WSH413NL

Hall Effect Switch IC with Thermal Protection

Features:

- Operate from 2.8V to 40V 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 350mA 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.
- Built-in thermal protection.
- Output react at South Magnetic Field
  recover at Zero or North Magnetic Field

General Description:

WSH413NL is designed to integrate Hall sensor with complementary output drivers on the same chip, It includes a temperature compensated voltage regulator, a differential amplifier, a Hysteresis controller, two Darlington output drivers capable of sinking 350mA current load. An on-chip protection diode is implemented to prevent reverse power fault. And built-in thermal protection circuit can protect system to be burned out due to fault application.

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. This make chip can operate smoothly on high range of ambient temperature. WSH413NL are rated for operation over temperature range from –20˚ C to 100˚C and voltage ranges from 2.8V to 40V.

Pin Descriptions:

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)

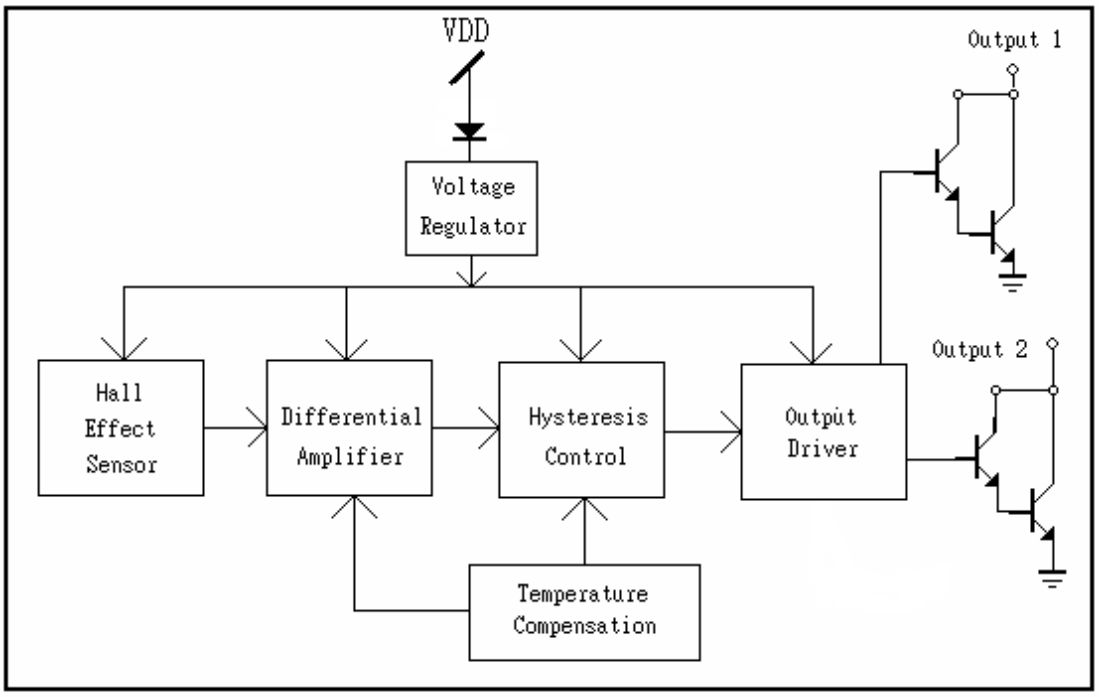
Supply Voltage	Vcc	----------	40V
Output breakdown Voltage	Vout	----------	46V
Magnetic flux density	B	----------	Unlimited
Reverse Protection Voltage	Vr	----------	40V
Output Current continuous	Ic	----------	350mA
Operating Temperature Range	Ta	----------	(-20˚C to +100˚C)
Storage Temperature Range	Ts	----------	(-65˚C to +150˚C)
Package Power Dissipation	Pd	----------	450mw for SIP-4L

Electrical Characteristics: **(T=+25˚C, Vcc=2.8V to 40V)**

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Units
Supply Voltage	Vcc	—	2.8	—	40	V
Output Saturation Voltage	Vout(sat)	Vcc=24V, Ic=200mA B > Bop	—	0.75	1.0	V
Output Leakage Current	Ileakage	Vcc=24V, B < Brp	—	<0.1	10	uA
Supply Current	Isupply	Vcc=24V, Output & FG Open	—	5	10	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

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

Function Block:



Magnetic Characteristics:

Characteristics	Symbol	Quantity	Ta= -20˚C to +100˚C Min	Typ.	Max	Unit
Operate Point	Bop	Grade A Garde B	40 40		100 250	Gauss
Release Point	Brp	Grade A Grade B	10 10		80 230	Gauss
Hysteresis Window	Bop-Brp		10		80	Gauss

Ordering Information:

SIP- 4L: WSH413NL-XPAN□ N: Non-lead Process Grade	**Grade:** SIP-4L : **1:** A Grade (100 Gauss) **2**: B Grade (250 Gauss)

