CLOUDUPPER

东莞市亿彩电子科技有限公司

产品规格书

SPECIFICATION

客户名称customer name：	
客户编码Customer No.	
产品类型Product Name ：	反射式光电开关
产品型号 Part No.：	SG105TR
版本 Version：	V1.2
发布日期 Date:	2022-3-25

客户承认 APPROVED BY CUSTOMER			亿彩承认 APPROVED BY CLOUDUPPER		
确认意见 COMMENTS	审核 CHECKED BY	批准 APPROVED BY	编写 PREPARED BY	审核 CHECKED BY	批准 APPROVED BY
			丁煜城	钟永成	田勇
判定: Judge outcome:			判定: Judge outcome:	OK	

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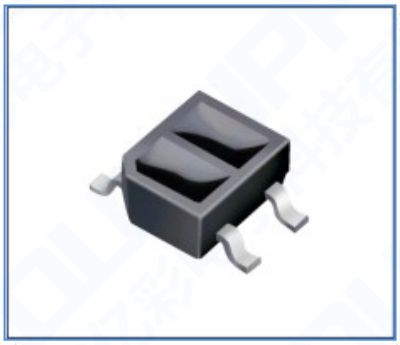
Address: No.11, Shajiao Fumin Road, Humen Town, Dongguan City, Guangdong Province

本规格书仅用于双方交流用需经双方签订后方可生效，自签订后有效期为两年，期满后需以书面形式续签。最终解释 权为亿彩所有。

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反射式光电开关
Optical Senor Reflective SG105TR



*特性 Feature

·快速响应时间Fast response time
·高灵敏度 High sensitivity
·可见光截止波长 λp =940nm Cut-off visible wavelength λp=940nm
·该产品本身将保持符合RoHS标准的版本。
·This product itself will remain within a RoHS-compliant version

*描述 Description

·SG105TR是一种光反射开关，包括砷化镓红外-LED发射机和NPN光晶体管，短距离高光敏接收器，在红外范围内工作。这两个组件都是并排安装在一个塑料包装盒中的
SG105TRis a light reflection switch that includes arsenide in frared-LED transmitter and NPN phototransistor,short range high photosensitive receiver operating in the infrared range.Both components are mounted side by side in a plastic packing box
·该光敏晶体管仅接收来自红外LED的辐射，此为正常工作状态。
·The phototransistor receives radiation from the IR LED only.This is the normal situation.
·但当无物体位于顶部遮挡反光时，光敏晶体管无法接收辐射。
·However, when no object is present at the top to block the reflection, the phototransistor cannot receive the radiation.
·如需获取更多组件信息，请参阅IR和PT。
·For additional component information,please refer to IR and PT

*应用 Application

·电机控制Motor control
·位置编码器Position encoder
·打印机、非接触开关 Printer 、Non-contact Switching
·物体存在或运动的通用检测General detection of object presence or motion
·自动售票机Automatic ticket vending machine
·智能电子产品 Intelligent Electronic Products
·工业机械设备 Industrial Intelligent Equipment
·安防防护应用 Safety Application Products

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反射式光电开关
Optical Senor Reflective SG105TR

*最大额定值 Absolute Maximum Ratings

测试项目 Parameter（Ta=25℃）		符合 Symbol	范围 Ratings	单位 Unit
输入端发射极 Input Emitter	功率 Power Dissipation *1	Pd	75	mW
	反向电压 Reverse Voltage	V_R	5	V
	持续正向电流 Forward Current	I_F	50	mA
	脉冲正向电流 Peak Forward Current *2	I_{FP}	1	A
输出端接收极 Output Detector	功率 Power Dissipation *1	Pd	75	mW
	集电极一发射极电压 Collector-Emitter Voltage	V_{CEO}	30	V
	发射极一集电极电压 Emitter-Collector Voltage	V_{ECO}	5	V
	集电极电流 Collector Current	$I_{C(ON)}$	20	mA
工作温度 Operating Temperature		Topr	-25~+85	℃
储存温度 Storage Temperature		Tstg	-40~+85	℃
焊接温度 Lead Soldering Temperature*3		Tsol	260	℃

