Low power omnipolar hall sensor

Introduction

HK469 is designed and produced using CMOS technology. It is a bipolar Hall switch chip with low power consumption and high sensitivity. 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 2.7-5.5V.

HK469 provides TO-92S in-line package and SOT23-3L package. Both packages meet ROHS environmental protection standards.

Features

- Micro-power battery-powered applications
- Highest ESD performance up to ±6kV
- Omnipolar output switch
- Push-pull output
- Operating voltage 2.7-5.5V

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

3-pin SOT23

3-pin TO92S

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Ordering Information

Partnumber	package	Packing	Ambient, TA
HK469UA	TO92S	Bulk, 1000 pieces/bag	-40℃ to 85℃
HK469SU	SOT23-3L	Reel, 3000pieces/reel	-40℃ to 85℃

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.

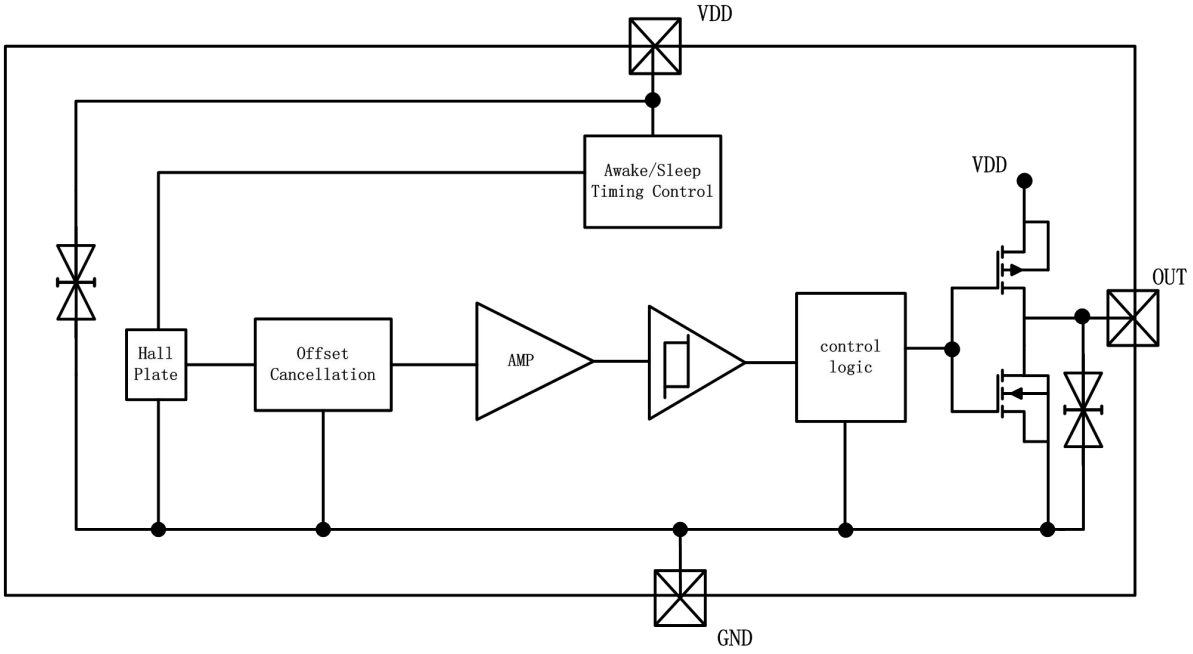
Parameter	Symbol	Value	Units
Supply voltage	VDD	6.0	V
Reverse voltage	VDD	-0.3	V
Output Sink Current	I_{sink}	5	mA
Output Voltage	Vout	6.0	V
Operating temperature range	T_a	-40~85	℃
Storage temperature range	T_s	-50~150	℃

