

## ◆ General Description

The GH1248 is an ultra-sensitive Hall-effect switch with digital latched output, mainly designed for battery-operation, hand-held equipments.

Special CMOS process is used for low-voltage and low-power requirement. A chopper stabilized amplifier improves stability of magnetic switch points. A sleep-awake logic controls the IC in sleep time or awake time. This function will reduce the average operating current of the IC. During the awake time, the output is changed with the magnetic flux density. During the sleep time, the output is latched in its previous state and the current consumption will reduce to some  $\mu\text{A}$ .

The IC switching behaviour is omnipolar, either north or south pole sufficient strength will turn the output on. If the magnetic flux density is larger than operating point ( $B_{OP}$ ), the output will be turned on; if it is less than releasing point ( $B_{RP}$ ), the output will be turned off.

The GH1248 is available in SIP-3L, SOT-23-3L and DFN1616-3 packages which are optimized for most applications.

## ◆ Features

- Micropower Operation
- 1.8 to 5.5V Power Supply
- Switching for Both Poles of a Magnet (Omnipolar)
- Stabilized Chopper
- Superior Temperature Stability
- Digital Output Signal
- Built-in Pull-up Resistor

## ◆ Applications

- Cover Switch in Notebook PC/PDA
- Handheld Wireless Application Awake Switch
- Magnet Switch in Low Duty Cycle Applications

