

## DN6847/SE/TE/S

Hall IC (Operating Temperature Range  
 $T_{opr} = -40$  to  $+100^{\circ}\text{C}$ , Operating in  
 Alternative Magnetic Field)

### Overview

The DN6847/SE/TE/S is a combination of a Hall element, amplifier, Schmitt circuit, and stabilized power supply/temperature compensator integrated on an identical chip by using the IC technology. It amplifies Hall element output at the amplifier, converts into a digital signal through the Schmitt circuit, and drives the TTL or MOS IC directly.

### Features

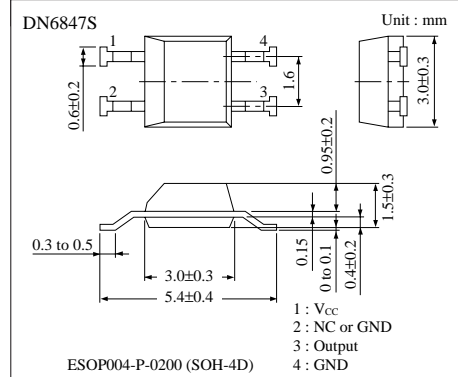
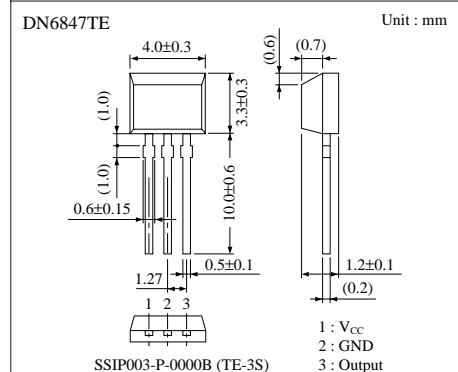
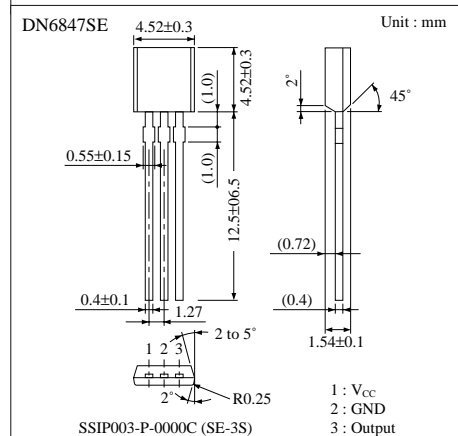
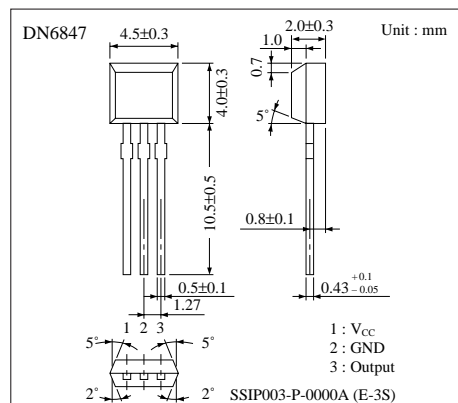
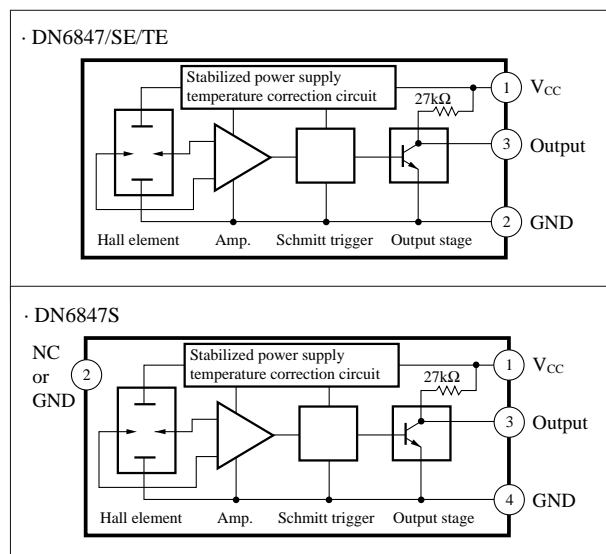
- High sensitivity and low drift
- Stable temperature characteristics due to the additional temperature compensator
- Wide operating supply voltage range ( $V_{CC}=4.5$  to  $16\text{V}$ )
- Operating in alternative magnetic field
- TTL and MOS ICs directly drivable by output
- Provided with the output pull-up resistors (typ  $27\text{k}\Omega$ )

### Applications

- Speed sensors
- Position sensors
- Rotation sensors
- Keyboard switches
- Microswitches

Note) This IC is not suitable for car electrical equipments.

