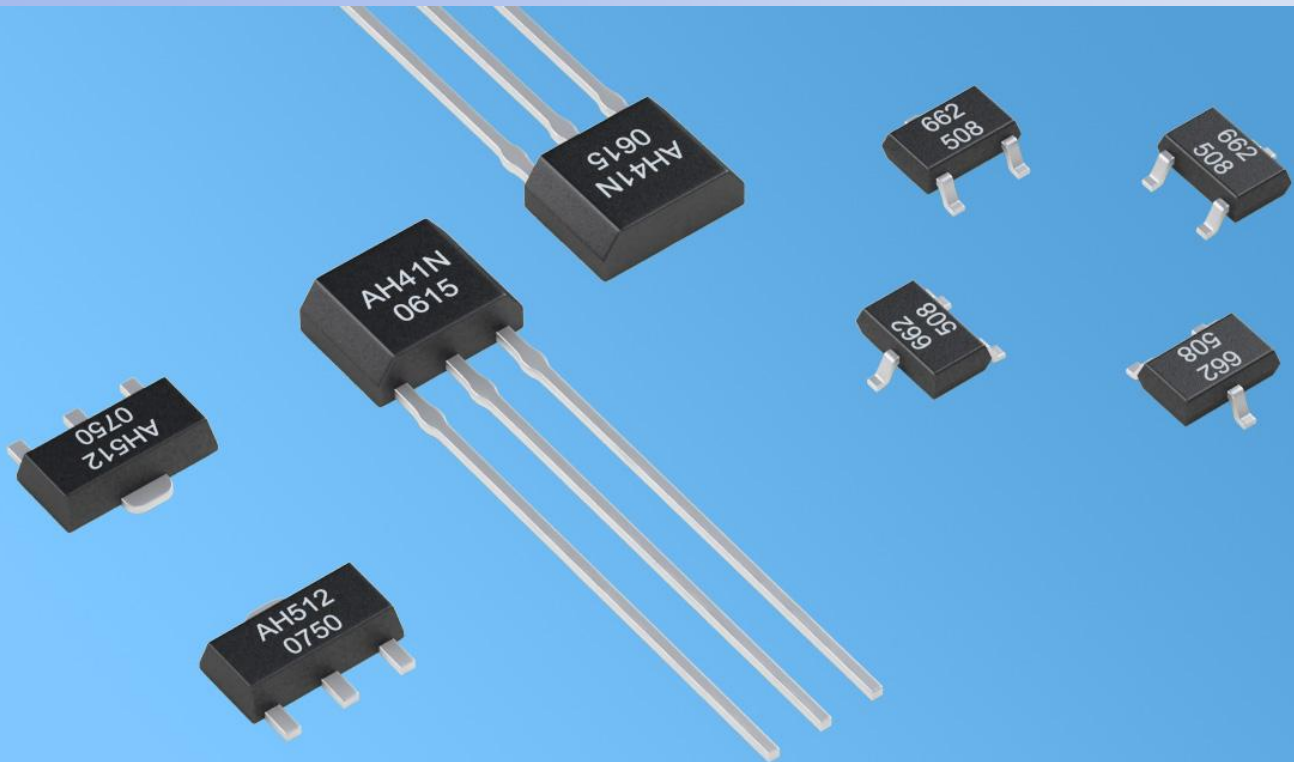


Unipolar Hall Sensor AH543

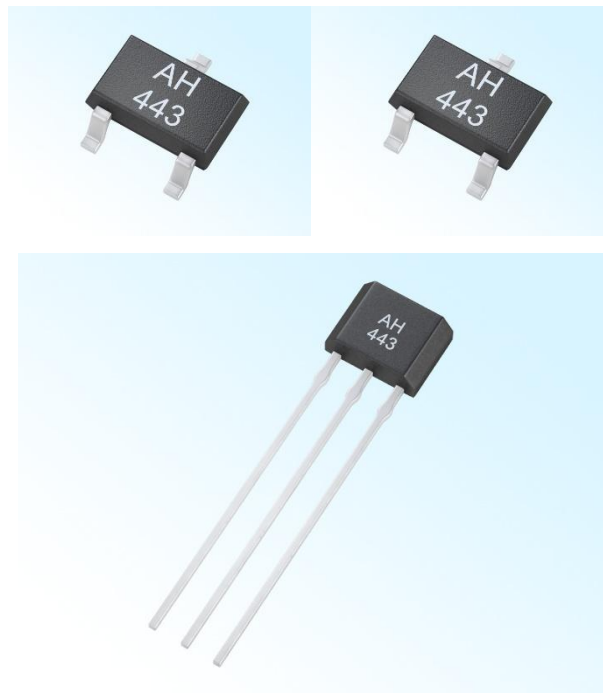


AH

NANJING AH

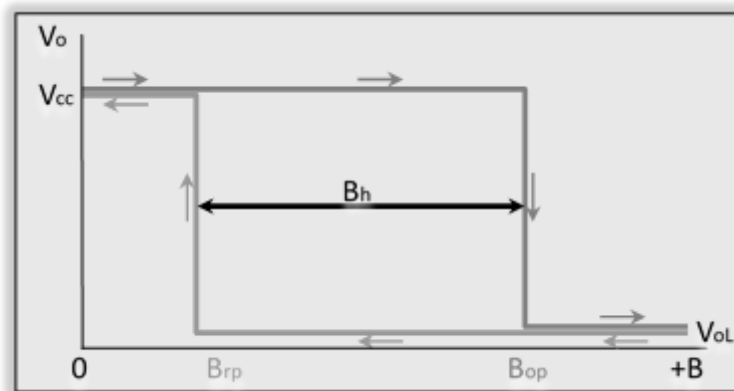
◆ Features

- Rated working voltage 4.5 V ~ 24 V, the limit voltages as low as 3.5 V;
- Operating temperature range: -40°C ~ 150°C;
- 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;
- There are variety of packages and out packing options;
- 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

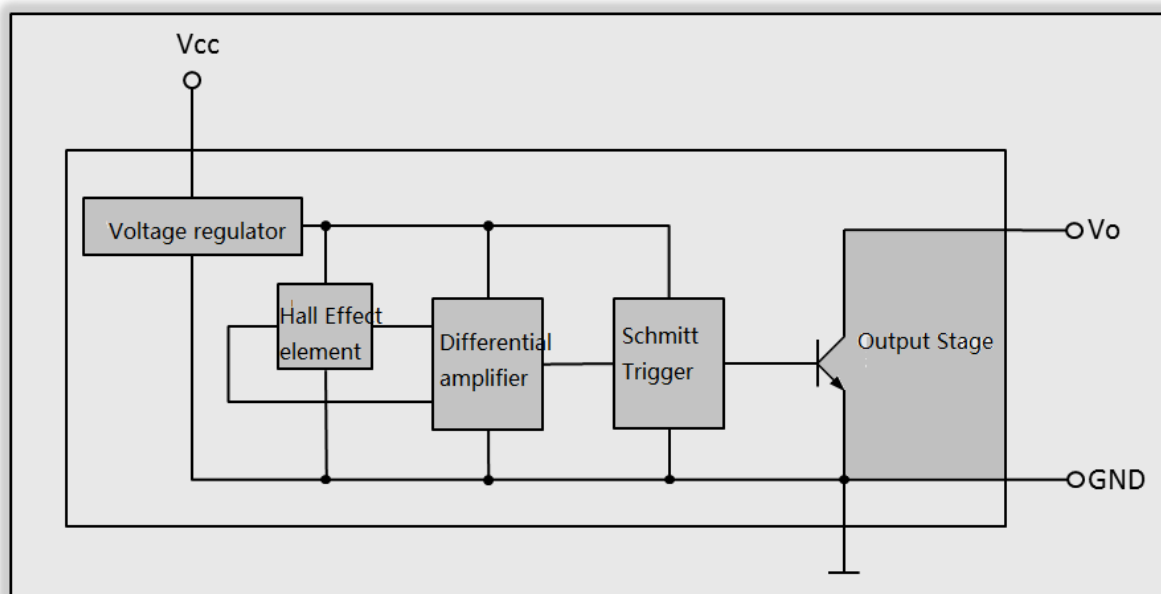


◆ Outline

When the “S” pole of magnet faces the mark surface of the sensor and is closed to sensor ($B \geq B_{OP}$), the sensor outputs low level; When magnet is far away from sensor ($B \leq B_{RP}$), the sensor outputs high level. When the “N” pole faces the mark surface, the sensor is no response. Stable Hysteresis ($B_H = |B_{OP} - B_{RP}|$) ensure Stable sensor's switch status. The magnet and electric transfer characteristic curve is shown as the figure:



◆ Block Diagram



Hall sensor AH543 is one of unipolar excitation single-ended digital output Hall IC. The sensor chip has built-in reverse voltage protection, voltage regulators, temperature compensation circuit, Hall-voltage generator, signal amplifier, Schmitt trigger 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.

