

49E Hall-Effect Linear Position Sensor

1. General Description

The 49E Series Economical Linear Hall-effect sensors are small, versatile linear Hall-effect devices that are operated by the magnetic field from a permanent magnet or an electromagnet. The linear sourcing output voltage is set by the supply voltage and varies in proportion to the strength of the magnetic field. The integrated circuitry features low noise output, which makes it unnecessary to use external filtering. It also includes thin film resistors to provide increased temperature stability and accuracy. These linear Hall sensors have an operating temperature range of -40 °C to 100 °C, appropriate for commercial, consumer, and industrial environments.

2. Feature

- „ Good linearity and high sensitivity (1.4 ~3.0mV/GS optional)
- „ Miniature construction
- „ Power consumption of 4 mA at 5 Vdc for energy efficiency
- „ Low-voltage operation down to 2.3 Vdc
- „ Single current sourcing output
- „ Linear output for circuit design flexibility
- „ Low noise output virtually eliminates the need for filtering
- „ Temperature range of -40 °C to 100 °C [-40 °F to 212 °F]
- „ Responds to either positive or negative gaussl

3. Application Range

- „ Current sensing
- „ Motor control
- „ Position sensing
- „ Magnetic code reading
- „ Rotary encoder
- „ Ferrous metal detector



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- „ Vibration sensing
- „ Liquid level sensing
- „ Weight sensing

4. Block Diagram

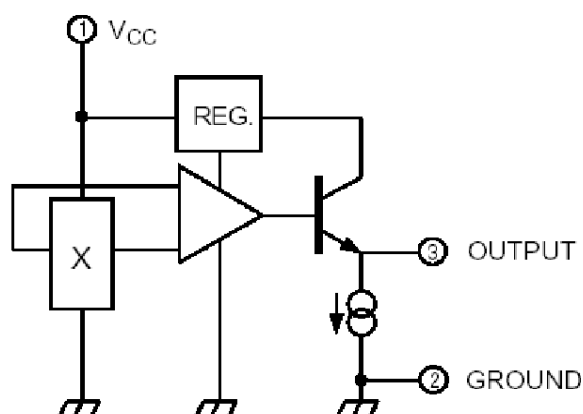
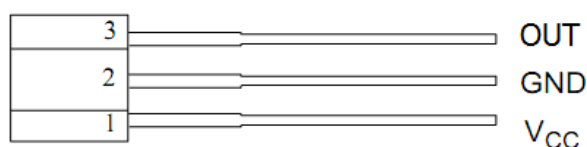


图 1 功能框图

5. Pin Description



Pin Number	Symbol	Description
1	VCC	Power supply
2	GND	Ground
3	OUT	Output

6. Absolute Maximum Rating

Symbol	Description	Min.	Typ.	Unit
V_{CC}	Power Supply	- 0.7	10	V
T_{stg}	Storage Temperature	- 65	150	°C
T_{OP}	Operating Temperature	- 20	120	°C



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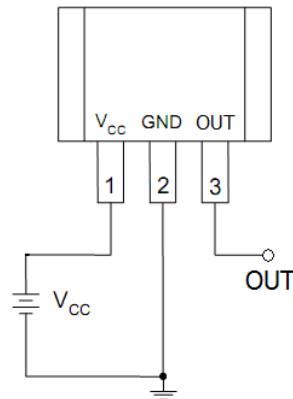
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7. Electrical Characteristics

$V_{CC} = 5V$, $I_{OUT} = 0mA$, $T_a = 25^\circ C$

Symbol	Characteristics	Test Condition	Min.	Typ.	Max.	Unit
V_{CC}	Power Supply		2.30	5	10	V
I_{CC}	Supply Current	$B = 0GS$			6.5	mA
V_{OUT}	Quiescent Output	$B = 0GS$	2.30	2.50	2.70	V
SR	Sensitivity (v1)	$B = \pm 100GS$	1.7	1.9	2.1	mV/GS
SR	Sensitivity (v2)	$B = \pm 100GS$	2.8	3.0	3.2	mV/GS
VH	Output High	$B = + 1200GS$	4.2			V
VL	Output Low	$B = - 1200GS$			1	V
R_{OUT}	Output resistance			40	100	Ohm
V_n	Output noise	$B = 0$, $BW = 10Hz \sim 10KHz$		90		μV

