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 MOS 固态继电器

DESCRIPTION: Photo MOSFET Solid State Relay

产品型号：HSSR-B1A0J-2

PART NO.：HSSR-B1A0J-2

拟制 Prepared	审核 Verified	批准 Approved

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1 概述 General

产品 HSSR-B1A0J-2 由蓝光 LED 耦合到光探测模块来控制 MOSFET 的开启与关断，采用 SVSON4 封装。该 HSSR-B1A0J-2 有非常小导通电阻 0.3Ω和高达 1A 额定电流，使其成为高速测试仪中开关应用的理想选择。一个最小 0.5mA 的电流流经输入级蓝光发光二极管可确保继电器动作。产品见图 1。

图 1 产品 Figure 1-Product

The HSSR-B1A0J-2 consists of a blue LED is coupled to the light detection module to control the MOSFET on and off. It is housed in an SVSON4 package. The HSSR-B1A0J-2 has a very small on-resistance of 0.3Ω and a current rating of up to 1A, making it ideal for switching applications in high-speed testers. The relay action with a minimum input current of 0.5mA through the input LED. Products shown in Figure 1.

2 特点 Features

- 单通道常开型单刀单掷继电器。Single Channel Normally on Single-Pole-Single-Throw (SPST) Relay.
- 20V 输出耐压产品。20V Output Withstand Voltage.
- 1A 额定电流产品。1A Current Rating.
- 低输入电流，CMOS 兼容。Low Input Current: CMOS Compatibility.
- 0.3Ω低通态电阻。0.3Ω Low On-Resistance.
- 非常高的断开阻抗：典型值 10 兆欧。
  Very High Output Off -state Impedance: 10 Teraohms Typical.
- 非常快的开关速度：典型值 0.05ms (Ton), 0.3ms (Toff)。
  High Speed Switching: 0.05ms (Ton), 0.3ms (Toff) Typical
- 高输入输出绝缘耐压：500 Vrms for 1 min。
  High Input-to-Output Insulation Voltage: 500 Vrms for 1 min.
- 符合 RoHS 指令最新要求及 REACH 法规最新要求。Compliance with the latest requirements of the RoHS Directive and the latest REACH requirements.

3 应用 Applications

- 探针卡。Probe Cards.
- ATE（自动测试设备）。ATE(Automatic Test Equipment).
- 测量仪器。Measuring Instruments.
- 高速逻辑 IC 测试仪。High-Speed Logic IC Testers.
- 高速内存测试仪。High-Speed Memory Testers.

4 电原理图 Schematic Diagram

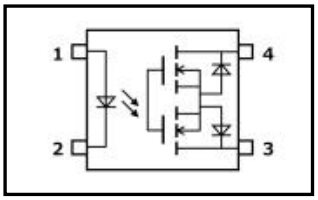


图 2 电原理图 Figure 2-Schematic

5 极限参数 Absolute Maximum Ratings

表 1 极限参数

Table 1-Absolute Maximum Ratings

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	50	mW
输出端 output	开关电压 Switching Voltage	$\mathbf{V_{O(MAX)}}$	20	V
	连续通态电流 Continuous load current	$\mathbf{I_{O(MAX)}}$	1	A
	耗散功率 Power dissipation (Single channel)	P_C	300	mW
工作温度 Operating temp.		T_{aop}	-40 ~ +85	℃
贮存温度 Storage temp.		T_{stg}	-55 ~ +125	℃
焊接温度 Soldering Temperature	手工焊 Hand Soldering (3 Sec.)	T_{sld}	360	℃
	回流焊 Reflow Soldering (5 Sec.)		260	
	波峰焊 Wave Soldering (10 Sec.)		270	
绝缘电压 Isolation voltage （RH≤60％,交流 1 分钟）(RH≤60%, AC 1min.)		V_{ISO}	500	V_{rms}

6 光电参数 Opto-Electrical Characteristics

表 2 光电参数

Table 2-Opto-Electrical Characteristics T_a=25℃

参数名称 Characteristic		符号 Symbol	测试条件 Test conditions	最小值 Min.	典型值 Typ.	最大值 Max.	单位 Unit
输入端 Input	正向电压 Forward voltage	V_F	I_F=10mA	-	2.5	3	V
	反向电流 Reverse current	I_R	V_R=5V	-	-	10	uA
	动作电流 Action Current	$I_{F(ON)}$ [a]	I_O= 1A	-	0.2	0.5	mA
	复位电流 Reset Current	$I_{F(OFF)}$	I_O=1A	-	0.05	-	mA
输出端 Output	断态漏电流 OFF-State Leakage Current	I_{OFF}	V_O= 20V	-	-	1	uA
	导通电阻 ON Resistance	R_{ON}	I_O=1A I_F=10mA	-	0.2	0.3	Ω

