GH1275A LOW-PIN-COUNT HALL DRIVER IC

◆ General Description

The GH1275A is an low-pin-count integrated Hall sensor with output driver designed for electronic commutation of brush-less DC motor and DC fan applications. The device includes an on-chip Hall sensor for magnetic sensing, an amplifier that amplifies the Hall voltage, a Schmitt trigger to provide switching hysteresis for noise rejection, a temperature compensation circuit to compensate the temperature drift of Hall sensitivity, two complementary open-drain drivers for sinking large load current. It also includes an internal voltage regulator which is used to provide bias voltage for internal circuits.

Place the device in a variable magnetic field, while the magnetic flux density is larger than threshold B_{OP}, OUT1 will be turned on (low) and OUT2 will be turned off (high). This output state is held till the magnetic flux density reversal falls below B_{RP} causing OUT1 to be turned off (high) and OUT2 turned on (low).

GH1275A is available in small SOT-23 package.

◆ Features

- On Chip Hall Effect Sensor
- 5 V and 12V Operation
- Drivers Allow 300mA Output Current
- Built-in Reverse Voltage Protection
- Zener Diodes Protection for Output Driver
- Embedded Over-Temperature Protection
- Precise Magnetic Switching Thresholds

◆ Applications

- Dual-coil Brushless DC Fan
- Dual-coil Brushless DC Motor

SOT-23

Figure 1. Package Type of GH1275A

◆ Ordering Information

Package	Temperature Range	Part Number	Marking ID	Packing Type
SOT-23	-40 to 85 ℃	GH1275AESE	G275	Tape and Reel

◆ Pin Configuration

SE Package
(SOT-23)

Figure 2. Pin Configuration of GH1275A (Front View)

◆ Pin Description

Pin Number	Pin Name	Function
1	OUT1	Output Pin 1 (Open-Drain)
2	OUT2	Output Pin 2 (Open-Drain)
3	GND	Ground Pin

