

DN8893MS

High Sensitivity Hall IC (Operating in Alternative Magnetic Field)

■ Overview

The DN8893MS is a combination of a Hall element, amplifier, Schmidt Circuit, stabilized power supply and temperature compensator integrated on an identical chip by using the IC technology. It amplifies a Hall element output at the amplifier, converts it into a digital signal through the Schemidt circuit and drives the TTL or MOS IC directly.

The package is the 3-pin mini-type, which is used in the Hall element.

■ Features

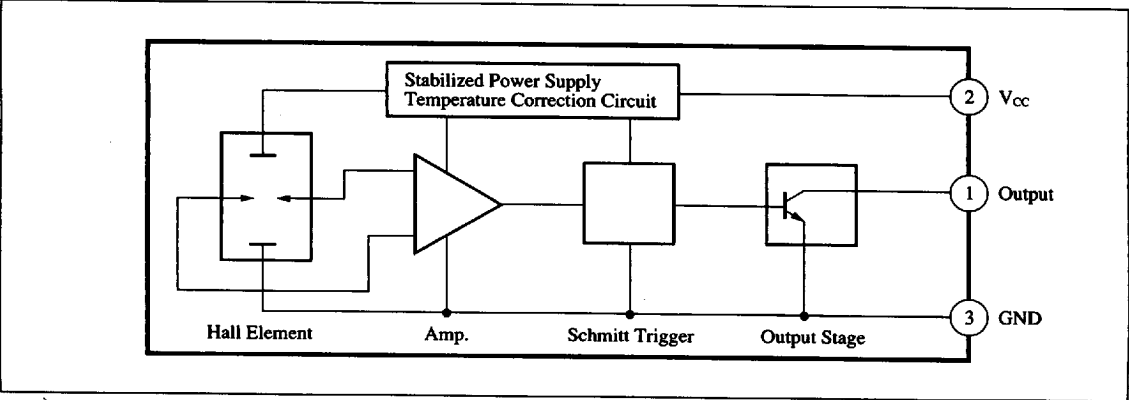
- Miniaturized SM 3-pin package
- High sensitivity and low drift
- The temperature characteristics stabilized by the additional temperature compensator
- Wide operating supply voltage range ($V_{CC}=4.5$ to $18V$)
- Operating in alternative magnetic field
- MOS IC directly drivable by output
- Output open collector

■ Application

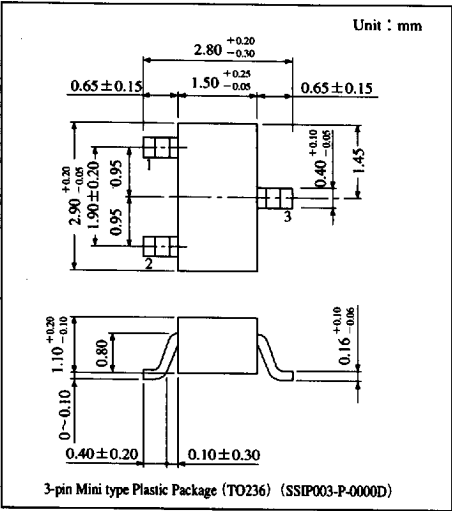
- Speed sensors
- Position sensors
- Rotation sensors
- Keyboard switches
- Micro switches

Note) The DN8893MS is not suitable for the car electrical equipment.

■ Block Diagram



Note) Care should be taken for the fact that the DN8893MS has the different characteristics and standard values from the DN8893 (Mini-type 3-pin package).



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■ Absolute Maximum Ratings (Ta=25℃)

Parameter	Symbol	Rating	Unit
Supply voltage	V _{CC}	19	V
Supply current	I _{CC}	7	mA
Circuit current	I _O	10	mA
Power dissipation	P _D	50	mW
Operating ambient temperature	T _{opr}	−40 to +100	℃
Storage temperature	T _{stg}	−55 to +125	℃

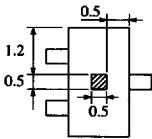
■ Electrical Characteristics (Ta=25℃)

Parameter	Symbol	Condition	min	typ	max	Unit
Operating flux density	B _{1(L→H)}	V _{CC} =12V	—	—	15	mT
	B _{2(H→L)}	V _{CC} =12V	−15	—	—	mT
Hysteresis width	BW	V _{CC} =12V	4	8	12	mT
Output voltage	V _{OL}	V _{CC} =4.5 to 18V, I _O =5mA, B=15mT	—	—	0.4	V
Output current	I _{OH}	V _{CC} =4.5 to 18V, V _O =18V, B=−15mT	—	—	10	μA
Supply current	I _{CC}	V _{CC} =18V	—	—	4	mA
		V _{CC} =4.5V	—	—	4	mA

Note) These are target standards and may be changed without any prior notice.

