

## 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, 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

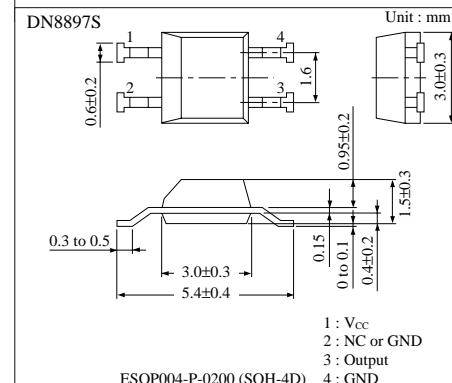
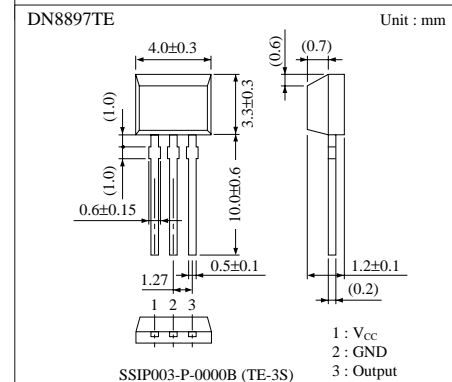
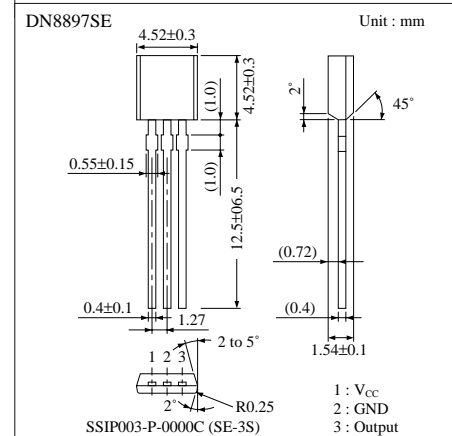
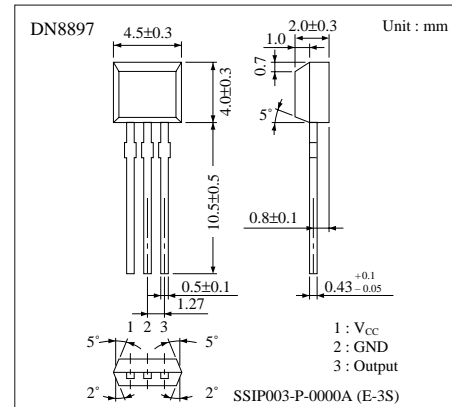
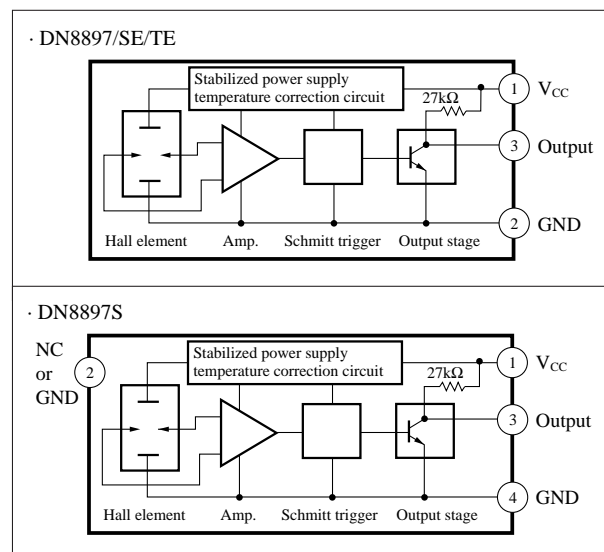
- High sensitivity and low drift
- Stable temperature characteristics due to the additional temperature compensator
- Wide operating supply voltage range ( $V_{CC} = 4.5$  to  $16\text{V}$ )
- Operatig in alternative magnetic field
- TTL and MOS ICs directly drivable by output
- Provided with the output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

