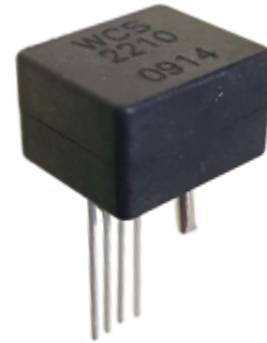


Linear Current Sensor with differential outputs**Features:**

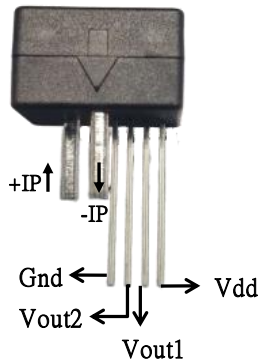
- Output voltage proportional to AC and DC current
- Built-in AC to DC rectifier circuit
- 0.5 mΩ internal conductor resistance
- Wide sensing current range 0~10 A at 5V volt
- High sensitive differential outputs
Single Ended, Sensitivity: 140 mV/A
Differential output, Sensitivity: 280 mV/A
- Wide operating voltage range 3.0~12 V
- Low operating current 3.0 mA
- Nearly zero magnetic hysteresis
- Ratiometric output from supply voltage
- 23K Hz Bandwidth
- Isolation voltage 1000V
- “Output voltage” is 1/2 supply voltage at zero current

**Functional Description :**

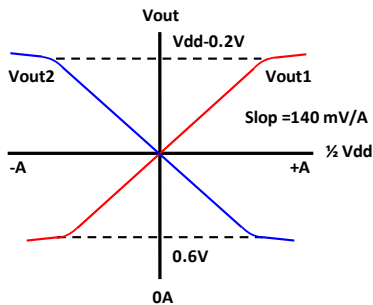
The Winson WCS2210 current sensor provides economical and precise solution for both DC and AC current sensing in industrial, commercial and communications systems. The unique package provides easy implementation without breaking original system and make current sensing possible. Typical applications include motor control, load detection and management, over-current fault detection and any intelligent power management system etc...

The WCS2210 consists of a precise, low-temperature drift linear hall sensor IC with temperature compensation and AC to DC rectifier circuit and a current path with 0.5 mΩ typical internal conductor resistance. This extremely low resistance can effectively reduce power loss, operating temperature and increase the reliability greatly. Applied current flowing through this conduction path generates a magnetic field which is sensed by the integrated Hall IC and converted into a proportional rectified DC voltage.

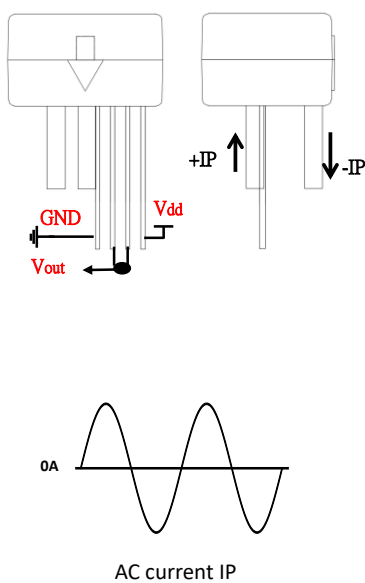
The terminals of the conductive path are electrically isolated from the sensor leads. This allow the WCS2210 current sensor to be used in applications requiring electrical isolation without the use of opto-isolators or other costly isolation techniques and make system more competitive in cost. Winson reserves the right to make changes to improve reliability or manufacturability.



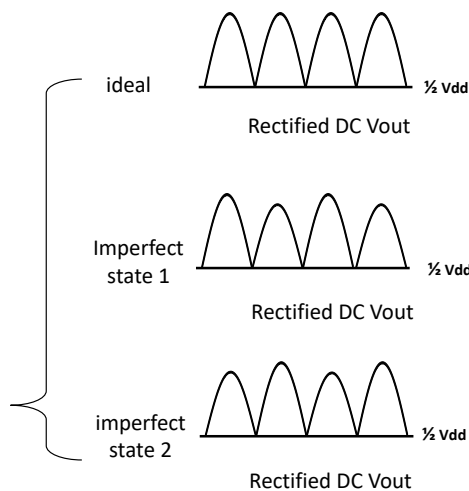
Vout VS. Primary Current



AC to DC Applications



- Note:**
- This can get rectified DC signal by connecting Vout1 and Vout2, but the small signal will be offset.
 - The state of rectified DC voltage output is shown below.

