



厦门华联半导体科技有限公司

Xiamen Hualian Semiconductor Technology Co., Ltd.

产品规格书

SPECIFICATION

产品名称：光电压输出型光耦合器

DESCRIPTION: Photovoltaic MOSFET Driver

产品型号：HPV9B55-2

PART NO.: HPV9B55-2

| 拟制 Prepared | 审核 Verified | 批准 Approved |
|----------------|----------------|----------------|
| | | |

电话 Tel: 86-0592-2950777

传真 Fax: 86-0592-6037471

网址 Web: www.xmhl.com

地址：厦门市翔安区舩阳南路 189 号

Add: No.189,Fangyang South Road,Xiang'an District,Xiamen China

1 概述 General

光电电压输出型光耦合器 HPV9B55-2 由砷化铝镓红外发光二极管作为输入级耦合到高电压输出光探测电路，光探测电路由高速光电二极管阵列和驱动电路构成。适用于功率 MOSFET 或 IGBT 的栅极驱动，产品见图 1

The Photovoltaic MOSFET Driver HPV9B55-2 consists of a AlGaAs infrared emitting diode input stage optically coupled to a high-voltage output detector circuit. It is capable of directly driving gates of power MOSFETs or IGBTs. Products shown in Figure 1.



图 1 产品 Figure 1-Product

2 特点 Features

- 单通道光伏 MOSFET 驱动输出 Single Channel Photovoltaic MOSFET Driver output;
- 输入、输出端之间绝缘电压高 Isolation voltage between input and output $V_{ISO} \geq 5000V_{rms}$
- 双列贴片式 8L 塑料封装 SMD 8L Plastic Package
- 符合 RoHS 指令最新要求及 REACH 法规最新要求。

Comply with the latest requirements of the RoHS directive and the latest requirements of REACH regulations.

3 应用 Applications

- 给电子电路提供电压源 Supply for electronic circuit ;
- 驱动固态继电器 Drive Solid State Relay.

4 极限参数 Absolute Maximum Ratings

表 1 极限参数

Table 1-Absolute Maximum Ratings

$T_a = (25 \pm 5)^\circ C$, RH=30~75%

| 参数名称 Characteristic | | 符号 Symbol | 额定值 Rating | 单位 Unit |
|---|--|-----------|------------|------------|
| 输入端 Input | 正向电流 Forward Current | I_F | 50 | mA |
| | 反向电压 Reverse Voltage | V_R | 5 | V |
| | 耗散功率 Power Dissipation (Single channel) | P_M | 100 | mW |
| 结温 Junction Temperature | | T_j | 100 | $^\circ C$ |
| 工作温度 Operating temp. | | T_{aop} | -40 ~ +110 | $^\circ C$ |
| 贮存温度 Storage temp. | | T_{stg} | -55 ~ +125 | $^\circ C$ |
| 焊接温度 Soldering Temperature | 手工焊 Hand Soldering (5 Sec.) | T_{sld} | 350 | $^\circ C$ |
| | 回流焊 Reflow Soldering (10 Sec.) | | 260 | |
| 绝缘电压 Isolation voltage (RH \leq 60%,交流 1 分钟) (RH \leq 60%, AC 1min.) | | V_{ISO} | 5000 | V_{rms} |

5 光电参数 Opto-Electrical Characteristics

表 2 光电参数

Table 2-Opto-Electrical Characteristics

Ta=(25±5)°C, RH=30~75%

| 参数 Parameters | 符号 symbol | 测试条件 Test condition | 最小值 Min. | 典型值 Typ. | 最大值 Max. | 单位 Unit |
|---|-------------------------------|------------------------|---|-------------|-------------|---------------|
| 输入 Input | 正向电压 Forward Voltage | V_F | $I_F=10\text{mA}$ | 1.35 | 1.5 | V |
| | 反向电流 Reverse Current | I_R | $V_R=5\text{V}$ | | 10 | μA |
| 输出 Out-put | 开路电压 Open Circuit Voltage | V_{oc} | $I_F=10\text{ mA}$ $I_O=0\text{ mA}$ | | 8 | V |
| | 短路电流 Short Circuit Current | I_{SC} | $I_F=10\text{ mA}$ $V_O=0\text{ V}$ | | 30 | μA |
| 传输隔离 特性 Switch specificati on | 开通时间 Turn On Time | T_{ON} | $I_F=10\text{mA}$ | 60 | | us |
| | 关断时间 Turn Off Time | T_{OFF} | $I_F=10\text{mA}$ | 45 | | us |
| | 绝缘电阻 Isolation resistance | R_{ISO} | $V_O=500\text{V}$ | 10^{12} | | Ω |

