

### ◆ Product Description

GH4212 is a 24V/350mA single coil brushless DC motor driver IC with locked rotor and self recovery functions. It adopts advanced high-voltage BCD technology and can meet various applications of single coil fans, water pumps, and motors. Adopting a single-chip solution: an internally integrated high sensitivity Hall sensor with a current drive module simplifies the overall PCB peripheral design and is better suited for manufacturing miniaturized fans and motors control board applications.

GH4212 is integrated with a locked rotor protection function, which can effectively prevent damage caused by IC overheating and long-term rotor locking. In addition, it also has a built-in power reverse protection function, which protects the chip from damage when the power is reversed. At the same time, it has overheat protection to ensure that the motor driver will not be damaged at high temperatures.

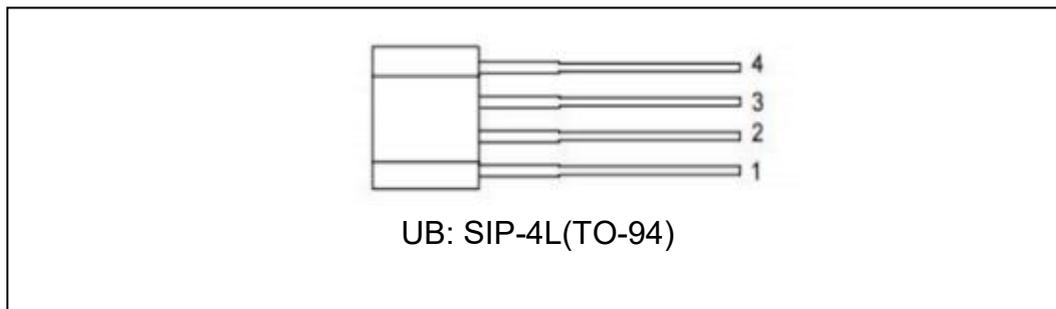
The output driver stage adopts a full bridge structure to achieve low noise and high efficiency. GH4212 adopts TO-94 (SIP-4L) and SOT23-6 packages for different applications on end user sides.

### ◆ Features

- Full bridge drive output
- Built in Hall sensor and current drive circuit
- Working voltage: 3.0~28V
- Maximum continuous output current: 24V/350mA
- High sensitivity: BOP +25GS, BRP -25GS
- Integrated with locked rotor and self recovery function
- Reverse power protection
- Overheating protection
- No additional capacitor is needed when the power supply is clean

### ◆ Application

- Single coil BLDC fans and motors
- Low pressure/low-power water pump



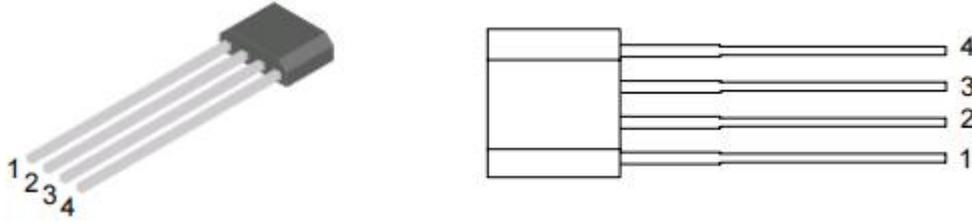
### ◆ Ordering Information

Product Model	Temperature	Package	Voltage	Packing type	Packing Qty
GH4212EUB	E	UB	3-28V	Bulk	1000 pcs /bag

**Note:**

- (1) E represents a working temperature range of -40 °C~105 °C;
- (2) UB represents the packaging form SIP-4L (TO-94)

### ◆ Pin Description



Pin	Name	Function
1	VCC	Supply Voltage
2	OUT1	Output 1
3	OUT2	Output 2
4	GND	Ground