*1、 在 25 摄氏度的环境中测试 below 25 Free Air Temperature

*2、脉宽小于等于 100us， 占空比 1% Pulse width≦100μs,Duty cycle= 1%

*3、离胶体 2mm 以上焊接 5s 内 2mm form body for 5 seconds

*光电特性 Electro-Optical Characteristics

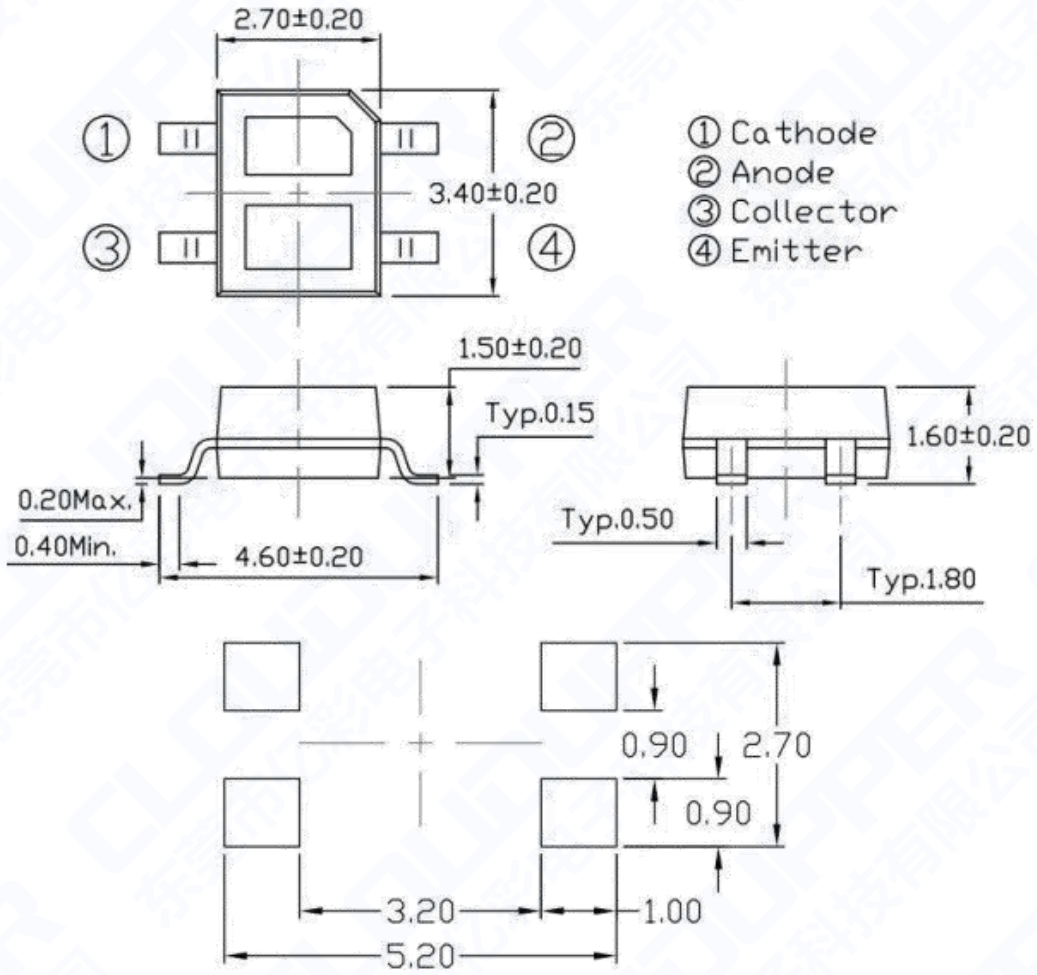
电性参数（温度=25℃） Parameter（Ta=25℃）		符号 Symbol	条件 Condition	最小值 Min.	典型值 Typ.	最大值 Max.	单位 Units
输入端 Input	正向电压 Forward Voltage	V_F	I_F=20mA	--	1.2	1.6	V
			IF=100mA*2	--	1.4	1.85	
			IF=1A *2	--	2.6	4.0	
	峰值波长 Peak Wavelength	λp	I_F=20mA	--	940	--	nm
	反向电流 Reverse Current	I_R	V_R=5V	--	--	10	μA
输出端 Output	暗电流 Dark Current	I_{CEO}	Ee=0mW/cm² V_{CE}=20V	--	--	100	nA
	集电极一发射极的工作电压C-E Saturation Voltage	$V_{CE(SAT)}$	I_C=2mA Ee=1mW/cm²	--	--	0.4	V
转换特性 Transfer Characteristics	上升时间 Rise Time	t_r	V_{CE}=5V I_C= 1mA R_L= 1000Ω	--	15	--	μS
	下降时间 Fall Time	t_f		--	15	--	
	光电流 Collector Current	$I_{C(ON)}$（5）	IF=10mA V_{CE}=5V	900	--	1100	μA
		$I_{C(ON)}$（6）		1100	--	1300	

*2、脉宽小于等于 100us， 占空比 1% Pulse width≦100μs,Duty cycle= 1%

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*产品尺寸 Package Dimension



备注Notes:

