

MG1A01 GaAs Hall

MG1A01 砷化镓霍尔元件

- Linear GaAs Hall Element

线性砷化镓霍尔元件

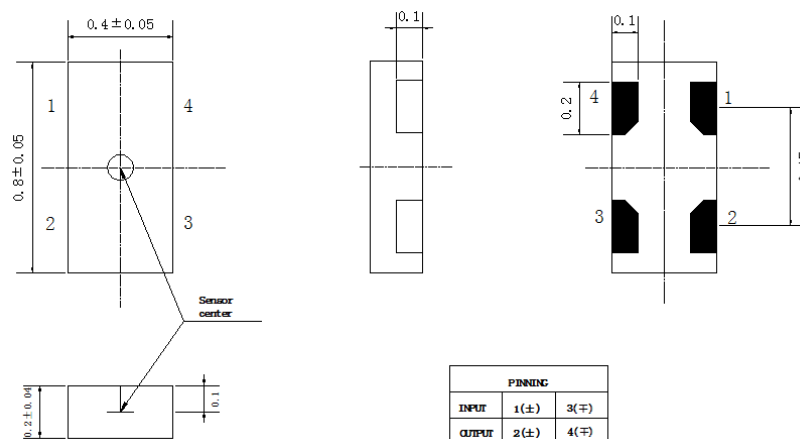
- Excellent Thermal Characteristics

卓越的热稳定特性

- Thin-type DFN Package

超薄 DFN 封装

- **外形尺寸图 Dimensional Drawing (Unit MM)**



Sensing center diameter $\Phi = 0.3$ mm

- **最大额定值 Absolute Maximum Rating**

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

工作温度

Storage Temperature Range $-40^{\circ}\text{C} \sim 150^{\circ}\text{C}$

存储温度

Maximum Input Voltage V_c [V] 9.5V

最大输入电压 V_c [V]

Maximum Input Power P_0 [mW] 105mW

最大输入功率

- **电气特性 (室温 25°C) Electrical Characteristics ($\text{RT}=25^{\circ}\text{C}$)**

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Table 1. Electrical Characteristics of MG1A01.

表 1. MG1A01电气特性

项目 Item	符号 Symbol	测量条件 Test Condi.	最小 Min.	标准 Typ.	最大 Max.	单位 Unit
霍尔电压 Hall Voltage	V_H	$B = 50\text{mT}, V_C = 6\text{V}$ $T_a = \text{RT}$	55		75	mV
输入电阻 Input Resistance	R_{in}	$B = 0\text{mT}, I_C = 0.1\text{mA}$ $T_a = \text{RT}$	650		850	Ω
输出电阻 Output Resistance	R_{out}	$B = 0\text{mT}, I_C = 0.1\text{mA}$ $T_a = \text{RT}$	650		850	Ω
非平衡电压 Offset Voltage	V_{os}	$B = 0\text{mT}, V_C = 6\text{V}$ $T_a = \text{RT}$	-5		+5	mV
输出电压温度系数 Temp. Coeffi. of V_H	$ \alpha V_H $	$B = 50\text{mT}, I_C = 5\text{mA}$, $T_a = 25^\circ\text{C} \sim 125^\circ\text{C}$			0.06	%/ $^\circ\text{C}$
输入电阻温度系数 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	%/ $^\circ\text{C}$
线性度 linearity	ΔK	$B = 0.1 \sim 0.5\text{T}$, $I_C = 5\text{mA}, T_a = \text{RT}$	-2		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.
- $$\alpha V_H = \frac{1}{V_H(T_{a1})} \times \frac{V_H(T_{a2}) - V_H(T_{a1})}{T_{a2} - T_{a1}} \times 100$$

$$T_{a1} = 25^\circ\text{C}, \quad T_{a2} = 125^\circ\text{C}$$
- $$\alpha R_{in} = \frac{1}{R_{in}(T_{a1})} \times \frac{R_{in}(T_{a2}) - R_{in}(T_{a1})}{T_{a2} - T_{a1}} \times 100$$

$$T_{a1} = 25^\circ\text{C}, \quad T_{a2} = 125^\circ\text{C}$$
- $$\Delta K = \frac{K(B_1) - K(B_2)}{\frac{K(B_1) + K(B_2)}{2}} \times 100 \quad K = \frac{V_H}{I_C \times B}$$

● 特征曲线图 Characteristic Curves

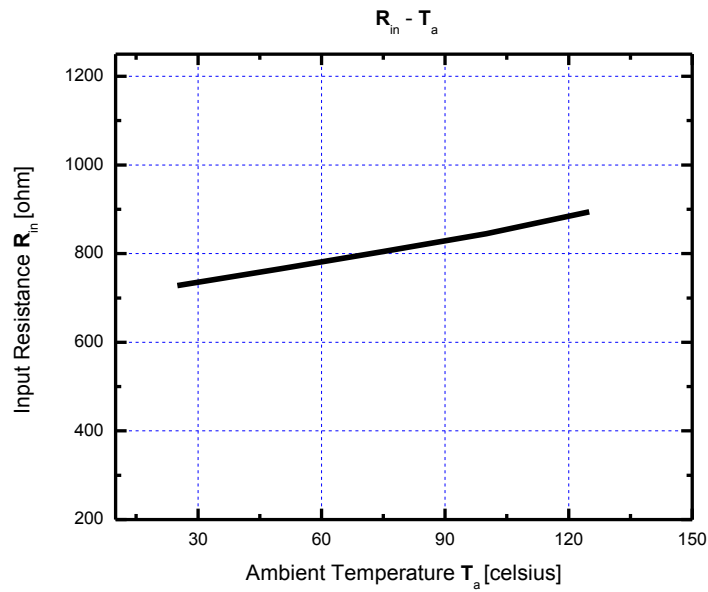


Figure 1. Input resistance R_{in} as a function of ambient temperature T_a .