6 电原理图 Schematic Diagram

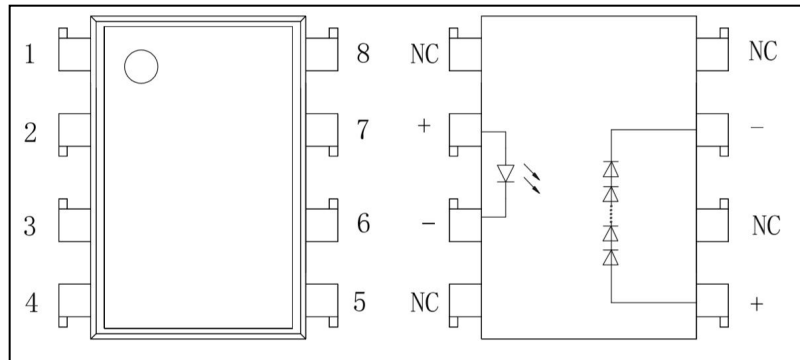


图 2 电原理图 Figure 2-Schematic

7 外形尺寸图 Dimensions Diagram

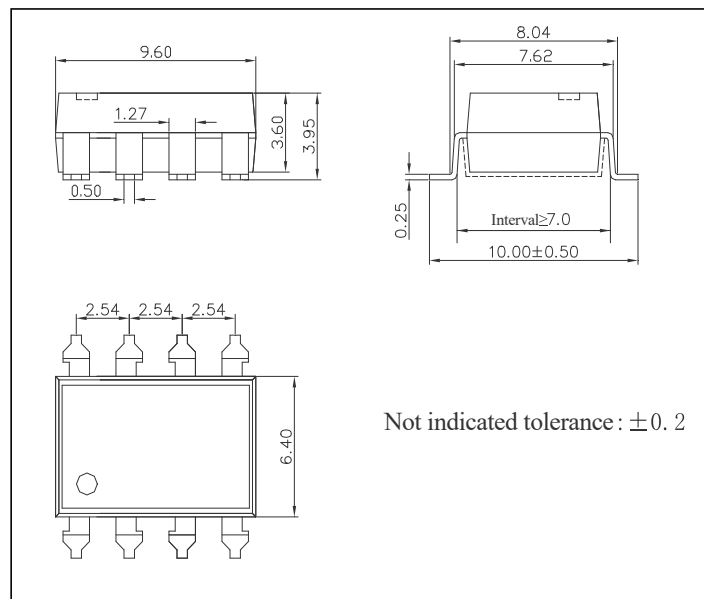


图 4 HPV9B55-2 外形尺寸
Figure 4- The dimensions of HPV9B55-2

8 标志 Mark

产品上应有型号、公司商标、生产日期代码、引出端识别标记。例如：HPV9B55-2 产品印章如图 5。
Print type characters, trade mark and Lot. No. on the Photo-transistor Coupler. For example the marking of product HPV9B55-2 is shown as figure 5.

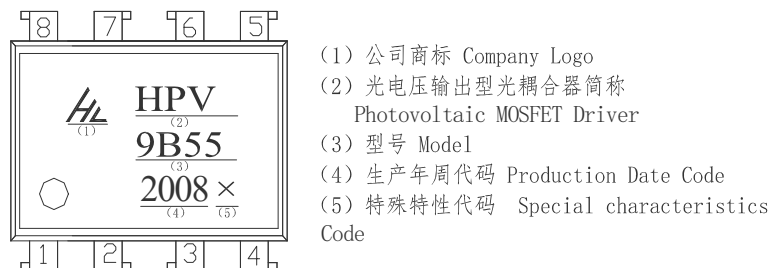


图 5 产品印章
Figure 5- Marking

9 包装方式 Packing

9.1 编带包装 (Tape and reel): 适用于 For HPV9B55-2.

9.1.1 每卷数量 (Qty/reel): 1000 只 (pcs)。每箱数量 (Qty/ctn): 10000 只 (pcs)。

9.1.2 内包装 (Inner packing):

每卷盘 1000 只, 贴合格证 (型号、生产日期代号、检验员代号)。

1000pcs/reel, certificate on reel (model, code of product date, Inspector's code)

9.1.3 外包装(Outer packing):

公司名称、地址、商标、产品型号、数量等标志。

Indication of company name, address, trade mark, model and quantity.