### ◆ Functional Block Diagram

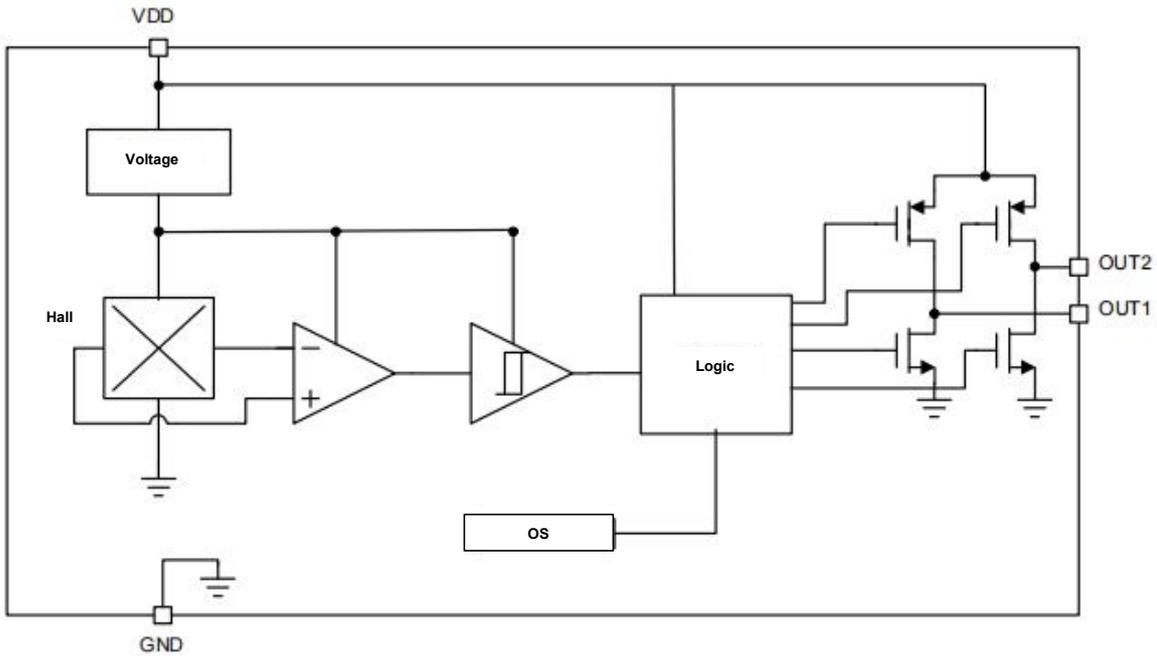


Figure 1. Function Block Diagram

### ◆ Absolute Maximum Ratings

Parameter	Symbol	Test Conditions	Rating	Unit
Supply Voltage	$V_{DD(CONT)}$		-30~30	V
Supply Current	$I_{DD(FAULT)}$		4	mA
Continuous Output Current	$I_{OUT(CONT)}$		350	mA
Hold Output Current	$I_{OUT(HOLD)}$		550	mA
Peak Output Current	$I_{OUT(PEAK)}$	$\leq 200\mu s$	1200	mA
Maximum Power Dissipation	$P_D$	TO-94(SIP-4L)	550	mW
Thermal Resistance (Junction to Ambient)	$\theta_{JA}$	TO-94(SIP-4L)	227	$^{\circ}C/W$
Thermal Resistance (Junction to Case)	$\theta_{JC}$	TO-94(SIP-4L)	49	$^{\circ}C/W$
Junction temperature	$T_J$		-40~150	$^{\circ}C$
Storage Temperature	$T_{STG}$		-55~160	$^{\circ}C$
Magnetic Flux Density			Unlimited	Gauss
IR-Reflow Lead Temperature	$T_P$	10s	260	$^{\circ}C$

Note:

Stresses greater than those listed under "Absolute Maximum Ratings" may cause permanent damage to the chip.

These are stress ratings only, and functional operation of the chip at these or any other conditions beyond those indicated above "Recommended Operating Conditions" is not implied. The chip is not guaranteed to function outside of its operating conditions.

### ◆ Recommended operating conditions

Parameter	Symbol	Min	Max	Unit
Power Supply	$V_{CC}$	3	28	V
Operation Temperature	$T_A$	-40	105	$^{\circ}C$

