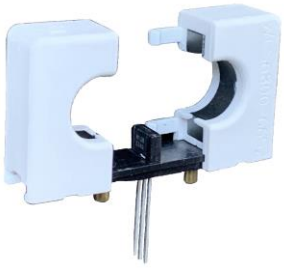
Hall Effect Base Linear Current Sensor

Features:

- 11 x 8 mm^2 split through hole design
- Output voltage proportional to AC and DC current
- Wide sensing current range 0~35 A at 5V volt.
- High sensitivity 65 mV/A
- Wide operating voltage range 3.0~12 V.
- Low operating current 3 mA
- Isolation voltage 4000 V
- Ratiometric output from supply voltage
- 23 KHz Bandwidth
- Two bronze sticks for easy soldering on PCB



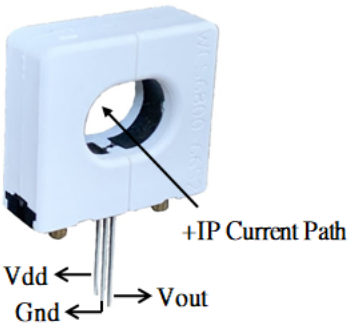
Functional Description:

The Winson WCS6800 current sensor provides economical and precise solution for both DC and AC current sensing in industrial, commercial and communications systems. New patent design of split through hole provides easy implementation without breaking original system and makes current sensing possible. Typical applications include motor control, load detection and management, over-current fault detection and any intelligent power management system etc…

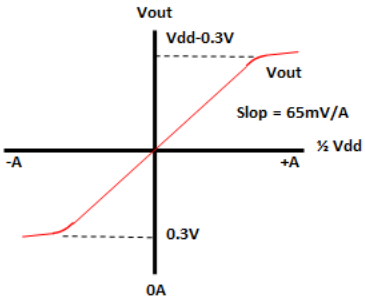
The WCS6800 consists of a precise, low-temperature drift linear hall sensor IC and 11x8 mm^2 split through hole. Users can use system's own electric wire by pass it through this hole to measure passing current. This design allows system designers to monitor any current path without breaking or changing 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 WCS6800 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.

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



Vout vs. Primary Current



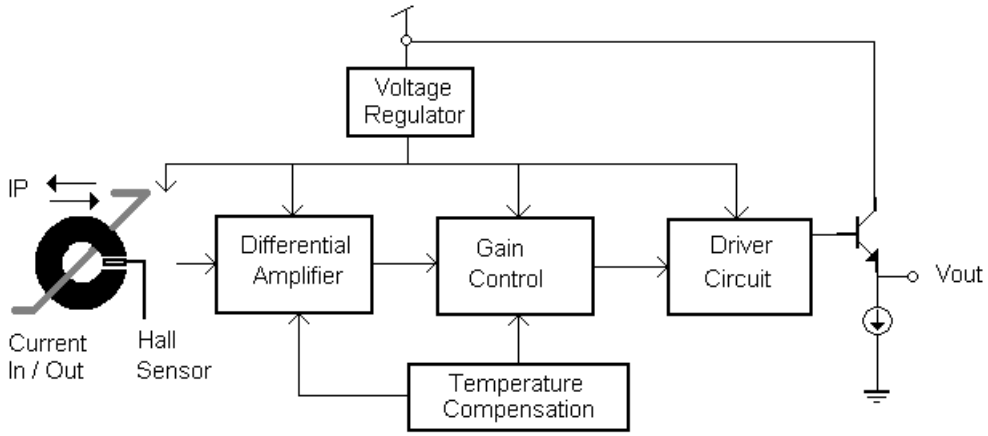
Absolute Maximum Range

Supply Voltage, Vdd ---------- **14V**
Pass Through Wire Channel ---------- **11X8mm²**
Output Current Sink---------- **0.4mA**
Output Current Source---------- **2mA**
Basic Isolation Voltage ---------- **4000V**
Operating Temperature Range, Ta ----------
---------- **-20°C to +125°C**
Storage Temperature Range, Ts ----------
---------- **-65°C to +150°C**
Power Dissipation, Pd ----------**1W**

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

Part No.	Sensitivity	Current range
WCS6800	65 mV/A	DC: ±0 ~ 35A
		AC: rms 25A

Function Block:



