CC6101

Chopper Stabilized, High Precision Latch Hall Effect Switch

General Description

CC6101 (Latch Hall effect sensor IC) is fabricated from advanced BICMOS technology, which has extremely temperature-stable and stress-resistant performance, especially suited for operation over extended temperature ranges (up to 150°C). CC6101 use Dynamic Offset Cancellation and Crosschip patented temperature compensation technology, which reduces the residual offset voltage normally caused by package stress, temperature dependencies and thermal stresses, etc….. make product has extremely high consistent on Magnetic sensibility.

CC6101 includes a voltage regulator, a Hall-voltage generator, a small-signal amplifier, chopper stabilization, a Schmitt trigger, and a short-circuit protected open-drain(OD) output to sink up to 30 mA. A south polarity magnetic field of sufficient strength is required to turn the output on (CC6101TO). A north polarity field of sufficient strength is necessary to turn the output off (CC6101TO). Internal regulator permits operation with supply voltage in the range of 2.5~28V.

CC6101 is available in TO-92S and TSOT23-3 packages. The operating temperature range is from -40~150℃.

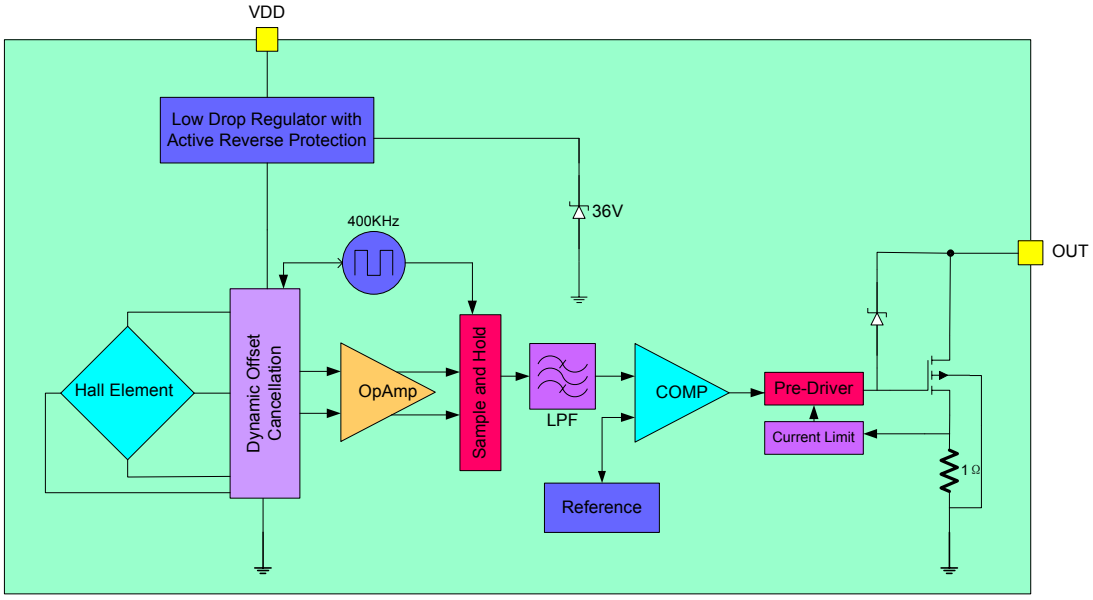
Features

- Symmetric Switch Point
- Operation Voltage Range: 2.5~28V
- VDD Over Voltage Protection 30V
- High Chopper stability with good consistent
- Reverse Supply Voltage Protection:-40V
- Superior Temperature Stability, higher to 150℃
- Output Short-circuit Protection (30mA)
- Small Package Size (TO-92S / TSOT23-3 package)
- Solid-state Reliability
- HBM ESD 4000V

Application

- BLDC Motor Commutation
- Speed Detection
- Linear Position Detection
- Angular Position Detection

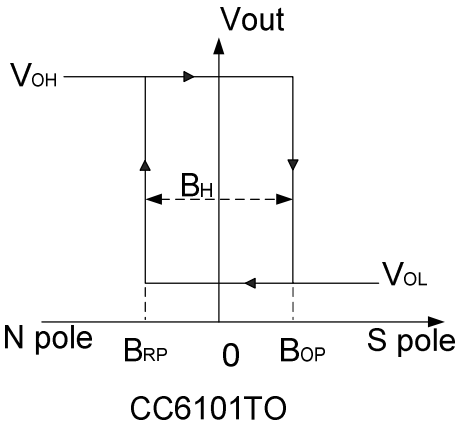
Function Block Diagram



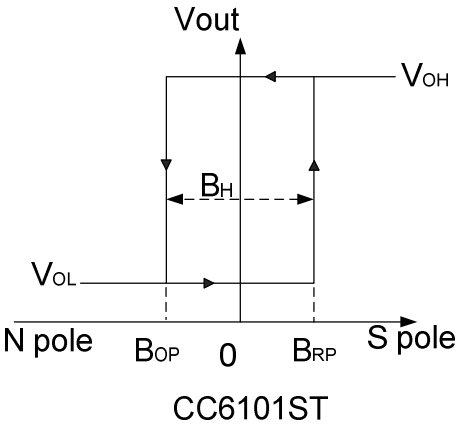
Ordering Information

Part No.	Packing Form	Package Code
CC6101TO	bulk，1000 pcs/bulk	TO (TO-92S)
CC6101ST	tape reel，3000 pcs/reel	ST (TSOT23-3)