一所有尺寸为毫米标识

All dimensions are in millimeters

一未标识尺寸正负公差为 0.3mm

Tolerances: unless dimensions ±0.3mm

*等级档位 Rank

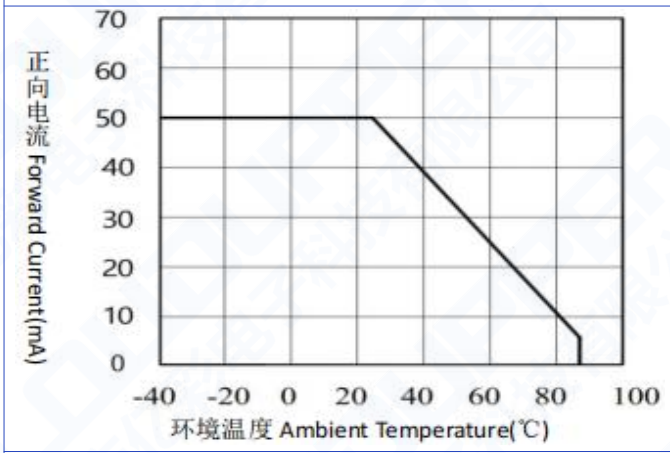
Condition：I_F=10mA、V_{CE}=5V Unit：mA

Bin Code	Min.	Max.
B	0.18	0.30
C	0.25	0.44

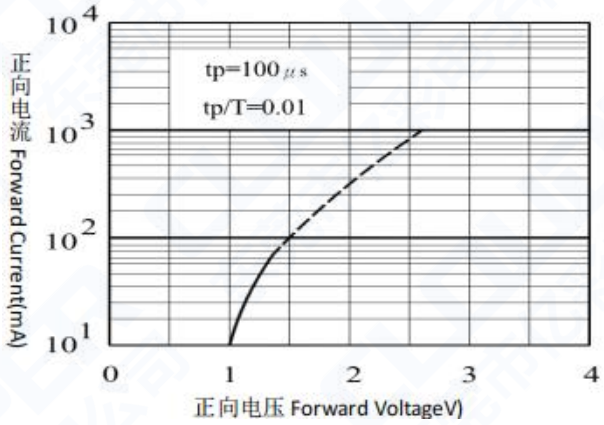
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*发射管特性曲线图 Typical Electro-Optical Characteristics Curves-IR

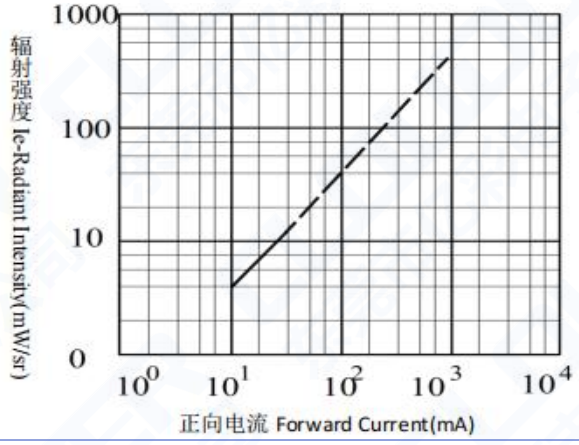
正向电流与环境温度的关系
ForwardCurrentvs.AmbientTemperature



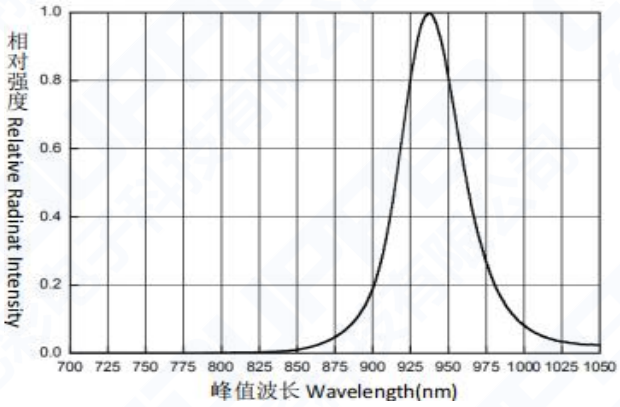
正向电流与正向电压的关系
Forward Current vs. Forward Voltage



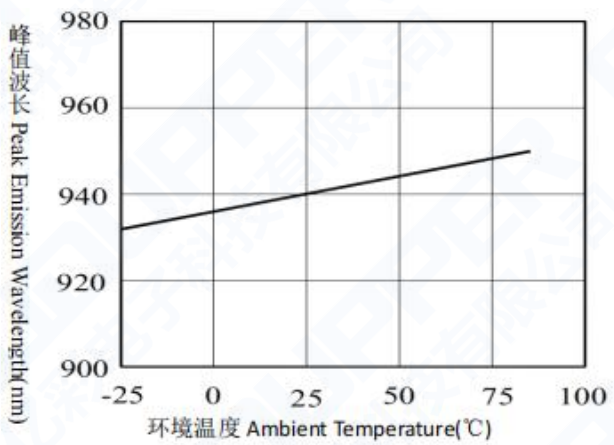
辐射强度与正向电流的关系
RadiantIntensityvs.ForwardCurrent



