

# DN6847/SE/TE/S

## Hall IC (Operating Temperature Range Topr = -40 to +100°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

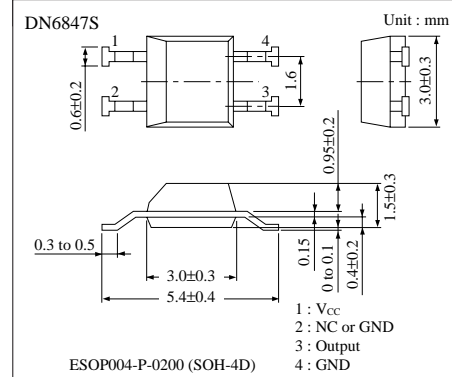
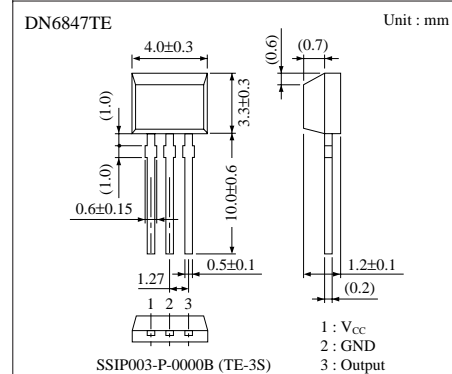
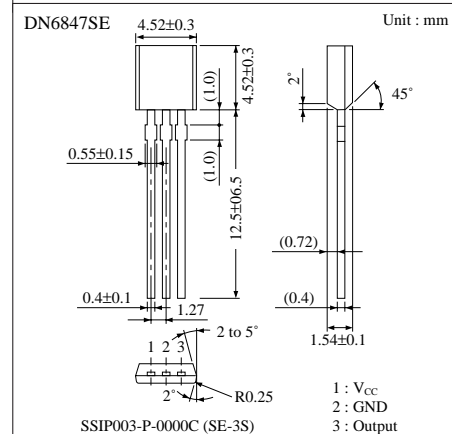
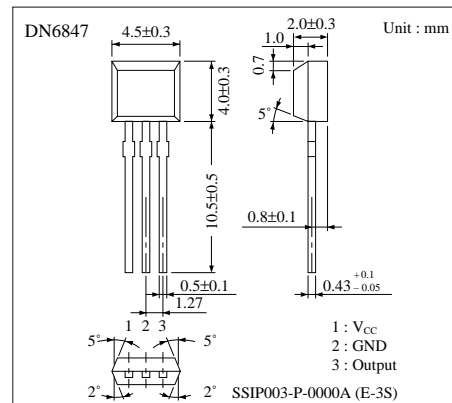
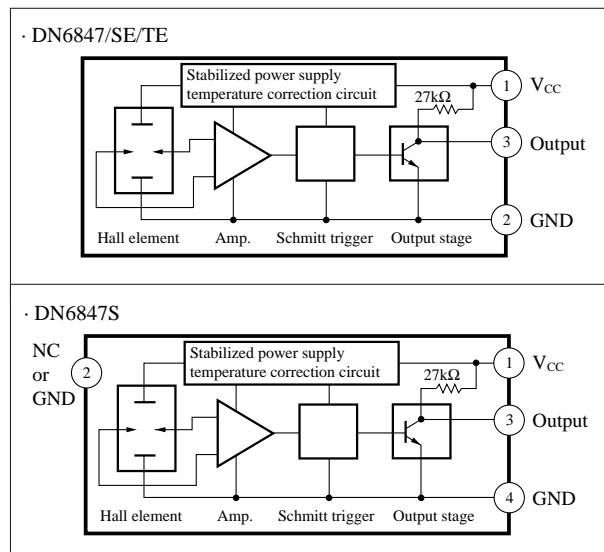
- High sensitivity and low drift
- Stable temperature characteristics due to the additional temperature compensator
- Wide operating supply voltage range ( $V_{CC}=4.5$  to  $16V$ )
- Operating in alternative magnetic field
- TTL and MOS ICs directly drivable by output
- Provided with the output pull-up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

### 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)

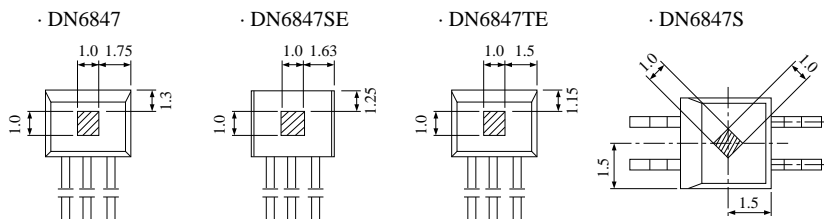
| Parameter                     | Symbol           | Rating      | Unit |
|-------------------------------|------------------|-------------|------|
| Supply voltage                | V <sub>CC</sub>  | 18          | V    |
| Supply current                | I <sub>CC</sub>  | 8           | mA   |
| Circuit 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   |

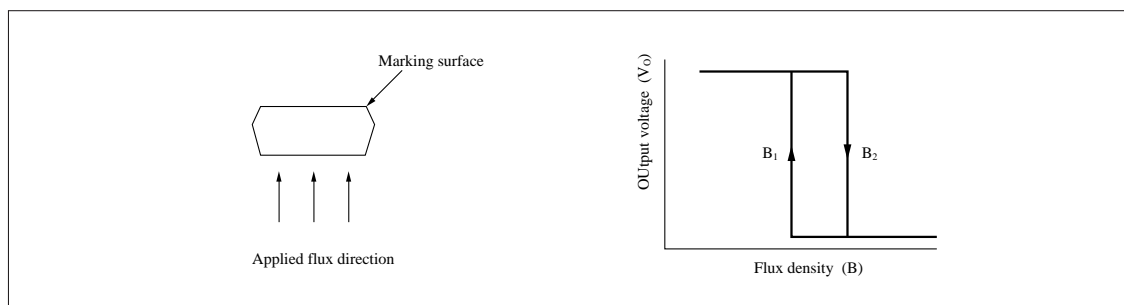
■ Hall Element Position

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

