

InSb Hall Element
**Differential Analog
Output Hall Element**

AS300B
● General Description

This is a ultra-high sensitivity type of ANGSEMI hall element using evaporated InSb film. It performs effectively in low magnetic fields due to the high sensitivity. The input and output resistance values are suitable for transistor circuits.

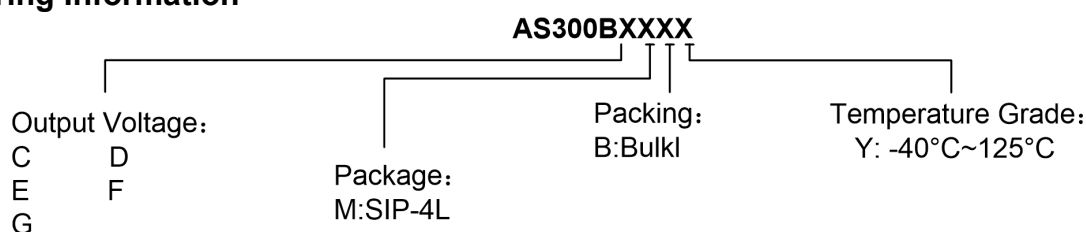
The device is available in SIP-4L package and is rated over the -40°C to 125°C. The all packages are RoHS and Green compliant.

● Features

- Ultra-High sensitivity InSb Hall Element
- Shipped in Package tape Real
- Differential Analog output
- Output Hall Voltage (mV)
 - C: 168mV to 204mV (C)
 - D: 196mV to 236mV (D)
 - E: 228mV to 274mV (E)
 - F: 266mV to 320mV (F)
 - G: 310mV to 370mV (G)
- RoHS & Green Compliant
- Thin 4pin SIP Packages
- -40°C to +125 °C Temperature Range

● Applications

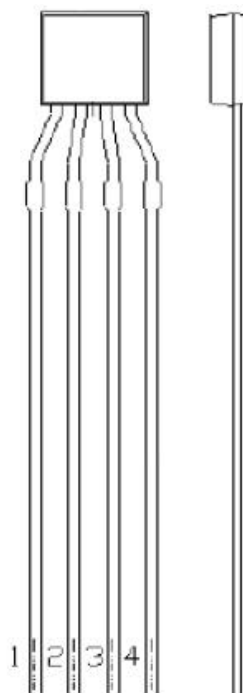
- Brushless DC Motor
- Other small precision motors
- DVD, CD-ROM, floppy disk drive
- Non-contacting, rotation sensors, current sensors
- Magnetic flux sensors other than those above

■ Ordering Information


Part Number	Output Hall Voltage (mV, B=50mT, VC=1V)	Package Type	Package Qty	Temperature	Eco Plan
AS300BCMBY	168 to 204	SIP-4L	Bulk 500pcs/package	-40~125°C	Green
AS300BDMBY	196 to 236	SIP-4L	Bulk 500pcs/package	-40~125°C	Green
AS300BEMBY	228 to 274	SIP-4L	Bulk 500pcs/package	-40~125°C	Green
AS300BFMBY	266 to 320	SIP-4L	Bulk 500pcs/package	-40~125°C	Green
AS300BGM BY	310 to 370	SIP-4L	Bulk 500pcs/package	-40~125°C	Green

■ Marking & Pin Assignment

SIP-4L:



Pin Name	Pin No.		I/O	Pin Function
	SOT23-4L			
Input	1 (+)	3 (-)	I/P	Input Pins +/-
	1 (-)	3 (+)	I/P	Input Pins -/+
OUTPUT	2 (+)	4 (-)	I/P	Output Pins +/-
	2 (-)	4 (+)	I/P	Output Pins -/+

■ Typical Application Circuit

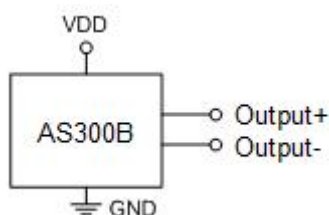


Figure 1, Typical Application Circuit of AS300B

■ Absolute Maximum Ratings¹ (T_A=25°C, unless otherwise noted)

Parameter	Symbol	Rating	Unit
Max. Input Current	I _{MAX}	20	mA
Maximum Power Dissipation	P _{DMAX}	300	mW
Storage Temperature Range	T _S	-55 to +150	°C
Operating Junction Temperature Range	T _{OP}	-40 to +125	°C
Maximum Soldering Temperature (at leads, 10 sec)	T _{LEAD}	260	°C

Note: 1: Stresses above those listed in absolute maximum ratings may cause permanent damage to the device. Functional operation at conditions other than the operating conditions specified is not implied. Only one absolute maximum rating should be applied at any one time.

