MG970 GaAs Hall Element

MG970 砷化镓霍尔元件

- Linear GaAs Hall Element

线性砷化镓霍尔元件

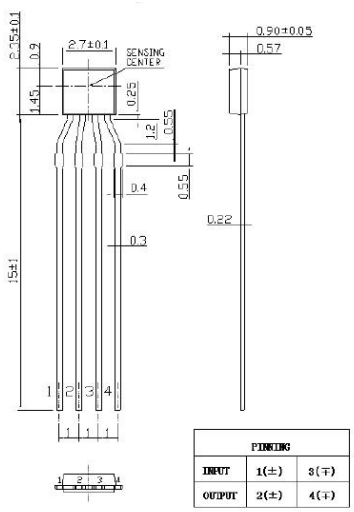
- Excellent Thermal Characteristics

卓越的热稳定特性

- SSIP-4 Package

超薄型 SIP-4 封装

● 外形尺寸图 Dimensional Drawing (Unit MM)



● 最大额定值 Absolute Maximum Rating

Operating Temperature Range 工作温度	-40℃ ~ 125℃
Storage Temperature Range 存储温度	-40℃ ~ 150℃
Maximum Input Voltage V_{cmax} [V] 最大输入电压 V_{max} [V]	12V

● 电气特性（测量温度 25℃）Electrical Characteristic（RT=25℃）

Table 1. Electrical Characteristics of MG970

表 1. MG970 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 = 50mT, I_C=6V T_a = RT	78		102	mV
输入电阻 Input Resistance	R_{in}	B = 0mT, I_C = 0.1mA T_a = RT	1000	1250	1500	Ω
输出电阻 Output Resistance	R_{out}	B = 0mT, I_C = 0.1mA T_a = RT	1800	2500	3000	Ω
非平衡电压 Offset Voltage	V_{os}	B = 0mT, I_C = 6V T_a = RT	-6		+6	mV
输出电压温度系数 Temp. Coeffi. of V_H	$\|\alpha V_H\|$	B = 50mT, I_C =1mA, T_a = 25℃ ~ 125℃			0.06	%/℃
输入电阻温度系数 Temp. Coeffi. of R_{in}	αR_{in}	B = 0mT, I_C =0.1mA, T_a = 25℃ ~ 125℃			0.3	%/℃
霍尔电压线性度 Linearity of V_H	ΔK	B = 0.1 - 0.5T, I_C =1mA T_a = RT	-1		+1	%

Note:

1. $\boldsymbol{V}_{\mathrm{H}} = \boldsymbol{V}_{\mathrm{H-M}} - \boldsymbol{V}_{\mathrm{os}}$

   in which $\boldsymbol{V}_{\mathrm{H-M}}$ is the Output Hall Voltage, $\boldsymbol{V}_{\mathrm{H}}$ is the Hall Voltage and $\boldsymbol{V}_{\mathrm{os}}$ is the offset Voltage under the identical electrical stimuli.

2. $\alpha \boldsymbol{V}_{\mathrm{H}} = \frac{1}{\boldsymbol{V}_{\mathrm{H}}(\boldsymbol{T}_{a1})} \times \frac{\boldsymbol{V}_{\mathrm{H}}(\boldsymbol{T}_{a2}) - \boldsymbol{V}_{\mathrm{H}}(\boldsymbol{T}_{a1})}{\boldsymbol{T}_{a2} - \boldsymbol{T}_{a1}} \times 100$

   $\boldsymbol{T}_{a1} = 25℃,\ \boldsymbol{T}_{a2} = 125℃$

3. $\alpha \boldsymbol{R}_{\mathrm{in}} = \frac{1}{\boldsymbol{R}_{\mathrm{in}}(\boldsymbol{T}_{a1})} \times \frac{\boldsymbol{R}_{\mathrm{in}}(\boldsymbol{T}_{a2}) - \boldsymbol{R}_{\mathrm{in}}(\boldsymbol{T}_{a1})}{\boldsymbol{T}_{a2} - \boldsymbol{T}_{a1}} \times 100$

   $\boldsymbol{T}_{a1} = 25℃,\ \boldsymbol{T}_{a2} = 125℃$

4. $\Delta \boldsymbol{K} = \frac{\boldsymbol{K}(\boldsymbol{B}_1) - \boldsymbol{K}(\boldsymbol{B}_2)}{\frac{\boldsymbol{K}(\boldsymbol{B}_1) + \boldsymbol{K}(\boldsymbol{B}_2)}{2}} \times 100 \qquad \boldsymbol{K} = \frac{\boldsymbol{V}_{\mathrm{H}}}{\boldsymbol{I}_c \times \boldsymbol{B}}$

● 特征曲线图 Characteristic Curves

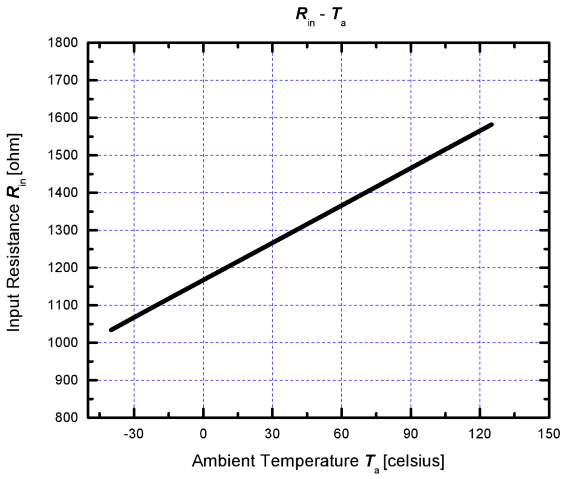


Figure 1. Input resistance $\boldsymbol{R}_{\mathrm{in}}$ as a function of ambient temperature $\boldsymbol{T}_{\mathrm{a}}$.

