

AH3142 AH3144 AH3145

SENSITIVE HALL-EFFECT SWITCH INTEGRATED CIRCUITS

These Hall-effect switches are monolithic integrated circuits with tighter magnetic specifications, designed to operate continuously over extended temperatures to +150°C, and are more stable with both temperature and supply voltage changes. The unipolar switching characteristic makes these devices ideal for use with a simple bar or rod magnet.

Each device includes a voltage regulator for operation with supply voltages of 4.5 to 24 volts, reverse battery protection diode, quadratic Hall-voltage generator, temperature compensation circuitry, small-signal amplifier, Schmitt trigger, and an open-collector output to sink up to 25 mA. With suitable output pull up, they can be used with bipolar or CMOS 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 _{CC}	24	V
Magnetic Flux Density	B	Unlimited	mT
Output OFF Voltage	V _{ce}	40	V
Continuous Output Current	I _{OL}	25	mA
Operating Temperature Range	T _A	AH31XXE	-25~85 °C
		AH31XXL	-40~150 °C
Storage Temperature Range	T _S	-55~150	°C

ELECTRICAL CHARACTERISTICS

T_A=25°C

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

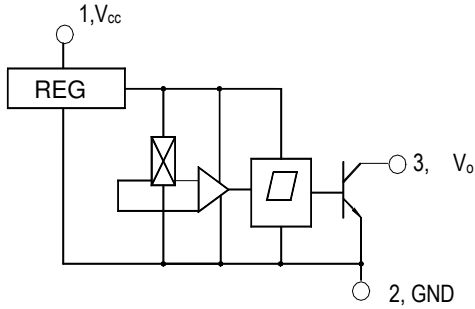
MAGNET CHARACTERISTICS

V_{CC}=4.5~24V

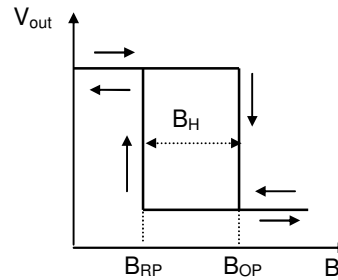
Parameter	Symbol	AH3142			AH3144			AH3145			Unit
		min	typ	max	min	typ	max	min	typ	max	
Operate Point	B _{OP}	-	-	21	-	-	26	-	-	28	mT
Release Point	B _{RP}	2	-	-	3	-	-	3	-	-	mT
Hysteresis	B _H	2.5	-	-	4	-	-	4	-	-	mT

NOTE: 1mT=10GS

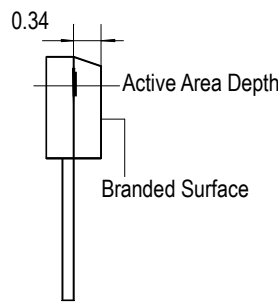
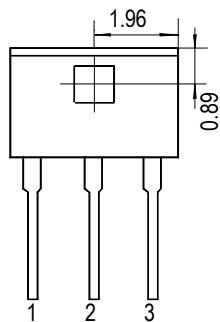
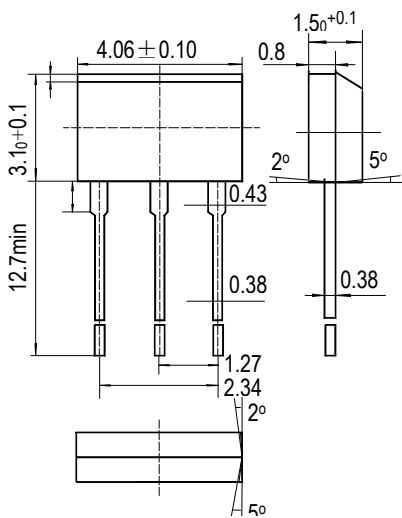
BLOCK DIAGRAM



MAGNETIC-ELECTRICAL TRANSFER CHARACTERISTICS

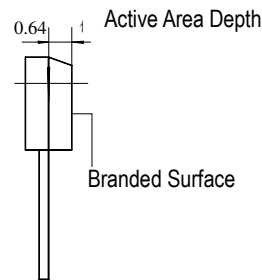
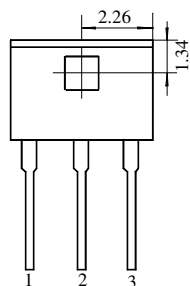
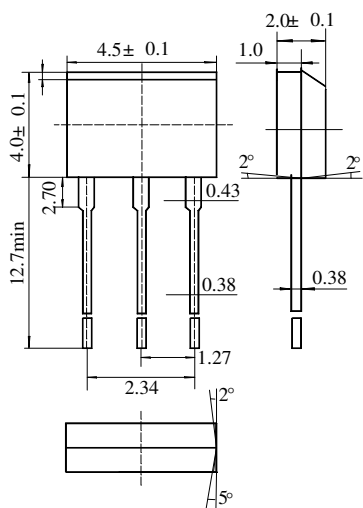


DIMENSIONS (in: mm)



1. V_{cc} 2. GND 3. OUTPUT

TO-92UA Package and Active Area



1. V_{cc} 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.

