SH-72D GaAs Hall Element

- Linear GaAs Hall Element with excellent thermal characteristics
- Thin-type DFN Package
- Shipped in packet-tape reel (10,000pcs per pack)

Absolute Maximum Rating

Item	Symbol	Conditions	Limit	Unit
Maximum Power Dissipation	P_D	T_a = 25℃	105	mW
Maximum Input Voltage	V_C		9.5	V
Operating Temperature Range	T_{opr}		-40 ~ +125	℃
Storage Temperature Range	T_{STG}		-40 ~ +150	℃

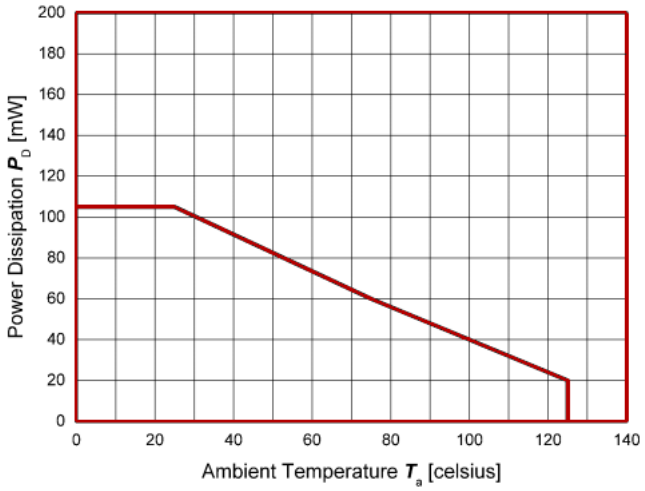
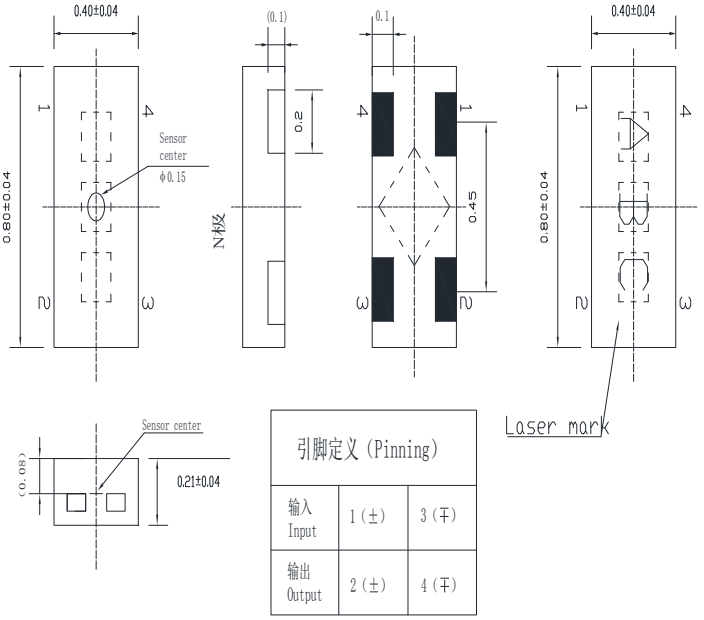


Figure 1. Maximum Power Dissipation P_D as a function of ambient temperature T_a

Dimensional Drawing (Unit: mm)



Electrical Characteristics (RT=25℃)

Table 1. Electrical Characteristics of SH-72D

Item	Symbol	Test Condi.	Min.	Typ.	Max.	Unit
Hall Voltage	V_H	B = 50mT, I_C = 5mA, T_a = RT	36		54	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, I_C = 5mA, T_a = RT	-5		+5	mV
Temp. Coeffi. of V_H	$\|\alpha V_H\|$	B = 50mT, I_C = 5mA, 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 = 0.1 - 0.5T, I_C = 5mA, T_a = RT	-2		+2	%

Note:

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

   In which $V_{H\text{-}M}$ 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℃, 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℃, T_{a2} = 125℃