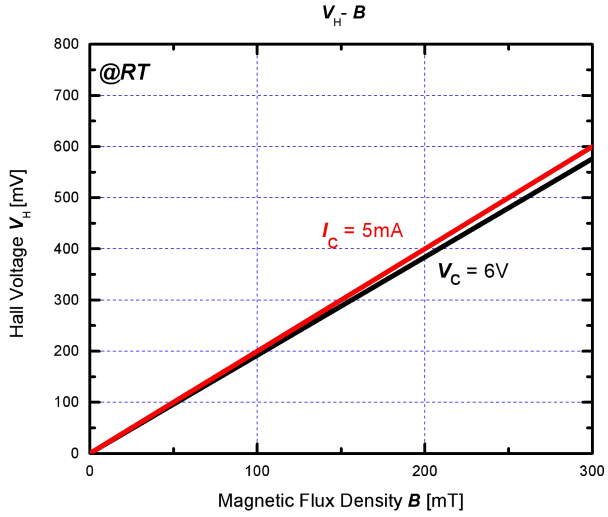


Figure 2. Hall voltage V_H as a function of magnetic flux density B .

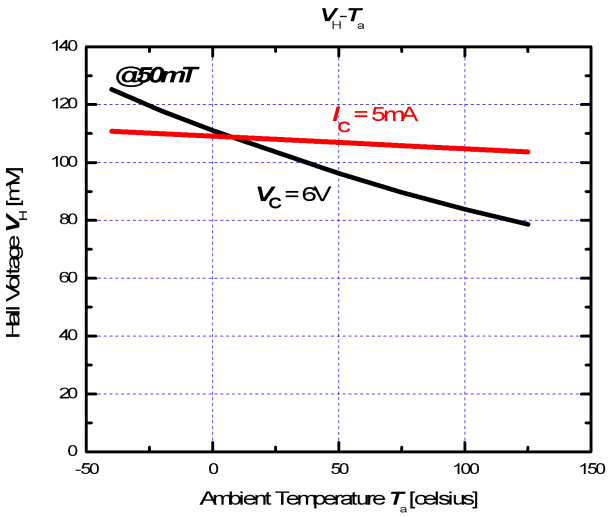


Figure 3. Hall voltage V_H as a function of ambient temperature T_a .

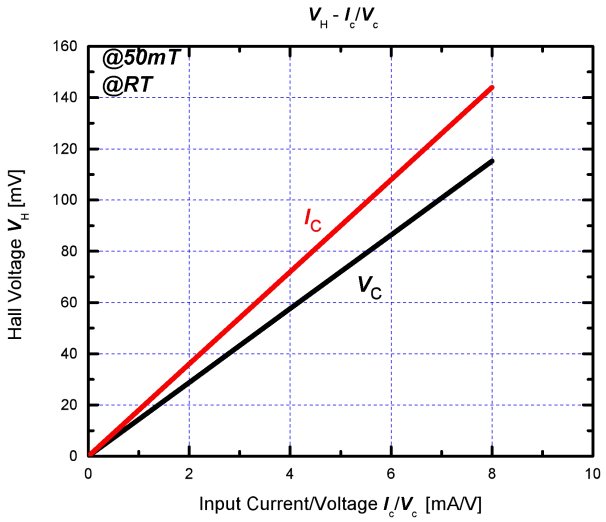


Figure 4. Hall voltage V_H as a function of electrical stimuli I_c/ V_c.

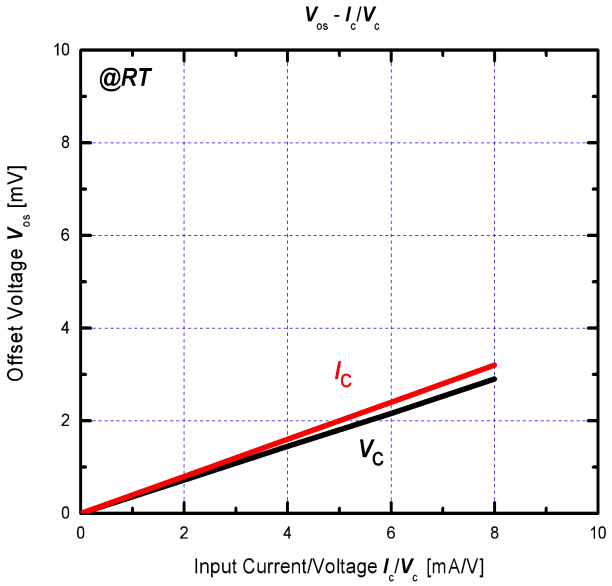


Figure 5. Offset voltage V_{os} as a function of electrical stimuli I_c/ V_c.

● 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，带有干燥剂，部分装有湿度指示剂。 在开封MBB后应立即检查湿度指示器。 **如果湿度指示器显示内部水分高于50%HR，请联系当地经销商。**

-对于超过2年的储存，建议在MBB密封的氮气氛中储存。 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. **Using self-sealer is highly recommended**. Keeping products away from chlorine and corrosive gas.
- **Long-term storage**

Products are sealed in MBB with a desiccant and partially a moisture indicator. The moisture indicator should be checked right after the unsealing of MBB. **If the moisture indicator reveals the internal moisture is above 50%HR, please contact the local distributor.**

- **For storage longer than 2 years**, 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.

