

DN8796MS

3 V operation Hall IC Alternating magnetic field operation

Overview

The DN8796MS is a 3 V operation Hall IC which includes a Hall element, amplifier circuit, Schmidt circuit, stabilized power supply and temperature compensation circuit which are integrated on a single chip with a fine patterning technology. The magnetic input signal is outputted by being converted to high or low. We have improved the conventional circuit to realize a stable operation covering from low to high supply voltage and from low to high temperature.

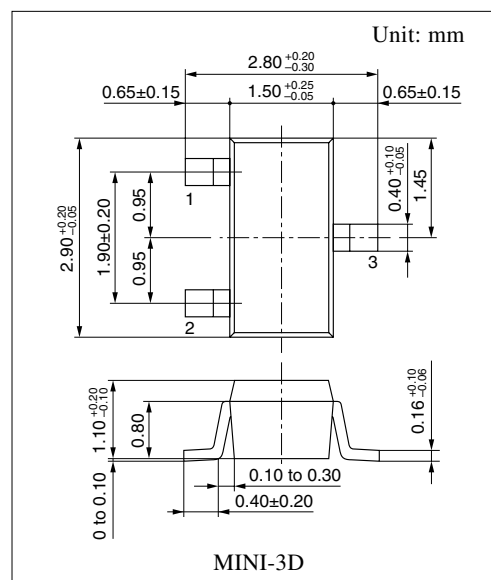
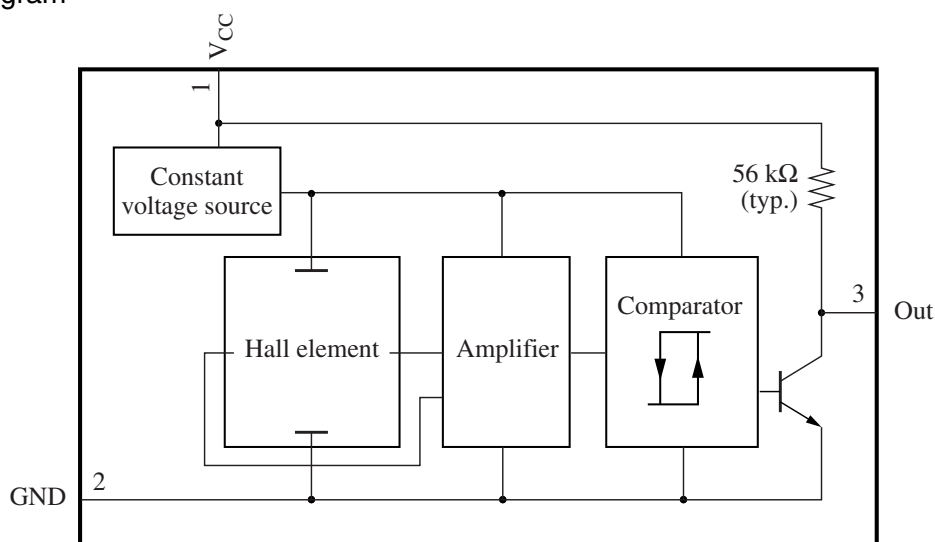
Features

- Wide operating supply voltage range
($V_{CC} = 2.7 \text{ V}$ to 14.4 V)
- Wide operating ambient temperature (-40°C to $+85^{\circ}\text{C}$)
- Package: Mini type (3-pin type)
(1.1 mm thick: Same as a standard transistor)
- Equipped with an output pull-up resistor (typical $56 \text{ k}\Omega$)

Applications

- DC brushless motor, fan motor, rotation sensor, detection of cover open/close (example for a cellular phone), position sensor

Block Diagram



Note) The package of this product will be changed to lead-free type (MINI-3DA). See the new package dimensions section later of this datasheet.

■ Pin Descriptions

Pin No.	Symbol	Description
1	Out	Output pin
2	V _{CC}	Supply voltage pin
3	GND	Ground pin

■ Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit
Supply voltage	V _{CC}	18	V
	V _{OUT}	18	
Supply current	I _{CC}	—	mA
Power dissipation	P _D	120	mW
Operating ambient temperature	T _{opr}	−40 to +85	°C
Storage temperature	T _{stg}	−55 to +125	°C

Note) 1. Except for the operating ambient temperature and storage temperature, all ratings are for T_a = 25°C.

2. The reverse insertion of this IC will cause its breakdown.
3. It will operate normally in several tens of ms after power on.
4. This IC is not suitable for car electrical equipment.

■ Recommended Operating Range

Parameter	Symbol	Range	Unit
Supply voltage	V _{CC}	2.7 to 14.4	V

■ Electrical Characteristics at T_a = 25°C

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Operating magnetic flux density 1	B _{H-L}	V _{CC} = 3 V	−18	—	—	mT
Operating magnetic flux density 2	B _{L-H}	V _{CC} = 3 V	—	—	18	mT
Hysteresis width	BW	V _{CC} = 3 V	4	8	12	mT
Output voltage 1	V _{OL1}	V _{CC} = 14.4 V, I _O = 5 mA, B = −18 mT	—	0.07	0.30	V
Output voltage 2	V _{OL2}	V _{CC} = 2.7 V, I _O = 5 mA, B = −18 mT	—	0.07	0.30	V
Output voltage 3	V _{OH1}	V _{CC} = 14.4 V, I _O = −20 μA, B = 18 mT	12.8	13.3	13.8	V
Output voltage 4	V _{OH2}	V _{CC} = 2.7 V, I _O = −20 μA, B = 18 mT	1.05	1.55	2.05	V
Output short-circuited current	−I _{OS}	V _{CC} = 14.4 V, B = 18 mT, V _O = 0 V	0.19	0.27	0.39	mA
Supply current 1	I _{CC1}	V _{CC} = 14.4 V, B = 18 mT	1.0	3.4	6.0	mA
Supply current 2	I _{CC2}	V _{CC} = 2.7 V, B = 18 mT	1.0	2.5	6.0	mA

Note) 1. Symbol B_{H-L} stands for the operating magnetic flux density where its output level varies from high to low.

2. Symbol B_{L-H} stands for the operating magnetic flux density where its output level varies from low to high.

3. 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 2.7 V to 14.4 V.)

4. A supply current changes by maximum 1 mA when its output level varies from high to low.