



# BCD, Omni-polar, High Supply Hall Sensors

## DESCRIPTION

The 8105 family, produced with BCD technology, The Hall IC internally includes an on-chip Hall voltage generator, a voltage regulator for operation with supply voltages of 3.0 to 30 V, temperature compensation circuitry, small-signal amplifier, Hall sensor with dynamic offset cancellation system, Schmitt trigger and an open-drain output

They are designed to respond to alternating North and South poles. While the magnetic flux density(B) is larger than operate point (Bop), the output will be turned on (Low), the output is held until the magnetic flux density(B) is lower than release point (Brp), then turn off (High).

The 8105 family provides a variety packages to customers: SOT-23 for surface mount and TO-92 flat for through-hole mount. All packages are RoHS compliant.

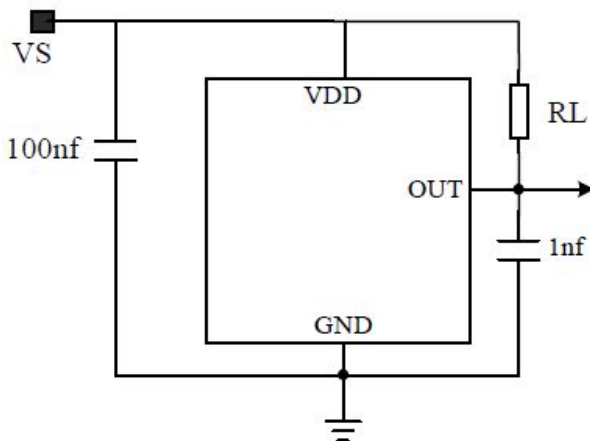
## FEATURES

- BCD Technology
- Magnetic Type: Omni-polar
- Wide Operation Voltage Range: Supply Voltage 3.0~30.0V
- Specified Operation Temperature Range From -40°C~150°C
- High Magnetic Sensitivity  
Bop=±40Gauss, Brp= ±20Gauss(typical)
- Open Drain Output

## APPLICATIONS

- Home appliances, Industrial
- Position Detection
- Solid-State Switch
- Proximity Switch
- Smart Meter

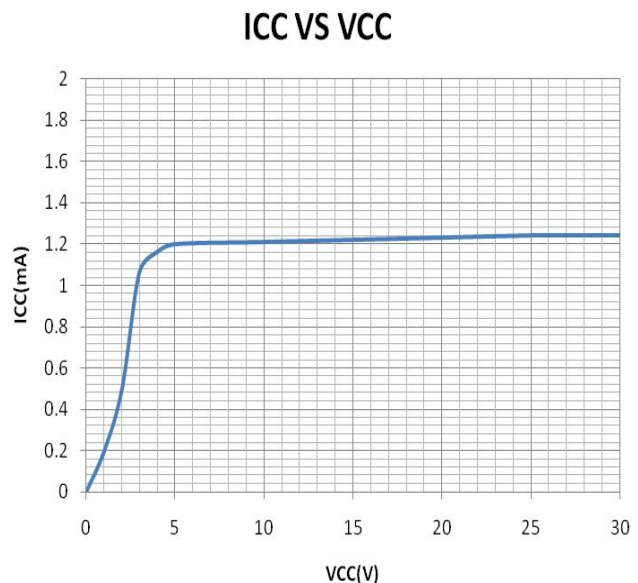
## TYPICAL APPLICATION



Application circuit of xxxx

NOTE:  $R_L$  Recommend 100Kohm.

## ELECTRICAL CHARACTERISTICS



## ORDERING INFORMATION

Part Number	Description
8105	Flat TO-92 package, bulk packaging(1000pcs/bag)

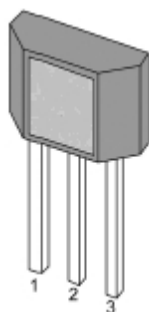
## ABSOLUTE MAXIMUM RATING

Parameter	Value	
Max Input Voltage	30V	
Max Output Current	50mA	
Operating Junction Temperature(Tj)	150°C	
Ambient Temperature(Ta)	-40°C -150°C	
Power Dissipation	TO-92	0.5 W
	SOT-23	0.25 W
Storage Temperature(Ts)	-40°C -150°C	
Magnetic Flux	No Limit	
Lead Temperature & Time	260°C, 10s	

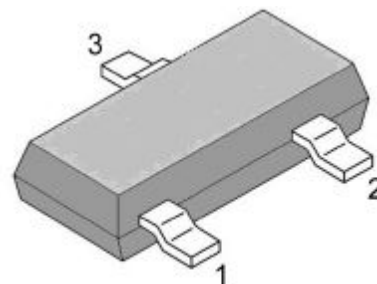
Note:

- Exceed these limits may cause damage to the device.
- Exposure to absolute maximum rating conditions may affect device reliability.

## PIN CONFIGURATION



SIP-3L (92S)



SOT23

Product Classification		
<b>8105 (92S)</b>		
Name	Number	Description
Vcc	1	Power supply
Gnd	2	Ground
Vout	3	Output
<b>8105A (92S)</b>		
Name	Number	Description
Vcc	1	Power supply
Gnd	2	Ground
Vout	3	Output
<b>8105 (SOT23-3)</b>		
Name	Number	Description
Vcc	1	Power supply
Vout	2	Output
Gnd	3	Ground
<b>8105A (SOT23-3)</b>		
Name	Number	Description
Vcc	1	Power supply
Vout	2	Output
Gnd	3	Ground

## RECOMMENDED WORK CONDITIONS

Parameter	Value
Input Voltage Range	3.0V -30V
Operating Junction Temperature(Tj)	-20°C -85°C

