

## CC6111

### Chopper Stabilized, High Precision

### Unipolar Hall Effect Switch

#### General Description

CC6111 (unipolar 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). CC6111 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.

CC6111 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 build in regulator permits operation with supply voltage in the range of 2.5~28V.

CC6111 is available for TO-92S and TSOT23-3 packages. The operating temperature range is from -40~150°C.

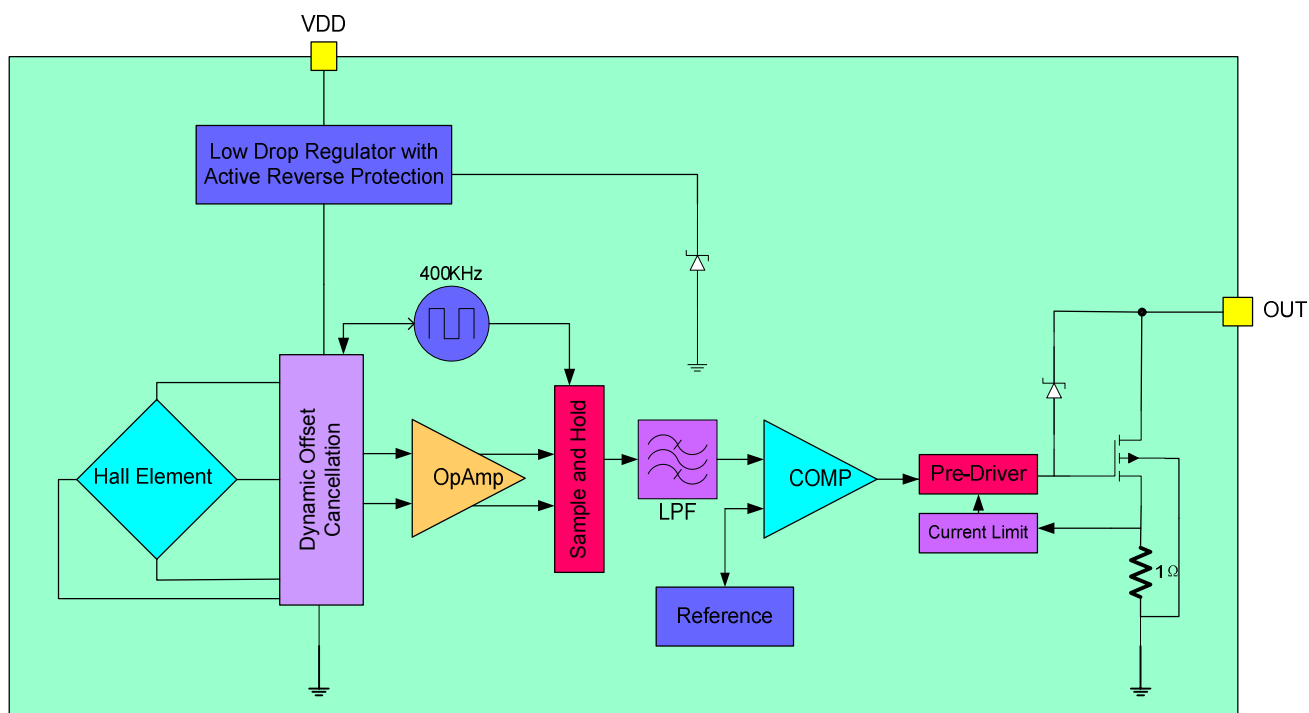
#### Features

- ◆ Operation Voltage Range: 2.5~28V
- ◆ Reverse Supply Voltage Protection:-40V
- ◆ High Chopper stability with good consistent
- ◆ Over Voltage Protection: 30V
- ◆ Superior Temperature Stability, higher to 150°C
- ◆ 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

