

LINEAR HALL SENSOR IC

◆ General Description

SL149X Series sensors have a ratiometric output voltage, set by the supply voltage. It varies in proportion to the strength of the magnetic field.

A new Hall effect integrated circuit chip provides increased temperature stability and sensitivity. Laser trimmed thin film resistors on the chip provide high accuracy and temperature compensation to reduce null and gain shift over temperature. The quad Hall sensing element minimizes the effects of mechanical or thermal stress on the output. The positive temperature coefficient of the sensitivity (+0.02%/°C typical) helps compensate for the negative temperature coefficients of low cost magnets, providing a robust design over a wide temperature range. The supply voltage range is from 4.5V to 10.5V, and the temperature range is from -40°C to +150°C.

SL149X Series sensors provides SIP3L(TO-92S) and SOT-89-3L packages.

◆ Features

- The typical value of the power supply current is 5mA at 5Vdc.
- Built-in resistor trimmed for precise sensitivity and temperature compensation.
- Rail-to-rail operation provides more useable signal for higher accuracy.
- Operating temperature range of -40 to +150°C.
- Responds to either positive or negative gauss.

◆ Applications

- Current sensor
- Pressure
- Speed detection
- Liquid level sensor
- Motor control
- Iron metal detection
- Position sensor
- Magnetic code reading
- Vibration detection

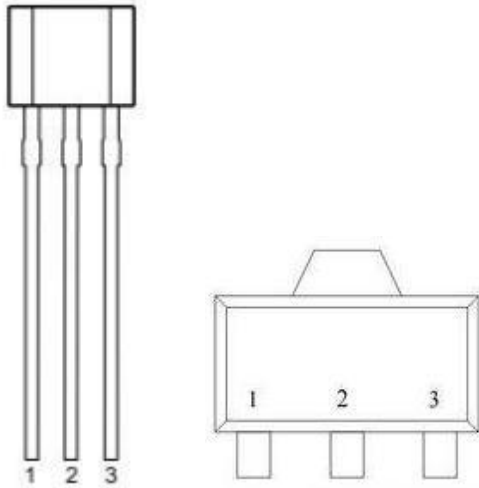


◆ Product Selection

Product	Operating Temperature	Package	Operating Voltage	Magnetic field type	Packing Type	Quantity
SL1496B	L(note1)	TO-92S	4.5-10.5V	linear	Bulk	1000
SL1495A	L(note1)	SOT-89-3L	4.5-10.5V	linear	Tape and reel	1000

Note:1)L indicates the operating temperature range is -40~150°C;2)UA indicates the package is SIP-3L/TO-92S;3)SY indicates the package is SOT-89-3L

◆ **Pin Configuration**



Pin Number	Pin Name	Function
1	V _{CC}	Supply voltage
2	GND	Ground
3	V _{out}	Output

◆ **Function Block Diagram**

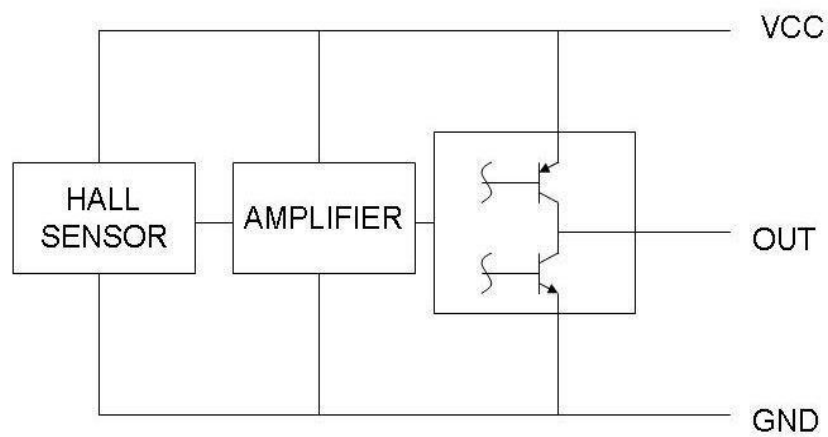


Figure 1. Block Diagram of SL149X

◆ **Electrical Characteristics**($T_A=25^{\circ}\text{C}$, $V_{CC}=5\text{V}$, unless otherwise specified)

