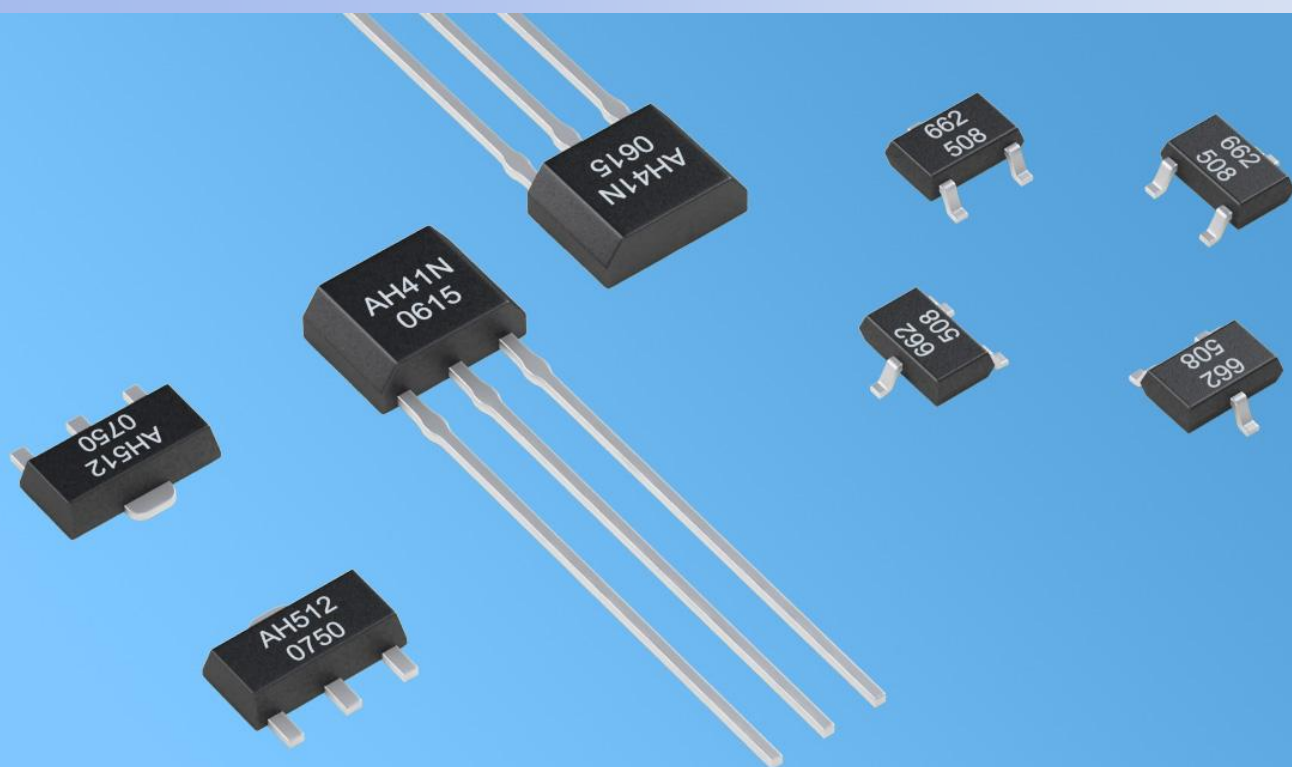


# Linear Hall Sensor AH3509



**AtinJ**  
南京艾驰

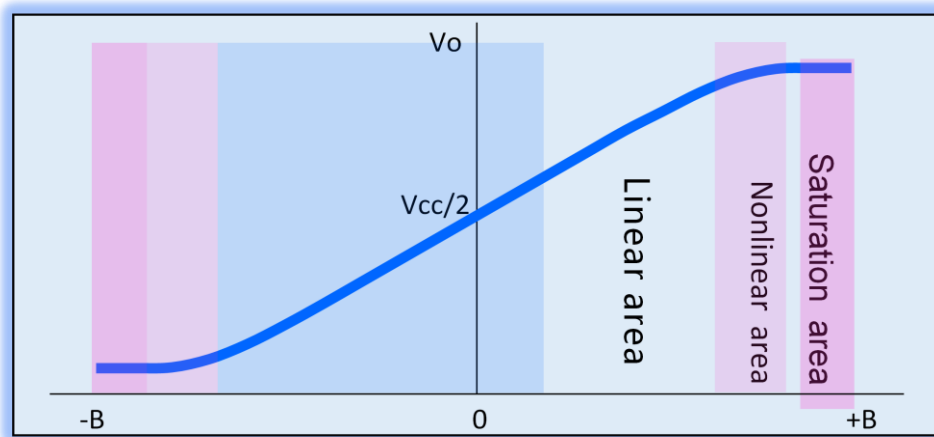
◆ Features

- Rated working voltage 4.5 V ~ 6 V,
- Operating temperature range: -40°C ~ 125°C;
- Rail to Rail voltage output, Rated output current : 6 mA,
- Variety of package forms and outer packings for your choice.
- No mechanical contact, no spark, switch signal stability, no shaking moment, high reliability and safety;
- Products meet the EU RoHS instruction 2011/65 / EU and REACH regulations 1907/2006 / EU requirements

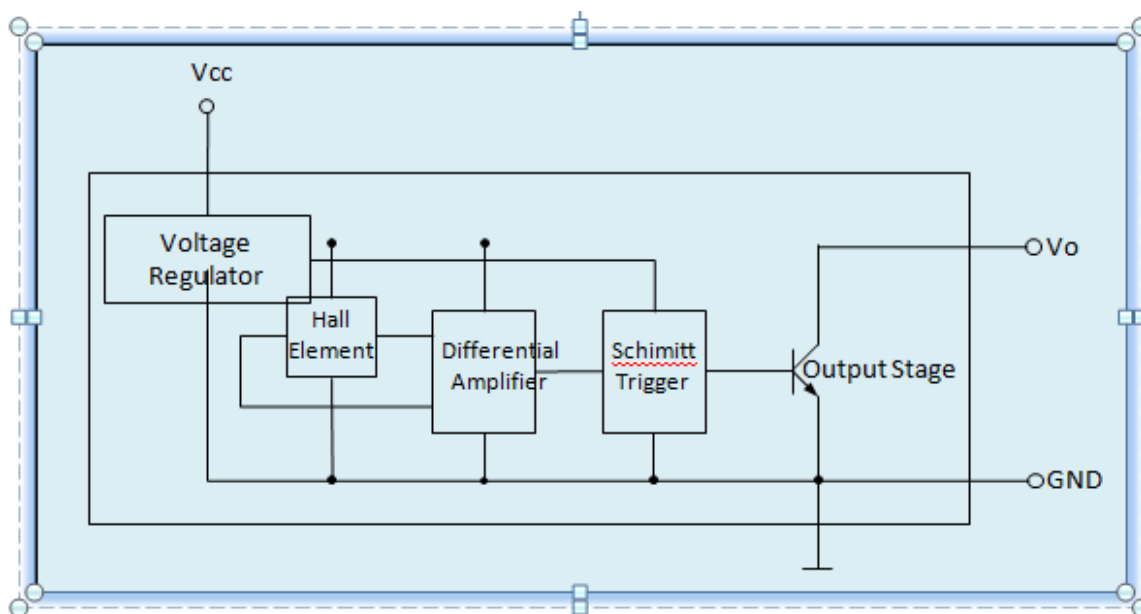


## ◆ Outline

The sensor will pass linear area /nonlinear area/ saturation area during the magnetic induction increases. When there is no magnetic field that applies in sensor ( $B=0$ ), when the output voltage of sensor is only half of  $V_{cc}$  ( $V_{cc}/2$ ); when “N” pole faces mark surface of sensor, and be closed to it gradually ( $B \rightarrow -\infty$ ), the output voltage begins to decrease, and the voltage doesn't reduce with the increased magnetic field; When the “S” pole of magnet faces the mark surface of the sensor and is closed to sensor gradually ( $B \rightarrow +\infty$ ), the output voltage of sensor begins to increase, and it doesn't increase with the increased magnetic field after it reaches saturation voltage. The magnetic and electric transfer characteristic curve of linear sensor is shown as the figure:



## ◆ Block Diagram



AH3509 is a kind of analog signal output Hall IC, the output voltage changes with the changes of magnetic field. The sensor chip has built-in reverse voltage protection, voltage regulators, temperature compensation circuit, Hall-voltage generator, signal amplifier, and other circuit unit etc. Excellent voltage regulator and temperature compensation circuit ensure the sensor stable operates over a wide voltage range and temperature range, and the reverse voltage protection circuit avoids the sensor to be damaged by reverse voltage.

