

霍爾磁感差動輸出 線性電流感測元件**特性：**

- 內建 **交流轉直流** 整流電路，交流進整流直流出
- 98 mΩ 低電流通道電阻
- 輸出電壓與交/直流電流呈線性比
- 在工作電壓 5 伏特下，可偵測電流 0 ~ 0.8 安培
- 高靈敏度
單端輸出，靈敏度為 2.1 mV/mA
差動輸出，靈敏度為 4.2 mV/mA
- 超大工作電壓範圍 3.0~12 伏特
- 低工作電流 3 mA
- 幾乎零遲滯現象
- 零電流“輸出電壓”為 1/2 工作電壓
- 反應頻寬 10 K Hz
- 絕緣電壓 1000V

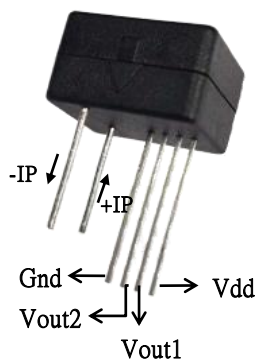
**功能描述：**

育陞半導體電流感測元件 WCS2201 提供經濟實惠與精準的交流/直流電流感測解決方案，特別適用於工業、商業、通訊系統，以及各類智慧型電源管理系統。WCS2201 獨特的封裝設計使客戶端能非常容易的安裝於各類應用上。一些較常用的應用如馬達電機控制、負載偵測與管理，以及系統“過電流偵測”與保護等...

WCS2201 包含一精準、低溫漂、有溫度補償設計並內建 AC to DC 整流電路的線性霍爾 IC 與一經高溫燒成的 C 型環的電流轉換器，其極低電阻 98 mΩ 的內部電流通道可有效降低電流通過時的耗損並降低工作溫度增加使用壽命。當交流電流通過內部電流通道時，C 型環的電流轉換器會將此一電流成比例的轉換成磁場，而線性霍爾 IC 又會將此一磁場成比例的轉換整流成 DC 輸出電壓。

WCS2201 的內部電流通道是獨立的，與線性霍爾 IC 的 Pin 腳是電性絕緣的，其間的耐壓可高達 1000 伏特。此一特性可使 WCS2201 可直接應用於需高壓絕緣的應用環境而不須要另外購買光耦合元件或其他高價的絕緣元件或科技，可以有效的降低系統成本。

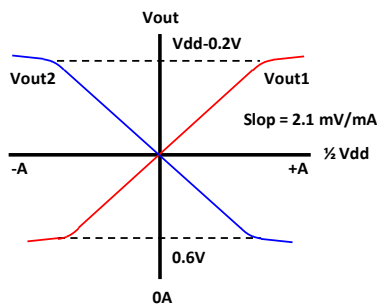
Winson reserves the right to make changes to improve reliability or manufacturability.



絕對最大可耐規格

工作電壓, Vdd	-----	14V
通過電流, IP	-----	2.5A
通過電流(10ms pulse)Ipulse,	-----	5A
輸出下沉電流	-----	0.4mA
輸出上拉電流	-----	2mA
基本絕緣電壓	-----	1000V
工作溫度範圍, Ta	-----	-20°C to +125°C
儲存溫度範圍, Ts	-----	-65°C to +150°C
耐功率消耗, Pd	-----	1W

Vout (輸出電壓) VS. IP (通過電流)



