

◆ Product Description

Gh4112 is a 12V/350mA single coil brushless DC motor driver IC with locked rotor and self recovery functions. It has the advantages of wide operating voltage, protections for reverse connection and over temperature, making it particularly suitable for position detection and current drive applications of low-power brushless DC fans and various micro 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.

As integrated with a locked rotor protection function, Gh4112 can effectively prevent damage caused by IC overheating and long-term rotor locking. At the same time, it also has built-in thermal shutdown protection to ensure that the motor driver will not be damaged at high temperatures.

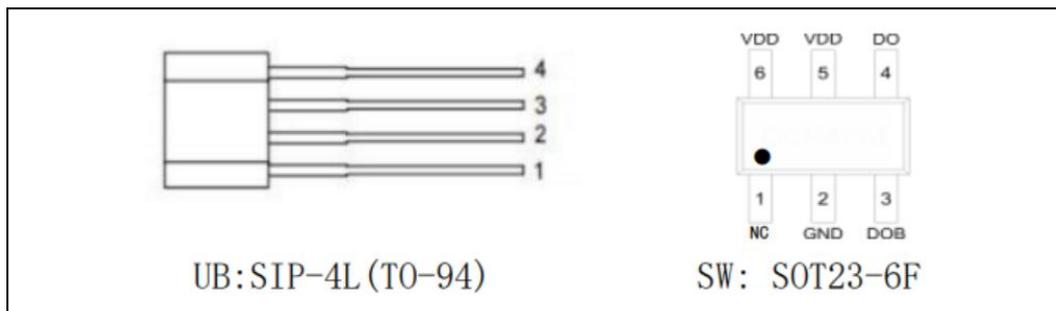
Gh4112 adopts TO-94 (SIP-4L) and SOT23-6 packages for different applications on end user sides.

◆ Features

- Full bridge drive output
- Working voltage: 3.0~18V
- Maximum continuous output current: 12V/350mA
- High sensitivity: BOP +25GS, BRP -25GS
- Integrated with locked rotor and self recovery
- Reverse power protection
- Overheating protection
- Built in Hall sensor and current drive circuit

◆ Application

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



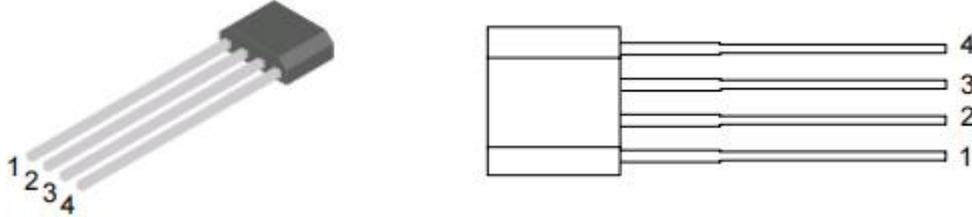
◆ Ordering Information

Product Model	Temperature	Package	Voltage	Packing type	Packing Qty
Gh4112EUB	E	UB	3-18V	Bulk	1000 pcs /bag
Gh4112ESX	E	SX	3-18V	Tape and Reel	3000 pcs /reel

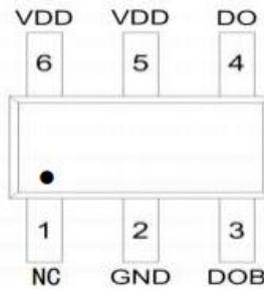
Note:

- (1) E represents a working temperature range of -40 °C~105 °C;
- (2) UB represents the package form SIP-4L (TO-94), SX for SOT23-6F package.

◆ Pin Description



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



Pin	Name	Function
1	NC	No connect
2	GND	Ground
3	DOB	Output 2
4	DO	Output 1
5	VDD	Supply Voltage
6	VDD	Supply Voltage

