◆ General Description

The GH49F is a small, Ratio-Metric, Linear Hall device that is operated by the magnetic field from a permanent magnet or an electromagnet. The output voltage is set by the supply voltage and varies in proportion to the strength of the magnetic field.

The integrated circuitry features low noise output, which makes it unnecessary to use external filtering. It also includes precision resistors to provide increased temperature stability and accuracy. The operating temperature range of these linear Hall sensors is -40ºC to 85ºC, appropriate for commercial, consumer and industrial applications.

The GH49F is available in standard TO-92S (SIP-3L) package.

◆ Features

- Miniature Construction
- Power Consumption of 2.1mA at V_{CC}=5V
- Sensitivity:1.8mV/Gs at V_{CC} =5V
- Single Current Sourcing Output
- Linear Output for Circuit Design Flexibility
- Low Noise Output Virtually Eliminates the Need for Filtering
- A Stable and Accurate Output
- Temperature Range of -40ºC to 85ºC
- Responds to Either Positive or Negative Gauss

◆ Applications

- Current Sensing
- Motor Control
- Position Sensing
- Magnetic Code Reading
- Ferrous Metal Detector
- Vibration Sensing
- Liquid Level Sensing
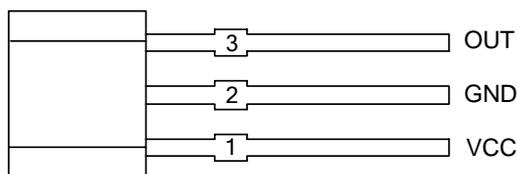- Weight Sensing

◆ Pin Configuration

TO-92S (SIP-3L)

Figure 1. Pin Configuration of GH49F (Front View)

◆ Pin Description

Pin Number	Pin Name	Function
1	V_{CC}	IC Power Supply voltage
2	GND	IC Ground
3	OUT	Output

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◆ **Functional Block Diagram**
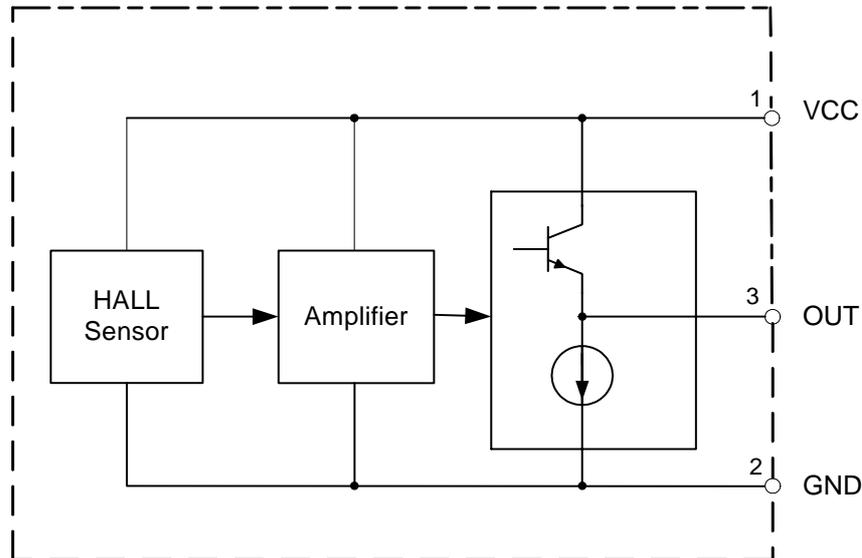

Figure 2. Functional Block Diagram of GH49F

◆ **Absolute Maximum Ratings (Note 1)**
(T_A=25°C)

Parameter	Symbol	Value	Unit
Supply Voltage	V_{CC}	15	V
Output Current	I_O	10	mA
Operating Temperature	T_A	-40 to 100	^{o}C
Storage Temperature Range	T_{STG}	-50 to 150	^{o}C
Magnetic Flux	B	Unlimited	Gauss

Note 1: Stresses greater than those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under "Recommended Operating Conditions" is not implied. Exposure to "Absolute Maximum Ratings" for extended periods may affect device reliability.

