

LINEAR HALL EFFECT IC

AH49H

Pin Configuration

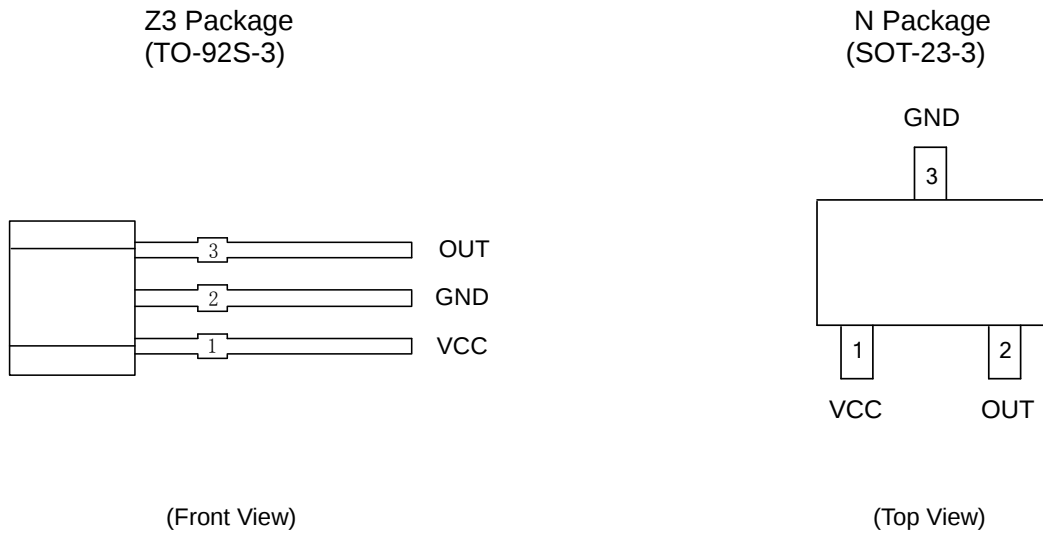


Figure 2. Pin Configuration of AH49H

Pin Description

Pin Number		Pin Name	Function
TO-92S-3	SOT-23-3		
1	1	VCC	Power supply pin
2	3	GND	Ground pin
3	2	OUT	Output pin

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Functional Block Diagram

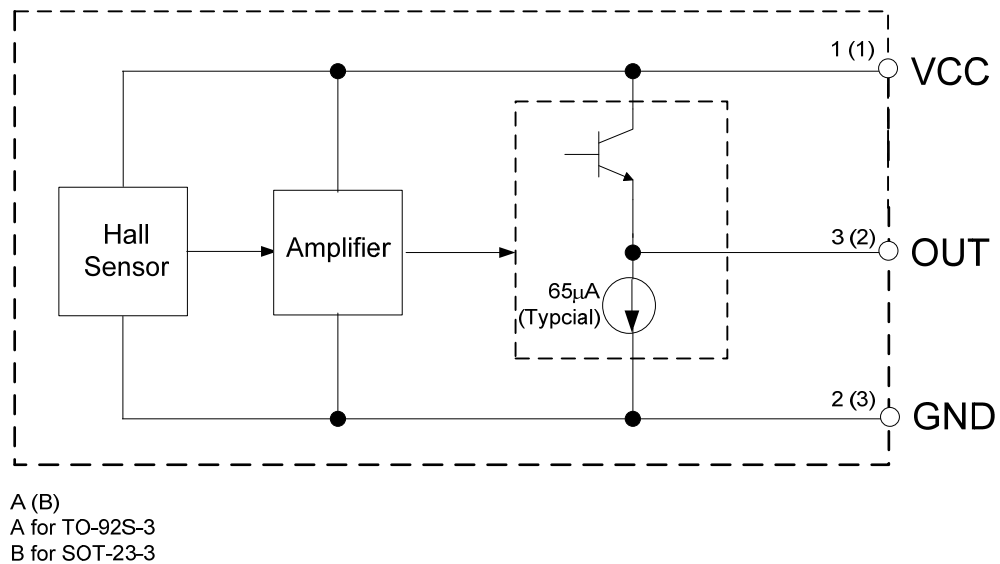
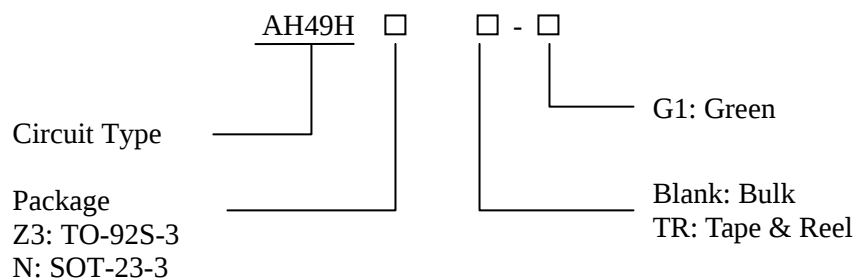


