WSH231

North and South pole Two outputs Hall Effect Switch IC

Features:

- Operates from 2.4V to 26V supply voltage with reverse voltage protection
- Operates with magnetic fields from DC to 15kHz
- On-chip Hall Sensor and driver
- On-chip temperature compensation circuitry minimizes shifts in On/Off points temperature and supply voltage
- Wide range operating temperature –40 ~ 90℃
- Output1: On (L) with magnetic South pole
  Output2: On (L) with magnetic North pole
  Both Off(H) without magnetic field

Functional Description:

WSH231 is the Hall sensor which designed to separate South pole and North pole switch with two different outputs that drive together on the same chip. South magnetic field with sufficient strength will turn the output1 on (low), the same reaction will be found in output2 for North magnetic field. In the absence of a magnetic field, both two outputs are off (high). The separation output of North and South pole allows WSH231 to easily interpret the direction of magnetic field. It can be widely used, like replace reed switches for superior reliability and case of manufacturing.

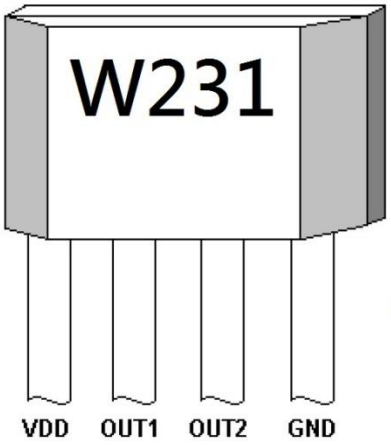
The temperature-dependent bias increases the supply voltage of the hall plates and adjusts the switching points to the decreasing induction of magnets at higher temperatures. Subsequently, the output can keep switching on/off on more precise switch point regardless to the ambient temperature. WSH231 are rated for operation over temperature range from –40˚ C to 90 ˚C and voltage ranges from 2.4V to 26V.

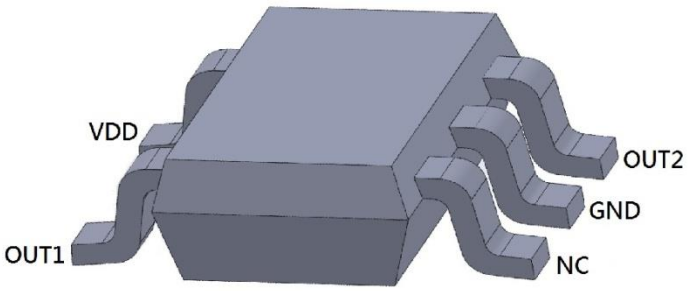
Pin Descriptions:

Name	P/I/O	Pin#	Description
Vdd	P	1	Positive Power Supply
Out1	O	2	South Output Pin
Out2	O	3	North Output Pin
Gnd	O	4	Ground
NC		5	No connection

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

Pin Position Diagram:





Absolute Maximum Rating (at Ta=25˚ C)

Supply Voltage	Vcc	26V
Output1 breakdown Voltage	$Vout_{(breakdown)}$	28V
Output2 breakdown Voltage	$Vout_{(breakdown)}$	28V
Magnetic flux density	B	Unlimited
Output ON Current (continuous)	Ic	20mA
Operating Temperature Range	Ta	(-40˚C to +90˚C)
Storage Temperature Range	Ts	(-65˚C to +150˚C)
Package Power Dissipation	Pd	500mw

Electrical Characteristics: (T=+25˚C, Vdd=2.4V to 26V)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Units
Supply Voltage	Vdd	—	2.4	—	26	V
Output1 Saturation Voltage	Out1 (sat)	Vdd=12V,Ic=10mA B > Bop	—	0.2	0.6	V
Output2 Saturation Voltage	Out2 (sat)	Vdd=12V,Ic=10mA B > Bop	—	0.2	0.6	V
Out1 & Out2 Leakage Current	Ileakage	Vdd=12V, B<Brp	—	<0.1	10	uA
Supply Current	Isupply	Vdd=12V,Output Open	—	2.5	6	mA

