

## Unipolar Hall Effect Switch CYD1102G

The CYD1102G is an integrated Hall Effect sensor designed for electronic commutation of brush-less 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 trigger to provide switching hysteresis for noise rejection, and open-collector output. An internal band gap 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.

### Features

♦ Wide operating voltage range 3V to 28V	♦ Reverse polarity protection
♦ Maximum output sink current 50mA	♦ Package : SIP-3L
♦ Open collector pre-driver	

### Block Diagram

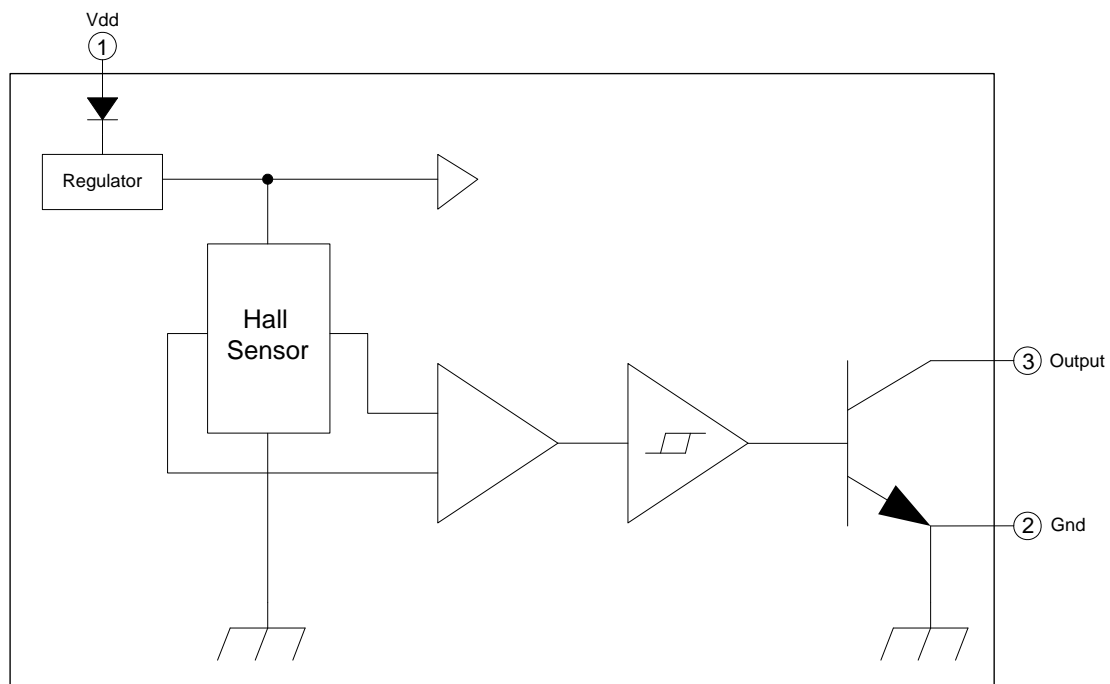
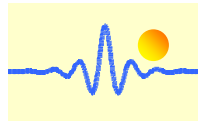


Figure.1

### Recommended Operating Conditions

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Supply Voltage	$V_{DD}$	-	3.0		28	V
Operating Temperature Range	$T_A$	-	-40		150	°C



### Absolute Maximum Ratings

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Operating Temperature	T <sub>OP</sub>	-	-40		150	°C
Storage Temperature	T <sub>ST</sub>	-	-65		150	°C
DC Supply Voltage	V <sub>DD</sub>	-	3.0		28	V
Supply Current	I <sub>DD</sub>	-			10	mA
Continuous Current	I <sub>O(CONT)</sub>				50	mA
Junction temperature	T <sub>J</sub>				160	°C
Power Dissipation	P <sub>D</sub>	SIP-3L			500	mW
Thermal Resistance	θ <sub>JC</sub>	SIP-3L		0.27		°C/mW
Lead Temperature		10sec			260	°C