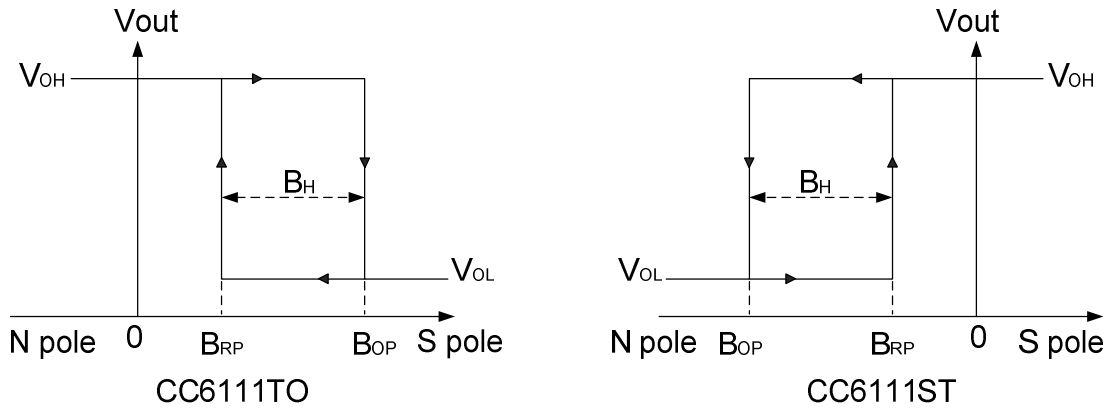
#### Function Block Diagram



## Ordering Information

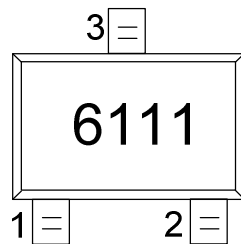
Part No.	Packing Form	Package Code
CC6111TO	bulk, 1000 pcs/bulk	TO (TO-92S)
CC6111ST	tape reel, 2500 pcs/reel	ST (TSOT23-3)

## Output vs. Magnetic Pole

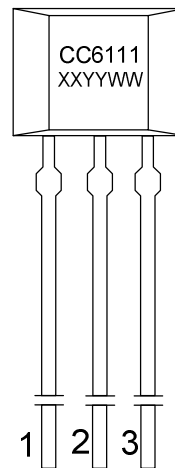


Note: Magnetic field need to be settled to top marking direction

## 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
Output Breakdown Voltage	$V_{OUT}$	30	V
Junction Temperature	$T_J$	150	°C
Storage Temperature	$T_S$	-40~150	°C
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)

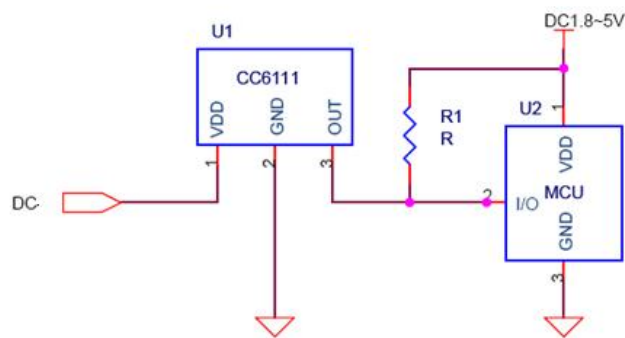
Parameter	Symbol	Condition	Min	Typ.	Max	Unit
Supply Voltage	$V_{DD}$	-	2.5	-	28	V
Supply Current	$I_{DD}$	25°C, $V_{DD}=12V$	-	2	-	mA
Output $V_{SAT}$ (sink)	$V_{SAT}$	$I_{OUT}=20mA$	-	-	0.4	V
Output Current Limit	$I_{LIM}$	-	30	-	60	mA
Output Rise Time	$t_r$	$R_L=820\Omega$ , $C_L=20pF$	-	0.2	-	us
Output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

## Magnetic Parameters

Parameter	Symbol	Condition	Min	Typ.	Max	Unit
Operate Point	$B_{OP}$	25°C	30	40	50	Gauss
Release Point	$B_{RP}$	25°C	20	30	40	Gauss
Hysteresis	$B_{HYS}$		5	10	15	Gauss