### ◆ Electrical Specifications

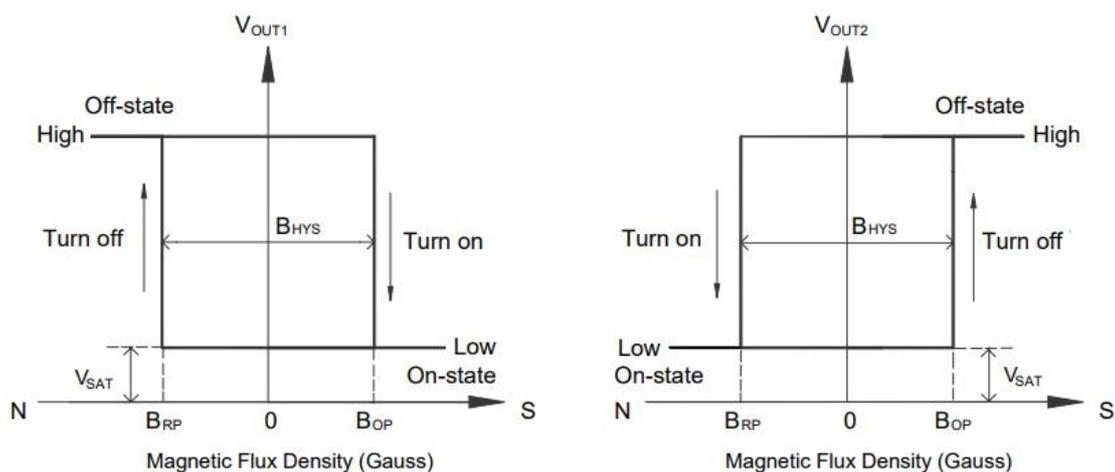
Typical values at  $T_A = +25^\circ\text{C}$ ,  $V_{DD} = 24\text{V}$ , unless otherwise specified.

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Supply Voltage	$V_{DD}$	Operating	3		28	V
Supply Current	$I_{DD}$	Operating		4	6	mA
Output Current	$I_{OUT}$				350	mA
Output On-Resistance	$R_{DSON}$	$T_A = 25^\circ\text{C}$ , $I_{OUT} = 300\text{mA}$		2.45		Ohm
Locked Protection On Time	$t_{ON}$			0.5		s
Locked Protection Off Time	$t_{OFF}$			3		s
Thermal Shutdown Temperature	$T_{SD}$			150		$^\circ\text{C}$

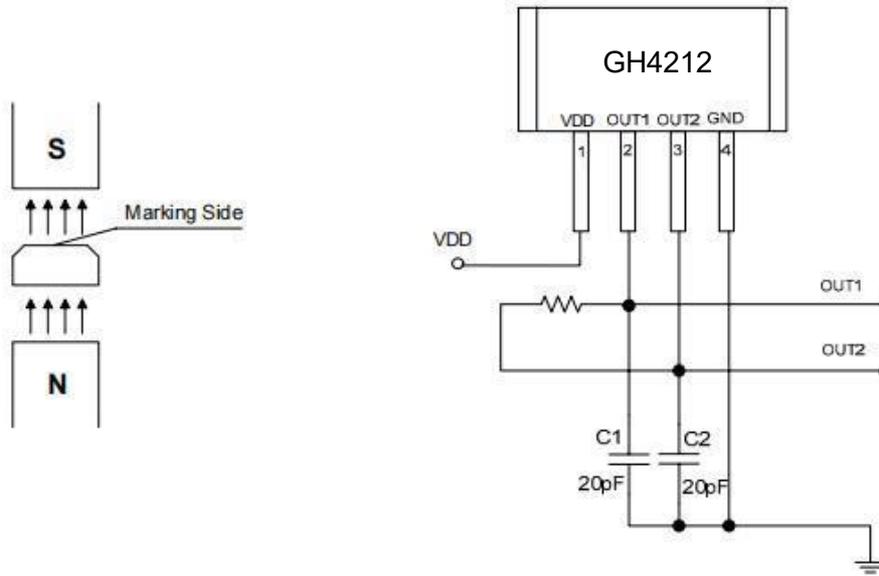
### ◆ Magnetic Specifications

Typical values at  $T_A = +25^\circ\text{C}$ ,  $V_{DD} = 24\text{V}$ , unless otherwise specified.