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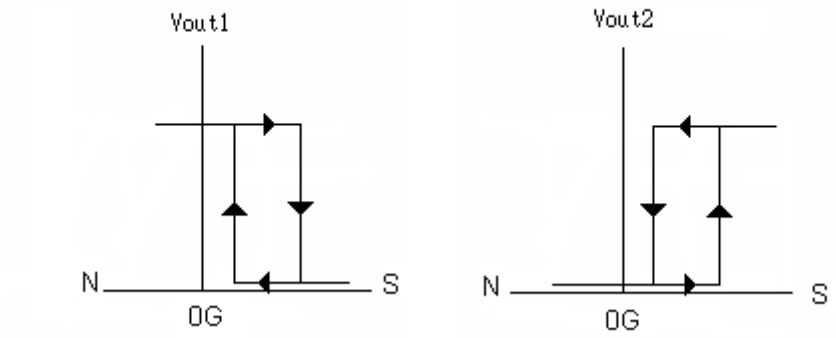
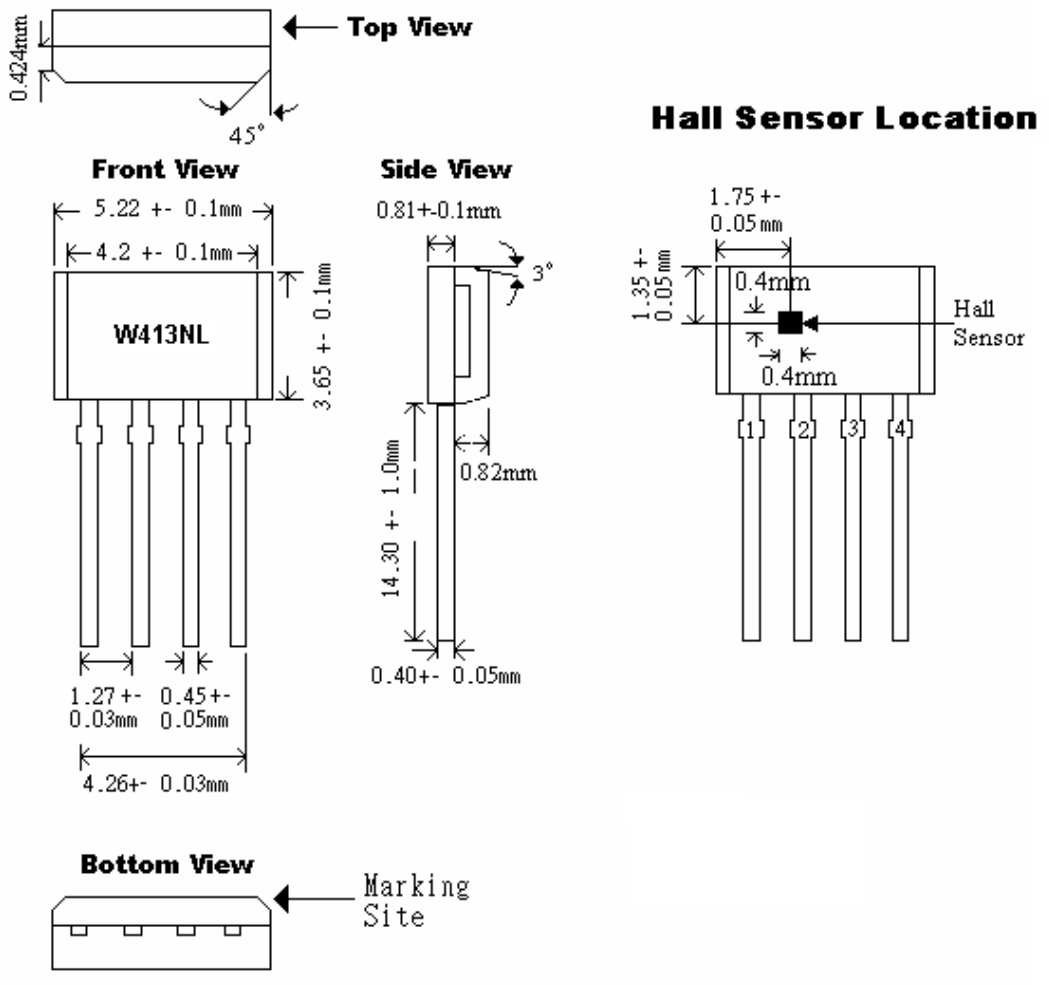
W413NL Complementary Output1 vs.Output2



Package Information:

SIP-4L:



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Application Circuit:

SIP-4L

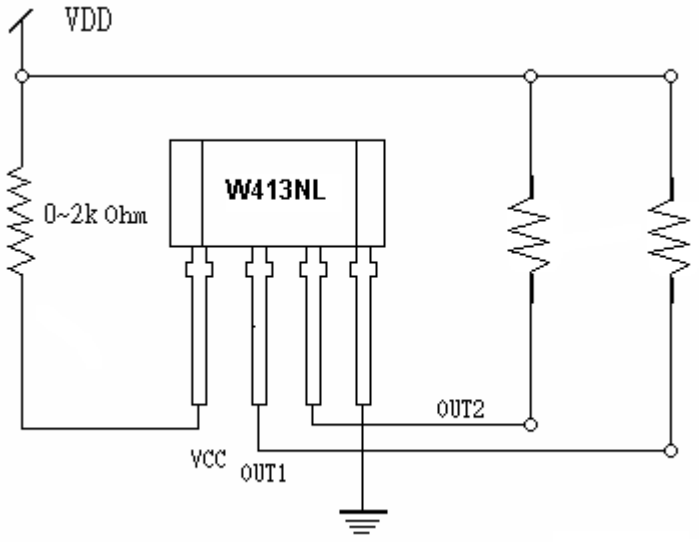

Figure 1.

Put additional resistor between **Power line** and **Pin 1** of W413NL can greatly incerease the surge voltage protection ability of system.