◆ Functional Block Diagram

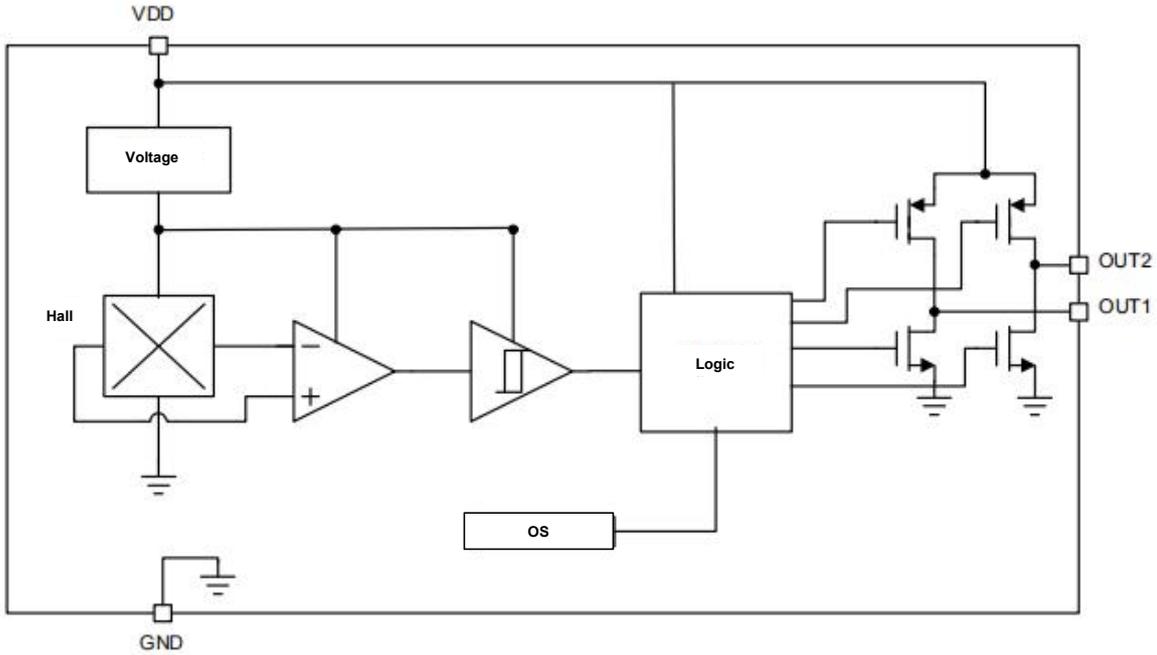


Figure 1. Function Block Diagram

◆ Absolute Maximum Ratings

Parameter	Symbol	Test Conditions	Rating	Unit
Supply Voltage	$V_{DD(CONT)}$		-20~20	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	$I_{OUT(PEAK)}$	$\leq 200\mu s$	700	mA
Maximum Power Dissipation	P_D	TO-94(SIP-4L)	550	mW
Thermal Resistance (Junction to Ambient)	θ_{JA}	TO-94(SIP-4L)	227	$^{\circ}C/W$
Thermal Resistance (Junction to Case)	θ_{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	$^{\circ}C$

12V/350mA Single Coil Hall-Effect Motor Driver

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	18	V
Operation Temperature	T_A	-40	105	°C

◆ Electrical Specifications

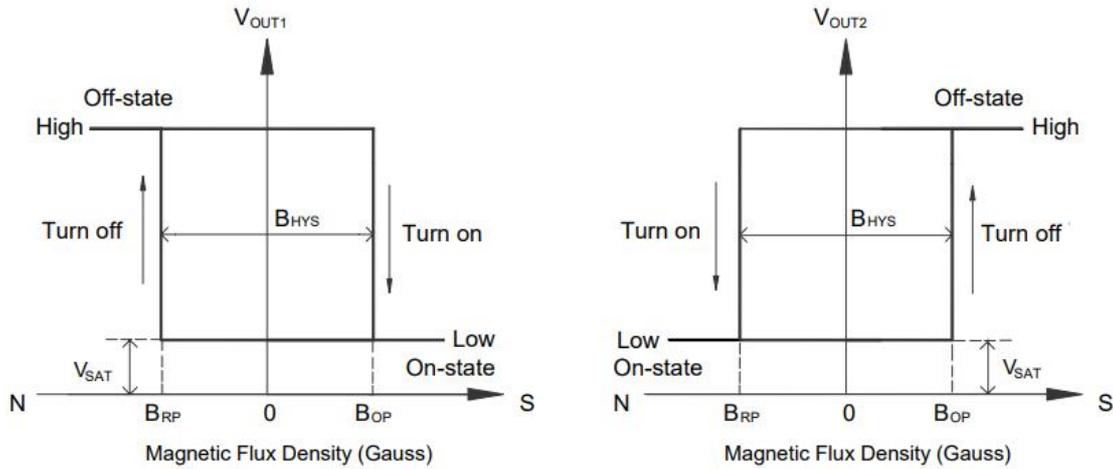
Typical values at $T_A = +25^\circ\text{C}$, $V_{DD} = 24\text{V}$, unless otherwise specified.

