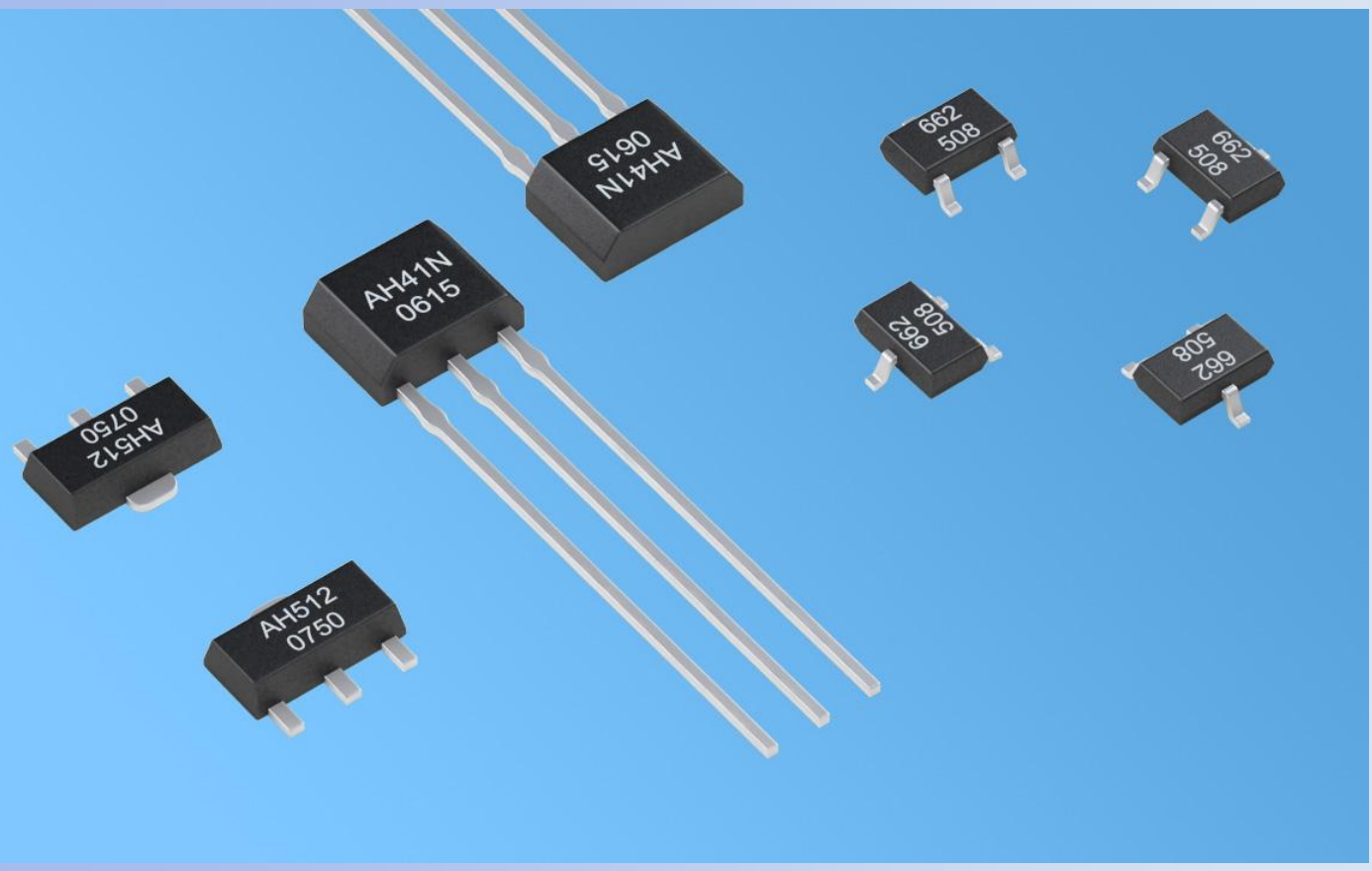
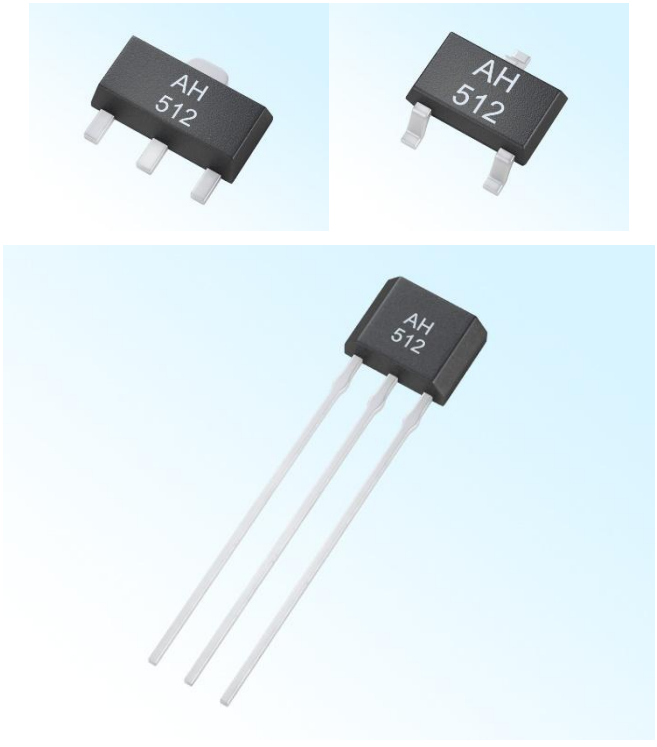
# Latch Type Hall Sensor AH512




