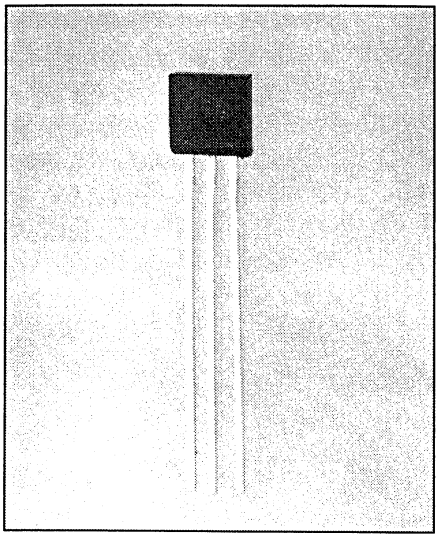
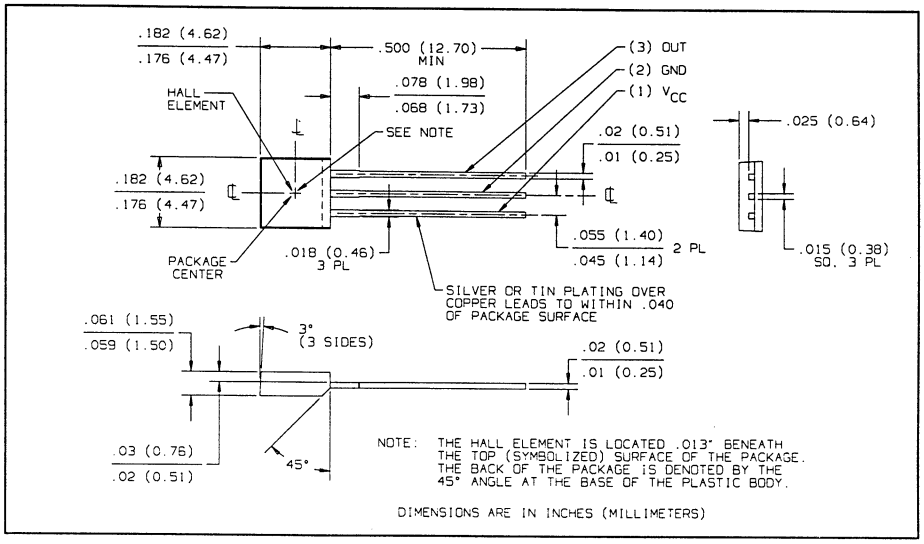
Hallogic® Bipolar Hall Effect Sensors (Latches)
Types OHN3075U, OHS3075U





Features

- Designed for use in brushless DC motors
- Operates over a broad range of supply voltages
- Excellent temperature stability to operate in harsh environments
- Drive capability up to 7 TTL loads

Description

The OHN3075U and OHS3075U each contain a monolithic integrated circuit which incorporates a Hall element, a linear amplifier, a threshold amplifier, and Schmitt trigger on a single Hallogic® silicon chip. Included on-chip is a bandgap voltage regulator to allow operation with a wide range of supply voltages. The devices feature logic level output and provides up to 21 mA of sink current. This allows direct driving of more than 7 TTL loads or any standard logic family using power supplies ranging from 4.5 to 24 volts. Output amplitude is constant at switching frequencies from DC to over 100 kHz.

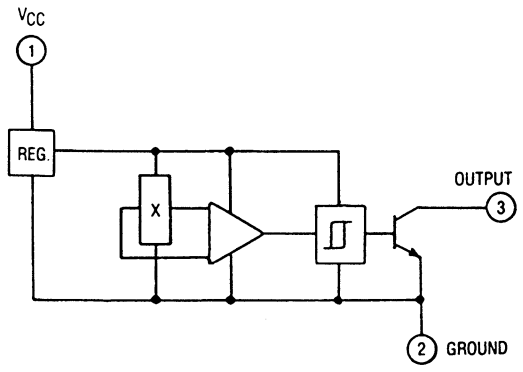
These devices turn on (logic level "0") in the presence of a magnetic south pole and turn off (logic level "1") when subjected to a magnetic north pole. Both magnetic poles are necessary for operation so they are referred to as Bipolar or Latching. This feature makes these sensors ideal for applications in brushless DC motors and for use with multiple pole magnets.

Absolute Maximum Ratings (T_A = 25° C unless otherwise noted)

Supply Voltage, V_{CC}	25 V
Storage Temperature Range, T_S	-65° C to +160° C
Operating Temperature Range, T_A OHN3075U	-20° C to +85° C
OHS3075U	-40° C to +150° C
Lead Soldering Temperature [1/8 inch (3.2 mm) from case for 5 sec. with soldering iron]	260° C(1)
Output ON Current, I_{SINK}	25 mA
Output OFF Voltage, V_{OUT}	25 V
Magnetic Flux Density, B	Unlimited

Note:
(1) Heat sink leads during hand soldering.