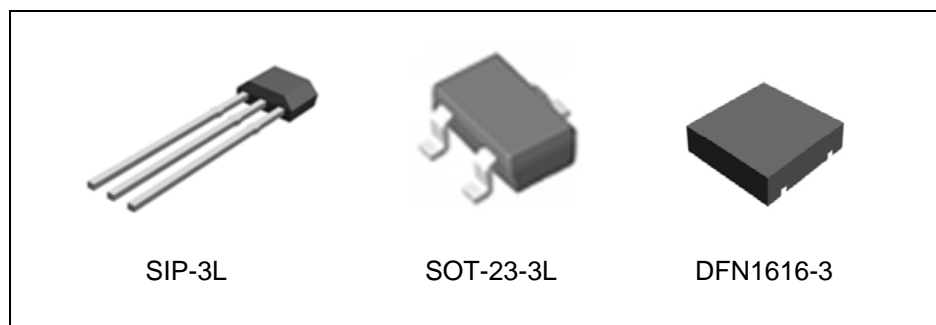


Figure 1. Package Types of GH1248

## ◆ Pin Configuration

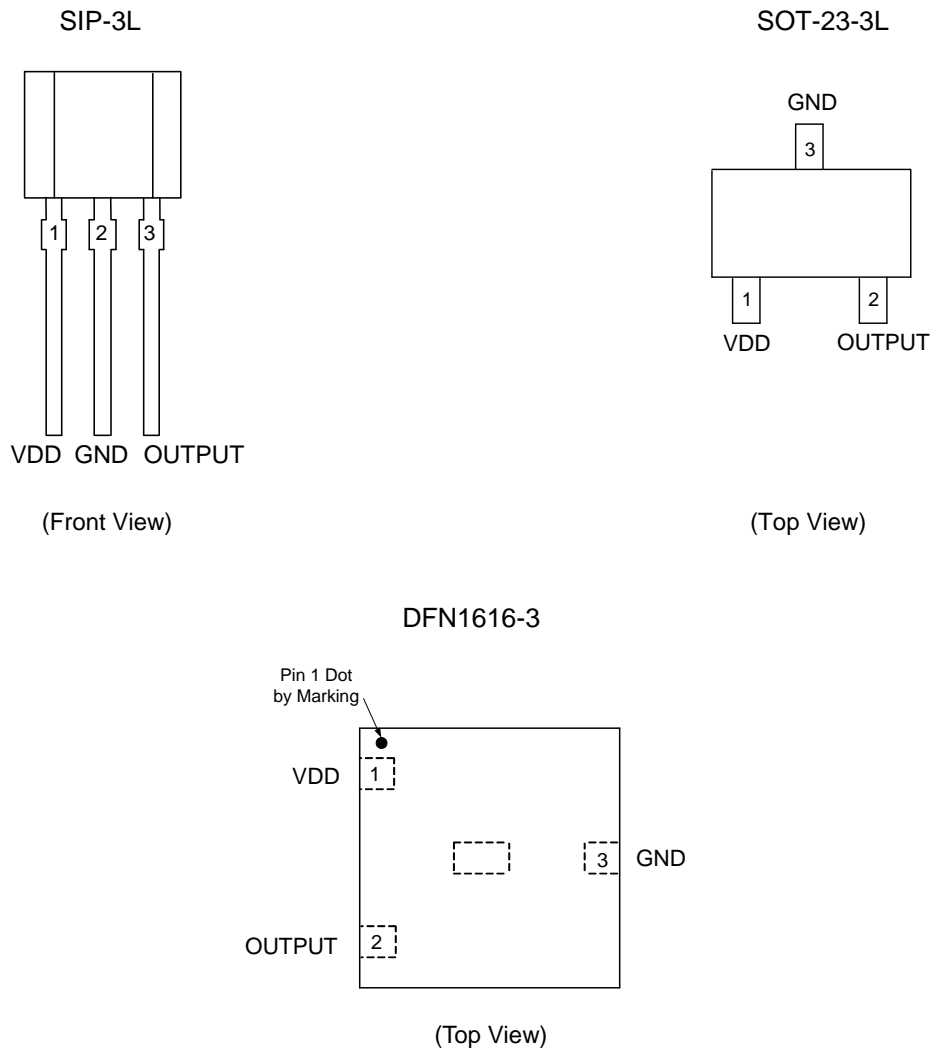
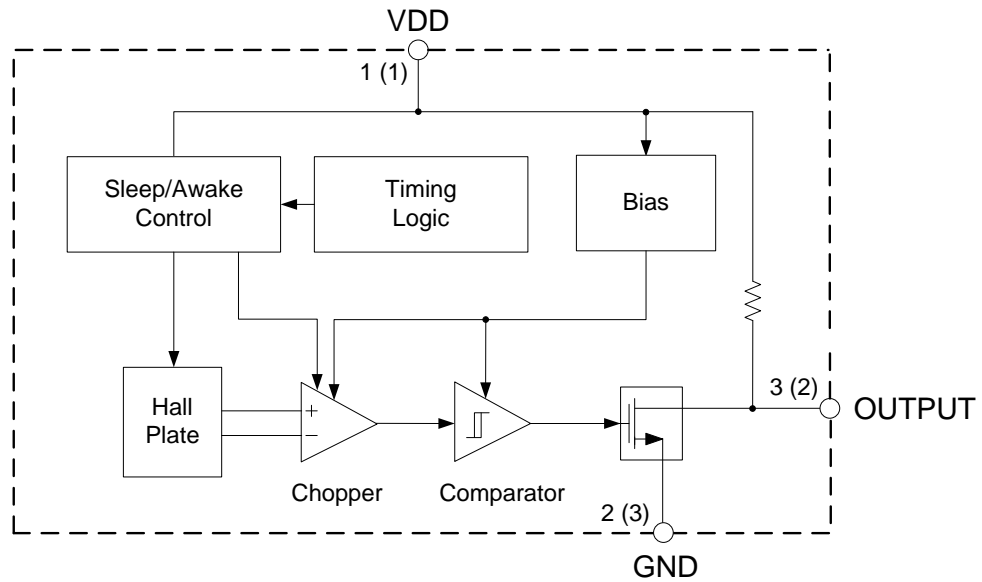


Figure 2. Pin Configuration of GH1248

## ◆ Pin Description

Pin Number			Pin Name	Function
SIP-3L	SOT-23-3L	DFN1616-3		
1	1	1	VDD	Power Supply
2	3	3	GND	Ground pin
3	2	2	OUTPUT	Output pin

◆ Functional Block Diagram



A(B)  
A for SIP-3L  
B for SOT-23-3L and DFN1616-3

Figure 3. Functional Block Diagram of GH1248

### ◆ Absolute Maximum Ratings ( $T_A=25^{\circ}\text{C}$ , Note 1)

Parameter	Symbol	Value	Unit
Supply Voltage	$V_{DD}$	7.0	V
Supply Current (Fault)	$I_{DD}$	5.0	mA
Output Voltage	$V_{OUT}$	7.0	V
Output Current	$I_{OUT}$	5.0	mA
Magnetic Flux Density	B	Unlimited	Gauss
Power Dissipation	$P_D$	SIP-3L	400
		SOT-23-3L	230
Storage Temperature	$T_{STG}$	-55 to 150	$^{\circ}\text{C}$
Junction Temperature	$T_J$	150	$^{\circ}\text{C}$

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.

Note 2: Electronic semiconductor products are sensitive to Electro Static Discharge (ESD). Always observe Electro Static Discharge control procedures whenever handling semiconductor products.

