DN8899/SE/TE/S

Hall IC (Operating Temperature Range Topr=–40 to+ 100˚C, Operating in Alternative Magnetic Field)

■ Overview

The DN8899/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 16V)
- Operating in alternative magnetic field
- TTL and MOS ICs directly drivable by output
- Semipermanent service life due to no contact parts
- Small change of the operating flux density against mechanical stress
- Output open collector
- “0” gauss point in the zero cross type hysteresis width

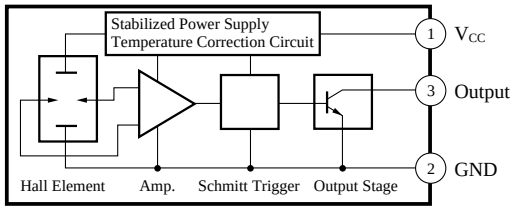
■ Applications

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

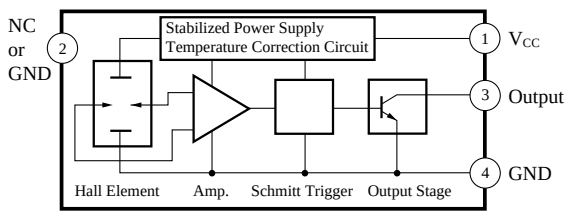
Note) This IC is not suitable for the car electric equipment.

■ Block Diagram

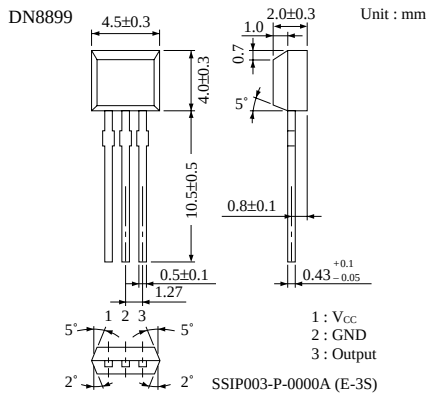
· DN8899/SE/TE



· DN8899S

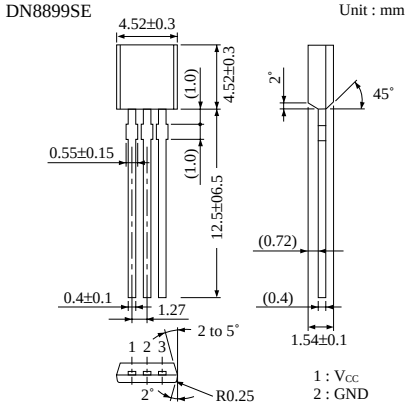


DN8899 Unit : mm



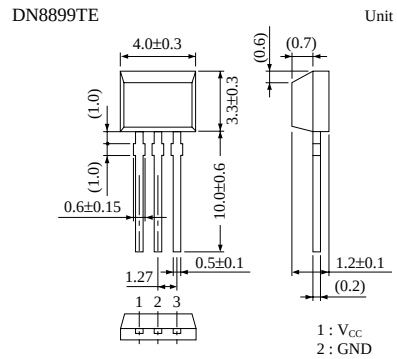
SSIP003-P-0000A (E-3S)

DN8899SE Unit : mm



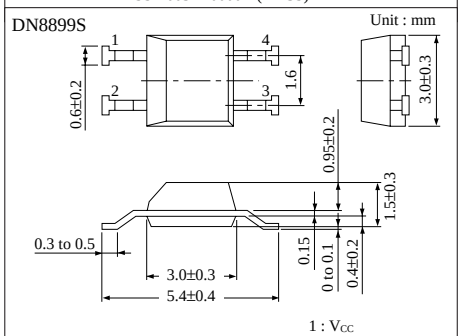
SSIP003-P-0000C (SE-3S)

DN8899TE Unit : mm



SSIP003-P-0000B (TE-3S)

DN8899S Unit : mm



ESOP004-P-0200 (SOH-4D)

■ Absolute Maximum Ratings (Ta=25˚C)

Parameter	Symbol	Rating	Unit
Supply voltage	V_{CC}	18	V
Supply current	I_{CC}	8	mA
Circuit current	I_O	20	mA
Power dissipation	P_D	150	mW
Operating ambient temperature	T_{opr}	–40 to +100	˚C
Storage temperature	T_{stg}	–55 to +125	˚C

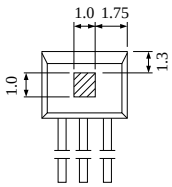
■ Electrical Characteristics (Ta=25˚C)