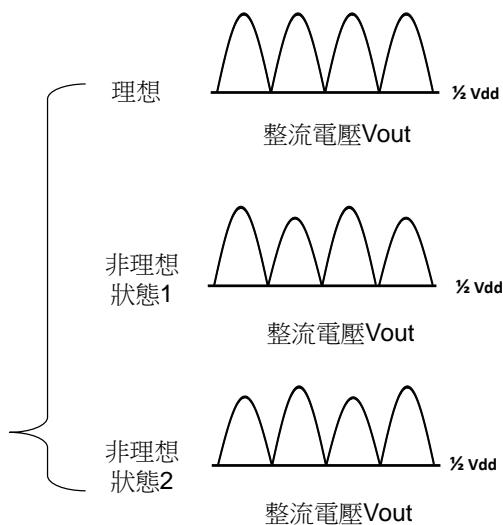
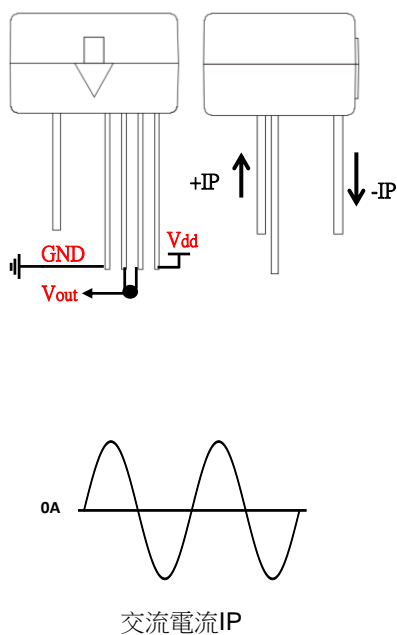
(Vdd = 5V)

Part No.	Sensitivity (Single Ended)	Current range
WCS2201	2.1 mV/mA	DC: ±0 ~ 0.8A AC: rms 0.6A

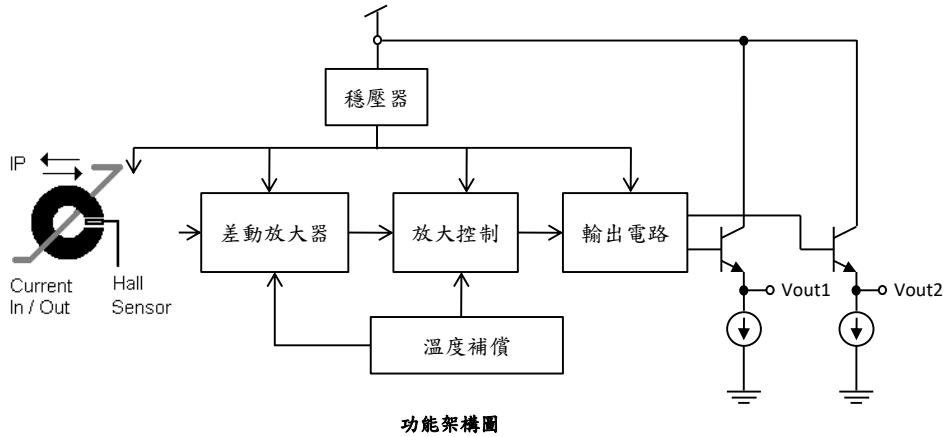
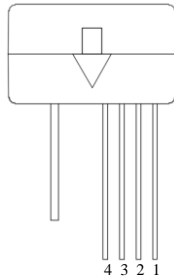
交流轉直流應用

注：1. 將Vout1與Vout2短路可整流交流訊號，但小訊號會被抵消。

2. 整流輸出可能出現的狀況如下圖



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功能方塊圖：

功能架構圖


Number	Name	Description
1	Vdd	輸入電源端
2	Vout1	類比輸出端1
3	Vout2	類比輸出端2
4	GND	訊號接地端

電性特性：
(T=+25°C, Vdd=5.0V)

