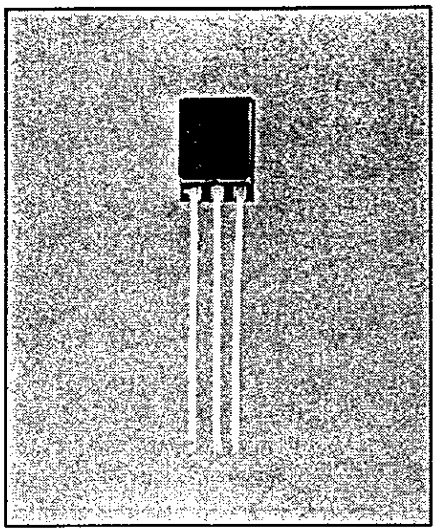
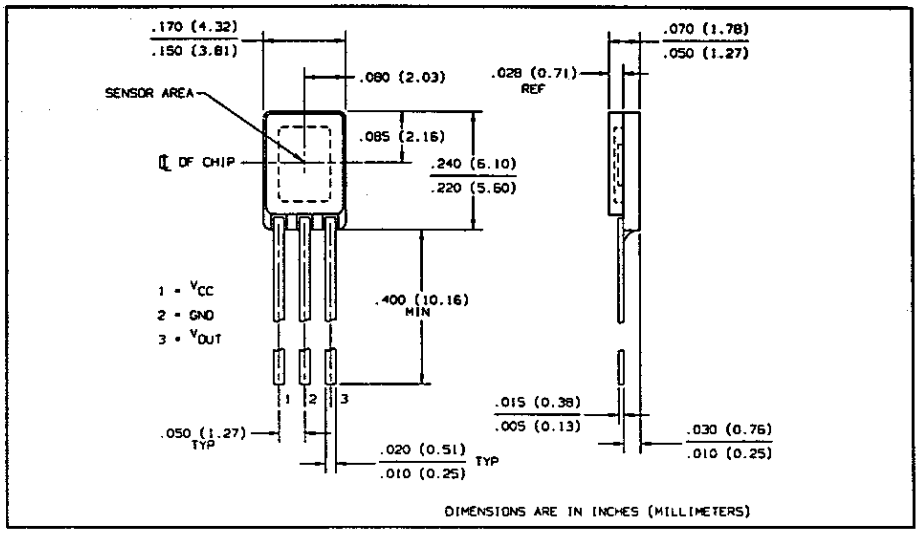
High Reliability Hallogic® Hall Effect Sensor
Types OMH3019B, OMH3019S





Features

- Lead finish is hot solder dip
- Hermetic ceramic package
- Operates over a broad range of supply voltages
- Excellent temperature stability to operate in harsh environments
- Hall element, linear amplifier, and Schmitt trigger on a single Hallogic® silicon chip
- Processing patterned after class B or class S of MIL-STD-883
- Suitable for military and space applications

Description

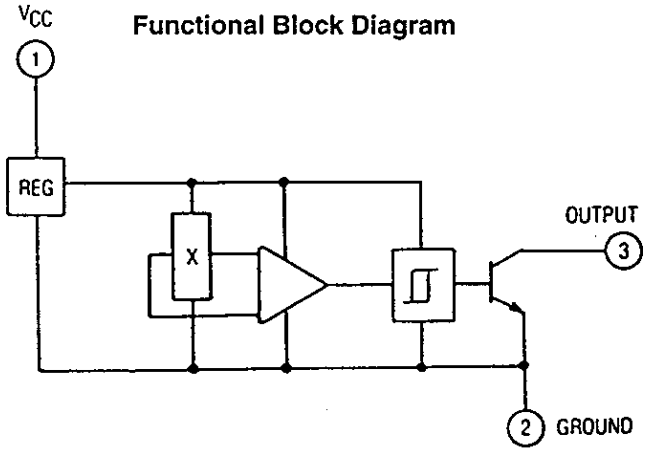
The chip contains a monolithic integrated circuit which incorporates a Hall element, a linear amplifier, and Schmitt trigger on a single silicon chip. Included on-chip is a bandgap voltage regulator to allow operation with a wide range of supply voltages. The device features logic level output and is capable of 25 mA of sink current. Output amplitude is constant at switching frequencies from DC to over 200 kHz.

The OMH3019B is processed to Optek's own screening procedures patterned after class B of MIL-STD-883. OMH3019S is patterned after class S. Typical screening and lot acceptance tests are provided on page 13-4.