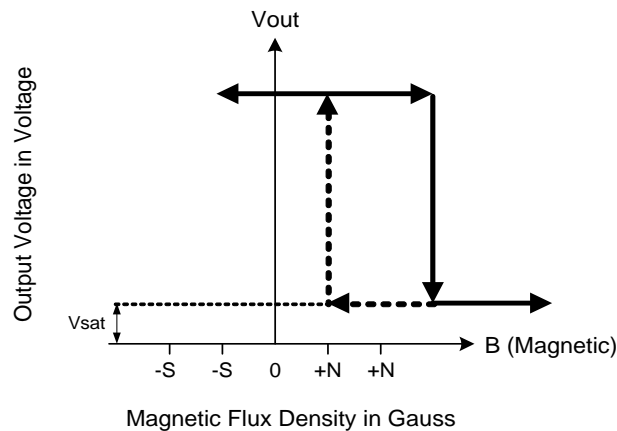
### Electrical Characteristics V<sub>DD</sub>=12.0V, T<sub>A</sub>=25°C (unless otherwise specified)

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Average Supply Current(no load)	I <sub>DD</sub>	-		3.5	10	mA
Output Saturation Voltage	V <sub>SAT</sub>	I <sub>out</sub> = 20mA		165	200	mV
Output Rise time	t <sub>r</sub>	RL=500Ω, CL=20pF(Figure 7)	0.2	-	0.75	µs
Output Fall time	t <sub>f</sub>	RL=500Ω, CL=20pF(Figure 7)	20	-	150	ns

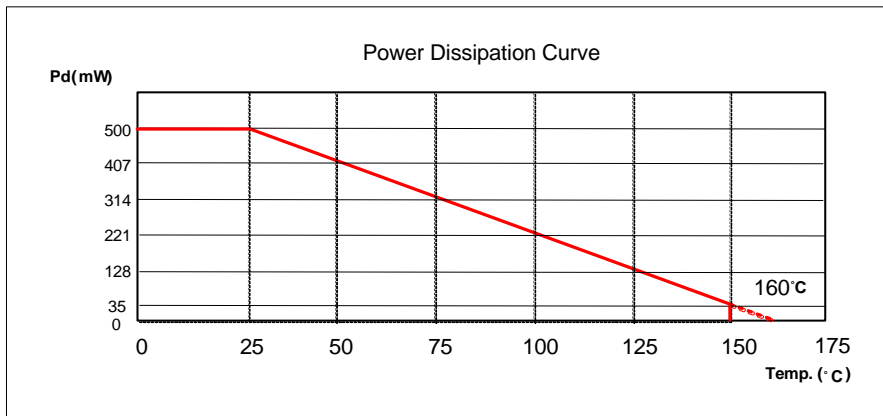
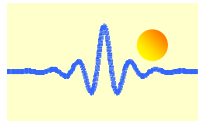
### Magnetic Characteristics

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Operate Points	B <sub>OP</sub>		+140	-	-	G
Release Points	B <sub>RP</sub>		-	-	+60	G
Hysteresis	B <sub>HYST</sub>		30	-	120	G

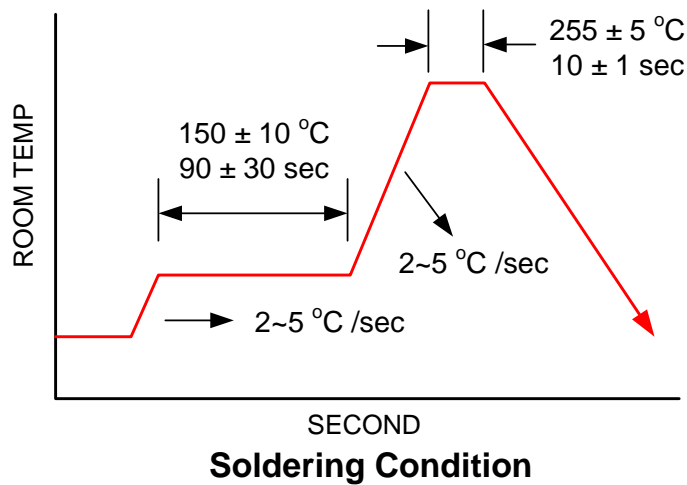
### Hysteresis Characteristics



**Figure.2**



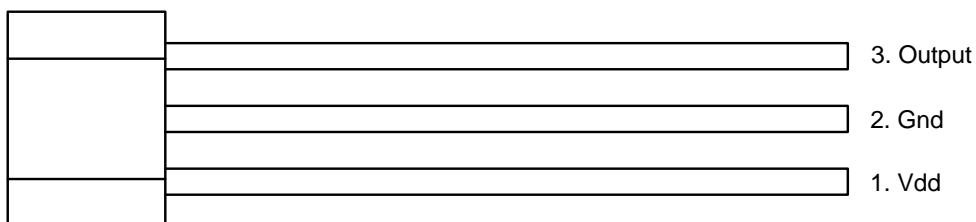
**Figure.3**



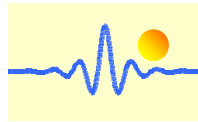
**Figure.4**

**Pin Connection**

[Top View]



