

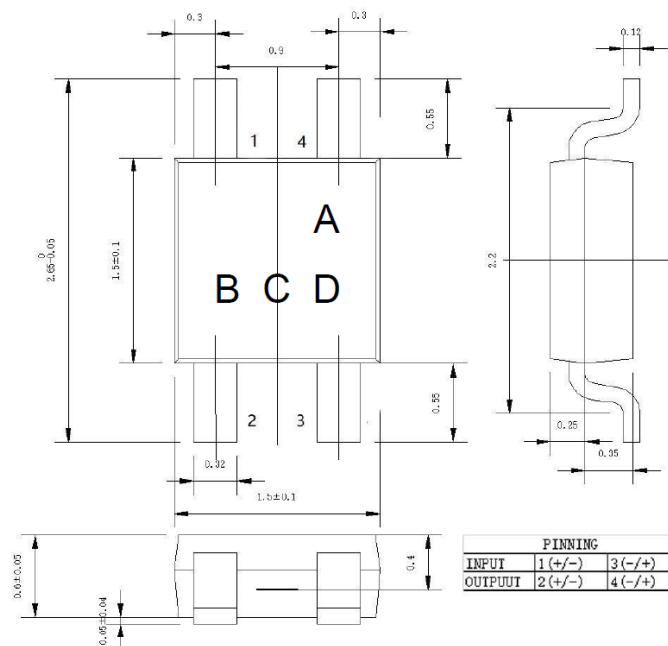
GaAs Hall Element MG610

Linear GaAs Hall Element with Excellent thermal characteristics

SSOT-4 package

Shipped in Packet-tape Reel (4000pcs devices per Reel)

Dimensional Drawing (Unit MM)



Absolute Maximum Rating

Operating Temperature range: $-40^{\circ}\text{C} \sim 125^{\circ}\text{C}$

Storage Temperature range : $-45^{\circ}\text{C} \sim 130^{\circ}\text{C}$

Maximum Input current : 10mA

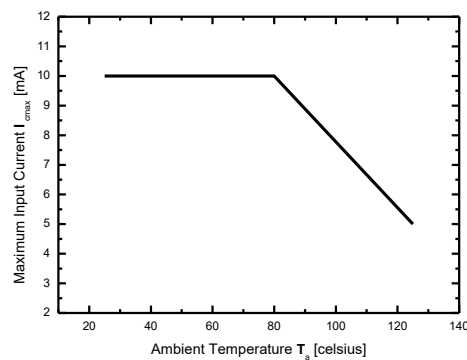


Figure 1. Maximum input current I_{cmax}

Electrical Characteristics (RT=25°C)

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

Note:

- $V_H = V_{H-M} - V_{os}$
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.

$$2. \alpha V_H = \frac{1}{V_H(T_{a1})} \times \frac{V_H(T_{a2}) - V_H(T_{a1})}{T_{a2} - T_{a1}} \times 100$$

$$T_{a1} = 25^\circ\text{C}, \quad T_{a2} = 125^\circ\text{C}$$

$$3. \alpha R_{in} = \frac{1}{R_{in}(T_{a1})} \times \frac{R_{in}(T_{a2}) - R_{in}(T_{a1})}{T_{a2} - T_{a1}} \times 100$$

$$T_{a1} = 25^\circ\text{C}, \quad T_{a2} = 125^\circ\text{C}$$

$$4. \Delta K = \frac{K(B_1) - K(B_2)}{\frac{K(B_1) + K(B_2)}{2}} \times 100$$

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

Characteristic Curves

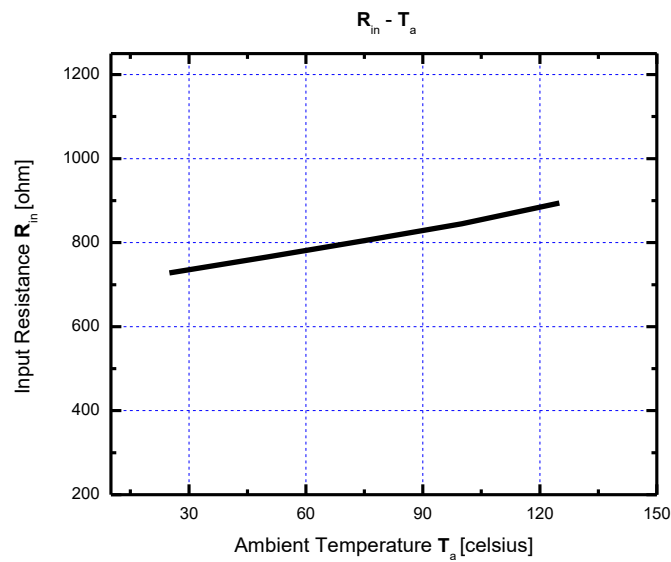


Figure 2. Input resistance R_{in} as a function of ambient temperature T_a .