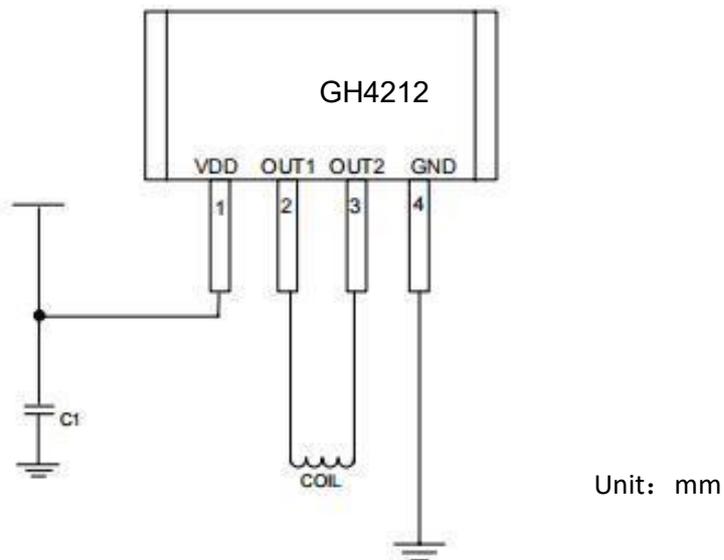
Parameter	Symbol	Min	Typ	Max	Unit
Operating Point	$B_{OP}$	-	25	-	Gauss
Releasing Point	$B_{RP}$	-	-25	-	Gauss
Hysteresis	$B_{HYS}$	-	50	-	Gauss



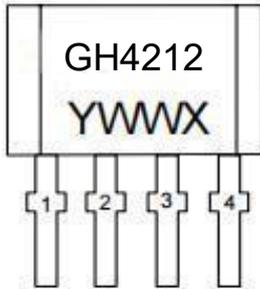
### ◆ Test Circuit



### ◆ Application Circuit



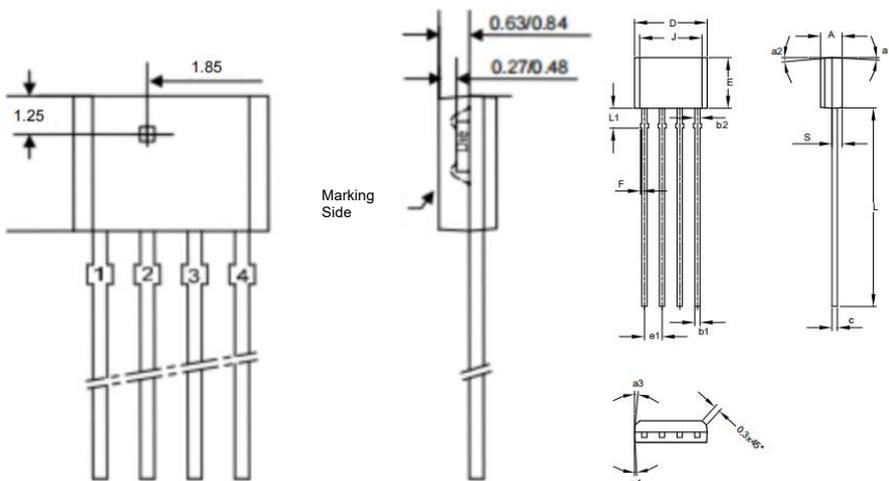
### ◆ Marking information



GH4212 Part No.  
 Y: Year, 0~9, ex: "7"=2017  
 WW: Nth Week, 01~52  
 X: Internal Code

### ◆ Package

SIP-4L(TO-94) Unit: mm



Size	Min	Max	Typ
A	1.45	1.65	1.55
b1	0.38	0.44	0.40
b2	-	-	0.48
C	0.35	0.45	0.40
D	5.12	5.32	5.22
e1	1.24	1.30	1.27
E	3.55	3.75	3.65
F	0.00	0.20	-
J	4.10	4.30	4.20
L	14.00	14.60	14.30
L1	1.32	1.52	1.42
S	0.63	0.83	0.73
a1	-	5°	3°
a2	4°	7°	5°
a3	10°	12°	11°
a4	5°	7°	6°

Unit: mm

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GoChip Microelectronics is a Chinese high-tech company, dedicating in the R&D, sales, and technical services of sensor chips. It was founded in 2010 and Headquarter in Shanghai, China. Now we have two R&D centers in both Shanghai and Hangzhou city, as well as marketing service networks throughout the country.

Taking the core concept of "Enhance oneself and Surpass expectations", and with more than a decade of persistent technological innovation and high-quality services, GoChip has gradually established a business mode with automotive electronics as the main track and continuously developing in the fields of new energy, industrial automation, consumer electronics. In automotive electronics, we are committed to providing customers with high-performance and reliable sensor chip solutions. Our products are widely used in automotive chassis control systems, engine power systems, and intelligent cabin electric systems. GoChip will continue to increase investment in technological R&D, actively explore the development and promotion of new products, and strive to make greater contributions to China Chip.

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