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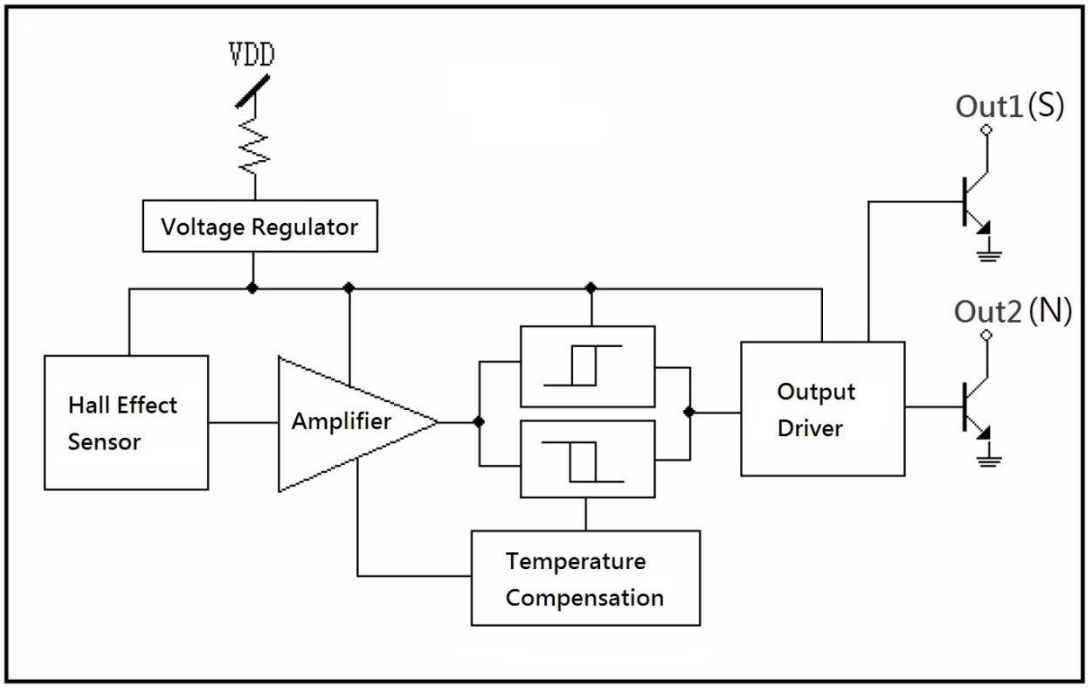
Function Block:



Magnetic Characteristics:

Characteristic	Symbol	Grade	Min.	Typ.	Max.	Unit
Operating Point	Bop	A			±70	Gauss
		B			±100	Gauss
		C			±150	Gauss
Release Point	Brp	A	±10			Gauss
		B	±10			Gauss
		C	±10			Gauss
Hysteresis Window	Bhys			5	15	Gauss

***+ mean South magnetic field, 1mT=10 Gauss**

Order Information (Halogen-free):

WSH231-XPAN□ (TO-94) WSH231-XPDN□ (SOT25) Grade	**Grade:** 2: 70 Gauss 3: 100 Gauss 5: 150 Gauss