2: The device is not guaranteed to function outside of its operating conditions.

Electrical Characteristics

($T_A = -40$ to $+125^\circ\text{C}$ unless otherwise noted. Typical values are at $T_A = +25^\circ\text{C}$, $1\text{mT}=10\text{Gauss}$)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_H	Output Hall Voltage	Const. Voltage Drive, $B=50\text{mT}$, $V_C=1\text{V}$	168	-	370	mV
R_{IN}	Input Resistance	$B=0\text{mT}$, $I_C=0.1\text{mA}$	240	-	550	Ω
R_{OUT}	Output Resistance	$B=0\text{mT}$, $I_C=0.1\text{mA}$	240	-	550	Ω
V_{OS}	Offset Voltage	$B=0\text{mT}$, $V_C=1\text{V}$	-7	-	+7	mV
aV_H	Temp. Coefficient of V_H	$B=50\text{mT}$, $I_C=1\text{mA}$	-	-1.8	-	$\%/^\circ\text{C}$
aR_{IN}	Temp. Coefficient of R_{IN}	$B=0\text{mT}$, $I_C=5\text{mA}$	-	-1.8	-	$\%/^\circ\text{C}$
-	Dielectric Strength	100V D.C	1.0	-	-	M Ω

Notes: 1, $V_H = V_{HM} - V_{OS}$ (V_{HM} : meter indication)

2, $aV_H = 1/(V_{HT1}) \times (V_{H(T3)} - V_{H(T2)})/(T3 - T2) \times 100$

3, $aR_{IN} = 1/(R_{INT1}) \times (R_{IN(T3)} - R_{IN(T2)})/(T3 - T2) \times 100$

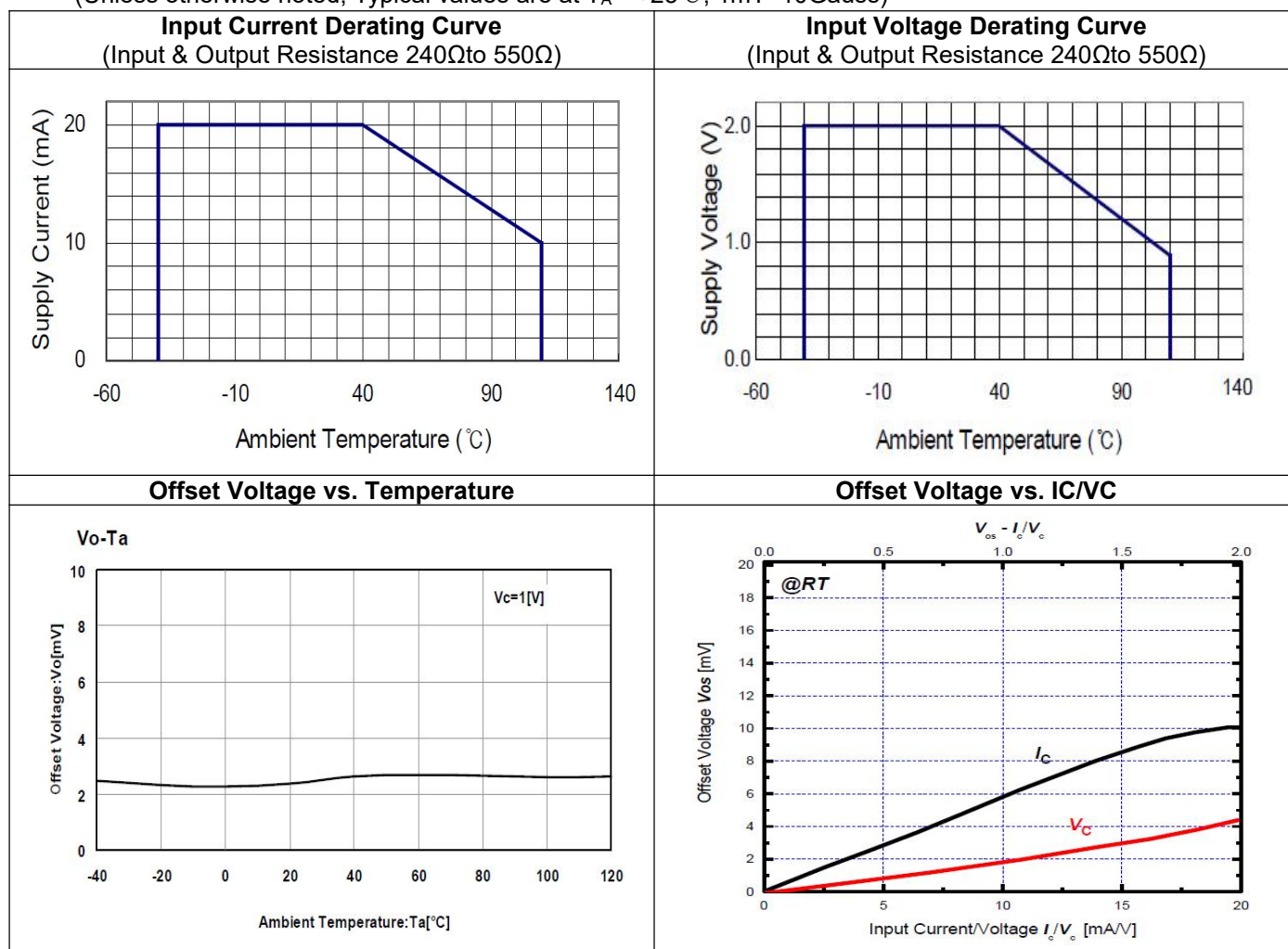
$T1=20^\circ\text{C}$, $T2=0^\circ\text{C}$, $T3=40^\circ\text{C}$.

