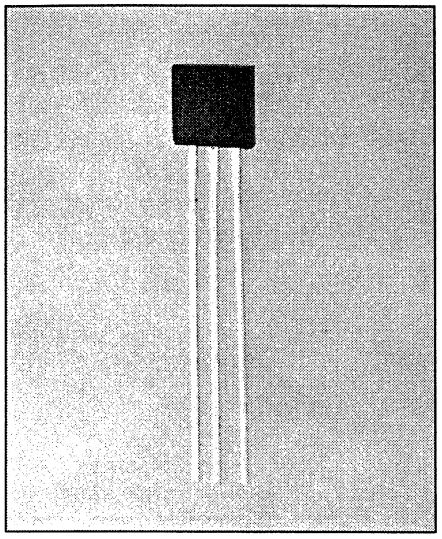
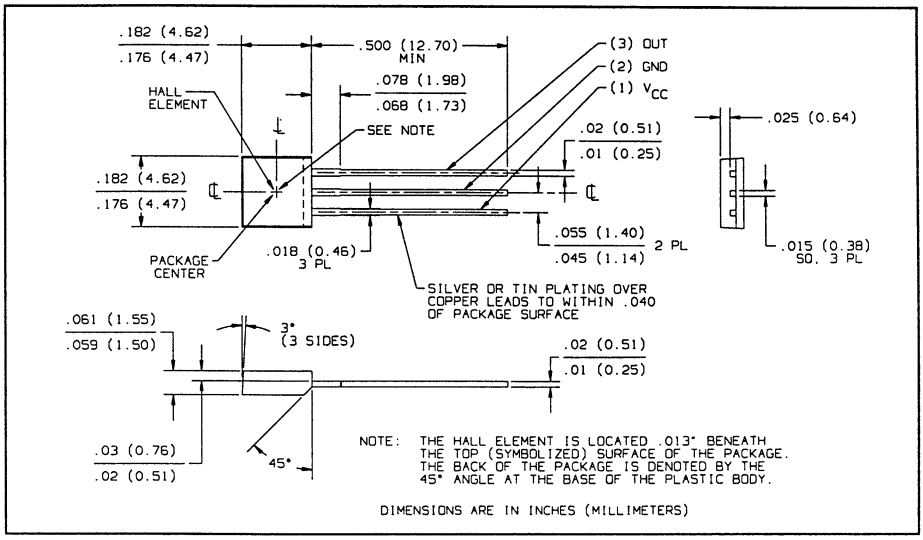
Hallogic® Hall Effect Sensors
Types OHN3019U, OHS3019U





Features

- Operates over a broad range of supply voltages
- Excellent temperature stability to operate in harsh environments
- Drive capability up to 7 TTL loads
- Hall element, linear amplifier, and Schmitt trigger on a single Hallogic® silicon chip

Description

The OHN3019U and OHS3019U each contain a monolithic integrated circuit which incorporates a Hall element, a linear amplifier, and Schmitt trigger on a single silicon chip. Included on-chip is a bandgap voltage regulator to allow operation with a wide range of supply voltages. The device features 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 200 kHz.

Stability of the magnetic operate and release points is excellent over this entire temperature range.

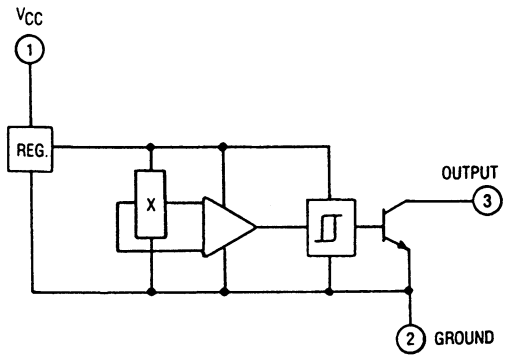
Package size has been kept to minimum, providing an advantage in applications where space is limited.