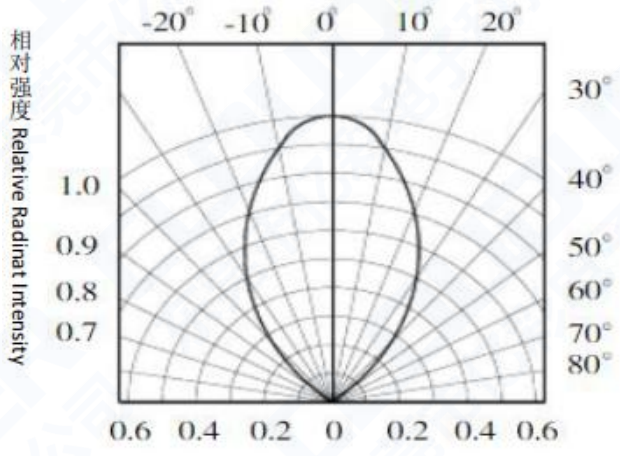
波长曲线图
SpectralDistribution



峰值波长与环境温度的关系
Peak Emission Wavelength vs. Ambient Temperature



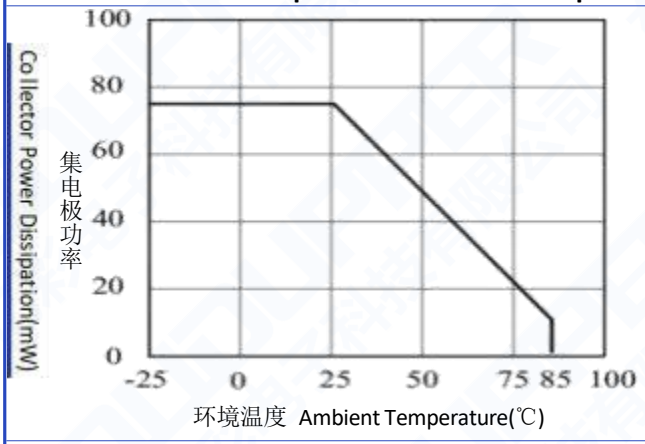
相对辐射强度与角位移的关系
Relative Radiant Intensity vs. Angular Displacement



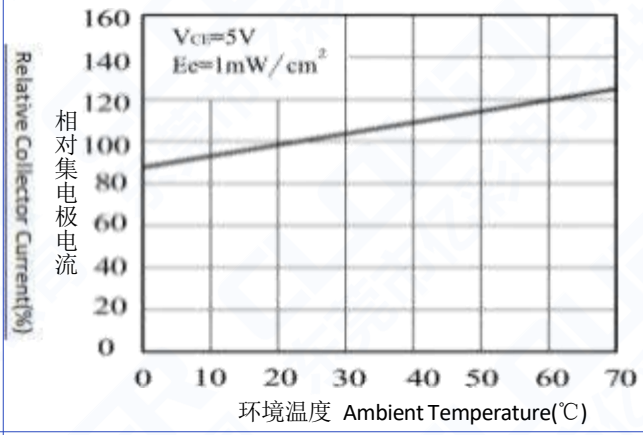
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*接收管特性曲线图 Typical Electro-Optical Characteristics Curves- PT

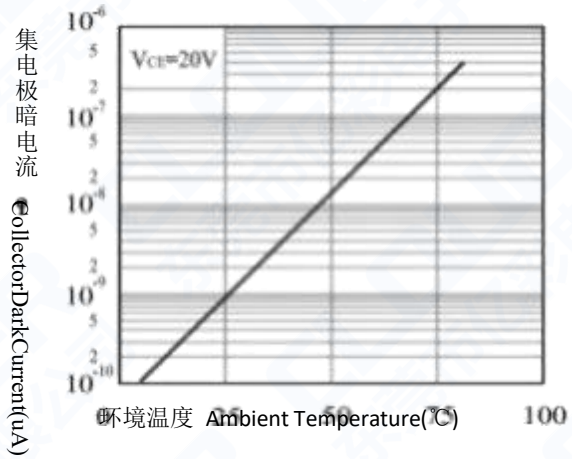
集电极功率与环境温度的关系
Collector Power Dissipation vs. Ambient Temperature



