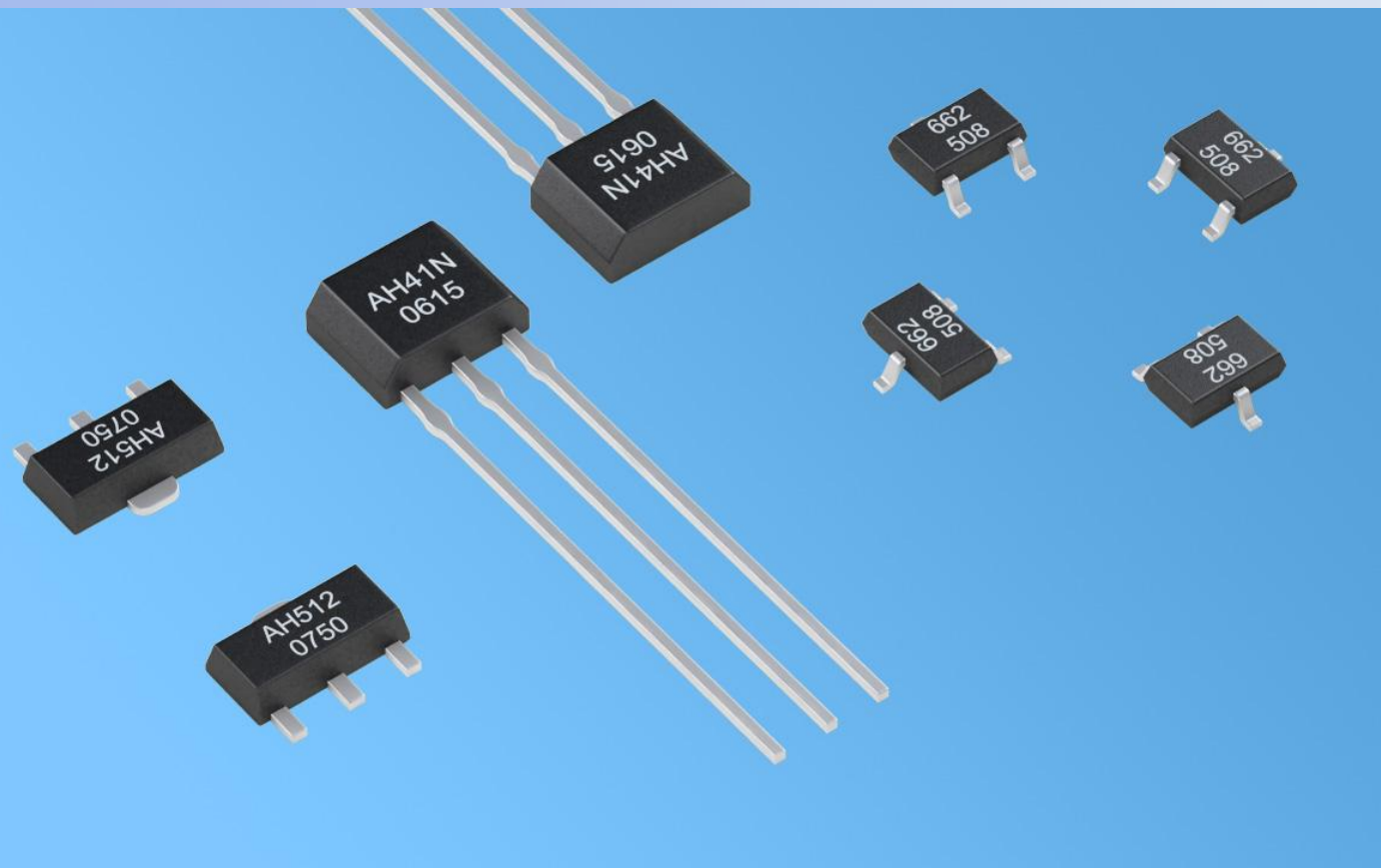


Latch Type Hall Sensor AH3031

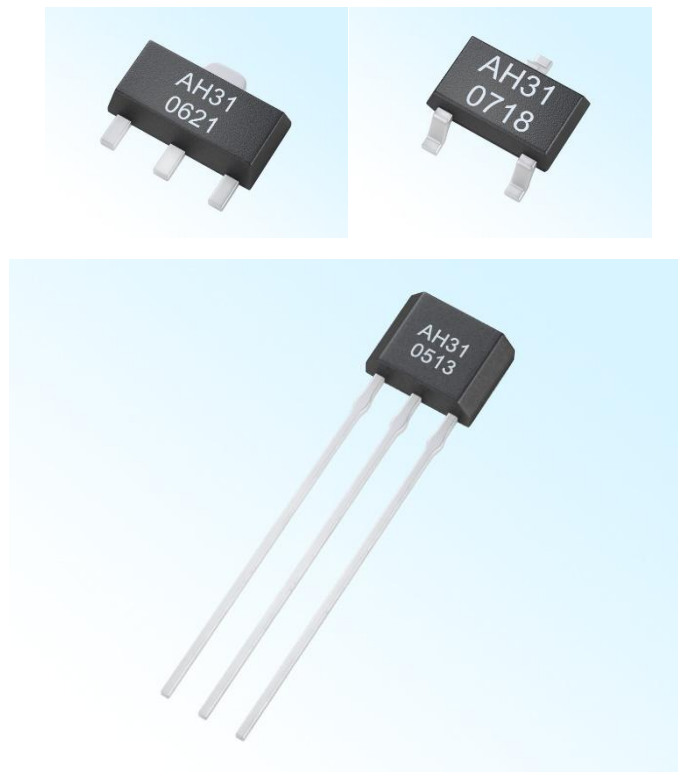


AH

NANJING AH

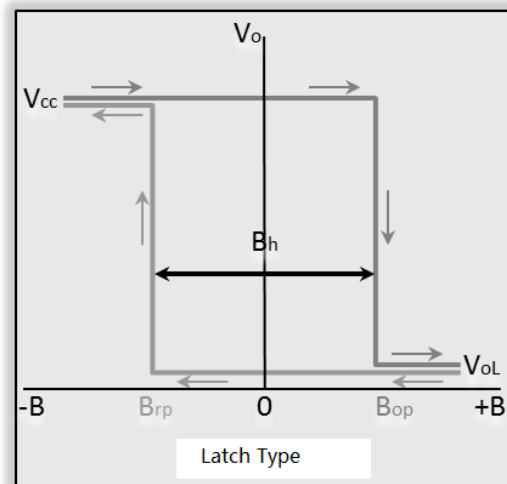
◆ Features

- Rated working voltage 4.5 V ~ 24 V, the limit voltages as low as 3.5 V;
- Operating temperature range: -55°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;
- 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

