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Unipolar Hall Switch IC with Complementary Outputs
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## Features:

- Operate from 2.8V to 20V supply voltage.
- On-chip Hall sensor.
- Internal bandgap regulator allows temperature compensated operations and a wide operating voltage range.
- High output sinking capability up to 400mA for driving large load.
- Lower current change rate reduces the peak output voltages during switching.
- Built-in protection diode for reverse power supply fault.

## General Description:

WSH41F is designed to integrate Hall sensor with complementary output drivers and frequency generator 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, two open-collector output drivers capable of sinking 400mA current load. An on-chip protection diode 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. WSH41F are rated for operation over temperature range from  $-20^{\circ}\text{C}$  to  $125^{\circ}\text{C}$  and voltage ranges from 2.8V to 20V.

## Pin Descriptions: SIP-4L

<b>Name</b>	<b>P/I/O</b>	<b>Pin#</b>	<b>Description</b>
Vcc	P	1	Positive Power Supply
OUT1	O	2	Output Pin #1
OUT2	O	3	Output Pin #2
GND	P	4	Ground

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

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

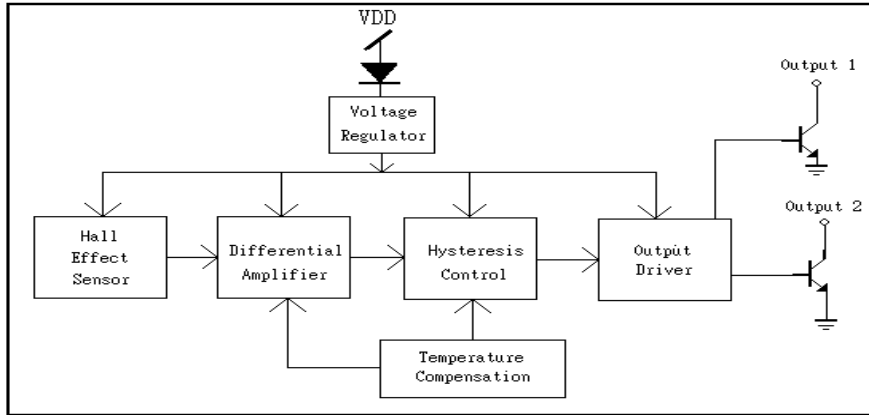
Supply Voltage	Vcc -----	20V
Output breakdown Voltage	Vout -----	26V
Magnetic flux density	B -----	Unlimited
Reverse Protection Voltage	Vr -----	20V
Output Current continuous	Ic -----	300mA
Hold current	Ih -----	400mA
Peak current	Ip -----	800mA
Operating Temperature Range	Ta -----	(-20°C to +125°C)
Storage Temperature Range	Ts -----	(-65°C to +150°C)
Package Power Dissipation	Pd -----	500mw for SIP-4L

**Electrical Characteristics: (T=+25°C, Vcc=2.8V to 20V)**

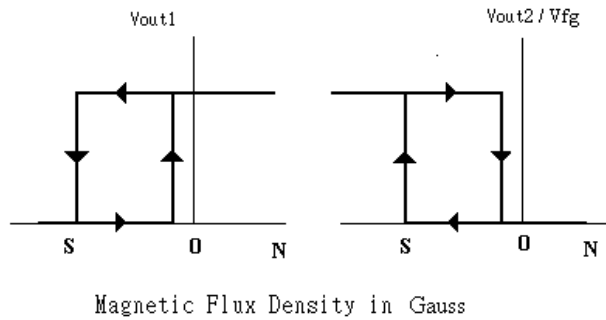
<b>Characteristic</b>	<b>Symbol</b>	<b>Test Conditions</b>	<b>Min</b>	<b>Typ</b>	<b>Max</b>	<b>Units</b>
Supply Voltage	Vcc	—	2.8	—	20	V
Output Saturation Voltage	Vout(sat)	Vcc=18V, Ic=200mA B > Bop	—	0.15	0.4	V
Output Leakage Current	Ileakage	Vcc=18V, B < Brp	—	<0.1	10	uA
Supply Current	Isupply	Vcc=18V, Output & FG Open	—	13	25	mA
Output Rising Time	Tr	Vcc=12V, RL=820Ω CL=20Pf	—	3.0	10	us
Output Falling Time	Tf	Vcc=12V, RL=820Ω CL=20Pf	—	0.3	1.5	us
Output Time Differential	Δt	Vcc=12V, RL=820Ω CL=20Pf	—	0.3	3	us

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Function Block:



WSH41F Complementary Output1 vs. Output2



Magnetic Characteristics:

Characteristics	Symbol	Quantity	Ta= -20°C to +125°C			Unit
			Min	Typ.	Max	
Operate Point	Bop	None latch			150	Gauss
Release Point	Brp	None latch	20			Gauss

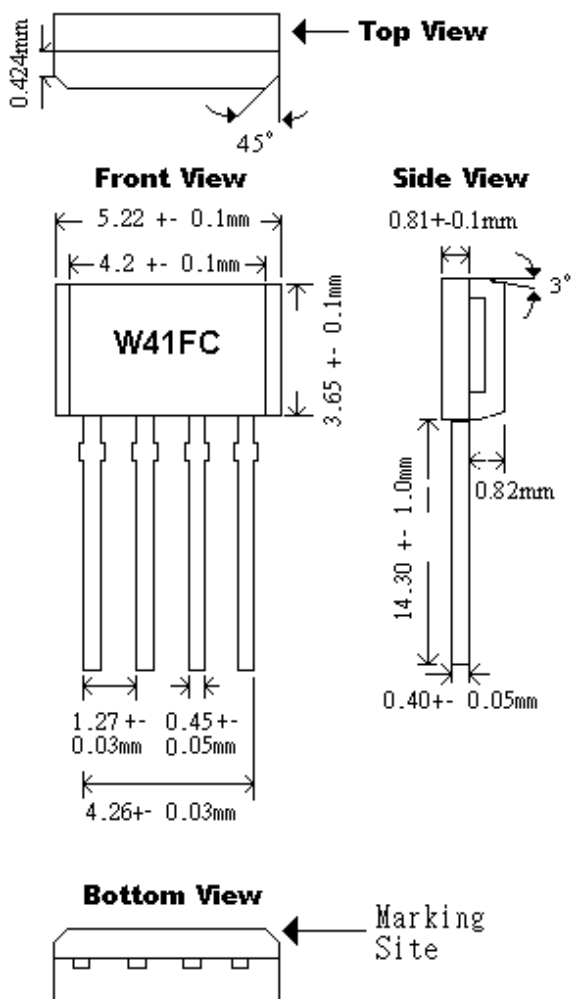
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Ordering Information:

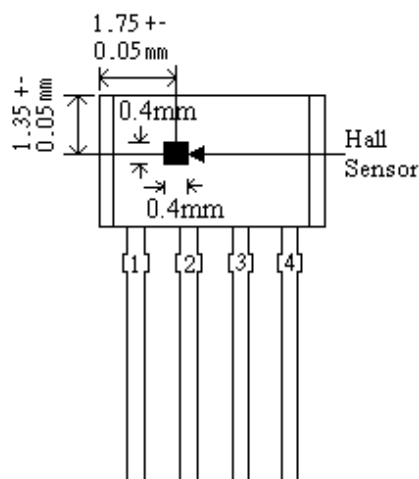
SIP- 4L: WSH41FC-XPAN5	None latch : 150 Gauss
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Package Information:

**Package Dimension**



**Hall Sensor Location**



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