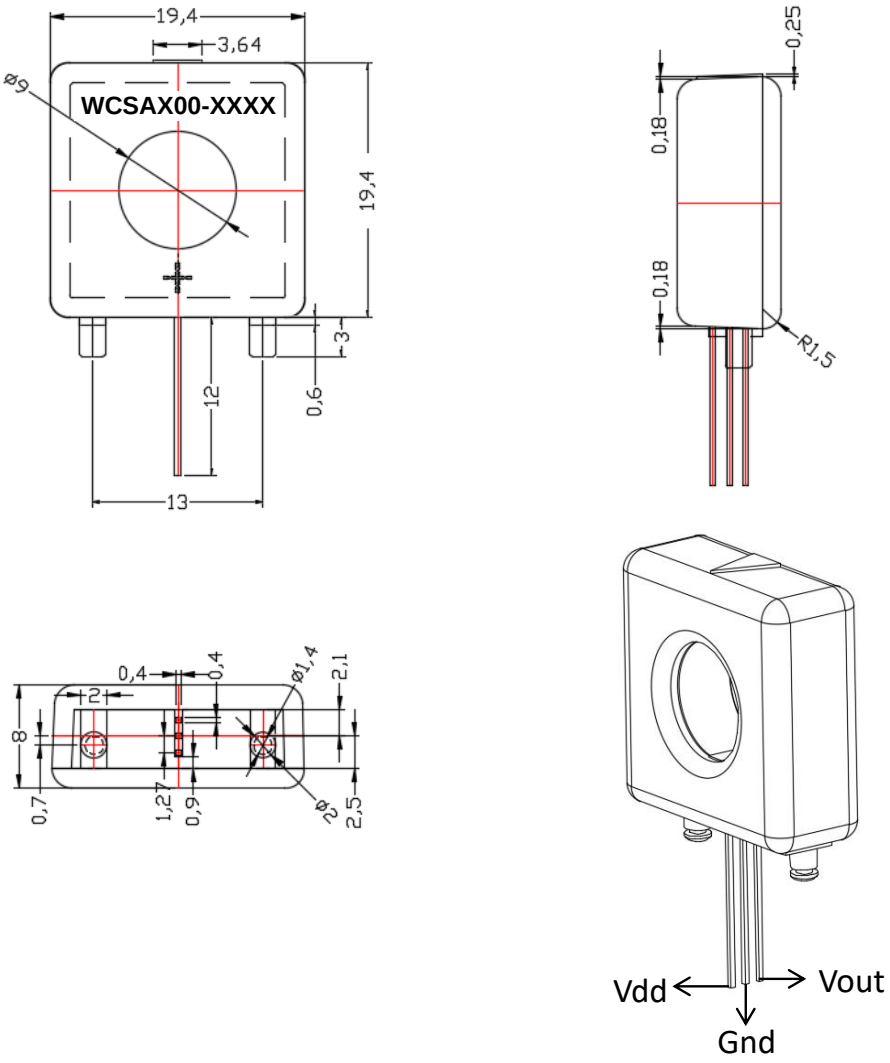
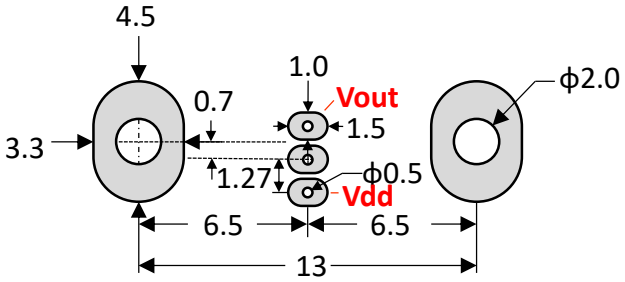
Package Information:

(Unit: mm)



PCB Layout Reference View (Top View)



WCS Application Note : please refer to Winson Website -> Products-> Application Note -> WCS Application Note :

http://www.winson.com.tw/Product/83

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