Output vs. Magnetic Pole



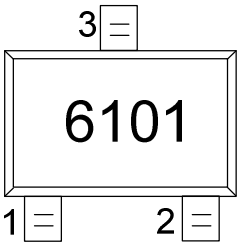
CC6101TO



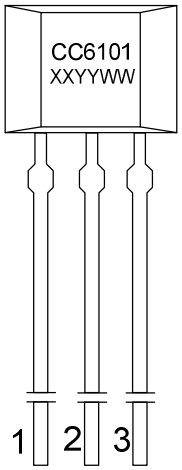
CC6101ST

Note: Magnetic field need to be settled to top marking direction

PIN Configurations



TSOT23-3



TO-92S

Pin Name	Number(TO-92S)	Number(TSOT23-3)	Function
VDD	1	1	Supply Voltage
GND	2	3	Ground
OUT	3	2	Output

Absolute Maximum Ratings

Parameter	symbol	value	unit
Supply Voltage	V_{DD}	30	V
Reverse Voltage	V_{RDD}	-40	V
Continuous Output Current	I_{OUT}	30	mA
Junction Temperature	T_J	150	°C
Storage Temperature	T_S	-50~160	°C
Operation Temperature	T_A	-40~150	
Magnetic Flux Density	B	Unlimited	Gauss
ESD Susceptibility	HBM	4000	V

Note: Exceeding the absolute maximum ratings may cause permanent damage. Exposure to absolute-maximum rated conditions for extended periods may degrade device reliability.

Electrical Parameters (V_{DD}=12V @ 25°C room temperature, unless specified otherwise)

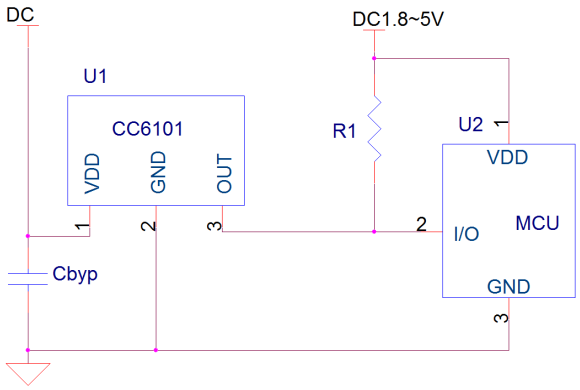
Parameter	Symbol	Condition	Min	Typ.	Max	Unit
Supply Voltage	V_{DD}	-	2.5	-	28	V
Supply Current	I_{DD}	25°C , V_{DD}=12V	-	2	-	mA
Output V_{SAT}（sink）	V_{SAT}	I_{OUT}=20mA	-	-	0.4	V
Output Current Limit	I_{LIM}	-	30	-	60	mA
Output Rise Time	tr	R_L=820Ω，C_L=20pF	-	0.2	-	us
Output Fall Time	tf	R_L=820Ω，C_L=20pF	-	0.1	-	us
Reverse Current	I_{RDD}	V_{DD}=-40V	-	-	-5	mA

Magnetic Specifications

Parameter	Symbol	Condition	Min	Typ.	Max	Unit
Operate Point	B_{OP}	25°C	15	30	45	Gauss
Release Point	B_{RP}	25°C	-45	-30	-15	Gauss
Hysteresis	B_{HYS}		50	60	70	Gauss