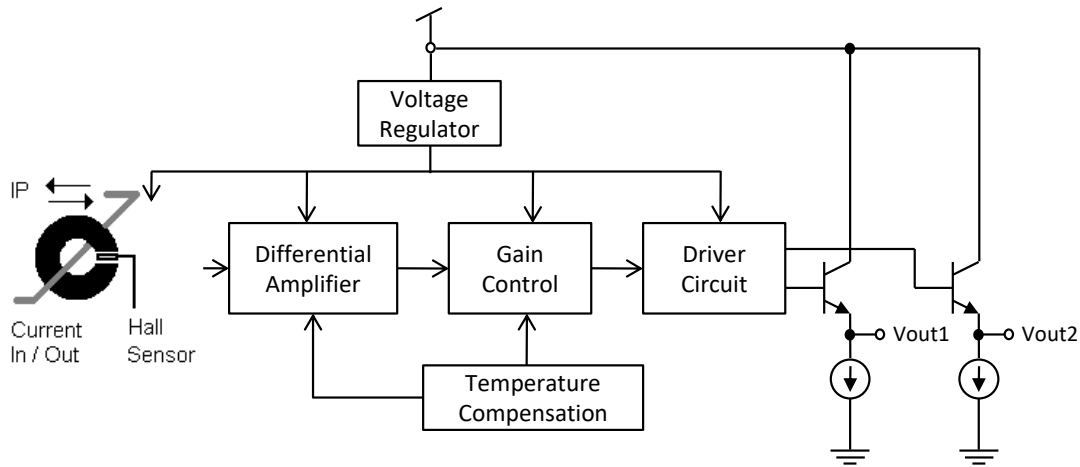
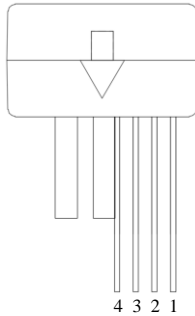


Absolute Maximum Range

Supply Voltage, Vdd	-----	14V
Pass Current, IP	-----	60A
Pass Current (10ms pulse), Ipulse	-----	150A
Output Current Sink	-----	0.4mA
Output Current Source	-----	2mA
Basic Isolation Voltage	-----	1000V
Operating Temperature Range, Ta	-----	-20°C to +125°C
Storage Temperature Range, Ts	-----	-65°C to +150°C
Power Dissipation, Pd	-----	1W

(Vdd = 5V)

Part No.	Sensitivity (Single Ended)	Current range
WCS2210	140 mV/A	DC: ±0 ~ 10.0A AC: rms 7.0A

Function Block:

Functional Block Diagram


Number	Name	Description
1	Vdd	Power supply terminal
2	Vout1	Analog output signal 1
3	Vout2	Analog output signal 2
4	GND	Signal ground terminal

