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Omnipolar Hall Effect Switch IC
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## Features:

- Operates from 2.4V to 26V supply voltage
- Operation with **North** or **South** Pole
- On-chip Hall Sensor and driver
- On-chip temperature compensation circuitry minimizes shifts in On/Off points temperature and supply voltage
- On-chip voltage regulator to stabilize On/Off switch point
- Wide range operating temperature  $-40 \sim 125^{\circ}\text{C}$
- Easily Manufacturability with magnet pole independence  
**South** or **North** magnetic field: Output **Low**  
**No** magnetic field : Output **High**.

## Functional Description:

WSH131 is designed to integrate pole independent Hall sensor with output driver together on the same chip. Either **North** or **South** magnetic field with sufficient strength will turn the output on (low). In the absence of a magnetic field, output is off (high). The polarity independence allow WSH131 to easily replace reed switches for superior reliability and ease of manufacturing.

To improve stability, it includes a temperature compensated voltage regulator, a differential amplifier, a Hysteresis controller and a open-collector output driver capable of sinking up to 20mA current load. 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. WSH131 are rated for operation over temperature range from  $-40^{\circ}\text{C}$  to  $125^{\circ}\text{C}$  and voltage ranges from 2.4V to 26V.

## Pin Descriptions:

<b>Name</b>	<b>P/I/O</b>	<b>Pin#</b>	<b>Description</b>
Vdd	P	1	Positive Power Supply
Gnd	P	2	Ground
Vout	O	3	Output Pin

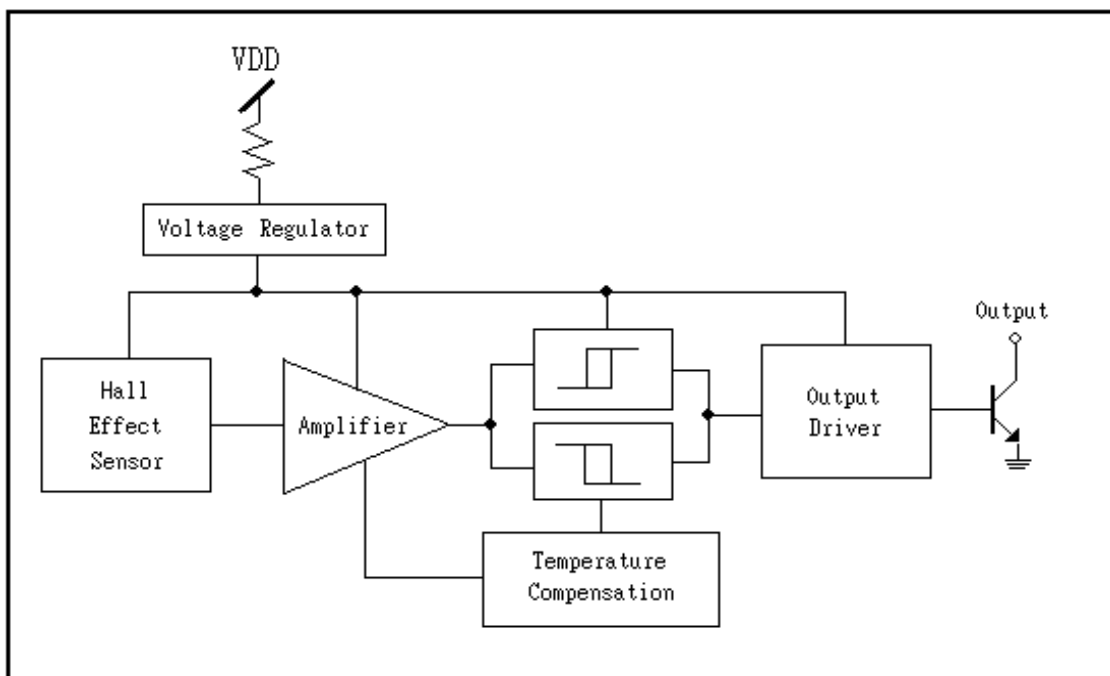
Winson reserves the right to make changes to improve reliability or manufacturability.

**Absolute Maximum Rating (at Ta=25° C)**

Supply Voltage	Vcc -----	26V
Output breakdown Voltage	Vout <sub>(breakdown)</sub> -----	30V
Magnetic flux density	B -----	Unlimited
Output ON Current (continuous)	Ic -----	20mA
Operating Temperature Range	Ta -----	(-40°C to +125°C)
Storage Temperature Range	Ts -----	(-65°C to +150°C)
Package Power Dissipation	Pd -----	350mw

**Electrical Characteristics: (T=+25°C, Vcc=2.4V to 26V)**

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Units
Supply Voltage	Vcc	—	2.4	—	26	V
Output Saturation Voltage	Vout (sat)	Vcc=12V, Ic=10mA B > Bop	—	0.2	0.6	V
Output Leakage Current	Ileakage	Vcc=12V, B<Brp	—	<0.1	10	uA
Supply Current	Is(off)	Vcc=12V, Output Open	—	3.0	6	mA

**Function Block:**


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### Magnetic Characteristics:

