

Hall Effect Position Sensor

◆ General Description

The SL1881 is a Hall-effect latch designed in CMOS technology. It is a magnetic sensor integrated circuit composed of voltage regulator unit, Hall sensor with dynamic offset cancellation system, Schmitt trigger and an open-drain output driver. The input signal is the magnetic induction intensity, and the output is switching type digital voltage signal. The SL1881 is suitable for working with rectangular or cylindrical magnets. The output tube of the sensor will be turned off and the output will be high when there is no magnetic. While the magnetic is larger than the operating point (BOP), the output switch tube will open and the output will be low; while the magnetic is lower than the release point (BRP), the output switch tube will be turned off and the output will be high.

◆ Features

- CMOS technology
- Operating voltage range from 3.2V to 24V
- Operating temperature range from -40~125°C
- Open drain output
- Maximum output current: 25mA
- SIP-3L/TO-92S, SOT23-3L and thin SOT23-3L package

◆ Applications

- Brushless DC motor
- Speed detection
- Position detection
- Contactless switch
- Safety alarm device
- Isolation detection

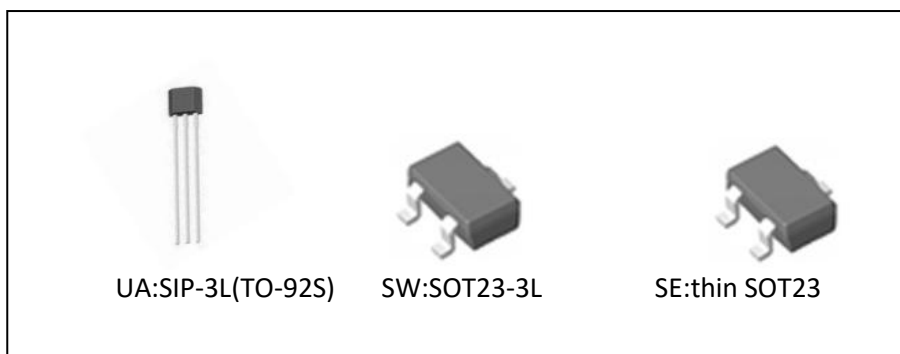


Figure 1 .Package Type of GH1881

◆ Ordering information

Product	Package	Packing Type	Quantity
SL1881KUA	K(note1)	Bulk	1000pcs
SL1881KSW	K	Tape and reel	3000pcs
SL1881KSE	K	Tape and reel	3000pcs

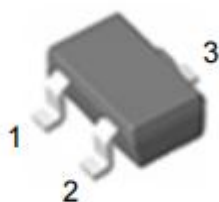
Note:(1)K indicates the operating temperature range is -40~125°C;(2)UA indicates the package is SIP-3L/TO-92S;(3)SW indicates the package is SOT23-3L(4)SE indicates the package is thin SOT23

◆ Pin Configuration

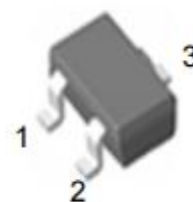
UA:SIP-3L(TO-92S)



SW:SOT23-3L



SE:thin SOT23



Pin Number		Pin Name	Function
SIP-3L/TO-92S	SOT23-3L/thin SOT23		
1	1	VCC	Power supply
2	3	GND	Ground
3	2	OUT	Open drain output ,requires an pull-up resistor

