

◆ General Description

The GH220X high sensitivity latching digital hall-effect sensor IC is small, sensitive, and versatile device that are operated by the magnetic field from a permanent or an electromagnet. The magnetic switch point is factory-programmed at end-of-line for optimum, providing reliable and consistent magnetic switch points. It does not use chopper stabilization on Hall elements. Compared with chopper stabilized high-sensitivity Hall latch sensors, it provides clean output signals and faster latch response time. GH220X provides reverse polarity protection, stable output within the temperature range of -40~125 °C, and can accept any DC power supply voltage from 3V to 24V. For brushless DC motor manufacturers who require reliable and consistent performance of locking sensors to achieve more efficient and smaller designs, this chip can respond to low magnetic fields and provide consistent repeatability, while also providing faster response time to magnetic field changes, thereby improving motor efficiency.

◆ Features

- Operating voltage range: 3~24V
- Operating temperature: -40~+125°C
- Built-in reverse voltage capability
- Fast response time
- High sensitivity
- Built-In pull-up Resistor
- No chopper stabilization
- Robust design
- Excellent magnetic switch point consistency
- Excellent magnetic switch point temperature characteristics

◆ Applications

- Brushless DC motor direction
- Flow sensing in equipment
- Speed and RPM detection in motors and fans
- Tachometer counter pickup
- Robot control
- Power window lift and anti-pinch systems
- Motion stop detection

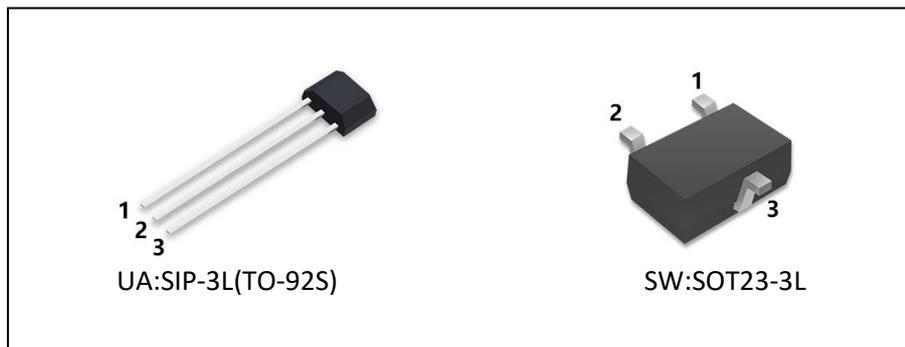


Figure 1. Package Type

◆ Ordering information

Product	Power Supply	Package	Temp	Packing	Quantity	Application
GH2201KUA	3-24V	TO-92S	-40~+125°C	Bulk	1000 pcs	Industrial
GH2201KSW	3-24V	SOT23-3L	-40~+125°C	Tape and Reel	3000 pcs	
GH2202KUA	3-24V	TO-92S	-40~+125°C	Bulk	1000 pcs	Automotive AEC Q100
GH2202KSW	3-24V	SOT23-3L	-40~+125°C	Tape and Reel	3000 pcs	

◆ Pin Configuration



Pin Number		Pin Name	Function
SIP-3L	SOT23-3L		
1	1	VCC	Power supply
2	3	GND	Ground
3	2	VOUT	Output