Electrical and magnetic characteristics（Ta =25˚C， VDD = 2.7V）

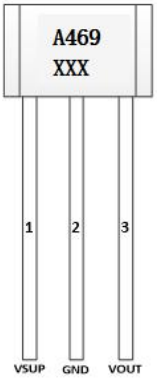
Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Electrical characteristics						
Operating voltage	VDD		2.7		5.5	V
Output low voltage	VOL	Iout=1mA			0.2	V
Supply current	IDD			5		uA
Wake-up mode time	Tawake	working		20		us
Sleep mode time	Tperiod	working		20		ms
working frequ ency				50		Hz
response fre			3	50		Hz

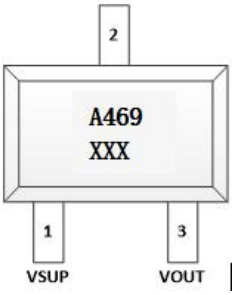
quency						
Magnetic characteristics						
Operate point	Bop	B>BopS （B<BopN）， Vout On		25		Gauss
Release point	Brp	B<BopS （B>opN）， Vout Off		-25		Gauss
Hysteresis	Bhys	|Bop-Brp|		50		Gauss

Function diagram



Pin Description





TO92S **SOT23**

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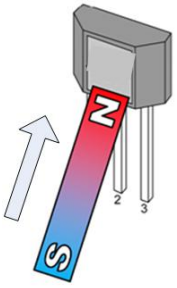
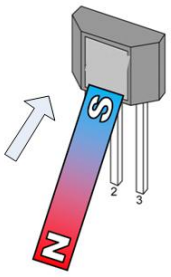
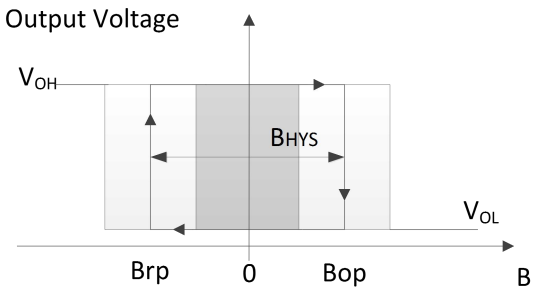
application example





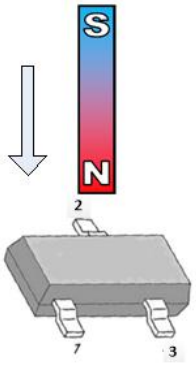


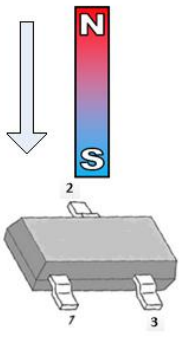
VOUT= High　　VOUT= Low　　TO92S Output Behavior

