

### Single Output Hall Effect Latch

#### ◆ GENERAL DESCRIPTION:

GH211 are integrated Hall sensors with output drivers, mainly designed for electronic commutation of brush-less DC Fan. This IC is using HV BCD process internally includes the regulator, protecting diode, Hall plate, amplifier, comparator, and a pair of complementary open-Drain outputs (DO, DOB).

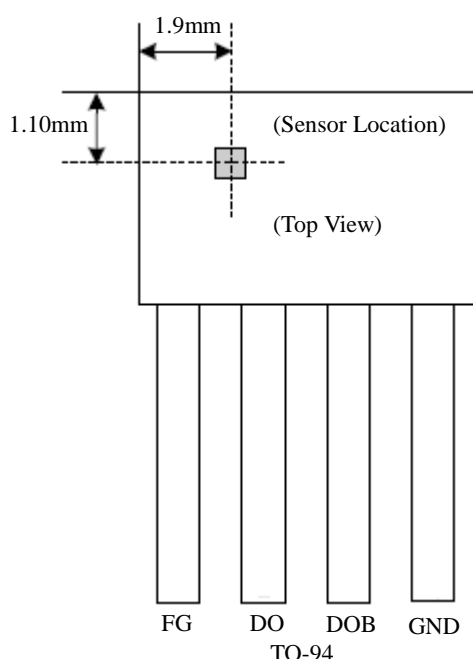
While the magnetic flux density (B) is larger than operate point (Bop), DO will turn on (low), and meanwhile DOB will turn off (high). Each output is latched until B is lower than release point (Brp), and then DO, DOB transfer each state. For DC fan application, sometimes need to test power reverse connection condition. Internal diode only protects chip-side but not for coil-side. If necessary, add one external diode to block the reverse current from coil-side.

#### ◆ FEATURES:

- On-chip Hall effect sensor with two different sensitivity and hysteresis settings
- Wide operating voltage range:4.0V~20V
- Output sink current up to 0.4A
- Built-in FG output
- -40°C to 85°C operating temperature
- Low Profile TO-94 Package( Green and Lead Free )

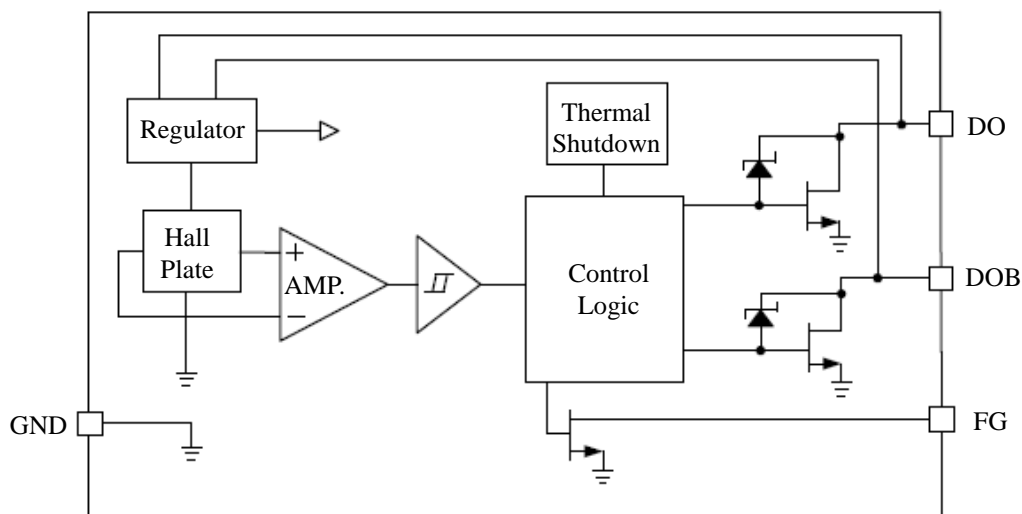
#### PIN ASSIGNMENT

The package of GH211 is TO-94 ; the pin assignment is given by:



Name	Description
FG	Rotation Speed Output
DO	Output1
DOB	Output2
GND	Ground.