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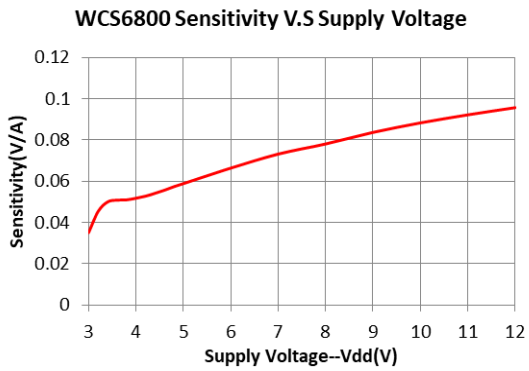
Electrical Characteristics: (T=+25°C, V_{dd}=5V)

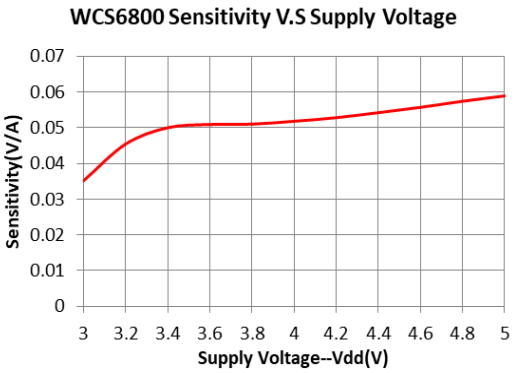
Characteristic	Symbol	Test Conditions	Min	Typ	Max	Units
Supply Voltage	V_{dd}	—	3.0	—	12	V
Supply Current	I_{supply}	IP = 0 A	—	3.5	6.0	mA
Zero Current Vout	V_{0G}	IP = 0 A	2.35	2.5	2.65	V
Conductor Through Hole	—	—	—	11x8	—	mm^2
Sensitivity	Sens	IP = ±10 A	52	65	78	mV/A
Bandwidth	BW	—	—	23	—	kHz
Measurable Current Range	MR	Vdd=5V (DC Mode)	—	±35	—	A
		Vdd=5V (AC RMS)	—	25	—	
Temperature Drift	△Vout	IP = 0 A	—	±1.0	—	mV/℃
Output Noise	V_{Np-p}	IP = 0 A	—	15	—	mV
	$V_{Np-p(0.01uF)}$	IP = 0 A, C = 0.01uF	—	3	—	

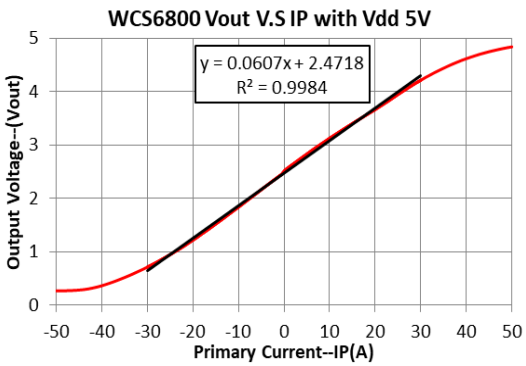
1. All output-voltage measurements are made with a voltmeter having an input impedance of at least 100kΩ

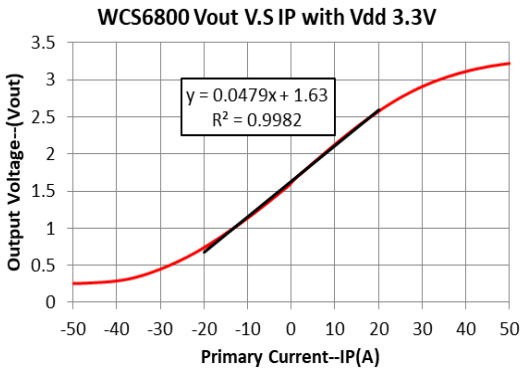
2. Do not apply any 'resistor load' on output pin, it will degrade IC's performance.