Parameter	Symbol	Condition	min	typ	max	Unit
Operating flux density	$B_{1\ (L\rightarrow H)}$	V_{CC}=12V	–12	–6	– 0.1	mT
	$B_{2\ (H\rightarrow L)}$	V_{CC}=12V	0.1	6	12	mT
Hysteresis width	BW	V_{CC}=12V	7	10	—	mT
Low output voltage	V_{OL}	V_{CC}=4.5 to 16V, I_O=12mA, B=12mT	—	—	0.4	V
High output current	I_{OH}	V_{CC}=4.5 to 16V, V_O=16V, B=–12mT	—	—	10	µA
Supply current	I_{CC}	V_{CC}=16V	—	—	6	mA
		V_{CC}=4.5V	—	—	5.5	mA

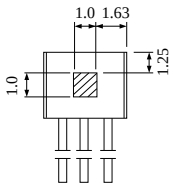
■ Hall Element Position

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

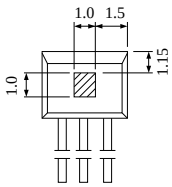
· DN8899



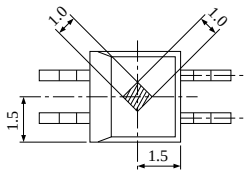
· DN8899SE



· DN8899TE

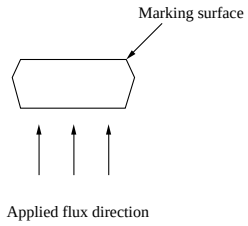


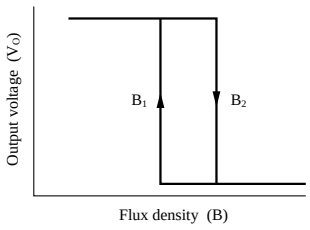
· DN8899S



Distance from package surface to sensor (mm)	DN8899	DN8899SE	DN8899TE	DN8899S
	0.7	0.42	0.4	0.65

■ Flux-Voltage Conversion Characteristics



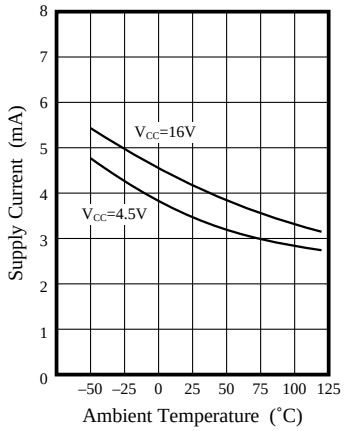


■ Supplementary Descriptions

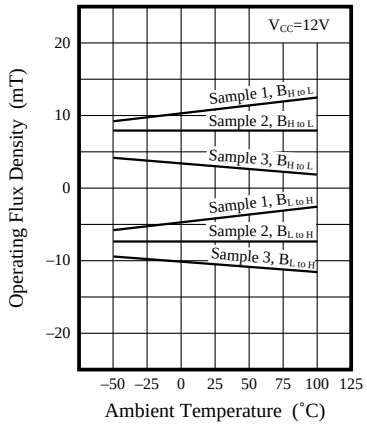
1. Change of the operation magnetic flux density dose not depend on the supply voltage, because the stabilization power supply is built in. (only for the range ; V_{CC}=4.5 to 16V)
2. Change from “H” to “L” level increases the supply current by approx. 1mA.

■ Characteristics Curve

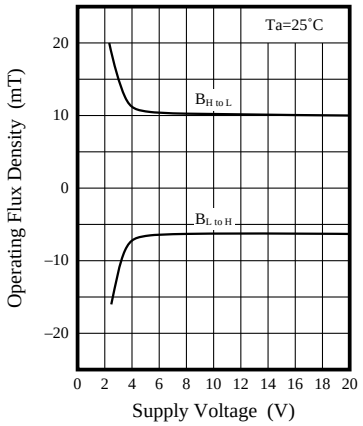
Supply Voltage – Ambient Temperature



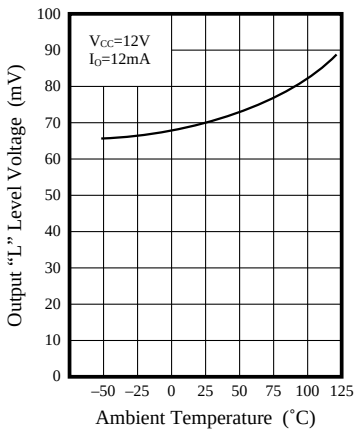
Operating Flux Density – Ambient Temperature



Operating Flux Density – Supply Voltage



Output Low Level Voltage – Ambient Temperature



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