## BLOCK DIAGRAM



## RDER/MARKING INFORMATION

Order Information	Top Marking
<p><b>G</b><b>H</b><b>2</b><b>1</b><b>1</b><b>X</b><b>X</b><b>X</b></p> <p>Package Type P3: TO-94</p> <p>Packing Blank: Bag A: Taping</p>	<p><b>2</b> <b>1</b> <b>1</b> —→ Part number</p> <p><b>YY</b> <b>WW</b> <b>X</b> —→ ID Code: internal</p> <p>—→ WW: 01~52</p> <p>—→ Year: 17=2017</p>

### ABSOLUTE MAXIMUM RATINGS (at T<sub>A</sub>=25°C)

Characteristics		Symbol	Rating	Unit
DO/DOB Clamping Voltage		$V_{DO/DOB}$	30	V
FG OFF Voltage		$V_{FG}$	24	V
Reverse Current		$I_R$	100	mA
Magnetic Flux Density		B	Unlimited	Gauss
Output Current	Continuous	$I_O$	400	mA
	Hold		500	
	Peak(start up)		700	
Power Dissipation		$P_D$	550	mW
Storage Temperature Range		$T_{STG}$	-65to+150	°C
Thermal Resistance from Junction to case		$\theta_{JC}$	49	°C/W
Thermal Resistance from Junction to ambient		$\theta_{JA}$	227	°C/W
Ambient Temperature		$T_A$	-40 to 85	°C

### ELECTRICAL CHARACTERISTICS

( $V_{DD} = 12V$ ,  $T_A = 25^\circ C$ , unless otherwise noted.)

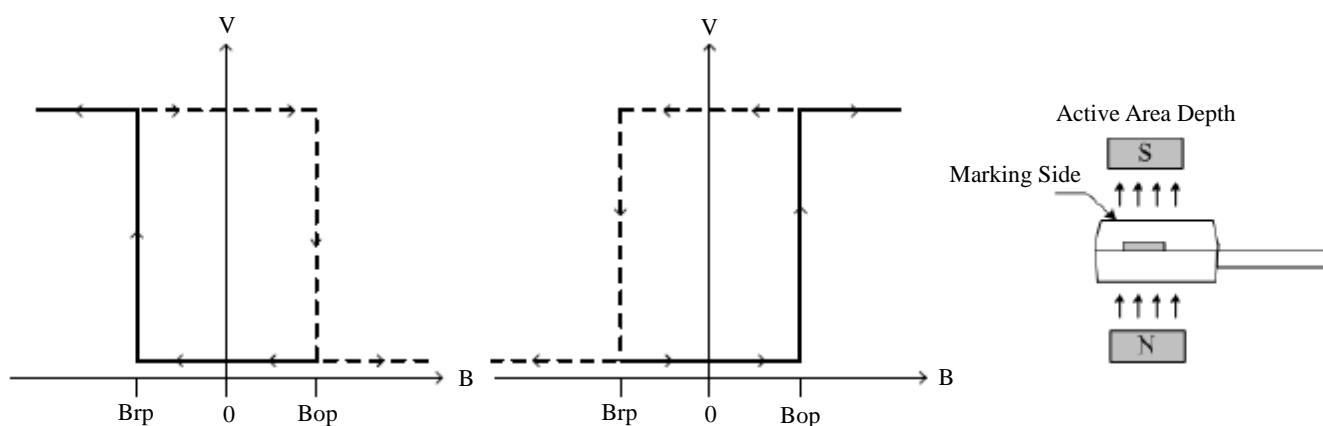
Characteristics	Symbol	Conditions	Min	Typ	Max	Units
Supply Voltage	$V_{DD}$	Operating	4	-	20	V
Supply current	$I_{DD}$	Operating	-	3.5	5	mA
Output Leakage Current	$I_{OFF}$	$V_{OUT}=12V$	-	<0.1	10	$\mu A$
Output On resistance	$R_{DS(ON)}$	$I_{OUT}=300mA$	-	1.4	-	$\Omega$
Output Clamping Voltage	$V_Z$	DO, DOB	-	32	-	V
FG OFF Leakage Current			-	-	1	$\mu A$
FG ON Saturation Voltage $V_{ON}$		10mA	-		0.5	V
Thermal shutdown Temp	$T_{SD}$		150	-	-	$^\circ C$
Thermal Shutdown Hysteresis	$T_{SH}$		-	30	-	$^\circ C$
Magnetic					(1mT=10 Gauss)	
Operate Point	$B_{OP}$		5	28	50	Gauss
Release Point	$B_{RP}$		-50	-28	-5	Gauss
Hysteresis	$B_{HYS}$		-	56	-	Gauss