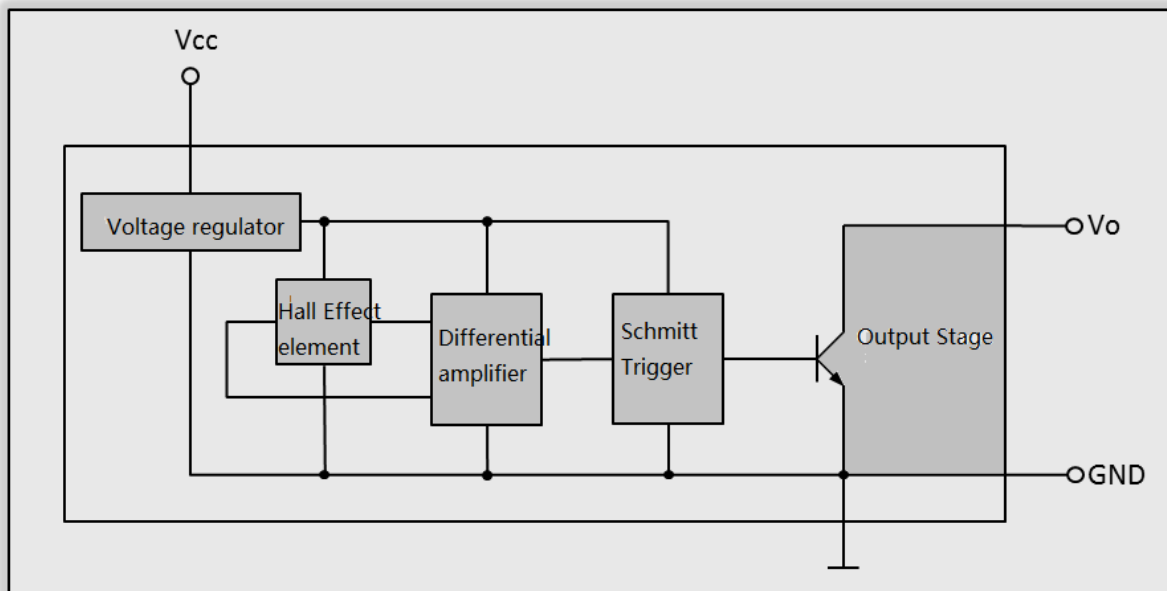


◆ Outline

When the “S” pole of magnet faces the mark surface of the sensor and is closed to sensor ($B > B_{rp}$) the sensor outputs low level; When the “N” pole faces the mark surface and is closed to sensor ($B < B_{op}$), , the sensor outputs high level. When the magnet is far away from the sensor ($B=0$), the output status of the sensor is latched and keeps constant. In order to change the output status, the applied magnetic field must be opposite polarity. The magnet and electric transfer characteristic curve of AH3031 is shown as the figure:



◆ Block Diagram



Hall sensor AH3031 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, 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	—	50	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	-55	150	°C
Output Current	I_O	—	8	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 : $V_{CC1} = V_{CC2} = 24V$, $I_O = 50mA$

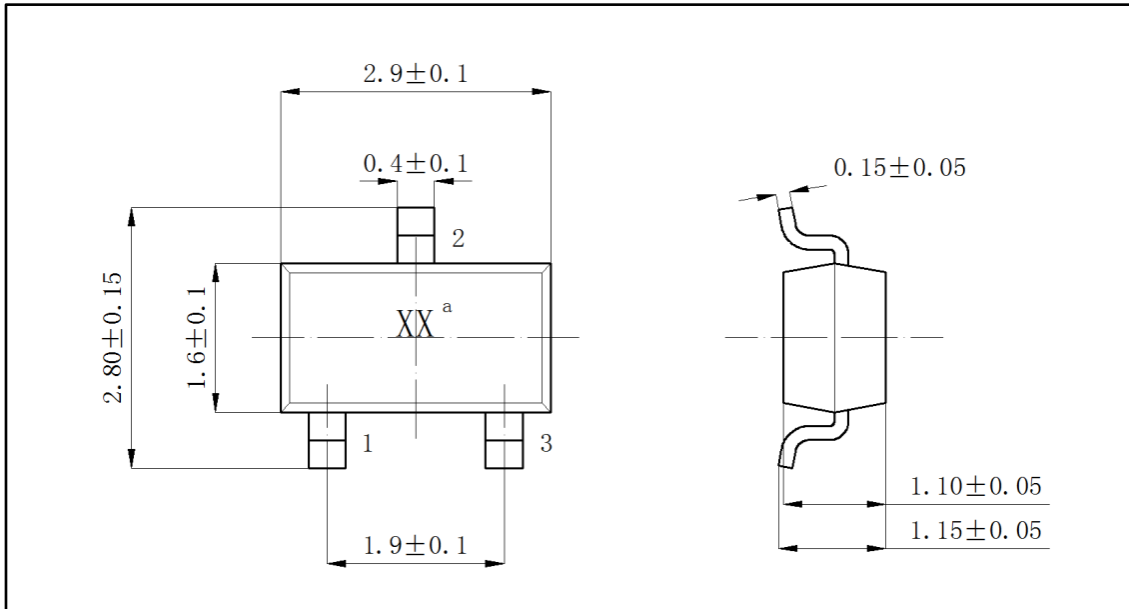
Parameter	Symbol	Min.	Typ.	Max.
Operate Point	B_{OP}	—	3	5
Release Point	B_{RP}	-5	-3	—
Hysteresis	B_H			
Operate point –Release Point	$ B_{OP} - B_{RP} $	3	6	10