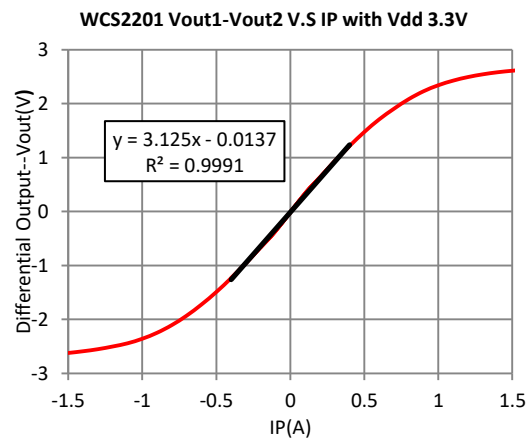
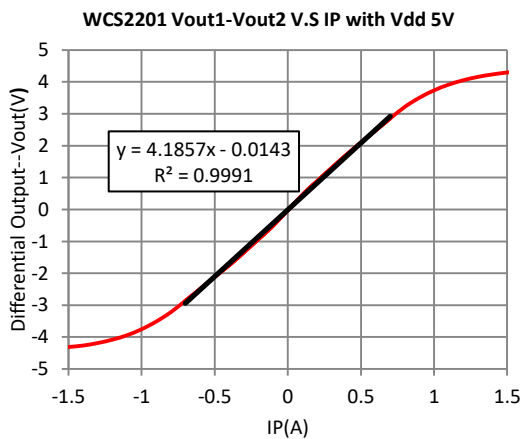
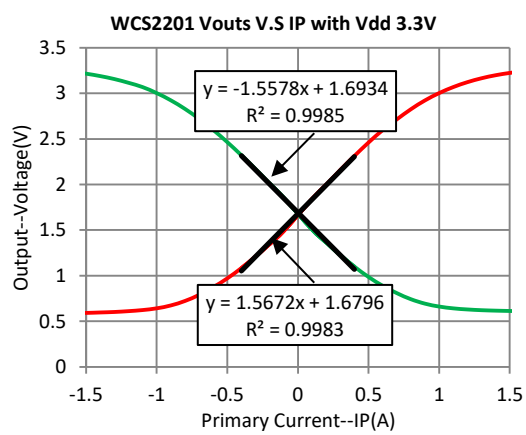
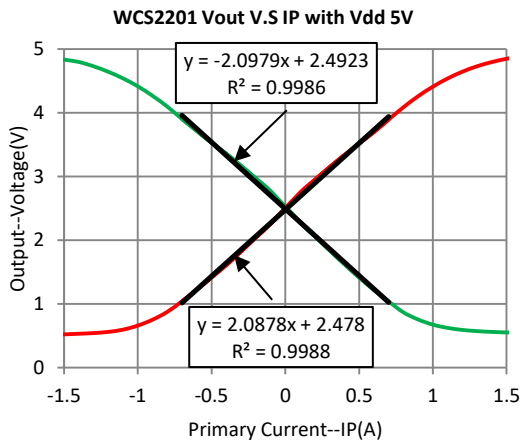
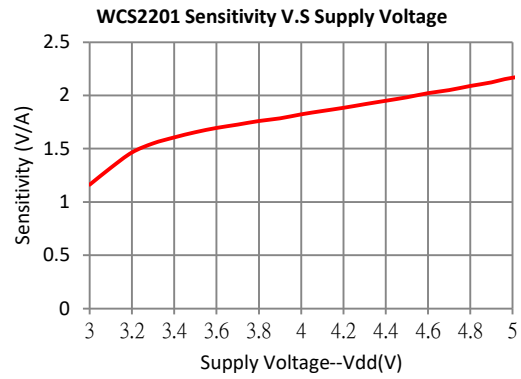
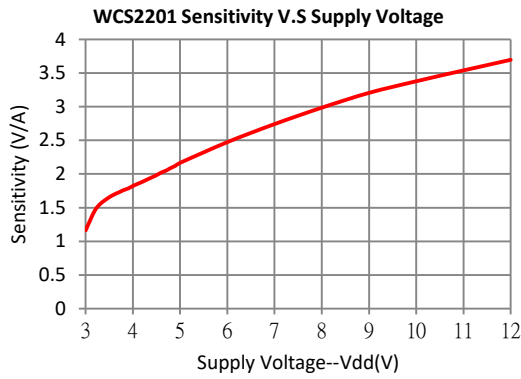
特性	符號	測試條件	Min	Typ	Max	Units
工作電壓	Vdd	—	3.0	—	12	V
工作電流	I _{supply}	IP = 0 A	—	3.0	6.0	mA
零電流電壓輸出	V _{OG1/2}	IP = 0 A (DC Mode)	2.3	2.5	2.7	V
零電流電壓輸出差	V _{OG1-2}	IP = 0 A (DC Mode)	-0.4	—	0.4	V
靈敏度(單端)	ΔV _{out1/2}	IP = ±0.2 A	1.7	2.1	2.4	mV/mA
靈敏度(差動)	ΔV _{out12}	IP = ±0.2 A	3.5	4.2	4.8	mV/mA
工作頻寬	BW	—	—	10	—	kHz
可量測電流範圍	MR	Vdd=5V (DC Mode)	—	±0.8	—	A
		Vdd=5V (AC RMS)	—	0.6	—	
溫度漂移	ΔV _{out}	IP = 0 A	—	±1.0	—	mV/°C
輸出雜訊	V _{Np-p}	IP = 0 A	—	16.6	—	mV
	V _{Np-p(0.01uF)}	IP = 0 A, C = 0.01uF	—	3.0	—	