### Block Diagram



## ■ Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Rating	Unit
Supply voltage	V <sub>CC</sub>	18	V
Supply current	I <sub>CC</sub>	8	mA
Circuit current	I <sub>O</sub>	20	mA
Power dissipation	P <sub>D</sub>	150	mW
Operating ambient temperature	T <sub>opr</sub>	-40 to +100	°C
Storage temperature	T <sub>stg</sub>	-55 to +125	°C

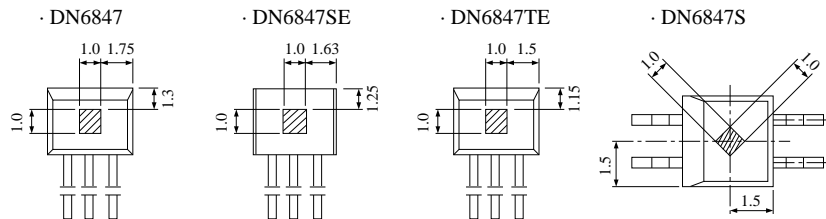
## ■ Electrical Characteristics (Ta=25°C)

Parameter	Symbol	Condition	min	typ	max	Unit
Operating flux density	B <sub>1</sub> (L to H)	V <sub>CC</sub> =12V	-17.5	-6	—	mT
	B <sub>2</sub> (H to L)	V <sub>CC</sub> =12V	—	6	17.5	mT
Hysteresis width	BW	V <sub>CC</sub> =12V	7	10	—	mT
Output voltage	V <sub>OL</sub>	V <sub>CC</sub> =4.5 to 16V, I <sub>O</sub> =12mA, B=17.5mT	—	—	0.4	V
	V <sub>OH</sub>	V <sub>CC</sub> =16V, I <sub>O</sub> =-30μA, B=-17.5mT	14.7	—	—	V
V <sub>CC</sub> =4.5V, I <sub>O</sub> =-30μA, B=-17.5mT		2.9	—	—	V	
Output short-circuit current	-I <sub>OS</sub>	V <sub>CC</sub> =16V, V <sub>O</sub> =0V, B=-17.5mT	0.4	—	0.9	mA
Supply current	I <sub>CC</sub>	V <sub>CC</sub> =16V	1	—	6	mA
		V <sub>CC</sub> =4.5V	1	—	5.5	mA

## ■ Hall Element Position

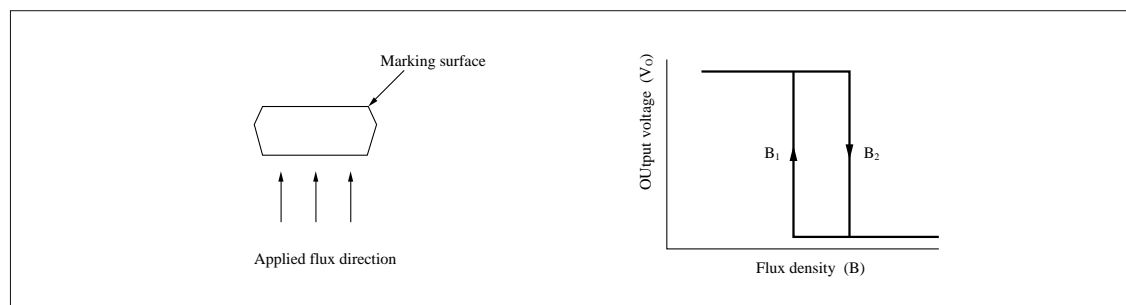
Unit : mm

The center of the Hall element is in the hatched area in the right figure.



Distance from package surface to sensor	DN6847	DN6847SE	DN6847TE	DN6847S
	0.7	0.42	0.4	0.65

## ■ Flux-Voltage Conversion Characteristics

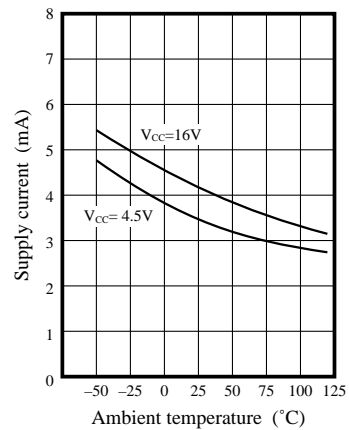


## ■ Precaution on Use

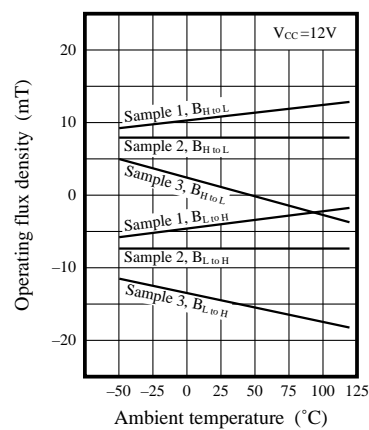
1. Change of the operation magnetic flux density does not depend on the supply voltage, because the stabilization power supply is built-in. (only for the range ;  $V_{CC}= 4.5$  to  $16V$ )
2. Change from "H" to "L" level increases the supply current by approx. 1mA.

## ■ Characteristics Curve

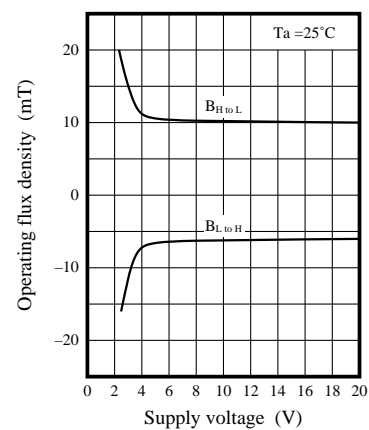
Supply voltage – Ambient temperature



Operating flux density – Ambient temperature



Operating flux density – Supply voltage



Output low level voltage – Ambient temperature

