GH2101

Bipolar Hall Effect Position Sensor

◆ General Description

GH2101 is a Bipolar Hall-effect IC,designed in BiCMOS technology,consists of devices that feature fast power-on time and low-noise operation.The GH2101 offer superior stability and stress-resistance and include voltage regulator, Hall-voltage generator,small-signal amplifier, Schmitt trigger, and NMOS output transistor. While the magnetic flux density is larger than operate point(BOP),the output will be turned off(High) and the output is latched "off"state until the magnetic flux density is lower than release point(BRP),then turn on(Low). The GH2101 can operate in the Voltage range of 3~24V and the temperature range of -40~+150℃.

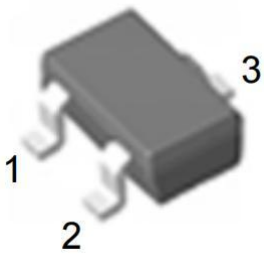
The small geometries of the BiCMOS process allow these devices to be provided in ultra small packages.The GH2101 is available in SOT23-3L.

◆ Features

- Operating voltage range: 3~24V
- Operating temperature range:40~+150℃
- Fast power-on time
- Low NOISE
- Reverse-battery protection
- Robust EMC performance
- Regulator stability without a bypass capacitor

◆ Applications

- Motion detector
- Automotive smart cockpit
- Industrial motor commutation
- Proximity detector
- Medical devices utilizing motors



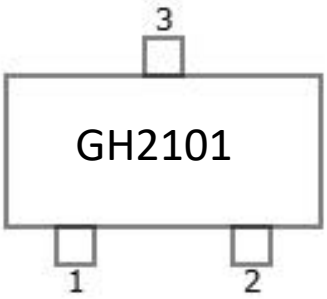
SW:SOT23-3L

Figure 1 .Package Type of GH2101

◆ Ordering information

Product	Package	Marking ID	Packing Type	Quantity
GH2101LSW	SOT23-3L	GH2101	Bulk	3000pic

◆ Pin Configuration



Pin	Pin Name	Function
1	VCC	Power supply
2	VOUT	Output
3	GND	Ground

◆ Functinal Block Diagram

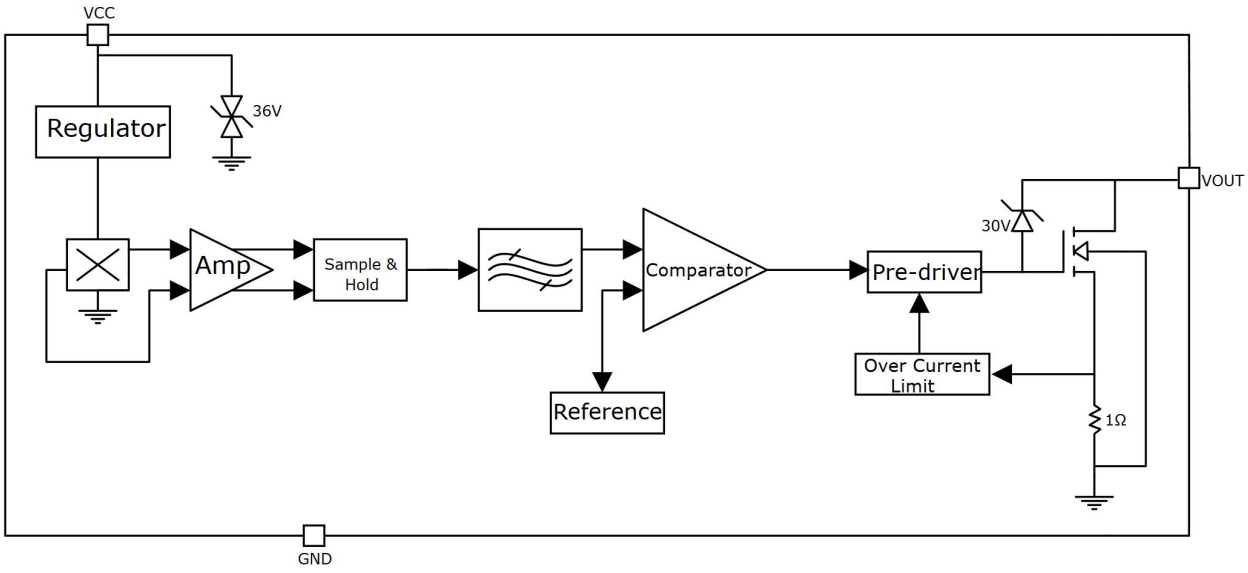


Figure 2 .Block Diagram of GH2101

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◆ Absolute Maximum Ratings

T_A =25°C (Note)

Parameter	Symbol	Value	Unit
Supply Voltage	V_{CC}	36	V
Reverse Supply Voltage	V_{RCC}	-36	V
Output Off Voltage	V_{OUT}	30	V
Reverse Output Voltage	V_{RCC}	-0.5	V
Output Current	$I_{OUTSINK}$	40	mA
Operation Temperature	T_A	-40~+150	℃
Junction Temperature	$Tj_{(max)}$	+165	℃
Storage Temperature	T_{ST}	-65~+170	℃

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°C, unless otherwise specified.