## ELECTRICAL CHARACTERISTICS

(Test Conditions:  $T_A=25^{\circ}\text{C}$ , Unless otherwise specified. )

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_{in}$	Input Voltage	Operating	3.0	-	30	V
$I_q$	Quiescent Current	$B < B_{RP}$ , $V_S=12\text{V}$	-	1.2	2.0	mA
$V_{SON}$	Output Saturation Voltage	$I_{out}=40\text{mA}$ , $B > B_{OP}$	-	-	0.4	V
$I_{OFF}$	Output Leakage Current	$B < B_{RP}$ , $V_{OUT}=30\text{V}$	-	-	0.1	$\mu\text{A}$
BOP	Magnetic Operating Point		-	$\pm 40$	$\pm 50$	G
BRP	Magnetic Release Point		$\pm 10$	$\pm 20$	-	G
BHYST	Hysteresis Window		10	20	30	G
$\theta_{JC}$	Thermal Resistor	TO-92	-	230	-	$^{\circ}\text{C} / \text{W}$
		SOT-23	-	301	-	W

Note1: All test are conducted under ambient temperature  $25^{\circ}\text{C}$  and within a short period of time 20ms

## BLOCK DIAGRAM

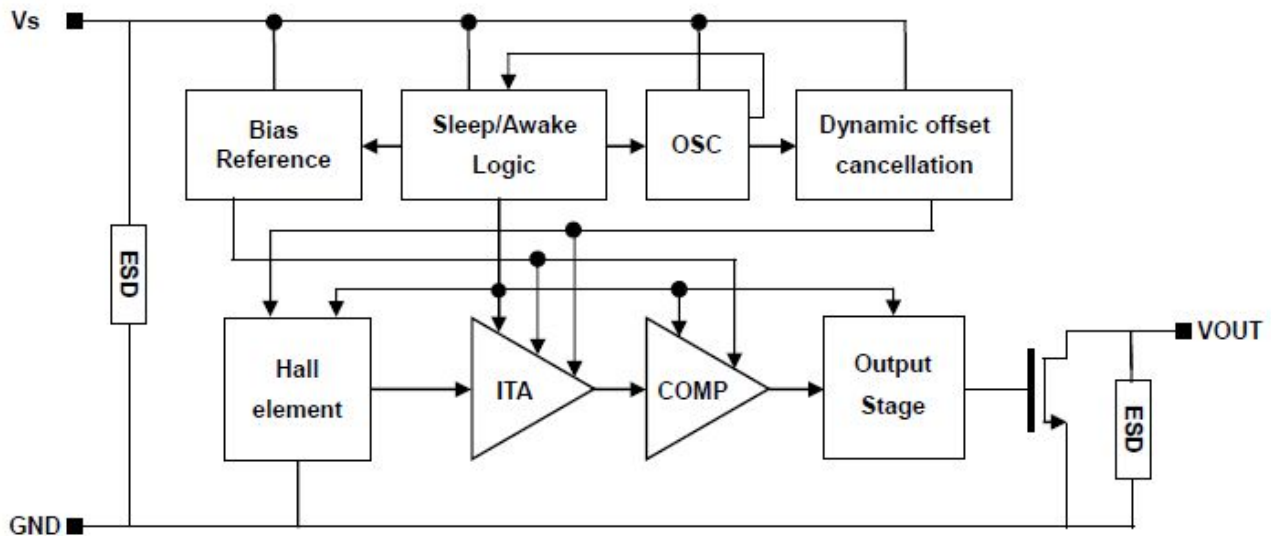


Fig.1 Block Diagram

## FUNCTION

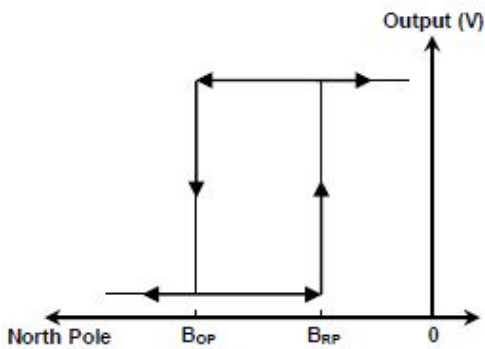
### Definition of Magnetic Parameters

**BOP:** Operating Point  
 Magnetic flux density applied on the branded side of the package which turns the output driver ON ( $V_{OUT} = \text{Low}$ )

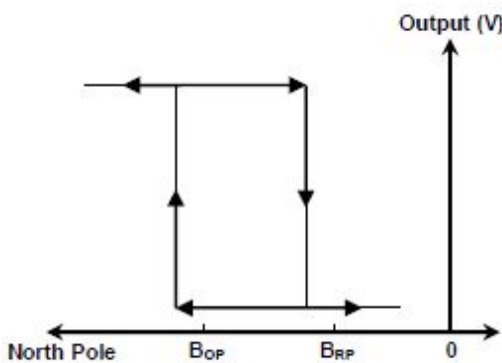
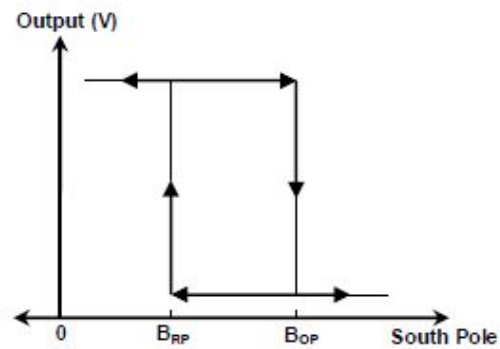
**BRP:** Release Point  
 Magnetic flux density applied on the branded side of the package which turns the output driver OFF ( $V_{OUT} = \text{high}$ )

**BHYST:** Hysteresis Window  
 BOP-BRP

### Definition of Switching Function



8105



8105A

