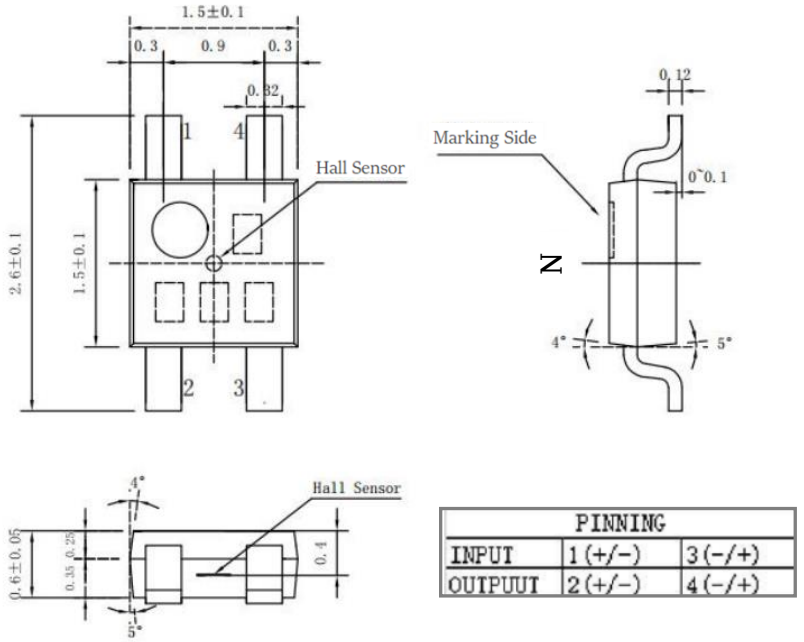
SMG610 GaAs Hall Element

Linear GaAs Hall element with Excellent thermal characteristics

SSOT-4L Package without Forming

Shipped in packet-tape reel (4,000pcs per reel)

Dimensional Drawing (Unit: mm)



PINNING		
INPUT	1 (+/−)	3 (−/+)
OUTPUUT	2 (+/−)	4 (−/+)

Absolute Maximum Rating

Operating Temperature range: -40℃ ~ 125℃
Storage Temperature range : -45℃ ~ 130℃
Maximum Input current : 10mA

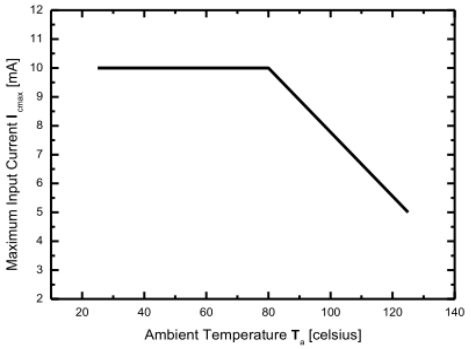


Figure 1. Maximum input current I_{cmax}

Electrical Characteristics (RT=25℃)

Item	Symbol	Test Condi.	Min.	Typ.	Max.	Unit
Hall Voltage	V_H	B = 50mT, V_C=6V T_a = RT	55		75	mV
Input Resist.	R_{in}	B = 0mT, I_C = 0.1mA T_a = RT	650		850	Ω
Output Resist.	R_{out}	B = 0mT, I_C = 0.1mA T_a = RT	650		850	Ω
Offset Voltage	V_{os}	B = 0mT, V_C = 6V T_a = RT	-11		+11	mV
Temp. Coeffi. of V_H	$\lvert\alpha V_H\rvert$	B = 50mT, I_C =1mA, T_a =25℃ ~ 125℃			0.06	%/℃
Temp. Coeffi. of R_{in}	αR_{in}	B = 0mT, I_C =0.1mA, T_a = 25℃ ~ 125℃			0.3	%/℃
Linearity of V_H	ΔK	B = 0 - 0.4T, I_C =1mA T_a = RT			2	%

Note:

1. $V_H = V_{H-M} - V_{os}$
   in which V_{H-M} is the Output Hall Voltage, V_H is the Hall Voltage and V_{os} is the offset Voltage under the identical electrical stimuli.
2. $\alpha V_H = \frac{1}{V_H\ (T_{a1})} \times \frac{V_H\ (T_{a2}) - V_H\ (T_{a1})}{T_{a2} - T_{a1}} \times 100$
   $T_{a1} = 25℃, \quad T_{a2} = 125℃$
3. $\alpha R_{in} = \frac{1}{R_{in}\ (T_{a1})} \times \frac{R_{in}(T_{a2}) - R_{in}\ (T_{a1})}{T_{a2} - T_{a1}} \times 100$
   $T_{a1} = 25℃, \quad T_{a2} = 125℃$
4. $\Delta K = \frac{K(B_1) - K(B_2)}{\frac{K(B_1) + K(B_2)}{2}} \times 100$

$$K = \frac{V_H}{I_c \times B},$$

Characteristic Curves

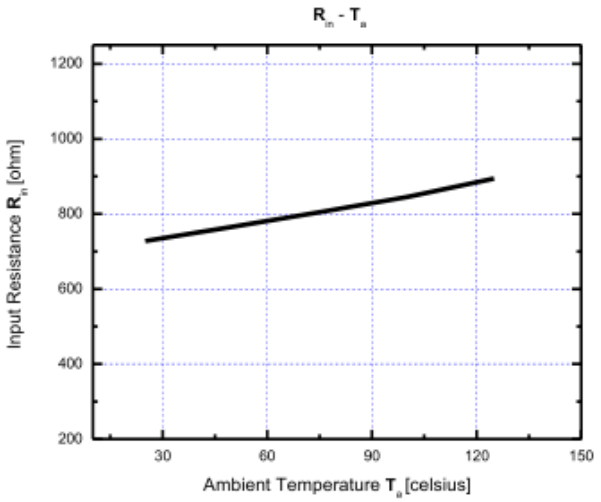


Figure 2.Input resistance R_{in} as a function of ambient temperature T_a.

