

## Unipolar Hall Effect Digital Switches

### For High Temperature

#### ◆ General Description

GH1443 is a switched Hall-Effect IC, which is for contactless switching applications. The device includes an on-chip Hall voltage generator for magnetic sensing, an amplifier that amplifies the Hall voltage, a Schmitt trigger to provide switching hysteresis for noise rejection, and an open-collector output. The bandgap regulator allows a wide operating voltage range. GH1443 is rated for operating temperature range from  $-20^{\circ}\text{C}$  to  $85^{\circ}\text{C}$  or  $-40^{\circ}\text{C}$  to  $150^{\circ}\text{C}$  and voltage range from 3.8V to 30V. GH1443 are capable of continuous 20mA sinking out and maybe cycled as high as 50mA maximum.

#### ◆ Features

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

#### ◆ Applications

- Non-Contact Switch
- Automotive Ignition
- Braker ICs
- Position Control
- Revolution Detection
- Safe Alarm Device
- Textile Control System

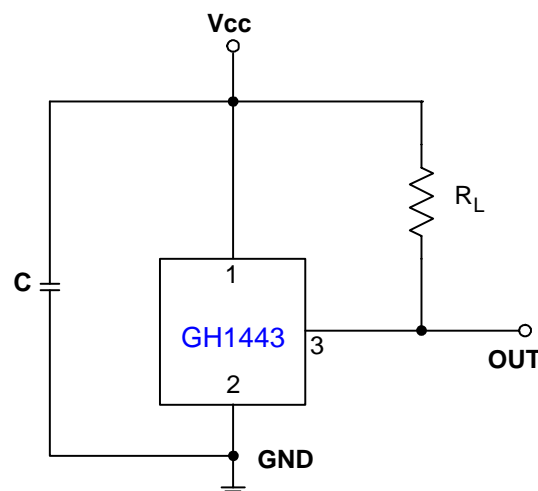


Fig.1 Typical Application of GH1443 in Brush-less DC Motor.

## ◆ Absolute Maximum Rating (Note 1)

SYMBOL	PARAMETER	RATING
VCC	Supply Voltage	-30V to +40VDC
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 (SIP3L)
Top	Operation Temperature Range	-40 to +150 °C
Tst	Storage Temperature Range	-65 to +150 °C
B	Magnetic Flux	No limit.

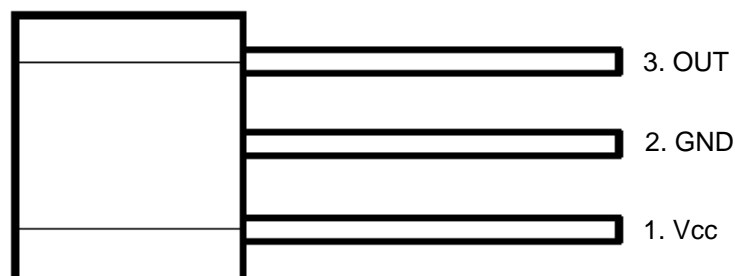
**Note 1:** Absolute Maximum Ratings are those values beyond which the life of a device may be impaired.

## ◆ 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

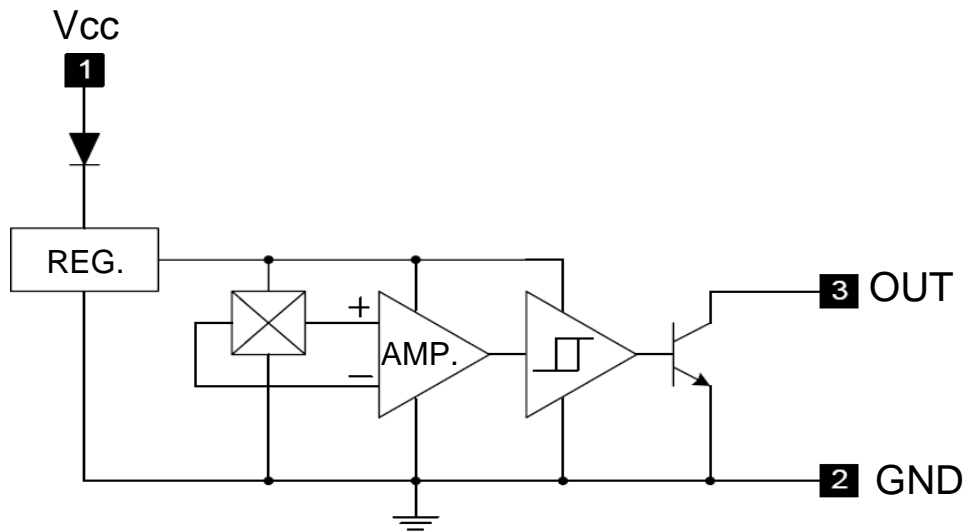


Figure 2. Function Block Diagram of GH1443

## ◆ Electrical Characteristics (T<sub>A</sub> = 25°C)

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V <sub>CC</sub>	Supply Voltage	Operating	3.8		30	V
V <sub>O(SAT)</sub>	Output Saturation Voltage	V <sub>CC</sub> = 12V, OUT "ON", I <sub>o</sub> = 25mA		150	250	mV
		V <sub>CC</sub> = 12V, OUT "ON", I <sub>o</sub> = 50mA		350	500	mV
I <sub>CC</sub>	Supply Current	V <sub>CC</sub> = 4V~28V, OUT "OFF"		4.0	10	mA
I <sub>LE</sub>	Output Leakage Current (Leakage into sensor output)	Released			10	μA
T <sub>r</sub> T <sub>f</sub>	Output Switching Time	Rise Time	R <sub>L</sub> =820Ω, C <sub>L</sub> =20pF		0.2	μS
		Fall Time	R <sub>L</sub> =820Ω, C <sub>L</sub> =20pF		0.5	μS