Figure 3. Functional Block Diagram of AH49H

Ordering Information



Package	Temperature Range	Part Number	Marking ID	Packing Type
TO-92S-3	-40 to 105°C	AH49HZ3-G1	49HG	Bulk
SOT-23-3		AH49HNTR-G1	GT7	Tape & Reel

BCD Semiconductor's Pb-free products, as designated with "G1" in the part number, are RoHS compliant and green.

**LINEAR HALL EFFECT IC****AH49H****Absolute Maximum Ratings (Note 1)**

Parameter		Symbol	Value	Unit
Supply Voltage		V_{CC}	10	V
Instantaneous Supply Voltage		V_{CC_INST}	50	V
Power Dissipation	TO-92S-3	P_D	400	mW
	SOT-23-3		230	
Ambient Temperature		T_A	-40 to 125	°C
Storage Temperature		T_{STG}	-50 to 150	°C
ESD (Human Body Model)			6000	V
ESD (Machine Mode)			400	V

Note 1: Stresses greater than those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under “Recommended Operating Conditions” is not implied. Exposure to “Absolute Maximum Ratings” for extended periods may affect device reliability.

Recommended Operating Conditions ($T_A=25^{\circ}\text{C}$)

Parameter	Symbol	Min	Max	Unit
Supply Voltage	V_{CC}	3	8	V
Operating Temperature	T_{OP}	-40	105	°C

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Electrical Characteristics

 $V_{CC}=3.3V$, $T_A=25^{\circ}C$, unless otherwise specified.

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Supply Current	I_{CC}		1.2	2	3.2	mA
Quiescent Output Voltage	V_{NULL}	$B=0$ (Gauss)	1.45	1.7	1.85	V
Output Voltage Sensitivity	V_{SEN}	$B=\pm 600$ (Gauss)		0.33		mV/Gauss
Output Voltage Span	$V_{OUT\ S}$			0.85 to 2.6		V
Output Resistor	R_{OUT}		30	50	70	Ω
Linear Magnetic Range	B			± 3000		Gauss
Output Noise		Bandwidth=10Hz to 10kHz		90		μV

Transferring Characteristics ($V_{CC}=3.3V$)

When there is no outside magnetic field ($B=0$ Gauss), the quiescent output voltage is one-half the supply voltage in general.

For TO-92S-3 package, if a south magnetic pole approaches the front face (the side with marking ID) of the Hall effect sensor, the circuit will drive the output voltage higher. In contrary, a north magnetic pole will drive the output voltage lower. The variations of voltage level up or down are symmetrical. Because the SOT-23-3 is reversed packaging with TO-92S-3, so the magnetic performance is also reversed. Therefore, if the reversed magnetic pole approaches the front face, the output is the same as TO-92S-3 package. Greatest magnetic sensitivity is obtained with a supply voltage of 8V, but at the cost of increased supply current and a slight loss of output symmetry. So, it is not

recommended to work in such condition unless the output voltage magnitude is a main issue. The output signal can be capacitively coupled to a next-level amplifier for further amplifying if the changing frequency of the magnetic field is high.

