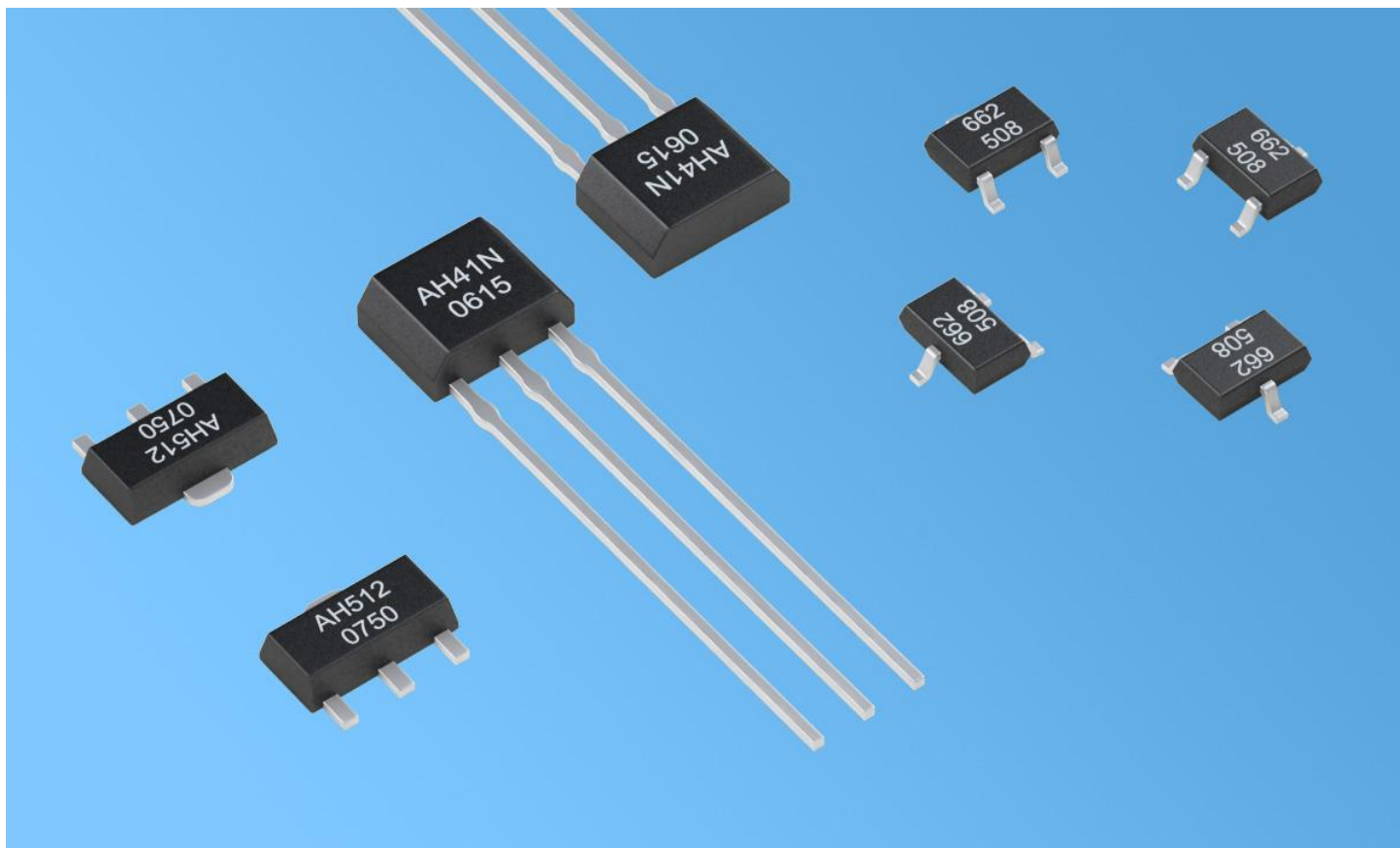


# Latch Type Hall Sensor AH4059



**AH**

NANJING AH

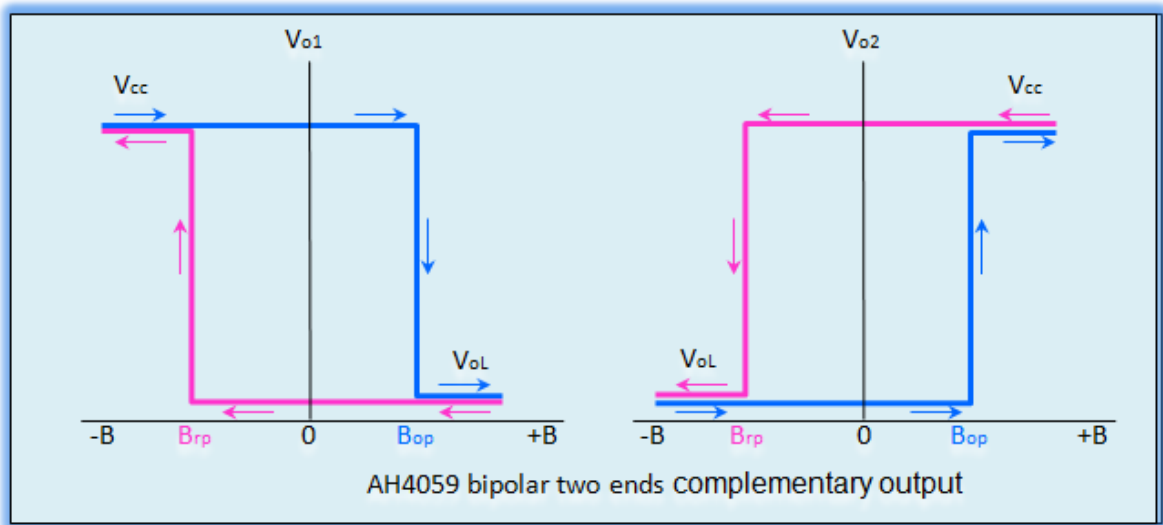
## ◆ Features

- 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) : 300 mA, it can directly drive the coils of DC motor (Fan ).
- Special design make the sensor owns immunity 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