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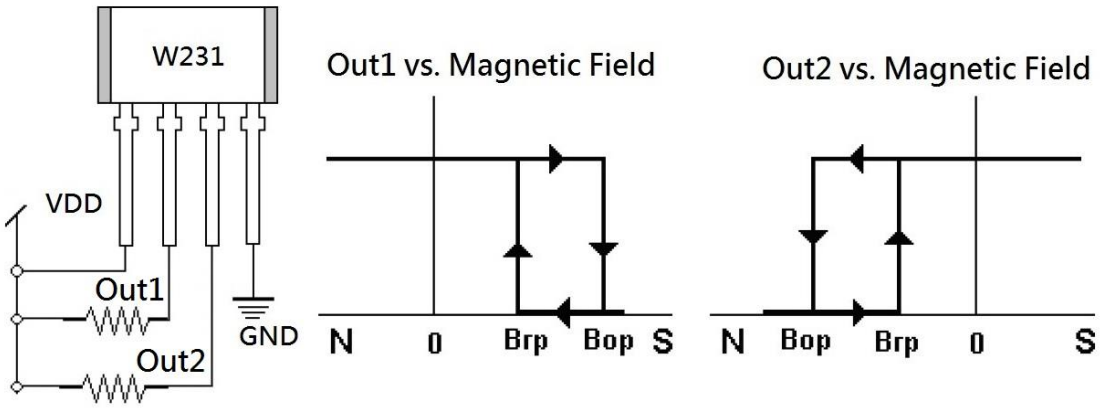
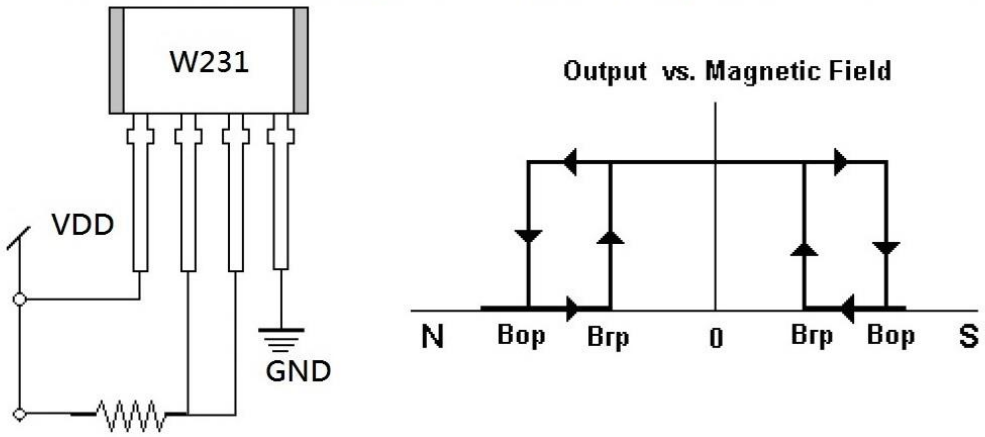
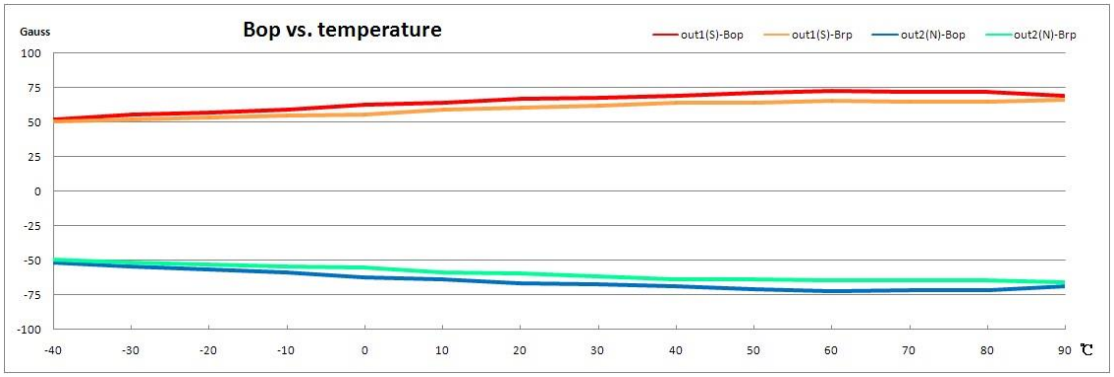
Application Circuit:



When Out1 and Out2 are short, W231 becomes Omnipolar Hall Effect Switch IC.



The correlation between Operating Point and temperature:



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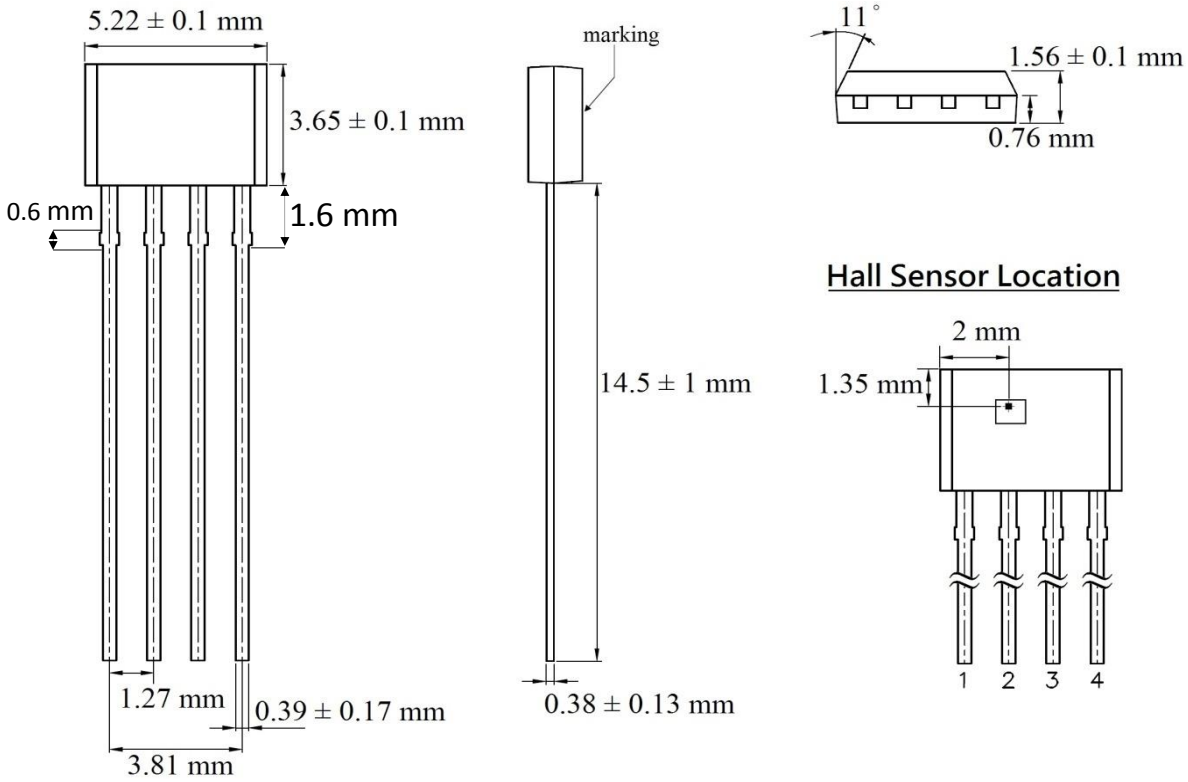
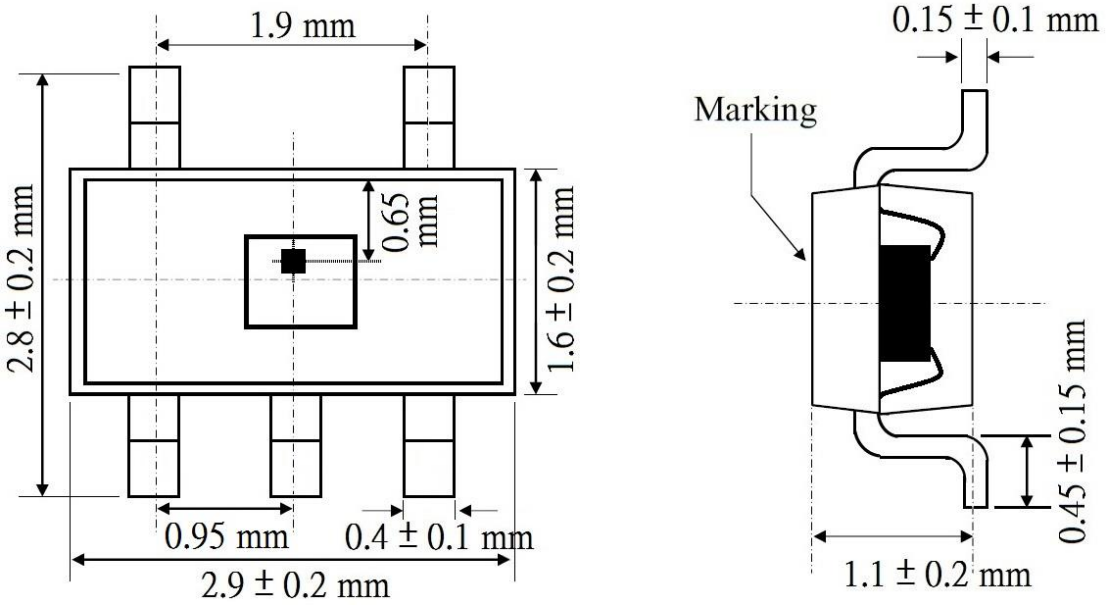
Package Information