◆ Functional Block Diagram

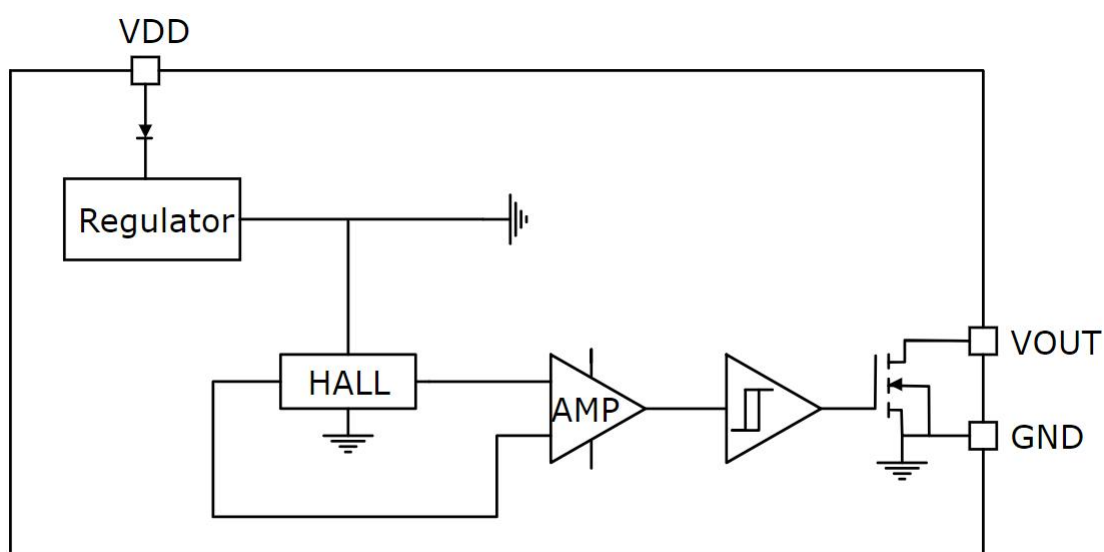


Figure 2. Block Diagram of SL1881

◆ Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Supply Voltage	V_{CC}	-0.3~+28	V
Flux	B	unlimit	Guass
Output Off Voltage	V_{OUT}	32	V
Output Current	I_{OUTL}	25	mA
Power consumption	P_D	450	mW
Operating Temperature	T_O	-40~+125	°C
Storage Temperature	T_J	+125	°C
Junction Temperature	T_S	-65~+160	°C

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

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

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Supply Voltage	V_{CC}	Operating	3.2	12	24	V
Supply Current	I_{DD}	Turn off	--	2.0	5.0	mA
Output On Voltage	V_{OUTL}	$I_{OUT}=20mA$, $B>BOP$	--	200	500	mV
Output Leakage Current	I_{OFF}	$V_{OUT}=24V$, $B<BRP$	--	<0.1	10	uA
Output Up Time	t_r	$R_L = 820\Omega$, $C_L = 20pF$	--	0.1	0.5	us
Output Fall Time	t_f	$R_L = 820\Omega$, $C_L = 20pF$	--	0.15	0.5	us
Frequency	F_{SW}	$R_L = 820\Omega$, $C_L = 20pF$	--	10	--	KHz

◆ Magnetic Characteristics

($V_S=12V$, $T_A=25^{\circ}C$)

GH1881KUA/GH1881KSE						
Parameter	Symbol	Condition	Min	Typ	Max	Unit
Operate Point	BOP	$V_{CC}=12V$, $T_A=25^{\circ}C$	5	25	50	GS
Release Point	BRP	$V_{CC}=12V$, $T_A=25^{\circ}C$	-50	-25	-5	GS
Hysteresis	BHYS	$V_{CC}=12V$, $T_A=25^{\circ}C$	30	50	60	GS

GH1881KSW						
Parameter	Symbol	Condition	Min	Typ	Max	Unit
Operate Point	BOP	$V_{CC}=12V$, $T_A=25^{\circ}C$	-50	-25	-5	GS
Release Point	BRP	$V_{CC}=12V$, $T_A=25^{\circ}C$	5	25	50	GS
Hysteresis	BHYS	$V_{CC}=12V$, $T_A=25^{\circ}C$	30	50	60	GS