◆ Functional Block Diagram

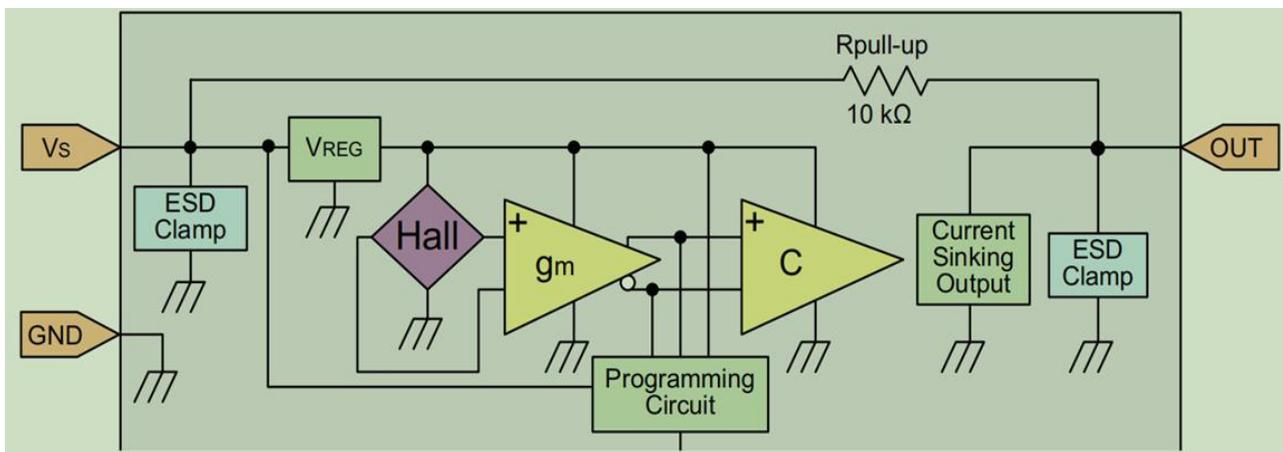


Figure 2. Block Diagram of GH220X

◆ Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Supply Voltage	V_{CC}	-32~+32	V
Output Off Voltage	V_{OUT}	-0.5~+32	V
Output Current	I_{OUT}	25	mA
Operation Temperature	T_A	-40~+125	°C
Storage Temperature	T_{ST}	-40~+165	°C
Flux	B	unlimit	Guass

Note:

- 1) If any one of the maximum ratings is exceeded, the device may be damaged.
- 2) The maximum power supply voltage that can work normally must be adjusted according to the constraints of junction temperature and power consumption.

◆ Electrical Characteristics

$V_{CC}=12V$, $T_A=25^\circ C$, unless otherwise specified.

Parameter	Symbol	Condition	Min	Type	Max	Unit
Supply Voltage	V_{CC}	Operating	3.0	--	24	V
Supply Current	I_{CC}	$V_{CC}=3V; T_A=25^\circ C$	--	3.5	6.0	mA
Output Current	I_{OUT}	-	--	--	20	mA
Output On Voltage	V_{SAT}	$I_{OUT}=15mA, B>55$	--	--	0.6	V
Output Leakage Current	I_{OL}	Guass < -55	--	--	10	uA
Output Fall/Up Time	t_f/t_r	$T_A=25^\circ C$	--	--	1.5	us

◆ Magnetic Characteristics

The magnetic switch point is programmable from $\pm 20GS \sim \pm 30GS$. ($V_S=12V$, $T_A=25^\circ C$)

GH2201KUA/ GH2202KUA

Parameter	Symbol	Condition	Min	Type	Max	Unit
Operate Point	BOP	$V_{CC}=12V, T_A=25^\circ C$	5	30	55	GS
Release Point	BRP	$V_{CC}=12V, T_A=25^\circ C$	-55	-30	-5	GS
Hysteresis	BHYS	$V_{CC}=12V, T_A=25^\circ C$	40	60	80	GS

GH2201KSW / GH2202KSW

Parameter	Symbol	Condition	Min	Type	Max	Unit
Operate Point	BOP	$V_{CC}=12V, T_A=25^\circ C$	-55	-30	-5	GS
Release Point	BRP	$V_{CC}=12V, T_A=25^\circ C$	5	30	55	GS
Hysteresis	BHYS	$V_{CC}=12V, T_A=25^\circ C$	40	60	80	GS