◆Limit Parameter

Parameter	Symbol	Min.	Max.	Unit
Storage Temp.	T_s	-55	175	°C
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	—	5 ⁰	mA

◆ Electrostatic Grade

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

◆ Operating Condition

Parameter	Symbol	Min.	Max.	Unit
Supply Voltage	V_{CC}	4.5	24	V
Operating Temp.	T_a	-40	150	°C
Output Current	I_O	—	5	mA

◆ Electrical Characteristic

Parameter	Symbol	Test Condition	Typ.	Max	Unit
Output Low Level	V_{OL}	$V_{CC1}=4.5$, $V_{CC2}=24V$, $I_O=25mA$, $B \geq B_{OP}$	0.2	0.4	V
Output High Level	V_{OH}	$V_{CC1}=4.5$, $V_{CC2}=24V$, $I_O=25mA$, $B \leq B_{RP}$	23.5	24	V
Output Leakage current	I_{OH}	$V_{CC2}=24V$, V_{CC1} Open circuit	0.1	10	μA
Supply Current	I_{CC}	$V_{CC1}=24V$, V_o Open Circuit	3.5	8	mA
Output Rise Edge Time	t_R	$V_{CC1}=V_{CC2}=12V$,	125	150	ns
Output Fall Edge Time	t_F	$R_L=1.2k\Omega$, $C_L=20pF$	60	80	ns

◆Magnetic Characteristic

Test Condition : $V_{CC1} = V_{CC2} = 24V$, $I_0 = 50mA$

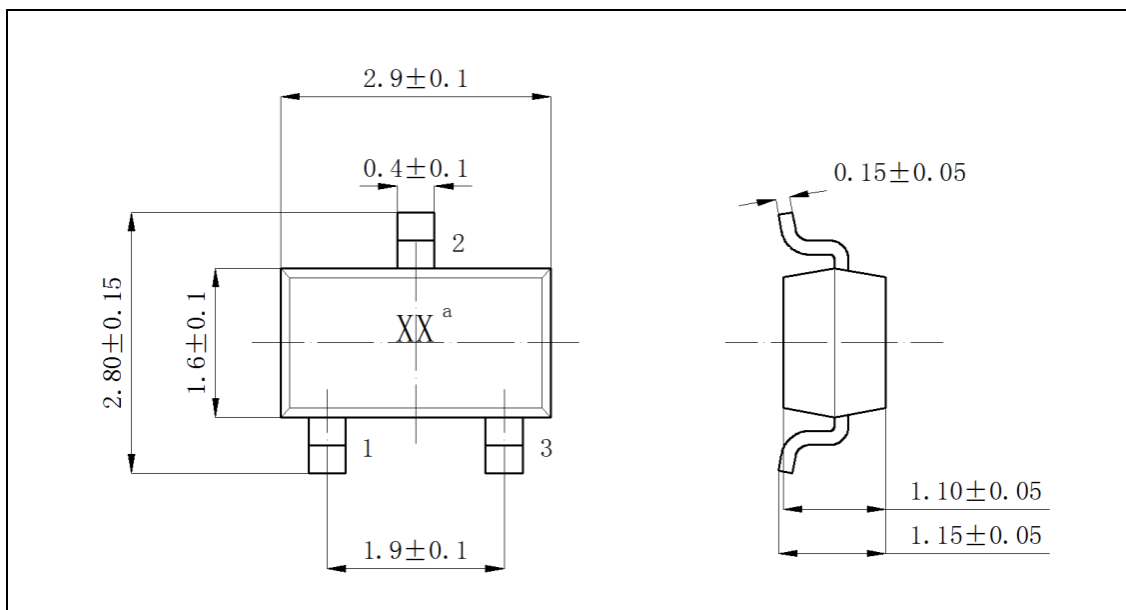
Parameter	Symbol	Min.	Typ.	Max.
Operate Point	B_{OP}	—	—	25
Release Point	B_{RP}	3	—	—
Hysteresis Operate point-Release point	B_H $B_{OP}-B_{RP}$	2	—	6

