Description

The BDH8182 is an integrated Hall-effect latched sensor designed for electronic commutation of brushless DC motor applications. The device includes an on-chip Hall voltage generator for magnetic sensing, a comparator that amplifiers the Hall voltage, and a Schmitt to provide switching hysteresis for noise rejection and open-collector output. An internal bandgap regulator is used to provide temperature compensated supply voltage for internal circuits and allows a wide operating supply range. A north pole of sufficient strength will turn the output ON. In the absence of a magnetic field, the output is OFF.
This IC is available in TO-92S-3 and SOT-23-3 package.

Features

- On-chip Hall Sensor
- Wide Operating Voltage Range: 3.5V to 24V
- Internal Bandgap Regulator for Temperature Compensation
- Maximum Output Sink Current: 25mA
- Operating Temperature: -40°C to 125°C
- ESD Rating: 3000V (Human Body Model) 300V (Machine Model)

Application

- Brushless DC Motor

Functional Block Diagram

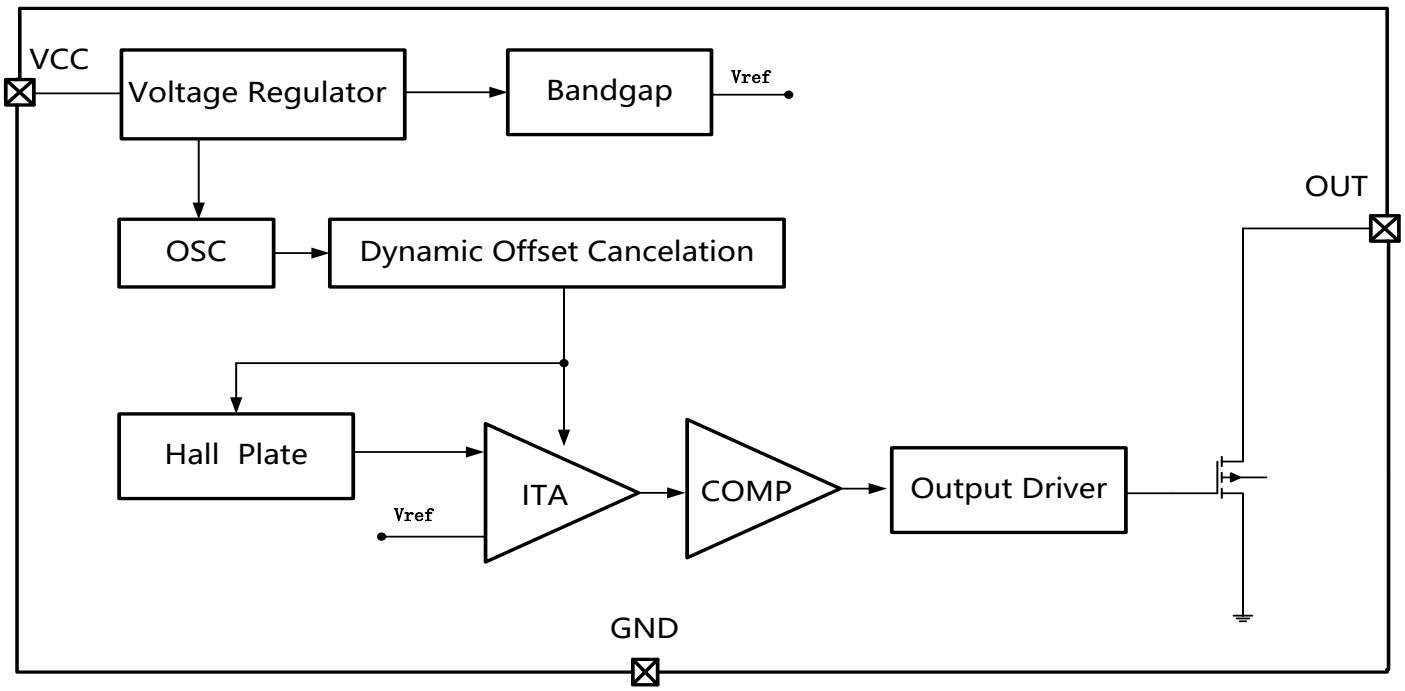


Figure 1. Functional Block Diagram of BDH8182