	输出电容 Output Capacitance	C_O	I_F=0JA, V_O=25V, f_O = 1MHz	-	120	-	pF
传输 Xfer	动作时间 Action Time	T_{ON}	I_F=10mA, I_O=1A	-	0.05	0.10	ms
	复位时间 Reset Time	T_{OFF}	I_F=10mA, I_O=1A	-	0.3	0.5	ms
	耦合电容 Coupled Capacitance	$C_{I/O}$		-	1	-	pF
隔离 Isolation	绝缘电压 Isolation voltage	V_{ISO}	I_{off}≤0.3mA, AC, 60s	500	-	-	V

[a] 保证所有器件在 I_F 值小于或等于最大的 $I_{F(ON)}$时动作。
It is guaranteed that all devices active when I_F value is less than or equal to the maximum value of $I_{F(ON)}$.

7 外形尺寸及电原理图 Dimensions and Circuit Diagram

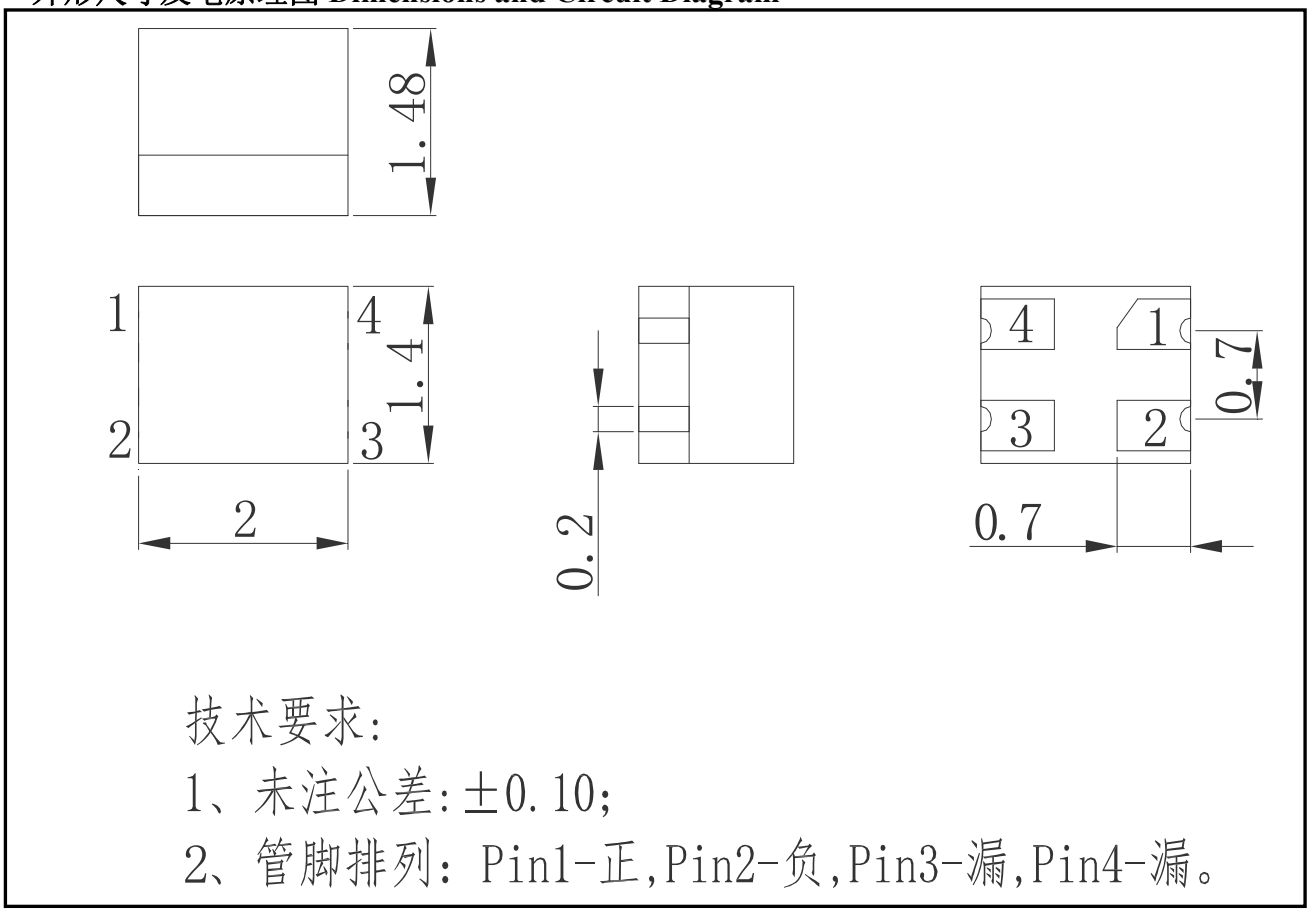


图 4 HSSR-B1A0J-2 外形尺寸
Figure 4- The dimensions of HSSR-B1A0J-2

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：HSSR-B1A0J-2 产品印章如图5。Print type characters ,trade mark and Lot.No.on the Photo Coupler.For example the marking of product HSSR-B1A0J-2 is shown as figure 5.

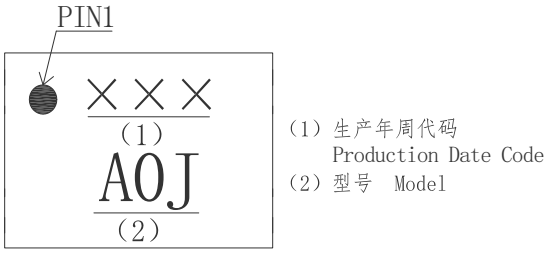


图 5 产品印章

Figure 5- Marking

9.3 注意事项 Note

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