### Driver output vs. magnetic pole

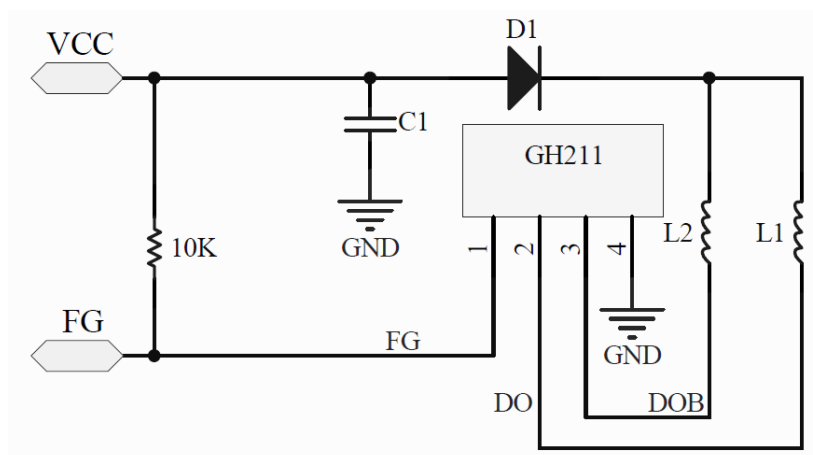
Characteristics	Test Conditions	DO	DOB
North pole	$B < B_{rp}$	High	Low
South pole	$B > B_{op}$	Low	High

Note: The magnetic pole is applied facing the branded side of the package

### Package Sensor Location



## APPLICATION CIRCUIT<sup>°C</sup>



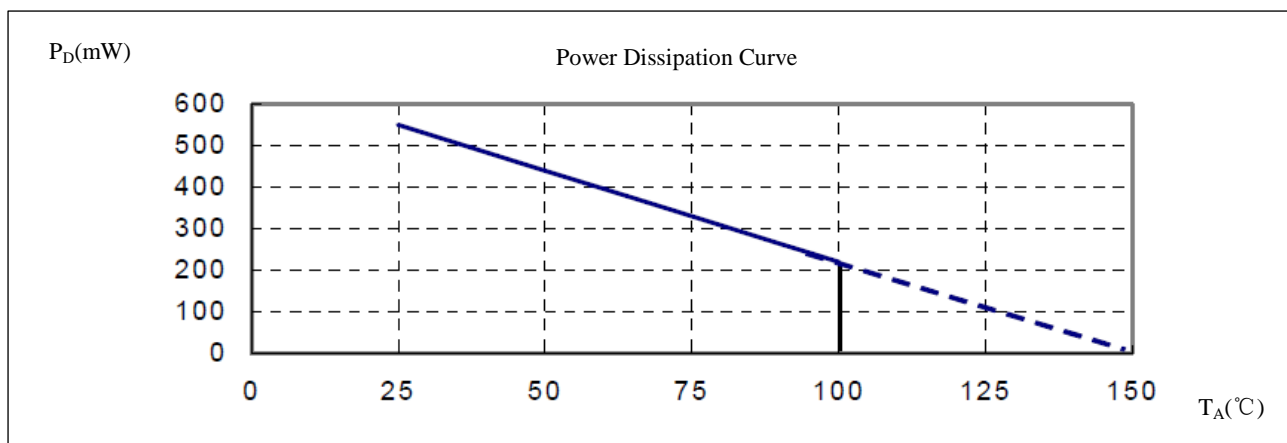
## 12V Brush-Less DC Fan

**Note1:** C1 (Optional) is for power stabilization, Recommended E-Cap 1uF/50V

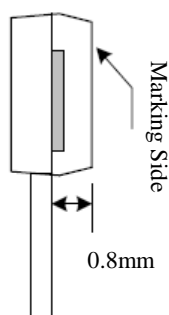
**Note2:** D1 (Optional) is a reverse protect diode.

## PERFORMANCE CHARACTERISTICS

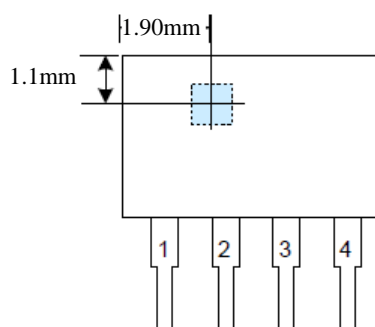
T <sub>A</sub> (°C)	25	50	60	70	80	85	90	95	100
P <sub>D</sub> (mW)	550	440	396	352	308	286	264	242	220
T <sub>A</sub> (°C)	105	110	115	120	125	130	135	140	150
P <sub>D</sub> (mW)	198	176	154	132	110	88	66	44	0



### Active Area Depth



### Package Sensor Location



### PACKAGE OUTLINES