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	-55° C to +125° C
Lead Soldering Temperature [1/8 inch (3.2 mm) from case for 5 sec. with soldering iron]	260° C
Output ON Current, I_{SINK}	25 mA
Output OFF Voltage, V_{OUT}	25 V
Magnetic Flux Density, B	Unlimited

Functional Block Diagram



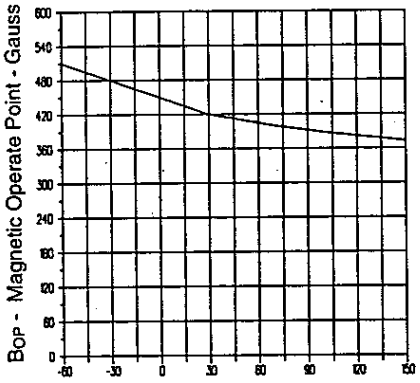
Types OMH3019B, OMH3019S

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

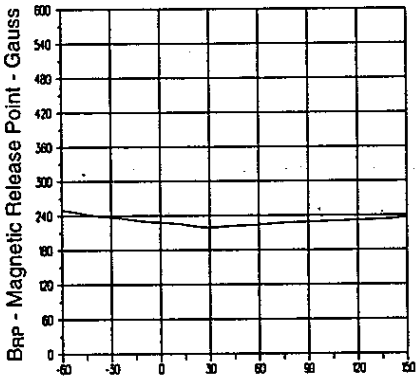
SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
B_{OP}	Magnetic Operate Point	175	420	500	Gauss	
B_{RP}	Magnetic Release Point	125	220	420	Gauss	
B_H	Magnetic Hysteresis	30	100	155	Gauss	
I_{CC}	Supply Current		5.0	9.0	mA	V_{CC} = 24 V, Output On
V_{OL}	Output Saturation Voltage		125	300	mV	V_{CC} = 4.5 V, I_{OL} = 15 mA
I_{OH}	Output Leakage Current		0.1	10	µA	V_{CC} = 24 V, V_{OUT} = 24 V
t_r	Output Rise Time		0.13	1.00	µs	R_L = 820 Ω, C_L = 20 pF
t_f	Output Fall Time		0.19	1.00	µs	R_L = 820 Ω, C_L = 20 pF

Typical Performance Curves

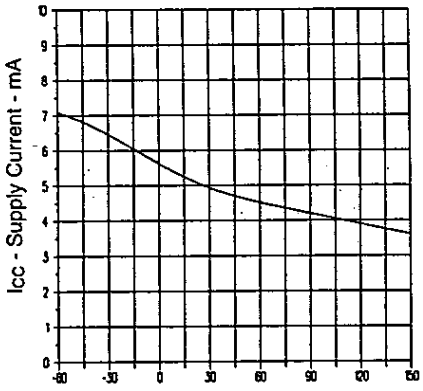
Magnetic Operate Point vs. Ambient Temperature



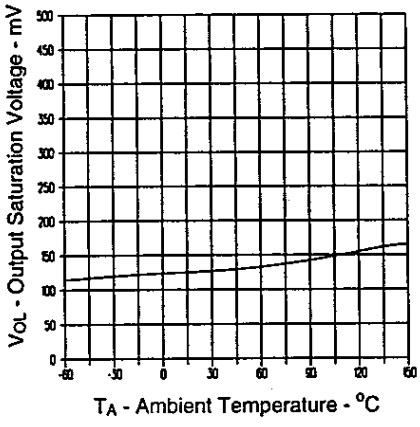
Magnetic Release Point vs. Ambient Temperature



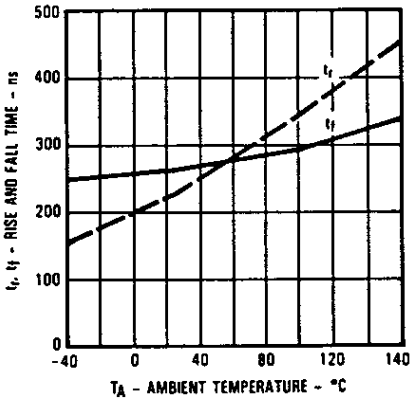
Supply Current vs. Ambient Temperature



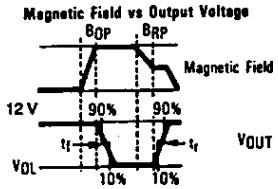
Output Saturation Voltage vs. Ambient Temperature



Rise and Fall Time vs Ambient Temperature



Rise and Fall Time Tests



Rise and Fall Time Test Circuit

