

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)

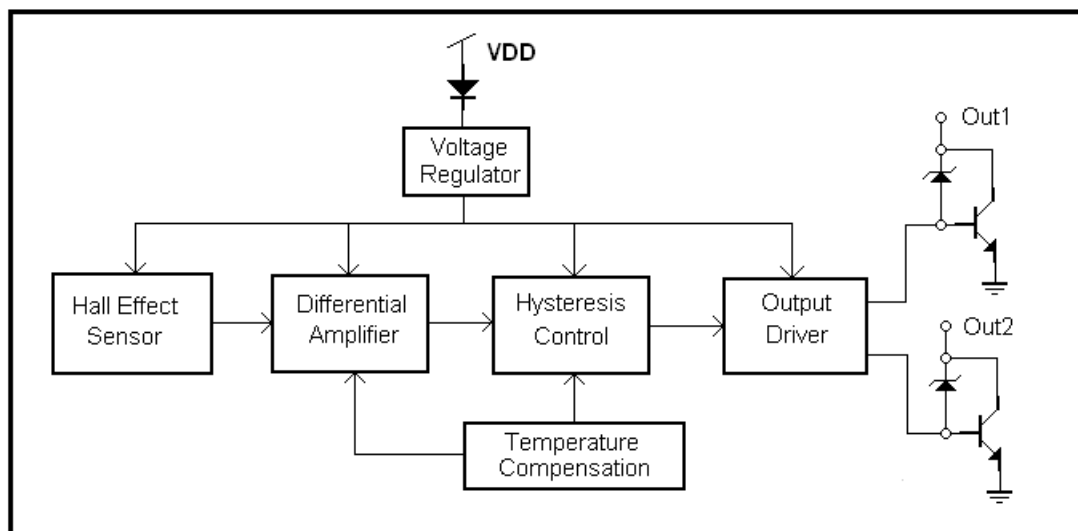
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|-----------------------|------------|-----------|
| Supply Voltage | Vcc ----- | 28V |
| Output Voltage | Vout ----- | 36V |
| Magnetic flux density | B ----- | Unlimited |

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

| | | | |
|-----------------------------|----|-------|-------------------|
| Reverse Protection Voltage | Vr | ----- | 28V |
| Output Current | 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 | Δt | Vcc=12V, RL=820Ω CL=20Pf | — | 0.3 | 3 | us |

Function Block:

Magnetic Characteristics:

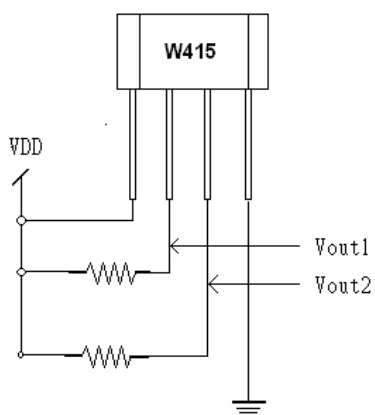
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| Characteristics | Symbol | Quantity | Ta= -20°C to +100°C | | | Unit |
|-------------------|---------|----------|---------------------|------|-----|-------|
| | | | Min | Typ. | Max | |
| Operating Point | Bop | | | 60 | 120 | Gauss |
| Release Point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

Ordering Information:

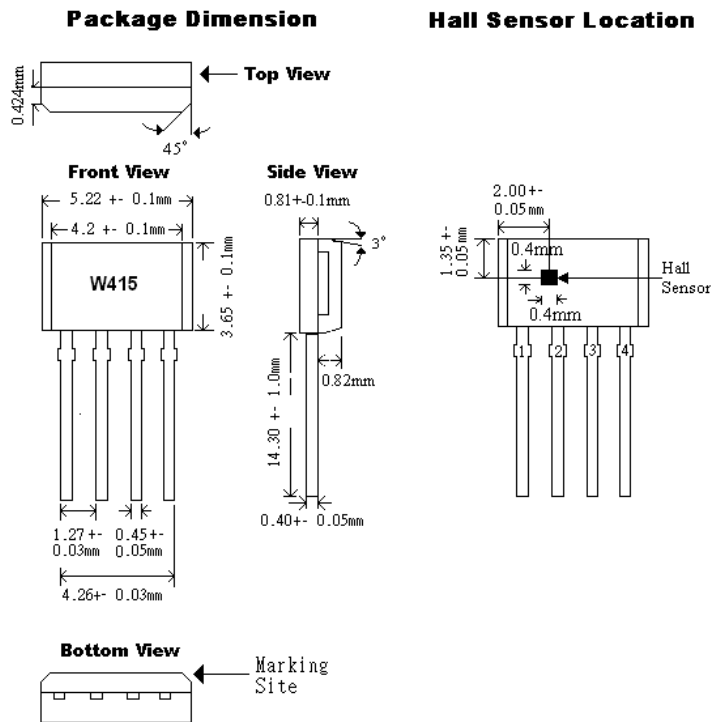
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|-----------------------|------------------------|
| SIP- 4L: WSH415-XPAN3 | Elec. Grade: 120 Gauss |
|-----------------------|------------------------|

Test Circuit:

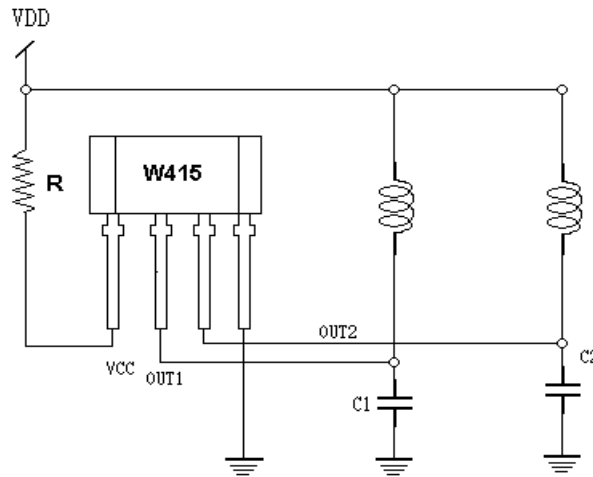


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Package Information:



Application Circuit:



Recommend:

12V: R= 0~200Ω

18V: R=300~500Ω

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