Unilateral linear output Hall IC

Product Features

- Current source output form
- Low noise output, no external capacitor filtering required
- Mechanical stress resistant design
- Good linearity
- Operating temperature: -40℃~+105℃
- Packaging form: 3-pin SIP, SOT-23-3L

Typical applications

- Motor control
- Position detection
- Current detection
- Liquid level detection

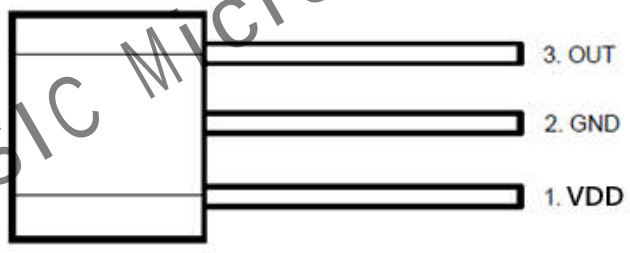
Product Overview

AH22462 is a single-sided linear output Hall sensor chip that integrates a magnetic field sensing unit, a low-noise amplifier, an output stage, temperature detection, zero point compensation, and sensitivity compensation control module. It senses the magnetic field perpendicular to the chip surface and converts it into voltage output at a certain ratio (sensitivity), making it highly suitable for current detection applications.

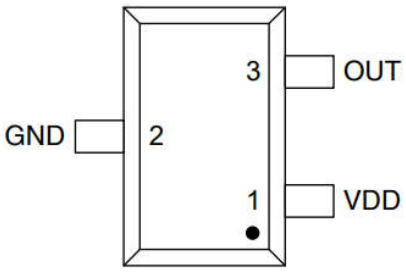
The zero-point output voltage (without magnetic field) of AH22462 is set to 2.2V by default when VCC = 3.3V, and its typical sensitivity is 2.3mV/Gs when VCC = 3.3V.

The typical operating voltage of the chip is 3.3V/5V, with an extreme voltage tolerance of up to 30V. Its operating temperature range supports -40~105℃, meeting the demanding requirements of harsh automotive electronic environments. AH2246 is available in two package types: 3-pin SIP and SOT-23-3L, with matte tin plating and the use of halogen-free green materials, meeting environmental protection requirements.

Pin definition



SIP3



SOT23-3L

SOT Pin Number	SIP Pin Number	Pin Name	Function
1	1	VDD	Supply Voltage
2	2	GND	Ground
3	3	OUT	Analog linear output

Limit parameters

Parameter	Symbol	Min	Max	Unit
Power supply voltage	V_{CC}	-0.3	30.0	V
Output pin voltage	V_{OUT}	-0.3	30.0	V
Power supply current	I_{CC}	---	15	mA
Output current	I_{OUT}	---	2	mA
Operating temperature	T_A	-40	105	℃
Junction temperature	T_J	-50	165	℃
Storage temperature	T_{STG}	-65	165	℃

Note: Stresses exceeding those listed here may cause permanent damage to the equipment.
Prolonged exposure to absolute maximum rated conditions may affect the reliability of the equipment.

Electrical characteristics(Note：unless otherwise specified，T_A=25°C, V_{DD}=3.3V，SOT23-3L)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Operating voltage	V_{CC}	T_J<$T_{J(Max)}$	2.5	3.3	10	V
Operating current	I_{CC}	V_{CC}=3.3V	---	1.36	2.0	mA
Output load R	R_L	OUT to GND	4	---	---	kΩ
Output voltage	$V_{OUT(H)}$	T_A =25℃, B=1000Gs	0.75	0.8	0.95	V
	$V_{OUT(L)}$	T_A =25℃, B=-500Gs	2.4	2.6	---	V
Static voltage	$V_{OUT(Q)}$	B=0 Gs, V_{CC} =3.3V	1.95	2.2	2.45	V
Sensitivity	Sens	V_{CC}=3.3V	2.0	2.3	2.6	mV/Gs
Response time	T_{resp}	delay in output signal arrival 90%	---	2	---	us

