

Description

The DH41G 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 amplifies 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: 50mA
- Operating Temperature: -40°C to 125°C
- ESD Rating: 3000V (Human Body Model) 300V (Machine Model)

Application

- Brushless DC Motor

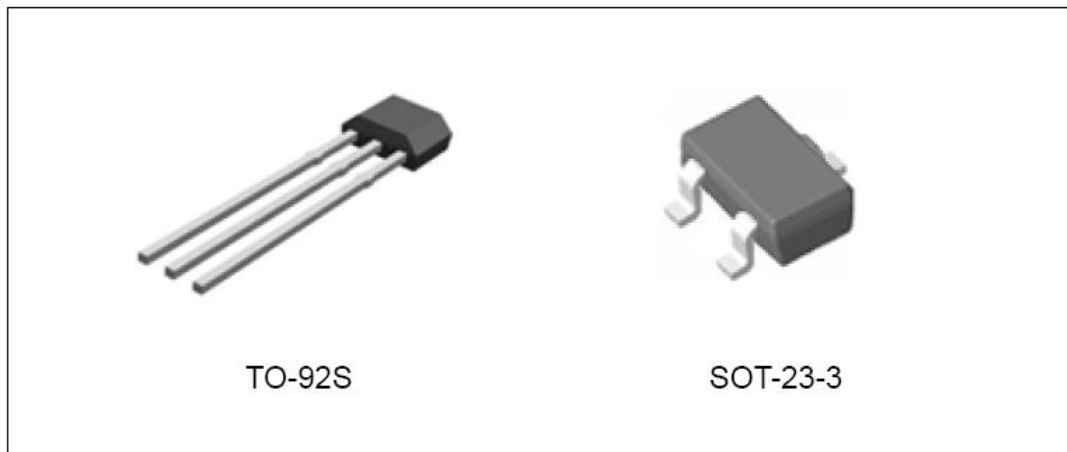
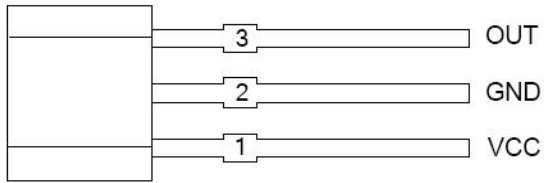


Figure 1. Package Type of DH41G

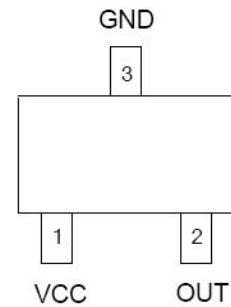
Package Information

Package (TO-92UA)



(Front View)

Package (SOT-23-3)



(Top View)

Figure 2. Pin Configuration of DH41G

Pin Description

Pin Number		Pin Name	Function
TO-92S	SOT-23-3		
1	1	VCC	Supply voltage
2	3	GND	Ground pin
3	2	OUT	Output

Functional Block Diagram

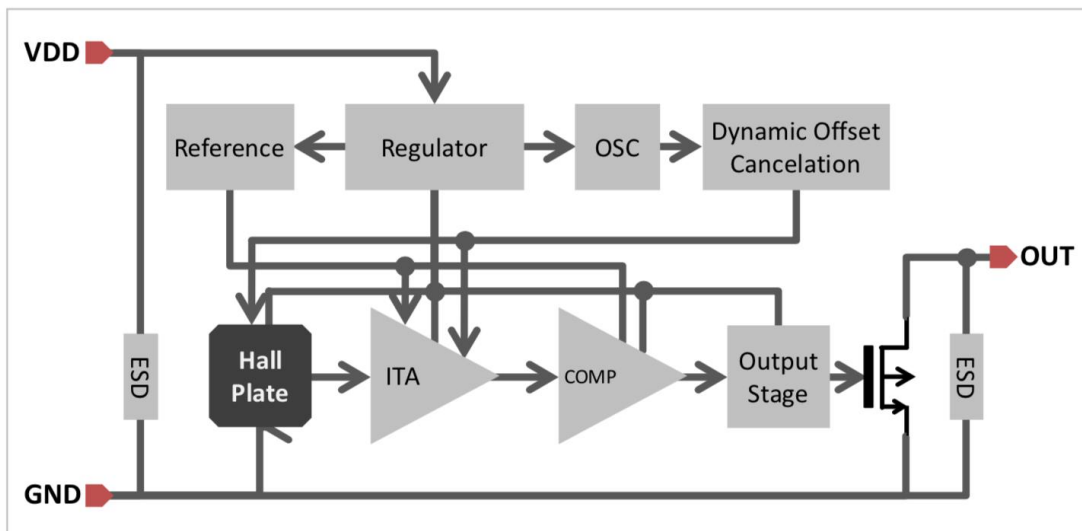


Figure 3. Functional Block Diagram of DH41G

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}	50	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	30	V
Operating Temperature	T _{OP}	-40	150	°C