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

9.2 推荐焊接条件 Recommended Soldering Conditions

9.2.1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.

9.2.2 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.

9.2.3 回流焊 Reflow soldering

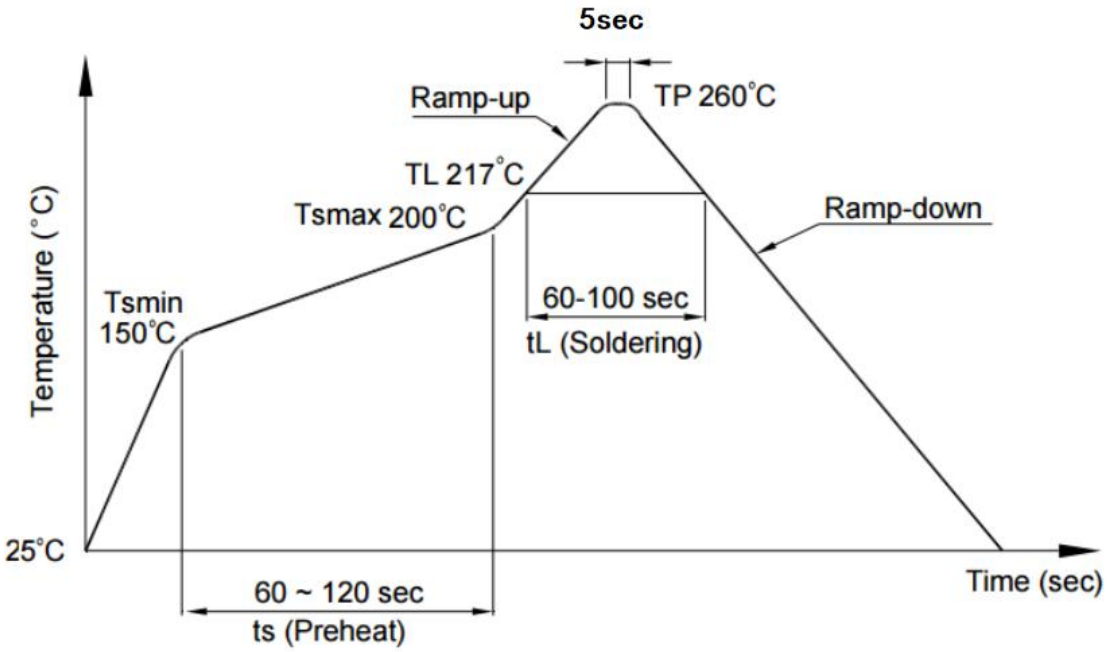
1) 推荐锡膏规格 Recommend tin glue specifications:

a) 熔点 Melting temperature:217℃

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 8 回流焊参数

Figure 8-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.

9.2.4 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℃±5℃，时间≤3s，返修次数≤2次。Manual soldering requirements: temperature ≤(360℃±5℃), time ≤3s, repair times ≤2 times.

9.3 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.：厦门市翔安区舫阳南路 189 号 No.189, Fangyang South Road, Xiang'an District, Xiamen China.

更改记录表

Engineering Change Notice-Record

版次 Edition	更改日期 Date	主要更改内容 Main Content	拟 制 Prepared	确 认 Checked
1.0	2023-12-08	新版发行 New edition	郑清清	黄发宝