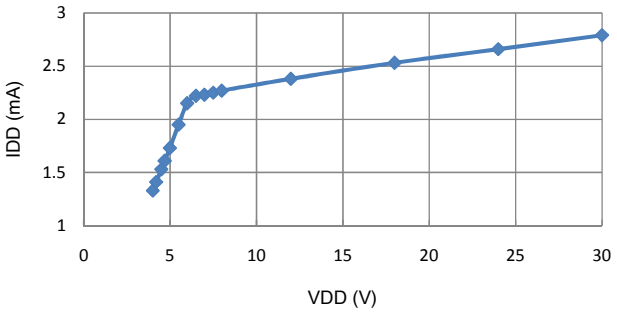
Note: 1mT=10Gauss=10Oe

Typical Application Circuit

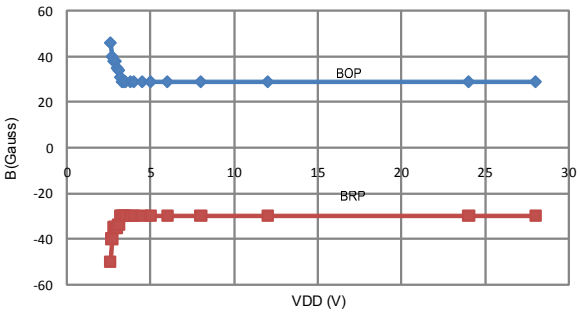


CC6101 Application

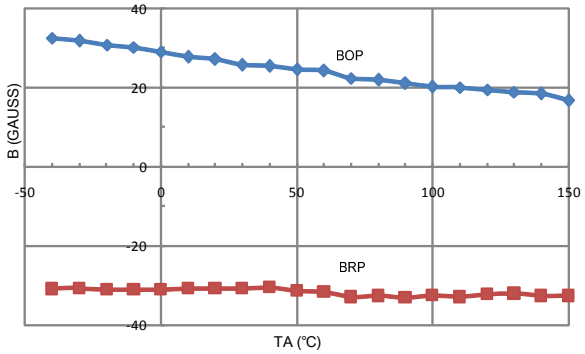
Waveform



IDD vs. VDD



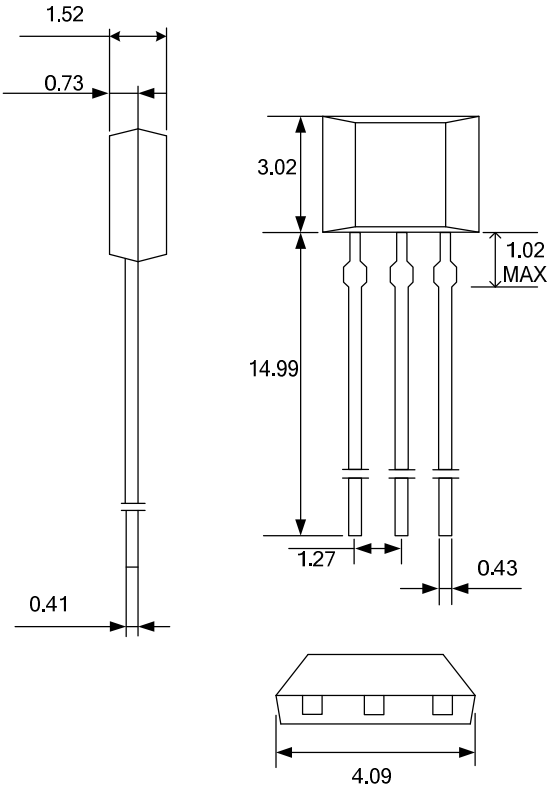
B vs. VDD



B vs. T_A

Package Informations

TO-92S package



Notes:

All dimensions are in millimeters

Marking:

1st Line: CC6101 - Name of the device

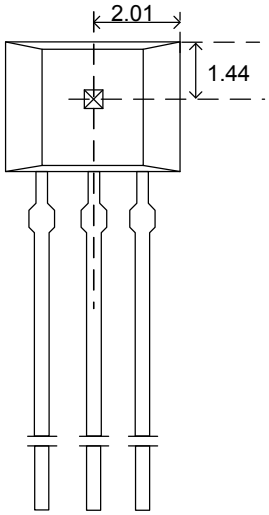
2nd Line: XXYYWW

XX – assembler code

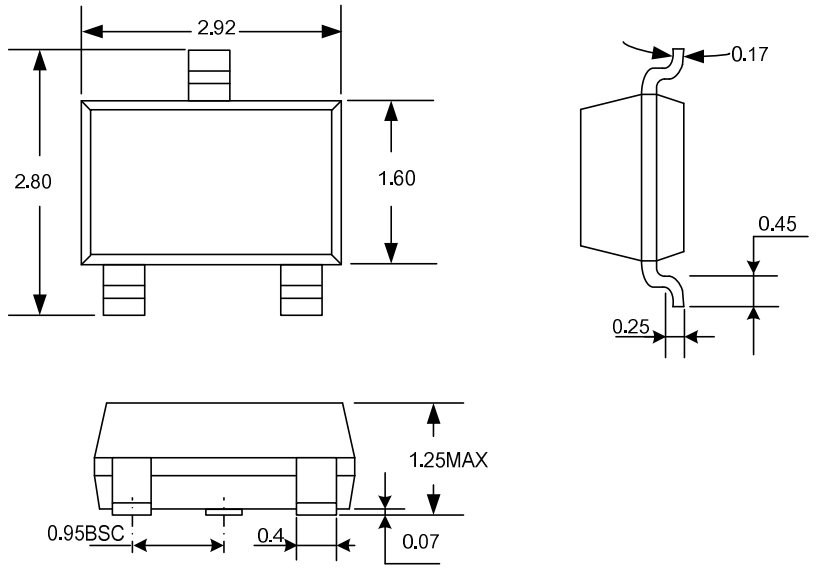
YY - assembly year (last 2 digits)

WW - assembly week number

Hall Plate Location



TSOT23-3 package



Notes:

1. All dimensions are in millimeters

Marking:

1st Line: 6101 - Name of the device

Hall Plate Location