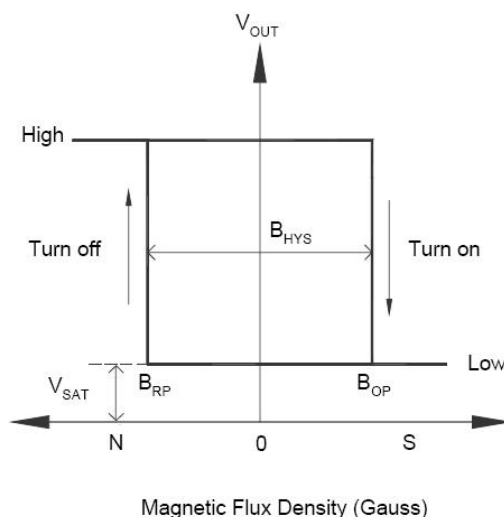
Electrical Characteristics

V_{CC} =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		1.5	3	mA
Output Leakage Current	I _{LEAK}	B< BRP		<0.1	10	μA
Output Saturation Voltage	V _{SAT}	I _{OUT} =1.0mA		110	300	mV
Rise Time	t _r	Operating		0.3		μs
Fall Time	T _f	Operating		0.3		μs

Magnetic Characteristics (TA=25°C)

Parameter	Symbol	Min	Type	Max	Unit
Operating point	B _{OP}	10	35	60	Gauss
Releasing Point	B _{RP}	-60	-35	-10	Gauss
Hysteresis	B _{HYS}		70		Gauss



Test Circuit

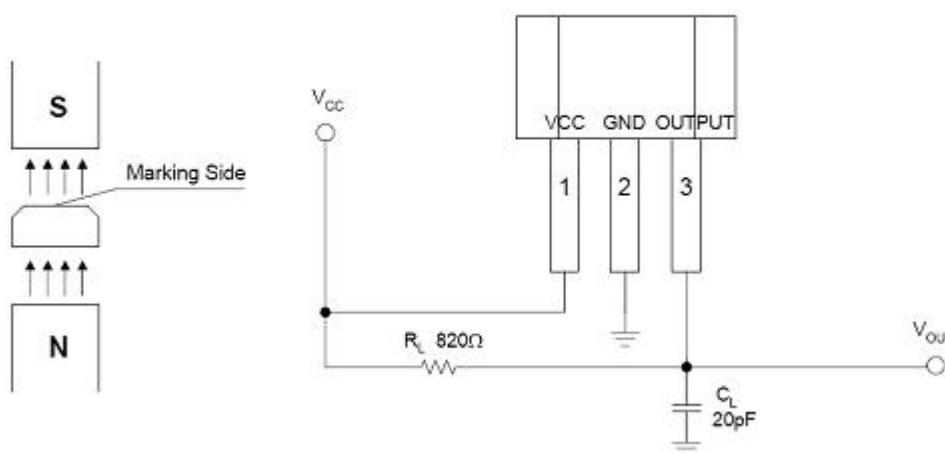
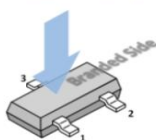