Note：1Gs = 0.1mT

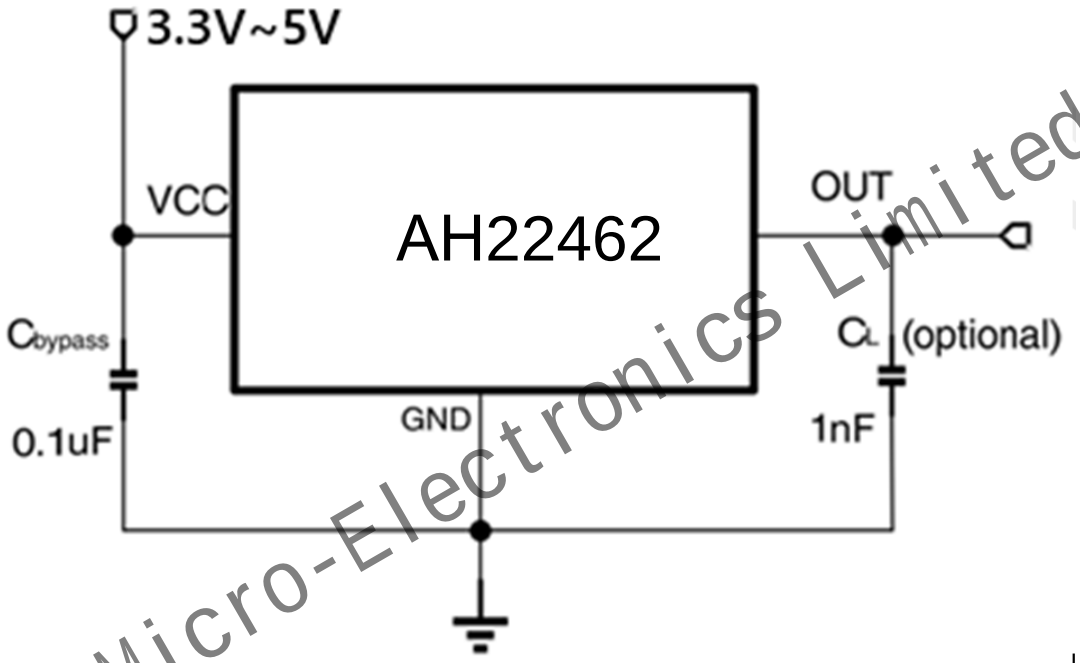
Archivedescription：

Test Bin	Condition	Min	Max	Unit	Level
1	VIN=3.3V，B=0Gs, Sort by VOUT	2.1	2.3	V	A
2		1.95	2.1	V	B
3		2.3	2.45	V	C

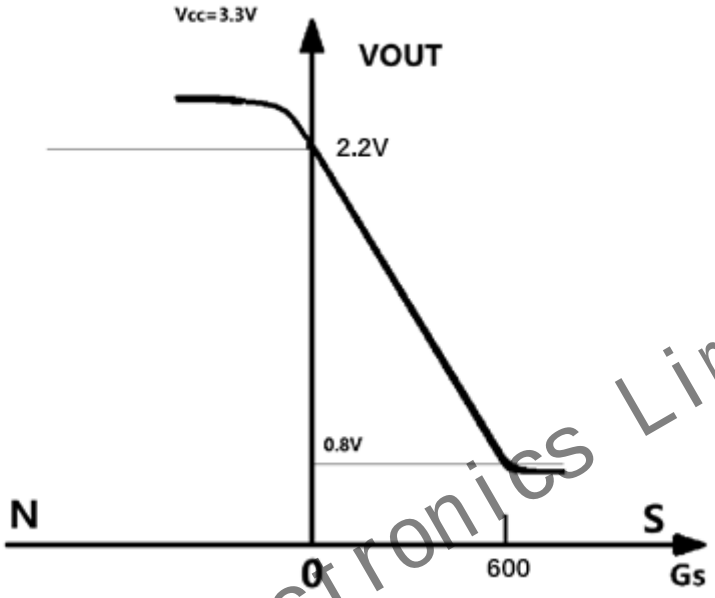
Thermal properties

Parameter	Symbol	Test conditions	Typ	Unit
Package thermal resistance	Vcc	Single-layer PCB, copper is limited to solder pads only	166	℃/W

