

# Low Power Omnipolar Hall Sensor

## Introduction

AH463 is designed and produced using CMOS technology. It is a south pole and north pole sensitive low-power omnipolar Hall effect switch. The device integrates a voltage regulator, a Hall voltage generator, a small signal amplifier, a chopper regulator, and schmitt-trigger and push-pull output. The sensor has the characteristics of good temperature stability, strong stress resistance and high sensitivity, and its operating voltage is 2.5-5.5V.

AH463 provides TO-92S in-line package and SOT23-3L package. Both packages meet RoHS environmental protection standards.

## Features

- Micro-power battery-powered applications
- Omnipolar output switch
- Push-pull output
- ESD HBM  $\pm 4$  kV
- Operating voltage 2.5-5.5V

## Application

- Solid state switch
- Cordless mobile phone reminder switch
- Flip phone screen saver switch
- Proximity switch
- Magnetic sensor switch with low duty cycle
- instead of reed
- Level gauge

## Package



## Low Power Omnipolar Hall Sensor

### Ordering Information

Part Number	Package	Packing	Operating Temperature
AH463UA	TO92S	Bulk, 1000 pieces/bag	-40°C to 85°C
AH463SU	SOT23-3L	Reel, 3000 pieces/reel	-40°C to 85°C

### Limit Parameters

The limit parameter is the limit value when the chip is applied. Exceeding the limit value may damage the chip. Although the function of the chip is not necessarily damaged when the limit parameter is exceeded, if the limit value is exceeded within a certain period of time, the reliability of the chip may be affected.

Parameter	Symbol	Value	Unit
Supply voltage	VDD	6.0	V
Reverse voltage	VDD	-0.3	V
Output Current	IOUT	±5	mA
Output Voltage	VOUT	6.0	V
Operating temperature range	Ta	-40~85	°C
Storage temperature range	Ts	-50~150	°C

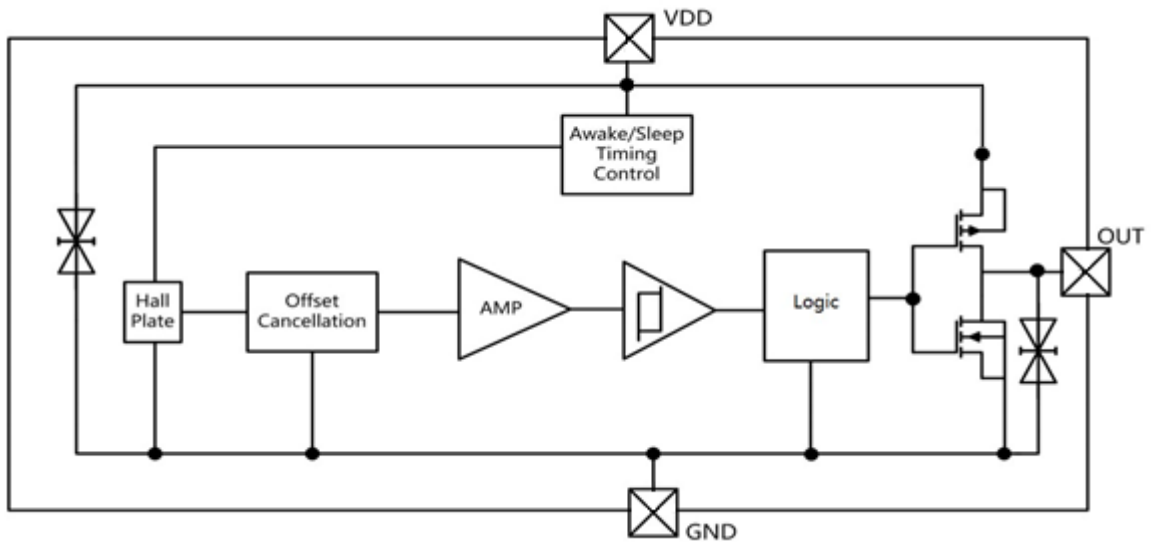
### Electrical and magnetic characteristics (Ta =25°C, VDD = 3.0V)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Electrical characteristics						
Operating voltage	VDD		2.5		5.5	V
Output low voltage	VOL	IOUT=1mA			0.2	V
Output high voltage	VOH	IOUT=-1mA	VDD-0.2			V
Output current	IOUT	Output low voltage			3.0	mA
		Output high voltage	-2.0			mA
Awake current	Iaw			2.8		mA
Average current	IDD			5	10	uA
Wake-up mode time	Taw			50	80	us
Sleep mode time	Tp			100	150	ms
Working frequency	Fw		6	10		Hz
Response frequency	Fr		3	5		Hz

