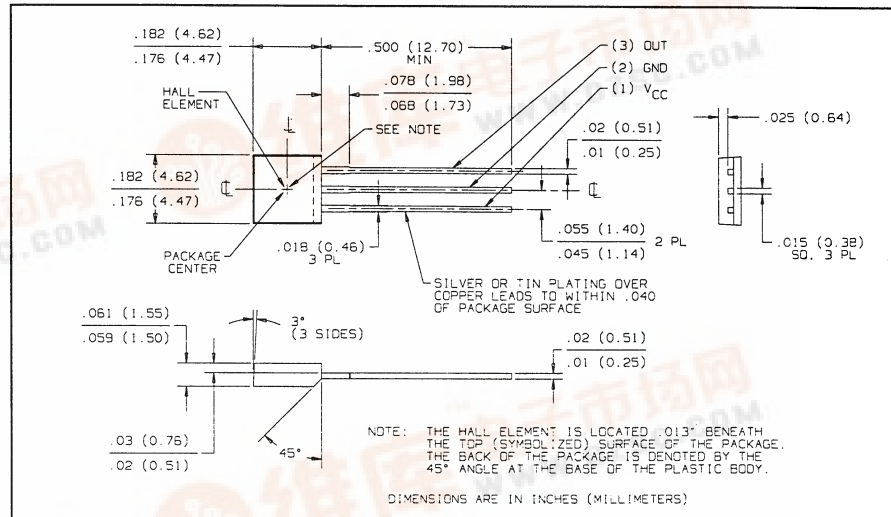
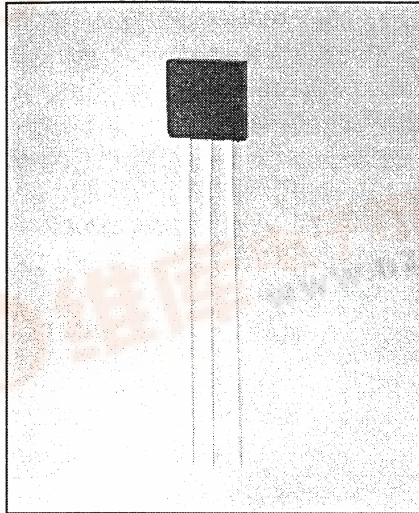




Product Bulletin OHN3119U  
May 1996

# Hallogic® Hall Effect Sensors Types OHN3119U, OHS3119U



## 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 OHN3119U and OHS3119U 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.

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

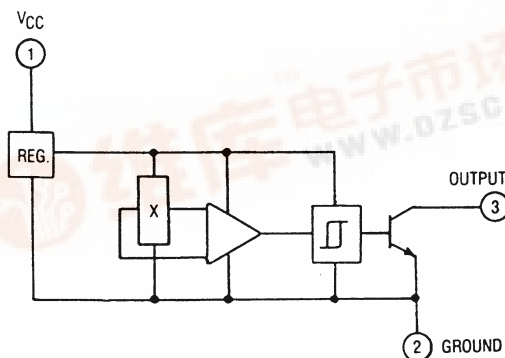
## Absolute Maximum Ratings ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

|                                                                                         |                                             |
|-----------------------------------------------------------------------------------------|---------------------------------------------|
| Supply Voltage, $V_{CC}$                                                                | 25 V                                        |
| Storage Temperature Range, $T_S$                                                        | $-65^\circ\text{C}$ to $+150^\circ\text{C}$ |
| Operating Temperature Range, $T_A$ OHN3119U                                             | $-20^\circ\text{C}$ to $+85^\circ\text{C}$  |
| OHS3119U                                                                                | $-40^\circ\text{C}$ to $+125^\circ\text{C}$ |
| Lead Soldering Temperature [1/8 inch (3.2 mm) from case for 5 sec. with soldering iron] | $260^\circ\text{C}$ (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 OHN3119U, OHS3119U

Electrical Characteristics ( $V_{CC} = 4.5 \text{ V}$  to  $24 \text{ V}$ ,  $T_A = 25^\circ \text{ C}$  unless otherwise noted)