1. 所有電壓輸出量測必須使用至少 100kΩ 輸入阻抗的電壓錶進行量測

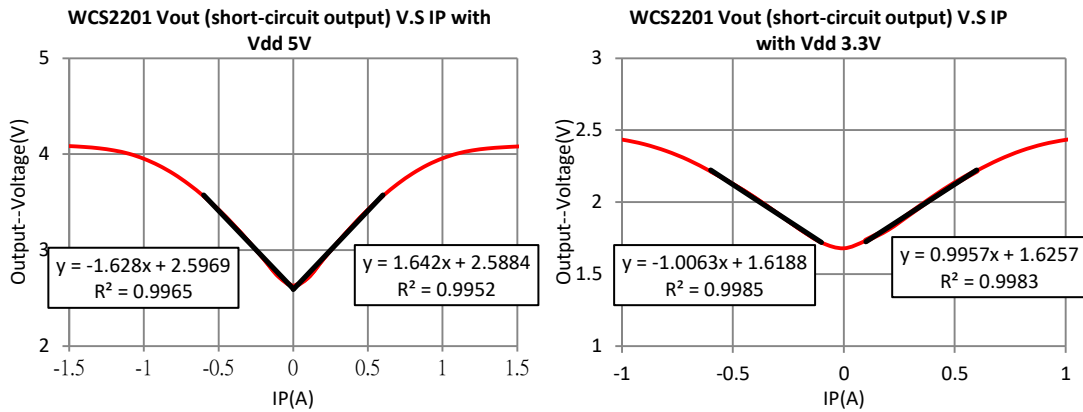
2. 請勿加任何 電阻負載 於輸出端，這會降低 IC 的表現

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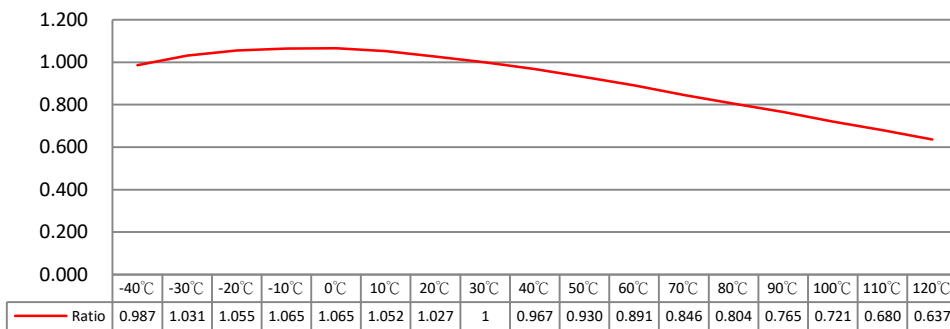
特性曲線圖表:



