

AH3133 AH3134 AH3135

HIGH SENSITIVE HALL-EFFECT SWITCH INTEGRATED CIRCUITS

These Hall-effect switches are monolithic integrated circuits with tighter magnetic specifications and high sensitivity, 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	°C

ELECTRICAL CHARACTERISTICS

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

Parameter	Symbol	Test condition	Type and Value			Unit
			min	typ	max	
Supply Voltage	V_{CC}		4.5	-	24	V
Output Saturation Voltage	V_{OL}	$I_{out}=15\text{mA}$ $B>B_{OP}$	-	200	400	mV
Output Leakage Current	I_{OH}	$V_{out}=24\text{V}$ $B<B_{RP}$	-	0.1	10	μA
Supply Current	I_{CC}	$V_{CC}=24\text{V}$ Output Open	-	-	10	mA
Output Rise Time	t_r	$R_L=820\ \Omega$ $C_L=20\text{PF}$	-	0.12	-	μS
Output Fall Time	t_f	$R_L=820\ \Omega$ $C_L=20\text{PF}$	-	0.18	-	μS

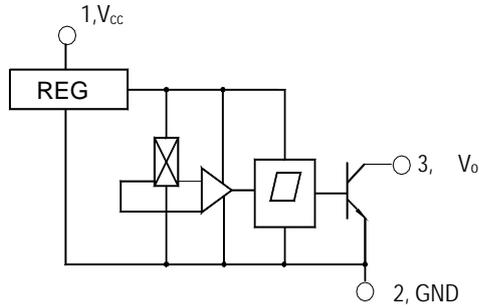
MAGNET CHARACTERISTICS

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

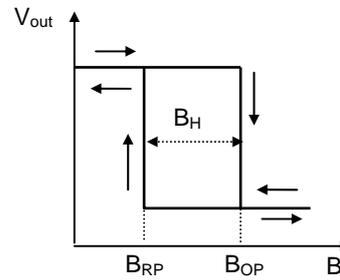
Parameter	Symbol	AH3133			AH3134			AH3135			Unit
		min	typ	max	min	typ	max	min	typ	max	
Operate Point	B_{OP}	-	-	11	-	-	11	-	-	11	mT
Release Point	B_{RP}	2	-	-	3	-	-	3	-	-	mT
Hysteresis	B_H	2.5	-	-	4	-	-	5	-	-	mT

NOTE: 1mT=10GS

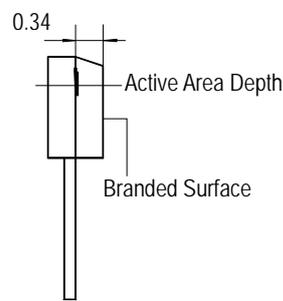
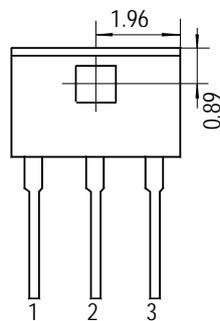
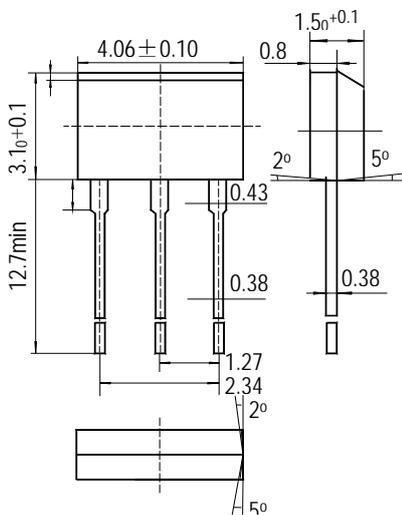
BLOCK DIAGRAM



MAGNETIC-ELECTRICAL TRANSFER CHARACTERISTICS

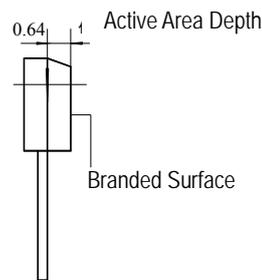
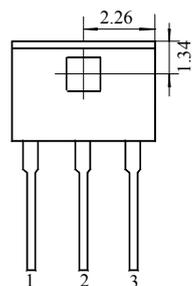
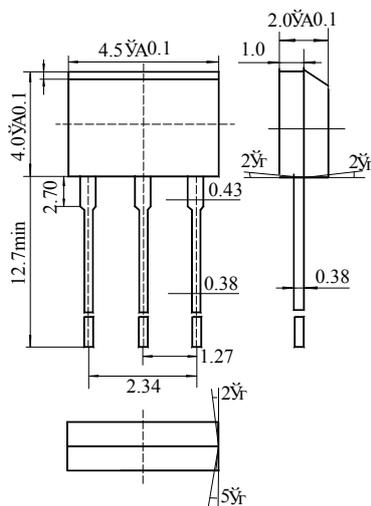


DIMENSIONS (in: mm)



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.