Functional Block Diagram



Types OHN3075U, OHS3075U

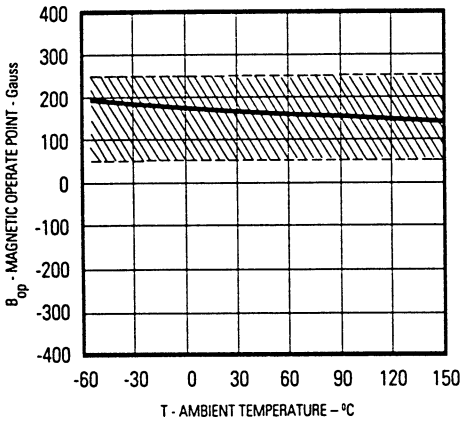
Electrical Characteristics (V_{CC} = 4.5 V to 24 V, T_A = 25° C unless otherwise noted)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
B_{OP}	Magnetic Operate Point(2)	50	100	250	Gauss	
B_{RP}	Magnetic Release Point	-250	-100	-50	Gauss	
B_H	Magnetic Hysteresis	100	200	500	Gauss	
I_{CC}	Supply Current		4	7	mA	V_{CC} = 24 V, Output Off B ≤ -250 Gauss
V_{OL}	Output Saturation Voltage		100	400	mV	V_{CC} = 4.5 V, I_{OL} = 20 mA, B ≥ 250 Gauss
I_{OH}	Output Leakage Current		0.1	10.0	µA	V_{CC} = 24 V, V_{OUT} = 24 V, B ≤ -250 Gauss
t_r	Output Rise Time		0.05	1.00	µs	R_L = 820 Ω, C_L = 20 pF, V_{CC} = 12 V
t_f	Output Fall Time		0.10	1.00	µs	

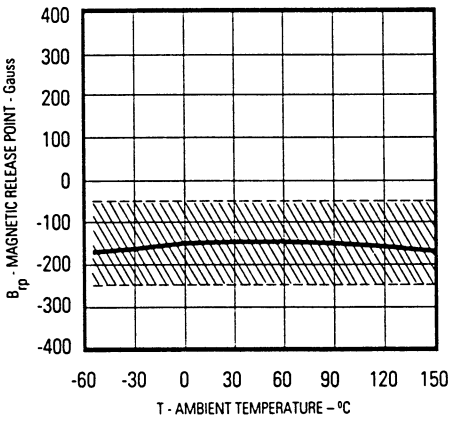
(2) South pole facing symbolized surface.

Typical Performance Curves

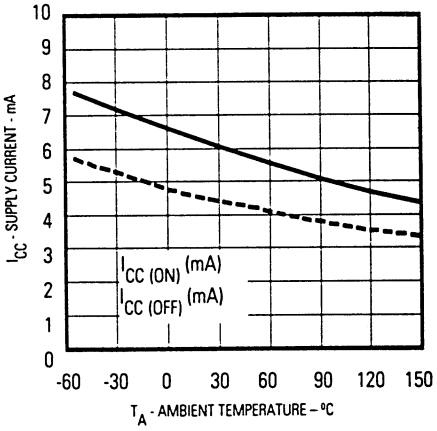
MAGNETIC OPERATE POINT vs AMBIENT TEMPERATURE



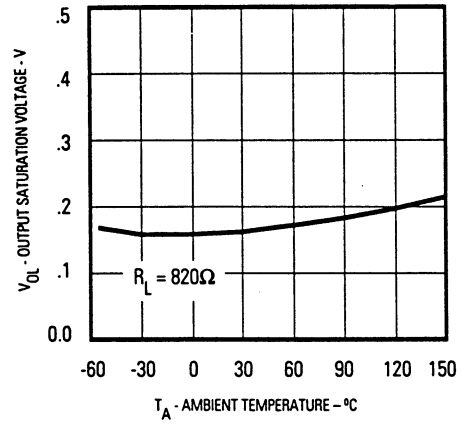
MAGNETIC RELEASE POINT vs AMBIENT TEMPERATURE



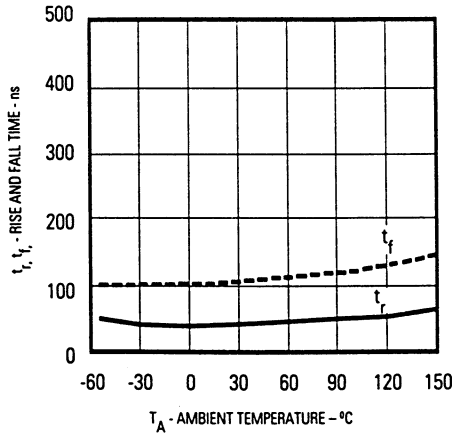
SUPPLY CURRENT vs AMBIENT TEMPERATURE



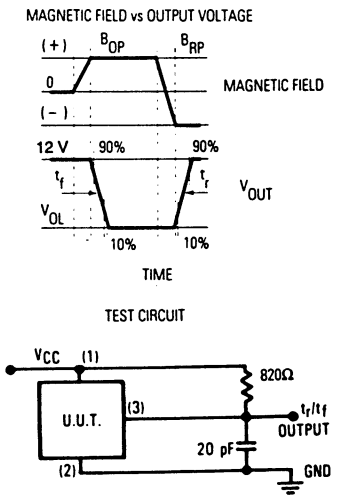
OUTPUT SATURATION VOLTAGE vs AMBIENT TEMPERATURE



RISE AND FALL TIME vs AMBIENT TEMPERATURE



RISE AND FALL TIME TEST



HALL EFFECT SENSORS