◆ Functional Description

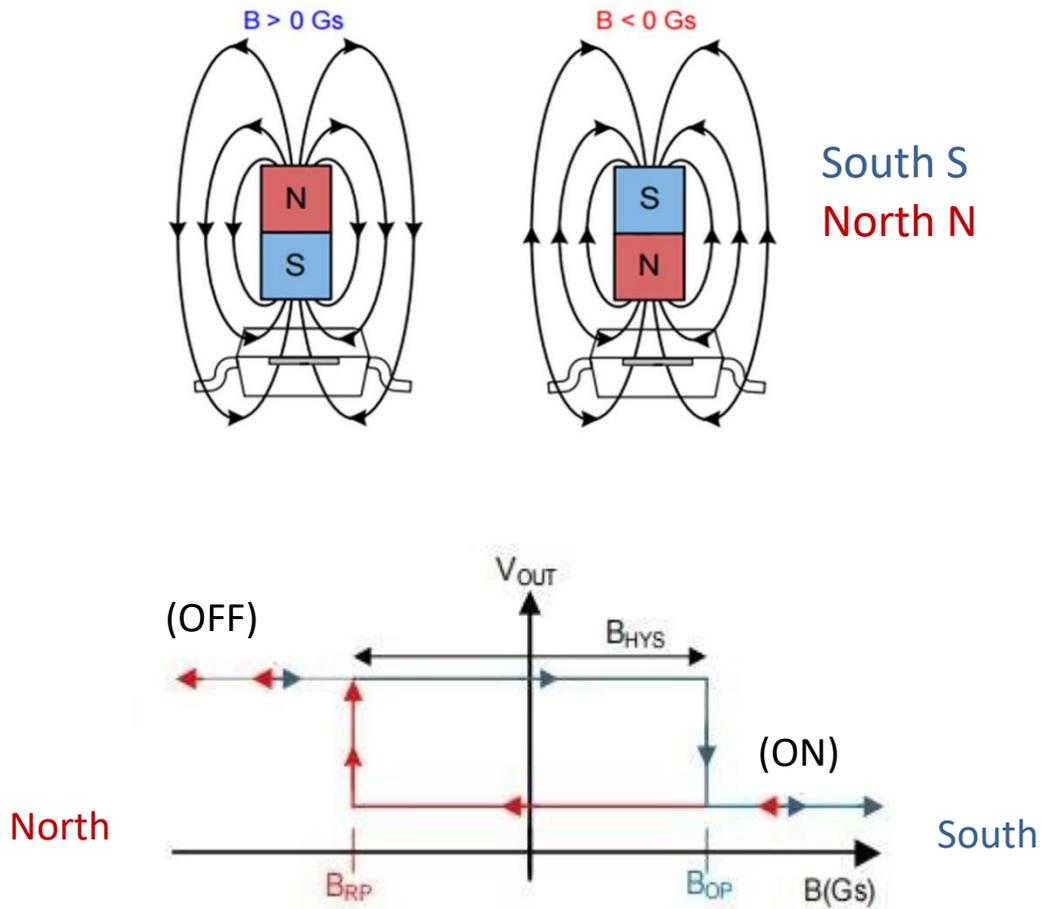


Figure 3. Output characteristics

Note:

Above picture shows the definition of magnetic field for SOT23-3L, the effective output is low.
 As for SIP-3L(TO-92S), the output exactly the opposite.

◆ Typical Application

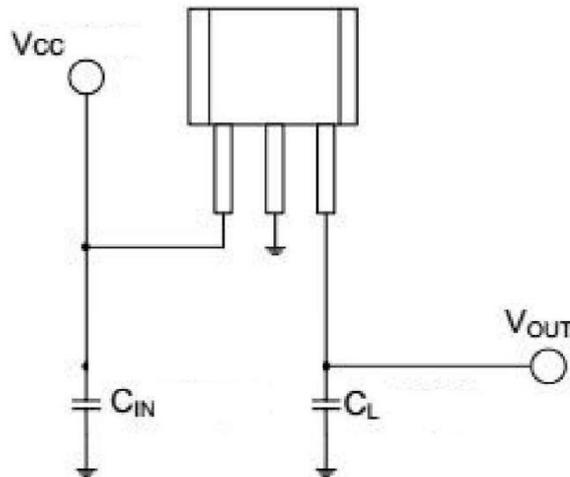
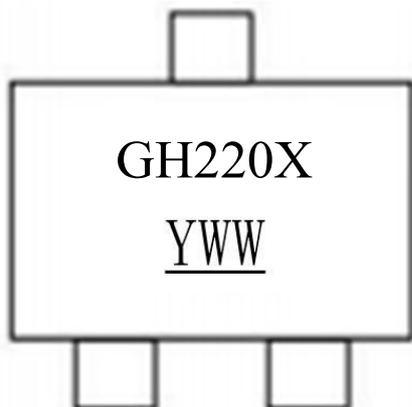


Figure 4. Application of GH2201

Note:

CIN is used to stabilize external power supply; RL is the pull-up resistance necessary for open collector output; CL is used to filter out the output noise. This capacitor will affect the rise time of the waveform.