《**TO-94**》



《**SOT-25**》



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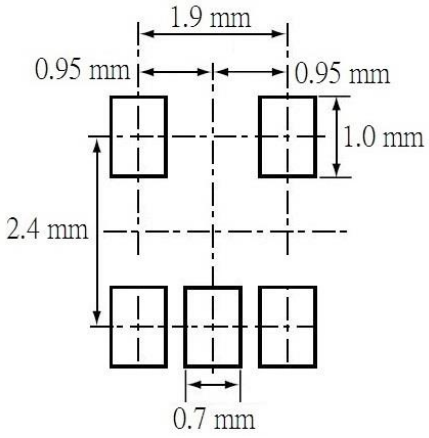
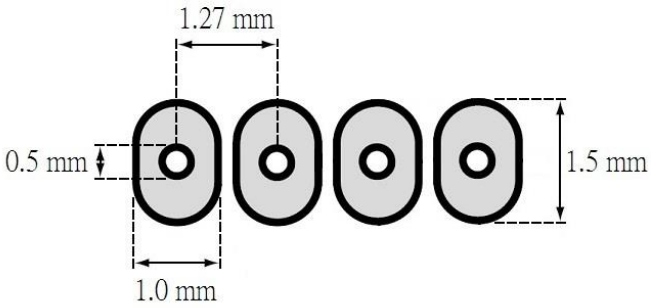
PCB Layout Reference View

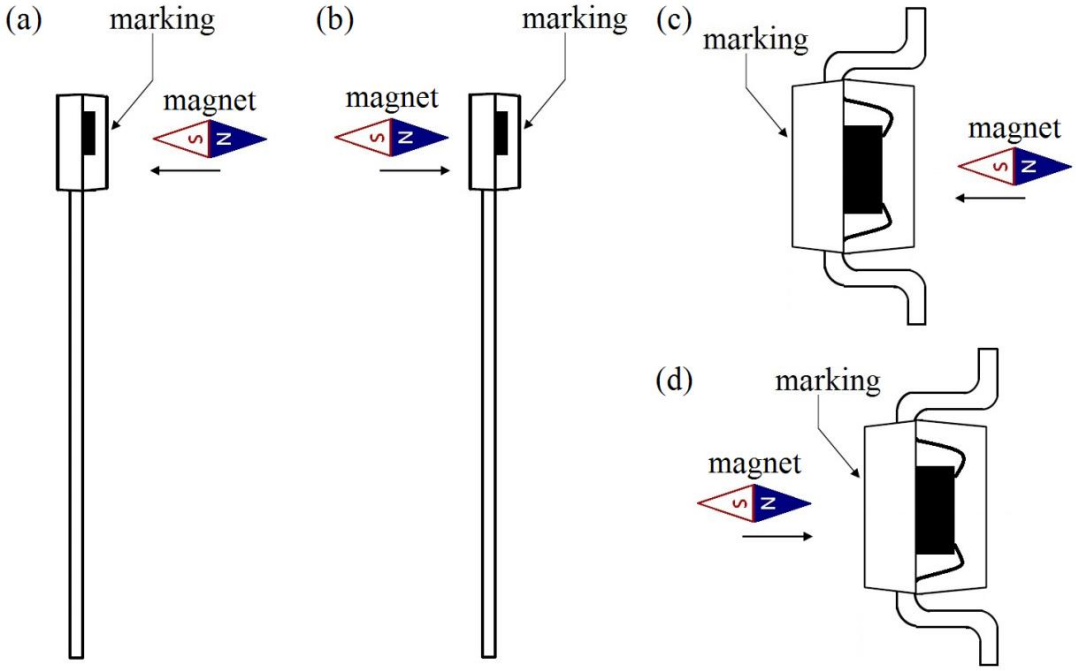
SOT-25



TO-94



Hall Device Sensing Direction



Precautions for the use of Hall Sensor IC: please refer to Winson Website-> Products->Application Note ->Hall Sensor IC Application Note: http://www.winson.com.tw/Product/83

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