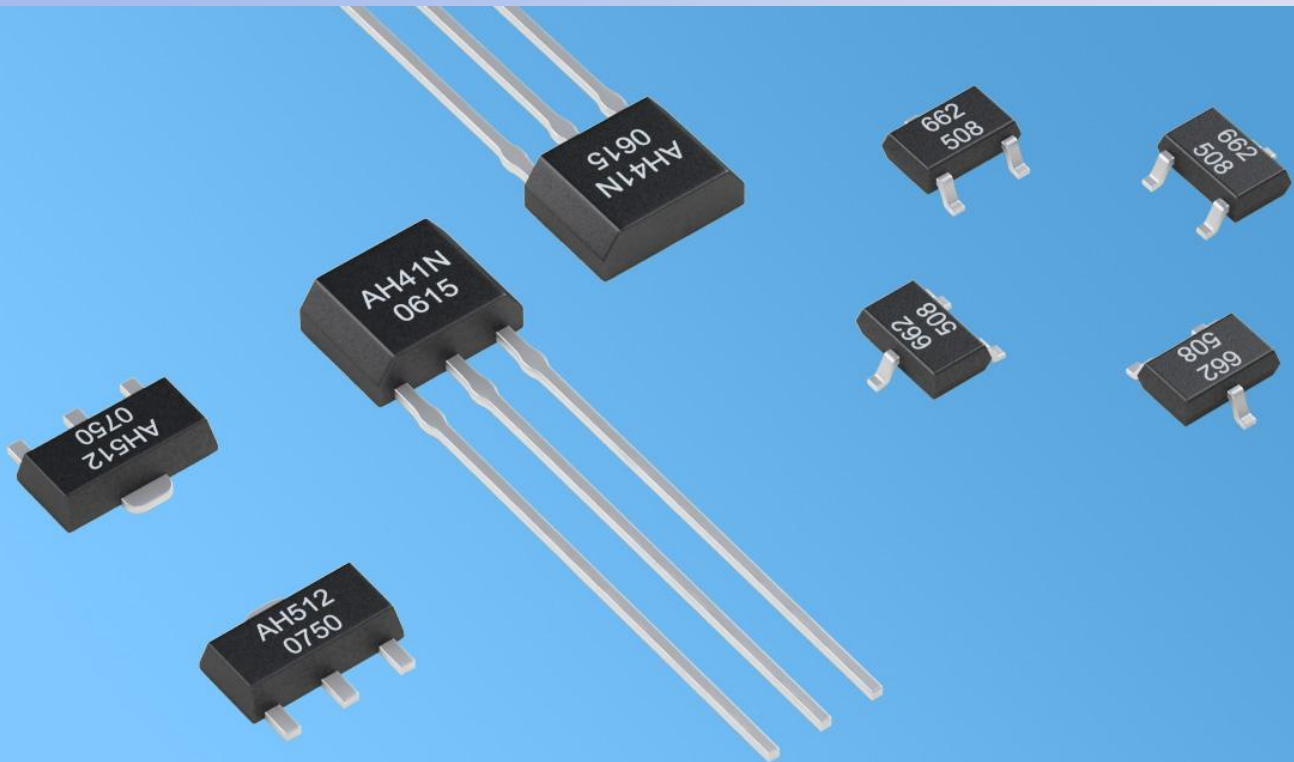


Unipolar Type Hall Sensor AH3133



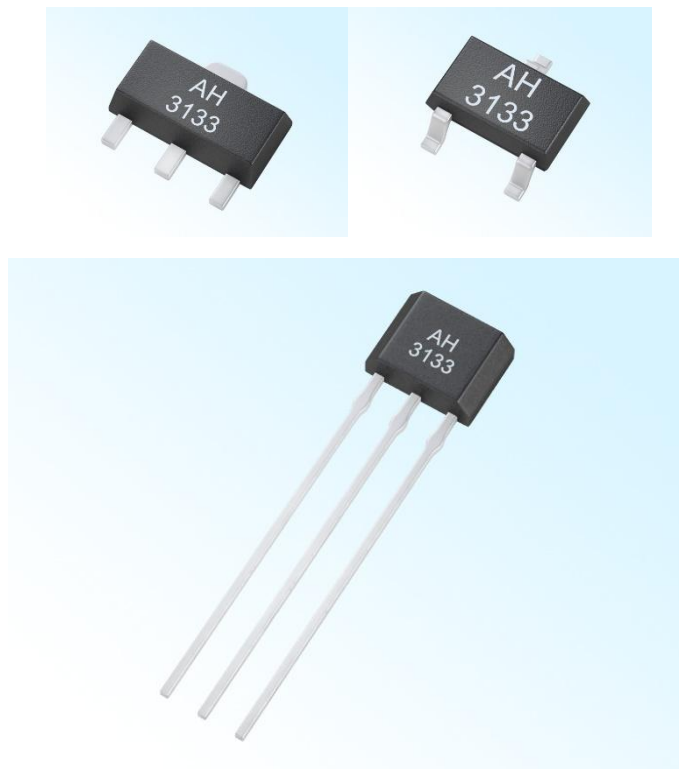
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◆Features

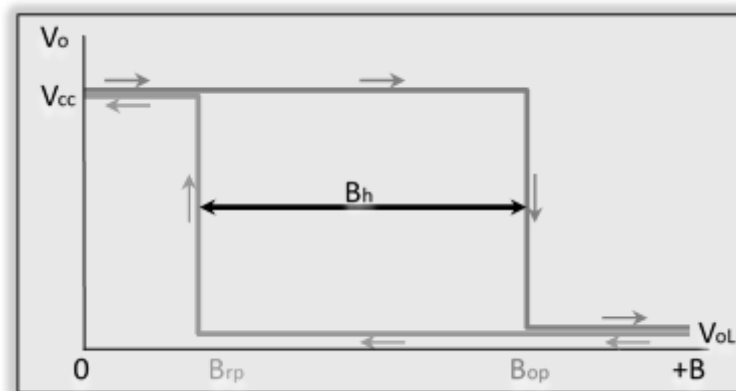
Rated working voltage 4.5 V ~ 24 V, the limit voltages as low as 3.5 V;

