

DN6847/SE/S

Wide operating temperature range
(-40°C to $+100^{\circ}\text{C}$)

Alternating magnetic field operation

Overview

In each of Hall ICs, a Hall element, an amplifier circuit, a Schmidt circuit, a stabilized power supply, and a temperature compensation circuit are integrated on a single chip by IC technique. The Hall element output is amplified by the amplifier circuit, and converted into the corresponding digital signals through the Schmidt circuit so that TTL and MOS IC are directly drivable.

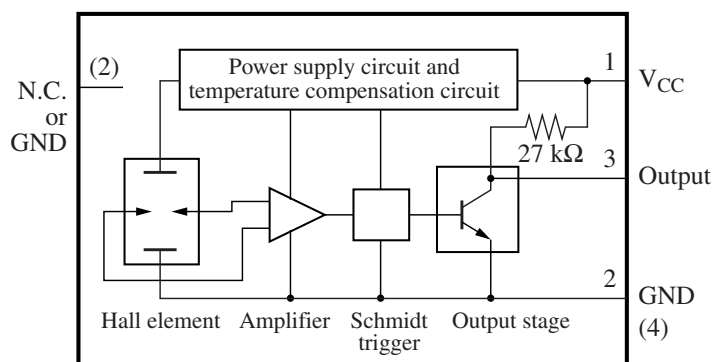
Features

- High sensitivity and low drift
- Stabilized temperature characteristics owing to additional integration of temperature compensation circuit.
- Wide operating supply voltage range
($V_{CC} = 4.5\text{ V}$ to 16 V)
- Alternating magnetic field operation
- TTL and MOS IC are directly drivable by the output.
- Equipped with an output pull-up resistor (typical $27\text{ k}\Omega$)

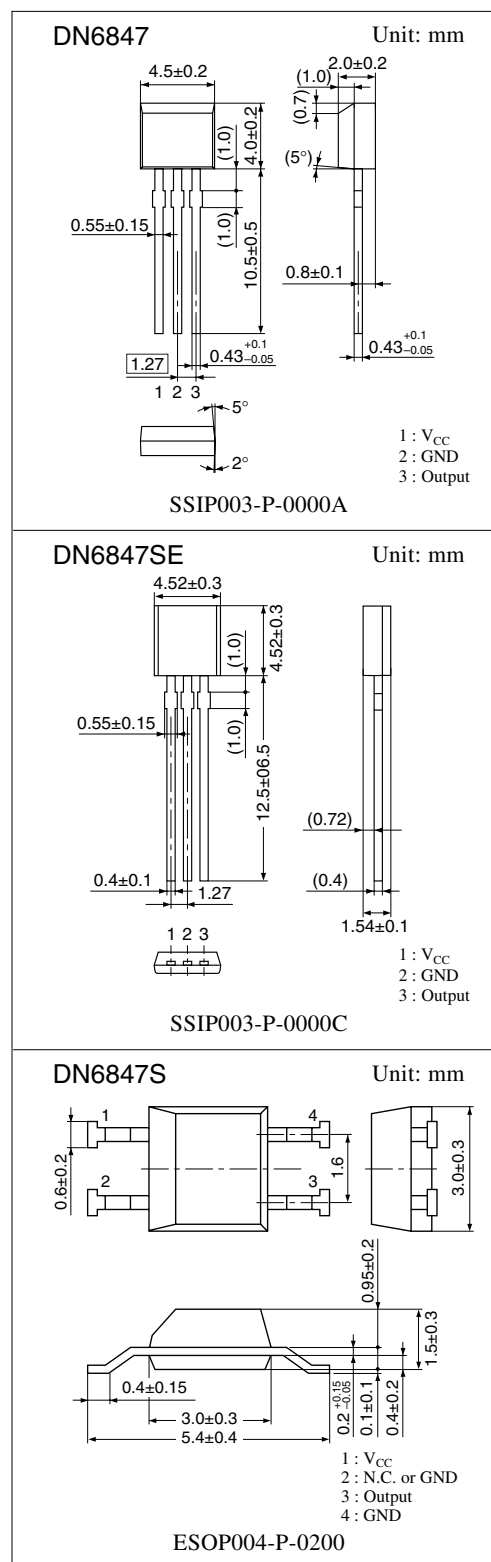
Applications

- Speed sensor, position sensor, rotation sensor, keyboard switch, micro switch and the like

Block Diagram (DN6847/SE/S)



Note) The number in () shows the pin number for the DN6847S.



Note) The packages (SSIP003-P-0000A, SSIP003-P-0000C and ESOP004-P-0200) of this product will be changed to lead-free type (SSIP003-P-0000H, SSIP003-P-0000J and ESOP004-P-0200A). See the new package dimensions section later of this datasheet.