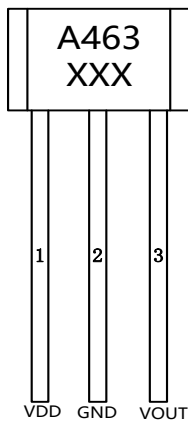
# Low Power Omnipolar Hall Sensor

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Magnetic characteristics						
Operate point	Bop			+/-17		Gauss
Release point	Brp			+/-12		Gauss
Hysteresis	Bhys	Bop-Brp		5		Gauss

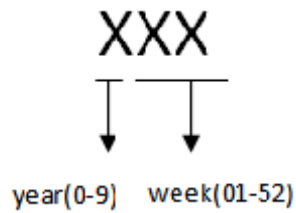
## Function diagram



## Pin Description



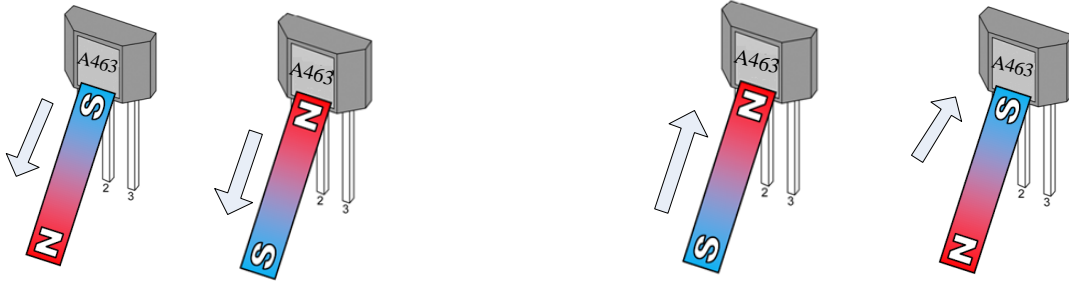
TO92S



SOT23

# Low Power Omnipolar Hall Sensor

## Application example



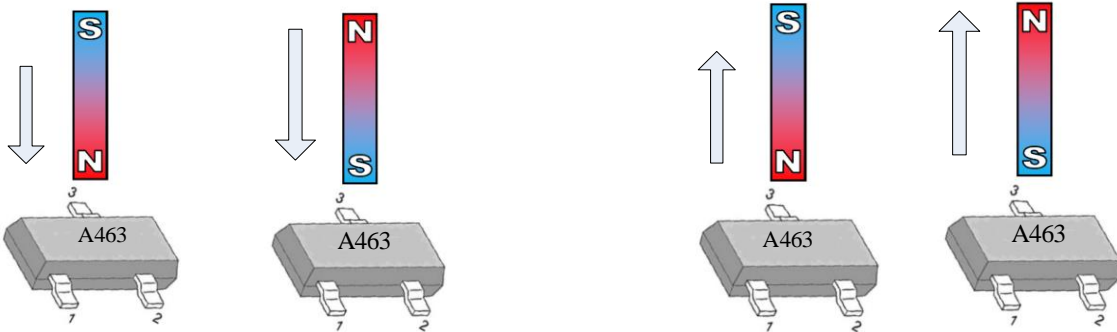
VOUT=High

VOUT=Low

**TO92S (AH463UA)**

## TO92S Pin Description

Name	Pin Number	Description
VDD	1	Power supply