◆ Marking Information



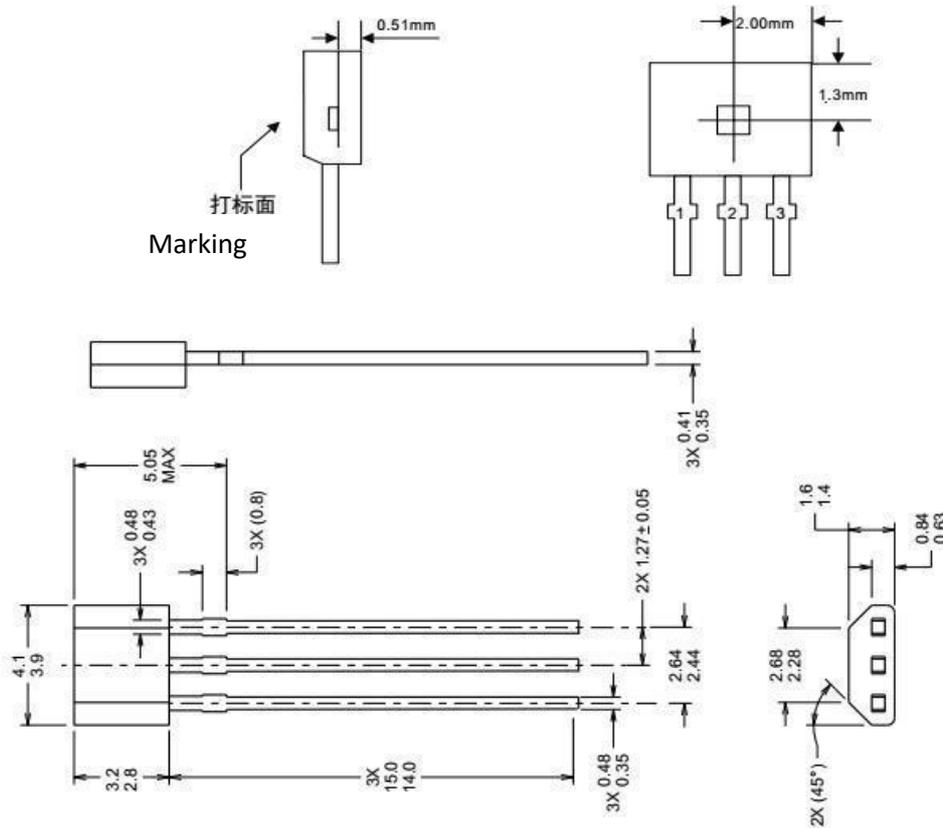
GH220X: product models, GH2201/2202

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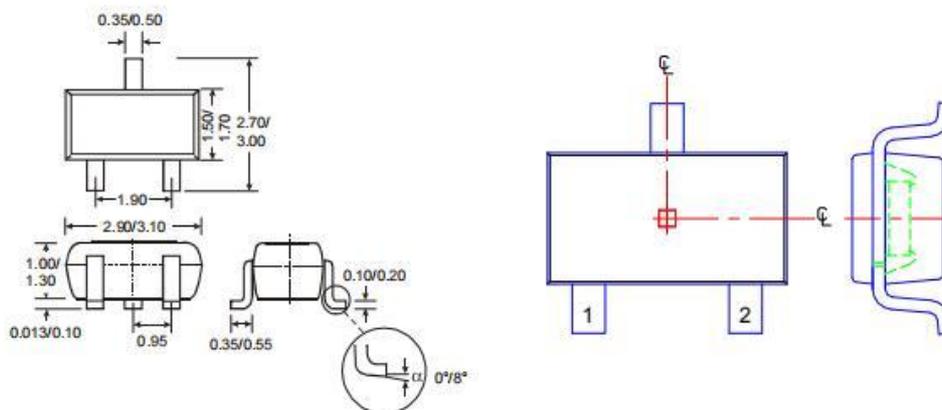
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◆ Package Information

(1) SIP-3L(TO-92S)



(2) SOT23-3L



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