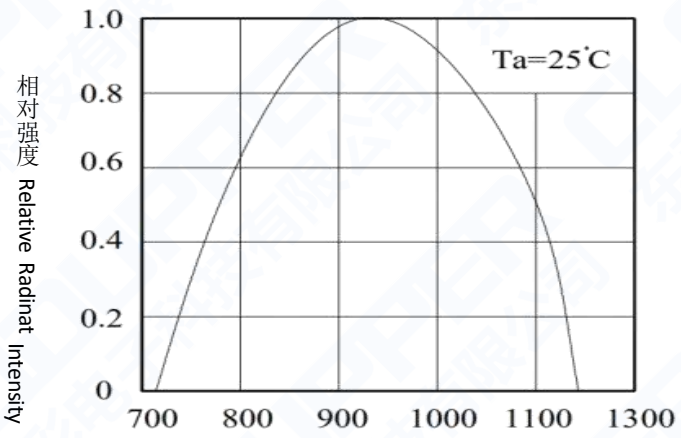
相对集电极电流与环境温度的关系
Relative Collector Current vs. Ambient Temperature



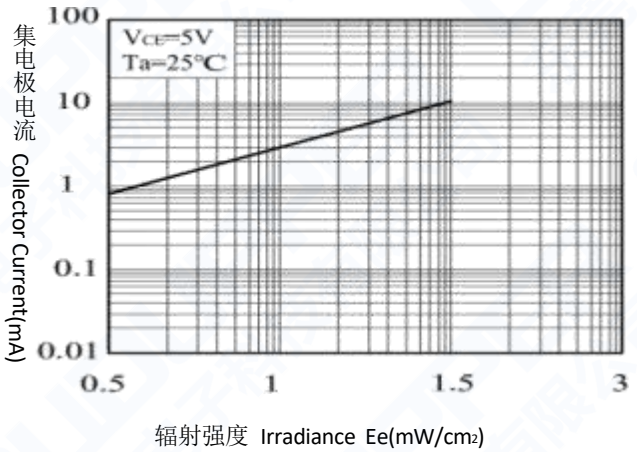
集电极暗电流与环境温度的关系
Collector Dark Current vs. Ambient Temperature



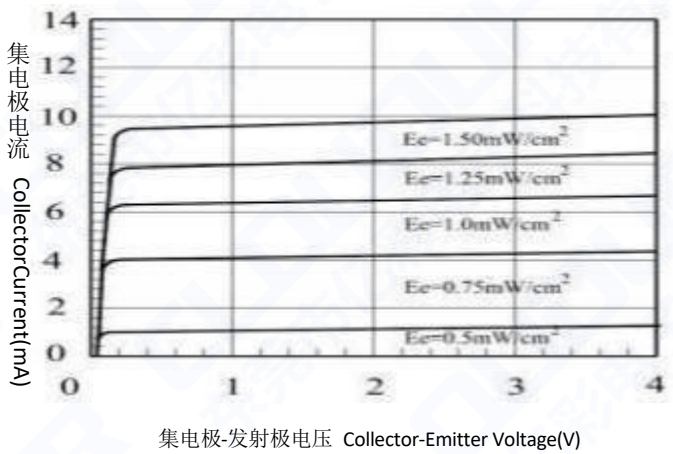
感应波长曲线图
Spectral Sensitivity



集电极电流与辐射强度的关系
Collector Current vs. Irradiance



集电极电流与集电极 - 发射极电压的关系
CollectorCurrentvs.Collector-EmitterVoltage



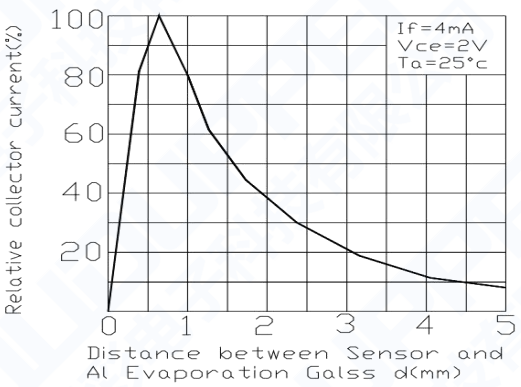
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*光电开关特性曲线图 Typical Electro-Optical Characteristics Curves- ITR

光电流与感应距离之间的关系 Relative Collector Current vs DIistance Between Sensor

Fig.1 Relative Collector Current vs. Distance between Sensor and Al Evaporation Galss



