

## CC6102

## Chopper Stabilized, High Precision Hall Effect Latch

### General Description

CC6102 Hall effect latches IC is extremely temperature-stable and stress-resistant sensors, especially suited for operation over extended temperature ranges (up to 150°C). Superior high-temperature performance is made possible through Dynamic Offset Cancellation and patent pending temperature compensation circuit, which reduces the residual offset voltage normally caused by device package over molding, temperature dependencies and thermal stresses.

CC6102 includes a voltage regulator, a Hall-voltage generator, a small-signal amplifier, chopper stabilization, a Schmitt trigger, and a short-circuit protected output to sink up to 30 mA, with a 15k $\Omega$  pullup resistor. A south polarity magnetic field of sufficient strength is required to turn the output on (CC6102TO). A north polarity field of sufficient strength is necessary to turn the output off (CC6102TO). Internal regulator permits operation with supply voltage in the range of 2.5~28V.

CC6102 is available in TO-92S and TSOT23-3 packages. The operating temperature range is from -40~150°C.

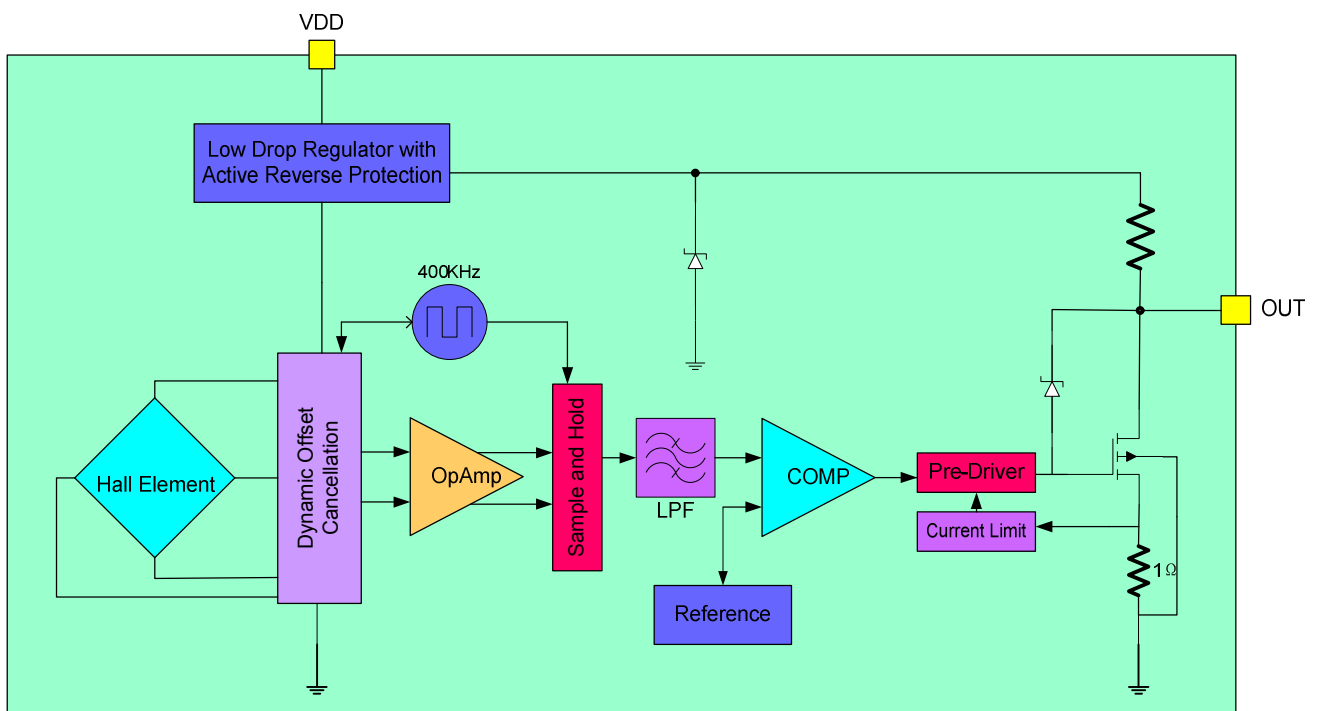
### Features

- ◆ Symmetric Switch Point
- ◆ Operation Voltage Range: 2.5~28V
- ◆ VDD Over Voltage Protection
- ◆ Reverse Supply Voltage Protection:-40V
- ◆ Superior Temperature Stability
- ◆ Output Short-circuit Protection
- ◆ Small Package Size
- ◆ Solid-state Reliability

