

Low voltage Single Coil Hall Effect IC with Complementary Output Drivers

Features:

- Operate from 1.8V to 4.5V supply voltage.
- On-chip Hall sensor.
- Internal thermal compensation circuit enable operation in a wide range temperature without loss of sensitivity.
- Output sinking capability up to 200mA for driving large load.
- Available in rugged low profile SOT-25 packages.

General Description:

WSH520 is designed to integrate Hall sensor with complementary output drivers on the same chip, it is suitable for single coil DC brushless motors. It includes a temperature compensated circuit, a differential amplifier, a Hysteresis controller, complementary bi-direction drivers for sinking and driving large current load. WSH520 are rated for operation over temperature range from -20°C to 75°C and voltage ranges from 1.8V to 4.5V.

Pin Descriptions: (SOT-25)

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

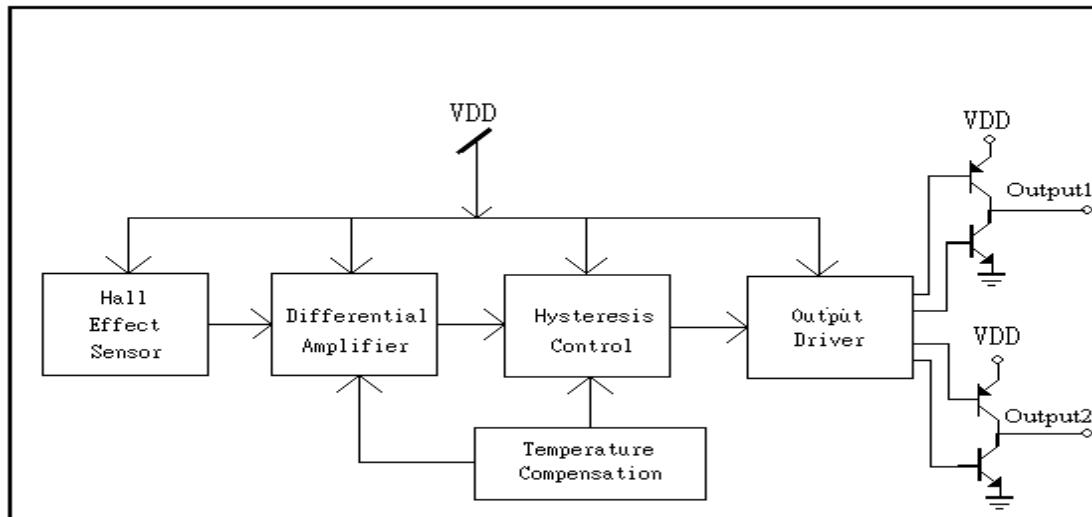
Absolute Maximum Rating (at $T_a=25^{\circ}\text{C}$)

| | | |
|--------------------------------|-----|--|
| Supply Voltage | Vcc | 5V |
| Magnetic flux density | B | Unlimited |
| Output ON Current (continuous) | Ic | 220mA |
| Operating Temperature Range | Ta | $(-20^{\circ}\text{C}$ to $+75^{\circ}\text{C}$) |
| Storage Temperature Range | Ts | $(-65^{\circ}\text{C}$ to $+150^{\circ}\text{C}$) |
| Package Power Dissipation | Pd | 350mw for SOT-25 |

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

Electrical Characteristics:
(T=+25°C, Vcc=1.8V to 4.5V)

| Characteristic | Symbol | Test Conditions | Min | Typ | Max | Units |
|---------------------------|--|-------------------------------|-----|------|-----|-------|
| Supply Voltage | Vcc | — | 1.8 | — | 4.5 | V |
| Output Saturation Voltage | V _{out(sat)} V _{drive} +V _{sink} | Vcc=3V, I _o =150mA | — | 0.6 | 1.0 | V |
| Output Leakage Current | I _{leakage} | Vcc=3V, B < Brp | — | <0.1 | 10 | uA |
| Supply Current | I _{supply} | Vcc=3V, I _o =150mA | — | 10 | 20 | mA |

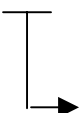
Function Block:


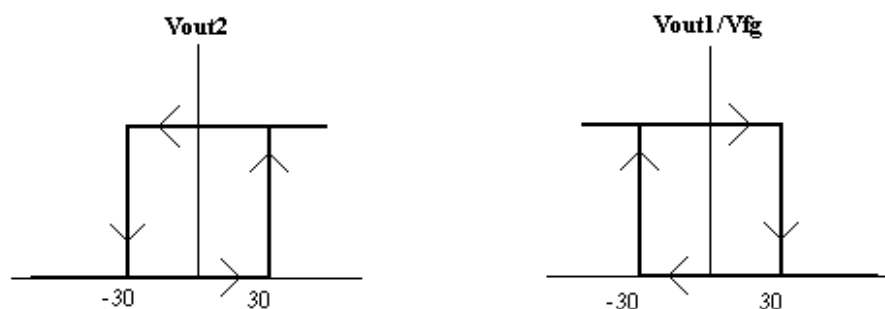
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Magnetic Characteristics:

| Characteristics | Symbol | Quantity | Ta= -20°C to +80°C | | | Unit |
|-------------------|---------|--------------------|--------------------|------------|-----------|-------|
| | | | Min | Typ. | Max | |
| Operate Point | Bop | Grade A Grade B | | 35 50 | 70 100 | Gauss |
| Release Point | Brp | Grade A Grade B | -70 -100 | -35 -50 | | Gauss |
| Hysteresis Window | Bop-Brp | | | 70 | 150 | Gauss |

Ordering Information:

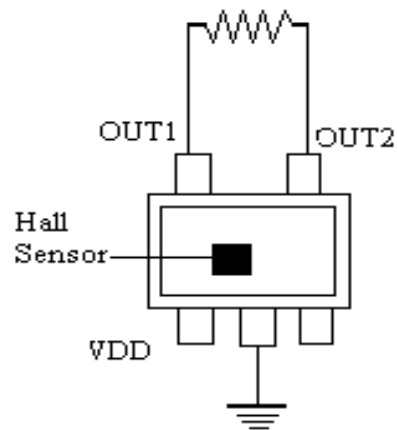
| | |
|--|--|
| SOT-25: WSH520-XP  | Elec. Grade SOT-25: 1: A Grade (70 Gauss) 2: B Grade (100 Gauss) |
|--|--|

Test Circuit:
WSH520 Complementary Output1/Vfg vs. Output2


Magnetic Flux Density in Gauss

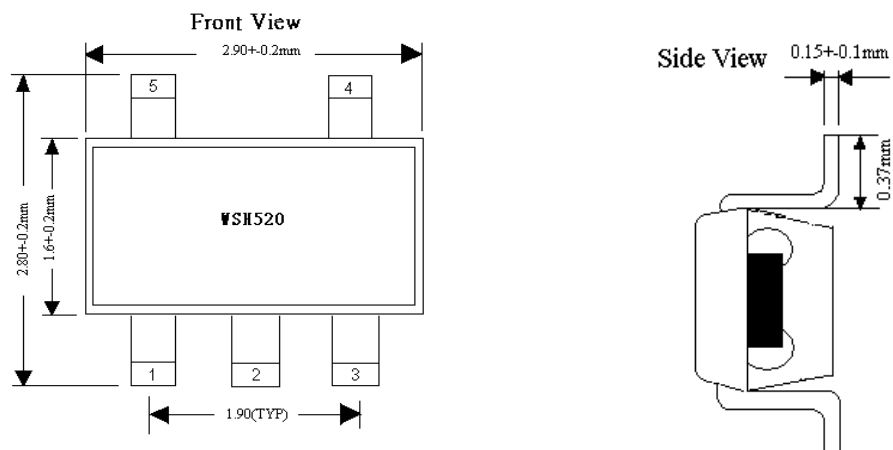
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1. SOT-25:

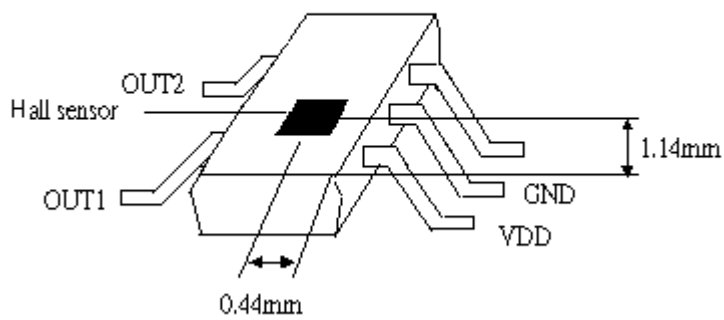
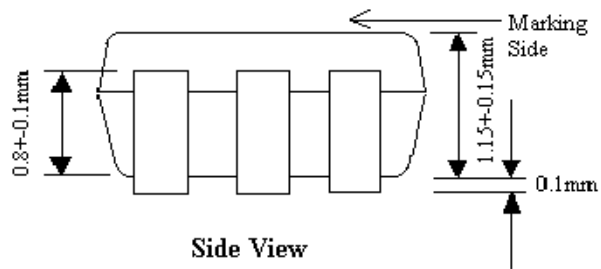