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

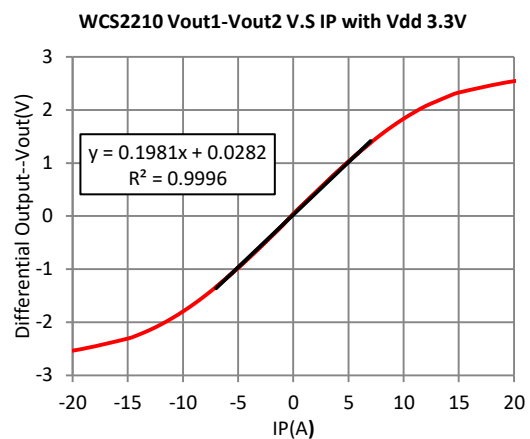
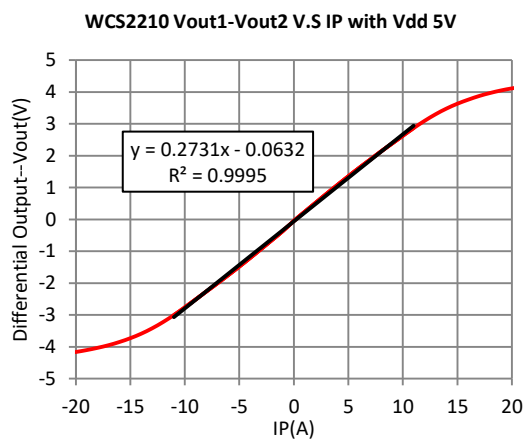
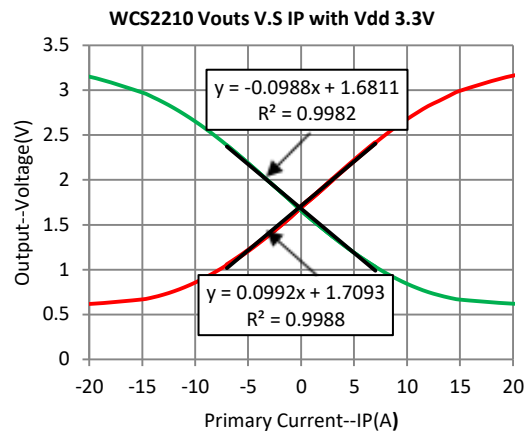
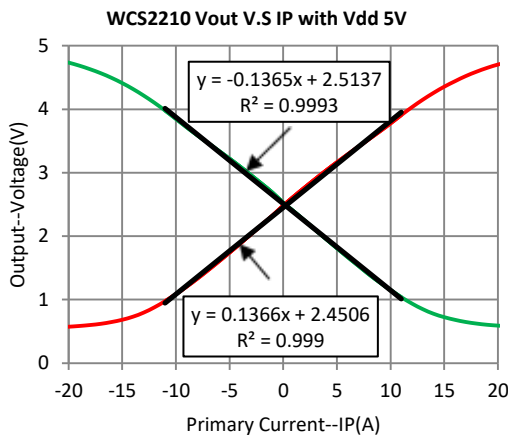
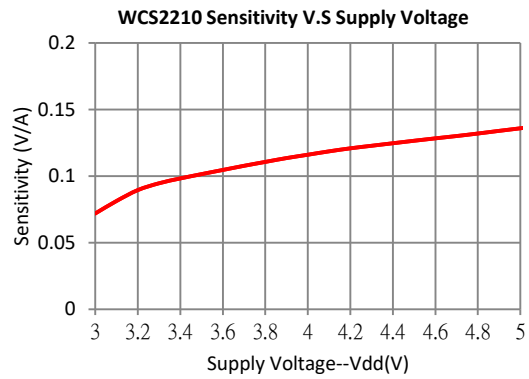
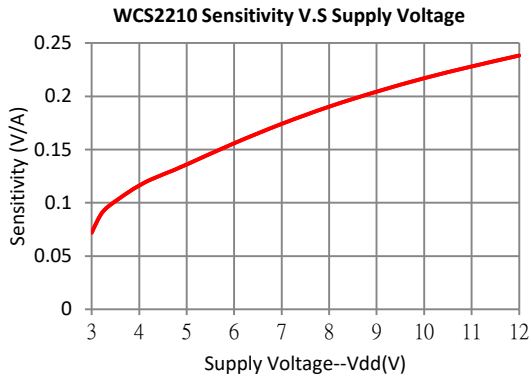
Characteristic	Symbol	Test Conditions	Min	Typ	Max	Units
Supply Voltage	Vdd	—	3.0	—	12	V
Supply Current	I _{supply}	I _P = 0 A	—	3.0	6.0	mA
Zero Current Vout	V _{0G1/2}	I _P = 0 A (DC Mode)	2.3	2.5	2.7	V
Zero Current Differential Vout	V _{0G1-2}	I _P = 0 A (DC Mode)	-0.4	—	0.4	V
Sensitivity (Single Ended)	Δ V _{out1/2}	I _P = ±8 A	119	140	161	mV/A
Sensitivity (Differential)	Δ V _{out12}	I _P = ±8 A	238	280	322	mV/A
Bandwidth	BW	—	—	23	—	kHz
Measurable Current Range	MR	Vdd=5V (DC Mode)	—	±10	—	A
		Vdd=5V (AC RMS)	—	7	—	
Temperature Drift	Δ V _{out}	I _p = 0 A	—	±1.0	—	mV/°C
Output Noise	V _{Np-p}	I _p = 0 A	—	16.6	—	mV
	V _{Np-p(0.01F)}	I _p = 0 A, C = 0.01uF	—	3.0	—	