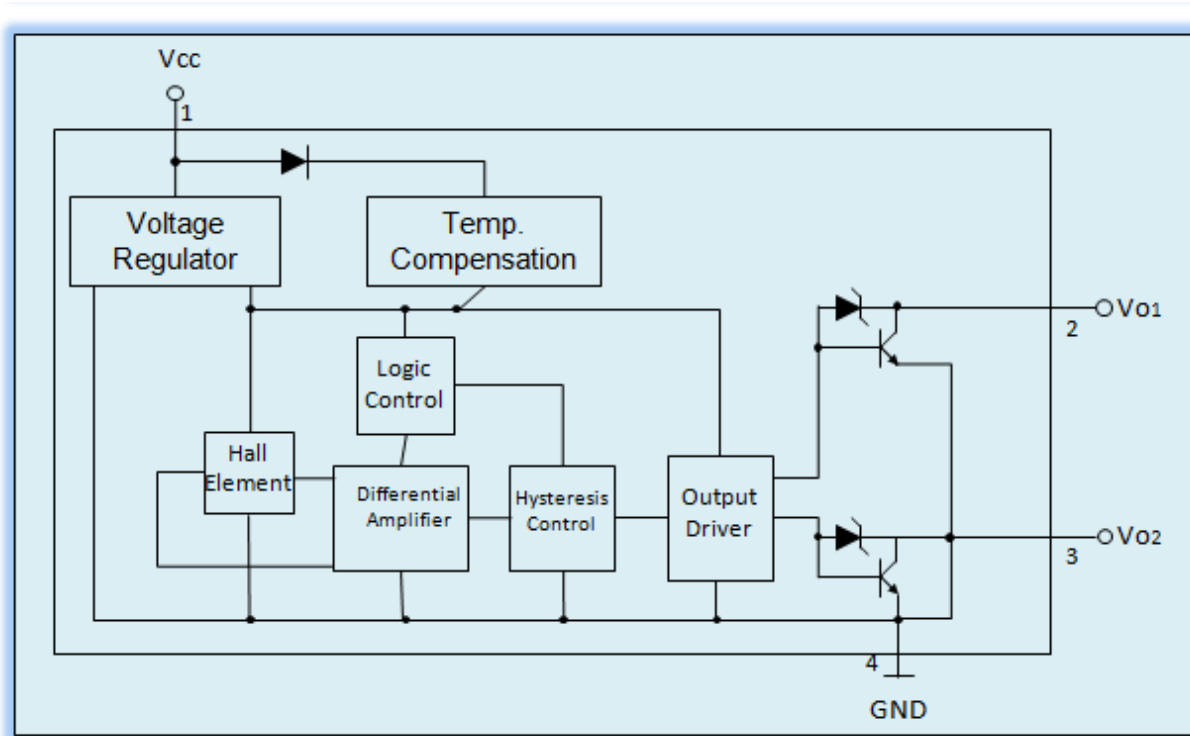


◆ Outline

□ AH4059 bipolar two ends complementary output switch type Hall Sensor, when the “S” pole faces the sensor’s mark surface and is closed to sensor ( $B \geq B_{op}$ ), output terminal  $V_{O1}$  outputs low level, and the output terminal  $V_{O2}$  outputs high level; when the “N” pole faces sensor’s mark surface and is closed to sensor ( $B \leq B_{rp}$ ), output terminal  $V_{O1}$  outputs high level, the output terminal  $V_{O2}$  output low level. Stable hysteresis ( $B_h = B_{op} - B_{rp}$ ) ensures stable switch status, The magnetic and electric transfer characteristic curve of AH4059 is shown as the figure:



### ◆Block Diagram



AH4059 Hall Sensor is a kind of bipolar 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 integrated 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.