◆ Functinal Block Diagram

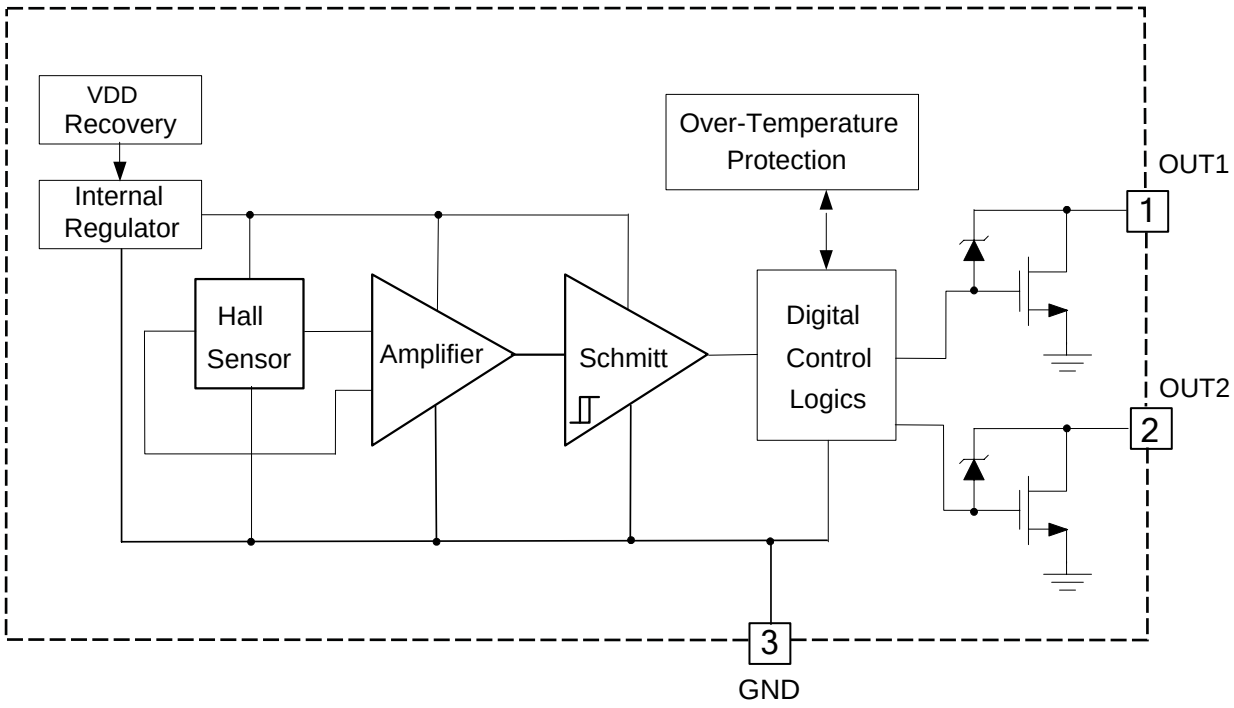


Figure 3. Functional Block Diagram of GH1275A

◆ Absolute Maximum Ratings T_A =25°C (Note 1)

Parameter	Symbol	Condition	Value	Unit
Supply Voltage (Continuous)	$V_{DD(CONT)}$		18	V
Supply Voltage (Peak)	$V_{DD(PEAK)}$	≤100s	24	V
Supply current (Fault)	$I_{DD(FAULT)}$		3.5	mA
Continuous current	$I_{OUT(HOLD)}$		300	mA
Hold current	$I_{OUT(HOLD)}$		350	mA
Peak current	$I_{OUT(PEAK)}$	≤200μs	400	mA
Power dissipation	P_D	SOT-23	370	mW
Thermal Resistance (Junction to Ambient)	θ_{JA}	SOT-23	375	℃/W
Operating Junction temperature	T_J		-40 to 150	℃
Storage temperature	T_{STG}		-55 to 160	℃
Output Clamp Voltage of Zener Diode	V_Z		24	V
Magnetic Flux Density	B		Unlimited	Gauss
IR-Reflow Lead Temperature	T_P	10s	260	℃

◆ Recommended Operating Conditions

Parameter	Symbol	Min	Max	Unit
Power Supply Voltage	V_{DD}	3.2	16	V
Operation Temperature	T_A	-40	85	℃

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 above “Recommended Operating Conditions” is not implied. Exposure to “Absolute Maximum Ratings” for extended periods may affect device reliability.

◆ Electrical Characteristics

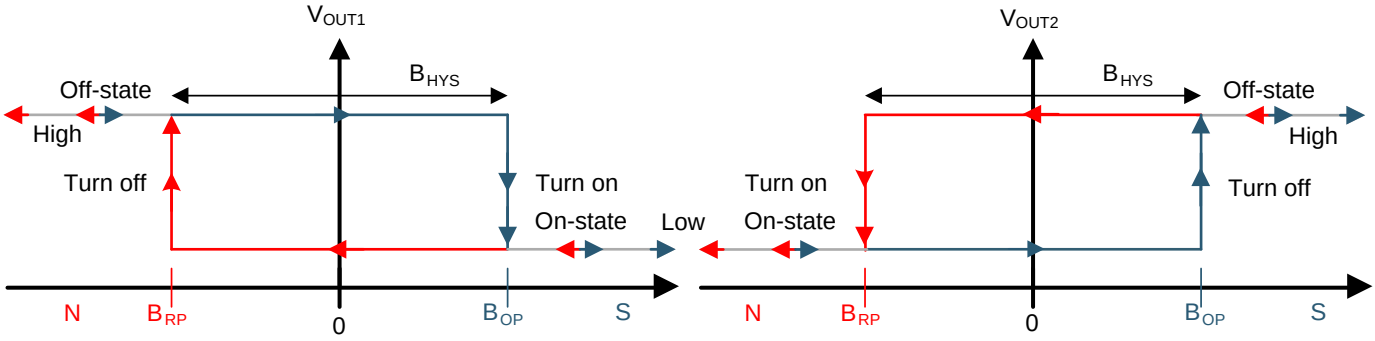
V_{DD} =12V , T_A =25°C, unless otherwise specified.