Characteristic Diagrams:









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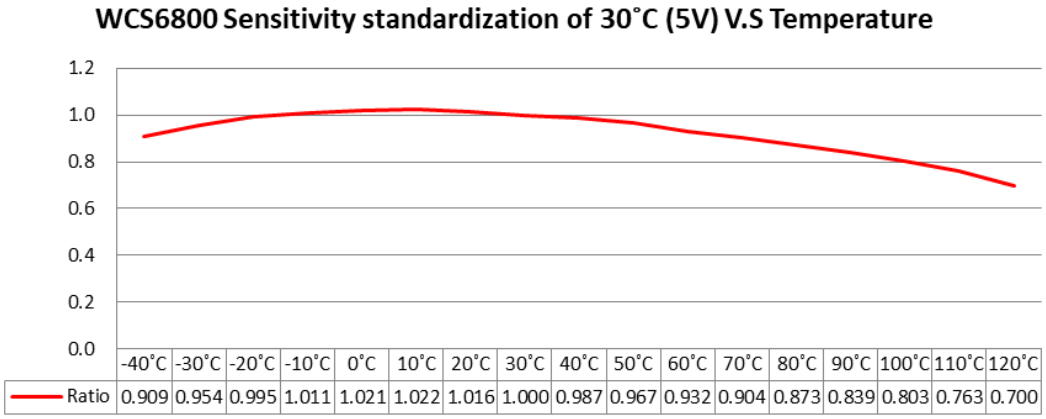
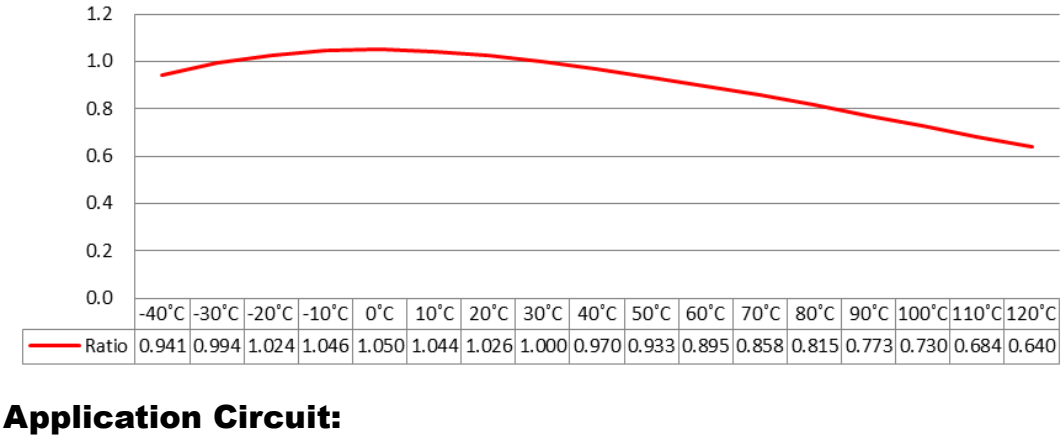
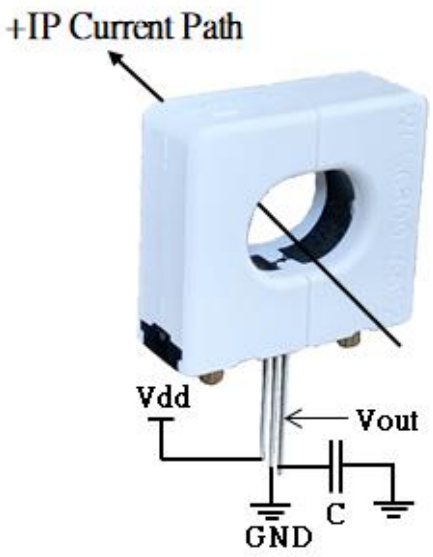


	-40˚C	-30˚C	-20˚C	-10˚C	0˚C	10˚C	20˚C	30˚C	40˚C	50˚C	60˚C	70˚C	80˚C	90˚C	100˚C	110˚C	120˚C
Ratio	0.909	0.954	0.995	1.011	1.021	1.022	1.016	1.000	0.987	0.967	0.932	0.904	0.873	0.839	0.803	0.763	0.700



	-40˚C	-30˚C	-20˚C	-10˚C	0˚C	10˚C	20˚C	30˚C	40˚C	50˚C	60˚C	70˚C	80˚C	90˚C	100˚C	110˚C	120˚C
Ratio	0.941	0.994	1.024	1.046	1.050	1.044	1.026	1.000	0.970	0.933	0.895	0.858	0.815	0.773	0.730	0.684	0.640

Application Circuit:



Capacitor C(0.01uF~0.1uF) is recommend to be connected between Vout and GND to reduce output noise.