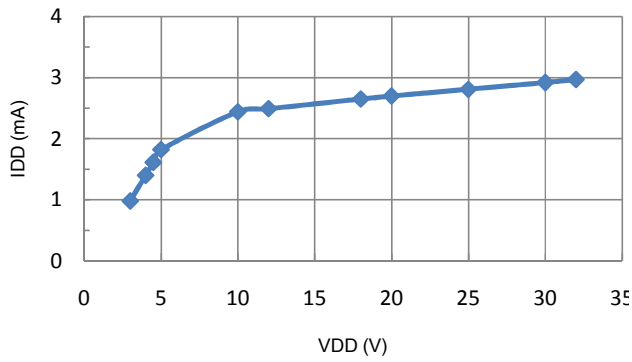
**Note:** 1mT=10Gauss=10Oe

## Typical Application Circuit

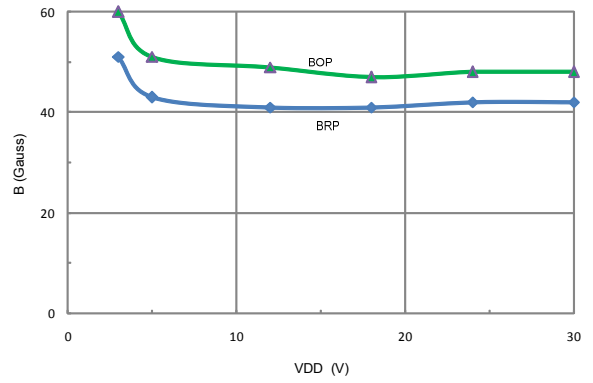


CC6111 Application

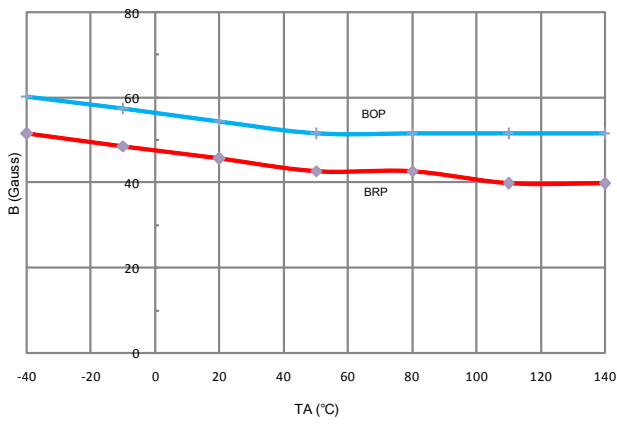
## Waveform



IDD vs. VDD



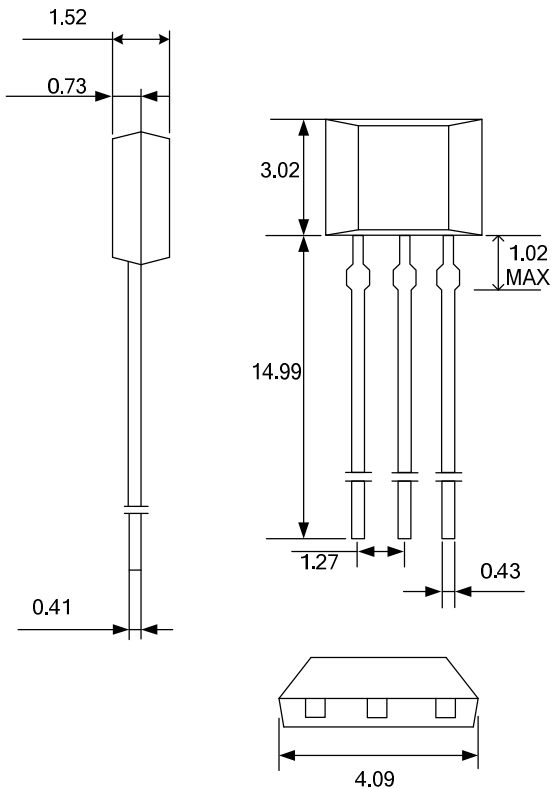
B vs. VDD



B vs. T<sub>A</sub>

## Package Informations

TO-92S package



### Notes:

All dimensions are in millimeters

### Marking:

1<sup>st</sup> Line: CC6111 - Name of the device

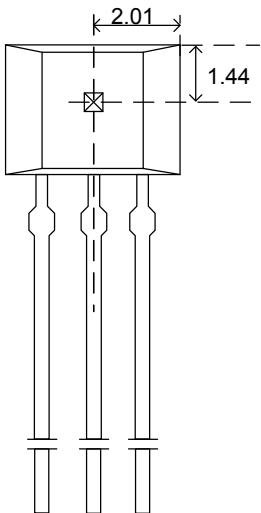
2<sup>nd</sup> Line: XYYWW

XX – assembler code

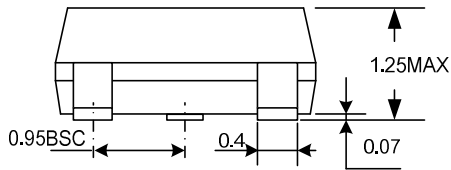
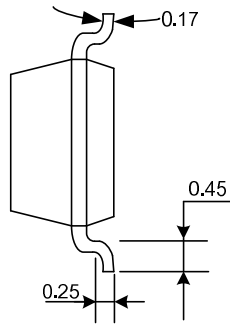
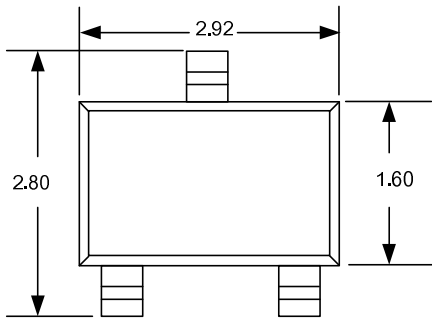
YY - assembly year (last 2 digits)

WW - assembly week number

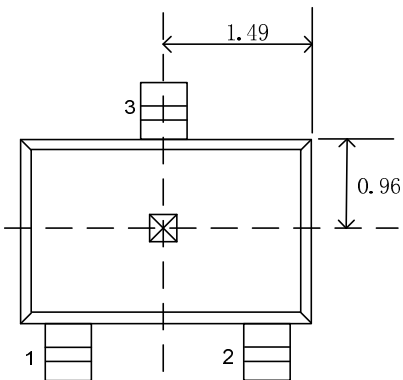
### Hall Plate Location



TSOT23-3 package



Hall Plate Location



**Notes:**

1. All dimensions are in millimeters

**Marking:**

1<sup>st</sup> Line: 6111 - Name of the device