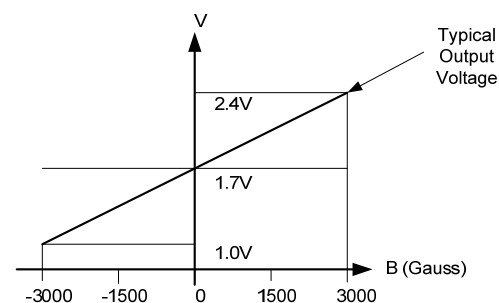


Figure 4. Transferring Characteristic of AH49H

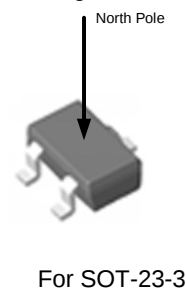
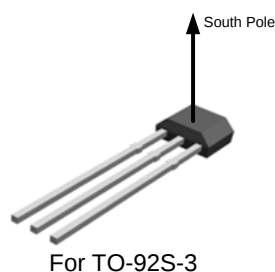


Figure 5. Magnetic Characteristic of AH49H



LINEAR HALL EFFECT IC

AH49H

Typical Performance Characteristics

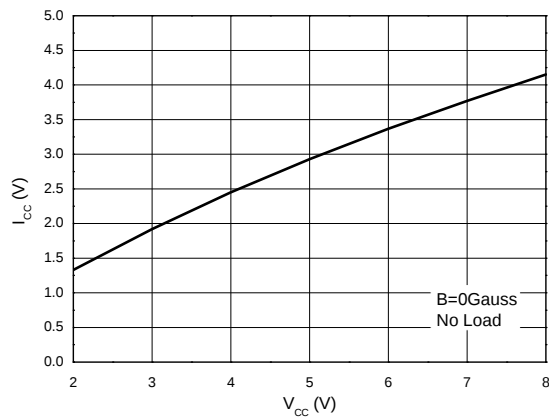


Figure 6. Supply Current vs. Supply Voltage