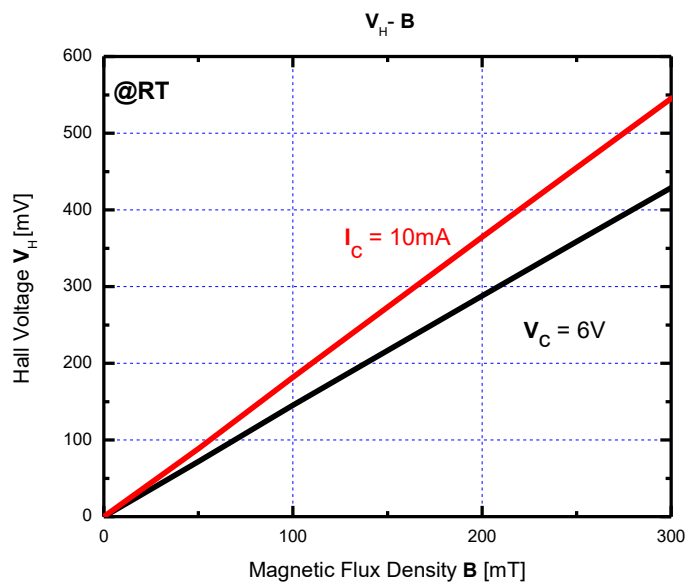


Figure 3. Hall voltage V_H as a function of magnetic flux density B .

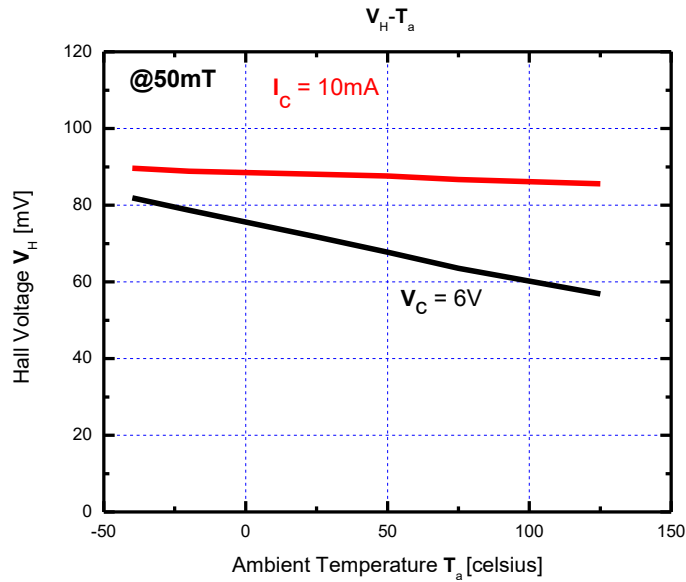


Figure 4. Hall voltage V_H as a function of ambient temperature T_a .

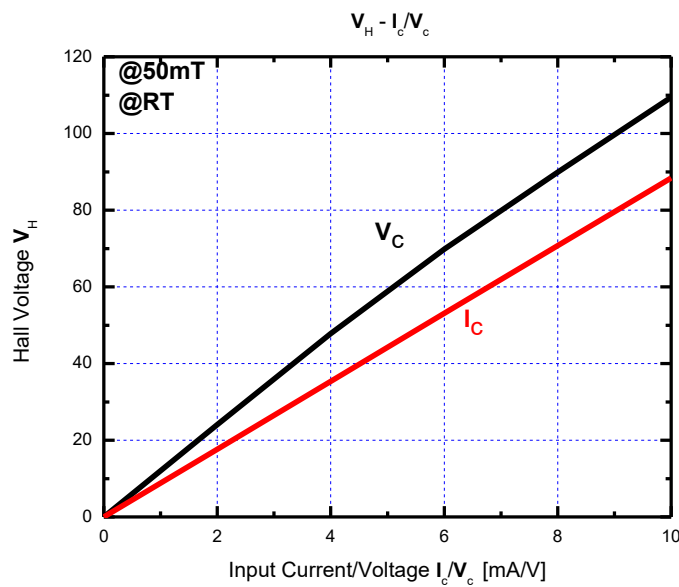


Figure 5. Hall voltage V_H as a function of electrical stimuli I_c/V_c .

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 °C or less.
- Duration should be 5 min or less.

Hand soldering conditions

- Solder at temperature 300 °C for less than 3s.

Soldering conditions

- Temperature in Pre-heating zone should be lower than 150°C.
- Temperature in Soldering zone should be lower than 280°C.

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 antistatic 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 to 35°C, 40 to 85%RH).

Keep products away from chlorine and corrosive gas.

- **Long-term storage** may result in poor lead solder ability and degraded electrical performance even under proper conditions. For those parts, which stored long-term shall be check solder ability before it is used.
- **For storage longer than 2 years**, it is recommended to store in nitrogen atmosphere. Oxygen 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.