■ Absolute Maximum Ratings

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

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

■ Recommended Operating Range

Parameter	Symbol	Range	Unit
Supply voltage	V_{CC}	4.5 to 16	V

■ Electrical Characteristics at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Operating magnetic flux density	$B_{1(L-H)}$	$V_{CC} = 12\text{ V}$	-17.5	-6	—	mT
	$B_{2(H-L)}$	$V_{CC} = 12\text{ V}$	—	6	17.5	mT
Hysteresis width	BW	$V_{CC} = 12\text{ V}$	7	10	—	mT
Output voltage	V_{OL}	$V_{CC} = 4.5\text{ V to }16\text{ V}, I_O = 12\text{ mA}, B = 17.5\text{ mT}$	—	—	0.4	V
	V_{OH}	$V_{CC} = 16\text{ V}, I_O = -30\text{ }\mu\text{A}, B = -17.5\text{ mT}$	14.7	—	—	V
		$V_{CC} = 4.5\text{ V}, I_O = -30\text{ }\mu\text{A}, B = -17.5\text{ mT}$	2.9	—	—	V
Output short circuit current	$-I_{OS}$	$V_{CC} = 16\text{ V}, V_O = 0\text{ V}, B = -17.5\text{ mT}$	0.4	—	0.9	mA
Supply current	I_{CC}	$V_{CC} = 16\text{ V}$	1	—	6	mA
		$V_{CC} = 4.5\text{ V}$	1	—	5.5	mA

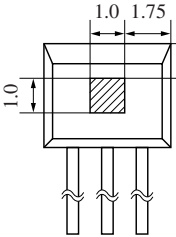
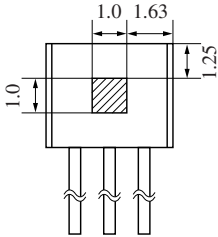
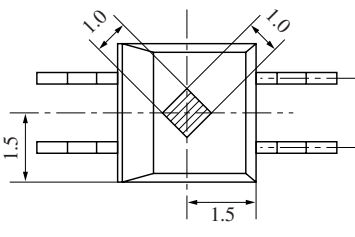
Note) 1. The variation of operating magnetic flux density does not depend on supply voltage due to its built-in stabilized power source. (V_{CC} should be confined to the range of 4.5 V to 16 V.)

2. A supply current increases by approximately 1 mA when its output level varies from high to low.

■ Technical Data

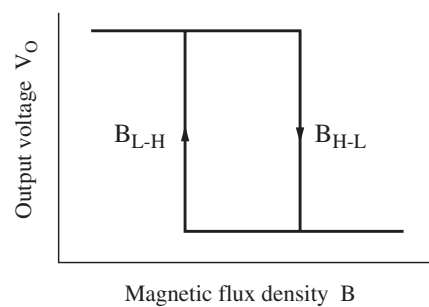
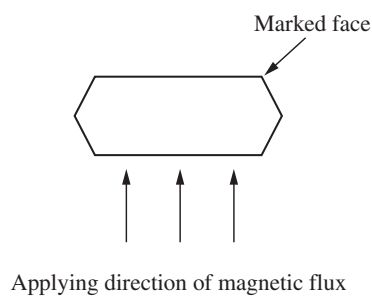
• Position of Hall element (unit: mm)

A Hall element is placed on the shaded part in the figure.

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

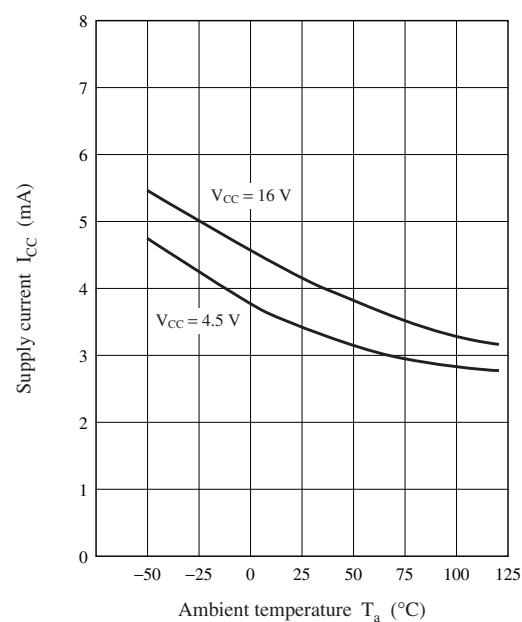
■ Technical Data (continued)