NANJING AH

## ◆ Features

- Rated working voltage 4.5 V ~ 24 V, the limit voltages as low as 3.5 V;
- Operating temperature range: -55℃ ~ 150℃;
- Rated output current(sink) : 25 mA, the maximum output current(sink): 50 mA
- Switch response time is about 1μs, the operating frequency DC ~ 100 kHz;
- Small temperature drift between operating point and release point;
- 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



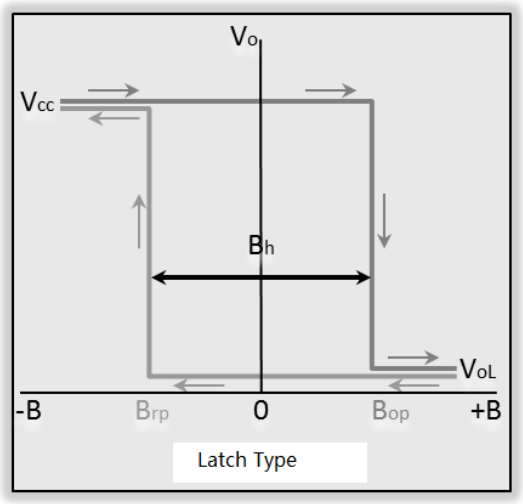



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## ◆ Outline

When the “S” pole of magnet faces the mark surface of the sensor and is closed to sensor（ B ≥ Bop ）, the sensor outputs low level; When “N” pole of magnet is face to sensor’s mark surface and clsed to the sensor( B≤ $B_{RP}$ )， the sensor outputs high level. When the magnet is far from sensor, (B=0) , the output status is latched and keep constant, in order to change the output status, the reverse polarity magnetic field must be applied on it.