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Supply Voltage	V_{DD}	Operating	3		18	V
Supply Current	I_{DD}	Operating		5.5	6	mA
Output Current	I_{OUT}				350	mA
Output On-Resistance	$R_{DS(ON)}$	$T_A = 25^\circ\text{C}$, $I_{OUT} = 300\text{mA}$		2.3		Ohm
Thermal Shutdown Temperature	T_{SD}			150		°C

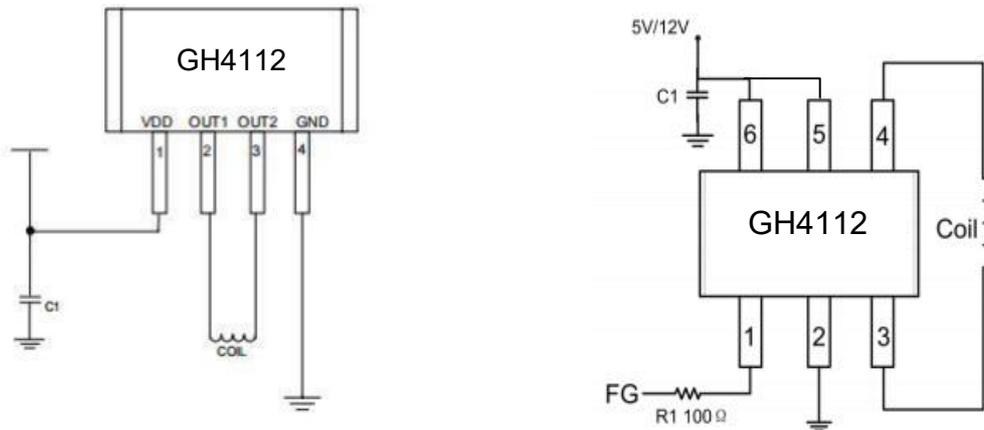
◆ Magnetic Specifications

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



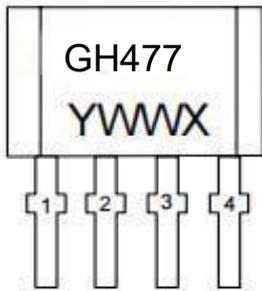
◆ Application Circuit



Note:

1. C1 is a bypass capacitor that can effectively absorb high-voltage pulses from the power supply and the reverse electromotive force generated by the coil during fan operation. To protect the cleanliness of the power supply, it is recommended that $C1=2.2-4.7 \mu F$.
2. If the application requires external PWM to speed the power supply, this product only supports use in low-frequency environments.

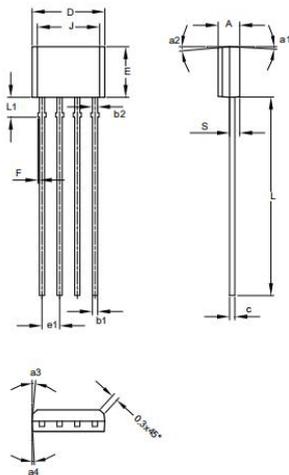
◆ Marking information



GH477: Part No.
 Y: Year, 0~9, ex: "7"=2017
 WW: Nth Week, 01~52
 X: Internal Code

◆ Package

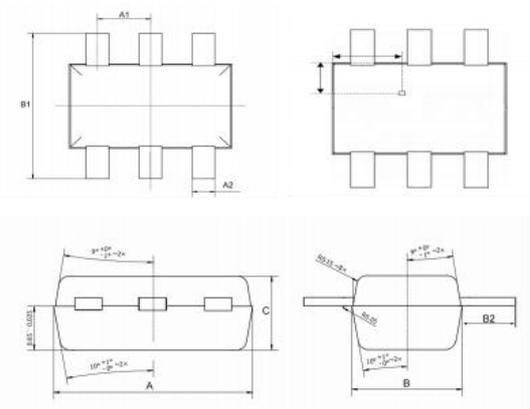
SIP-4L(TO-94) Unit: mm



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

SOT23-6F



COMMON DIMENSIONS UNITS MEASURE-MILLIMETER			
SYMBOL	MIN	NOM	MAX
A	2.82	2.92	3.02
A1	0.90	0.95	1.0
A2	0.35	0.4	0.45
B	1.52	1.62	1.72
B1	4.05	4.10	4.15
B2	1.20	1.25	1.30
C	1.05	1.10	1.15
C1	0.60	0.65	0.70

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◆ About GoChip

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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