Test Circuit

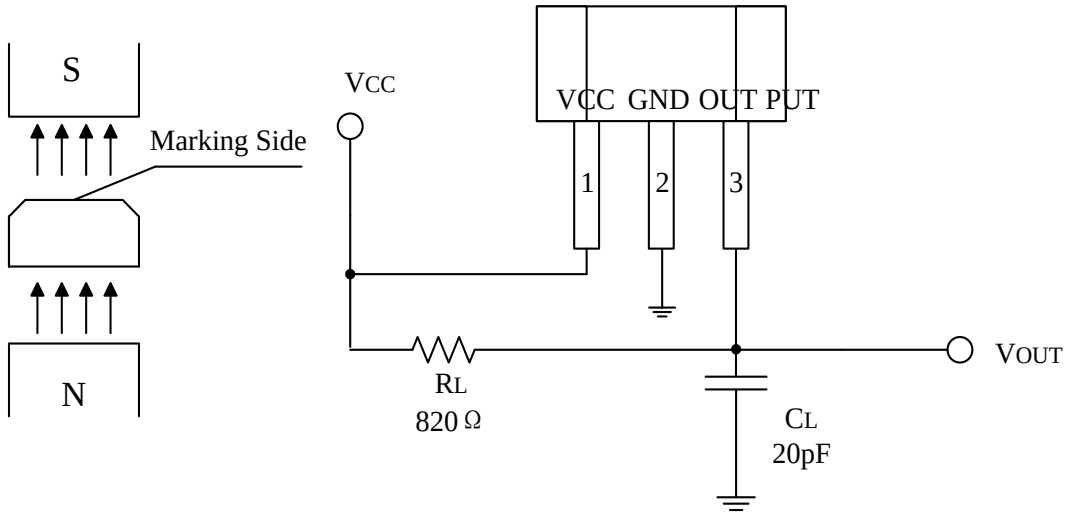


Figure 2. Basic Test Circuit of BDH8182

Package Information

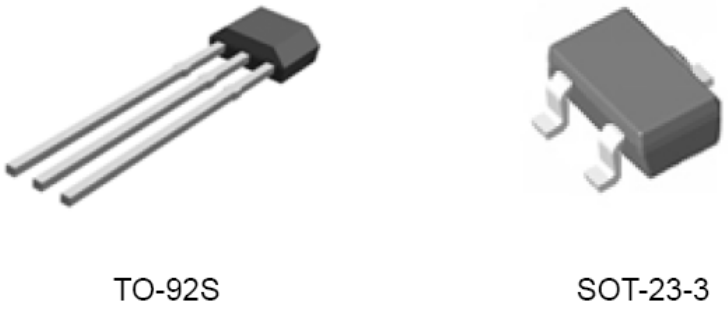
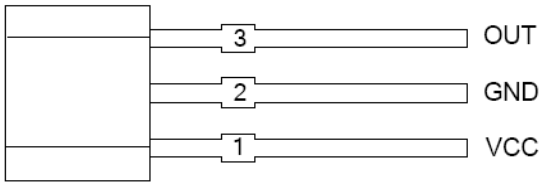


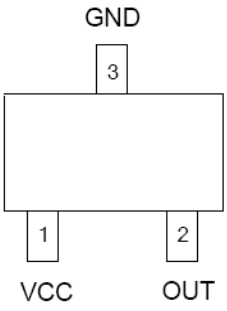
Figure 3. Package Type of BDH8182

Package (TO-92S)



(Front View)

Package (SOT-23-3)



(Top View)

Figure 4. Pin Configuration of BDH8182

Pin Description

Pin Number		Name	Function
TO-92S	SOT23-3L		
1	1	VCC	Supply voltage
2	3	GND	Ground pin
3	2	OUT	Output

Absolute Maximum Ratings (Note 1)

Parameter	Symbol	Value	Unit
Supply Voltage	V_{CC}	-30 to 30	V
Output Off Voltage	V_{CE}	30	V
Output Sink Current (Continuous Current)	I_{OUT}	25	mA
Power Dissipation	PD	400	mW
Storage Temperature	T_S	-55 to 150	°C
Junction Temperature	T_J	125	°C
ESD (Machine Model)	ESD	300	V
ESD (Human Body Model)	ESD	3000	V

Note 1: Stresses greater than those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under “Recommended Operating Conditions” is not implied. Exposure to “Absolute Maximum Ratings” for extended periods may affect device reliability.

