

AH413

BIPOLAR HALL-EFFECT LATCH

The Hall-effect latch 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_{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	-40~150	°C
Storage Temperature Range	T_S	-55~150	°C

ELECTRICAL CHARACTERISTICS

$T_A=25^{\circ}C$

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

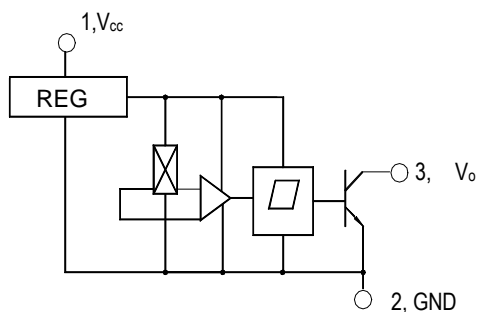
MAGNET CHARACTERISTICS

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

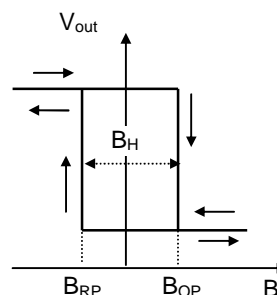
Parameter	Symbol	AH413			Unit
		min	typ	max	
Operate Point	B_{OP}	-	-	10	mT
Release Point	B_{RP}	-10	-	-	mT
Hysteresis	B_H	8	-	-	mT

NOTE: 1mT=10GS

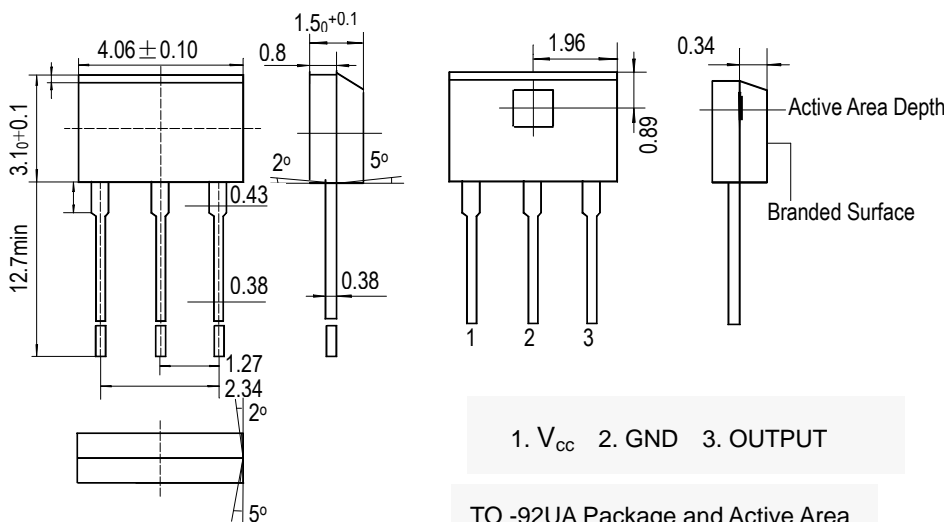
BLOCK DIAGRAM



MAGNETIC-ELECTRICAL TRANSFER CHARACTERISTICS



DIMENSIONS (in: mm)



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

TO -92UA Package and Active Area

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.

