

## 1、 Features

- Low power consumption
- Operation under low-voltage:  
2.7V
- Low current- Dozens of  $\mu\text{A}$  of  
the power consumption current
- Omnipolar works  
Both S, N pole can work
- Wide temperature range:  
 $-45^{\circ}\text{C}$  to  $85^{\circ}\text{C}$
- Lead / connector for direct  
output
- High sensitivity
- Customized lead output

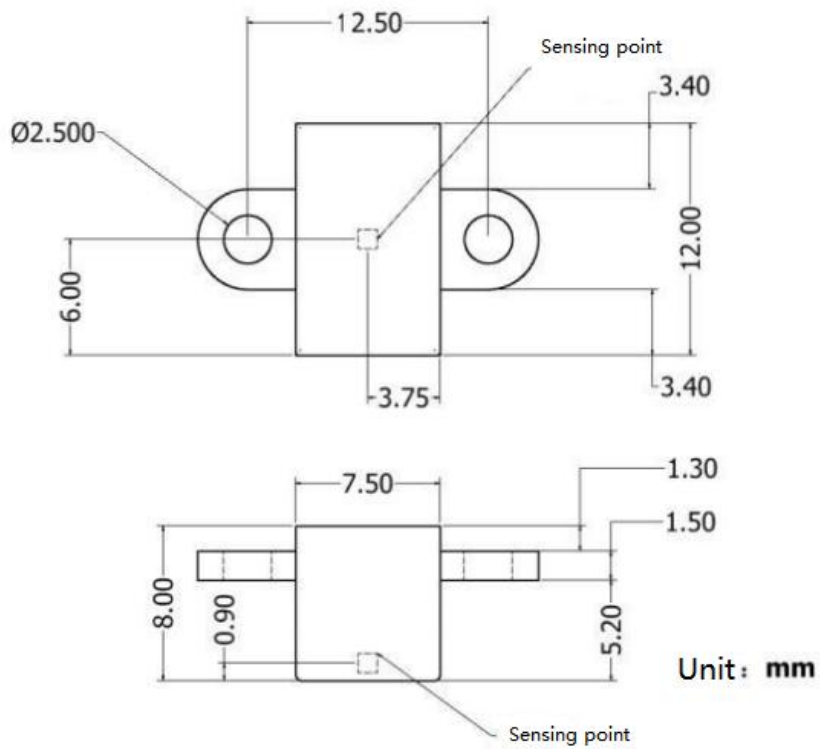
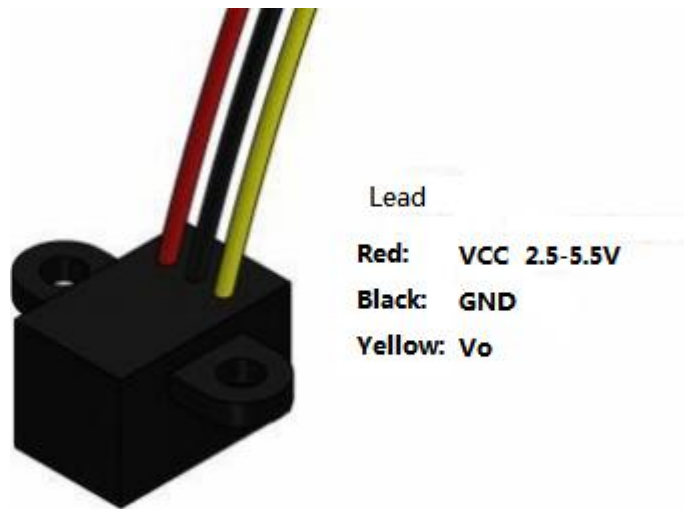
## 2、 Application

- Home appliances, cabinets and  
other door switch detection
- Object position detection-  
coffee cup
- Low-standby power  
consumption occasion
- The small-size sensor field

## 3、 Overview

The AH-SF12D is an omnipolar low power magnetic proximity switch based on Hall IC for detecting the departure and closing of the object. With AH-SF12D, it needn't distinguish the poles, it only makes the magnet leave or close to the sensor. AH-SF12D has excellent voltage and temperature performance, to ensure that the sensor to stable work in a wide voltage and temperature range, the reverse voltage protection circuit can avoid the reverse voltage damage.