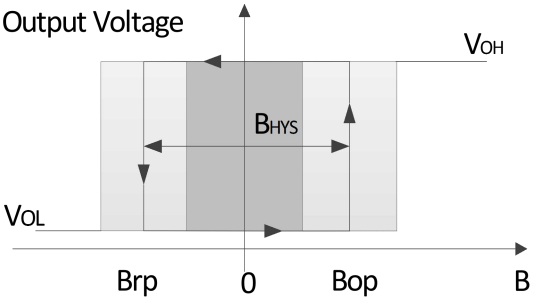
TO92S （AH469UA）

TO92S 引脚说明

Name	Pin number	Description
VDD	1	Power supply
Vout	2	Ground
GND	3	Output







VOUT= Low　　VOUT= High　　SOT23 Output Behavior

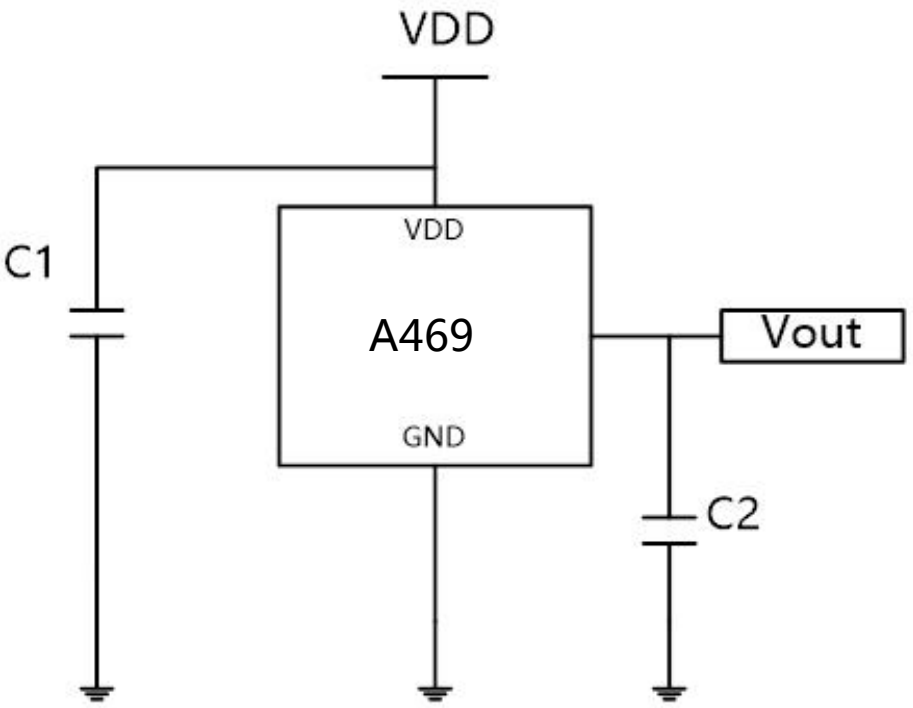
SOT23 （AH469SU）

SOT23 Pin description

Name	Pin number	Description
VDD	1	Power supply
Vout	2	Output
GND	3	Ground

Application Circuits

C1=2.2nF，C2=100pF



typical application circuit

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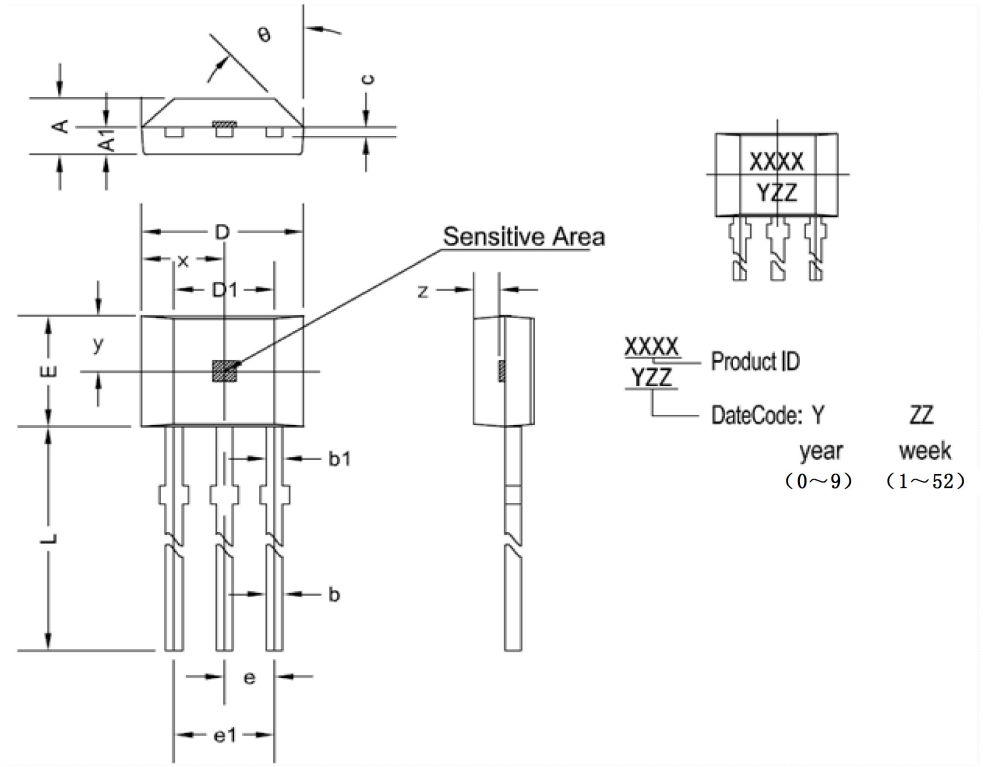
Package dimensions