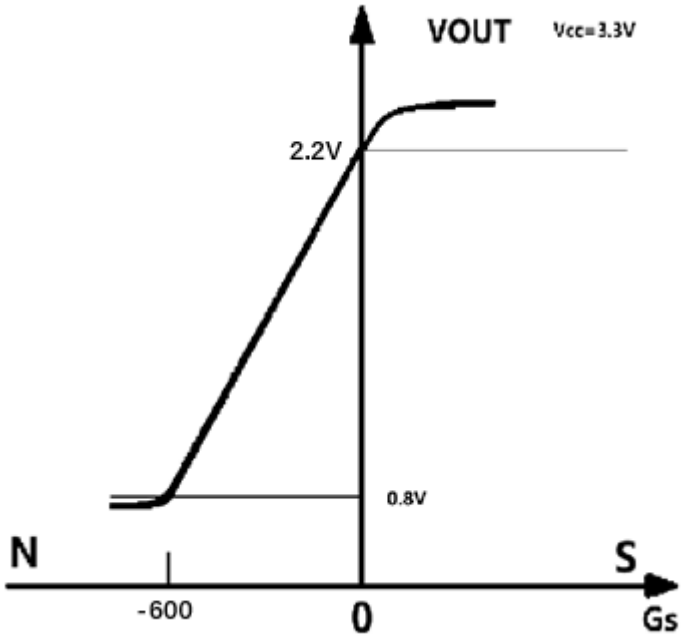
Test circuit diagram



Within the operating voltage range of the power supply, the typical value of the chip's static (with zero magnetic field strength) output voltage Vout_Q is 2.2V@Vcc=3.3V. When in the SOT23-3L package, the output voltage of the chip decreases proportionally when the S-pole magnetic field perpendicular to the chip's logo surface is strengthened; in the SIP3 (TO92S) package, it is responsive to the N-pole magnetic field, and the output is inversely proportional to the magnetic field strength. The sensitivity of the chip is defined as the ratio of the change in output voltage (mV) to the change in magnetic field (Gs). The maximum output voltage of the chip at room temperature is Vcc-0.7V, and the minimum output voltage is 0.8V.



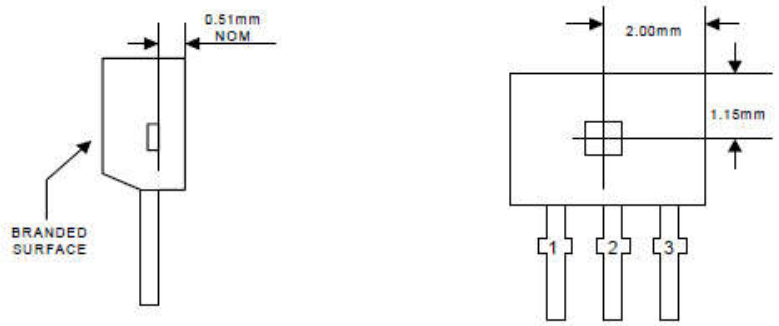
SOT23-3L Magnetic induction output curve