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Supply Voltage	V_{CC}	Operating	3	--	24	V
Output Leakage Current	I_{OUTOFF}	V_{OUT}=24V，B<BRP	--	--	10	uA
Output On Voltage	$V_{OUT(SAT)}$	I_{OUT}=20mA，B>BOP	--	160	400	mV
Supply Current	I_{CCON}	B>BOP	--	3.7	7.5	mA
	I_{CCOFF}	B<BRP	--	3.5	7.5	mA
Output Rise Time	t_r	VCC=12V,R_L=820Ω，C_{OUT}=12pF	--	--	1.7	us
Output Fall Time	t_f	VCC=12V,R_L=820Ω，C_{OUT}=12pF	--	--	400	us
Reverse Battery Current	I_{RCC}	V_{RCC}=-36V	--	--	-10	mA
Supply Zener Clamp Voltage	V_Z	I_{CC}=5mA,TA=25℃	36	--	--	V
Supply Zener Current	I_Z	V_Z=36V,TA=25℃	--	--	5	mA

◆ Magnetic Characteristics

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Operate Point	BOP	VCC=12V,TA=25℃	--	85	--	GS
Release Point	BRP	VCC=12V,TA=25℃	--	-85	--	GS
Hysteresis	BHYS	VCC=12V,TA=25℃	--	170	--	GS

◆ Functional Description

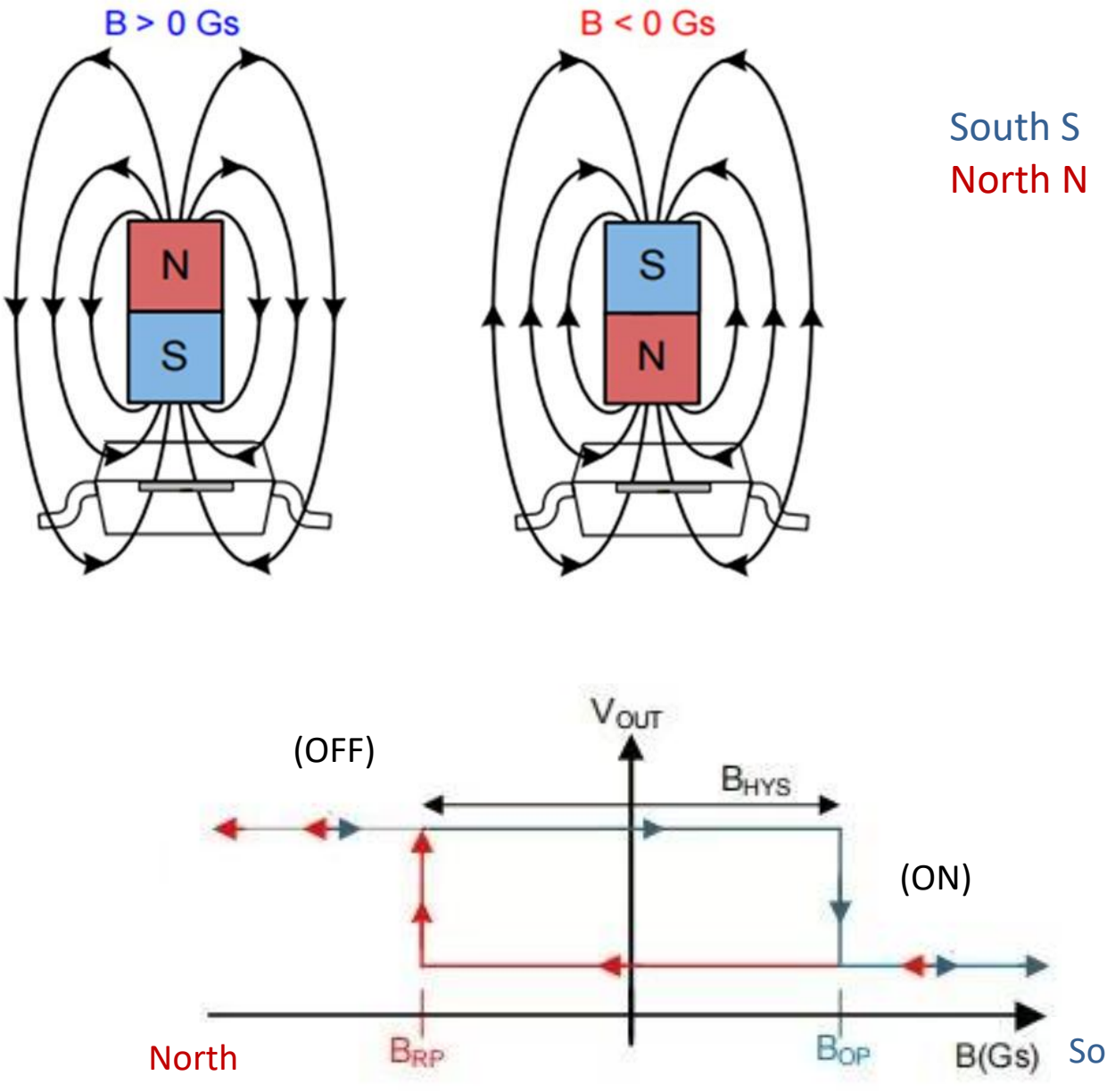
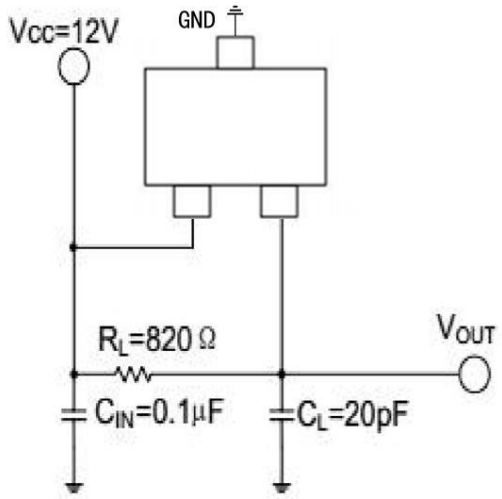