## ◆Limit Parameter

Parameter	Symbol	Min.	Max.	Unit
Storage Temp	$T_s$	-55	175	°C
Supply Voltage	$V_{CC}$	4.0	6.0	V
Magnetic Induction	$B$	不限	不限	mT

## ◆ Electrostatic Grade

Under human being mode, the Electrostatic compression is large than  $\pm 6\text{kV}$ .

### ◆Operating Condition

Parameter	Symbol	Min.	Max.	Unit
Supply Voltage	$V_{CC}$	4.5	6	V
Operating Temp.	$T_A$	-25	85	°C
Output Current	$I_O$	—	3	mA

### ◆Electromagnetic Characteristic

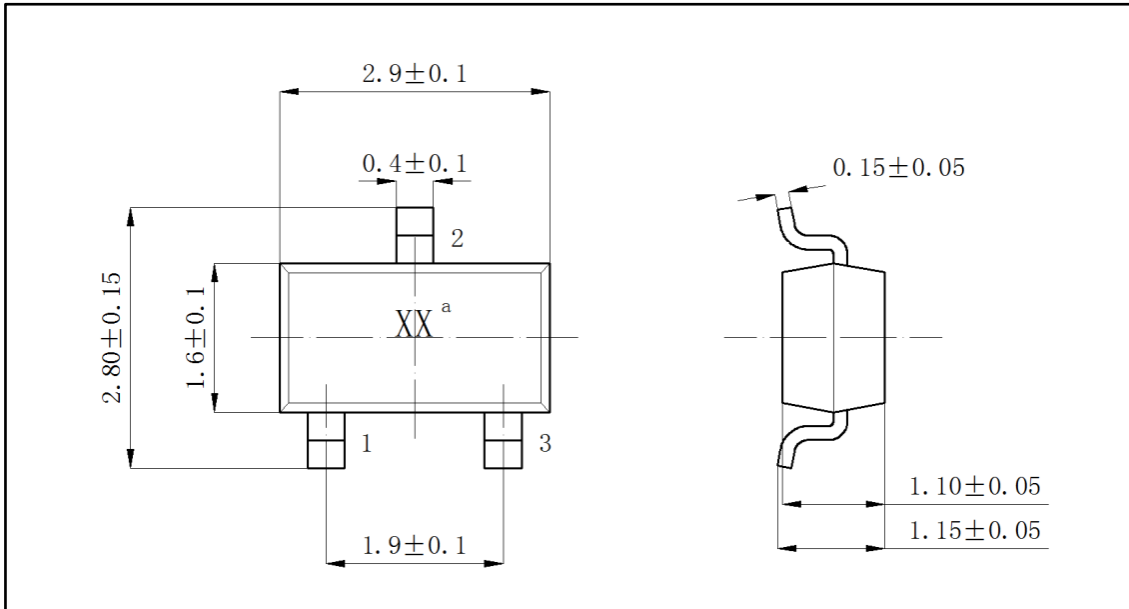
Parameter	Symbol	Test Condition	Min.	Typ	Max	Unit
Stationary voltage	$V_O$	$V_{CC}=5V$	2.35	2.5	2.65	V
Stationary voltage drift	$\Delta V$	$V_{CC}=5V, T_A=125^\circ C$	-15	0	15	mV
Supply current	$I_{CC}$	$V_{CC}=5V$	-	5	8	mA
Sensitivity	$S$	$V_{CC}=5V, T_A=25^\circ C$	47	50	53	mV/mT
Sensitivity Drift	$T_C$	<i>Compare with the sensitivity under 25°C within operating Temp.</i>	0.06	0.12	0.18	°C/%
Linear Area	$L$	-	-50	-	+50	mT

