



WSH130NL

## Unipolar 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
- On-chip temperature compensation circuitry minimizes shifts in on and off points and hysteresis over temperature and supply voltage
- Ideal sensor for speed measurement, revolution counting, positioning, and DC brushless motors
- On (L) with magnetic **South** pole and Off(H) without magnetic field or with magnetic **North** pole

### Functional Description :

WSH130NL is designed to integrate Hall sensor with output driver together on the same chip, it is suitable for speed measurement, revolution counting, positioning. 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. An on-chip protection resistor is implemented to prevent reverse power fault.

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 open collector output switches to the appropriate state.

WSH130NL 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:

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

### Absolute Maximum Rating (at $T_a=25^{\circ}\text{C}$ )

Supply Voltage	Vcc -----	26V
Output breakdown Voltage	Vout(breakdown) -----	30V

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



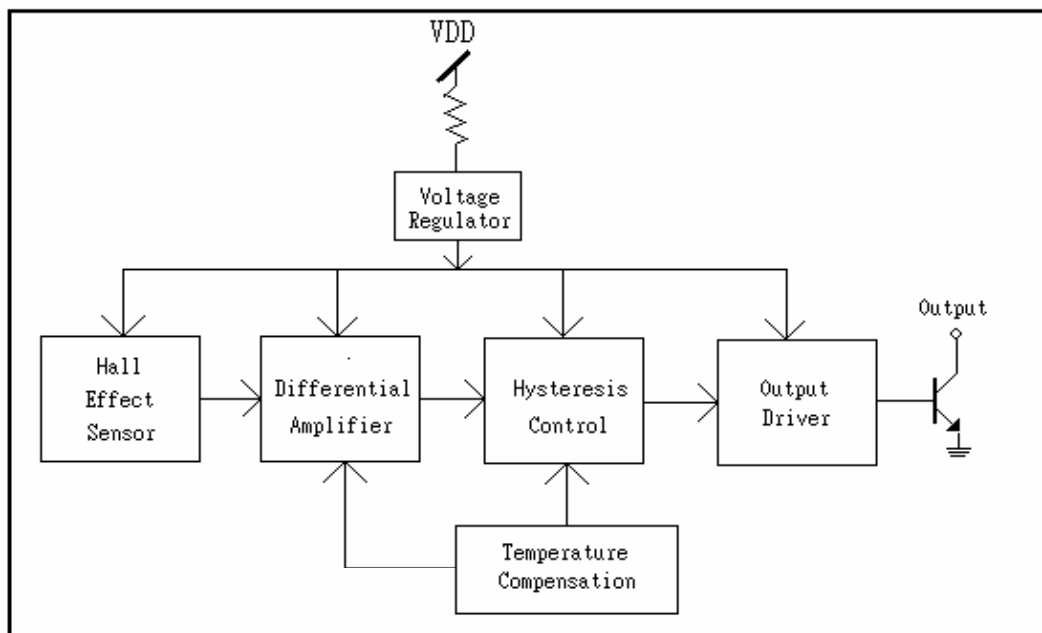
## WSH130NL

Magnetic flux density	B	-----	Unlimited
Reverse Protection Voltage	V <sub>r</sub>	-----	26V
Output ON Current (continuous)	I <sub>c</sub>	-----	25mA
Operating Temperature Range	T <sub>a</sub>	-----	(-40°C to +125°C)
Storage Temperature Range	T <sub>s</sub>	-----	(-65°C to +150°C)
Package Power Dissipation	P <sub>d</sub>	-----	500mw

### Electrical Characteristics: (T=+25°C, V<sub>cc</sub>=2.4V to 26V)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Units
Supply Voltage	V <sub>cc</sub>	—	2.4	—	26	V
Output Saturation Voltage	V <sub>out</sub> (sat)	V <sub>cc</sub> =12V, I <sub>c</sub> =10mA B > B <sub>op</sub>	—	0.2	0.6	V
Output Leakage Current	I <sub>leakage</sub>	V <sub>cc</sub> =12V, B < B <sub>rp</sub>	—	<0.1	10	uA
Supply Current	I <sub>supply</sub>	V <sub>cc</sub> =12V, Output Open	—	4.0	8	mA
Output Rise Time	T <sub>r</sub>	V <sub>cc</sub> =12V, R <sub>L</sub> =2K Ω CL=20Pf	—	1.0	10	μs
Output Falling Time	T <sub>f</sub>	V <sub>cc</sub> =12V, R <sub>L</sub> =2K Ω CL=20Pf	—	0.3	1.5	μs

