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### SS496B-S



Actual product appearance may vary.

**SS490 Series Cost-Reduced Miniature Ratiometric Linear Hall-Effect Sensor; surface mount package**

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#### Features

- Small size
- Low power consumption
- Single current sinking or current sourcing output
- Linear output for circuit design flexibility
- Built-in thin-film resistors - laser trimmed for precise sensitivity and temperature compensation
- Rail-to-rail operation provides more useable signal for higher accuracy
- Responds to either positive or negative gauss
- Quad Hall sensing element for stable output

#### Potential Applications

- Current sensing
- Motor control
- Position sensing
- Magnetic code reading
- Rotary encoder
- Ferrous metal detector
- Vibration sensing
- Liquid level sensing
- Weight sensing

#### Description

The SS490 Series MRL (Miniature Ratiometric Linear) sensors are versatile linear Hall effect devices operated by the magnetic field from a permanent magnet or an electromagnet. The ratiometric output voltage is set by the supply voltage. It varies in proportion to the strength of the magnetic field.

The integrated circuitry provides increased temperature stability and sensitivity. Laser trimmed thin film resistors on the chip provide high accuracy (null to  $\pm 3\%$ , sensitivity up to  $\pm 3\%$ ) and temperature compensation. The positive temperature coefficient of the sensitivity ( $+0.02\%/^{\circ}\text{C}$  typical) compensates for the negative temperature coefficients of low cost magnets.

The SS490B Series sensors offer cost-effective MRL sensing with slightly wider specifications than the SS490 products. The SS490B has a typical sinking or sourcing output of 1.5 mA continuous, uses seven mA of supply current at 5.0 volts at  $25^{\circ}\text{C}$ , for predictable performance over the full temperature range. SS490B Series sensors have wider null and sensitivity tolerances and a wider drift over temperature.

**NOTE:** Products ordered in bulk packaging (plastic bags) may not have perfectly straight leads as a result of normal handling and shipping operations. Please order tape packaging option for applications with critical lead straightness requirements.

#### Supporting Documentation

[Dimensions](#)

[Circuit Block Diagram](#)

[Required Accessories—Magnets](#)

[Engineering Drawing](#)

Product Specifications	
Product Type	Miniature Hall-Effect Linear Position Sensor IC
Package Quantity/Type	Available in 1,000/Bag
Package Style	Surface Mount
Supply Voltage	4.5 Vdc to 10.5 Vdc
Output Type	Sink/Source
Termination Type	Surface Mount
Magnetic Actuation Type	Ratiometric
Operating Temperature Range	$-40^{\circ}\text{C}$ to $150^{\circ}\text{C}$ [ $-40^{\circ}\text{F}$ to $302^{\circ}\text{F}$ ]
Storage Temperature	$-55^{\circ}\text{C}$ to $165^{\circ}\text{C}$ [ $-67^{\circ}\text{F}$ to $329^{\circ}\text{F}$ ]
Output Voltage	0.2 Vdc to $(V_s - 0.2 \text{ Vdc})$ typ., 0.4 Vdc to $(V_s - 0.4 \text{ Vdc})$ min.
Linearity (% of Span)	$\pm 1.0\%$ typ.
Output Voltage Span (min.)	0.4 Vdc to $(V_s - 0.4 \text{ Vdc})$
Availability	Global
Supply Current (max. @ $25^{\circ}\text{C}$ )	8.7 mA @ 5 Vdc
Sensitivity @ $25^{\circ}\text{C}$	$2.500 \text{ mV} \pm 0.200 \text{ mV/G}$
Output Voltage Swing (Negative G)	0.4 Vdc
Output Voltage Swing (Positive G)	$V_s - 0.4 \text{ Vdc}$
Temperature_Error_25_Null_Shift_2	$\pm 0.064$
Temperature_Error_25_Sensitivity_1	$-0.02$ min., $0.08$ max.
Output_Current_Typical_Source_45	1.5 mA
Output_Current_Minimum_Source_45	1 mA
Output_Current_Minimum_Sink_45	0.6 mA
Output_Current_Minimum_Sink_5	1 mA
Magnetic Range (typ.)	$-84 \text{ mT}$ to $84 \text{ mT}$ [ $-840 \text{ G}$ to $840 \text{ G}$ ]
Magnetic Range (min.)	$-75 \text{ mT}$ to $75 \text{ mT}$ [ $-750 \text{ G}$ to $750 \text{ G}$ ]
Output Voltage Span (typ.)	0.2 Vdc to $(V_s - 0.2 \text{ Vdc})$
Null (Output @ 0 G)	$2.50 \text{ Vdc} \pm 0.150 \text{ Vdc}$
Response Time ( $\mu\text{s}$ )	3 $\mu\text{s}$
Series Name	SS490

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