TO92S



TO92S dimensions

symbol	Size (mm)		Size (in inches)	
	minimum	maximum	minimum	maximum
A	1.42	1.67	0.056	0.066
A1	0.66	0.86	0.026	0.034
b	0.35	0.56	0.014	0.022
b1	0.4	0.55	0.016	0.022
C	0.36	0.51	0.014	0.02
D	3.9	4.2	0.154	0.165
D1	2.97	3.27	0.117	0.129
E	2.9	3.28	0.114	0.129
e	1.270 TYP		0.050 TYP	
e1	2.44	2.64	0.096	0.104
L	13.5	15.5	0.531	0.61
x	2.025TYP		0.080TYP	
y	1.545TYP		0.061TYP	
z	0.500TYP		0.020TYP	
θ	45°TYP		45°TYP	

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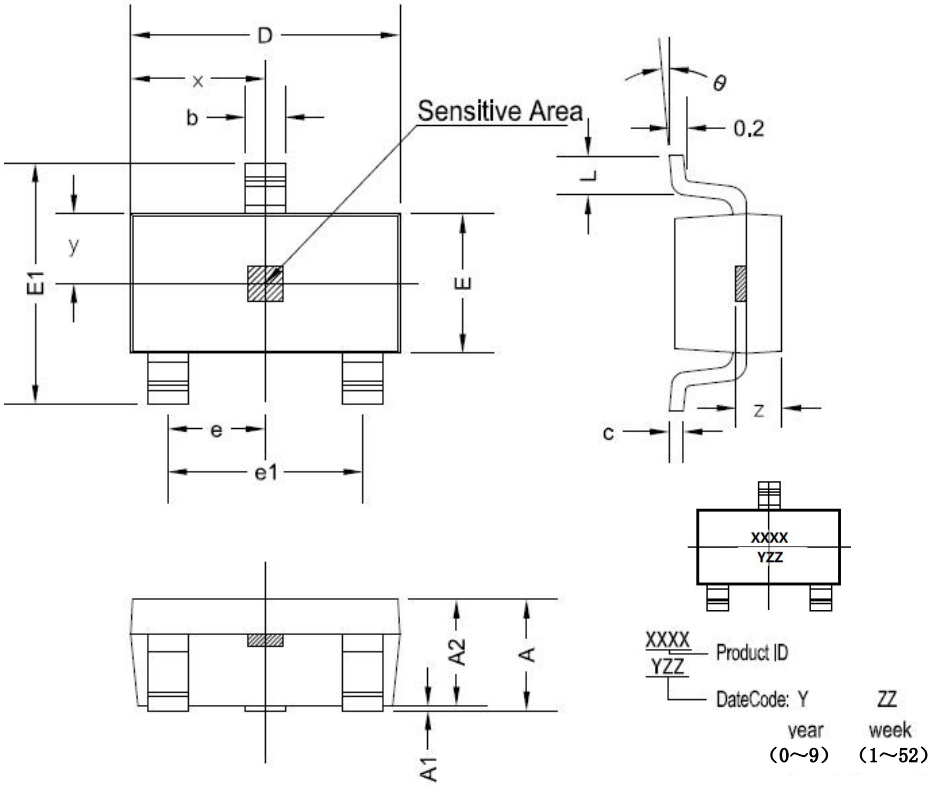
SOT23



SOT23 dimensions

symbol	Size (mm)		Size (in inches)	
	minimum	maximum	minimum	maximum
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°