



## 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

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

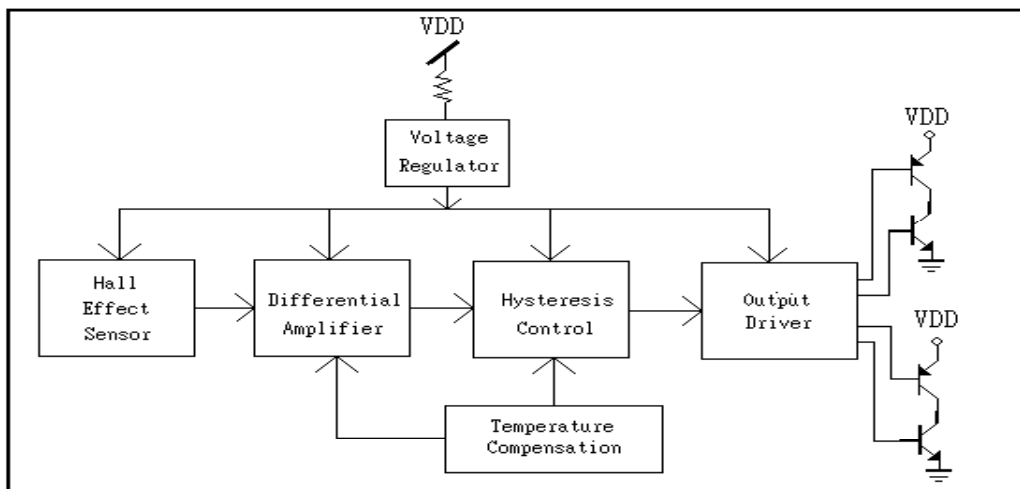
**Absolute Maximum Rating (at Ta=25° C)**

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:**



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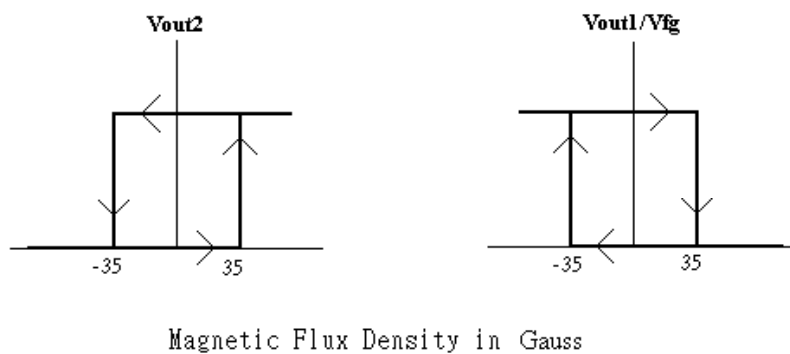
**Magnetic Characteristics:**

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

**Ordering Information:**

<p><b>SIP -4L:</b> WSH420-XPAN <input type="checkbox"/></p> <div style="margin-left: 100px;"> <p>└─ Elec. Grade</p> </div>	<p>Elec. Grade</p> <p><b>SIP-4L:</b></p> <p><b>1:</b> A Grade (50 Gauss)</p> <p><b>2:</b> B Grade (70 Gauss)</p> <p><b>3:</b> C Grade (120 Gauss)</p>
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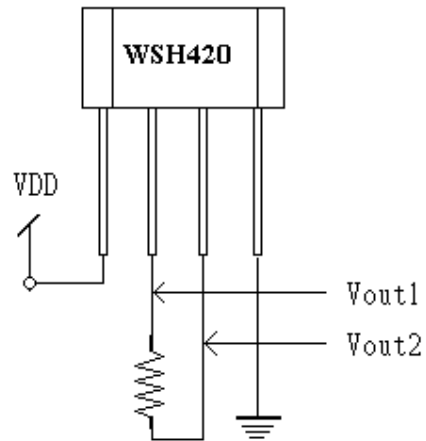
**WSH420 Complementary Output1/Vfg vs. Output2**



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Testing Circuit



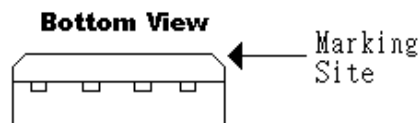
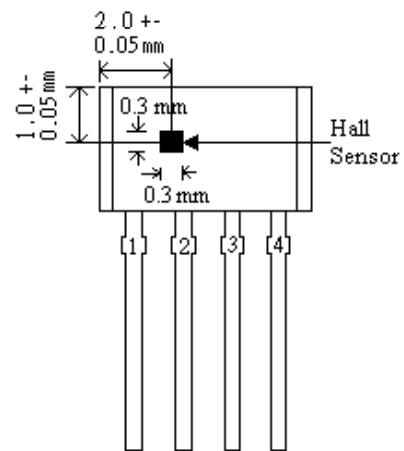
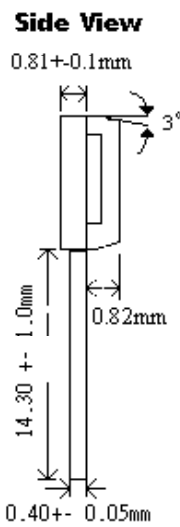
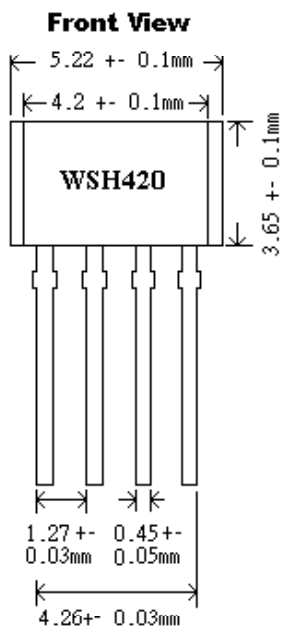
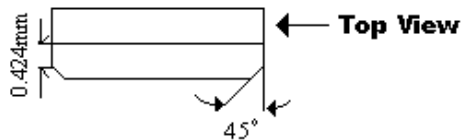
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**Package Information:**

1. SIP-4L

**Package Dimension**

**Hall Sensor Location**



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Application Circuit:

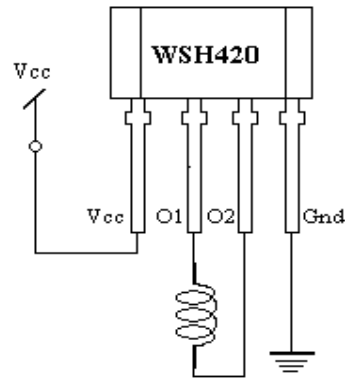


Figure 1.