Parameter		Test Conditions	SL1495A	SL1496B	Unit
Supply Voltage (VCC)		Operating	4.5~10.5	4.5~10.5	V
Supply Current (ICC)		Typ.	5	5	mA
		Max.	8.7	8.7	mA
Output Type			Ratiometric		V_{PP}
Output Current	Typ.Source	$V_{CC}>4.5\text{V}$	1.5	1.5	mA
	Min.Source	$V_{CC}>4.5\text{V}$	1	1	mA
	Min.Sink	$V_{CC}>4.5\text{V}$	0.6	0.6	mA
	Min.Sink	$V_{CC}>5.0\text{V}$	1	1	mA
Output Voltage range		Typ.		0.2~($V_{CC}-0.2$)	V
		Max.		0.4~($V_{CC}-0.4$)	V
Null(Output @ 0Gauss)			2.500 ± 0.075	2.500 ± 0.150	V
Sensitivity(mV/GS)			3.125 ± 0.125	2.500 ± 0.200	mV/GS
Linearity,% of Span		Typ.	-1.00	-1.00	%
		Max.	-1.50	-1.50	%

Note:

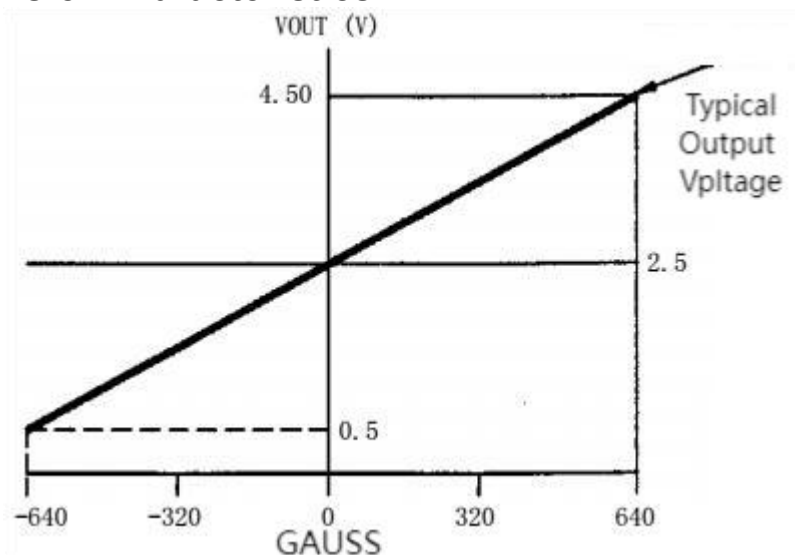
1)If any one of the maximum ratings is exceeded,the device may be damaged.

2)The maximum power supply voltage that can work normally must be adjusted according to the constraints of junction temperature and power consumption.

◆ **Magnetic Characteristics**($T_A=25^{\circ}\text{C}$, $V_{CC}=5\text{V}$, unless otherwise specified)

Parameter		SL1495A	SL1496B	Unit
Magnetic field range	Typ.	± 670	± 840	Guass, GS
	Max.	± 600	± 750	Guass, GS

