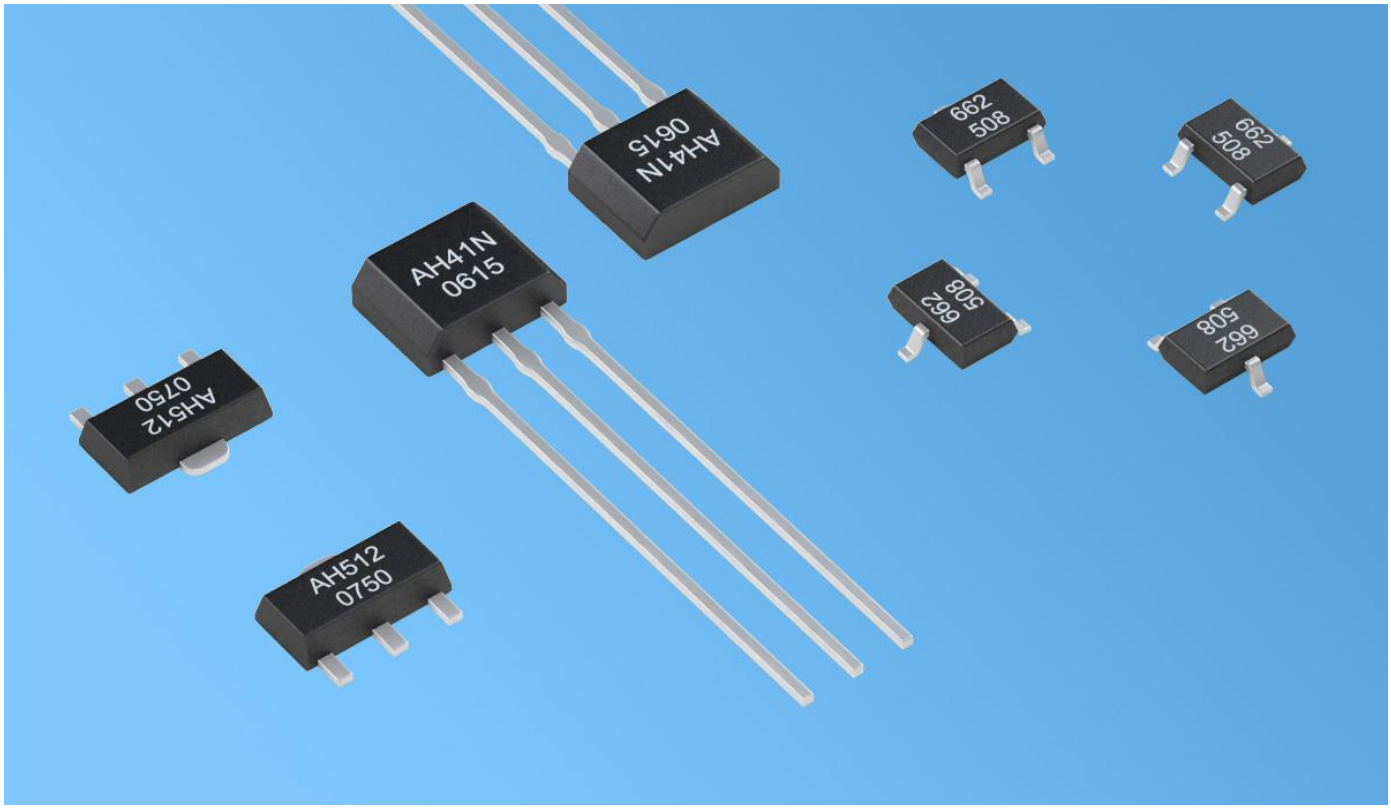
Latch Type Hall Sensor AH4158



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) : 300 mA, it can directy drive the coils of DC motor (Fan).
- Special design make the sensor owns imunity to logic race condition, short switch time and good switch sensitivity.
- 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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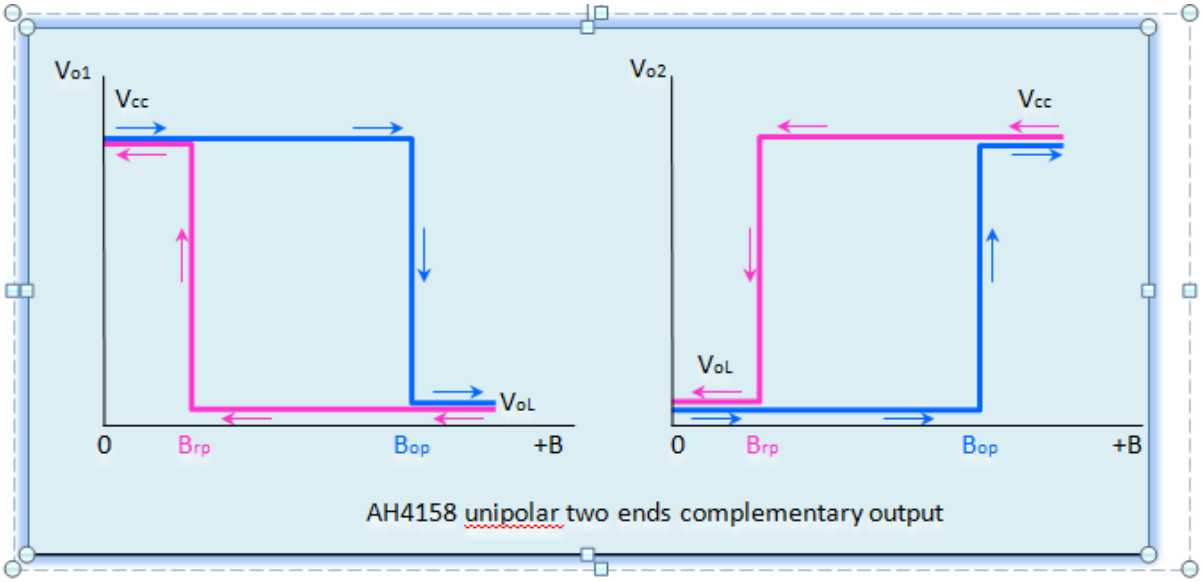
◆ Outline

AH4158 unipolar two ends complementary output switch type Hall Sensor, when the "S" pole faces