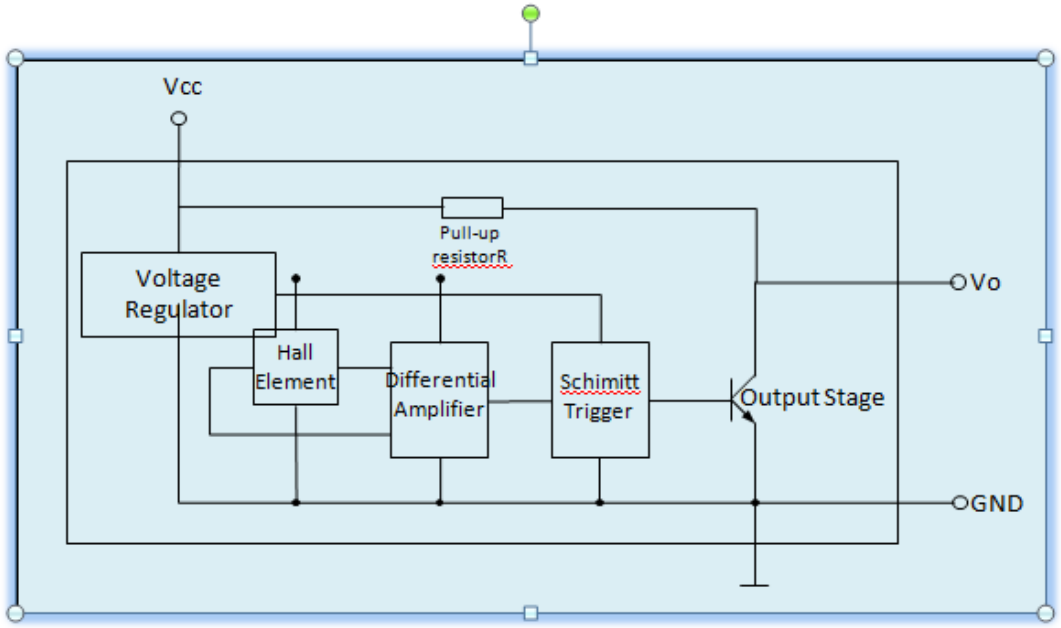
The magnet and electric transfer characteristic curve of AH512 is shown as the figure:






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## ◆ Block Diagram




Hall sensor AH512 is one of bipolar excitation single-ended digital output Hall IC. The output signal owns latch function. The sensor chip has built-in reverse voltage protection, voltage regulators, temperature compensation circuit, Hall-voltage generator, signal amplifier, Schmitt trigger, built-in pull-up resistor, and open collector output driver 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.



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## ◆Limit Parameter

| Parameter | Simbol | Min. | Max. | Unit |
|---|---|---|---|---|
| Storage Temp. | *Ts* | -55 | 175 | ℃ |
| Supply Voltage | $V_{CC}$ | 3.5 | 28 | V |
| Output Cut-off Voltage | $V_O$ ( off ) | — | 25 | V |
| Magnetic Induction | *B* | unlimited | unlimited | mT |
| Output Current | $I_O$ | — | 50 | mA |

## ◆ Electrostatic Grade

Under human being mode, the Electrostatic compression is large than ±6kV.



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## ◆ Operating Condition

| Parameter | Symbol | Min. | Max. | Unit |
|---|---|---|---|---|
| Supply Voltage | $V_{CC}$ | 4.5 | 24 | V |
| Operating Temp. | *Ta* | -55 | 150 | ℃ |
| Output Current | $I_O$ | — | 8 | mA |

## ◆ Electrical Characteristic

| Parameter | Symbol | Test Condition | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| Output Low Level | $V_{OL}$ | *VCC1=4.5，VCC2=24V，IO=25mA，B≥BOP* | 0.2 | 0.4 | V |
| Output High Level | $V_{OH}$ | *VCC1=4.5，VCC2=24V，IO=25mA，B≤BRP* | 23.5 | 24 | V |
| Output leakage current | $I_{OH}$ | $V_{CC2}$=24V, $V_{CC1}$ Open Circuit | 0.1 | 10 | μA |
| Supply current | $I_{CC}$ | VCC1=24V，Vo Open Circuit | 3.5 | 8 | mA |
| Output Rise Edge Time | $t_R$ | $V_{CC1}$=$V_{CC2}$=12V，$R_L$=1.2kΩ，$C_L$=20pF | 125 | 150 | ns |
| Output Fall Edge Time | $t_F$ | | 60 | 80 | ns |



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## ◆ Magnetic Characteristic

