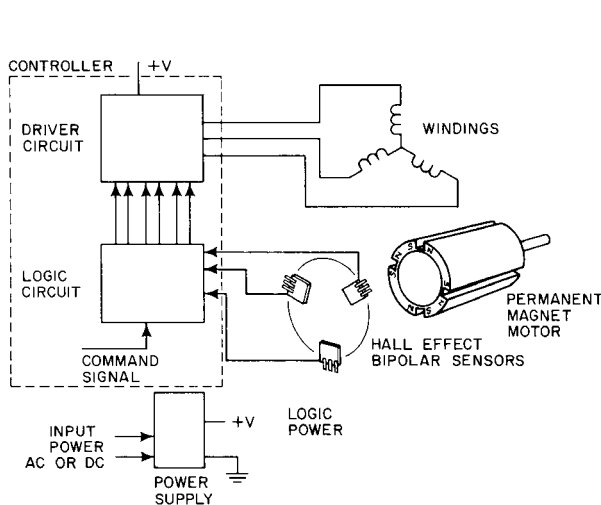


◆ General Description

The GH1187 is an integrated Hall Effect latched sensor designed for electronic commutation of brush-less DC motor applications. The device includes an on-chip Hall voltage generator for magnetic sensing, a comparator that amplifies the Hall voltage, and a Schmitt to provide switching hysteresis for noise rejection, and open-collector output. An internal bandgap regulator is used to provide temperature compensated supply voltage for internal circuits and allows a wide operating supply range.

In the absence of a magnetic field, the output pin is "OFF" (High). A north pole of sufficient strength will turn the output "ON" (Low). While the magnetic flux density (B) is larger than threshold B_{op} , the output pin is "ON". If B removed toward B_{rp} , the output pin is latched "ON" state prior to $B < B_{rp}$. When $B < B_{rp}$, the output pin goes into "OFF" state.

◆ Typical Application



◆ Features

- Bipolar Hall Effect Latch Sensor
- Wide operating voltage range: 3.8V~30V
- Open Collector Pre-Driver
- Maximum output sink current: 50mA
- Chip Power Reverse-Connection Protection
- Operating Temperature: $-40^{\circ}\text{C} \sim +150^{\circ}\text{C}$
- Package: SIP3L (TO-92S)

◆ Applications

- Rotor Position Sensing
- Current Switch
- Encoder
- RPM Detection
- Brush-less DC Motor
- Brush-less DC Fan
- Revolution counting
- Speed measurement

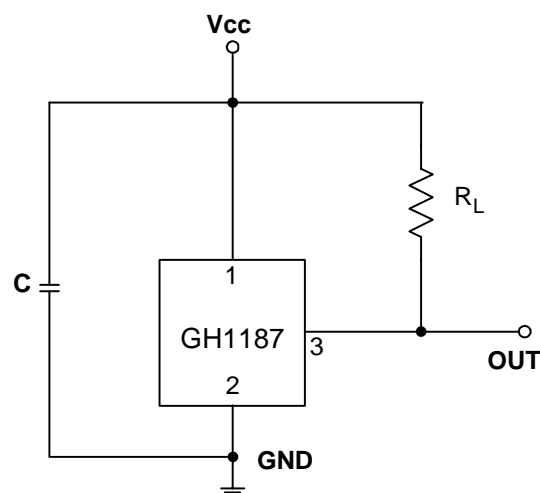


Fig.1 Typical Application of GH1187 in Brush-less DC Motor

◆ **Absolute Maximum Rating** (Note 1)

| SYMBOL | PARAMETER | RATING |
|------------|--------------------------------------|--------------------------------------------------------------------|
| VCC | Supply Voltage | -30V to +30VDC |
| Vout (off) | Voltage externally applied to output | +40VDC max, OFF condition only -0.5 V min., OFF or ON condition |
| Io (sink) | Output "ON" Current | 50 mA |
| PD | Power Dissipation | 450 mW |
| Top | Operation Temperature Range | -40 to +150 °C |
| Tst | Storage Temperature Range | -65 to +160 °C |
| B | Magnetic Flux | No limit. |

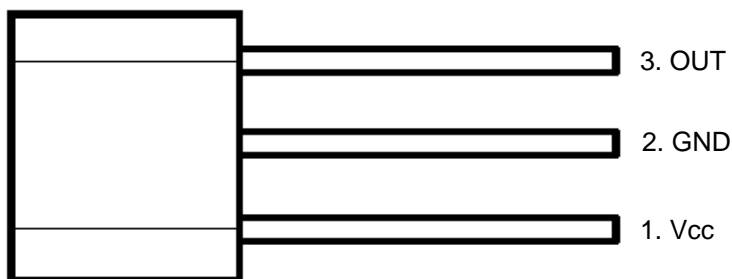
Note 1: Absolute Maximum Ratings are those values beyond which the life of a device may be impaired.