### Application

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

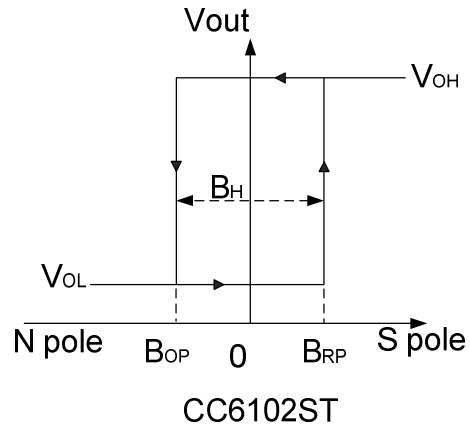
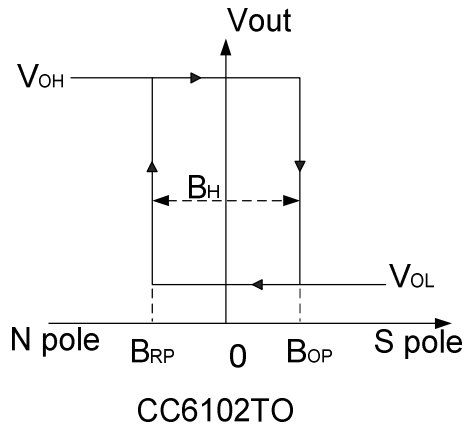
### Function Block Diagram



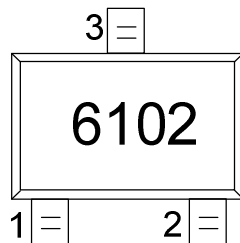
## Ordering Information

Part No.	Packing Form	Package Code
CC6102TO	bulk, 1000 pcs/bulk	TO (TO-92S)
CC6102ST	tape reel, 2500 pcs/reel	ST (TSOT23-3)

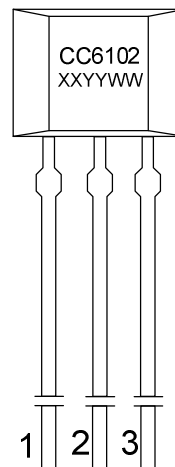
## Output vs. Pole



## 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
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)

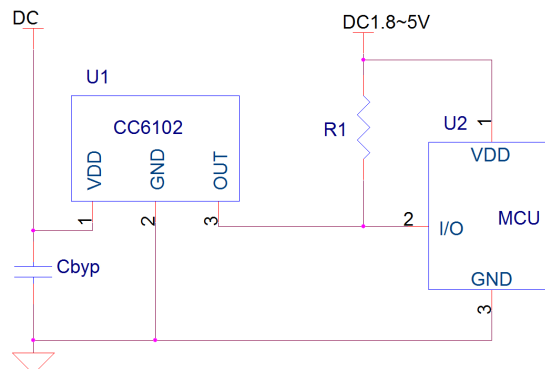
Parameter	Symbol	Condition	Min	Typ.	Max	Unit
Supply Voltage	$V_{DD}$	-	2.5	-	28	V
Supply Current	$I_{DD}$	25°C, $V_{DD}=12V$	-	2	-	mA
Output $V_{SAT}$ (sink)	$V_{SAT}$	$I_{OUT}=20mA$	-	-	0.4	v
Output Current Limit	$I_{LIM}$	-	30	-	60	mA
Output Rise Time	$t_r$	$R_L=820\Omega$ , $C_L=20pF$	-	0.2	-	us
Output Fall Time	$t_f$	$R_L=820\Omega$ , $C_L=20pF$	-	0.1	-	us
Reverse Current	$I_{RDD}$	$V_{DD}=-40V$	-	-	-5	mA
Output Pullup Resistor	$R_{PULLUP}$		-	15	-	k $\Omega$

## Magnetic Specifications

Parameter	Symbol	Condition	Min	Typ.	Max	Unit
Operate Point	$B_{OP}$	25°C	20	30	40	Gauss
Release Point	$B_{RP}$	25°C	-40	-30	-20	Gauss
Hysteresis	$B_{HYS}$		50	60	70	Gauss