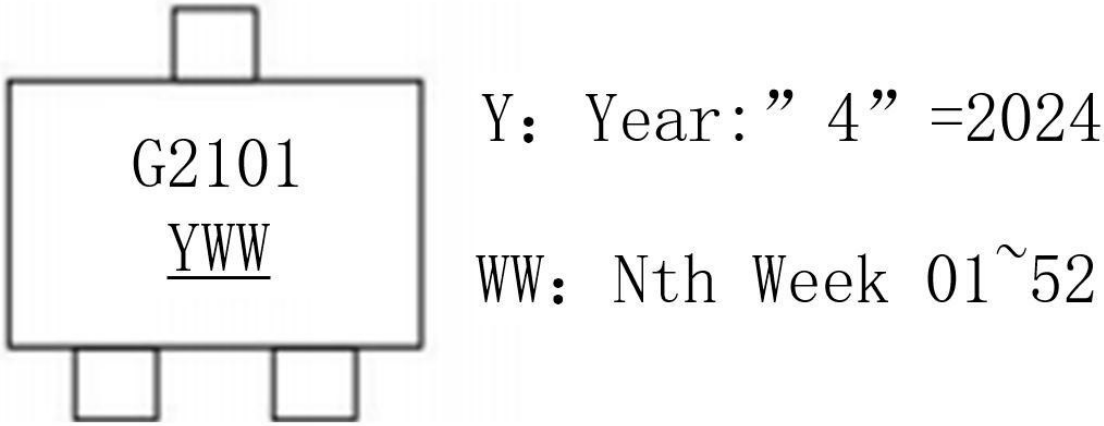
Figure 3 Output characteristics of GH2101

◆ Typical Application



Note:CIN is used to stabilize external power supply;RL is the pull-up resistance necessary for open collector output,depending on the current capacity required by the back-end input;CL is used yo filter out the output noise.This capacitor will affect the rise time of the waveform.

◆ Marking Information



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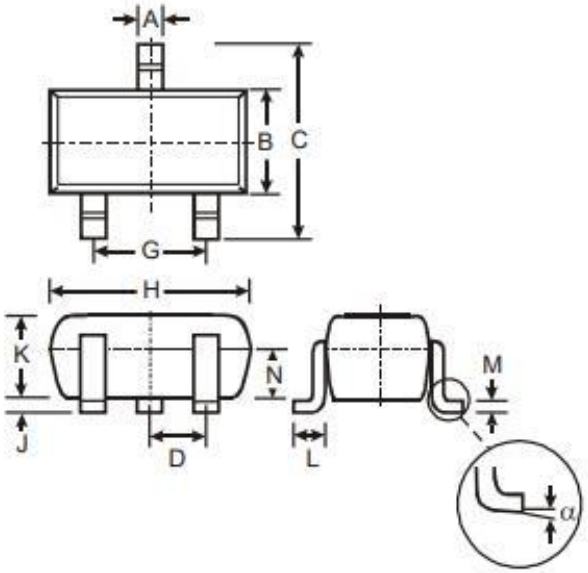
◆ Pacakge Information



Dim	Min	Max	Typ
A	0.35	0.50	0.38
B	1.50	1.70	1.60
C	2.70	3.00	2.80
D	-	-	0.95
G	-	-	1.90
H	2.90	3.10	3.00
J	0.013	0.10	0.05
K	1.00	1.30	1.10
L	0.35	0.55	0.40
M	0.10	0.20	0.15
N	0.70	0.80	0.75
α	0°	8°	-
All Dimensions in mm			

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