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Supply Voltage	V_{DD}	Operating	(Note 2)	-	16	V
Supply Current	I_{DD}	Output open	-	1.3	2.5	mA
Output Current	I_{OUT}	T_A=25℃	-	-	300	mA
		T_A=85℃	-	-	230	mA
Output Leakage Current	$I_{LEAKAGE}$	V_{OUT} =16V	-	0.1	10	μA
Output Driver ON-Reistance	R_{DSON}	T_A=25℃	-	1.4	1.8	Ohm
		T_A=85℃	-	2.0	2.8	Ohm
Thermal Shutdown Threshold	T_{SD}		165	-	-	℃

◆ Magnetic Characteristics

V_{DD} =12V, T_A =25°C, unless otherwise specified.

Parameter	Symbol	Min	Typ	Max	Unit
Operating Point	B_{OP}	-	15	60	Gauss
Releasing Point	B_{RP}	-60	-15	-	Gauss
Hysteresis	B_{HYS}	15	30	-	Gauss



Magnetic Pole (Note 3)	Conditions	OUT1	OUT2
North Pole	B < B_{RP}	High	Low
South Pole	B > B_{OP}	Low	High

Note 2: The minimal value of V_{DD} should be determined using the following equation: V_{DD} = 3.2V + R_{COIL} * I_{DD}

Note 3: The magnetic pole is applied facing the marked side of the package.

◆ Typical Application

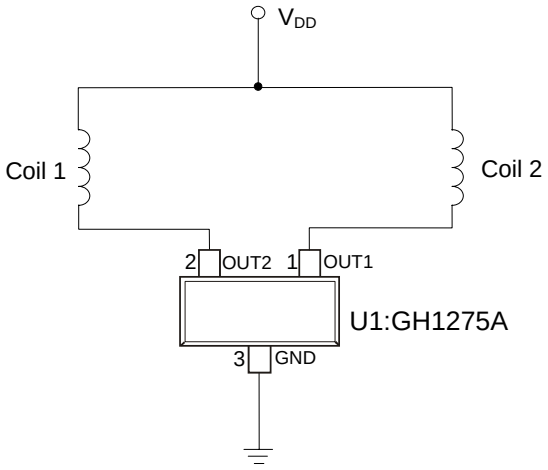
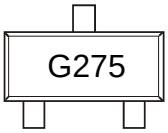


Figure 4. Typical Application of GH1275A

◆ Marking Information

(SOT-23)



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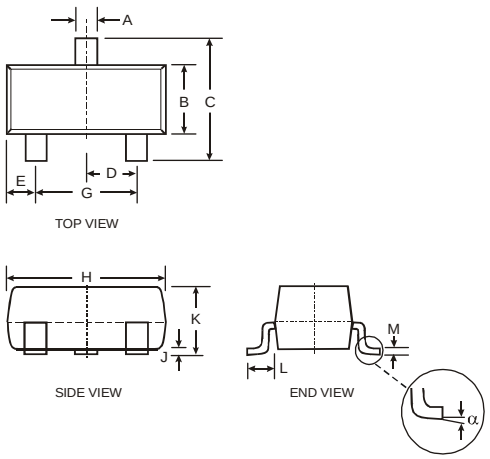
◆ Pacakge Information (SE: SOT-23) Unit: mm



SOT-23		
Dim	**Min**	**Max**
A	0.37	0.51
B	1.20	1.40
C	2.30	2.50
D	0.89	1.03
E	0.45	0.60
G	1.78	2.05
H	2.80	3.00
J	0.013	0.10
K	0.903	1.10
L	0.45	0.61
M	0.085	0.180
α	0°	8°
All Dimensions in mm		

◆ Recommended Mounting Pad Geometry Unit: mm