the sensor's mark surface and is closed to sensor (B≥Bop), output terminal V_{O1} outputs low level, and the output terminal V_{O2} outputs high level; when the magnet is far away from the sensor （B≤Brp), output terminal V_{O1} outputs high level, the output terminal V_{O2} output low level. Stable hysteresis（ Bh= Bop- Brp ）ensures stable switch status, The magnetic and electric transfer characteristic curve of AH4158 is shown as the figure:



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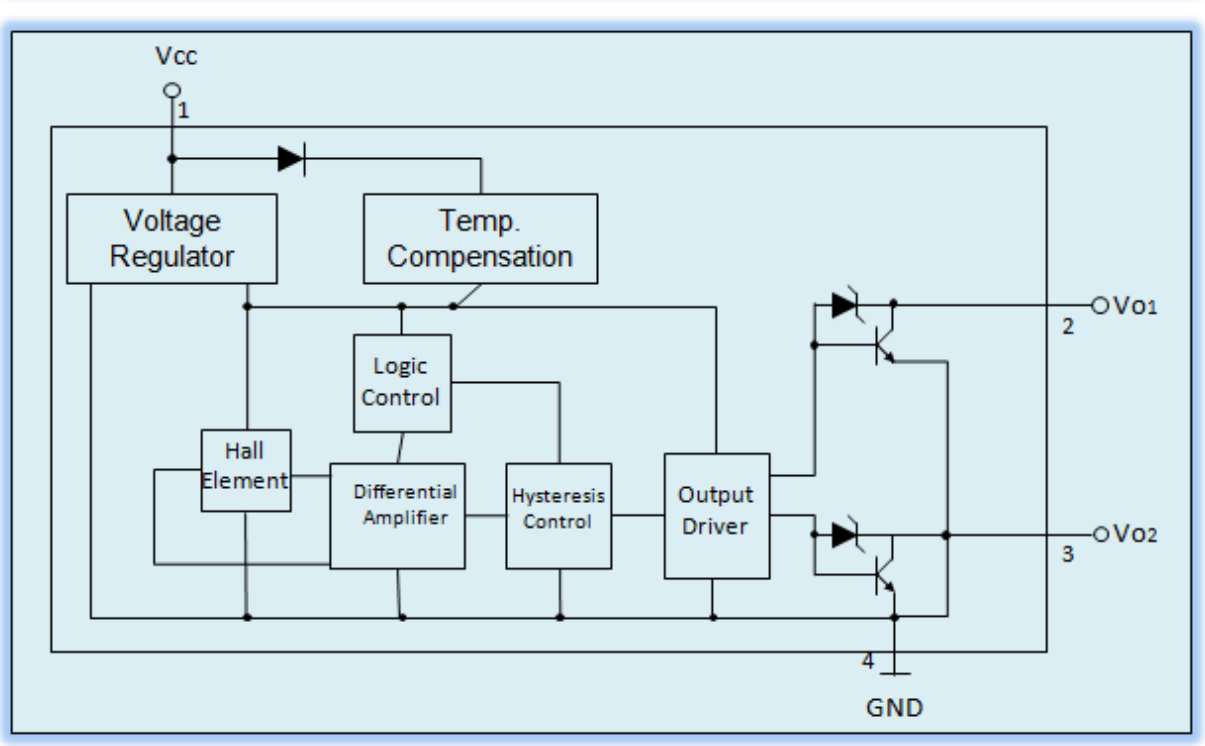
◆Block Diagram