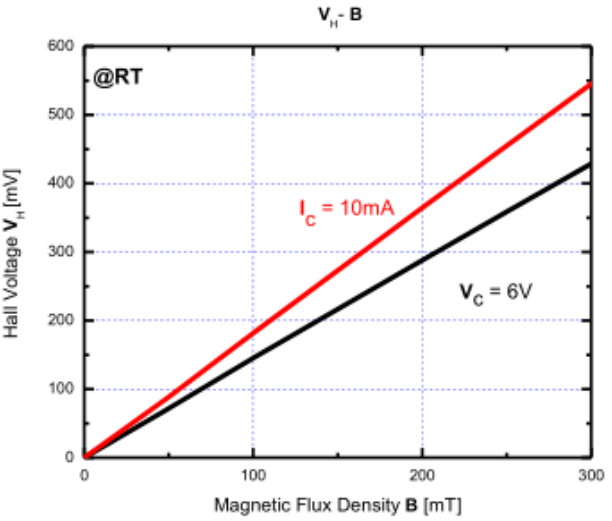


Figure 3. Hall voltage V_H as a function of magnetic flux density B.

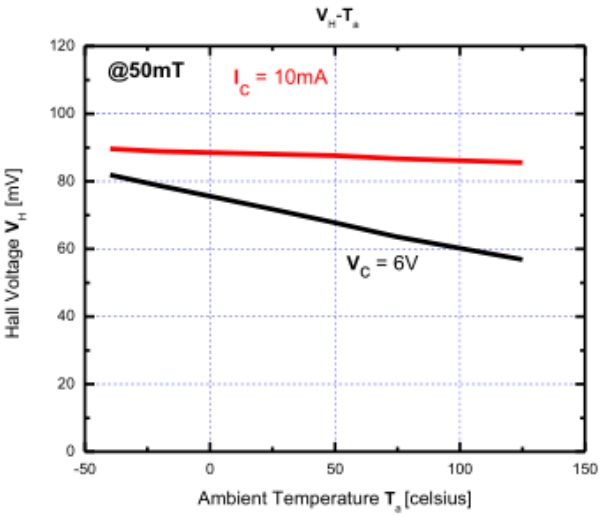


Figure 4. Hall voltage V_H as a function of ambient temperature T_a.

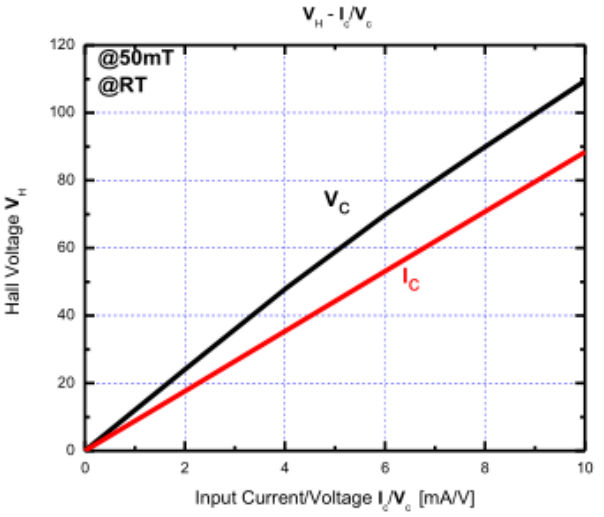


Figure 5. Hall voltage V_H as a function of electrical stimuli I_C/ V_C.

Soldering Conditions

The following conditions should be preserved. Solder ability should be checked by yourself, because it is depend on solder paste material and other parameters.

Material of solder flux

- Use the resin based flux and refrain from using organic or inorganic acid based and water-soluble one.

Cleansing of solder flux conditions

- Use Ethanol or Isopropyl alcohol as cleansing material.
- Process temperature should be 50 ℃ or less.
- Duration should be 5 minutes or less.

Hand soldering conditions

- Apart from the mold resin more than 1mm.
- Solder at temperature 300 ℃ for less than 5s.

Wave soldering conditions

- Temperature in Pre-heating zone should be lower than 150℃.
- Temperature in Soldering zone should be lower than 270℃.

Precautions for ESD

This product is the device that is sensitive to ESD (Electrostatic Discharge). Handling Hall Elements with the ESD-Caution mark under the environment in which

- Static electrical charge is unlikely to arise (Ex: Relative Humidity over 40%RH).
- Wearing the anti-static suit and wristband when handling the devices.
- Implementing measures against ESD as for containers that directly touch the devices.

Precautions for Storage

- Products should be stored at an appropriate temperature and humidity (5°C to 35°C, 40%RH to 60%RH) after the unsealing of the MBB. Keeping products away from chlorine and corrosive gas.
- **For storage longer than 2 years**

  Products are sealed in MBB with a desiccant. It is recommended to store in nitrogen atmosphere with MBB sealed. Oxygen and H_2O of atmosphere oxidizes leads of products and lead solder ability get worse.

Precautions for Safety

- Do not alter the form of this product into a gas, powder or liquid through burning, crushing or chemical processing.
- Observe laws and company regulations when discarding this product.

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