8. Typical Application



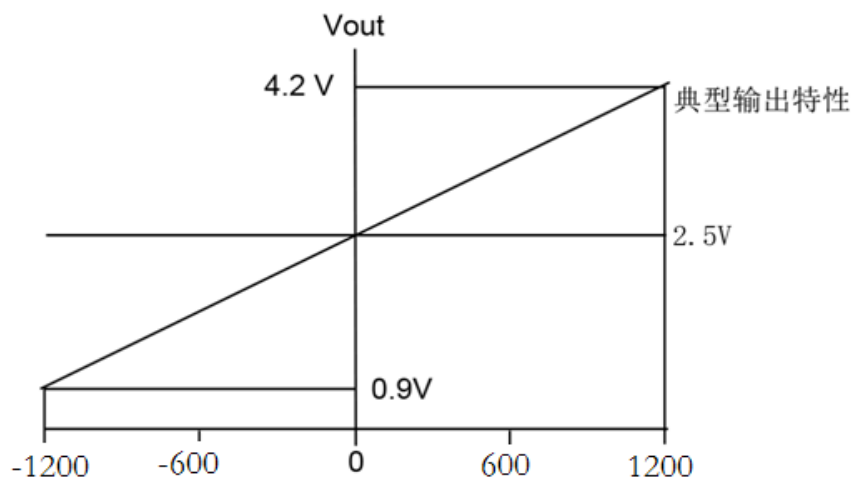
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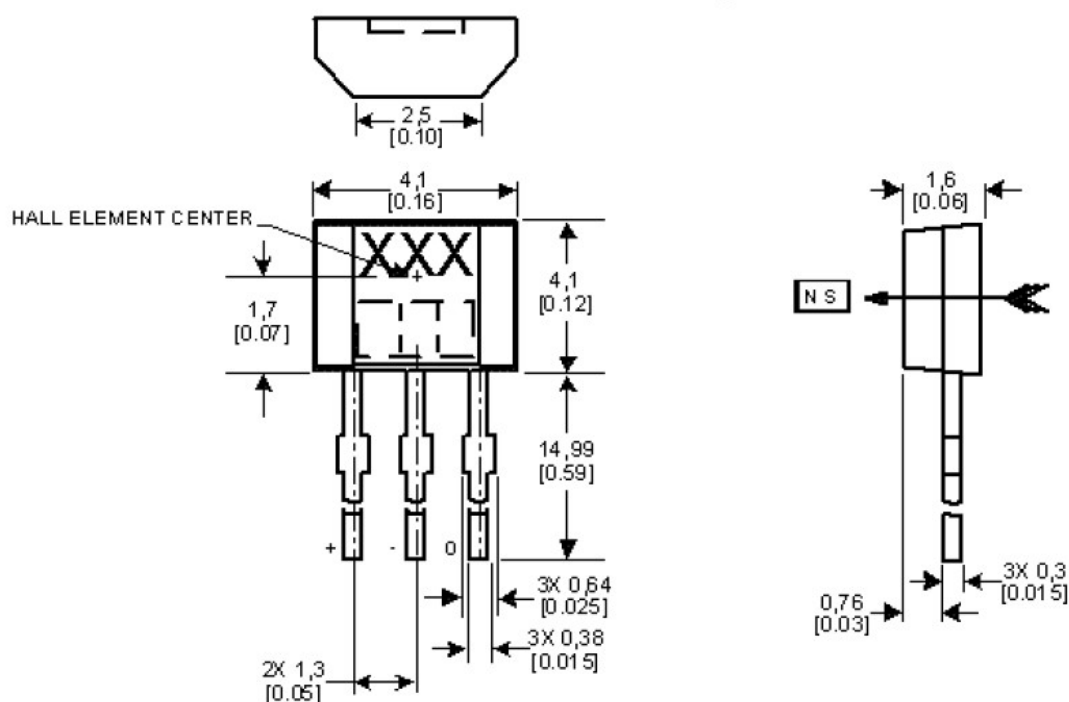
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9. Magnetic Characteristics



10. Package and sensor location



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