WSH415

Hall Effect IC with Two complementary Outputs

Features:

- Operate from 2.8V to 28V 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 600mA for driving large load.
- Lower current change rate reduces the peak output voltages during switching.
- Available in rugged low profile SIP-4L packages.
- Built-in protection diode for reverse power supply fault.

General Description:

WSH415 is designed to integrate Hall sensor with two complementary output drivers on the same chip, it is suitable for speed measurement, revolution counting, positioning, and DC brushless motors. It includes a temperature compensated voltage regulator, a differential amplifier, a Hysteresis controller, two open-collector output drivers capable of sinking 600mA 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. WSH415 are rated for operation over temperature range from –20˚ C to 100˚C and voltage ranges from 2.8V to 28V.

Pin Descriptions: SIP-4L

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

Absolute Maximum Rating (at Ta=25˚ C)

Supply Voltage	Vcc ----------	28V
Output Voltage	Vout ----------	36V
Magnetic flux density	B ----------	Unlimited

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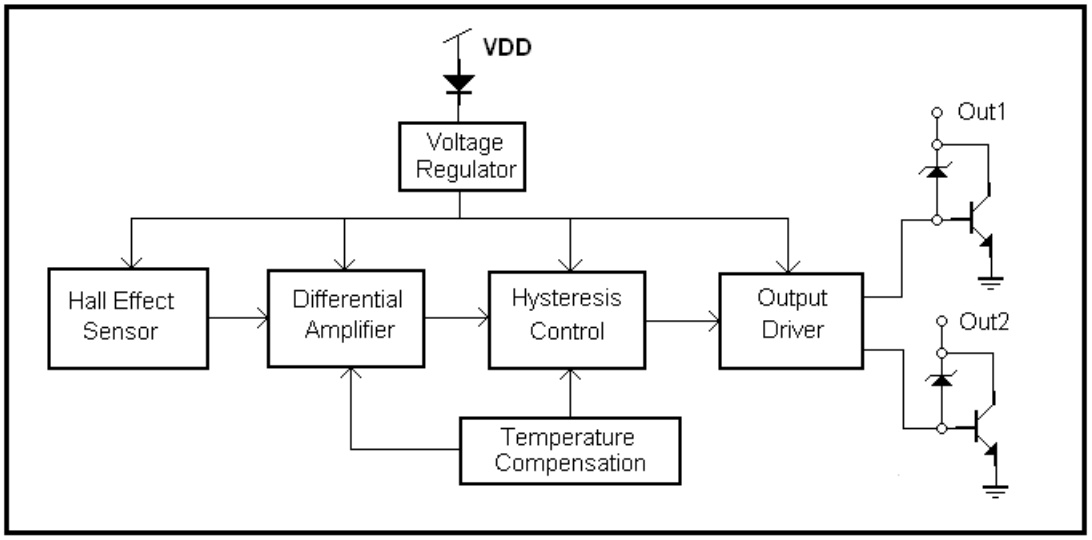
Reverse Protection Voltage	Vr	----------	28V
Output Current continuous	Ic	----------	500mA
Hold current	Ih	----------	600mA
Peak current	Ip	----------	800mA
Operating Temperature Range	Ta	----------	(-20˚C to +100˚C)
Storage Temperature Range	Ts	----------	(-65˚C to +150˚C)
Package Power Dissipation	Pd	----------	500mw for SIP-4L

Electrical Characteristics: (T=+25˚C, Vcc=2.8V to 28V)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Units
Supply Voltage	Vcc	—	2.8	—	28	V
Output Saturation Voltage	Vout(sat)	Vcc=20V, Ic=200mA B > Bop	—	0.15	0.4	V
Output Leakage Current	Ileakage	Vcc=20V, B < Brp	—	<0.1	10	uA
Supply Current	Isupply	Vcc=20V, Output &	—	18	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	△t	Vcc=12V, RL=820Ω CL=20Pf	—	0.3	3	us

Function Block:



Magnetic Characteristics:

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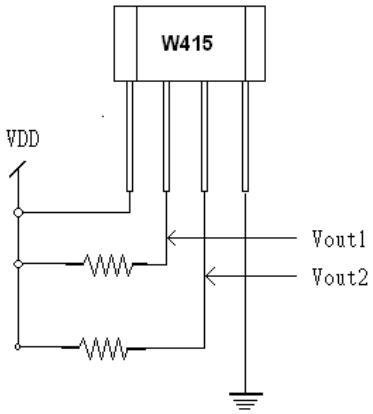
Characteristics	Symbol	Quantity	Ta= -20˚C to +100˚C Min	Typ.	Max	Unit
Operating Point	Bop			60	120	Gauss
Release Point	Brp		-120	-60		
Hysteresis Window	Bop-Brp			50	150	Gauss