## ◆ Test Circuit

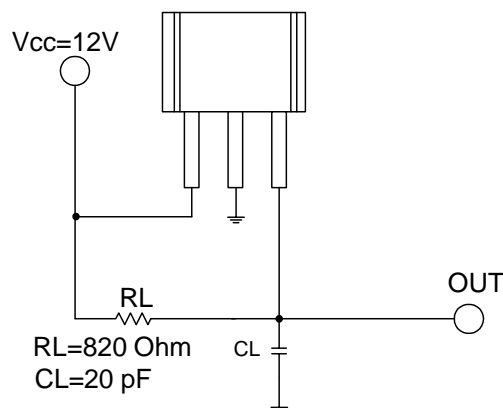


Fig 3. Test Circuit

## ◆ Magnetic Characteristics (TA = 25°C, VCC = 4.5~30V)

SYMBOL	PARAMETER	MIN.	TYP.	MAX.	UNIT
Bop	Operation Point	70	-	250	Gauss
Brp	Release Point	50	-	230	Gauss
Bhy	Hysteresis	20	55	80	Gauss

## ◆ Operating Characteristics

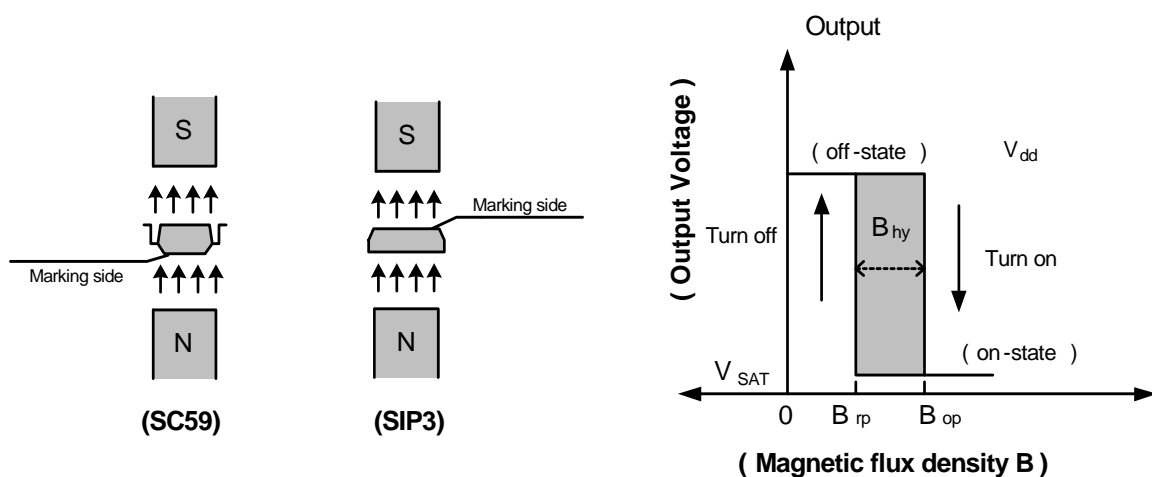


Figure 4. Operating Characteristics of GH1443

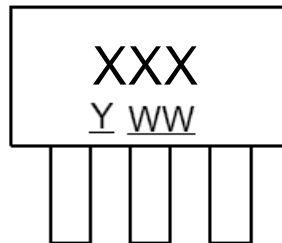
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## ◆ Marking Information

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**SIP-3L**

( Top View )



Y : Year : "8" = 2008

WW : Nth Week 01~52

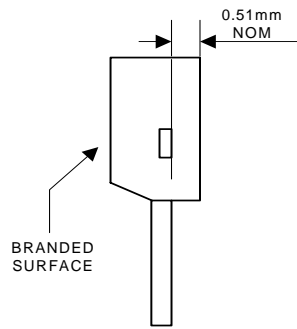
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## ◆ Order Information

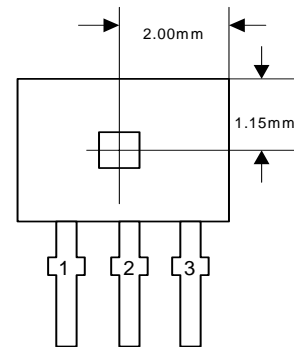
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## ◆ Package Information (unit: mm)

**Package Type: SIP-3L for Bulk pack**



Active Area Depth



Sensor Location

### Package Dimension