AH4158 Hall Sensor is a kind of unipolar field excitation two ends complementary output switch type Hall IC. Complementary output Hall sensor is particularly suitable for double coil DC motor, double coil DC fan, speed measurement and rotation control. The sensor chip intergrated bandgap reference voltage source, Hall voltage generator, signal amplifier, hysteresis controller, reverse voltage protection diode, and two way complementary output open collector output driver which sink current reaches 300mA and so on circuit unit. Excellent bandgap reference voltage source ensures the sensor can keep concordant sensitivity in a wide temperature range. Reverse voltage protection diode can avoid reverse power failure.

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◆Limit Parameter

Parameter	Symbol	Min.	Max.	Unit
Storage Temp.	T_S	-55	150	℃
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	—	500	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.	T_a	-25	85	℃
Output Current	I_O	—	300	mA

◆Electrical **Characteristc**

Paramater	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}	VCC2=24V，VCC1 open circuit	0.1	10	μA
Supply Current	I_{CC}	VCC1=24V，Vo open circuit	6	12	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}	—	10	20
Release Point	B_{RP}	3	5	—
Hysteresis |Operate point-Release point|	B_H $\|B_{OP}-B_{RP}\|$	3	-	16

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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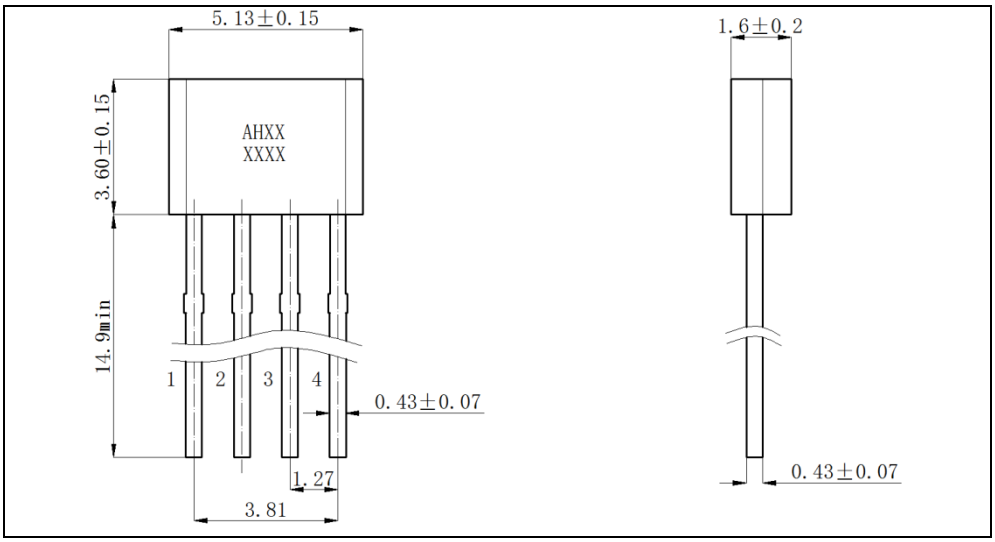
◆Package Outline

- TO-92UA/TO-92S Package outline（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.

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