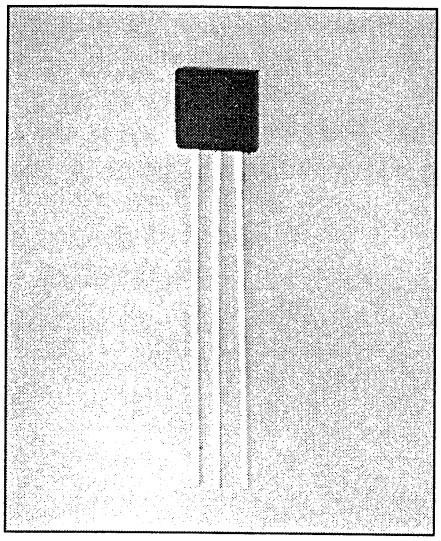
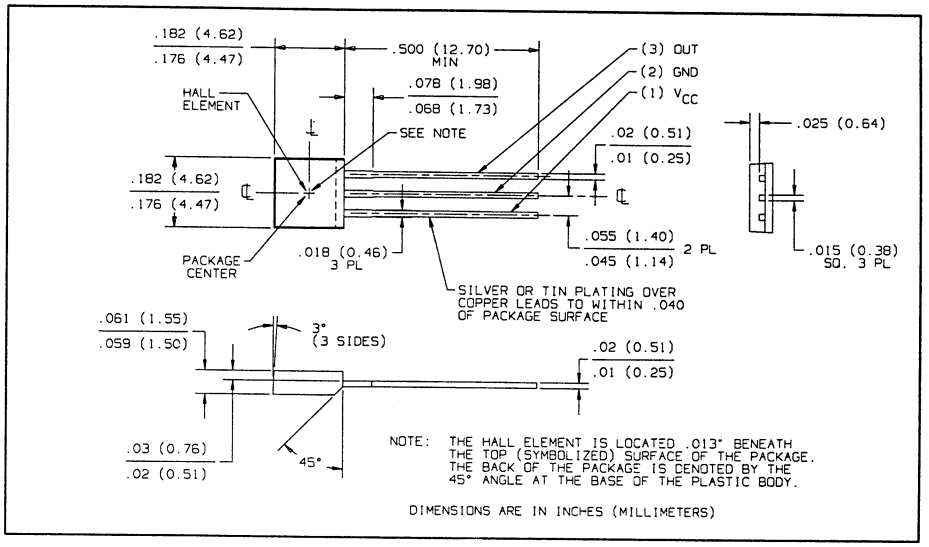
Hallogic® Bipolar Hall Effect Sensors (Latches)
Types OHN3177U, OHS3177U





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 OHN3177U and OHS3177U 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.

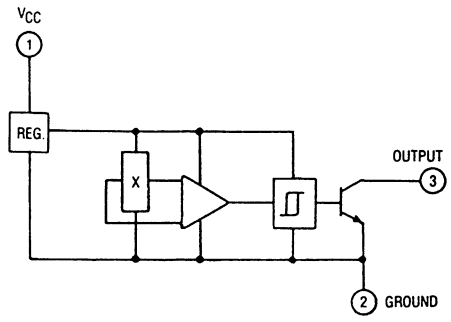
These devices turn on (logic level "0") in the presence of a magnetic south pole and turn off (logic level "1") when subjected to a magnetic north pole. Both magnetic poles are necessary for operation so they are referred to as Bipolar or Latching. This feature makes these sensors ideal for applications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

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 OHN3177U	-20° C to +85° C
OHS3177U	-40° C to +125° 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 OHN3177U, OHS3177U

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
I_{CC}	Supply Current		4	7	mA	V_{CC} = 24 V, Output Off
V_{OL}	Output Saturation Voltage		100	400	mV	V_{CC} = 4.5 V, I_{OL} = 20 mA, B ≥ 200 Gauss
I_{OH}	Output Leakage Current		0.1	10.0	µA	V_{CC} = 4.5 V, V_{OUT} = 24 V, B ≤ -150 Gauss
t_r	Output Rise Time		0.05	1.00	µs	R_L = 820 Ω, C_L = 20 pF
t_f	Output Fall Time		0.10	1.00	µs	

Magnetic Characteristics

		T_A = 25° C		T_A = -20° C to 85° C		T_A = -40° C to 125° C		
CHARACTERISTICS	SYMBOL	MIN	MAX	MIN	MAX	MIN	MAX	UNITS
Operate Point(2)	B_{OP}	50	150	25	150	25	200	G
Release Point	B_{RP}	-150	-50	-150	-25	-200	-25	G
Hysteresis	B_H	100		50		50		G

(2) South pole facing symbolized surface.

HALL EFFECT SENSORS