Classification of Output Hall Voltage (V_H)

Rank	$V_H(\text{mV})$	Conditions
C	168 to 204	$B=50\text{mT}$, $V_C=1\text{V}$, Constant Voltage Drive
D	196 to 236	
E	228 to 274	
F	266 to 320	
G	310 to 370	

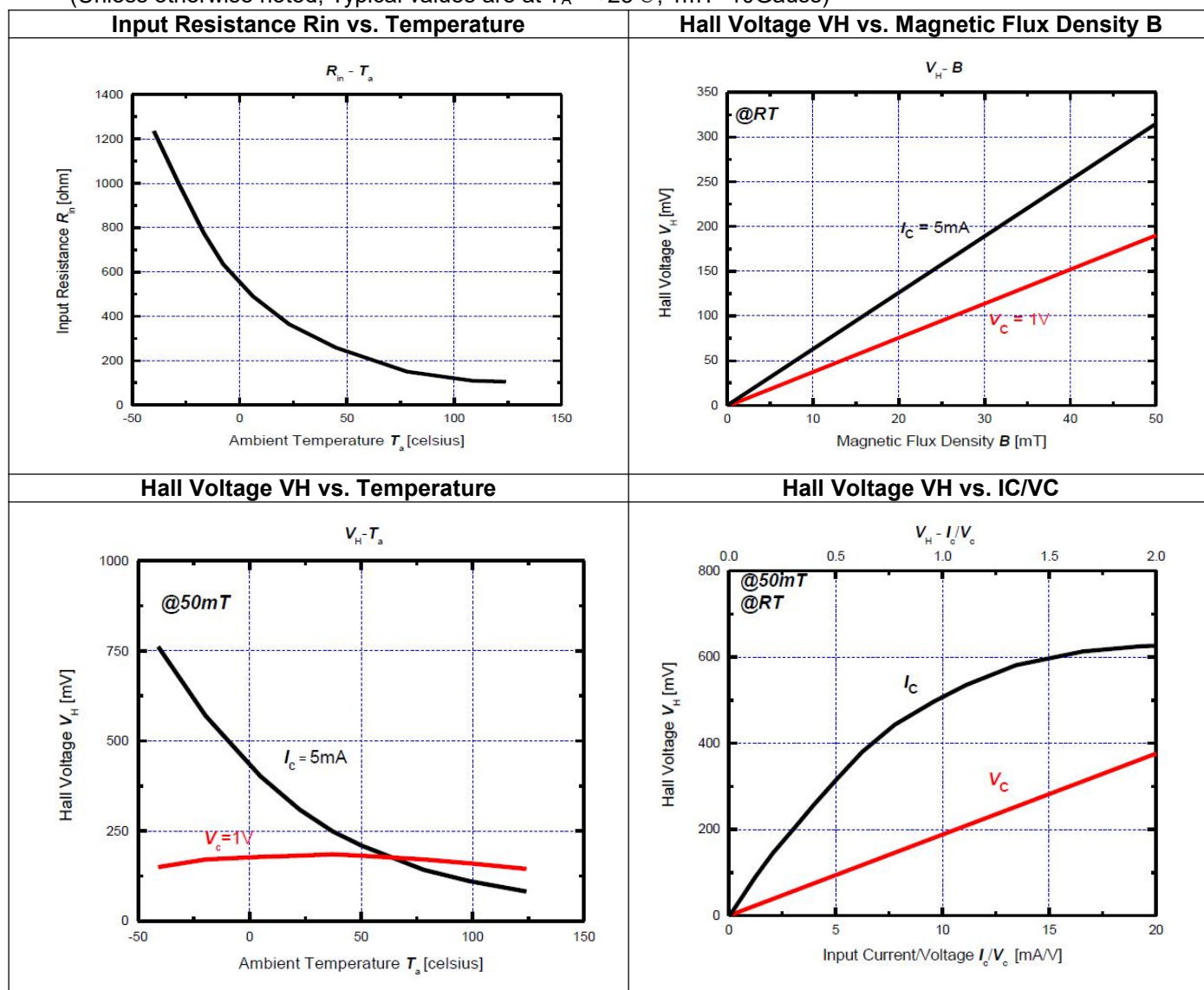
Typical Characteristics—AS300B

(Unless otherwise noted, Typical values are at $T_A = +25^\circ\text{C}$, $1\text{mT}=10\text{Gauss}$)



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Thermal Considerations

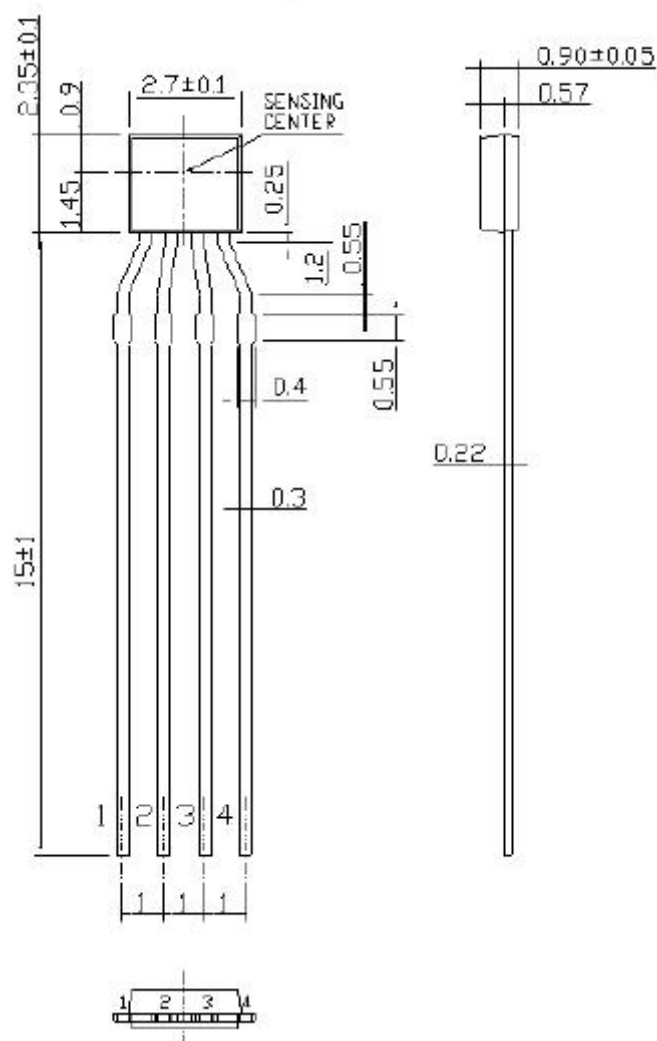
The maximum IC junction temperature should be restricted to 125°C under normal operating conditions. This restriction limits the power dissipation of the AS300B. Calculate the maximum allowable dissipation, $P_{D(\text{max})}$, and keep the actual dissipation less than or equal to $P_{D(\text{max})}$. The maximum-power-dissipation limit is determined using following equation:

$$P_{D(\text{MAX})} = \frac{125^\circ\text{C} - T_A}{R_{\theta JA}}$$

Where, T_A is the maximum ambient temperature for the application. $R_{\theta JA}$ is the thermal resistance junction-to-ambient given in Power Dissipation Table.

■ Package Information

SIP-4L: (unit: mm)



■ Packing Information

1. Packing type: Bulk
2. Packing minimum: 500pcs