GND	2	Ground
VOUT	3	Output



VOUT=Low

VOUT=High

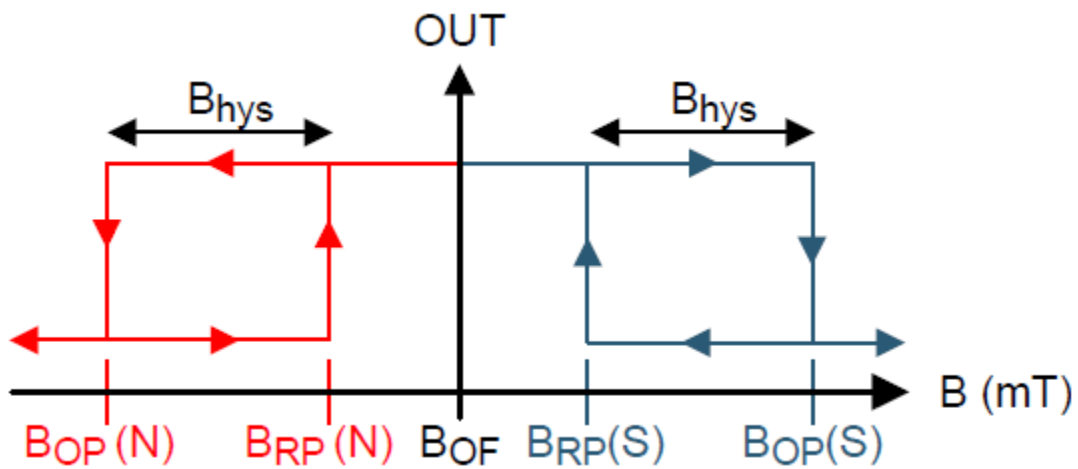
**SOT23 (AH463SU)**

## SOT23 Pin Description

Name	Pin Number	Description
VDD	1	Power supply
VOUT	2	Output
GND	3	Ground

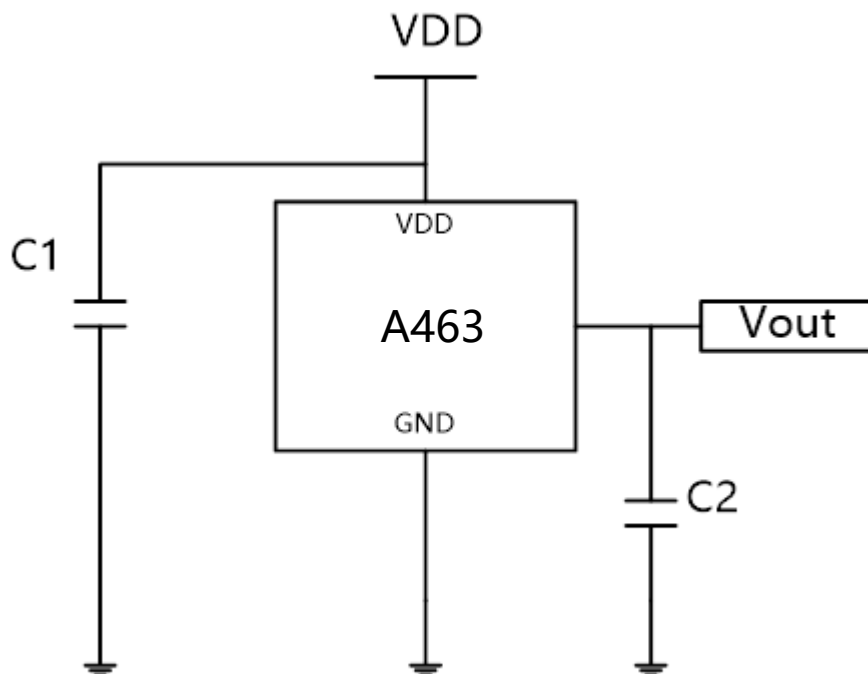
# Low Power Omnipolar Hall Sensor

## Output Behavior



## Application Circuit

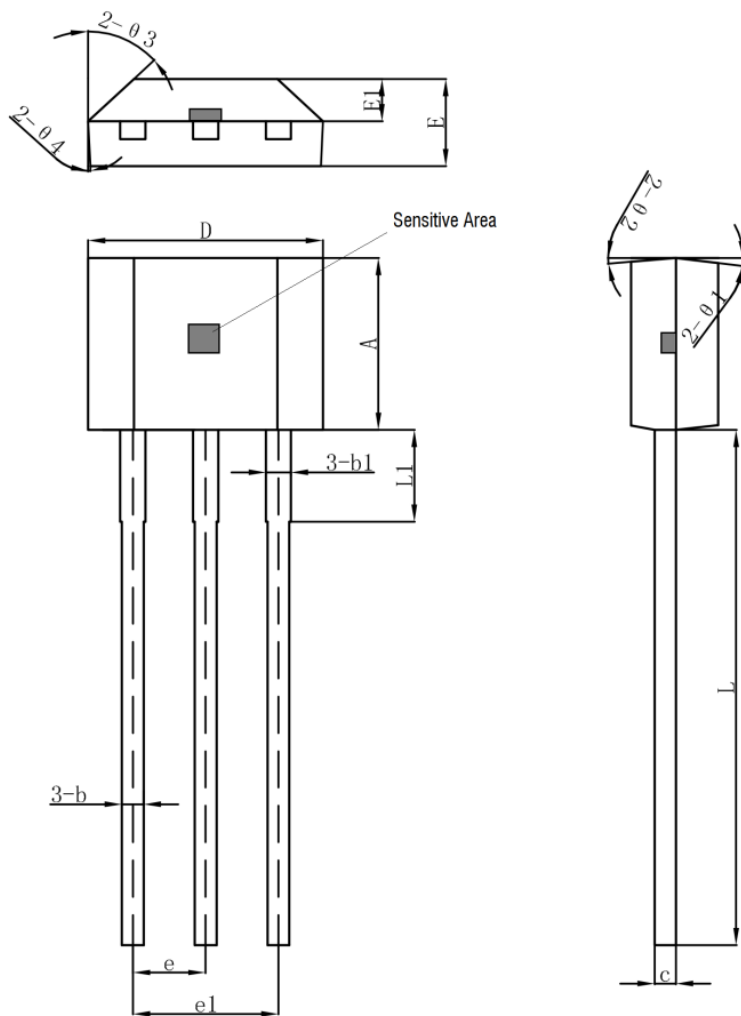
$C1=10nF$ ,  $C2=100pF$



Typical application circuit

### Package dimensions

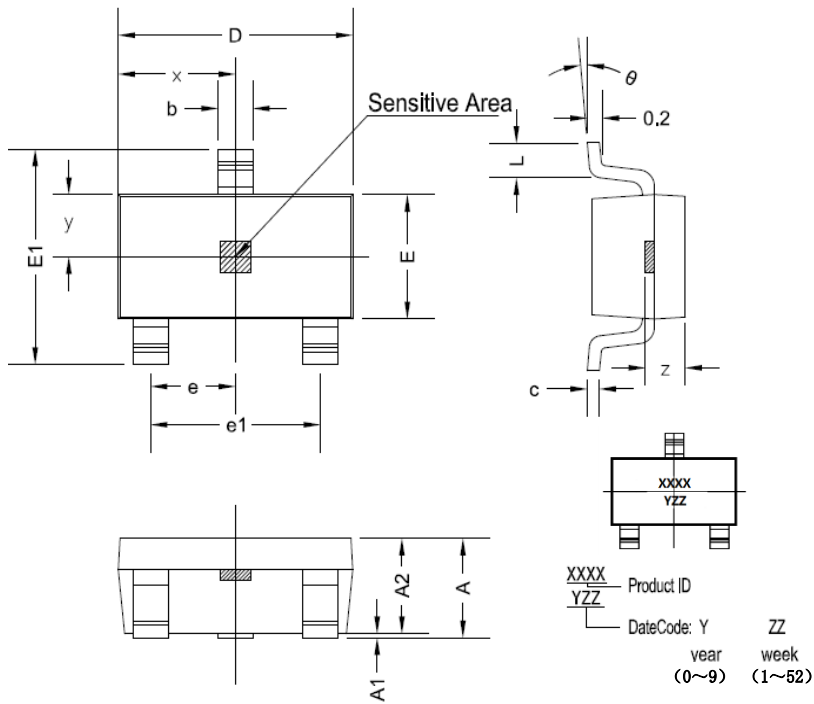
#### T092S



Symbol	Size (mm)		
	Min.	Typ.	Max.
A	2.90	3.00	3.10
b	0.35	0.39	0.40
b1		0.44	
c	0.36	0.38	0.40
D	4.00	4.10	4.20
E	1.42	1.52	1.62
E1		0.75	
e		1.27	
e1		1.27	
L		2.54	
L1	13.50	14.50	15.50
$\theta 1$		6°	
$\theta 2$		3°	
$\theta 3$		45°	
$\theta 4$		3°	
h		3.6	

## Low Power Omnipolar Hall Sensor

### SOT23



Symbol	Size(mm)		Size (inch)	
	Min.	Max.	Min.	Max.
A	1.05	1.25	0.041	0.049
A1	0	0.1	0	0.004
A2	1.05	1.15	0.041	0.045
b	0.3	0.5	0.012	0.02
c	0.100	0.2	0.004	0.008
D	2.82	3.02	0.111	0.119
E	1.5	1.7	0.059	0.067
E1	2.65	2.95	0.104	0.116
e	0.950 TYP		0.037 TYP	
e1	1.8	2	0.071	0.079
L	0.3	0.6	0.012	0.024
x	1.460TYP		0.057TYP	
y	0.800TYP		0.032TYP	
z	0.600TYP		0.024TYP	
θ	0°	8°	0°	8°

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