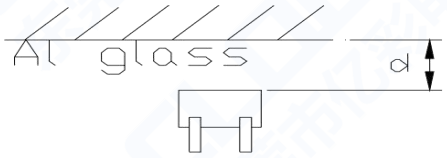
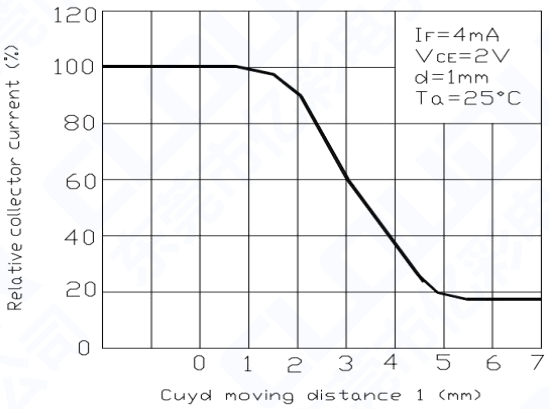


Fig.2 Relative Collector Current vs. Card Moving Distance (1)



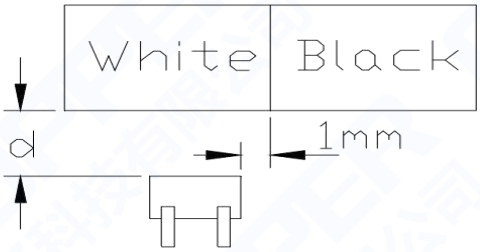
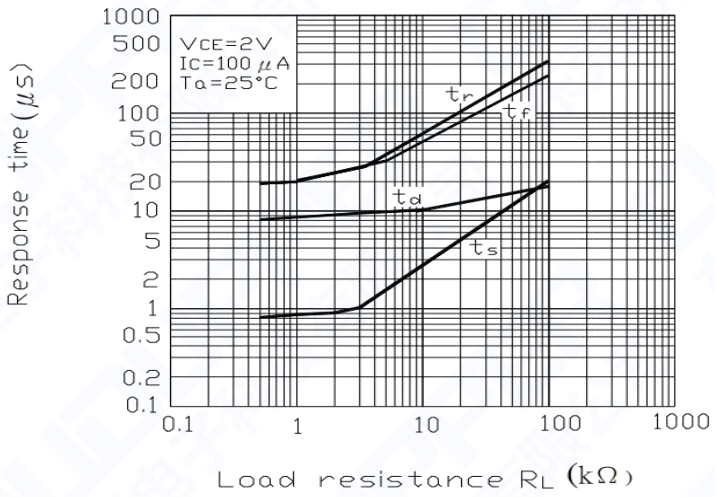
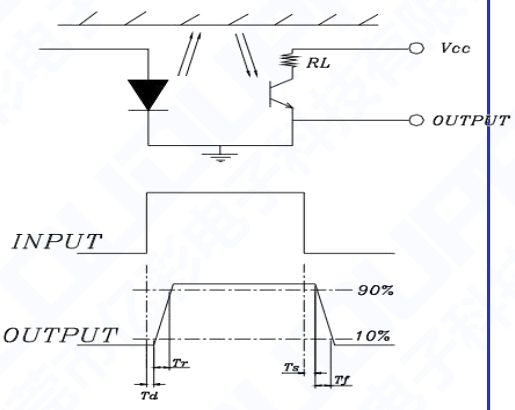


Fig.3 Response Time vs. Load Resistance



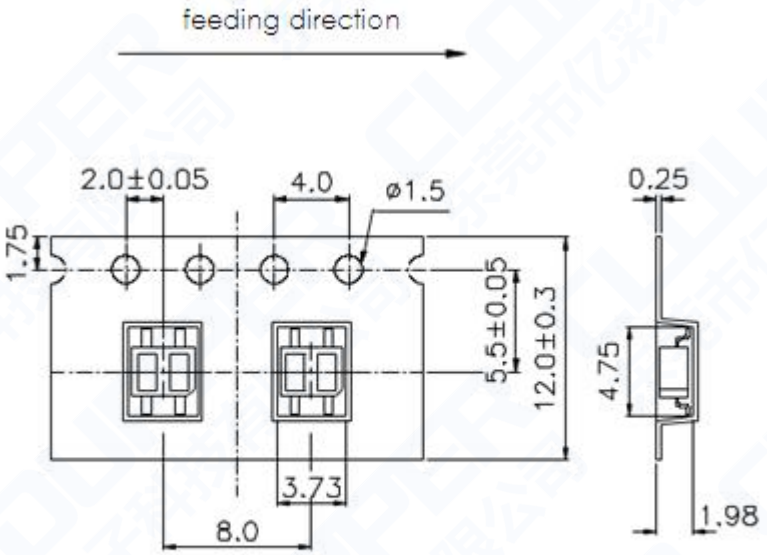


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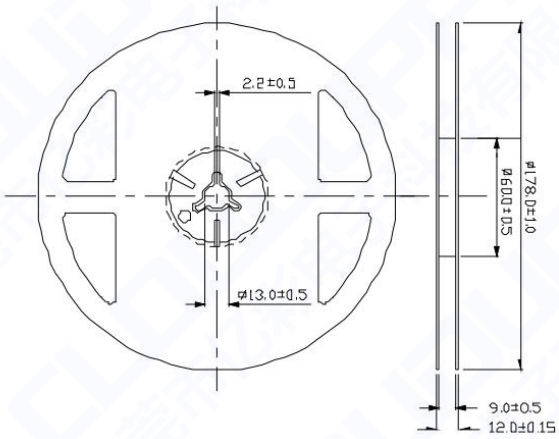
*包装规格 Packing Specification