◆ **Recommended Operating Conditions** (T_A=25°C)

Parameter	Symbol	Min	Max	Unit
Supply Voltage	V_{CC}	3.0	7.0	V
Ambient Temperature	T_A	-20	85	^{o}C

◆ **Electrical Characteristics** (V_{CC}=5V, T_A=25°C, unless otherwise specified.)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Supply Current	I_{CC}		2.0		9	mA
Quiescent Output Voltage	V_{NULL}	B=0GS	2.25	2.5	2.75	V
Output Voltage Sensitivity	Sen	B=0GS to ± 900GS	1.4	1.8	2.2	mV/GS
Output Voltage Span	V_{OS}		1.05 to (V_{CC}-1.05)	0.95 to (V_{CC}-0.95)		V
Bandwidth (-3dB)	BW			23		KHz
Magnetic Field Range	B			±900		GS
Linearity of Span	Lin			0.7		%
Output Noise		BW=10Hz to 10kHz		90		μV

◆ **Magnetic Characteristics**

When there is no outside magnetic field (B=0GS), the quiescent output voltage is one-half the supply voltage in general.

For TO-92S package, if a south magnetic pole approches to the front face (the side with marking ID) of the Hall effect sensor, the circuit will drive the output voltage higher. Contrary, a north magnetic pole will drive the output voltage lower. The variations of voltage level up or down are symmetrical.

Greatest magnetic sensitivity is obtained with a supply voltage of 6V, but at the cost of increased supply current and a slight loss of output symmetry. So, it is not recommended to work in such condition unless the output voltage magnitude is a main issue. The output signal can be capacitively coupled to an amplifier for boosting further if the changing frequency of the magnetic field is high.
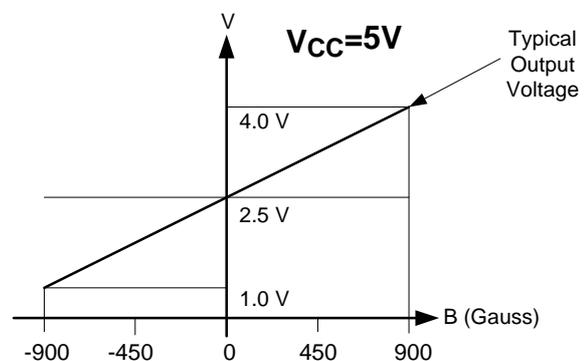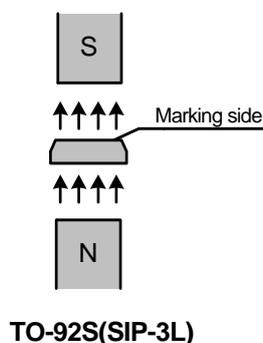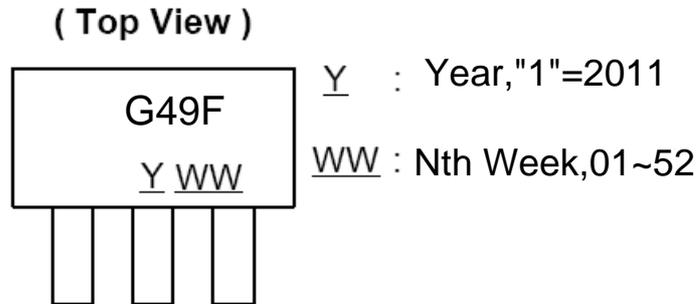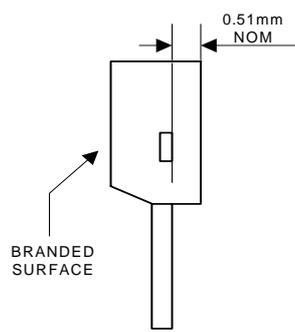

TO-92S(SIP-3L)

Figure 3. The Transfer Characteristics of GH49F

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LINEAR HALL EFFECT SENSOR IC   GH49F

◆ **Marking Information**

(Top View)

G49F

Y WW

Y : Year,"1"=2011

WW : Nth Week,01~52

◆ **Package Information** (unit: mm)

Package Type: TO-92S (SIP-3L) for Bulk pack

0.51mm NOM

BRANDED SURFACE

Active Area Depth

2.00mm

1.3mm

1 2 3
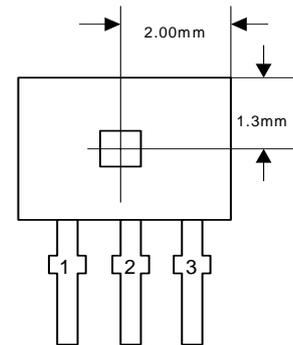
Sensor Location

Package Dimension

5°nom.

5°nom.

14.0/15.0

0.35/0.41

2.8/3.2   1.55Min.

3.9/4.3

0.43/0.48

0/0.2

0.35/0.41

0.63/0.84

1.40/1.60

45°

3°

1.24/1.30

2.51/2.57

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