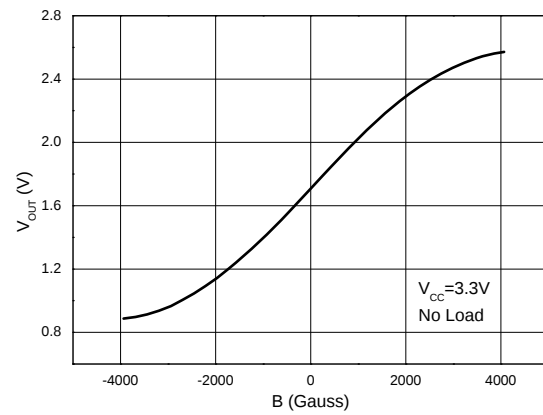


Figure 7. Output Voltage vs. Magnetic Field

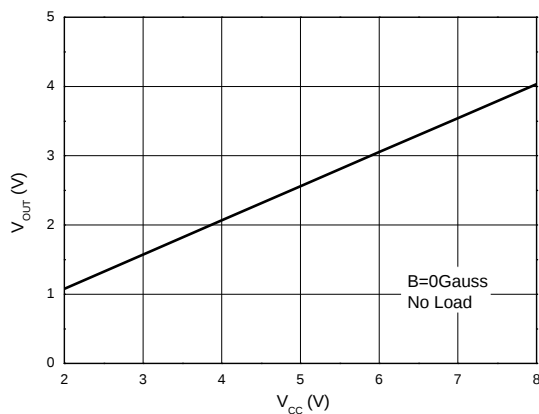


Figure 8. Output Voltage vs. Supply Voltage

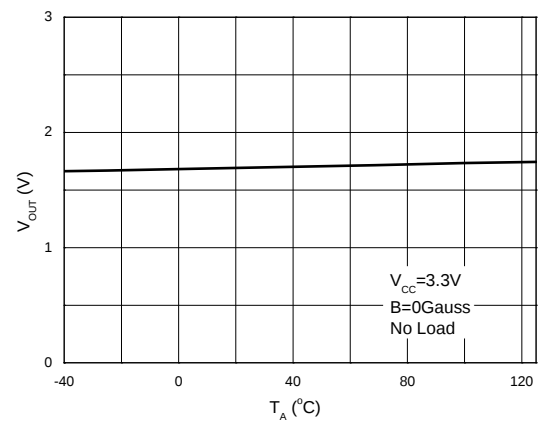


Figure 9. Output Voltage vs. Ambient Temperature

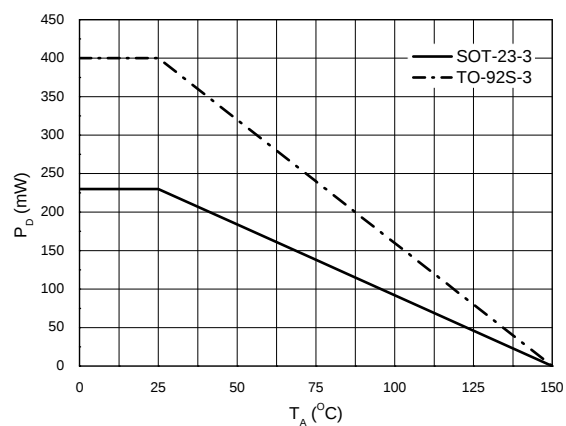
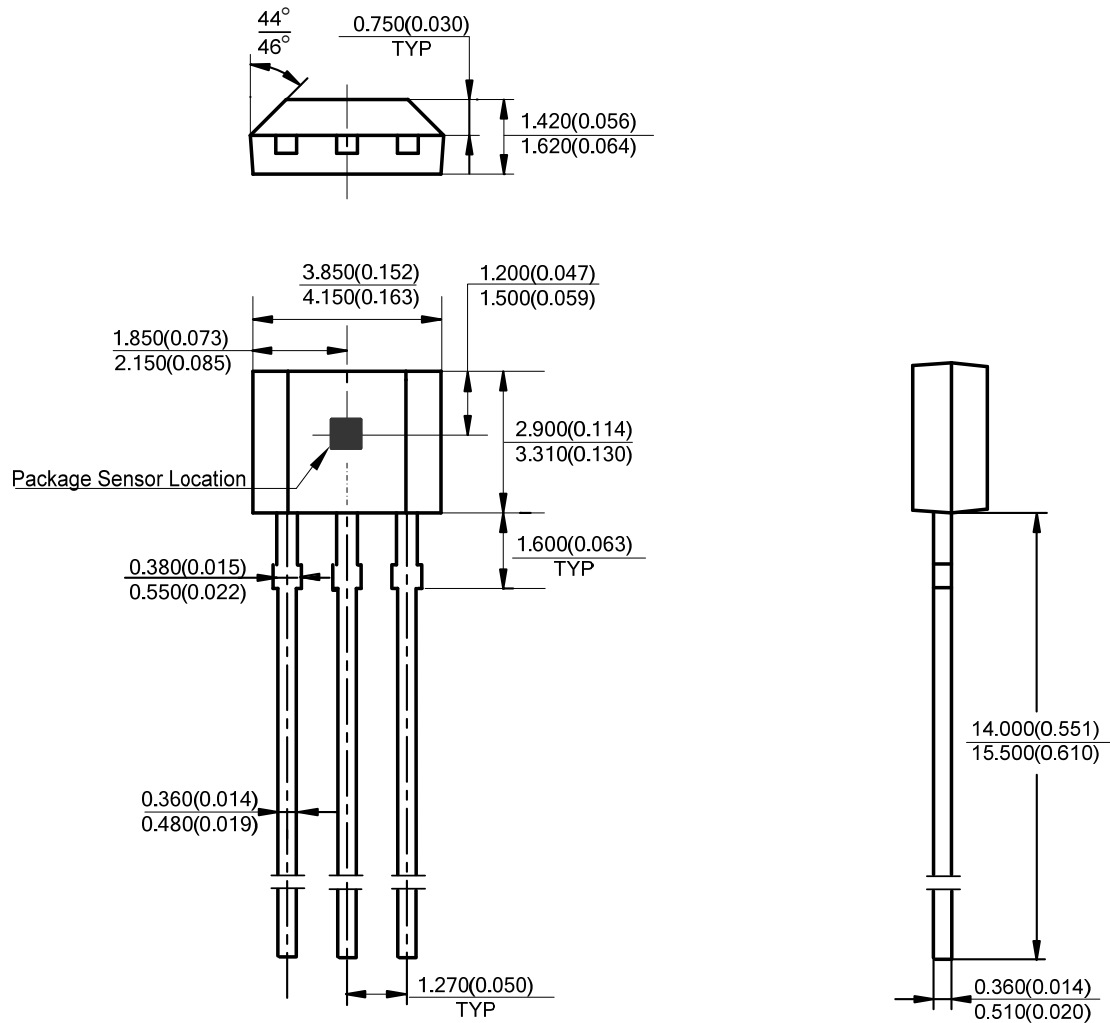
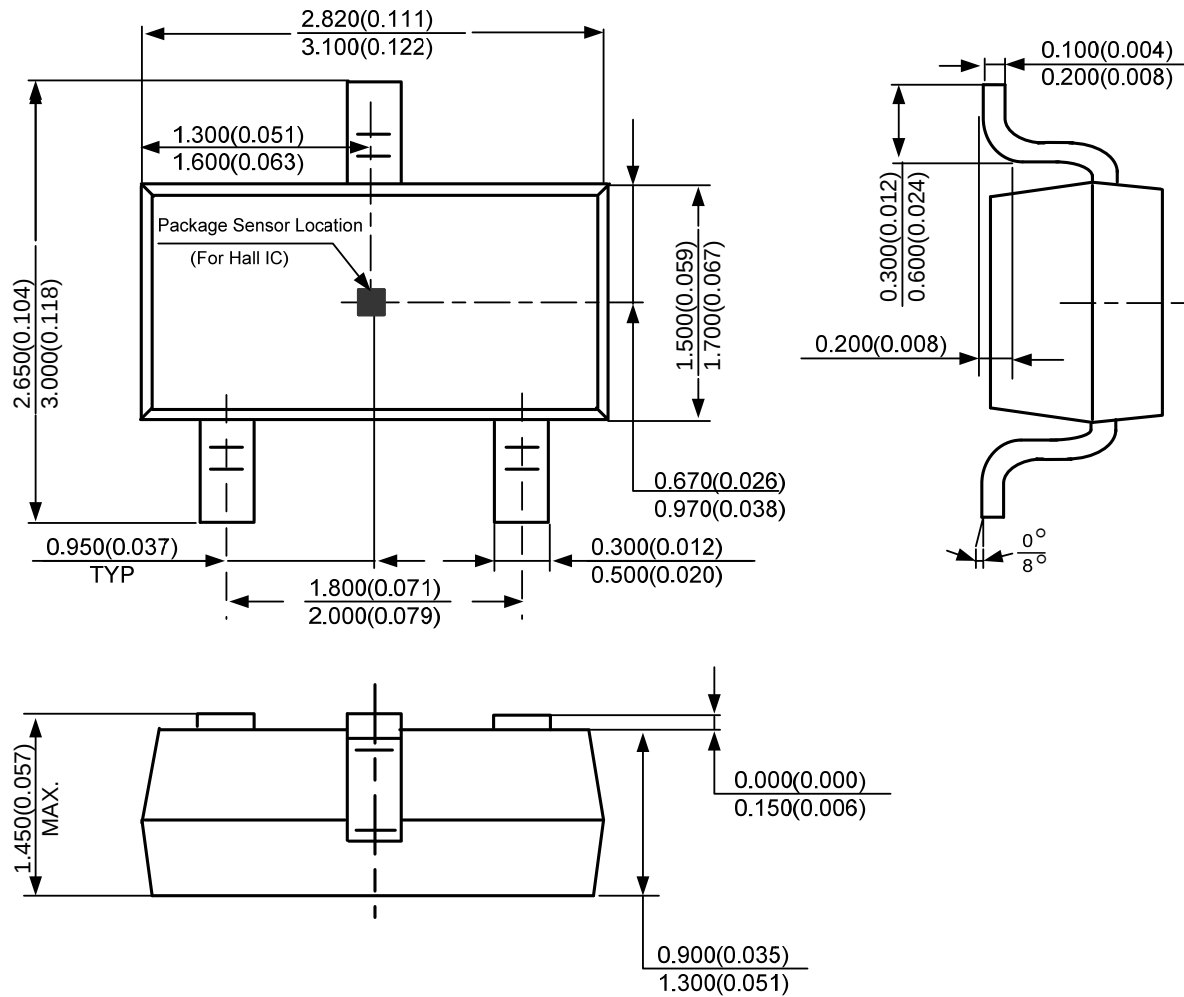
**LINEAR HALL EFFECT IC****AH49H****Typical Performance Characteristics (Continued)**

Figure 10. Power Dissipation vs. Ambient Temperature

LINEAR HALL EFFECT IC
AH49H
Mechanical Dimensions
TO-92S-3
Unit: mm(inch)


LINEAR HALL EFFECT IC
AH49H
Mechanical Dimensions (Continued)
SOT-23-3
Unit: mm(inch)




BCD Semiconductor Manufacturing Limited

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