

## DN8897/SE/TE/S

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

### Overview

The DN8897/SE/TE/S is a combination of a Hall element, amplifier, Schmidt 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 Schmidt circuit, and drives the TTL or MOS IC directly.

### Features

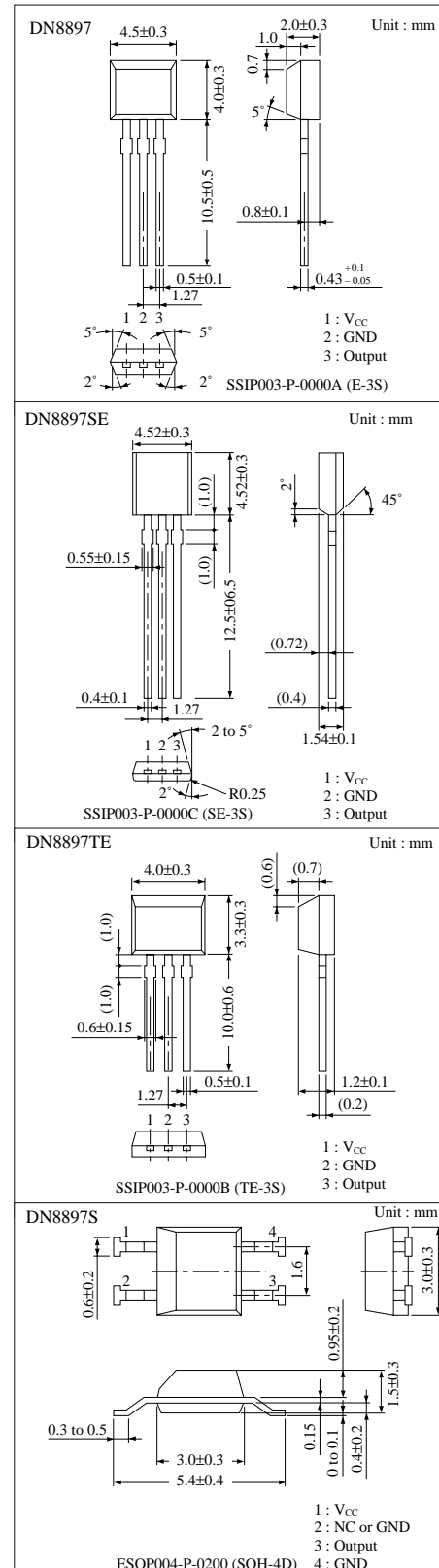
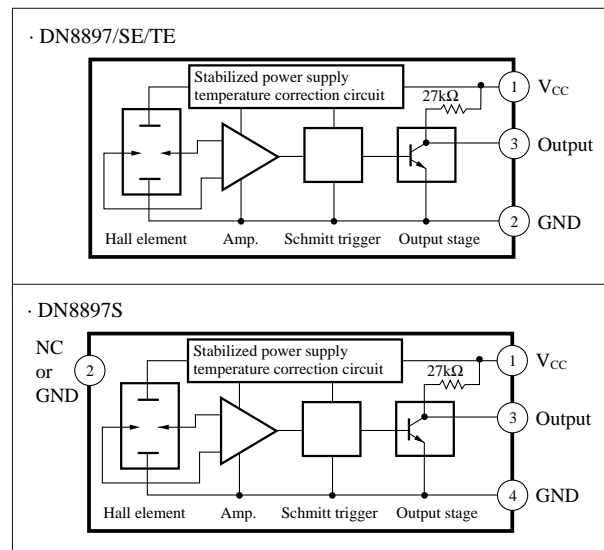
- High sensitivity and low drift
- Stable temperature characteristics due to the additional temperature compensator
- Wide operating supply voltage range ( $V_{CC} = 4.5$  to  $16\text{V}$ )
- Operatig in alternative magnetic field
- TTL and MOS ICs directly drivable by output
- Provided with the output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

### Applications

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

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

### Block Diagram



■ Absolute Maximum Ratings (Ta=25°C)

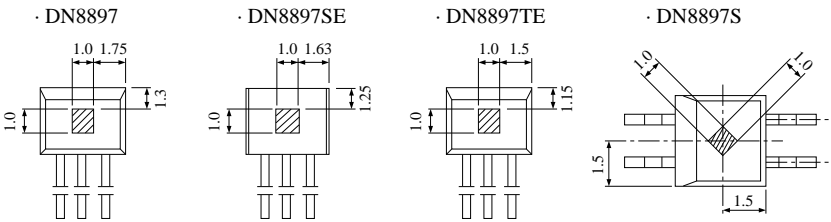
| Parameter                     | Symbol           | Rating      | Unit |
|-------------------------------|------------------|-------------|------|
| Supply voltage                | V <sub>CC</sub>  | 18          | V    |
| Supply current                | I <sub>CC</sub>  | 8           | mA   |
| Circuit 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→H) | V <sub>CC</sub> =12V                                      | −12  | −6  | −0.1 | mT   |
|                              | B <sub>2</sub> (H→L) | V <sub>CC</sub> =12V                                      | 0.1  | 6   | 12   | 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=12mT | —    | —   | 0.4  | V    |
|                              | V <sub>OH</sub>      | V <sub>CC</sub> =16V, I <sub>O</sub> =−30μA, B=−12mT      | 14.7 | —   | —    | V    |
|                              |                      | V <sub>CC</sub> =4.5V, I <sub>O</sub> =−30μA, B=−12mT     | 2.9  | —   | —    | V    |
| Output short-circuit current | −I <sub>OS</sub>     | V <sub>CC</sub> =16V, V <sub>O</sub> =0V, B=−12mT         | 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   |