Note 1: Unit is mT, 1mT=10Gs

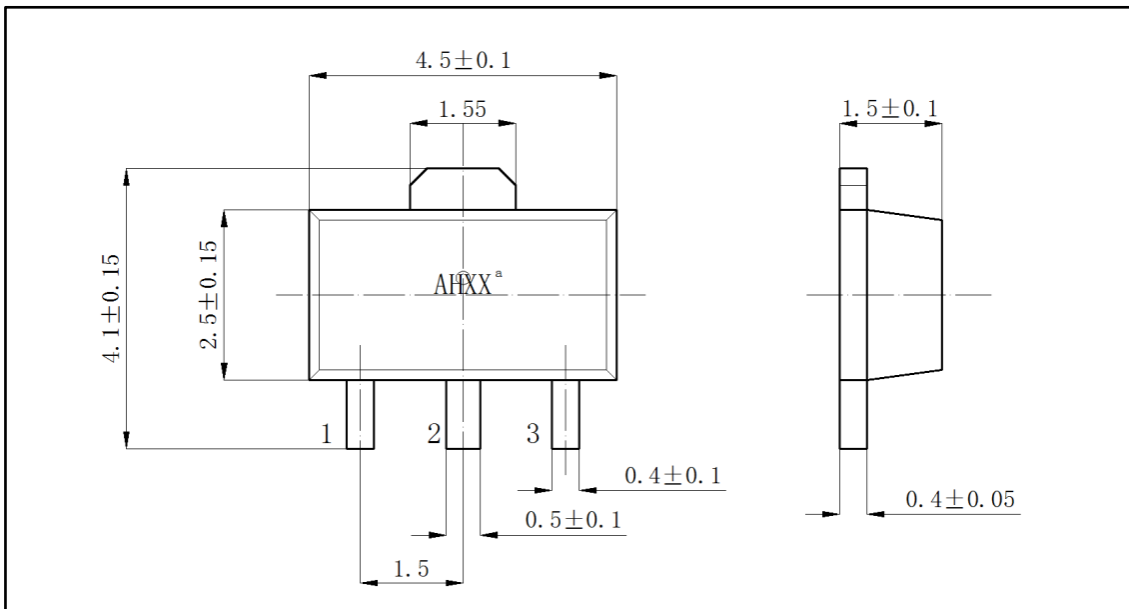
Note 2: When the “S”Pole of the magnetic field is vertical to the front mark of product, we call the magnetic field  $B > 0$ .

◆Package Outline

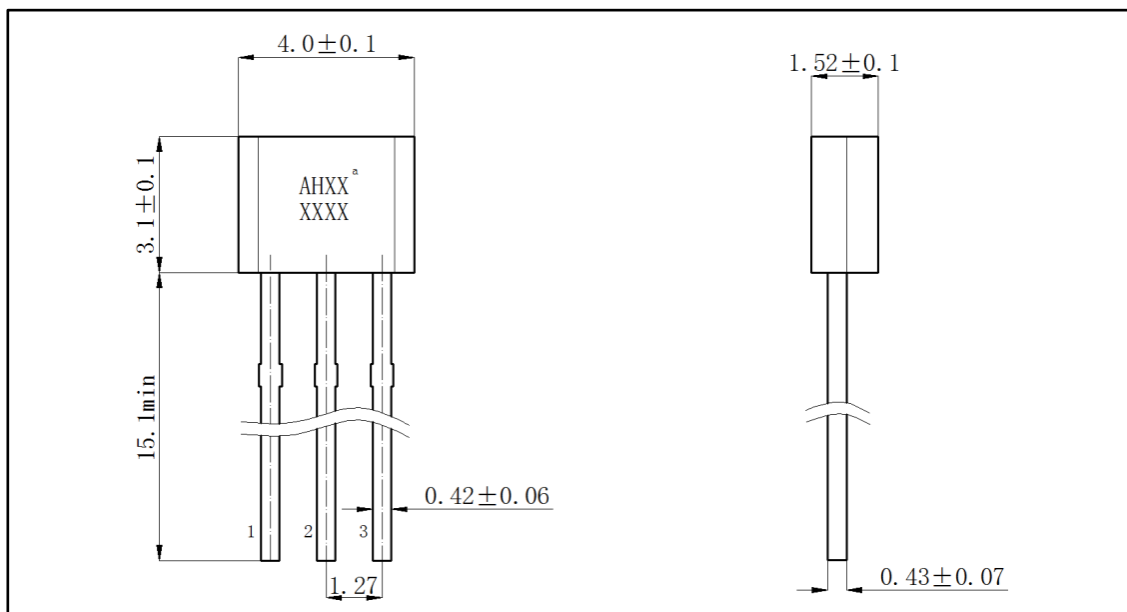
- SOT23-3L ( M type ) package figure ( Unit: mm )



- SOT89-3L ( S type ) package figure ( Unit: mm )



- TO-92UA/TO-92S ( UA type ) package figure ( Unit: mm )



Note: in the package outline figure, Pin 1 is Vcc, Pin2 is GND, Pin 3 is output terminal.

- Mark

Mark “XX” or “AHXX” are abbreviation form of parts No., the second line “XXXX” means product lot No.