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

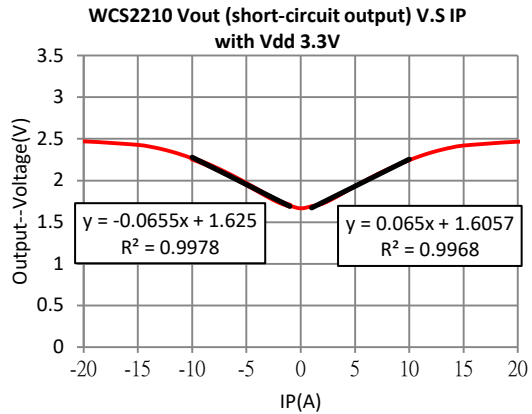
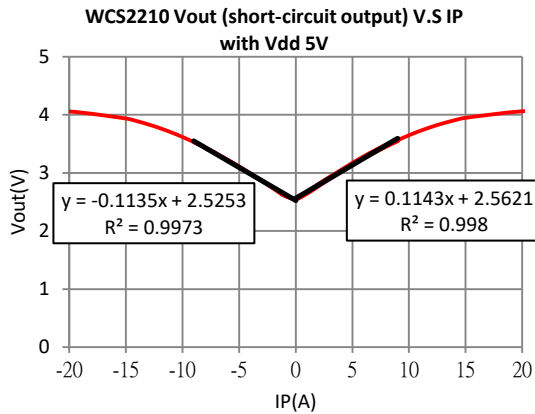
2. Do not apply any 'resistor load' on output pin, it will degrade IC's performance

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

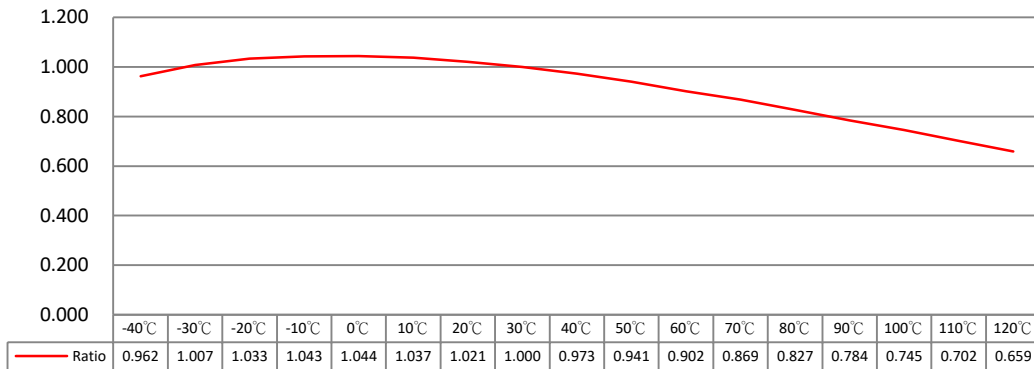
Characteristic Diagrams:



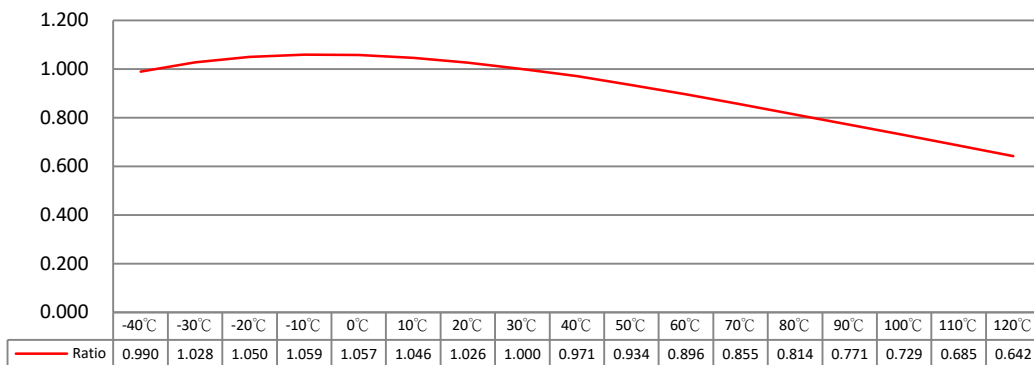
Winson reserves the right to make changes to improve reliability or manufacturability.