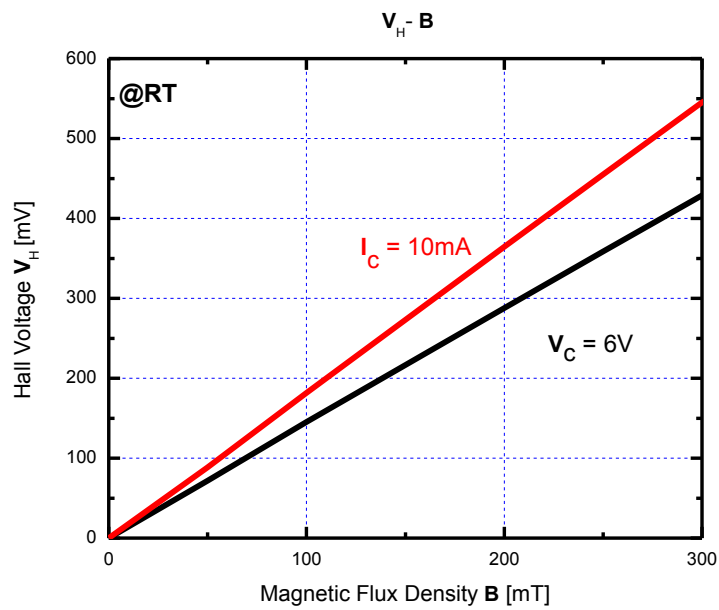


Figure 2. Hall voltage V_H as a function of magnetic flux density B .

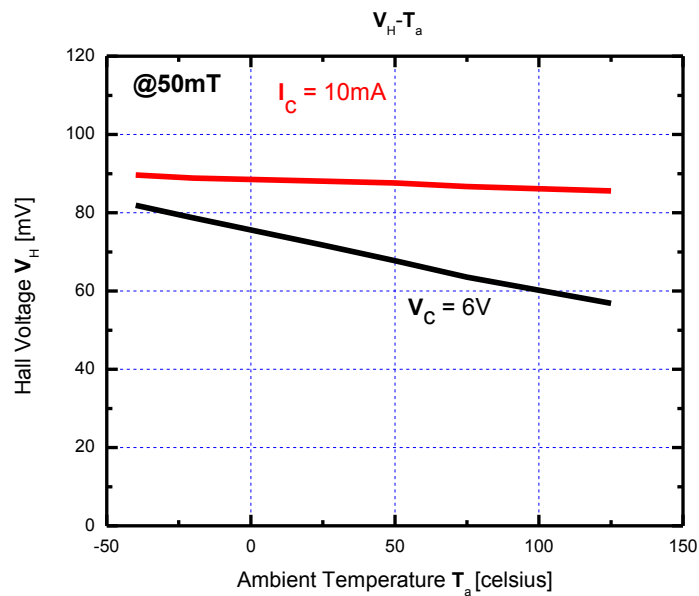


Figure 3. Hall voltage V_H as a function of ambient temperature T_a .

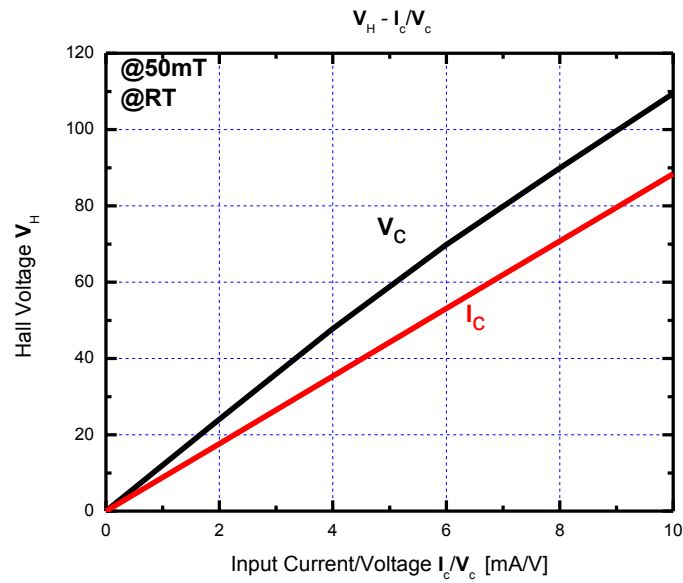


Figure 4. Hall voltage V_H as a function of electrical stimuli I_c/V_c .

● ESD 预防措施

本产品是对ESD（静电放电）敏感的设备。在以下环境中处理带有ESD警告标记的霍尔元件：

- 不太可能出现静电荷的环境（例如：相对湿度超过40%RH）。
- 处理器件时佩戴防静电服和腕带
- 对于直接接触器件的容器建议实施ESD防护措施。

● 存储注意事项

- 在开封MBB后，产品应在适当的温度和湿度（5至35°C，40至60%RH）下储存。强烈建议使用自密封袋，使产品远离氯气和腐蚀性气体。

- 长期储存

产品用MBB密封

-**对于超过2年的储存**，建议在MBB密封的氮气中储存。大气中的水氧会导致器件引脚氧化，从而导致引脚焊接能力变差。

● 安全注意事项

-不要通过燃烧，粉碎或化学处理等方式将本产品变成气体，粉末或液体。

-丢弃本产品时，请遵守法律和公司规定。

● 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 60%RH) after the unsealing of MBB. Keeping products away from chlorine and corrosive gas.

- Long-term storage

Products are sealed in MBB.

- **For storage longer than 2 years**, it is recommended to store in nitrogen atmosphere with MBB sealed. Oxygen and H₂O 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.