◆ **Pin Description**

| PIN # | NAME | P/I/O | FUNCTION DESCRIPTION |
|-------|------|-------|--------------------------------|
| 1 | VCC | P | Input Power Supply |
| 2 | GND | P | Ground |
| 3 | OUT | O | Output Stage of Open Collector |

◆ **Pin Configuration**

SIP3L
(Top View)



◆ Functional Block Diagram

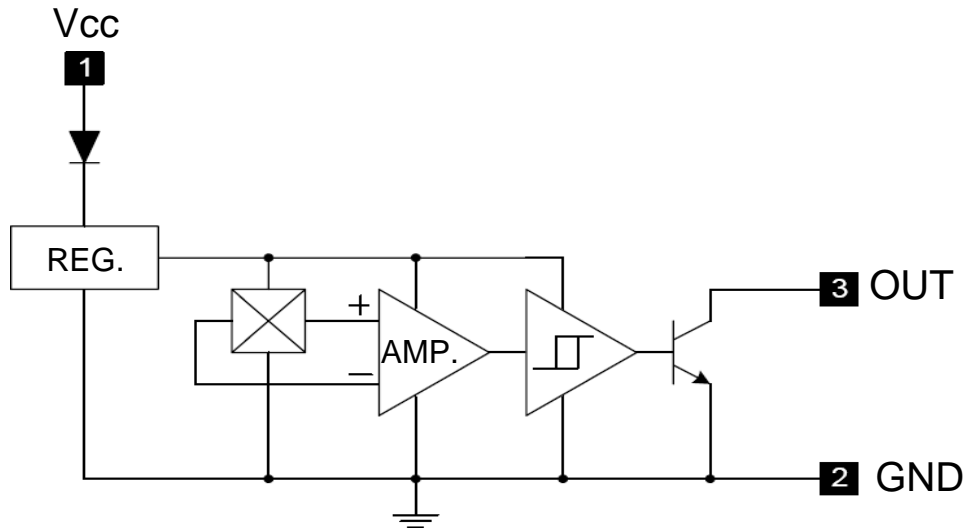


Figure 2. Function Block Diagram of GH1187

◆ Electrical Characteristics (TA = 25°C)

| SYMBOL | PARAMETER | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|-----------------|--------------------------------------------------------|-----------------------------------|------------------|------|------|------|
| Vcc | Supply Voltage | Operating | 3.8 | | 30 | V |
| VO(SAT) | Output Saturation Voltage | Vcc = 12V, OUT "ON", Io = 25mA | 100 | | 250 | mV |
| | | Vcc = 12V, OUT "ON", Io = 50mA | 250 | | 600 | mV |
| Icc | Supply Current | Vcc = 3.8V~30V, OUT "OFF" | | 3.2 | 7.5 | mA |
| I _{LE} | Output Leakage Current (Leakage into sensor output) | Released | | | 10 | μA |
| Tr | Output Switching Time | Rise Time | RL=820Ω, CL=20pF | 0.2 | | μS |
| Tf | | Fall Time | RL=820Ω, CL=20pF | | 0.5 | μS |

◆ Test Circuit

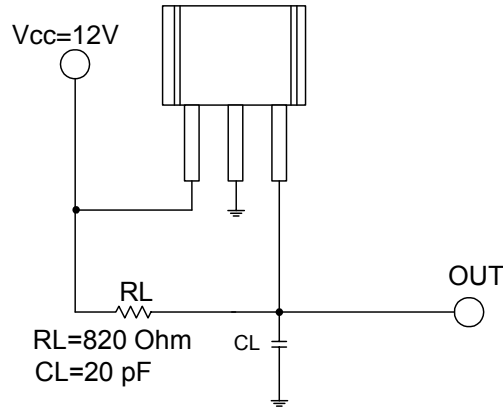


Fig 3. Test Circuit

◆ Magnetic Characteristics (TA = 25°C, Vcc = 12V)

| SYMBOL | PARAMETER | MIN. | TYP. | MAX. | UNIT |
|--------|-----------------|------|------|------|-------|
| Bop | Operation Point | 25 | 100 | - | Gauss |
| Brp | Release Point | - | -100 | -25 | Gauss |
| Bhy | Hysteresis | | 200 | | Gauss |