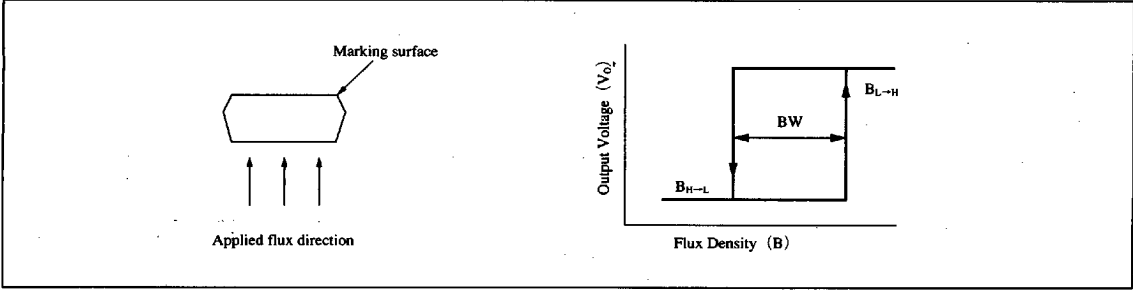
■ Hall Element Position

	DN8893MS
Distance from package surface to sensor (mm)	0.71



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

■ Flux-Voltage Conversion Characteristics



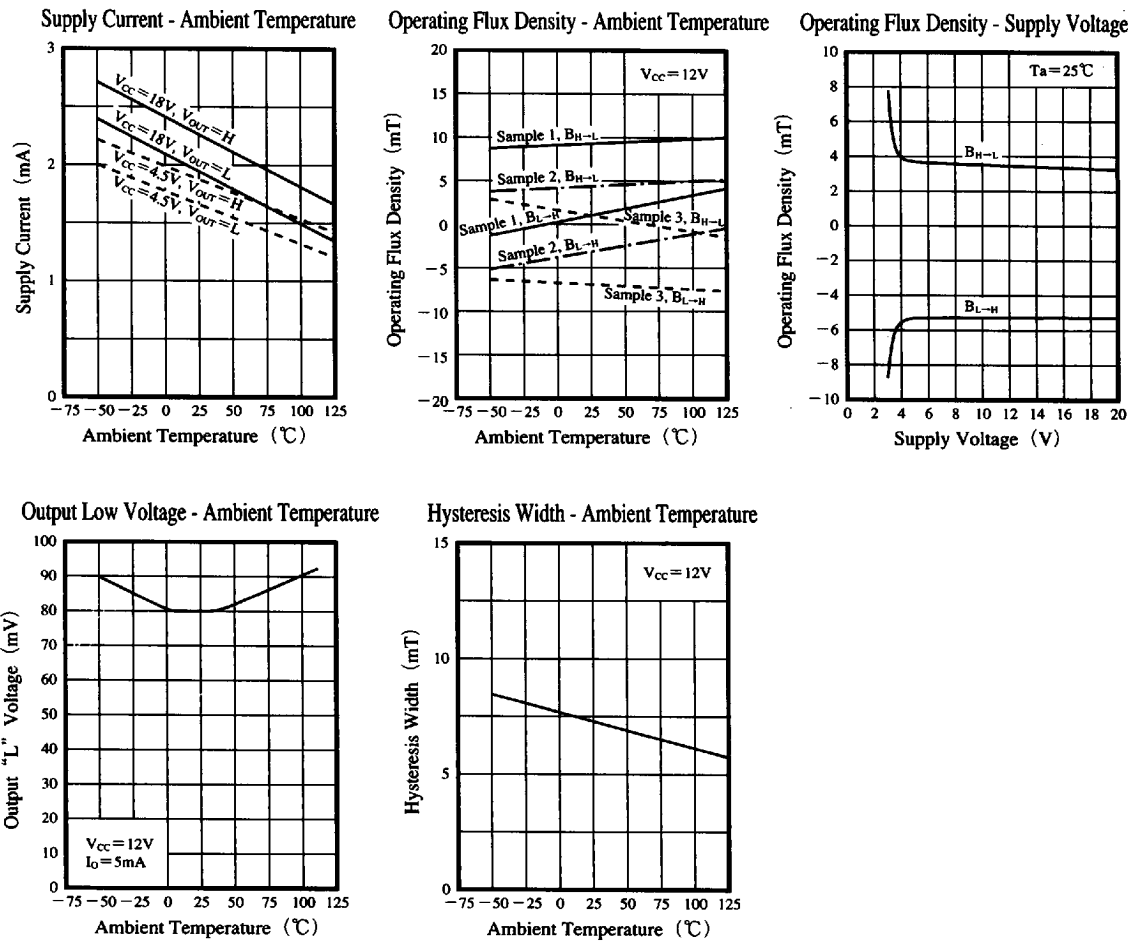
■ Supplementary Description

- 1. The change of operating flux density does not depend on the supply voltage because the stabilized power supply is built in (only for the range : V_{CC}=4.5 to 18V).
- 2. The shift from “H” to “L” in output level increases the supply current by approx. 1 mA.

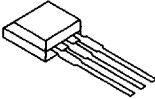
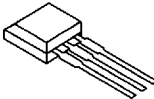
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Characteristic Curve



Comparison of DN8893 with DN6852 and DN6849

Parameter	DN8893	DN8893MS	DN6853	DN6849
Operating flux density	± 12mT	± 15mT	± 30mT D-ranked selection ± 10mT	± 17.5mT Zero-cross selection DN8899 ± 12mT
V _{CC}	4.5V to 18V	4.5V to 18V	3.6V to 16V	4.5V to 16V
Temperature characteristics	Linear change (same as for DN6849)	Linear change (same as for DN6849)	Large change in high temperature side	Linear change
Package	SSIP003-P-0000 	3-pin Mini Plastic Package 	SSIP003-P-0000 	SSIP003-P-0000 