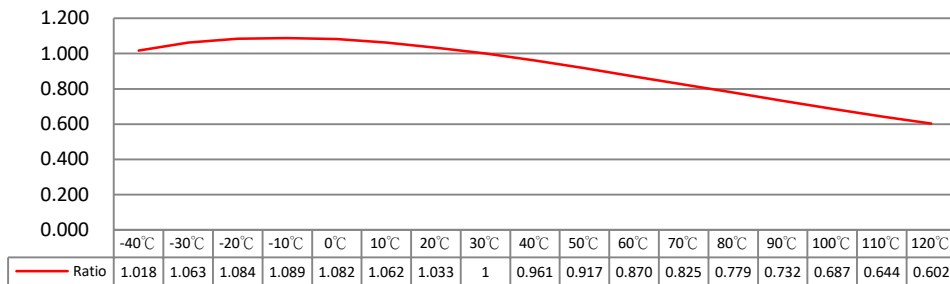
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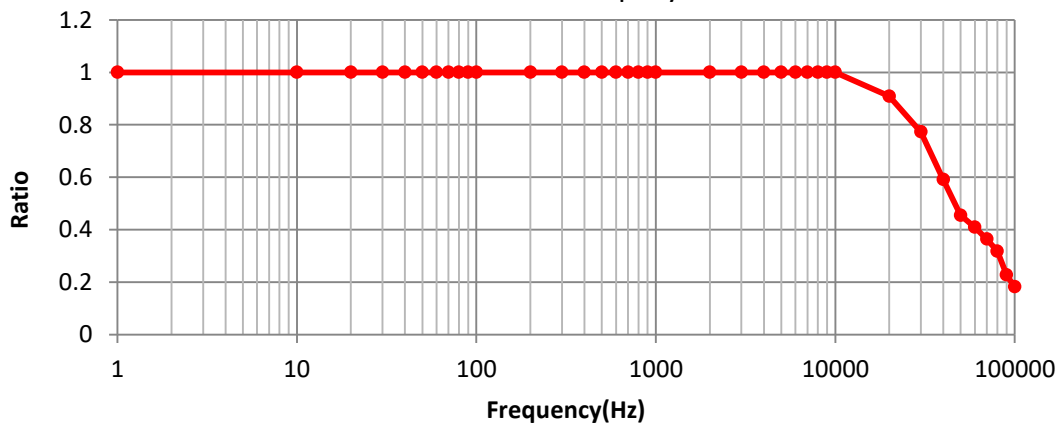
WCS2201 Sensitivity standardization of 30°C (5V) V.S Temperature