9.1.4 示意图 (Schematic):

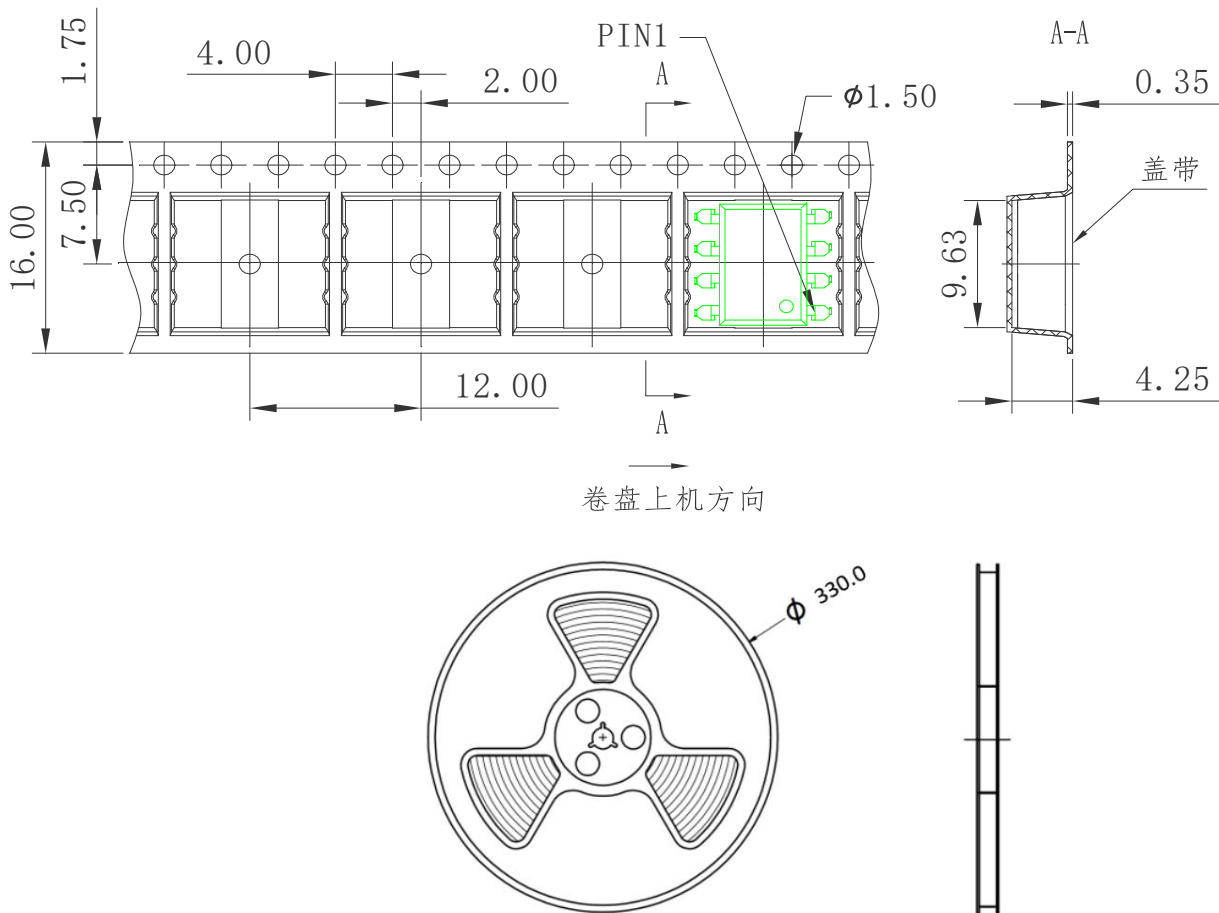


图 6 编带包装示意图

Figure 6- Taping Packing Schematic

9.3 注意事项 Note

9.3.1 推荐贮存温度 Recommend storage Temp.: 0~40°C;

推荐贮存湿度 Recommend storage humidity: <60%;

9.3.2 湿气敏感度等级 1 级。MSL level: MSL 1.

9.4 引脚镀锡厚度: 大于等于 5 μ m, 平均 8 μ m ~10 μ m。

Thickness of Sn which plated on lead frame: $\geq 5 \mu\text{m}$, average 8 μm ~10 μm .

9.5 推荐焊接条件 Recommended Soldering Conditions

9.5.1 请勿使用超过最高贮存温度的物体直接接触环氧本体。

Do not contact the epoxy body directly with objects exceeding the maximum storage temperature.

9.5.2 在高温下不要对环氧本体施加压力, 特殊情况下施加的力不应超过2.5N。

Do not apply pressure to the epoxy at high temperatures, and in special cases do not apply more than 2.5N.