**Figure.5**



### Pin Description

Name	I/O	Pin No.	Description
Vdd	P	1	Positive power supply
Gnd	G	2	Ground
Output	O	3	Driver output

Legend: I=input, O=output, I/O=input/output, P=power supply, G=ground

### Marking Information

[Top View]

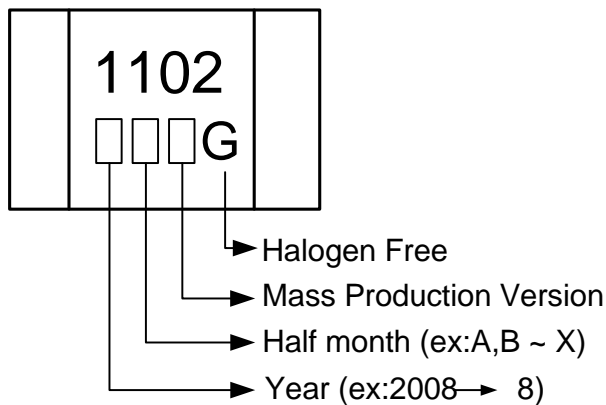
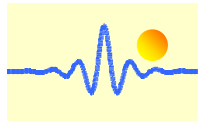


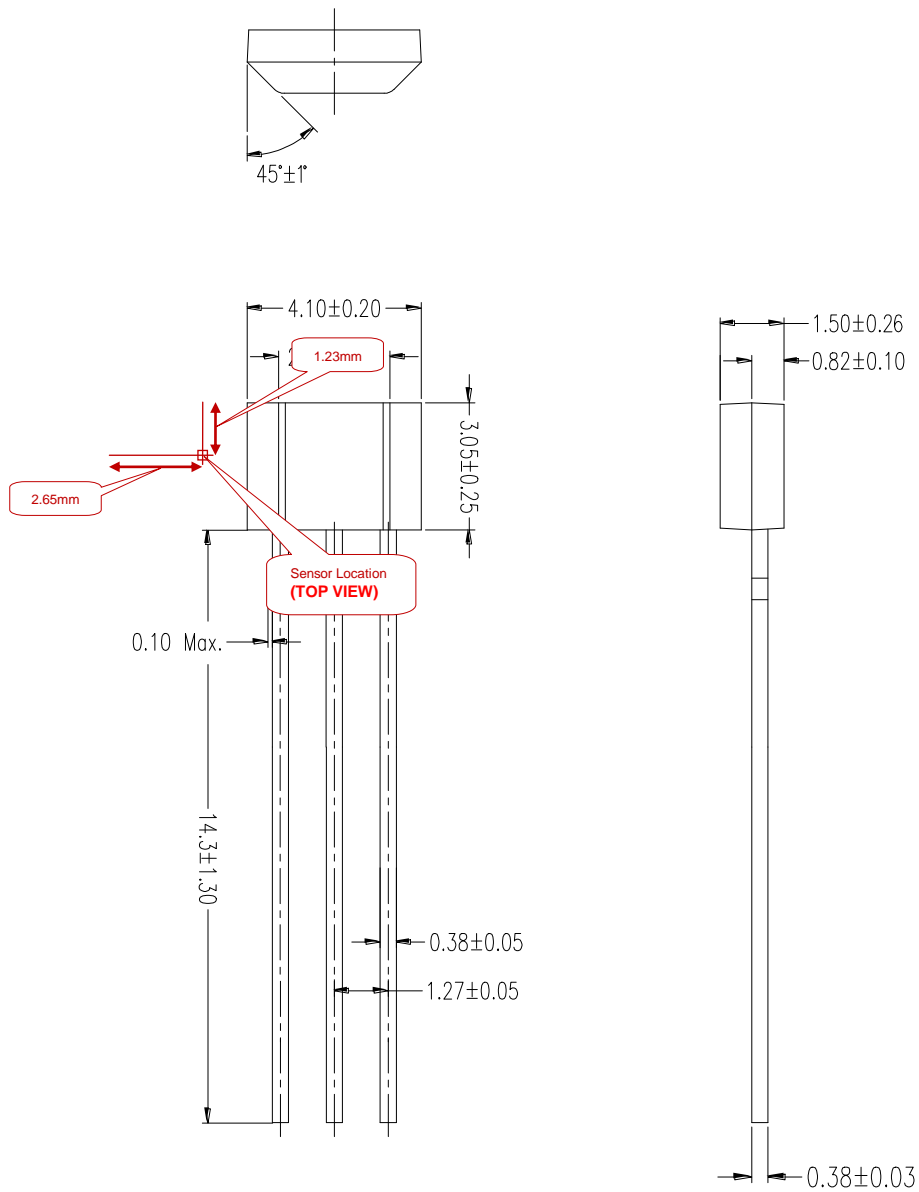
Figure.6