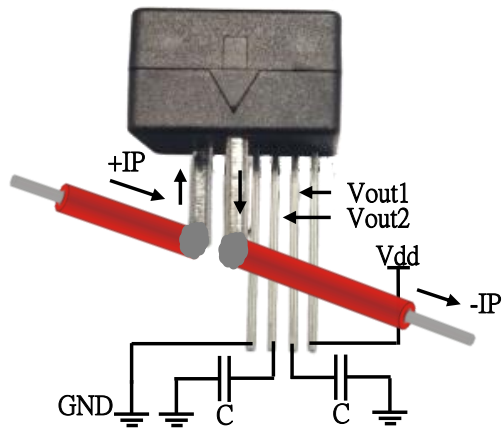
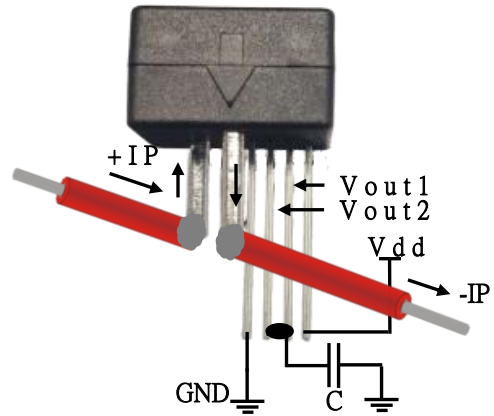
WCS2210 Sensitivity standardization of 30°C (5V) V.S Temperature



WCS2210 Sensitivity standardization of 30°C (3.3V) V.S Temperature

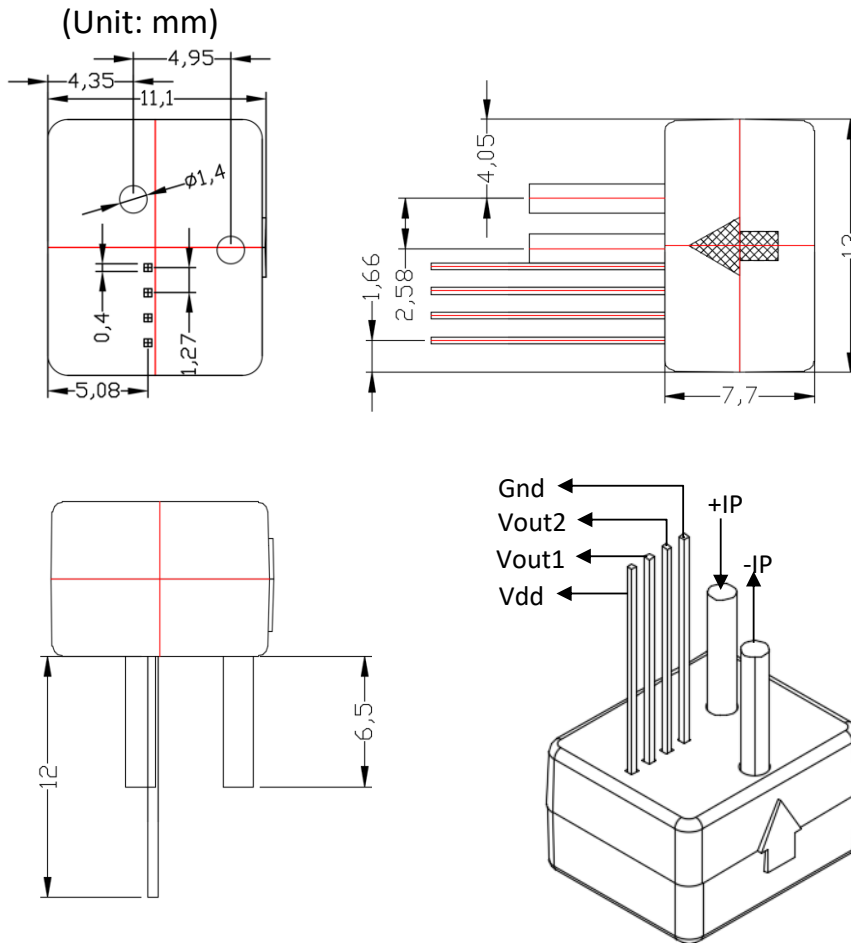


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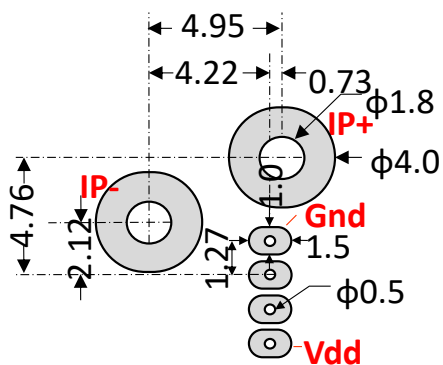
Application Circuit:**(1) Differential Output****(2) AC to DC**

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

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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