### ◆ Recommended Operating Conditions

Parameter	Symbol	Min	Max	Unit
Supply Voltage	$V_{DD}$	1.8	5.5	V
Operating Temperature	$T_{OP}$	-40	85	$^{\circ}\text{C}$

## ◆ Electrical Characteristics

$V_{DD}=3.0V$ ,  $T_A=25^{\circ}C$ , unless otherwise specified.

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Supply Voltage	$V_{DD}$	Operating	1.8	3.0	5.5	V
Supply Current	$I_{AW}$	Awake		1.2	1.8	mA
	$I_{SL}$	Sleep		1.0	2.0	$\mu A$
	$I_{AVG}$	Average		2.5	5.0	$\mu A$
Output Current	$I_{OUT}$				5.0	mA
Output Leakage Current	$I_{LEAK}$	$B <  B_{RP} $		<0.01	1.0	$\mu A$
Saturation Voltage	$V_{SAT}$	$I_{OUT}=1.0mA$		0.05	0.25	V
Awake Mode Time	$t_{AW}$	Operating	15	25	35	$\mu s$
Sleep Mode Time	$t_{SL}$	Operating	20	30	40	ms
Duty Cycle	D			0.10		%

## ◆ Magnetic Characteristics (Note 3)

$V_{DD}=3.0V$ ,  $T_A=25^{\circ}C$ , unless otherwise specified.

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Operating point	$B_{OPS}$	South pole to branded side $B > B_{OPS}, V_{OUT}=\text{low}(\text{output on})$		16	25	Gauss
	$B_{OPN}$	North pole to branded side $B > B_{OPN}, V_{OUT}=\text{low}(\text{output on})$	-25	-16		Gauss
Releasing Point	$B_{RPS}$	South pole to branded side $B < B_{RPS}, V_{OUT}=\text{high}(\text{output off})$	5	10	15	Gauss
	$B_{RPN}$	North pole to branded side $B < B_{RPN}, V_{OUT}=\text{high}(\text{output off})$	-15	-10		Gauss
Hysteresis	$B_{HYS}$	$ B_{OPX} - B_{RPX} $ (Note 4)	3	6	9	Gauss

Note 3: The specifications stated here are guaranteed by design. 1 Gauss=0.1mT

Note 4:  $B_{OPX}$ =operating point(output turns on);  $B_{RPX}$ =releasing point(output turns off)

◆ Magnetic Characteristics (Continued)