◆ **Functional Description**

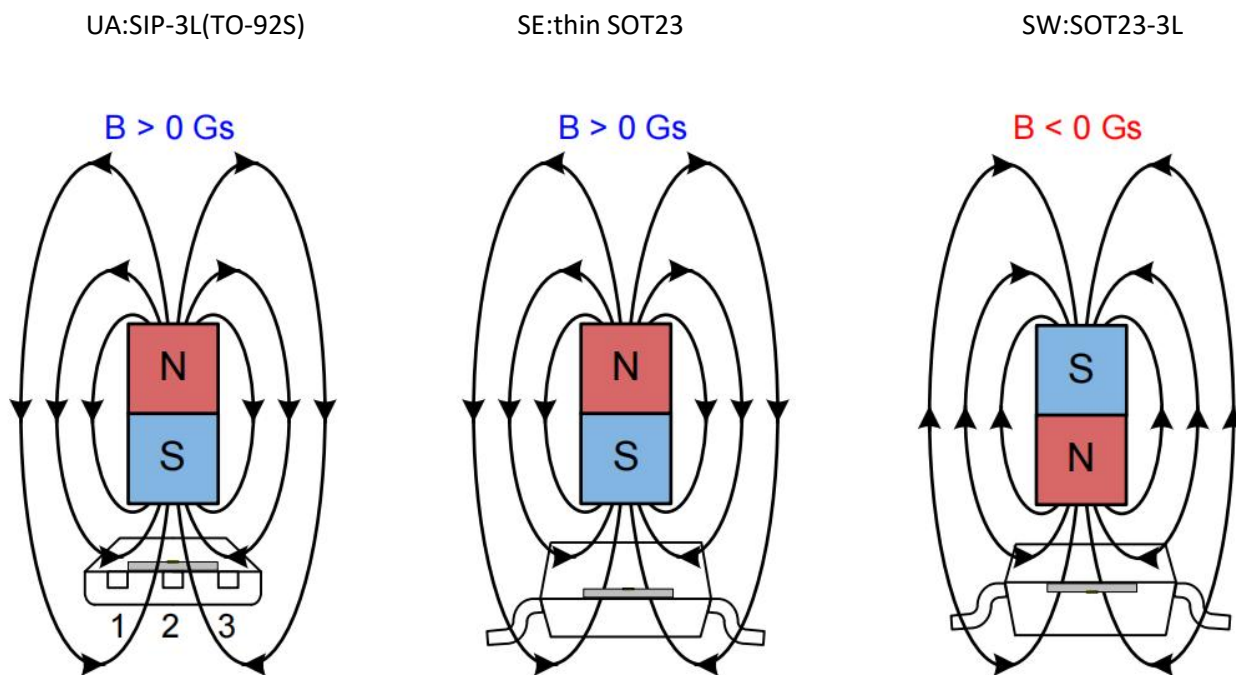


Figure 3. Definition of magnetic field induction direction

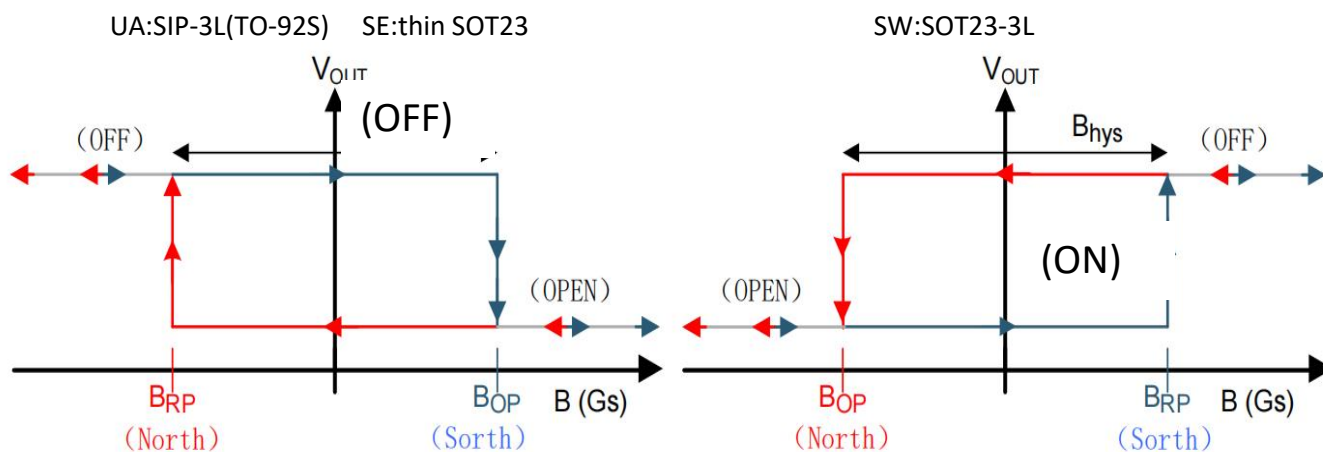


Figure 4. Output characteristics of SL1881

◆ **Typical Application**

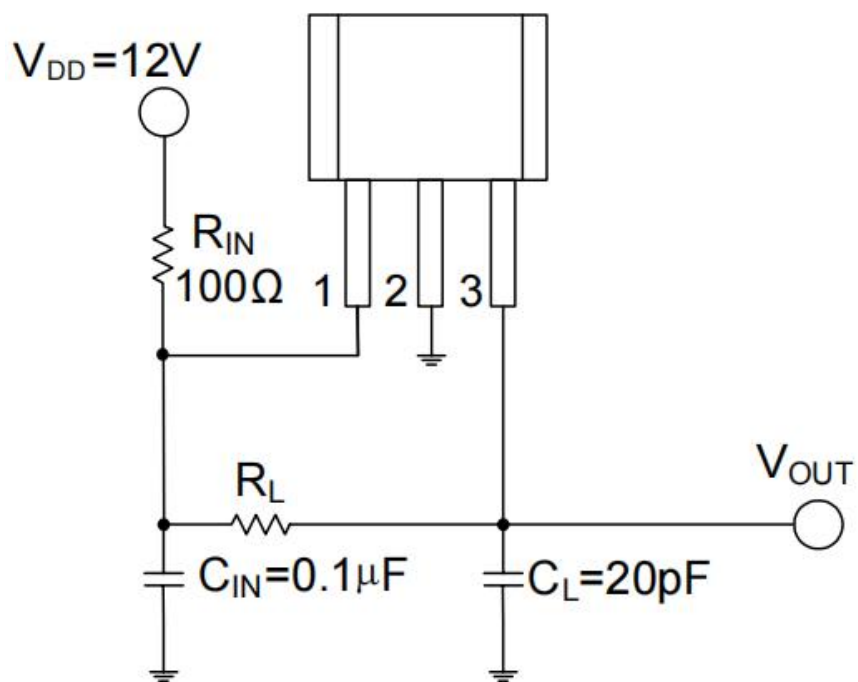