Package Information:

1. SOT-25

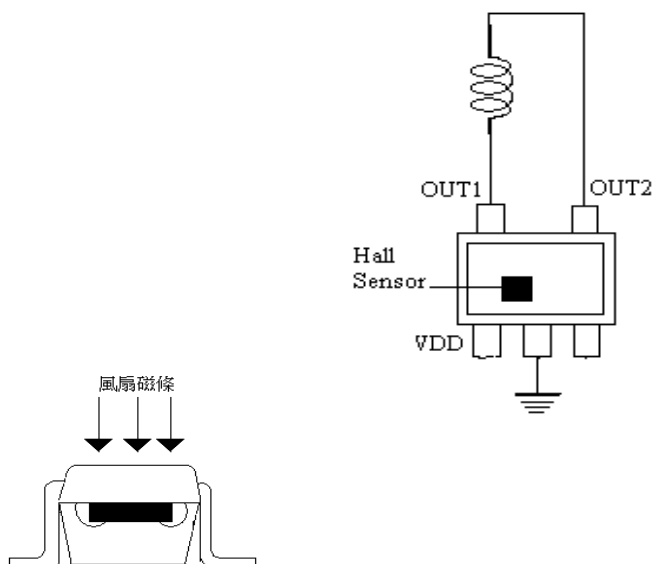


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Application Circuit:

1-1. SOT-25



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Figure 1.

1-2. SOT-25

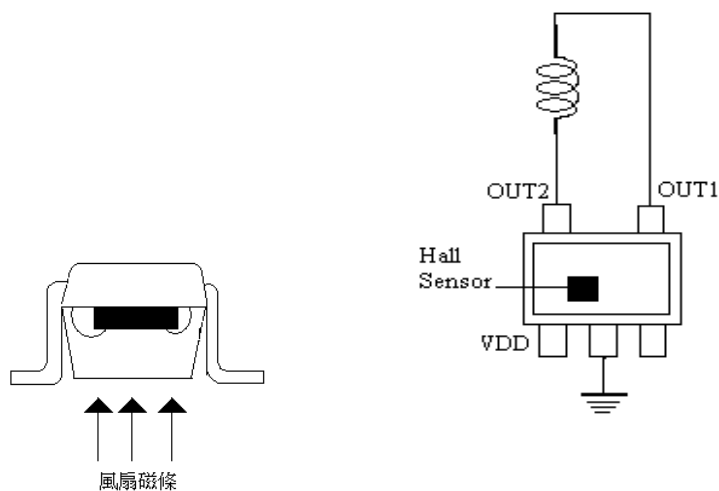
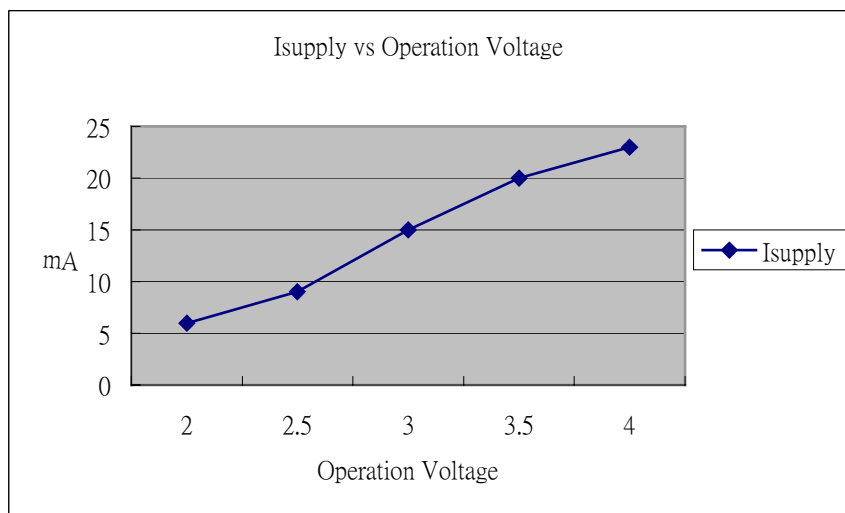


Figure 2.

IV-Curve



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