贴装尺寸
Taping Dimension



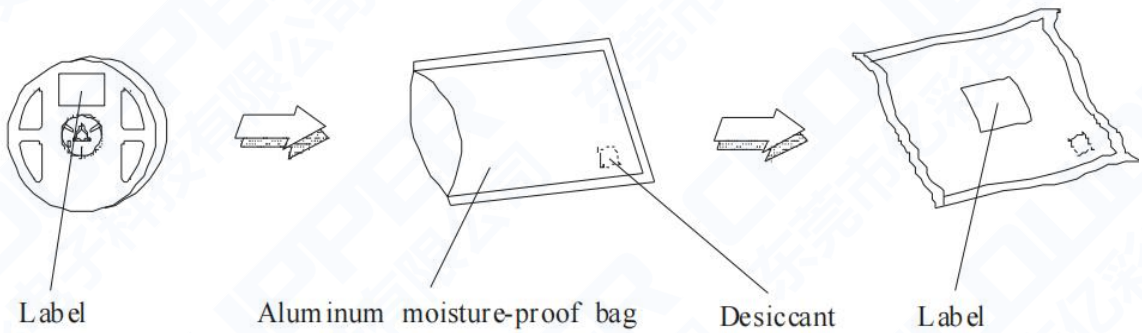
General Tolerance ±0.1

卷盘尺寸
Reel Dimensions



防潮包装
Moisture Resistant

Note: The tolerances unless mentioned is ±0.1mm ,Unit = mm



包装方式	包装	内盒	外箱
袋装	1000 PCS/ 盘	15盘/包	2包/箱

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*注意事项 Note

--过流保护 Over-current-proof

1、客户必须应用电阻进行保护，否则会造成轻微电压偏移大电流变化（烧毁将发生）。Customer must apply resistors for protection, otherwise slight voltage shift will cause big current change (Burn out will happen).

--储存 Storage

1、产品准备使用前不要打开防潮袋。Do not open moisture proof bag before the products are ready to use.

2、在打开包装之前，二极管应保持在 10℃~30℃和 90%RH 或以下。Before opening the package, the LED should be kept at 10℃~30℃ and 90%RH or less.

3、二极管建议在一年内使用。The LED suggested be used within one year.

4、 打开包装后，设备必须存储在 10℃~30℃ 和 60%RH，并在 168 小时内使用（地板寿命）。如果未使用的 二极管仍然存在，它应储存在防潮包装中。After opening the package, the devices must be stored at 10℃~30℃ and 60%RH, and used within 168 hours (floor life). If unused LED remain, it should be stored in moisture proof packages.

5、如果吸湿材料（干燥剂材料）已褪色或未打开的袋子已超过保质期或设备（袋外）已超过地板寿命，需要烘焙处理。If the moisture absorbent material (desiccant material) has faded or unopened bag has exceeded the shelf life or devices (out of bag) have exceeded the floor life, baking treatment is required.

6 、如果需要烘焙，请参阅 IPC/JEDECJ-STD-033 进行烘焙程序或建议以下条件：在 60 ° C ± 5 ° C 和 5%RH<96 小时（筛/管/套单位）If baking is required, refer to IPC/JEDEC J-STD-033 for bake procedure or recommend the following conditions: 96 hours at 60°C ± 5°C and < 5 % RH (reeled/tubed/loose units)

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---焊接（Soldering）

1. 焊接时需格外注意：焊接部位与环氧树脂球体之间应保持超过3毫米的距离；建议将焊点延伸至连接杆底部以外。

1. Careful attention should be paid during soldering. When soldering, leave more than 3mm from the solder joint to the epoxy bulb, and soldering beyond the base of the tie bar is recommended.