WCS2201 Sensitivity standardization of 30°C (3.3V) V.S Temperature

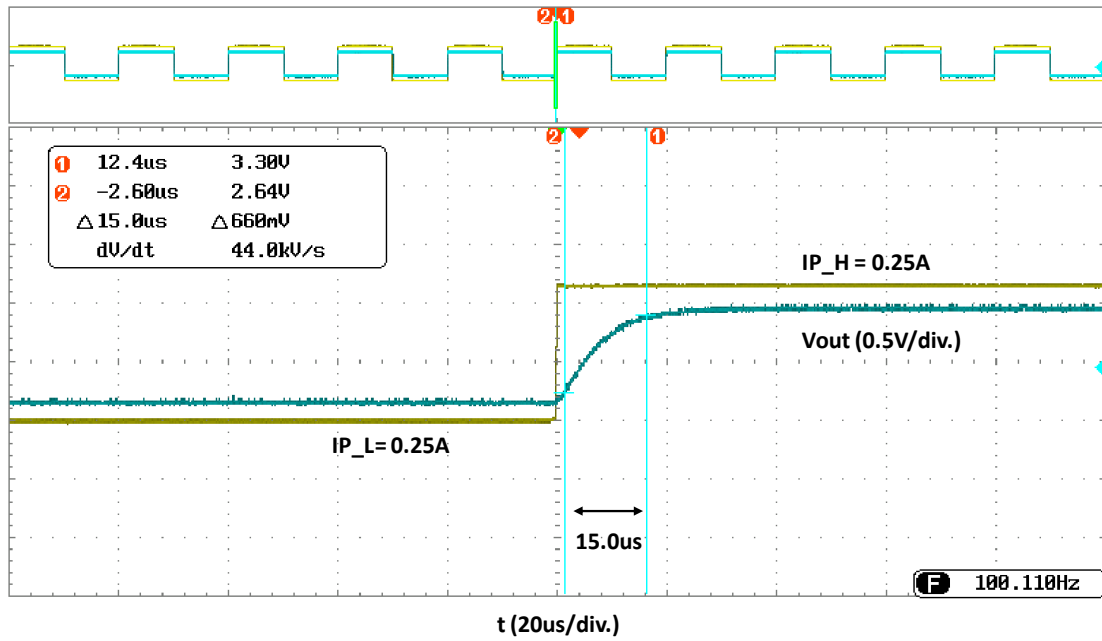


WCS2201 Unit Gain V.S. Frequency

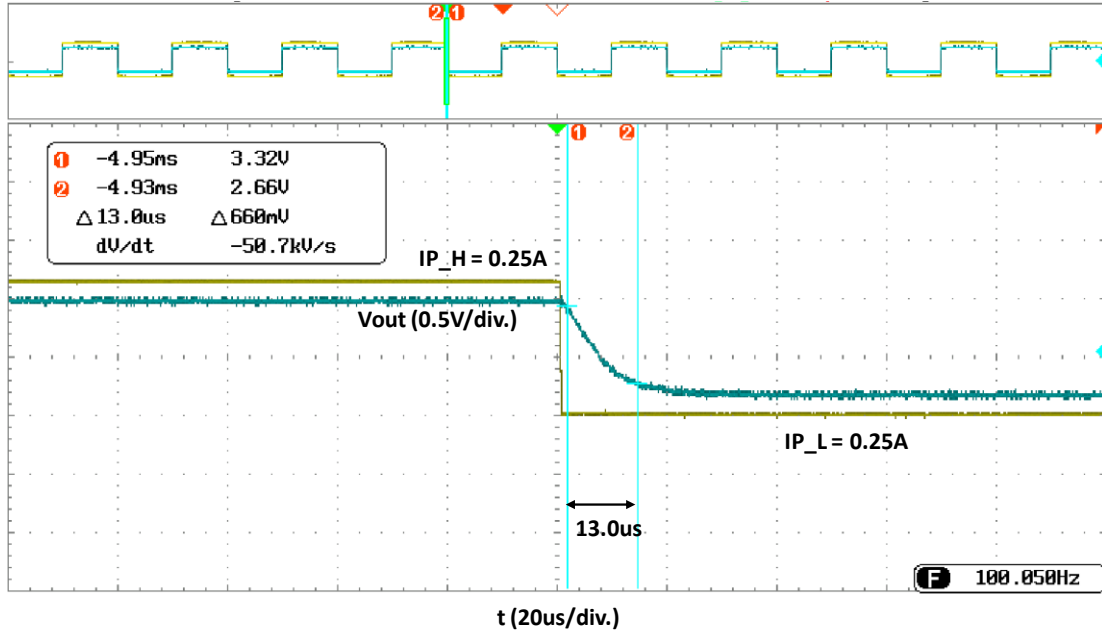


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Vout1 Response Time of Pulse Current