Recommended Operating Conditions (TA=25°C)

Parameter	Symbol	Min	Max	Unit
Supply Voltage	V_{CC}	3.5	24	V
Operating Temperature	T_{OP}	-40	125	°C

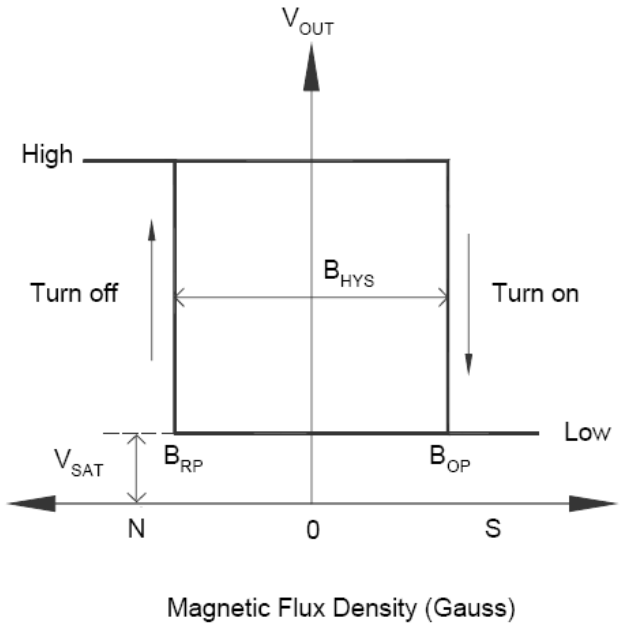
Electrical Characteristics

VCC =12V, TA =25°C, unless otherwise specified.

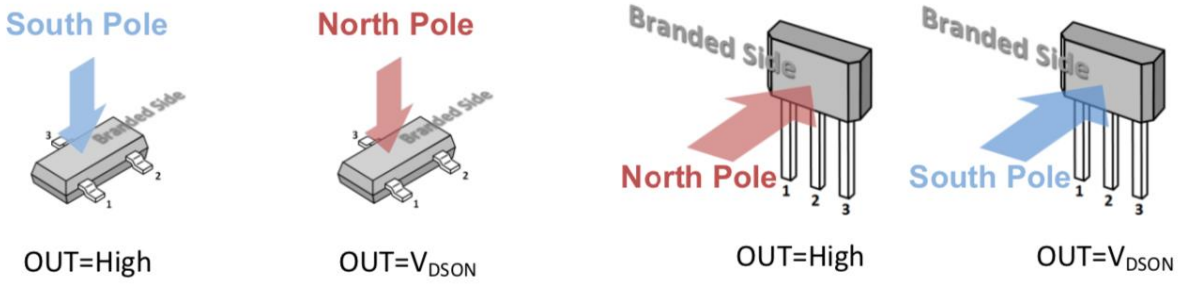
Parameter	Symbol	Conditions	Min	Type	Max	Unit
Supply Voltage	V_{CC}	Operating	3.5		24	V
Supply Current	I_{CC}	Awake		2.5	5	mA
Output Leakage Current	I_{LEAK}	B< | BRP |		<0.1	10	μA
Output Saturation Voltage	V_{SAT}	IOUT =1.0mA		110	300	mV
Rise Time	tr	Operating		0.2		μs
Fall Time	Tf	Operating		0.2		μs

Magnetic Characteristics (TA=25°C)

Parameter	Symbol	Min	Type	Max	Unit
Operating point	B_{OP}	-	35	70	Gauss
Releasing Point	B_{RP}	-70	-35	-	Gauss
Hysteresis	B_{HYS}		70		Gauss