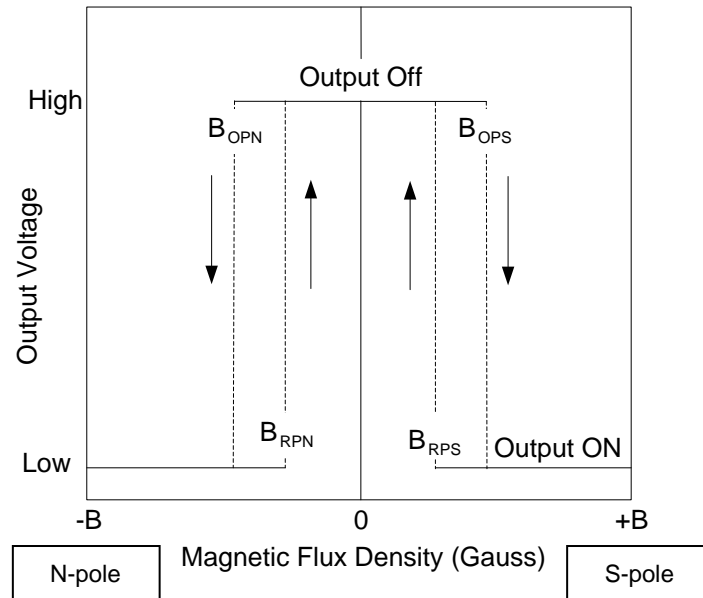


Figure 4. Output Voltage vs. Magnetic Flux Density

◆ Typical Application Circuit

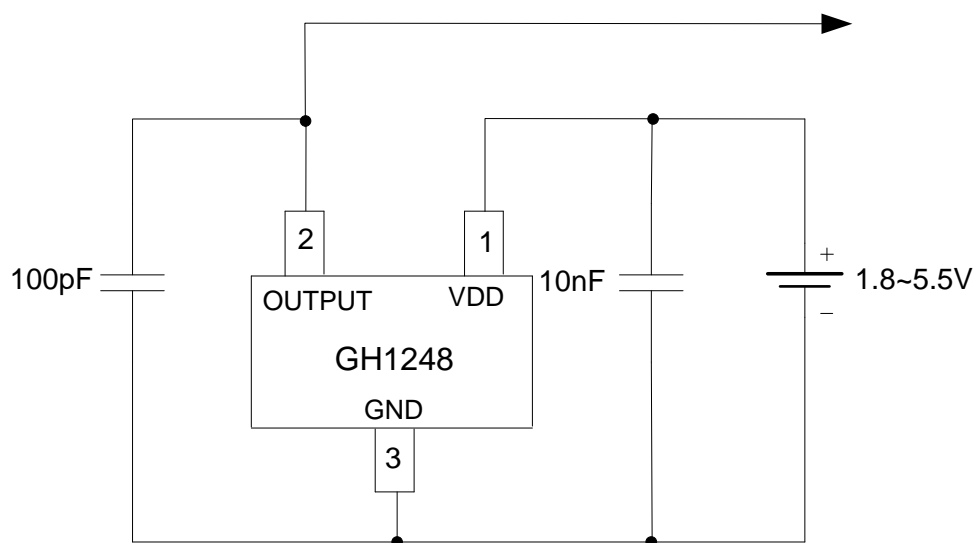
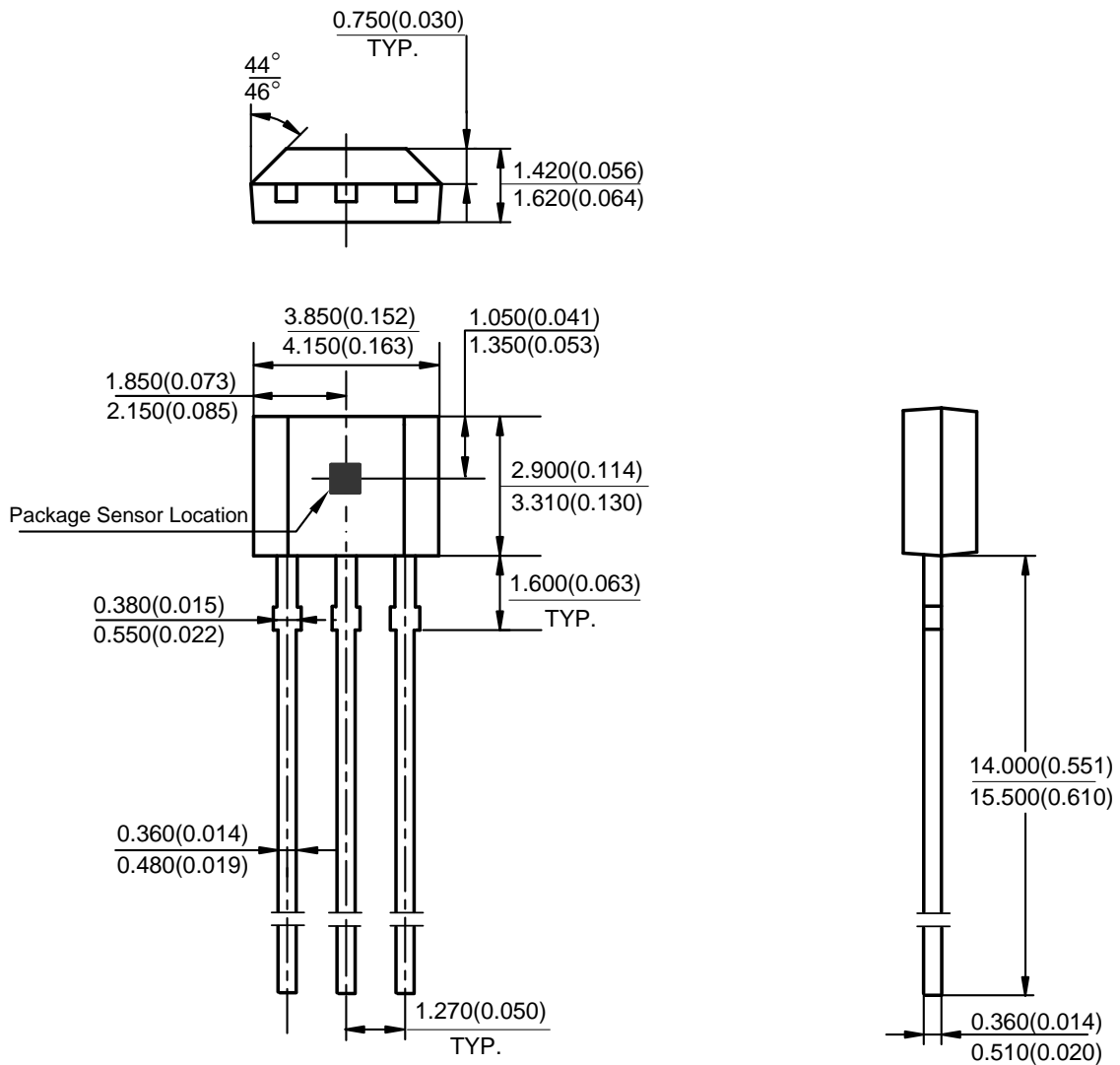