9.5.3 回流焊 Reflow soldering

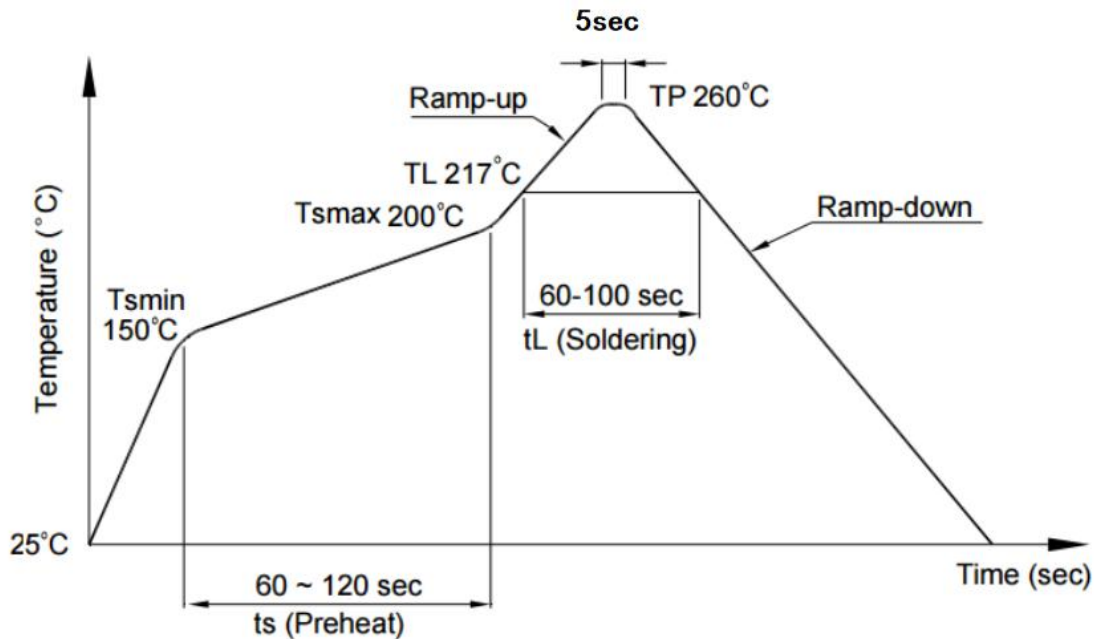
1) 推荐锡膏规格 Recommend tin glue specifications:

a) 熔点 Melting temperature: 217°C

b) 组分 Contains: SnAg3Cu0.5

2) 回流焊工序必须在器件冷却至室温后进行。Never take next process until the component is cooled down to room temperature after reflow.

3) 推荐回流焊接参数，如下图所示： The recommended reflow soldering profile is following:



| 项目 Items | | 条件 Conditions |
|---------------------------------|--------------------------------|----------------|
| 预热 Preheat | Temperature Min (T_{Smin}) | 150°C |
| | Temperature Max (T_{Smax}) | 200°C |
| | Time (min to max) (t_s) | 90±30 sec |
| 焊接区 Soldering zone | Temperature (T_L) | 217°C |
| | Time (t_L) | 60 ~100 sec |
| 最高温度 Peak Temperature (T_P) | | 260°C |
| 升温速率 Ramp-up rate | | 3°C / sec max. |
| 降温速率 Ramp-down rate | | 3~6°C / sec |

图 7 回流焊参数

Figure 7-Recommended reflow soldering profile

4) 建议在所示的温度和时间条件下进行一次回流焊，最多不能超过三次。One time soldering reflow is recommended within the condition of temperature and time profile shown below. Do not solder more than three times.

9.5.4 手工烙铁焊 Manual soldering

1) 手工烙铁焊仅用于产品返修或样品测试。Manual soldering is only applicable to product repair.

2) 手工烙铁焊要求：温度 $360^{\circ}\text{C} \pm 5^{\circ}\text{C}$ ，时间 $\leq 3\text{s}$ ，返修次数 ≤ 2 次。Manual soldering requirements: temperature $\leq (360^{\circ}\text{C} \pm 5^{\circ}\text{C})$, time $\leq 3\text{s}$, repair times ≤ 2 times.

9.6 本说明书所展示的产品是为一般电子应用而设计的，如办公自动化设备、通讯设备、视听设备、电气应用和仪器仪表等。对于需要高可靠性或安全性的设备，如空间应用、核动力控制设备、医疗设备等，请与我们的销售代表联系。The products shown in this publication are designed for the general use in electronic applications such as office automation equipment, communications devices, audio/visual equipment, electrical application and instrumentation. For equipment/devices where high reliability or safety is required, such as space applications, nuclear power control equipment, medical equipment, etc, please contact our sales representatives.

10 产地 Production Place

10.1 产地 Production Place: 中国厦门 Xiamen China;

10.2 工厂名称 Production NO.: 厦门华联半导体科技有限公司; Xiamen Hualian Semiconductor Technology Co., Ltd.;

10.3 工厂地址 Production Add.: 厦门市翔安区舩阳南路 189 号 No.189, Fangyang South Road, Xiang' an District, Xiamen China.