Figure 4. Basic Test Circuit of DH41G

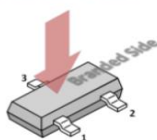
Definition of Switching Function

South Pole

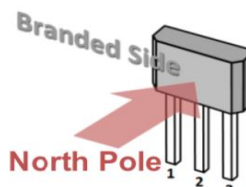


OUT=High

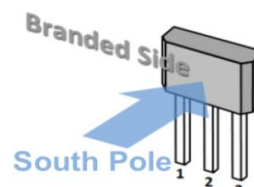
North Pole



OUT=V_{DSON}



OUT=High



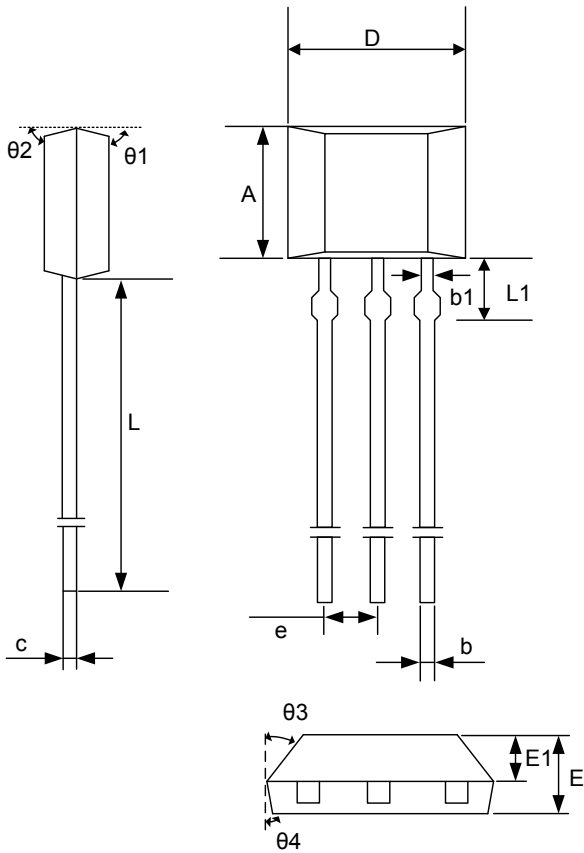
OUT=V_{DSON}

Switching Point of SOT-23

Switching Point of TO-92UA

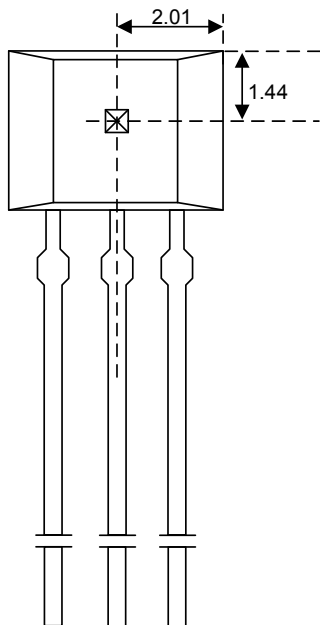
Package Dimensions

TO-92UA

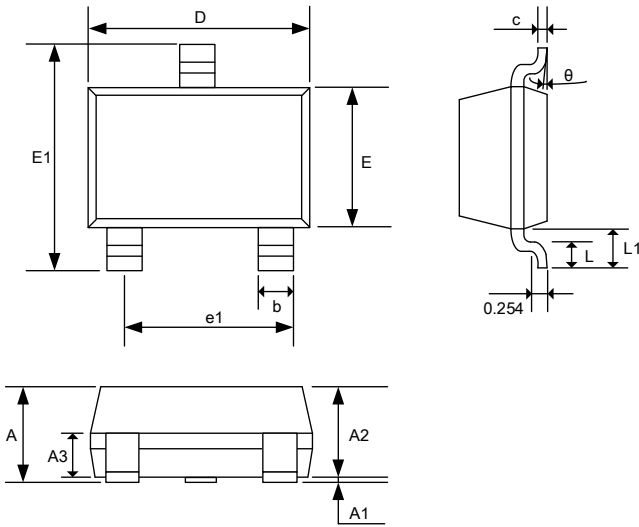


符号	毫米		
	最小值	典型值	最大值
A	2.90	3.00	3.10
b	0.35	0.39	0.56
b1	-	0.44	-
c	0.36	0.38	0.51
D	3.9	4.0	4.1
e	1.27BSC		
E	1.42	1.52	1.62
E1	-	0.75	-
L	13.5	14.5	15.5
L1	-	1.6	-
θ_1	-	6°	-
θ_2	-	3°	-
θ_3	-	45°	-
θ_4	-	3°	-

Hall 感应点位置

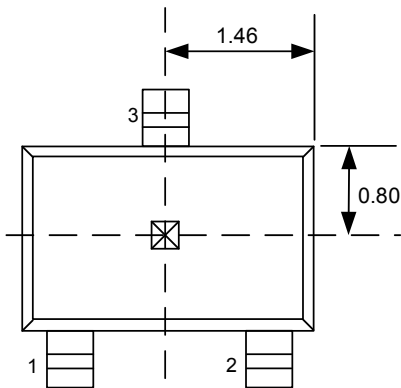


SOT23-3封装



符号	毫米		
	最小值	典型值	最大值
A	-	-	1.35
A1	0.04	0.08	0.12
A2	1.00	1.10	1.20
A3	0.55	0.65	0.75
b	0.37	0.40	0.43
c	0.11	0.16	0.21
D	2.77	2.90	3.07
E	1.40	1.60	1.80
E1	2.70	2.85	3.00
e1	1.80	1.90	2.00
L	0.35	0.45	0.55
L1	0.55	0.65	0.75
θ	0°	-	8°

Hall 感应点位置



注意：所有单位均为毫米。