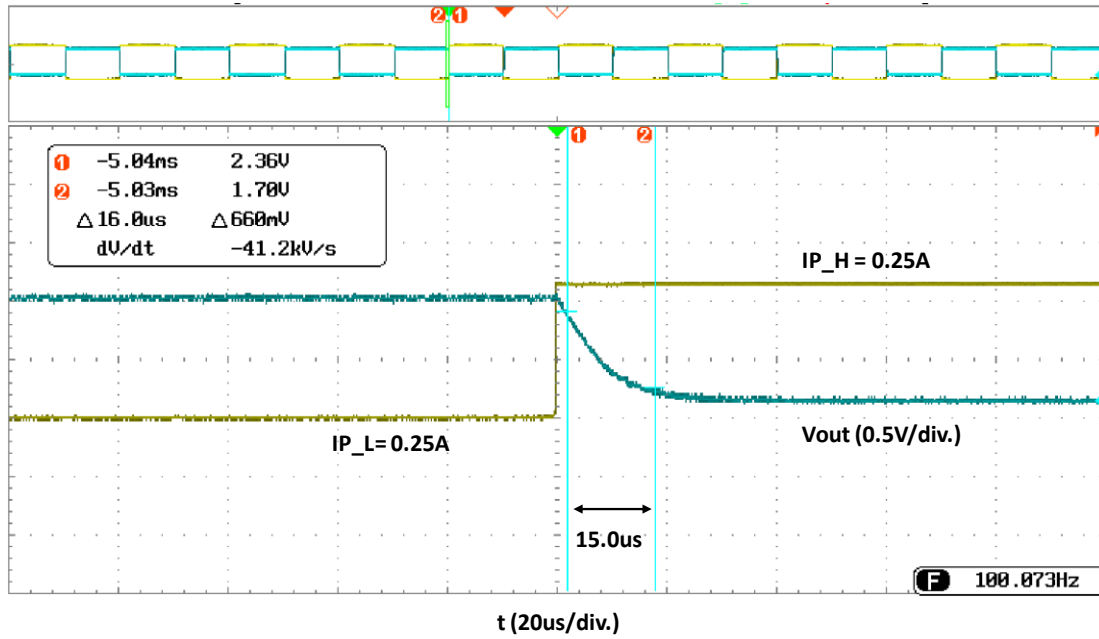


Vout1 Response Time of Pulse Current

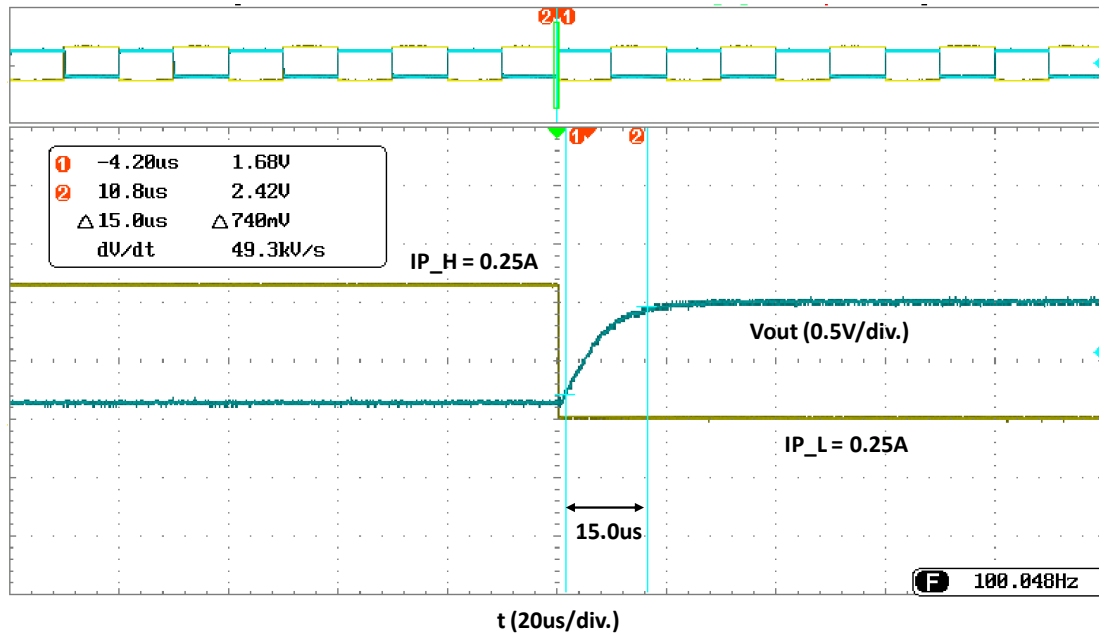


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Vout2 Response Time of Pulse Current