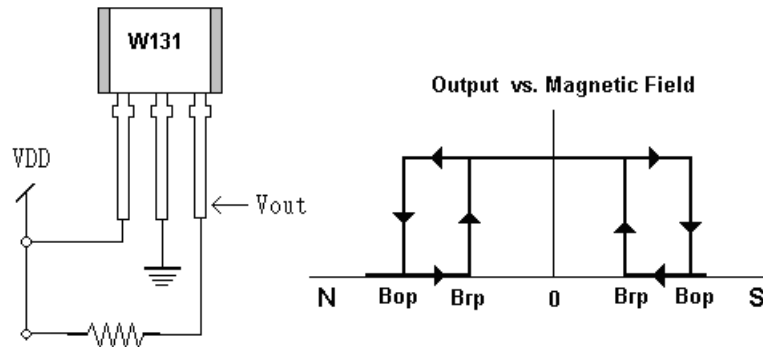
Characteristic	Symbol	Grade	Min.	Typ.	Max.	Unit
Operating Point	Bop	A	±20		±100	Gauss
		B	±20		±150	Gauss
Operating Point	Brp	A	±10			Gauss
		B	±10			Gauss
Hysteresis Window	Bhys			10	30	Gauss

**Ps:** + - indicate direction of magnetic field, 1mT=10 Gauss

### Order Information: (Halogen Free)

WSH131-XPAN □ (TO-92 )	Grade: 3: 100 Gauss 5: 150 Gauss
WSH131-XPCN □ (SOT23)	
↑ Grade	

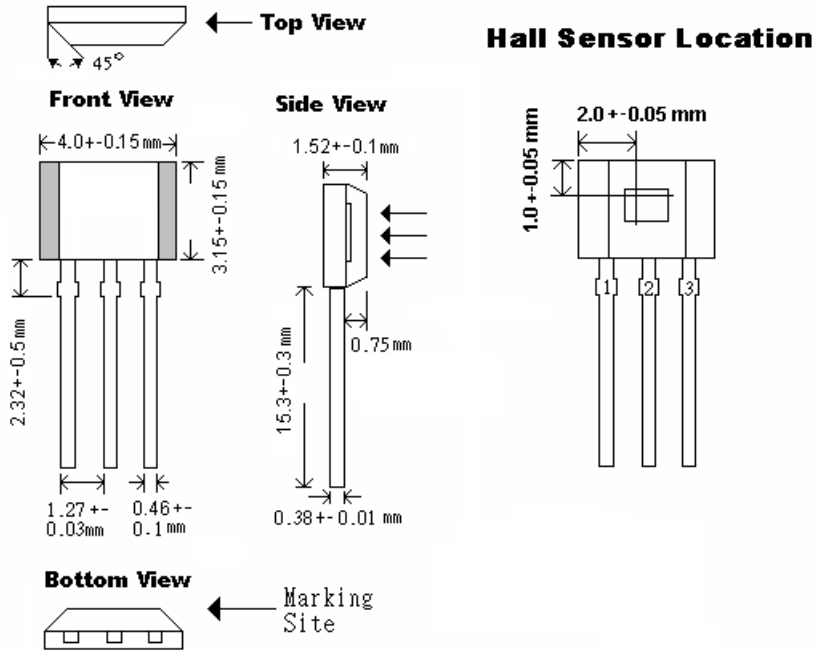
### Application Circuit:



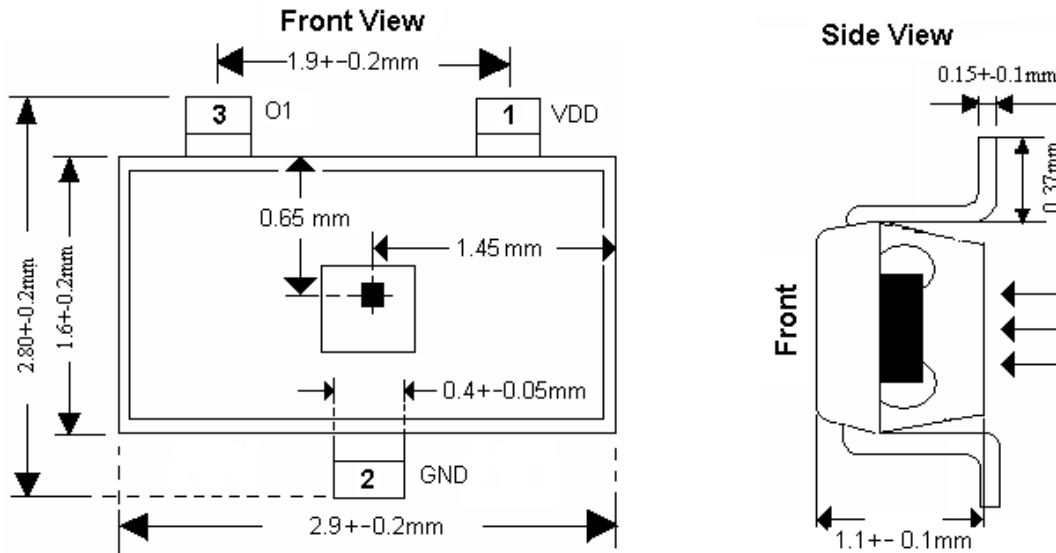
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**Package Information:**

**TO-92S:**



**SOT-23:**



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