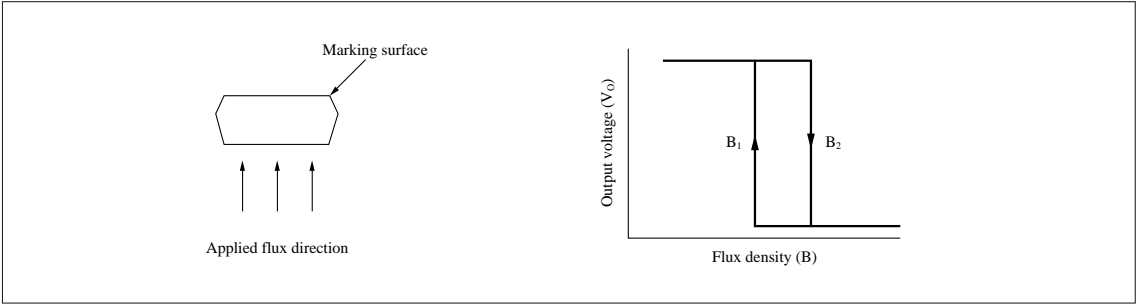
■ Hall Element Position

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



| Distance from package surface to sensor (mm) | DN8897 | DN8897SE | DN8897TE | DN8897S |
|--|--------|----------|----------|---------|
|  | 0.7    | 0.42     | 0.4      | 0.65    |

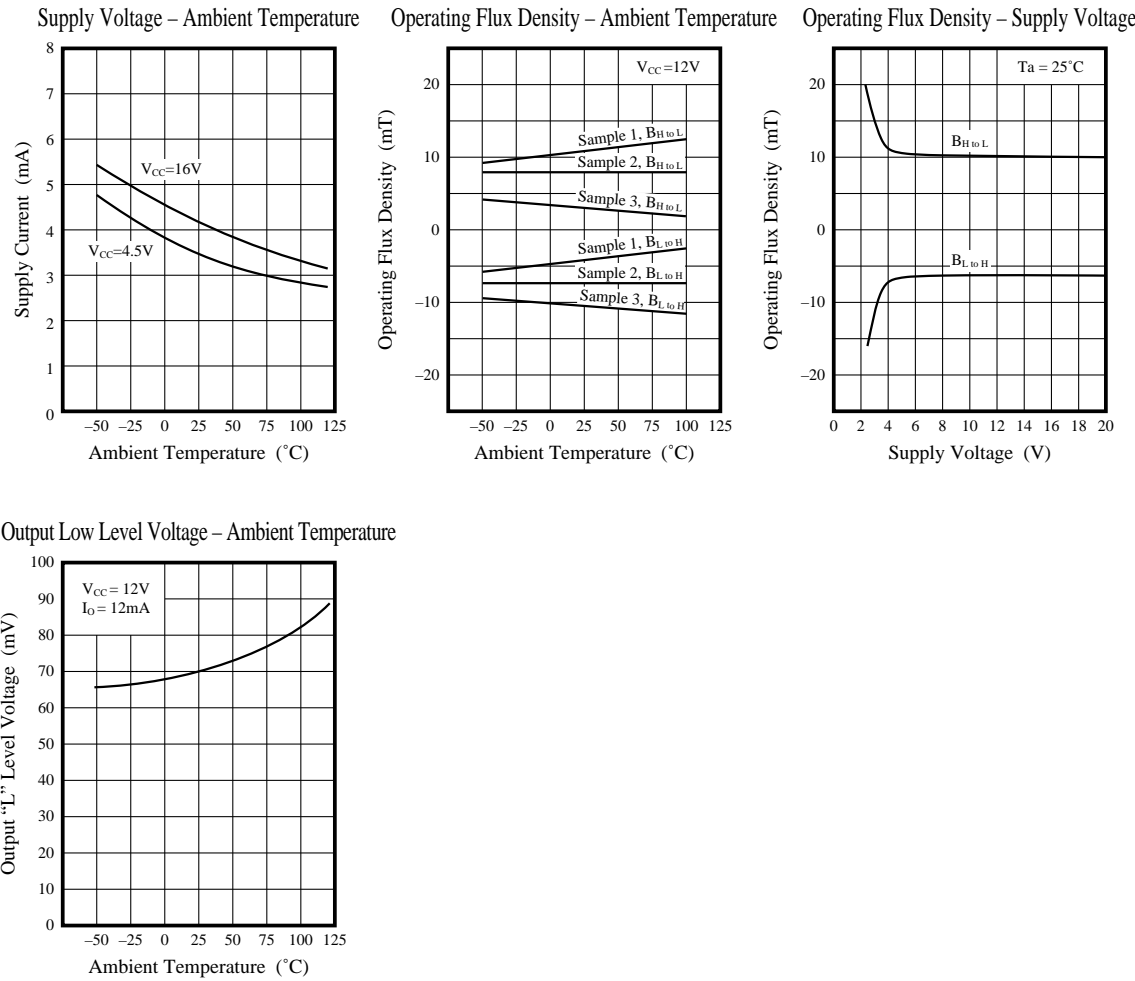
■ Flux-Voltage Conversion Characteristics



■ Precaution on Use

- 1. Change of the operation magnetic flux density dose 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



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