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

Supply Voltage, V_{CC}	25 V
Storage Temperature Range, T_S	-65° C to +150° C
Operating Temperature Range, T_A OHN3019U	-20° C to +85° C
OHS3019U	-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



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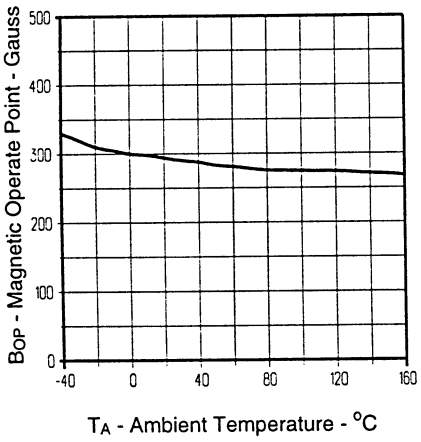
Electrical Characteristics (V_{CC} = 4.5 V to 24 VDC, T_A = 25° C unless otherwise noted)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
B_{OP}	Magnetic Operate Point(2)		300	500	Gauss	
B_{RP}	Magnetic Release Point	125	235		Gauss	
B_H	Magnetic Hysteresis	50	65		Gauss	
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 ≥ 500 Gauss
I_{OH}	Output Leakage Current		0.1	10.0	µA	V_{CC} = 24 V, V_{OUT} = 24 V, B ≤ 100 Gauss
t_r	Output Rise Time		0.21	1.00	µs	R_L = 820 Ω, C_L = 20 pF
t_f	Output Fall Time		0.25	1.00	µs	

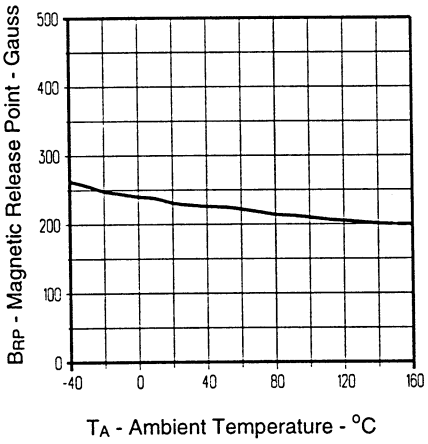
(2) South pole facing symbolized surface.

Typical Performance Curves

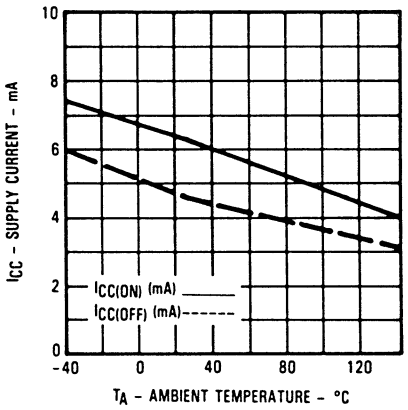
Magnetic Operate Point vs Ambient Temperature



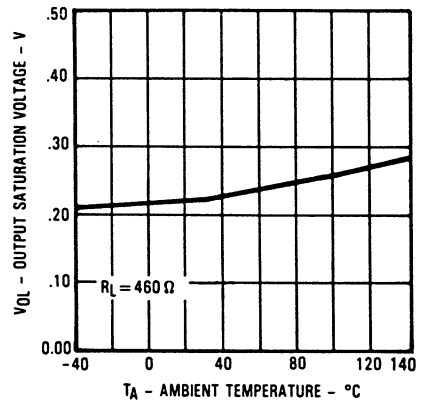
Magnetic Release Point vs Ambient Temperature



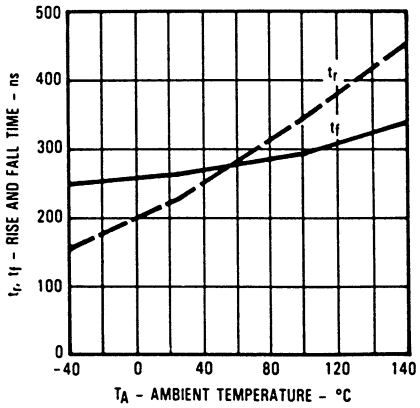
Supply Current vs Ambient Temperature



Output Saturation Voltage vs Ambient Temperature

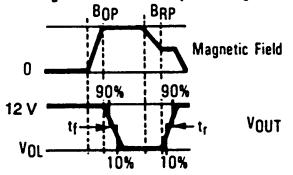


Rise and Fall Time vs Ambient Temperature

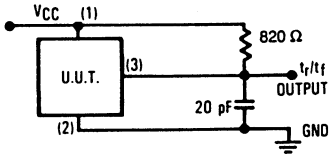


Rise and Fall Time Tests

Magnetic Field vs Output Voltage



Rise and Fall Time Test Circuit



HALL EFFECT SENSORS