• Magneto-electro conversion characteristics

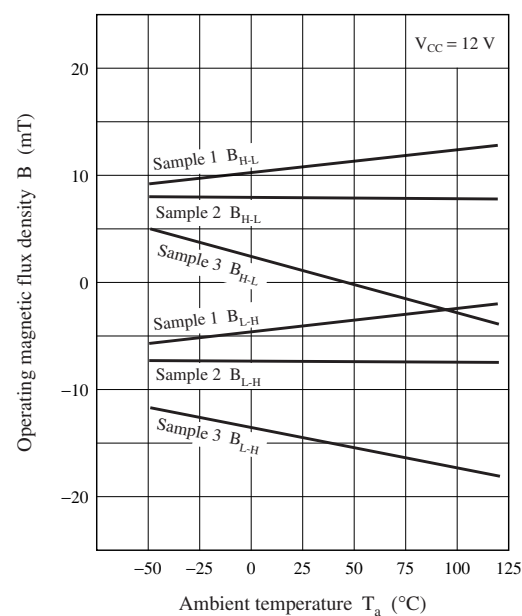


• Main characteristics

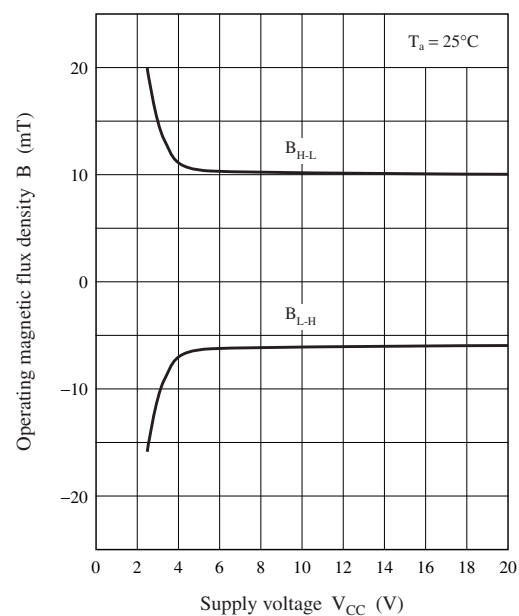
Supply current — Ambient temperature



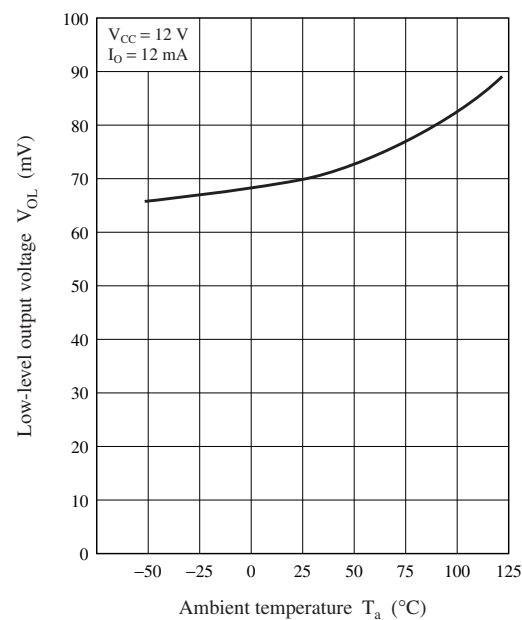
Operating magnetic flux density — Ambient temperature



Operating magnetic flux density — Supply voltage

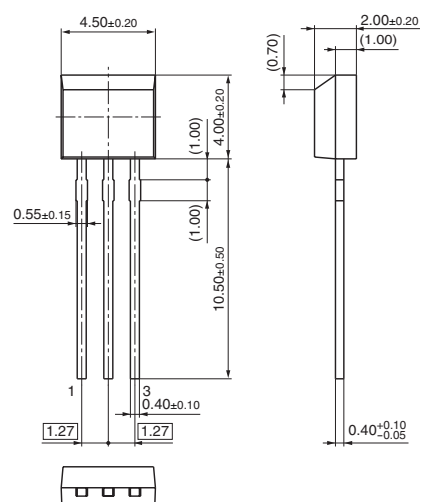


Low-level output voltage — Ambient temperature

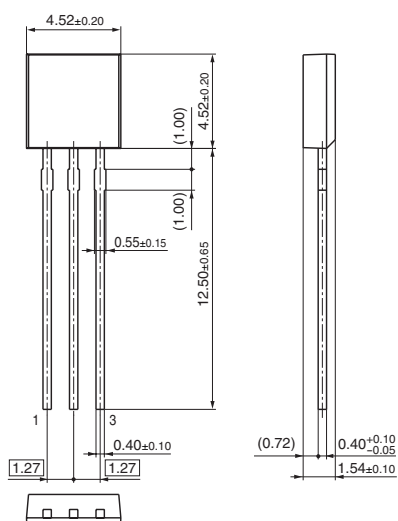


■ New Package Dimensions (Unit: mm)

- SSIP003-P-0000H (Lead-free package)



- SSIP003-P-0000J (Lead-free package)



- ESOP004-P-0200A (Lead-free package)