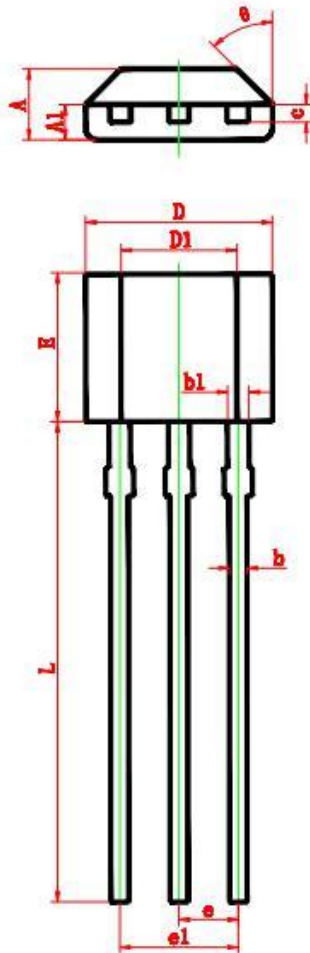
◆ **Typical Transfer Characteristics**



◆ **Package Information**

(1)SIP-3L(TO-92S)

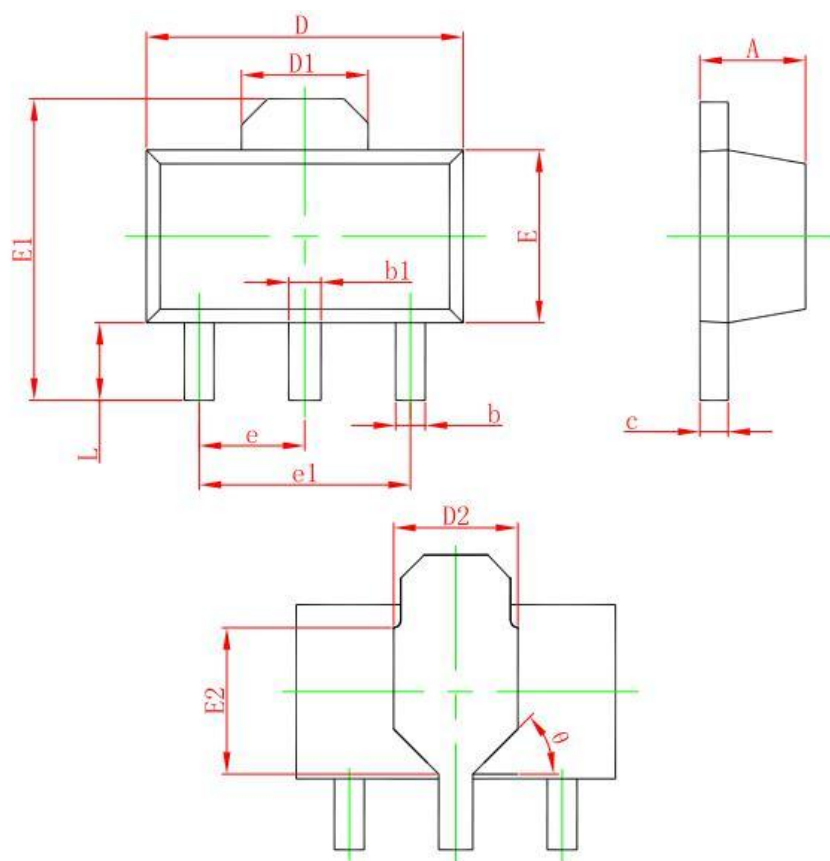
Unit:mm



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.420	1.620	0.056	0.064
A1	0.660	0.860	0.026	0.034
b	0.330	0.480	0.013	0.019
b1	0.400	0.510	0.016	0.020
c	0.330	0.510	0.013	0.020
D	3.900	4.100	0.154	0.161
D1	2.280	2.680	0.090	0.106
E	3.050	3.250	0.120	0.128
e	1.270 TYP.		0.050 TYP.	
e1	2.440	2.640	0.096	0.104
L	15.100	15.500	0.594	0.610
θ	45° TYP.		45° TYP.	

(2)SOT-89-3L

Unit:mm



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF.		0.061 REF.	
D2	1.750 REF.		0.069 REF.	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
E2	1.900 REF.		0.075 REF.	
e	1.500 TYP.		0.060 TYP.	
e1	3.000 TYP.		0.118 TYP.	
L	0.900	1.200	0.035	0.047
θ	45°		45°	