### Order Information

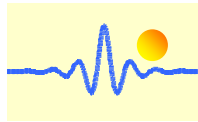
Part Number	Operating Temperature	Package	MOQ
CYD1102G	-40 °C to +150 °C	SIP-3L	1000ea



**Package Dimension (Unit: mm)**  
**SIP-3L(Halogen Free)**



**Figure.7**



## Test Circuit

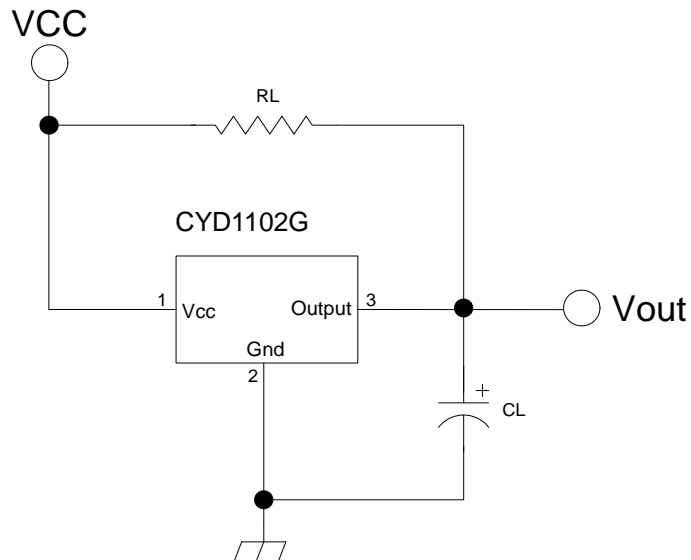


Figure.8

## Functional Application Circuit

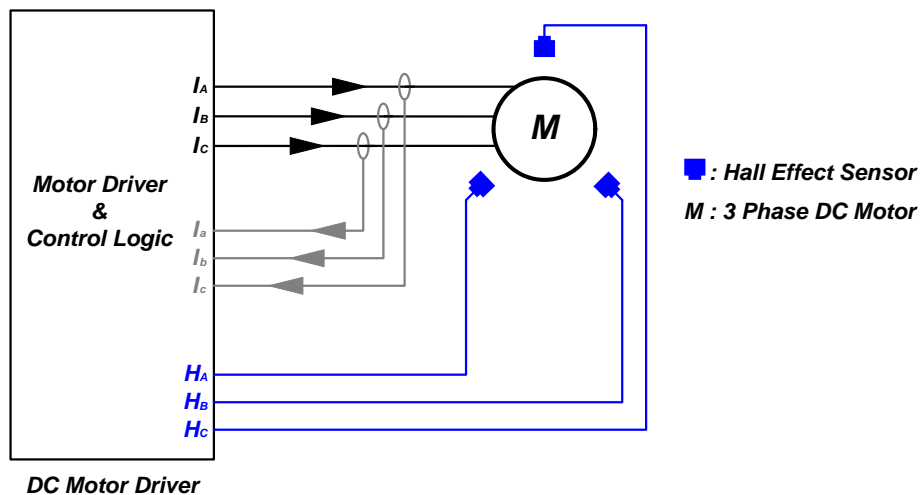


Figure.9