### Function Block:



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**WSH130NL**

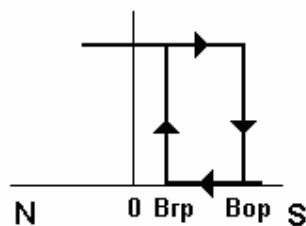
**Magnetic Characteristics:**

Characteristic	Symbol	Grade	Min.	Typ.	Max.	Unit
Operating Point	Bop	A			+ 50	Guass
		B			+70	Guass
		C			+150	
Release Point	Brp	A	+10			Guass
		B	+10			Guass
		C	+10			Guass
Hysteresis Window	Bhys			10	30	Guass

**Ordering Information:**

WSH130NL-XPAN □ (TO-92 )	Grade: 1: 50 Guass 2: 70 Guass 5: 150 Guass
WSH130NL-XPCN □ (SOT23)	
Grade	

**Output vs. Magnetic Field**

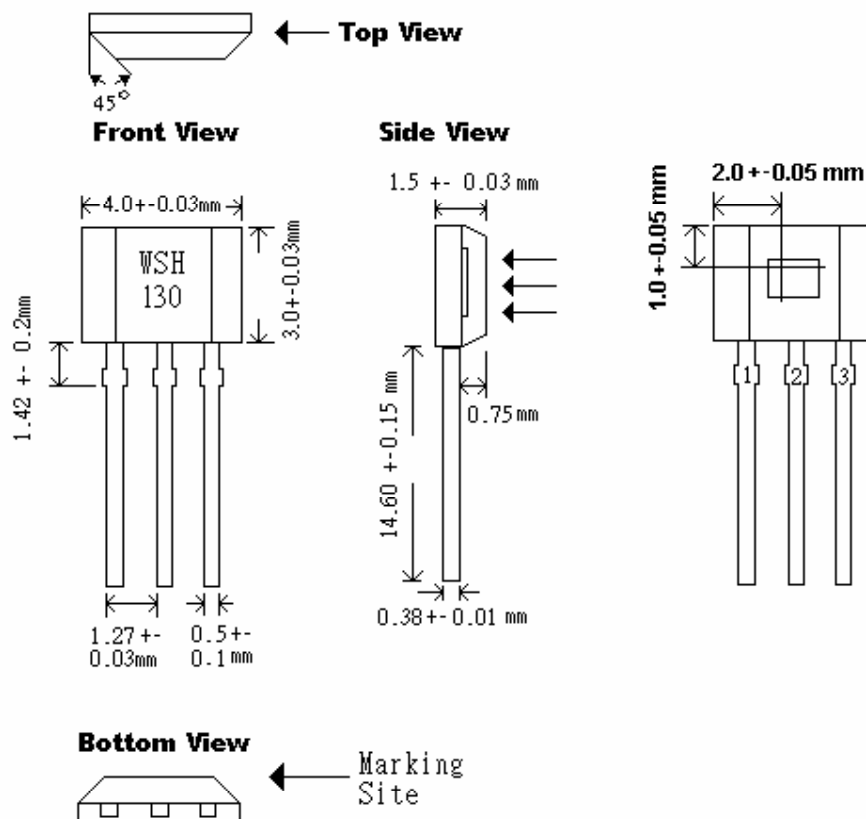


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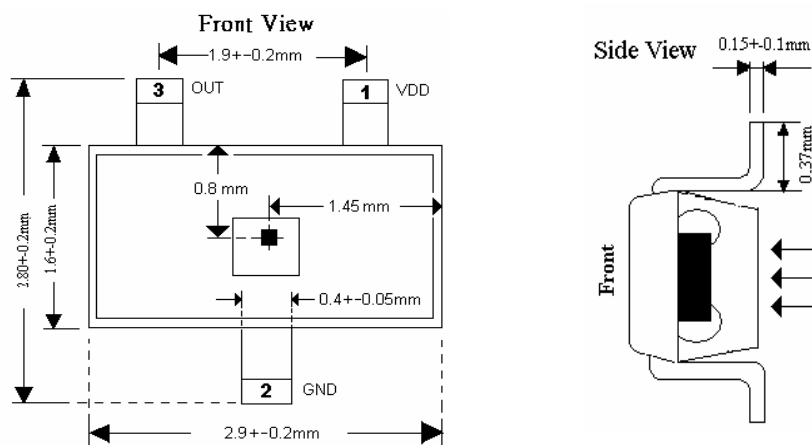
## Package Information:

### Package Dimension

### Hall Sensor Location



SOT23:



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**Application Circuit:**

**Magnetic detector:**

