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	℃
		AH31XXL	-40~150	℃
Storage Temperature Range	T_S		-55~150	℃

ELECTRICAL CHARACTERISTICS

T_A=25℃

Parameter	Symbol	Test condition	Type and Value			Unit
			min	typ	max	
Supply Voltage	V_{CC}		4.5	-	24	V
Output Saturation Voltage	V_{OL}	Iout=15mA B>B_{OP}	-	200	400	mV
Output Leakage Current	I_{OH}	Vout=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=820Ω C_L=20PF	-	0.12	-	μS
Output Fall Time	t_f	R_L=820Ω C_L=20PF	-	0.18	-	μS

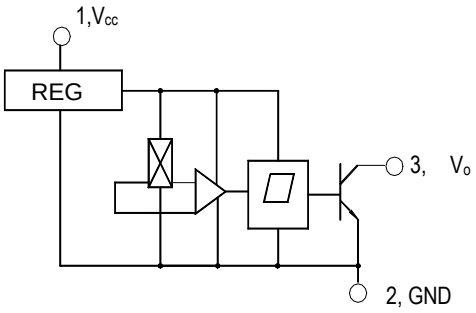
MAGNET CHARACTERISTICS

V_{CC}=4.5～24V

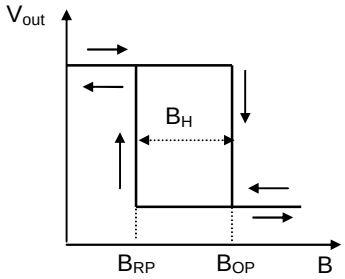
Parameter	Symbol	AH3142			AH3144			AH3145			Unit
		min	typ	max	min	typ	max	min	typ	max	
Operate Point	B_{OP}	-	-	21	-	-	26	-	-	28	mT
Release Point	B_{RP}	2	-	-	3	-	-	3	-	-	mT
Hysteresis	B_H	2.5	-	-	4	-	-	4	-	-	mT

NOTE: 1mT=10GS

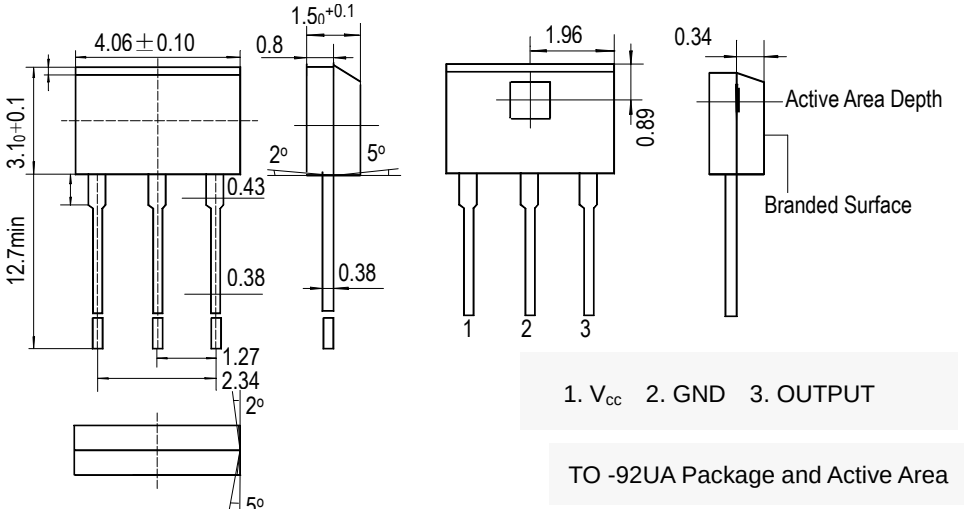
BLOCK DIAGRAM



MAGNETIC-ELECTRICAL TRANSFER CHARACTERISTICS

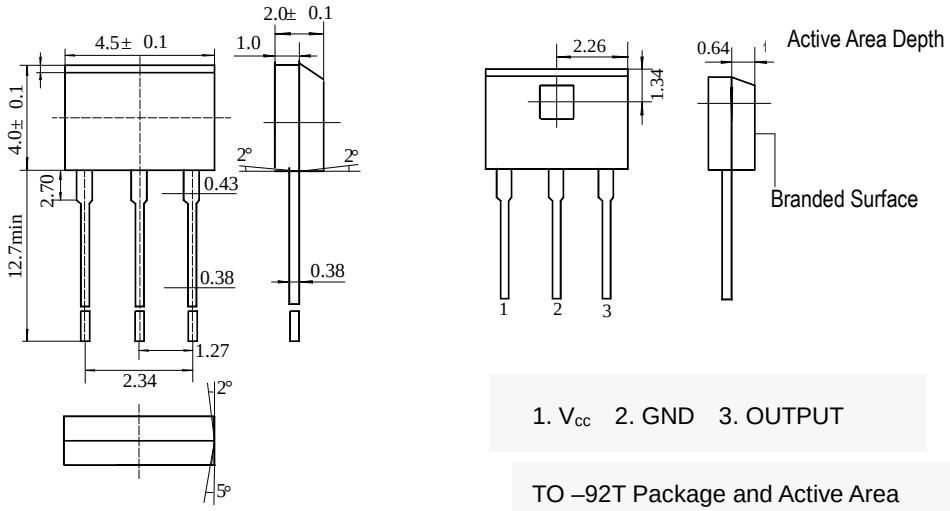


DIMENSIONS (in: mm)



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.