#### 4、 Outline, Wiring Function and Size



## 5、 Performance Parameters

### 5.1 Limit Parameters

	Min.	Max.	Unit
Supply voltage $V_s$	2.4	7	V
Operating magnetic field $B$	0	unlimited	mT
Operating Temp. $T$	-55	85	°C
Storage Temp. $T_s$	-55	125	°C

### 5.2 Electrical Characteristics

$V_s=5V$

	Symbol	Min.	Typ.	Max.	Unit
Supply voltage	$V_s$	2.7	3 , 5	5.5	V
High level output voltage	$V_{oh}$	$V_s - 0.5$	$V_s - 0.1$	$V_s$	V
Low level output voltage	$V_{ol}$	-	0.1	0.5	V
Average power consumption current	$I$	10	12	15	uA
Working frequency	$F$	8	10	12	Hz

### 5.3 Magnetic Characteristics

**V<sub>s</sub> = 5V, Using N35 D6\*4 NdFeB**

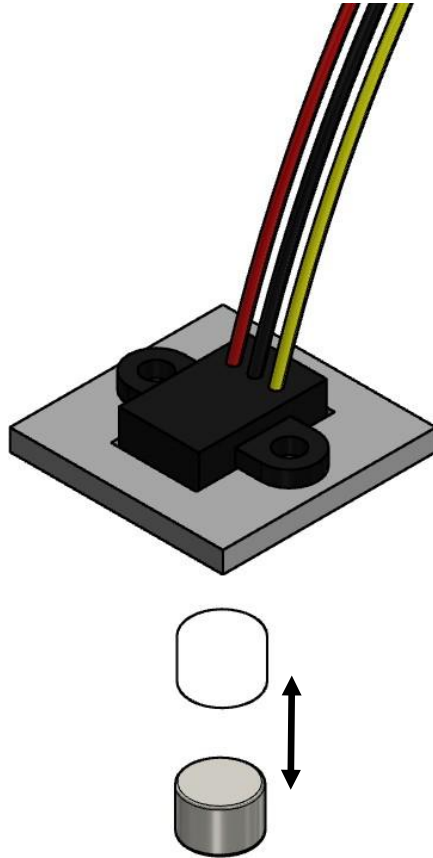
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	Symbol	Min.	Typ.	Max.	Unit
Working distance	Da	0	10	12	mm
Response time	Ta	20	100	200	mS

## 6. Sensor Installation And Working Demonstration

(The wire frame is trigger position)

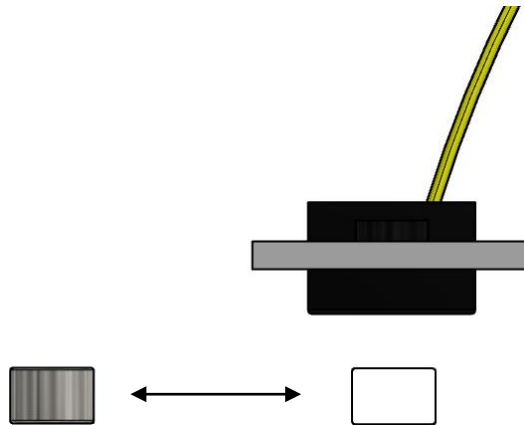
### 6.1 Conventional Working Mode:



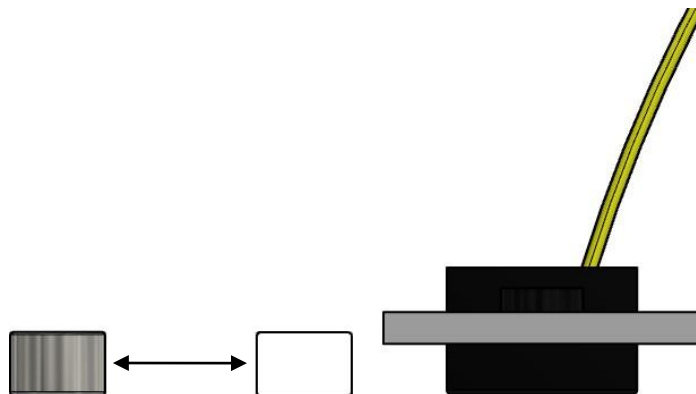
The trigger for magnet's leaving or closing, is commonly used in refrigerator door, cabinet door switch detection, button detection, coffee cup / pot in position detection, small home appliance protection cover in position detection.

## 6.2 Other Working Modes

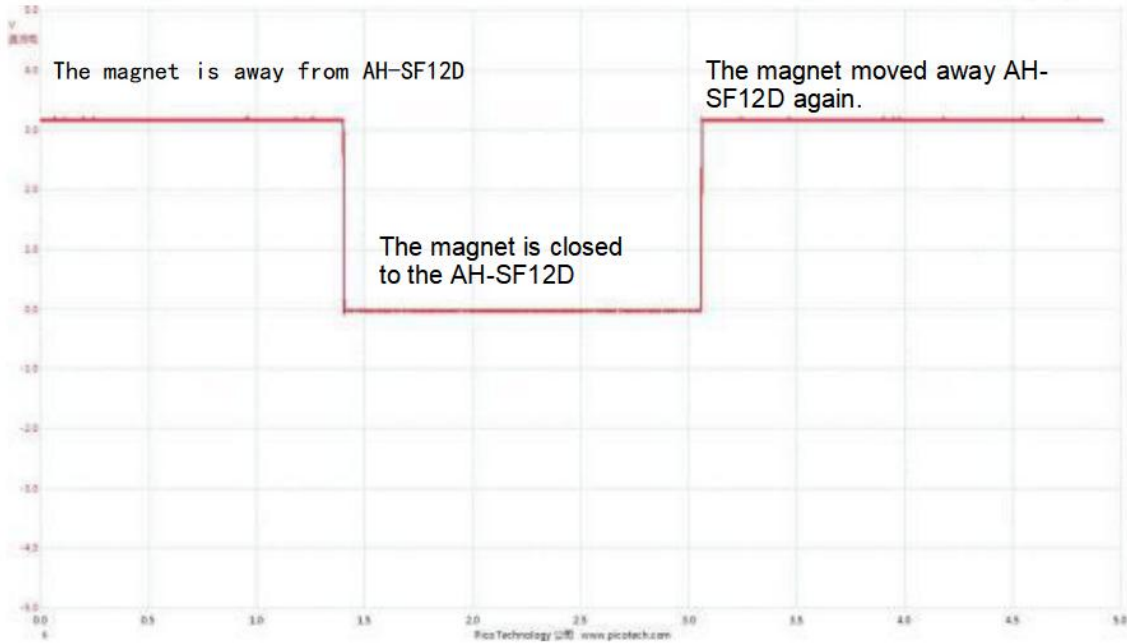
(1) Crossing below the working surface



(2) Close to the side



## 7. Waveform Diagram Generated Based On The Working Mode Described In 6.1 (3.3V power supply)



## **8. AH-SFXXX Series Sensor Function Expansion**

While keeping the same shape and location dimensions, other functions can be available depending on the selected Hall IC:

With the bipolar latch Hall IC, when using pairs of poles ( one pair or multi-pairs of pole) magnet, the output waveform is a square wave, it can measure the high-speed motor speed and calculate the number of rotations.

With the unipolar conventional Hall IC, when using single magnet, it can measure motor rotation speed, component displacement.