- 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

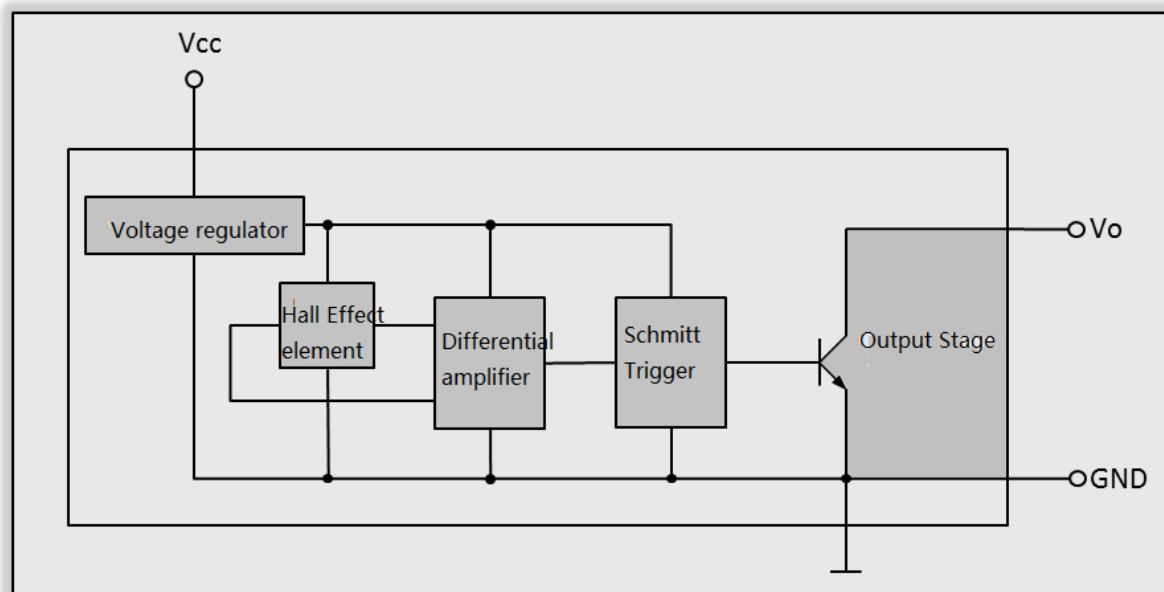


◆ Outline

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 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 the Stable sensor's switch status. The magnet and electric transfer characteristic curve is shown as the figure:



◆Block Diagram



Hall sensor AH3133 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 : $V_{CC1} = V_{CC2} = 24V$, $I_O = 50mA$

Parameter	Symbol	Min.	Typ.	Max.
Operate Point	B_{OP}	—	4.5	6
Release Point	B_{RP}	1	2	—
Hysteresis Operate point-Release point	B_H $B_{OP} - B_{RP}$	—	2.5	3

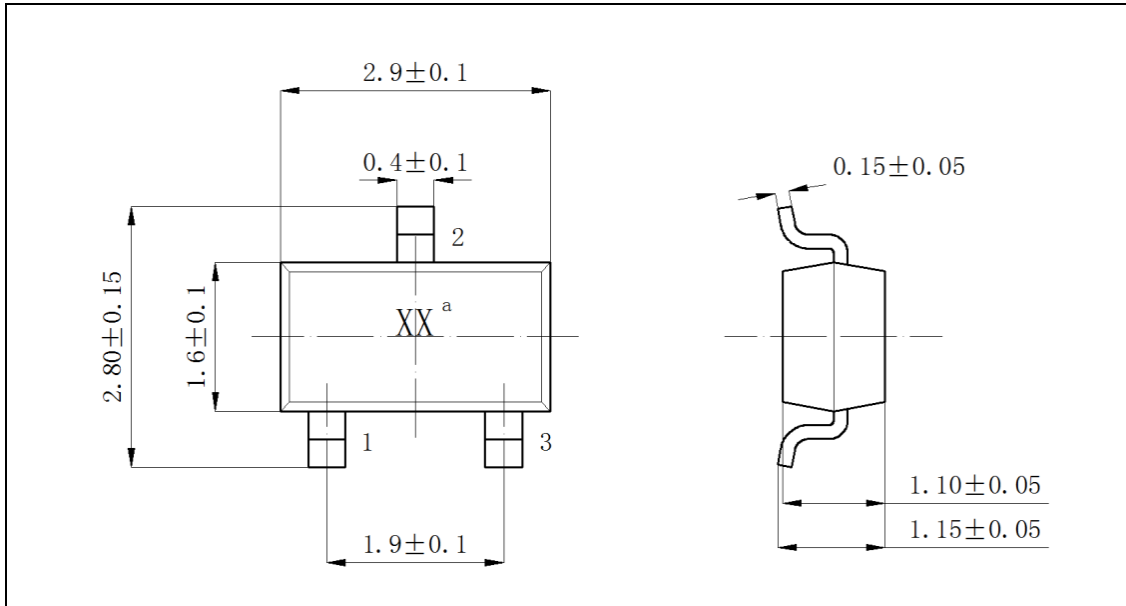
Note 1: Unit is mT, 1mT=10Gs