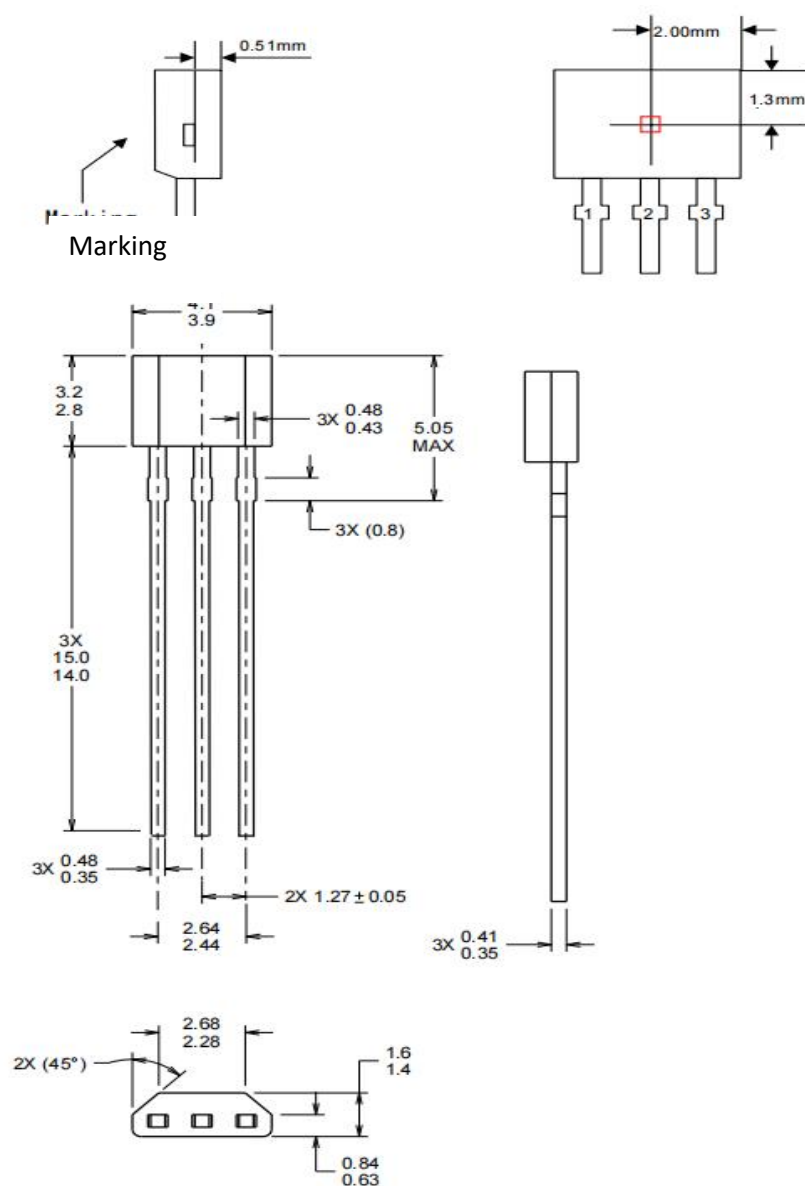
Figure 5. Application of SL1881

Note: R_{IN} and C_{IN} are used to stabilize the external power supply voltage; R_L is the pull-up resistance necessary for open collector output, and the value range from 820Ω to 100kΩ; C_L is used to filter out the