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 27kΩ)

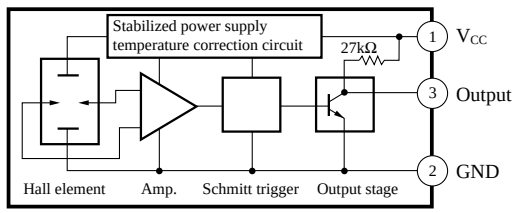
■ Applications

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

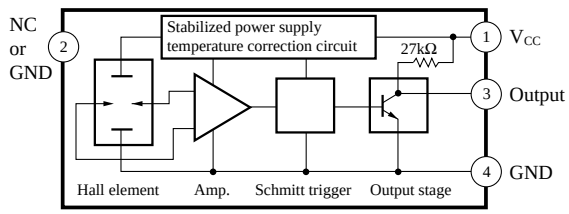
Note) This IC is not suitable for car electrical equipments.

■ Block Diagram

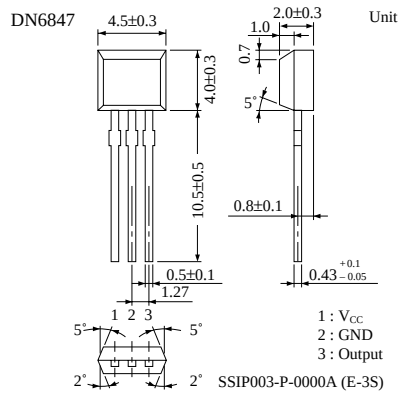
· DN6847/SE/TE



· DN6847S



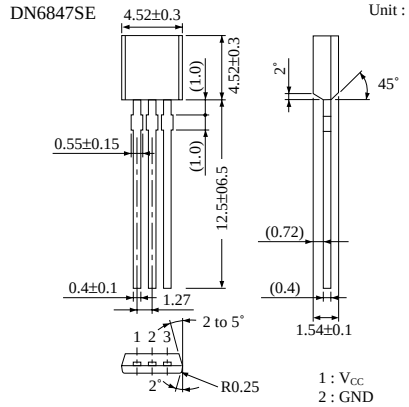
DN6847 Unit : mm



1 : V_{CC}
2 : GND
3 : Output

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

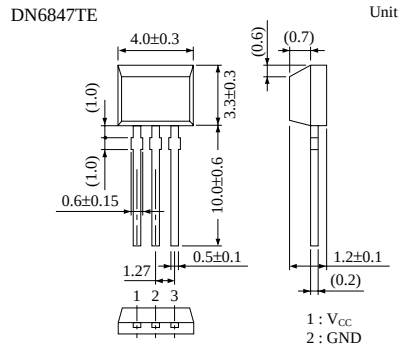
DN6847SE Unit : mm



1 : V_{CC}
2 : GND
3 : Output

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

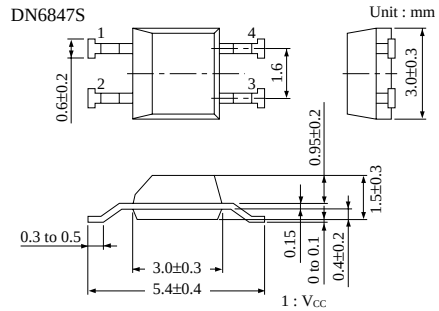
DN6847TE Unit : mm



1 : V_{CC}
2 : GND
3 : Output

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

DN6847S Unit : mm



1 : V_{CC}
2 : NC or GND
3 : Output
4 : GND

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

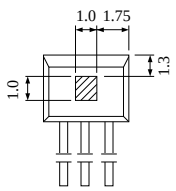
■ Electrical Characteristics (Ta=25˚C)

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

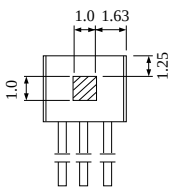
■ Hall Element Position

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

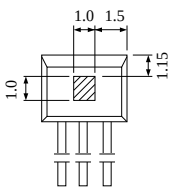
· DN6847



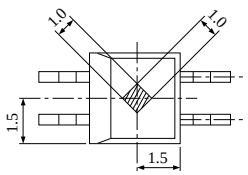
· DN6847SE



· DN6847TE

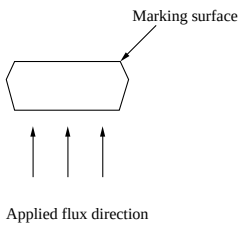


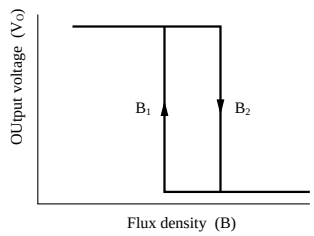
· DN6847S



Distance from package surface to sensor	DN6847	DN6847SE	DN6847TE	DN6847S
	0.7	0.42	0.4	0.65

■ Flux-Voltage Conversion Characteristics



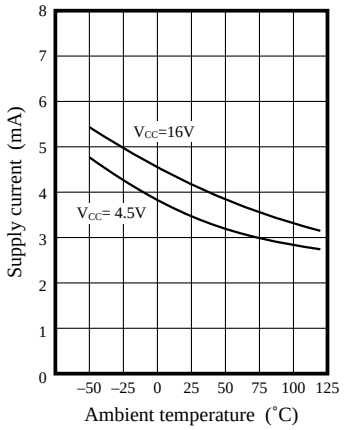


■ Precaution on Use

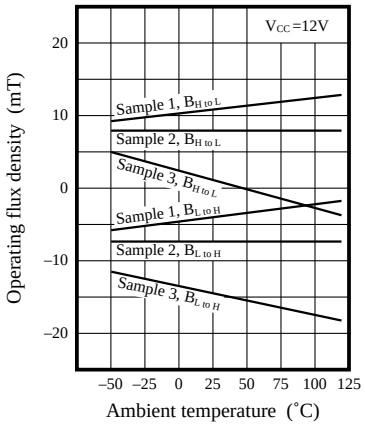
1. Change of the operation magnetic flux density does not depend on the supply voltage, because the stabilization power supply is built-in. (only for the range ; V_{CC}= 4.5 to 16V)
2. Change from “H” to “L” level increases the supply current by approx. 1mA.

■ Characteristics Curve

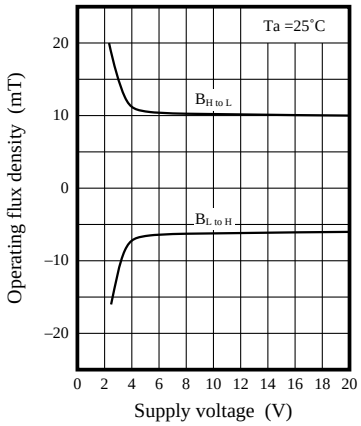
Supply voltage – Ambient temperature



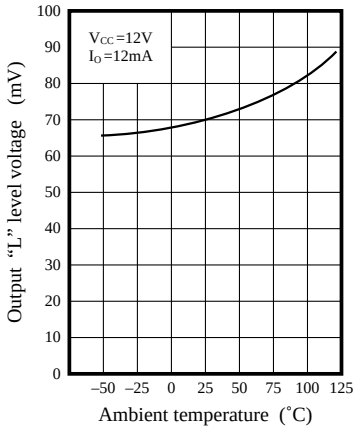
Operating flux density – Ambient temperature



Operating flux density – Supply voltage



Output low level voltage – Ambient temperature



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