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

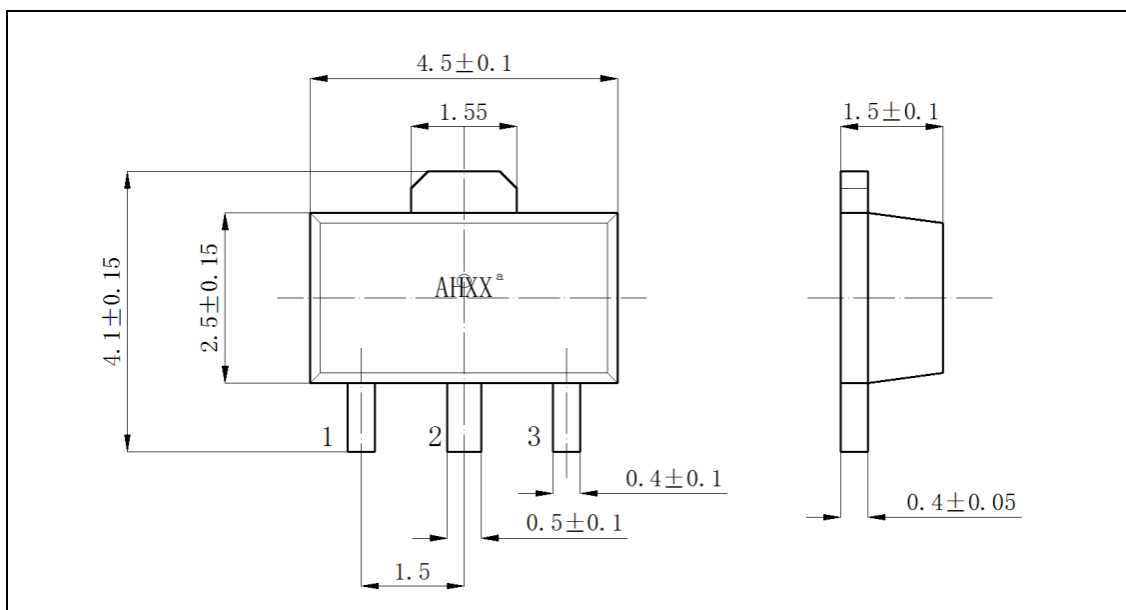
Note2: When the “S”Pole of the magnetic field is vertical to the front mark of product, we call the magnetic field $B > 0$.

◆ Package Outline

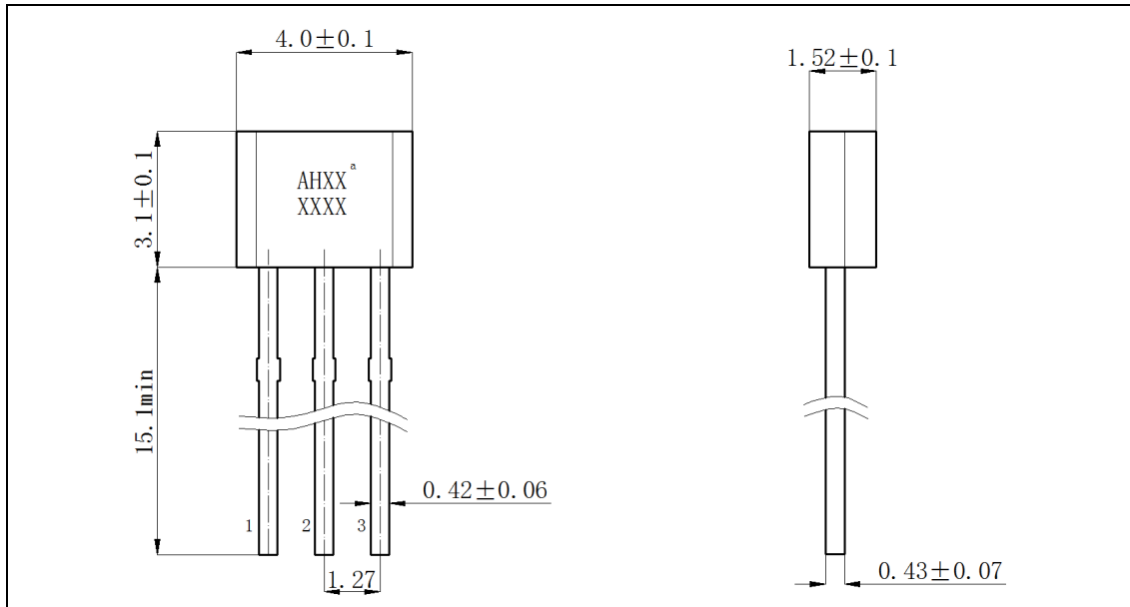
- SOT23-3L (M type) Package figure (Unit: mm)



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



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



Note: In the above package outline figure, Pin 1: Vcc, Pin2: GND, Pin 3: Output terminal.

- Mark

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