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

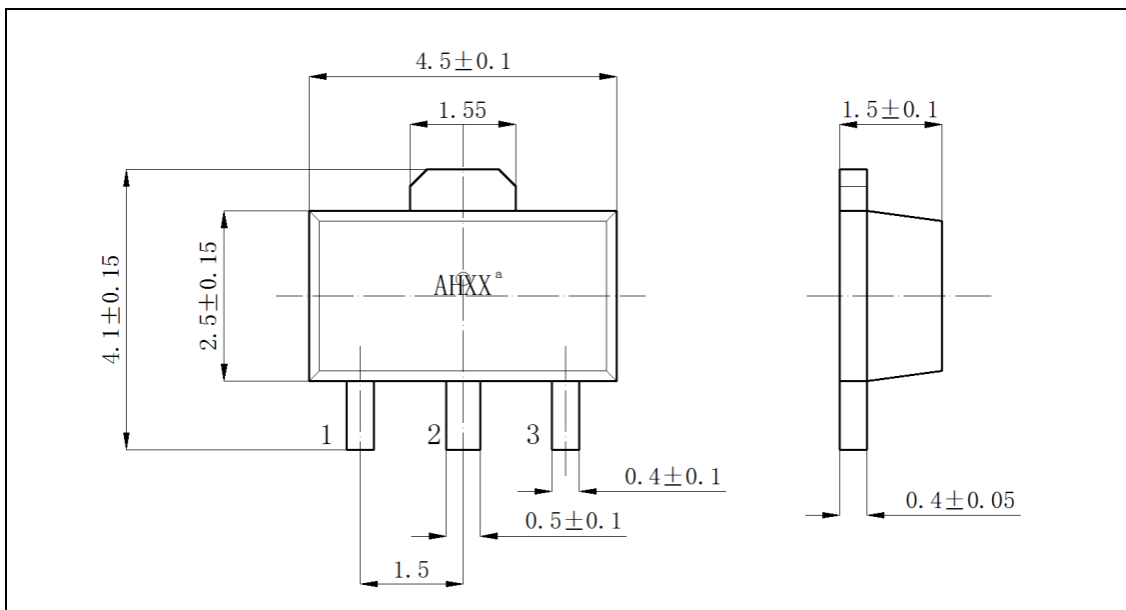
Note3: For M type (SOT23-3L) product, the operating magnetic field is subject to “N”Pole.

◆ Package Outline

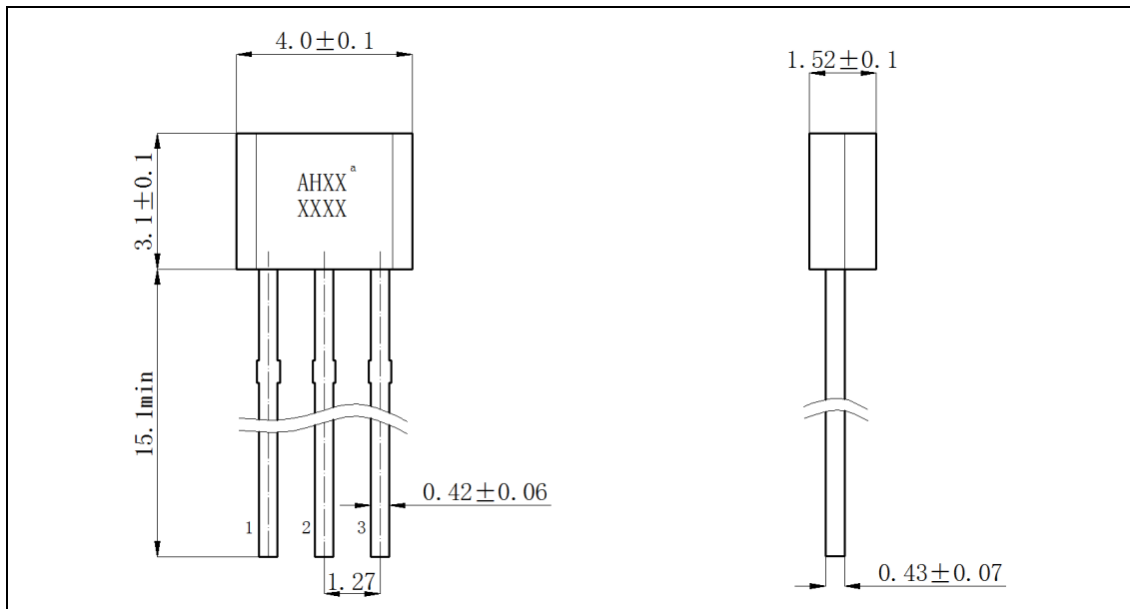
- SOT23-3L (M type) Package figure (Unit: mm)



- 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.