output noise. This capacitor will affect the rise time of the waveform.

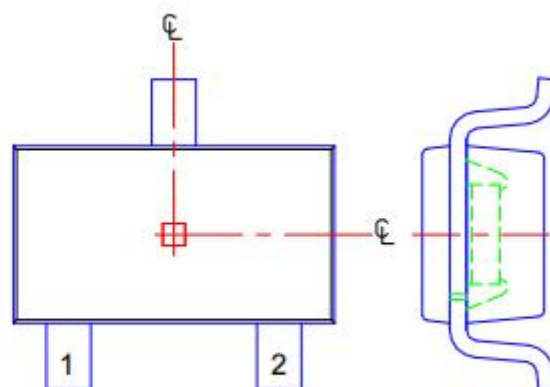
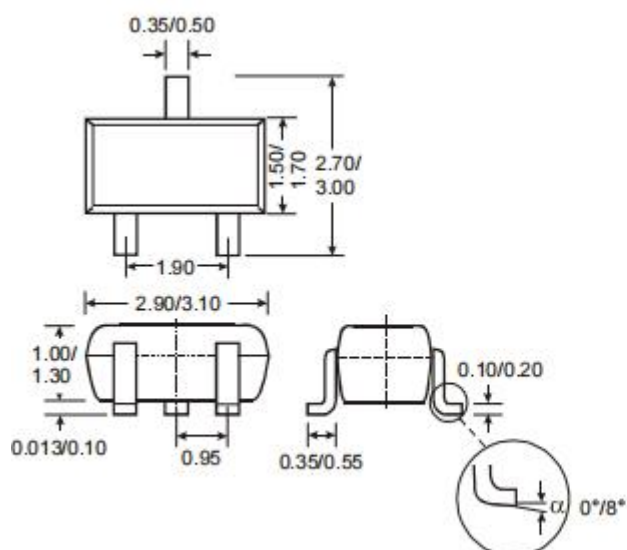
(SOT23-3L,thin SOT23)

◆ Package Information

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



(2)SOT23-3L



(3) thin SOT23