Definition of Switching Function



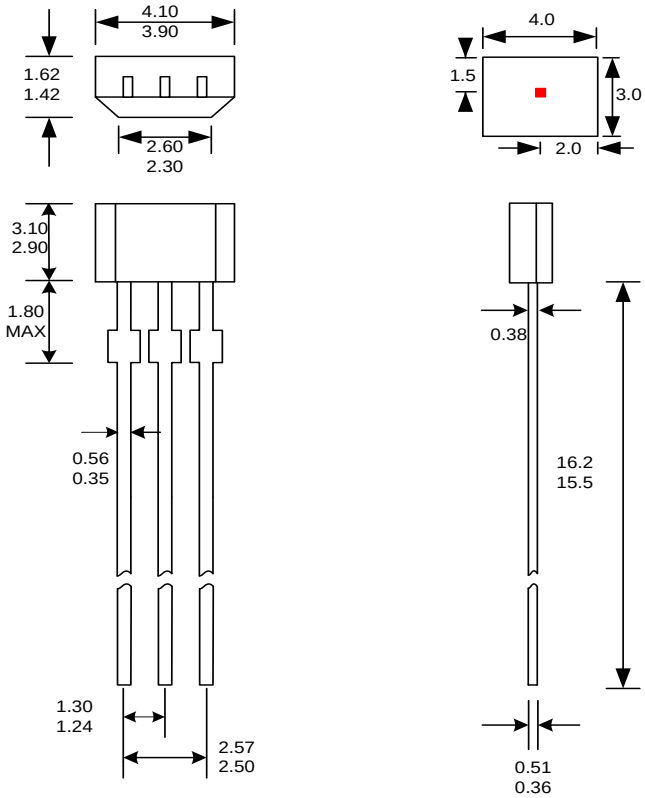
Switching Point of SOT-23-3 Switching Point of TO-92S

Package Dimensions

1.TO-92S

3-Terminal
UA Package

Dimension:mm



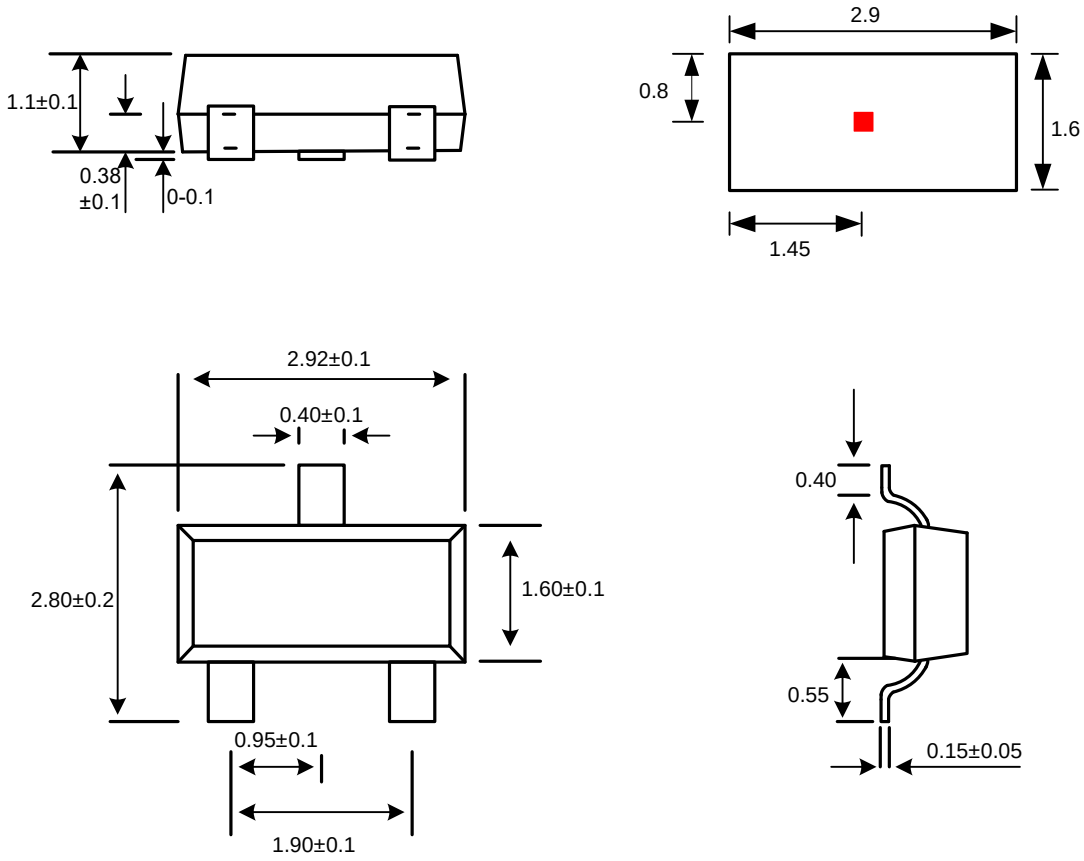
Notes:
1. Exact body and lead configuration at vendor's option within limits shown.
2. Height does not include mold gate flash.

Where no tolerance is specified, dimension is nominal.

2、SOT-23-3

3-Terminal
SO Package

Dimension:mm



Notes:
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