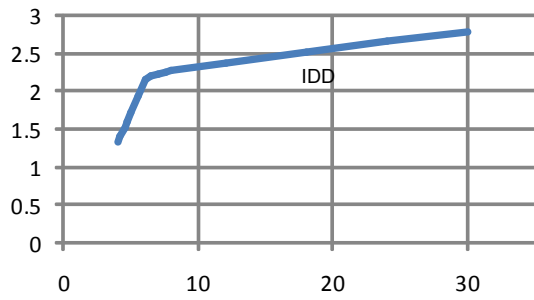
**Note:** 1mT=10Gauss=10Oe

## Typical Application Circuit

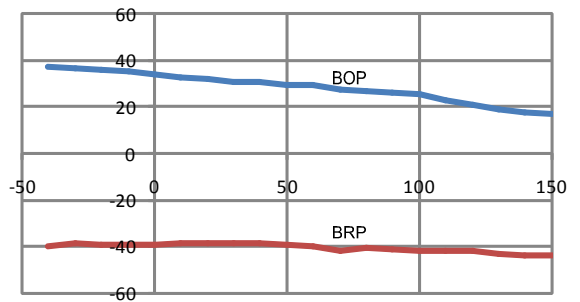


CC6102 Application

## Waveform



IDD vs. VDD



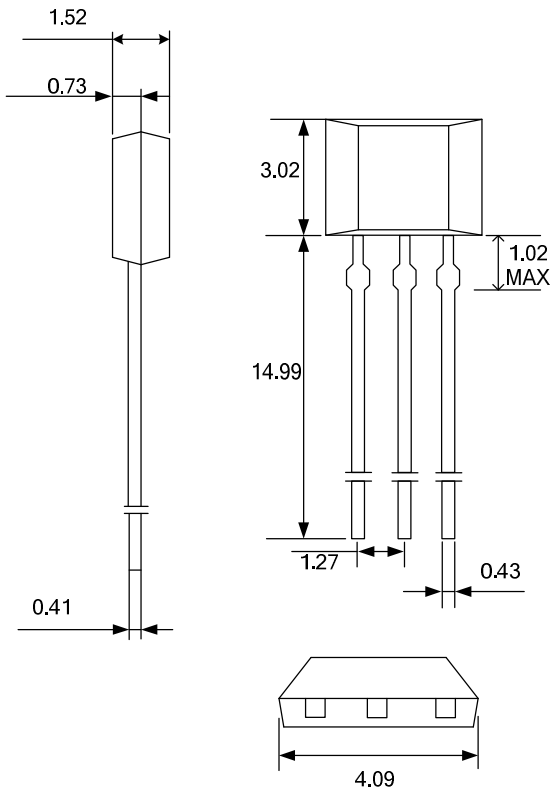
B vs. T<sub>A</sub>



B vs. VDD

## Package Informations

TO-92S package



### Notes:

All dimensions are in millimeters

### Marking:

1<sup>st</sup> Line: CC6102 - Name of the device

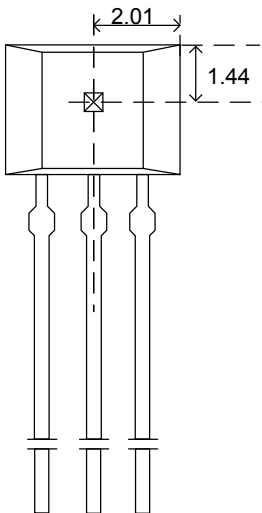
2<sup>nd</sup> Line: XYYWW

XX – assembler code

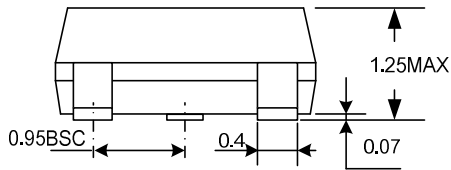
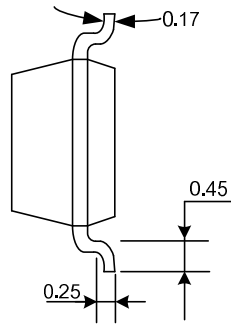
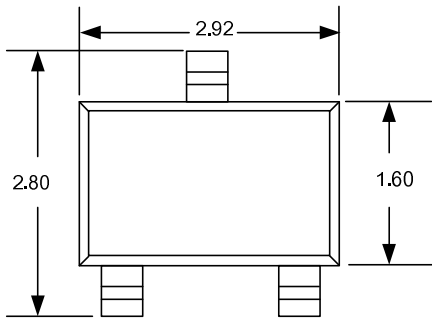
YY - assembly year (last 2 digits)

WW - assembly week number

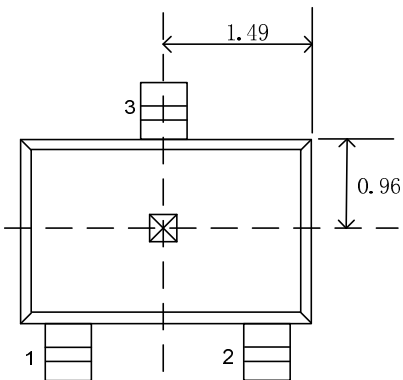
### Hall Plate Location



TSOT23-3 package



Hall Plate Location



**Notes:**

1. All dimensions are in millimeters

**Marking:**

1<sup>st</sup> Line: 6102 - Name of the device