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

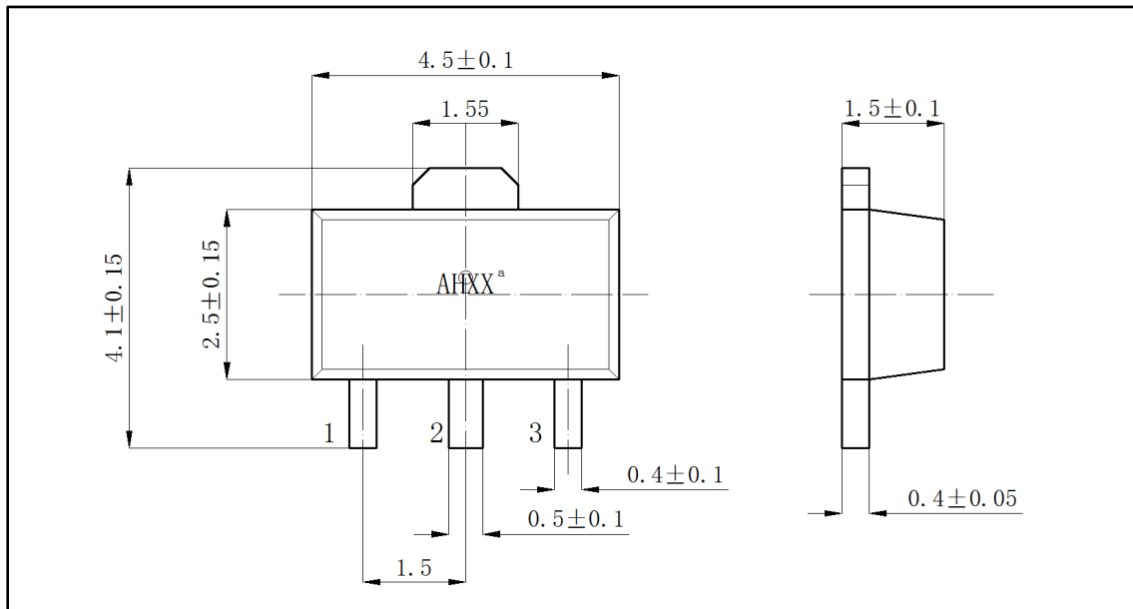
Note 2: When the “S”Pole of the magnetic field is vertical to the front mark of product, we call the magnetic field $B > 0$.

◆ Package Outline

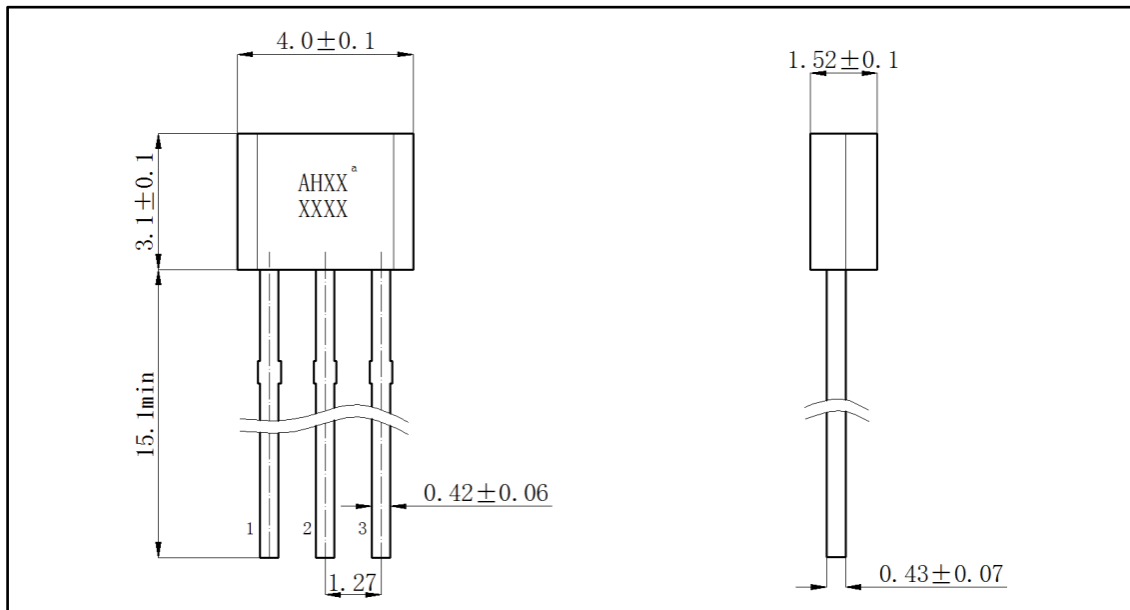
- SOT23-3L Package figure (Unit: mm)



- SOT-89 Package figure (Unit: mm)



- 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.