◆ Operating Characteristics

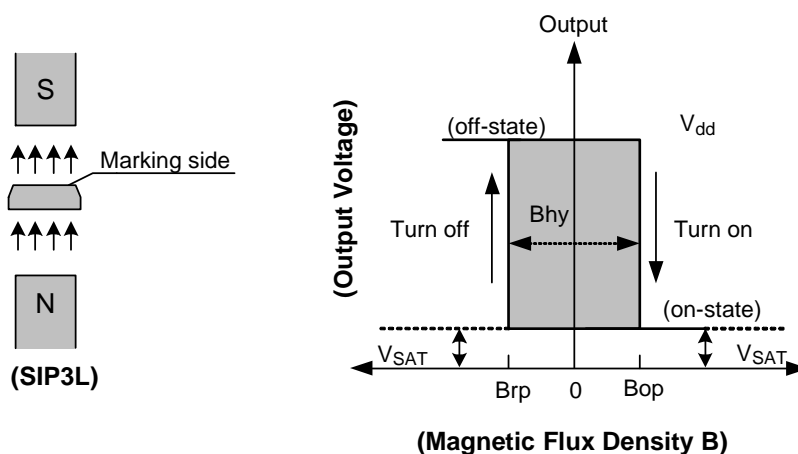
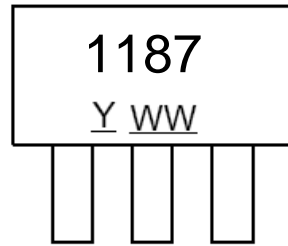


Figure 4. Operating Characteristics of GH1187

◆ Marking Information

SIP-3L

(Top View)

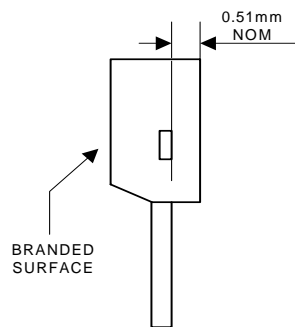


Y : Year : "8" = 2008

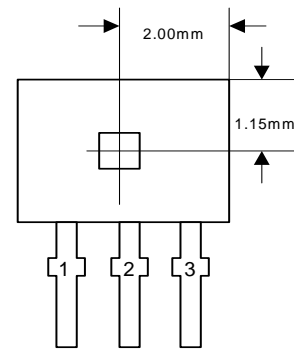
WW : Nth Week 01~52

◆ Package Information (unit: mm)

Package Type: SIP-3L for Bulk pack

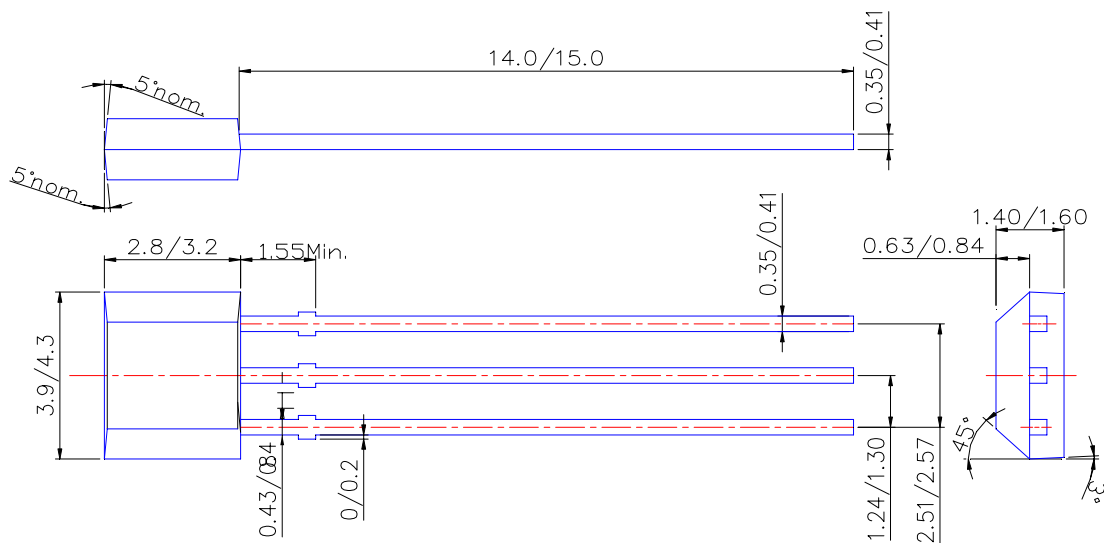


Active Area Depth



Sensor Location

Package Dimension



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