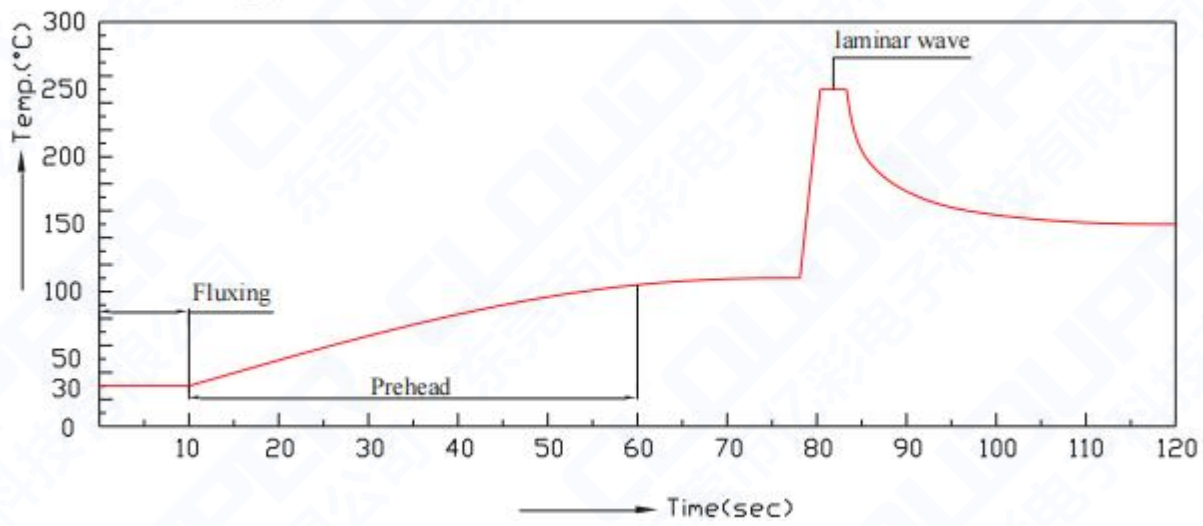
2. 推荐焊接条件：

2. Recommended soldering conditions:

Hand Soldering 手焊		DIP Soldering 波峰焊	
Temp.at tip of iron 铁尖端温度	300℃ Max.(30W Max.) 最高温度：300℃（最大功率：30W）	Preheat temp. 预热温度。	100° C Max.(60 sec Max.) 最高温度：100°C（最长加热时间：60秒）
Soldering time 焊接时间	3 sec Max. 最长 3 秒。	Bath temp.&time 浸泡温度与时间	260 Max.,5 sec Max 260 最大值：5秒；最大持续时间
Distance 距离	3mm Min.(From solder joint to epoxy bulb) 最小厚度为 3 mm（从焊点到环氧树脂球体）	Distance 距离	3mm Min.(From solder joint to epoxy bulb) 最小厚度为 3 mm（从焊点到环氧树脂球体）

3. 推荐焊接曲线：

3. Recommended soldering profile:



4. 在光电开关处于高温状态时（尤其是焊接过程中），应避免对引线框架施加任何应力。

4. Avoid applying any stress to the lead frame while the Optical Senor is at high temperature, particularly during soldering.

5. 浸渍焊和手工焊接操作不应超过一次。

5. Dip and hand soldering should not be done more than once.

6. 完成光电开关的焊接后，应将环氧树脂灯泡置于免受机械冲击或振动的环境中，直至光电开关恢复至室温。

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6. After soldering the Optical Senor, the epoxy bulb should be protected from mechanical shock or vibration until the Photo Interrupter returns to room temperature.

7. 不建议采用快速冷却过程来使光电开关从峰值温度降至正常温度。

7. A rapid-rate cooling process is not recommended for bringing the Optical Senor down from peak temperature to normal temperature.

8. 尽管推荐的焊接条件已在上表中明确列出，但对于光电开关而言，在尽可能低的温度下进行浸焊或手工焊接更为理想。

8. Although the recommended soldering conditions are specified in the above table, dip or hand soldering at the lowest possible temperature is desirable for the Optical Senor.

9. 波峰焊接参数必须根据推荐的焊接温度和停留时间进行设置并保持。

9. Wave soldering parameters must be set and maintained according to the recommended temperature and dwell time in the solder wave.

--清洁（Cleaning）

1、溶剂温度应在45。C或以下。浸泡时间应在3分钟或以下。Solventtemperatureshouldbe45。Cor below.Immersiontimeshouldbe3minutesorless.

2、不执行超声波清洗。Donotexecuteultrasoniccleaning.

3、推荐溶剂材料：乙醇、甲醇和异丙醇Recommendedsolventmaterials:Ethylalcohol,Methylalcoholand Isopropylalcohol.

--热管理（Heat Management）

1. 在光电开关应用的设计阶段，必须充分考虑其热管理问题。应参照各产品规格书中提供的降额曲线对电流进行适当降额处理。

1.Heat management of Optical Senor must be taken into consideration during the design stage of Photo Interrupter application.The current should be de-rated appropriately by referring to the de-rating curve found in each product specification.

2. 应用过程中需对光电开关周围的温度进行控制。

2.The temperature surrounding the Optical Senor in the application should be controlled.

--其他 （Other）

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