Test Condition：$V_{CC1}$ = $V_{CC2}$ =24V，$I_O$ = 50mA

| Parameter | Symbol | Min. | Typ. | Max. |
|---|---|---|---|---|
| Operate Point | $B_{OP}$ | — | 2.5 | 4 |
| Release Point | $B_{RP}$ | 4 | -2.5 | — |
| Hysteresis<br>｜Operate point –Release Point｜ | $B_H$<br>$\lvert B_{OP}-B_{RP} \rvert$ | 2.5 | 4 | 6 |

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

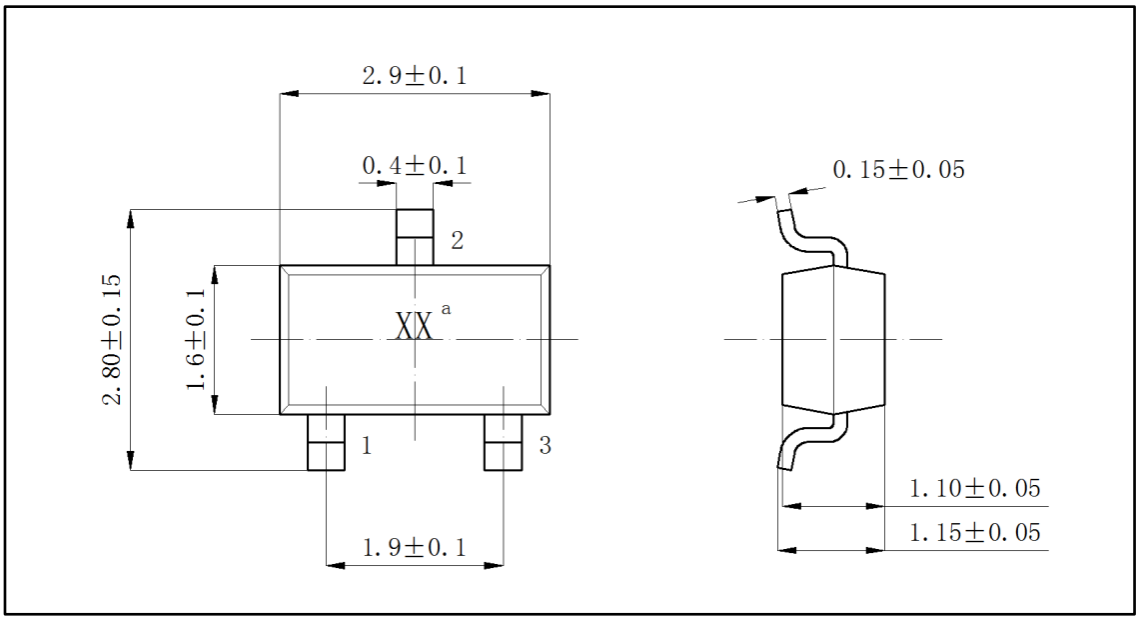
Note2: When the “S”Pole of the magnetic field is vertical to the front mark of product, we call the magnetic field B > 0.