### ◆Limit Parameter

Parameter	Symbol	Min.	Max.	Unit
Storage Temp.	$T_s$	-55	150	°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	$I_O$	—	500	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.	$T_a$	-25	85	°C
Output Current	$I_O$	—	300	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	$\mu A$
Supply Current	$I_{CC}$	$V_{CC1}=24V, V_O$ Open Circuit	6	12	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 :  $V_{CC1} = V_{CC2} = 24V$  ,  $I_O = 50mA$

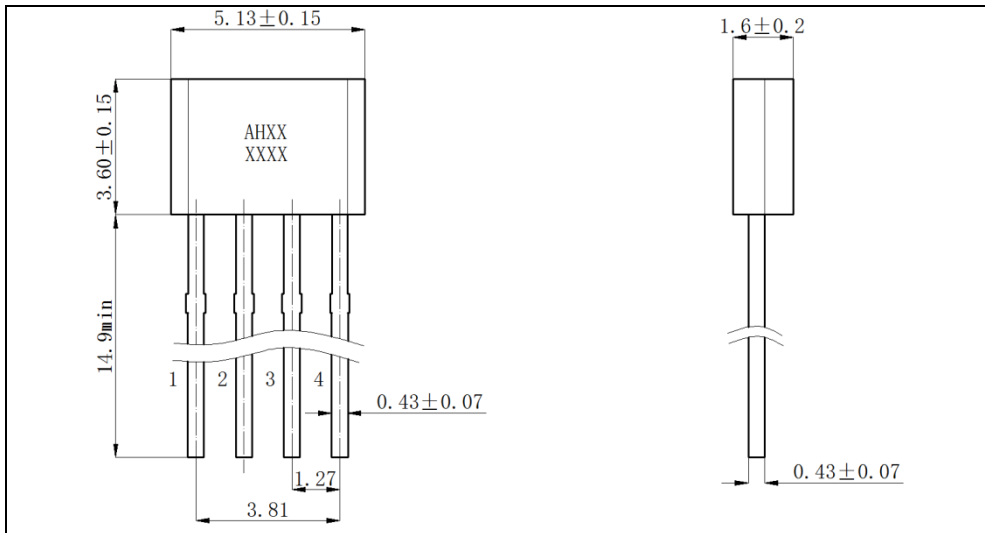
Parameter	Symbol	Min.	Typ.	Max.
Operate Point	$B_{OP}$	—	4	8
Release Point	$B_{RP}$	-8	-4	—
Hysteresis	$B_H$	3	-	16
Operate point-Release point	$B_{OP} - B_{RP}$			

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 )



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.