

# AH61 HIGH-SENSITIVITY HALL-EFFECT SWITCH SENSOR

These Hall-effect switch integrated circuits are monolithic integrated circuit consisting of a voltage regulator, Hall-voltage generator, differential amplifier, schmitt trigger, temperature compensation circuit and open-collector output stage. Its input is a magnetic flux density signal and output is a digital voltage signal.

## FEATURES

- . Wide supply voltage range
- . Fast response time
- . Wide frequency and temperature range
- . Long operating life
- . Small size, convenient installing
- . Output compatible with all digital logic families

## TYPICAL APPLICATIONS

- . Contactless switch
- . Speed measurement
- . Isolation measurement
- . Automotive ignitor
- . Position control
- . Revolution detection
- . Brushless d.c motor

## ABSOLUTE MAXIMUM RATING

| Parameter                   | Symbol   | Value     | Unit |
|-----------------------------|----------|-----------|------|
| Supply voltage              | $V_{CC}$ | 24        | V    |
| Magnetic flux density       | B        | Unlimited | mT   |
| Output OFF voltage          | $V_{ce}$ | 50        | V    |
| Continuous output current   | $I_{OL}$ | 50        | mA   |
| Operating temperature range | $T_A$    | -40~150   | °C   |
| Storage temperature range   | $T_S$    | -55~150   | °C   |

## ELECTRICAL CHARACTERISTICS

 $T_A=25^{\circ}\text{C}$ 

| Parameter                 | Symbol   | Test conditions                   | Type and Value |      |     | Unit          |
|---------------------------|----------|-----------------------------------|----------------|------|-----|---------------|
|                           |          |                                   | min            | typ  | max |               |
| Supply voltage            | $V_{CC}$ |                                   | 4.5            | -    | 24  | V             |
| Output saturation voltage | $V_{OL}$ | $I_{out}=20\text{mA}$ $B>B_{OP}$  | -              | 200  | 400 | mV            |
| Output leakage current    | $I_{OH}$ | $V_{out}=24\text{V}$ $B<B_{RP}$   | -              | 0.1  | 10  | $\mu\text{A}$ |
| Supply current            | $I_{CC}$ | $V_{CC}=\text{Output open}$       | -              | -    | 10  | mA            |
| Output rise time          | $t_r$    | $R_L=820\Omega$ $C_L=20\text{PF}$ | -              | 0.12 | -   | $\mu\text{S}$ |
| Output fall time          | $t_f$    | $R_L=820\Omega$ $C_L=20\text{PF}$ | -              | 0.18 | -   | $\mu\text{S}$ |

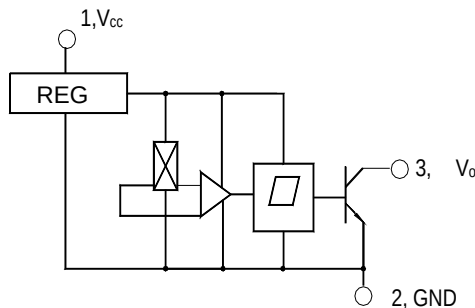
## MAGNET CHARACTERISTICS

$V_{CC}=4.5\sim 24V$

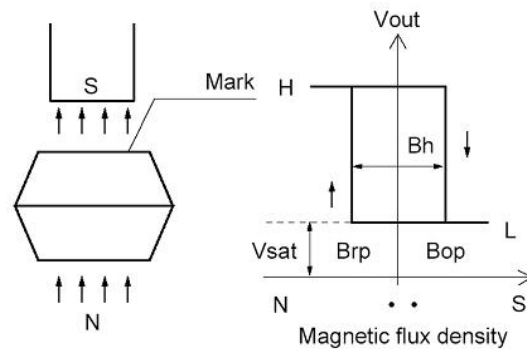
| Parameter     | Symbol   | Type and Value |     |     | Unit |
|---------------|----------|----------------|-----|-----|------|
|               |          | min            | typ | max |      |
| Operate point | $B_{OP}$ |                | 3   | 4.5 | mT   |
| Release point | $B_{RP}$ | -4.5           | -3  |     | mT   |
| Hysteresis    | $B_H$    |                | 6   | -   | mT   |

NOTE: 1mT=10GS

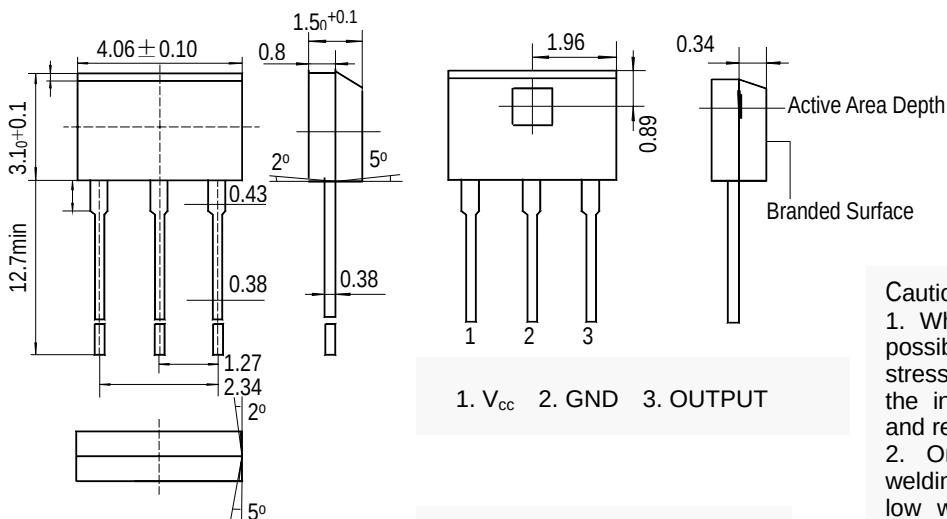
## BLOCK DIAGRAM



## MAGNETIC-ELECTRICAL TRANSFER CHARACTERISTICS



## DIMENSIONS (in: mm)



TO-92UA Package and Active Area

### Cautions

1. When install, should as full as possible decrease the mechanical stress acting on the Hall IC, to avoid the influence of the operate point and release point.
2. On the premise of ensuring welding quality, use as possible as low welding temperature as short time.