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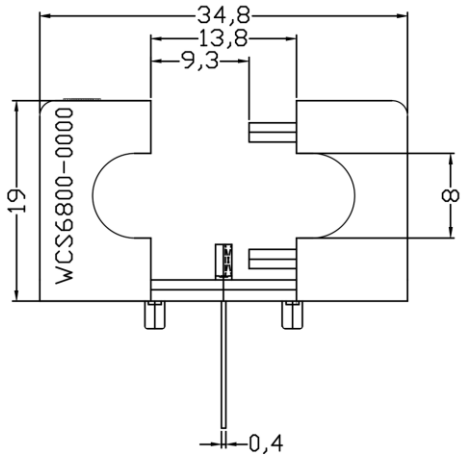
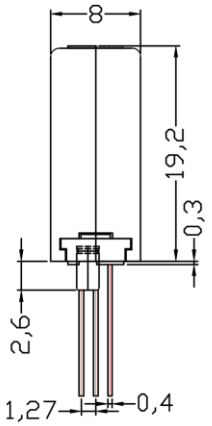
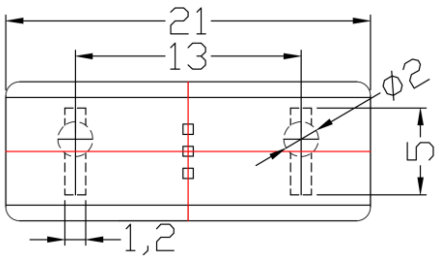
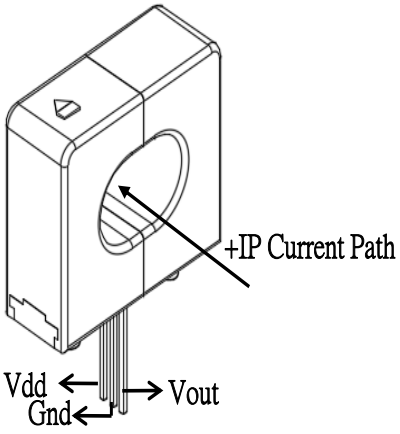
Package Information:

(Unit: mm)

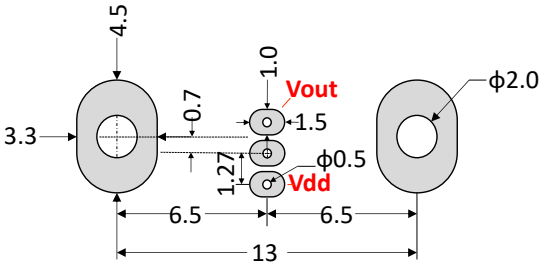








PCB Layout Reference View (Top View)



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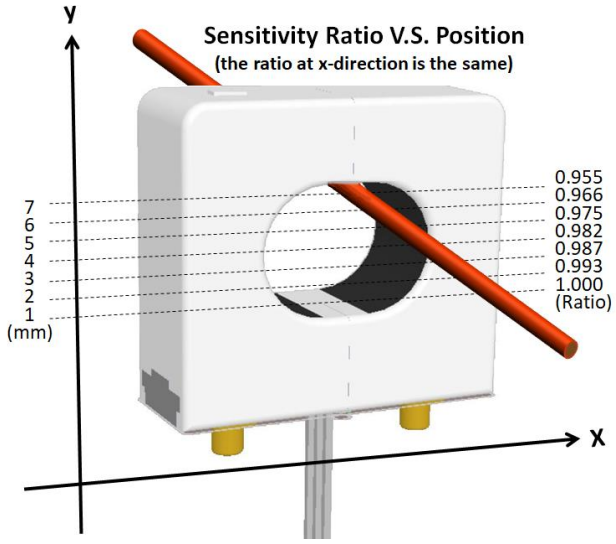
Application Notice:

There is a linear variation of sensitivity along the y directions. Keep wire as fixed as possible to get steadiest reading.



WCS Application Note : please refer to Winson Website -> Products-> Application Note -> WCS Application Note : http://www.winson.com.tw/Product/83