Ordering Information:

SIP- 4L: WSH415-XPAN3	Elec. Grade: 120 Gauss

Test Circuit:



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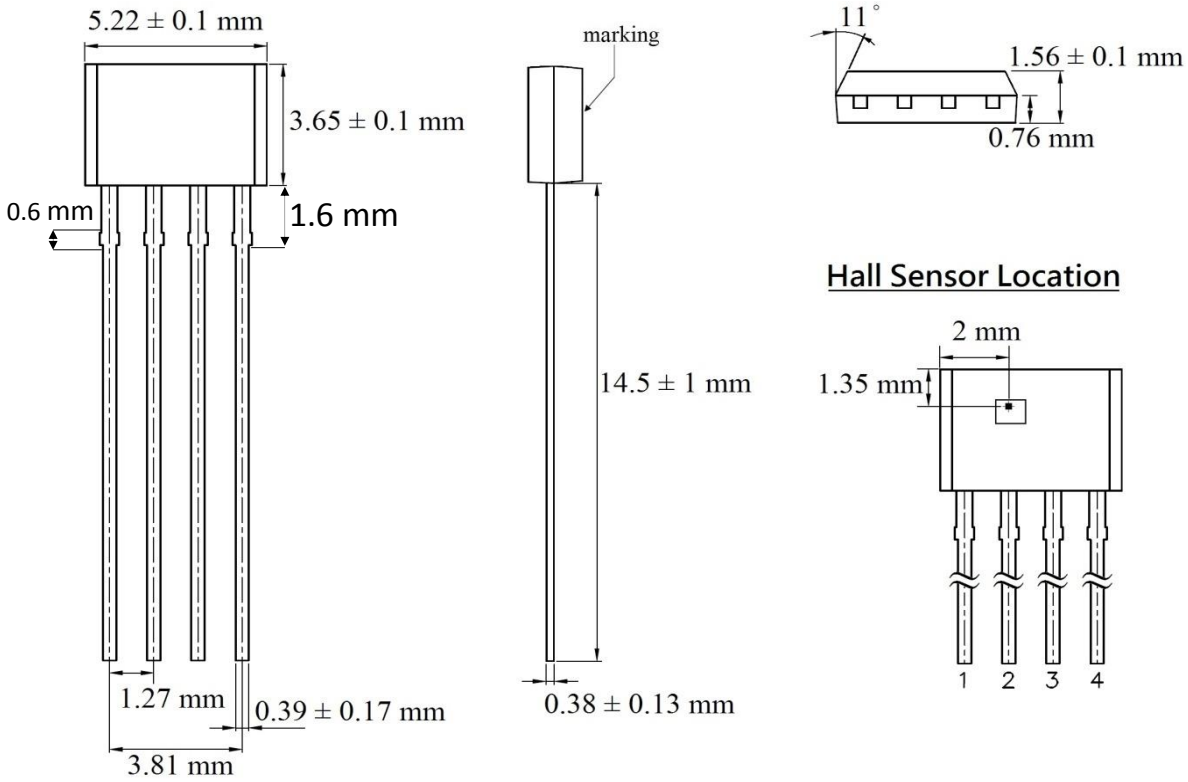
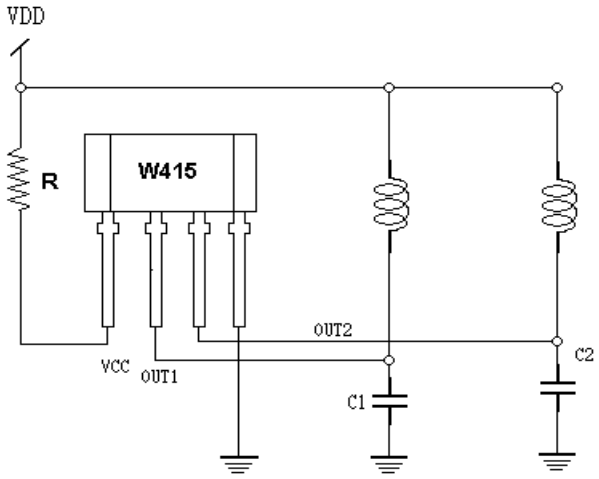
Package Information:



Application Circuit:



Recommend:

12V: R= 0~200Ω

18V: R=300~500Ω

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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