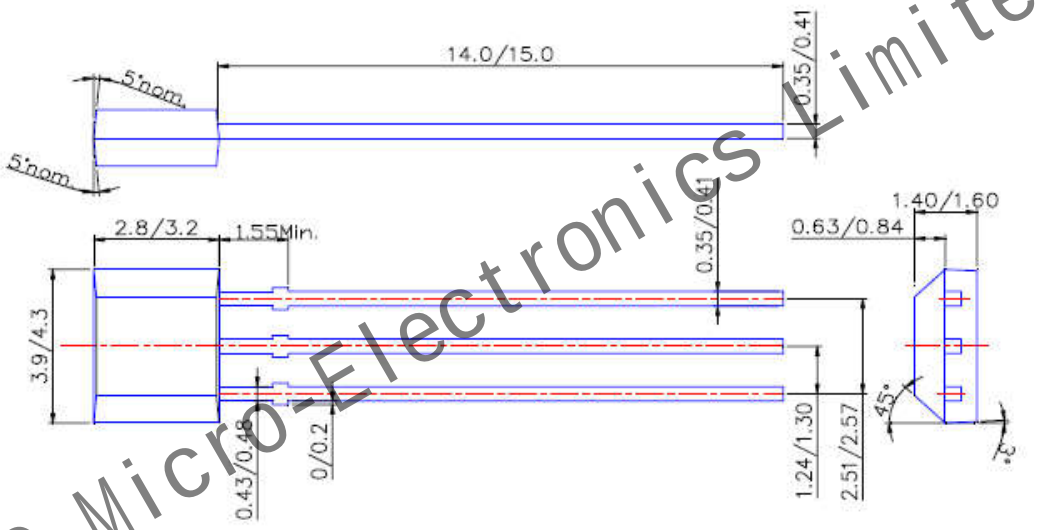


SIP3 Magnetic induction output curve

Package information

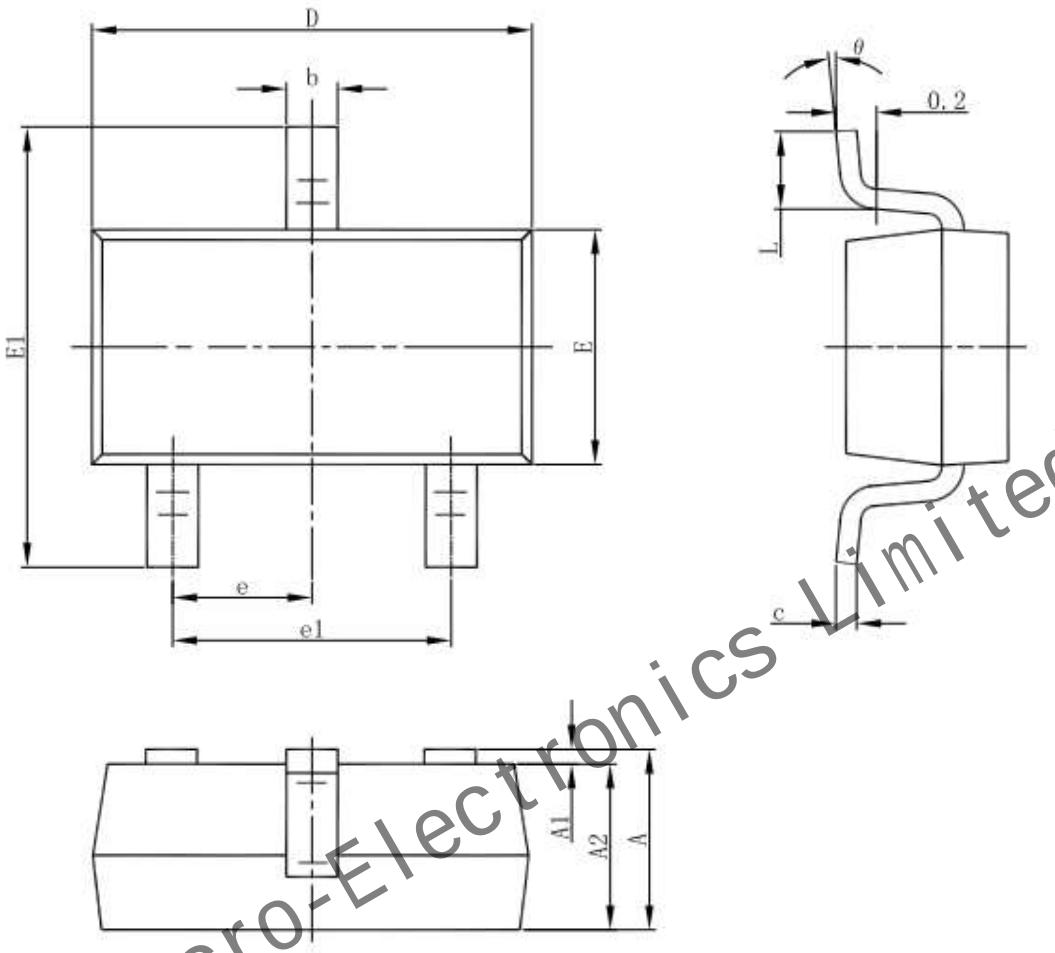
3-pin TO92S Outline Dimensions





Note 6

3-pin SOT23-3 Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

Order Information

Product NO.	Information
AH22462BT0	TO92S package, tape and reel packaging(1000pcs/bag),Rohs/Pb Free
AH22462AT0	SOT23-3L package, tape and reel packaging(3000pcs/bag),Rohs/Pb Free