Single Coil Hall Effect IC with Thermal Lock Protection and Auto-Restart

Features:

- Operate from 2.4V to 15V supply voltage.
- On-chip Hall sensor.
- Internal bandgap regulator allows temperature compensated operations and a wide operating voltage range.
- Output sinking capability up to 450mA 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 resistance for reverse power supply fault.
- Built-in thermal lock protection and auto-restart function.

General Description:

WSH420 is designed to integrate Hall sensor with two push-pull output drivers and frequency generator together on the same chip, it is suitable for single coil DC brushless motors. It includes a temperature compensated voltage regulator, a differential amplifier, a Hysteresis controller, complementary bi-direction drivers for sinking and driving large current load. An on-chip protection resistor is implemented to prevent reverse power fault. And built-in thermal lock protection and auto-restart function will automatically shutdown power at 120°C to prevent the coils be damaged during high temperature and auto-restart at 115°C. It can replace the function of lock protection and auto-restart at low cost.

WSH420 are rated for operation over temperature range from –20˚ C to 85˚C and voltage ranges from 2.4V to 15V.

Pin Descriptions: (SIP-4L)

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

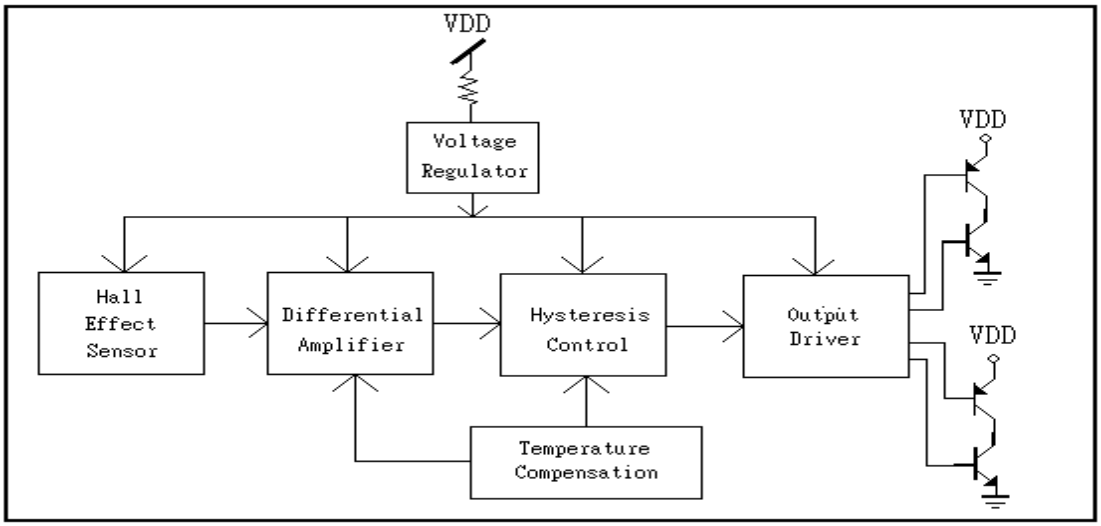
Absolute Maximum Rating (at Ta=25˚C)

Supply Voltage	Vcc	----------	15V
Magnetic flux density	B	----------	Unlimited
Reverse Protection Voltage	Vr	----------	15V
Output Lock Current	Ic	----------	450mA
Operating Temperature Range	Ta	----------	(-20˚C to +85˚C)
Storage Temperature Range	Ts	----------	(-65˚C to +150˚C)
Package Power Dissipation	Pd	----------	500mw for SIP-4L

Electrical Characteristics: **(T=+25˚C, Vcc=2.4V to 15V)**

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Units
Supply Voltage	Vcc	—	2.4	—	15	V
Output Saturation Voltage	Vout(sat) Vdrive+Vsink	Vcc=12V, Io=200mA	—	0.6	1.0	V
Output Leakage Current	Ileakage	Vcc=12V, B < Brp	—	<0.1	10	uA
Supply Current	Isupply	Vcc=12V, Io=200mA FG “ON”	—	22	30	mA

Function Block:



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

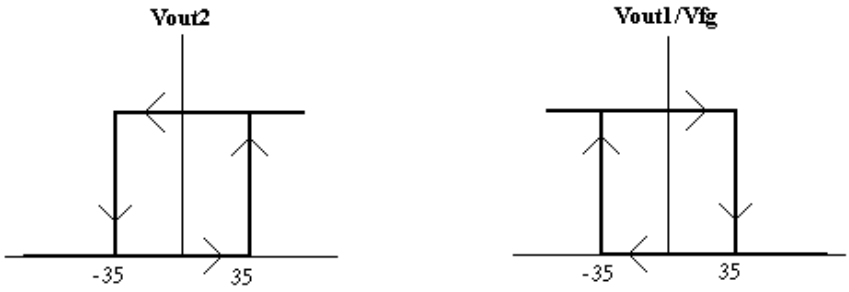
Magnetic Characteristics:

Characteristics	Symbol	Quantity	Ta= -20˚C to +90˚C Min	Typ.	Max	Unit
Operate Point	Bop	A Grade B C		35 50	50 70 120	Gauss
Release Point	Brp	A Grade B C	-50 -70 -120	-35 -50		Gauss
Hysteresis Window	Bop-Brp			40	80	Gauss

Ordering Information:

SIP -4L: WSH420-XPAN□ Elec. Grade	Elec. Grade **SIP-4L:** **1:** A Grade (50 Gauss) **2:** B Grade (70 Gauss) **3:** C Grade (120 Guass)

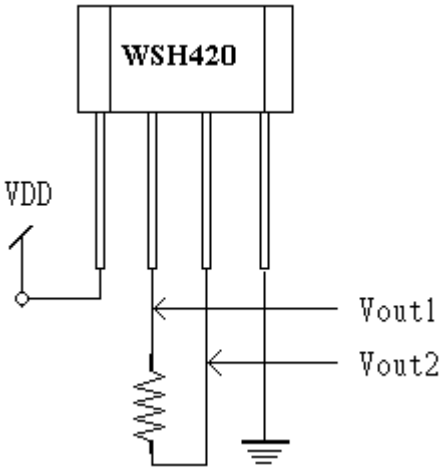
WSH420 Complementary Output1/Vfg vs.Output2



Magnetic Flux Density in Gauss

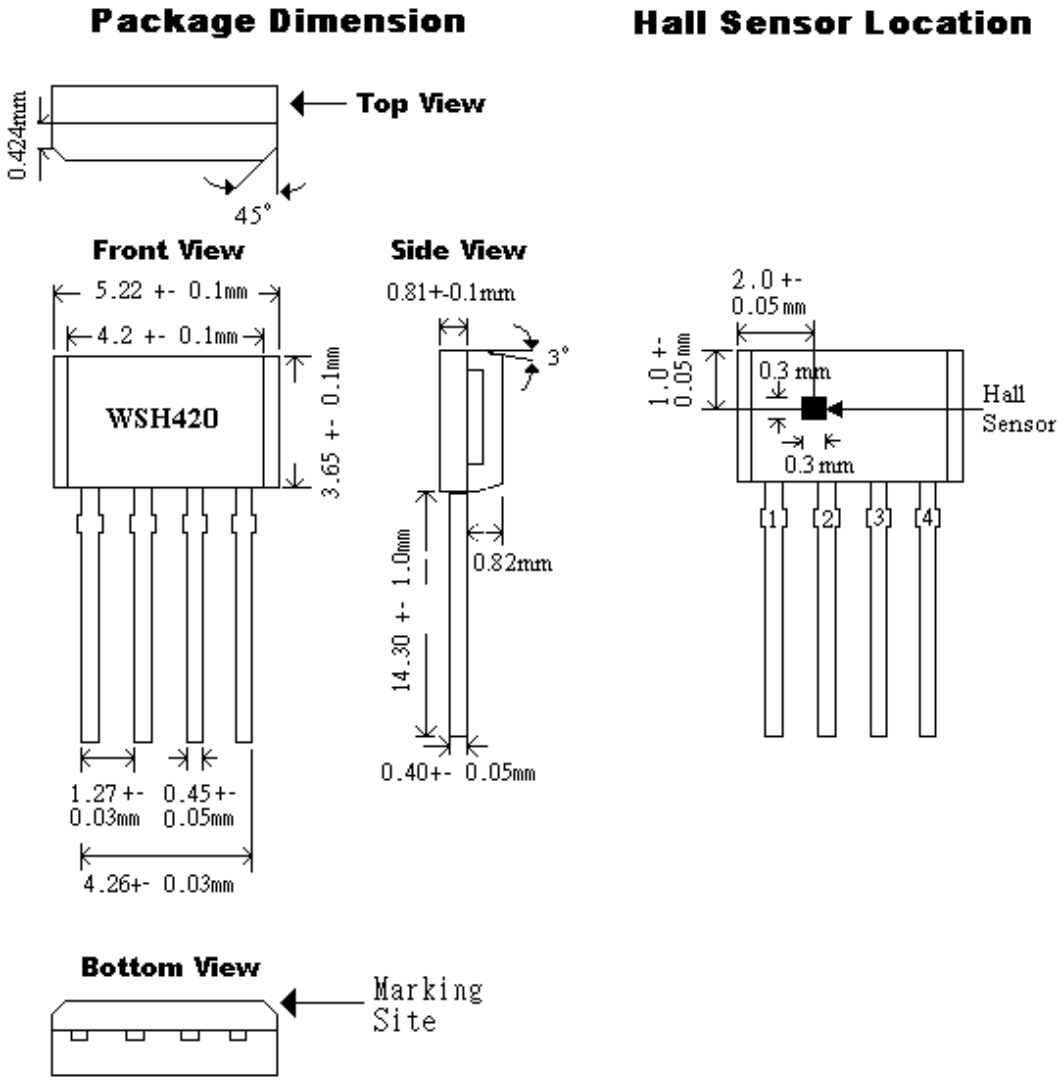
Winson reserves the right to make changes to improve reliability or manufacturability.

Testing Circuit



Package Information:

1. SIP-4L



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

Application Circuit:

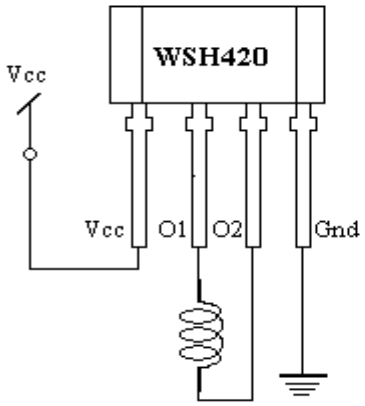


Figure 1.