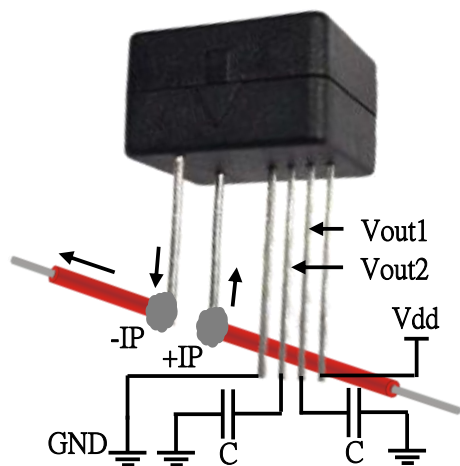


Vout2 Response Time of Pulse Current

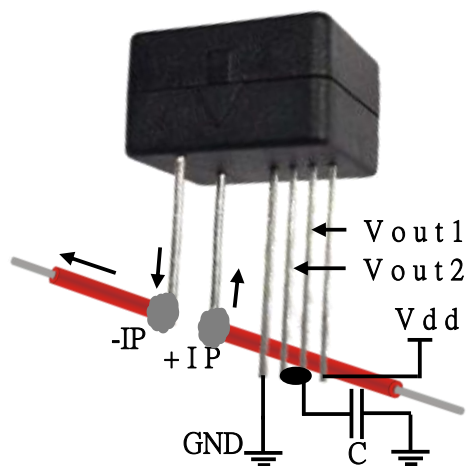


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應用電路:



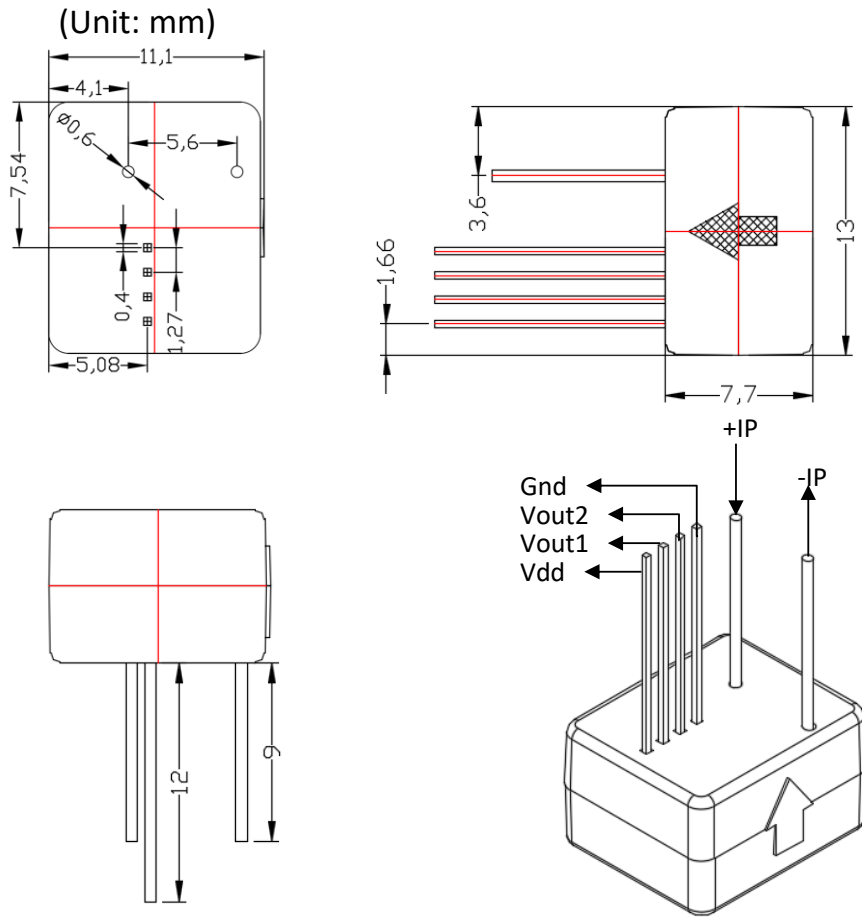
(1) 差動輸出



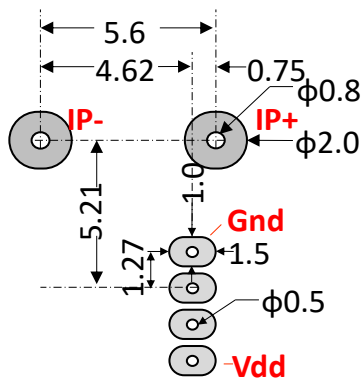
(2) AC to DC

建議將電容 C (0.01uF~0.1uF) 連接在 Vout 和 GND 之間，以降低輸出噪聲。

封裝資訊: (單位: mm)



PCB Layout Reference View(Top View)



WCS 系列電流感測元件使用說明：請參考 Winson 網站->產品->使用手冊->

WCS 系列電流感測元件使用說明：<http://www.winson.com.tw/Product/82>

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