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

   B_1 = 0.5T, B_2 = 0.1T

Characteristic Curves

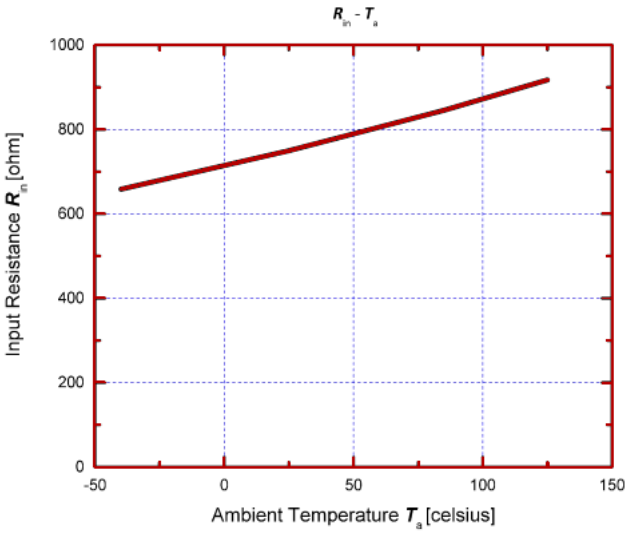


Figure 2. Input resistance R_{in} as a function of ambient temperature T_a

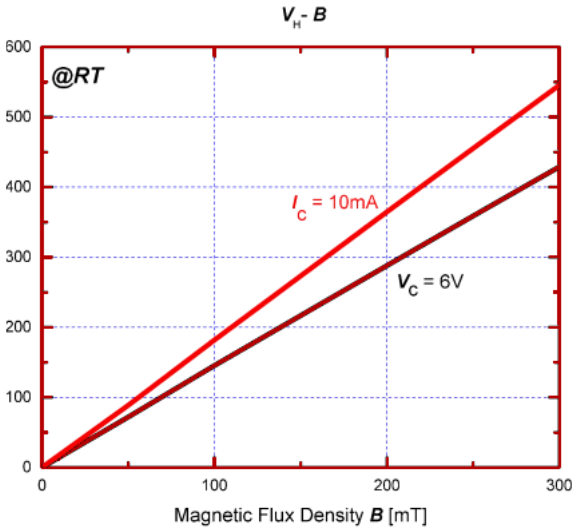


Figure 3. Hall voltage V_H as a function of magnetic flux density B

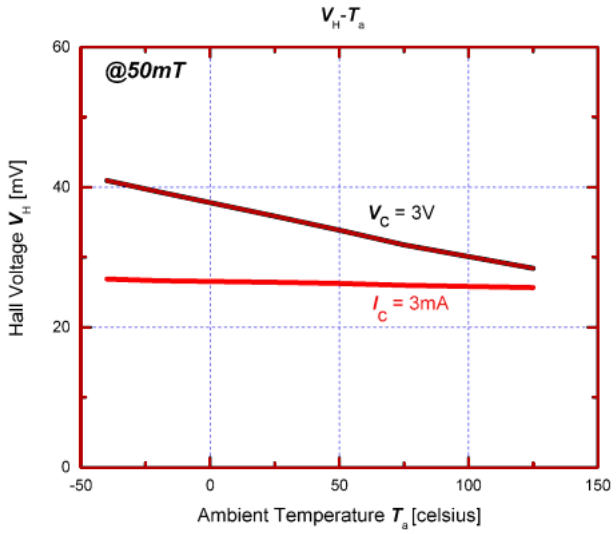


Figure 4. Hall voltage V_H as a function of ambient temperature T_a

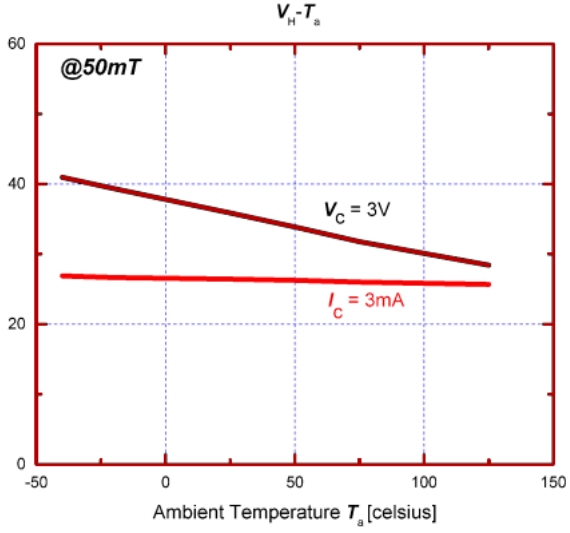


Figure 5. Hall voltage V_H as a function of electrical stimuli I_c/ V_c

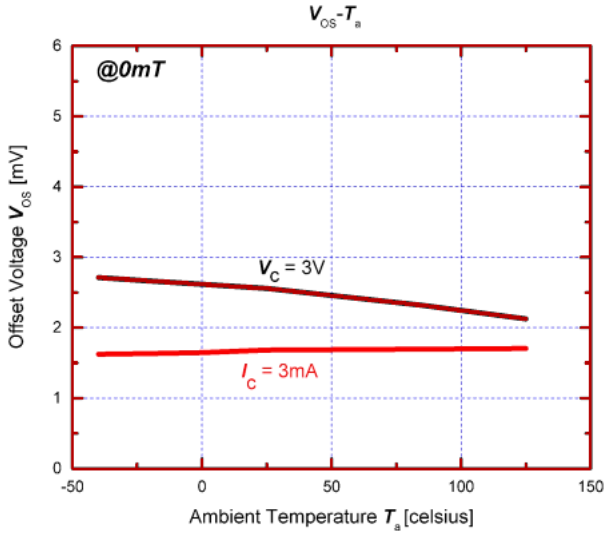