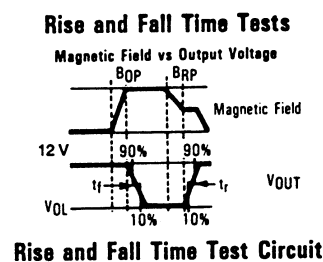
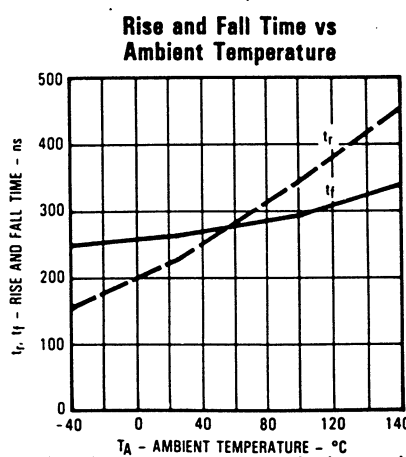
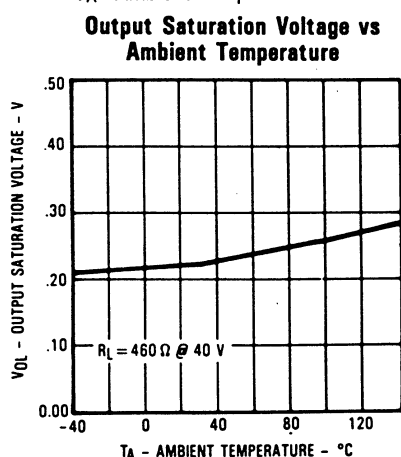
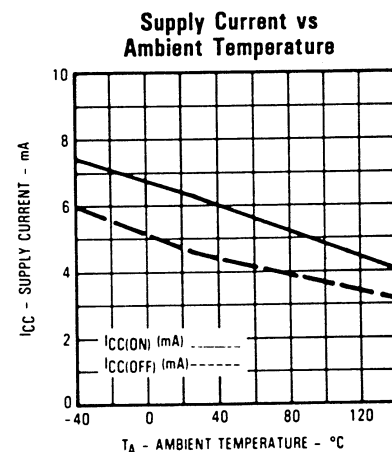
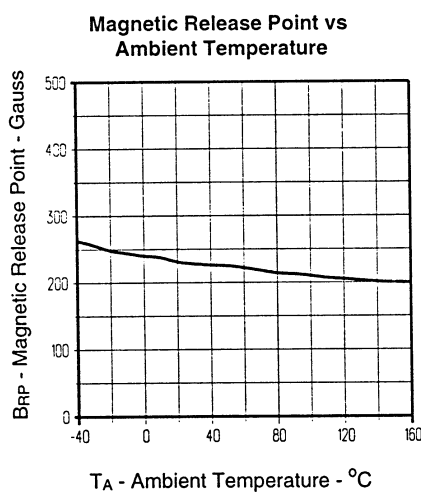
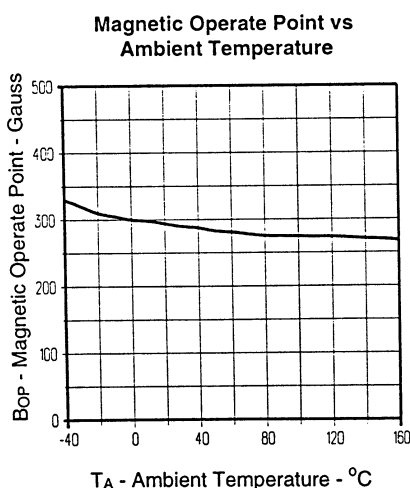
| SYMBOL   | PARAMETER                 | MIN | TYP  | MAX  | UNITS         | TEST CONDITIONS                                                                  |
|----------|---------------------------|-----|------|------|---------------|----------------------------------------------------------------------------------|
| $I_{CC}$ | Supply Current            |     | 4    | 7    | mA            | $V_{CC} = 24 \text{ V}$ , Output Off                                             |
| $V_{OL}$ | Output Saturation Voltage |     | 100  | 400  | mV            | $V_{CC} = 4.5 \text{ V}$ , $I_{OL} = 20 \text{ mA}$ , $B \geq 500 \text{ Gauss}$ |
| $I_{OH}$ | Output Leakage Current    |     | 0.1  | 10.0 | $\mu\text{A}$ | $V_{CC} = 4.5 \text{ V}$ , $V_{OUT} = 24 \text{ V}$ , $B \leq 50 \text{ Gauss}$  |
| $t_r$    | Output Rise Time          |     | 0.21 | 1.00 | $\mu\text{s}$ | $R_L = 820 \Omega$ , $C_L = 20 \text{ pF}$                                       |
| $t_f$    | Output Fall Time          |     | 0.25 | 1.00 | $\mu\text{s}$ |                                                                                  |

## Magnetic Characteristics

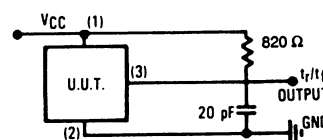
|                              |        | $T_A = 25^\circ \text{ C}$ |     | $T_A = -20^\circ \text{ C}$ to $85^\circ \text{ C}$ |     | $T_A = -40^\circ \text{ C}$ to $125^\circ \text{ C}$ |     |       |
|------------------------------|--------|----------------------------|-----|-----------------------------------------------------|-----|------------------------------------------------------|-----|-------|
| CHARACTERISTICS              | SYMBOL | MIN                        | MAX | MIN                                                 | MAX | MIN                                                  | MAX | UNITS |
| Operate Point <sup>(2)</sup> | BOP    | 175                        | 500 | 100                                                 | 545 | 45                                                   | 575 | G     |
| Release Point                | BRP    | 125                        | 450 | 50                                                  | 495 | 25                                                   | 555 | G     |
| Hysteresis                   | BH     | 50                         |     | 50                                                  |     | 20                                                   |     | G     |

(2) South pole facing symbolized surface.

## Typical Performance Curves



### Rise and Fall Time Test Circuit



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