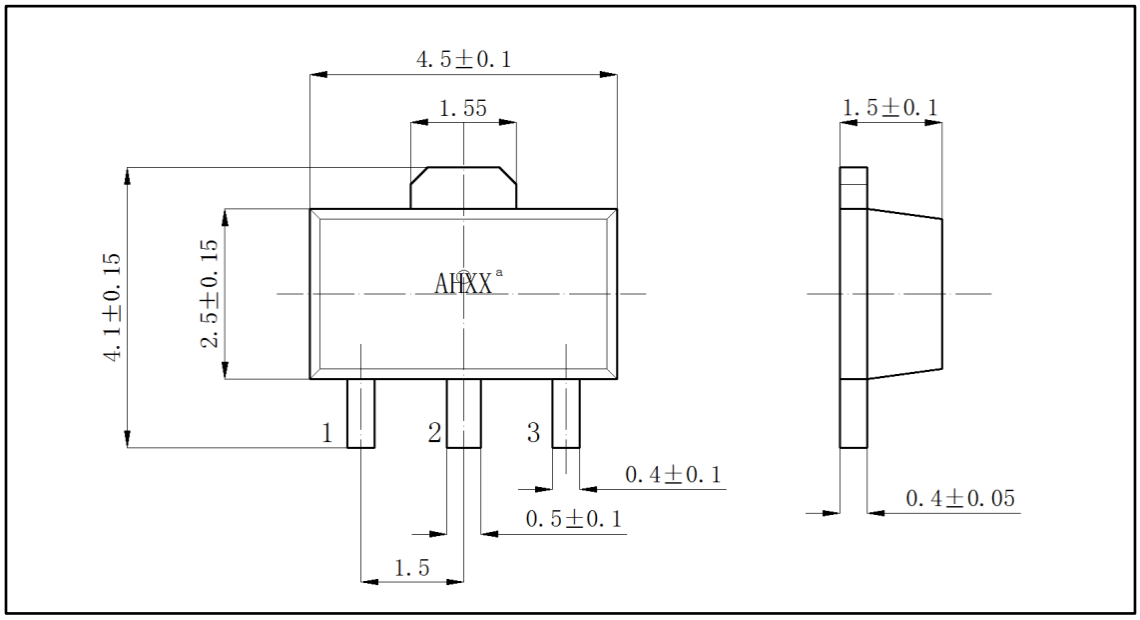
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## ◆ Package Outline

- SOT23-3L Package figure（Unit: mm）



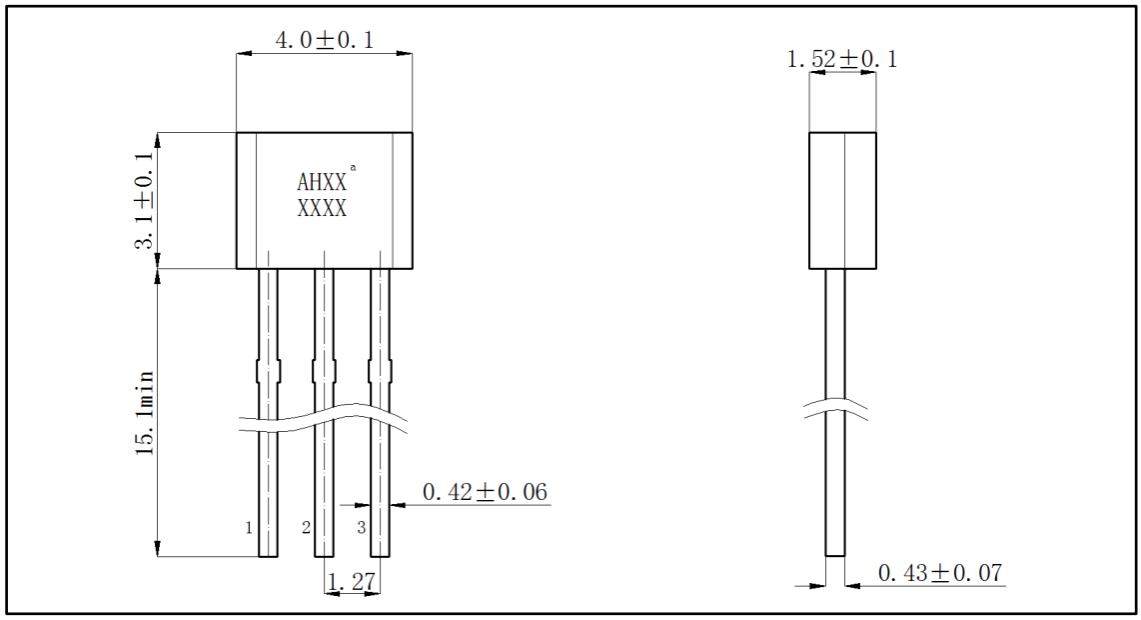

- SOT-89 Package figure（Unit: mm）






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




Note: In the package outline, Pin1 is Vcc, Pin 2: GND, Pin3: output terminal.

## Mark

Mark “XX”or “AHXX” are abbreviation form of parts No.



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