Figure 6. Offset voltage V_{OS} as a function of ambient temperature T_a

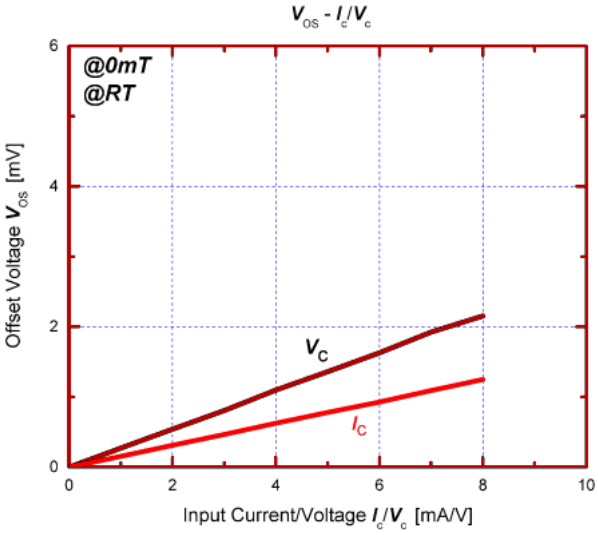


Figure 7. Offset voltage V_{OS} as a function of electrical stimuli I_c/V_c

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 5min or less.

Hand-Soldering

- Solder the leads to PC board at the point(part from the body) at 260℃ for 10 seconds or 350℃ for less than 3 seconds.

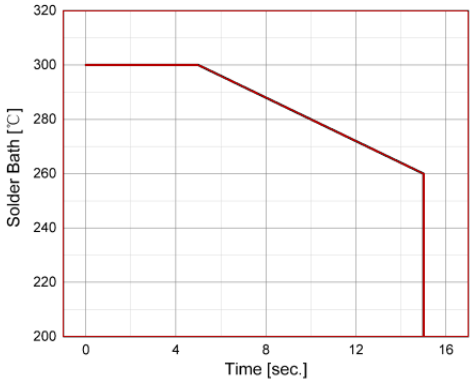


Figure 8. (Reference) Conditions of Dip Soldering

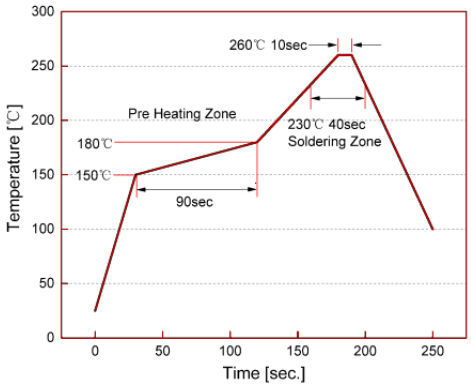


Figure 9. (Reference) Conditions of Reflow Profile

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.