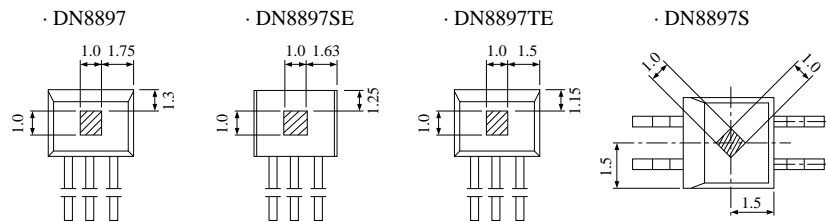
Parameter	Symbol	Rating	Unit
Supply voltage	V <sub>CC</sub>	18	V
Supply current	I <sub>CC</sub>	8	mA
Circuit current	I <sub>O</sub>	20	mA
Power dissipation	P <sub>D</sub>	150	mW
Operating ambient temperature	T <sub>opr</sub>	-40 to +100	°C
Storage temperature	T <sub>stg</sub>	-55 to +125	°C

## ■ 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

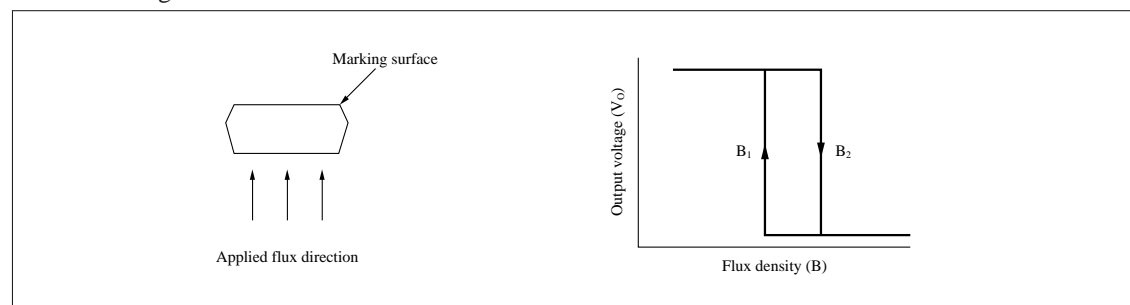
## ■ Hall Element Position

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

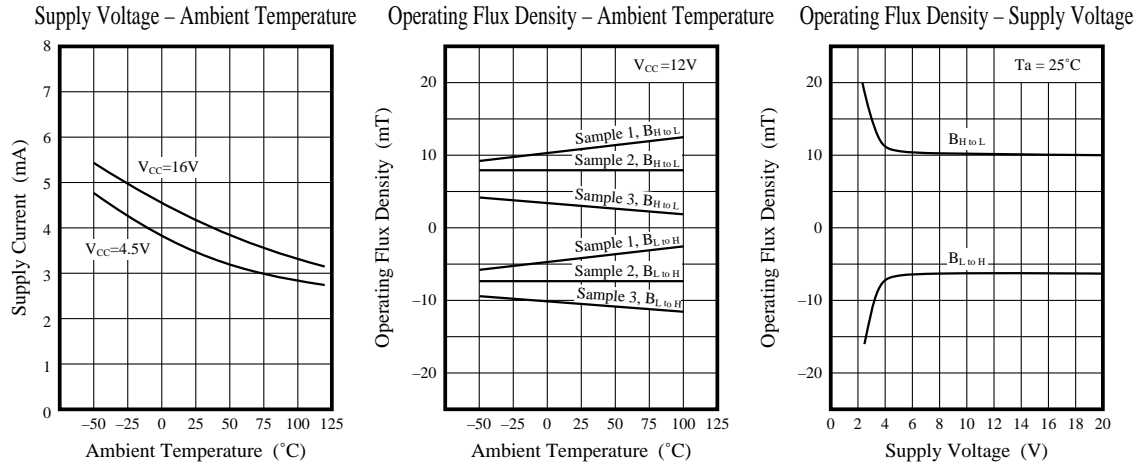
## ■ Flux-Voltage Conversion Characteristics



## ■ 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



## Output Low Level Voltage – Ambient Temperature

