

# AH3075 AH3076 AH3077

## BIPOLAR HALL-EFFECT LATCHES

These Hall-effect latches are temperature-stable and stress-resistant sensors especially suited for electronic commutation in brushless dc motors using multipole ring magnets. Each device includes a voltage regulator, quadratic Hall voltage generator, temperature compensation circuit, signal amplifier, Schmitt trigger, and an open-collector output on a single silicon chip. The on-board regulator permits operation with supply voltages of 4.5 volts to 24 volts. The switch output can sink 25 mA. With suitable output pull up, they can be used directly with bipolar or MOS logic circuits.

### 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 . Position Control  
Speed Measurement . Revolution Detection  
Isolation Measurement . Brushless DC Motor  
Automotive Ignitor

### ABSOLUTE MAXIMUM RATING

Parameter	Symbol	Value	Unit
Supply Voltage	V <sub>CC</sub>	24	V
Magnetic Flux Density	B	Unlimited	mT
Output OFF Voltage	V <sub>ce</sub>	40	V
Continuous Output Current	I <sub>OL</sub>	25	mA
Operating Temperature Range	T <sub>A</sub>	-40~150	°C
Storage Temperature Range	T <sub>S</sub>	-55~150	°C

### ELECTRICAL CHARACTERISTICS

T<sub>A</sub>=25°C

Parameter	Symbol	Test condition	Type and Value			Unit
			min	typ	max	
Supply Voltage	V <sub>CC</sub>		4.5	-	24	V
Output Saturation Voltage	V <sub>OL</sub>	I <sub>out</sub> =15mA B>B <sub>OP</sub>	-	200	400	mV
Output Leakage Current	I <sub>OH</sub>	V <sub>out</sub> =24V B<B <sub>RP</sub>	-	0.1	10	μA
Supply Current	I <sub>CC</sub>	V <sub>CC</sub> =24V Output Open	-	-	10	mA
Output Rise Time	t <sub>r</sub>	R <sub>L</sub> =820Ω C <sub>L</sub> =20PF	-	0.12	-	μS
Output Fall Time	t <sub>f</sub>	R <sub>L</sub> =820Ω C <sub>L</sub> =20PF	-	0.18	-	μS

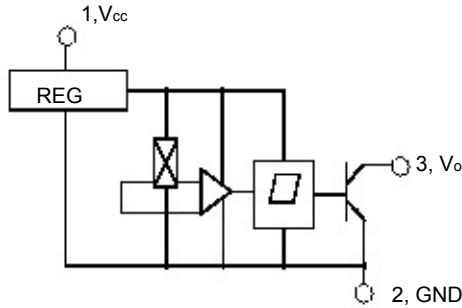
### MAGNET CHARACTERISTICS

V<sub>CC</sub>=4.5~24V

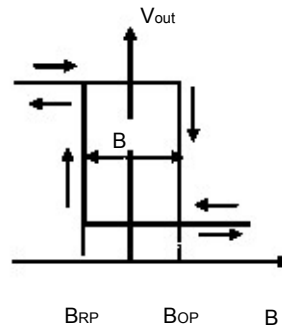
Parameter	Symbol	AH3075			AH3076			AH3077			Unit
		min	typ	max	min	typ	max	min	typ	max	
Operate Point	B <sub>OP</sub>	-	-	10	-	-	13	-	-	15	mT
Release Point	B <sub>RP</sub>	-10	-	-	-13	-	-	-15	-	-	mT
Hysteresis	B <sub>H</sub>	8	-	-	8	-	-	8	-	-	mT

NOTE: 1mT=10GS

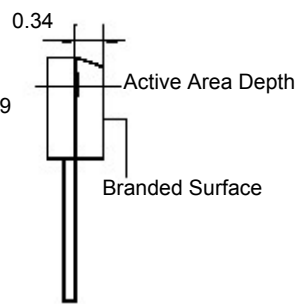
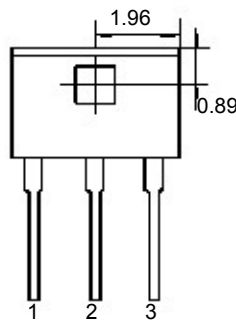
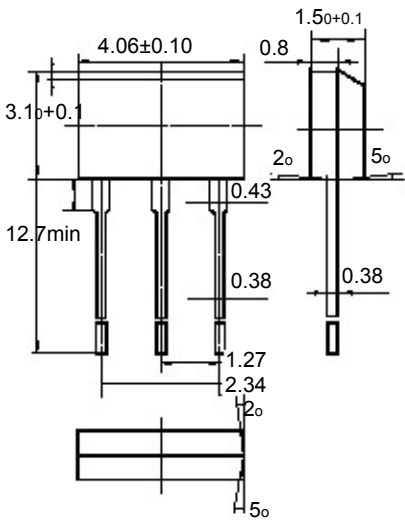
**BLOCK DIAGRAM**



**MAGNETIC-ELECTRICAL TRANSFER CHARACTERISTICS**

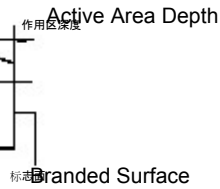
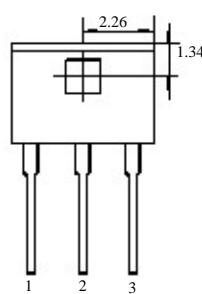
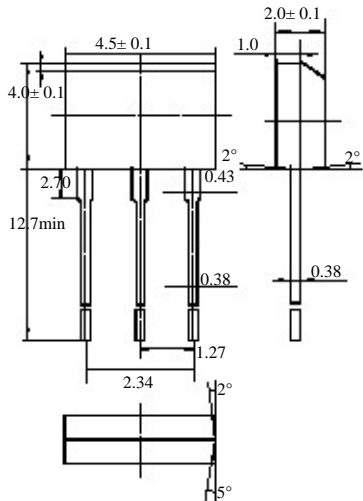


**DIMENSIONS (in: mm)**



1. V<sub>CC</sub> 2. GND 3. OUTPUT

TO-92UA Package and Active Area



1. V<sub>CC</sub> 2. GND 3. OUTPUT

TO-92T 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.