Figure 5. Typical Application of GH1248

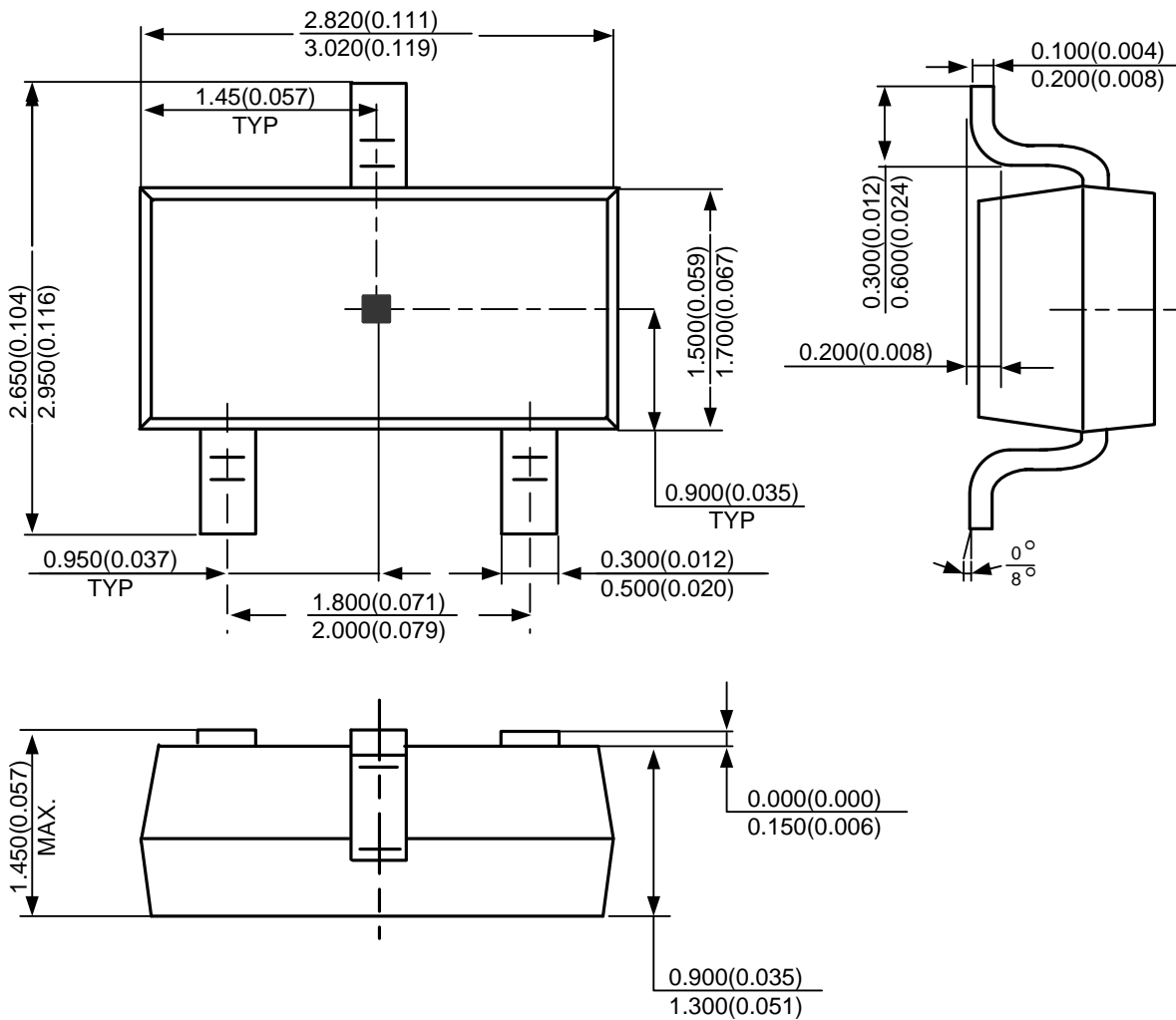
◆ Mechanical Dimensions

SIP-3L Unit: mm(inch)



◆ Mechanical Dimensions (Continued)

SOT-23-3L Unit: mm(inch)





◆ Mechanical Dimensions (Continued)

DFN1616-3 Unit: mm(inch)

