深圳市强生光电科技有限公司

Shenzhen JNJ Optoelectronics Co.,Limited

产品规格书

SPECIFICATION FOR APPROVAL

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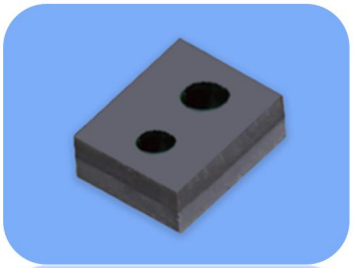
业务部 SERVICES DEPT.	工程部 ENGINEER DEPT.	制作 PREPARED	审核 CHECKED	批准 APPROVED
段晓星	孔祥明	谭议	马新华	金谦

客户接收 CUSTOMER ACCEPTANCE：		
客户名称 CUSTOMER：		
担当 SIGNED：	审核 CHECKED：	批准 APPROVED：

地址：深圳市龙岗区横岗街道 228 工业区永发工业园 48 号 3C 厂区
Address:3C, No. 48, Winfat Industrial Park, 228 Industrial Zone, HengGang street,LongGang ShenZhen
电话(Tel)：0755-85236381
网站(Web site)：http://www.jnjopto.com

产品构造 Product conformation：

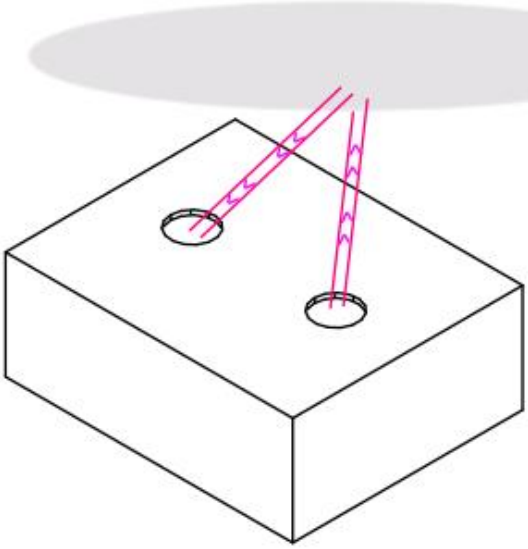
- 封装胶水：黑色硅胶
  Packaging glue: Black silicone
- 发光颜色：红外(不可见光) 波长 940nm+PT 芯片
  Luminous color: Infrared (invisible light) wavelength 940nm
- 静电敏感材质
  Electrostatic sensitive material

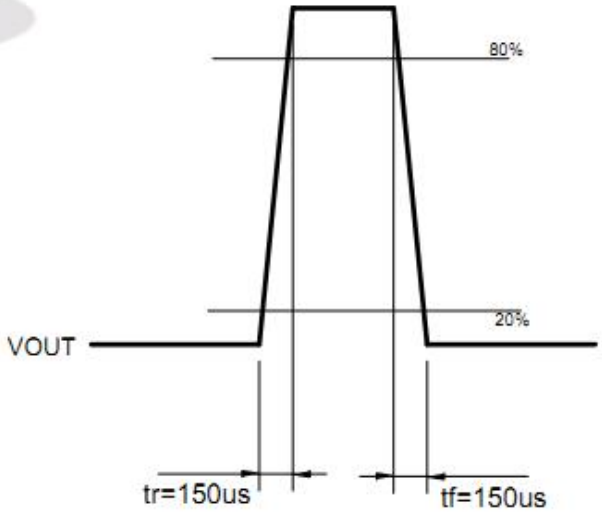


应用 Applications：

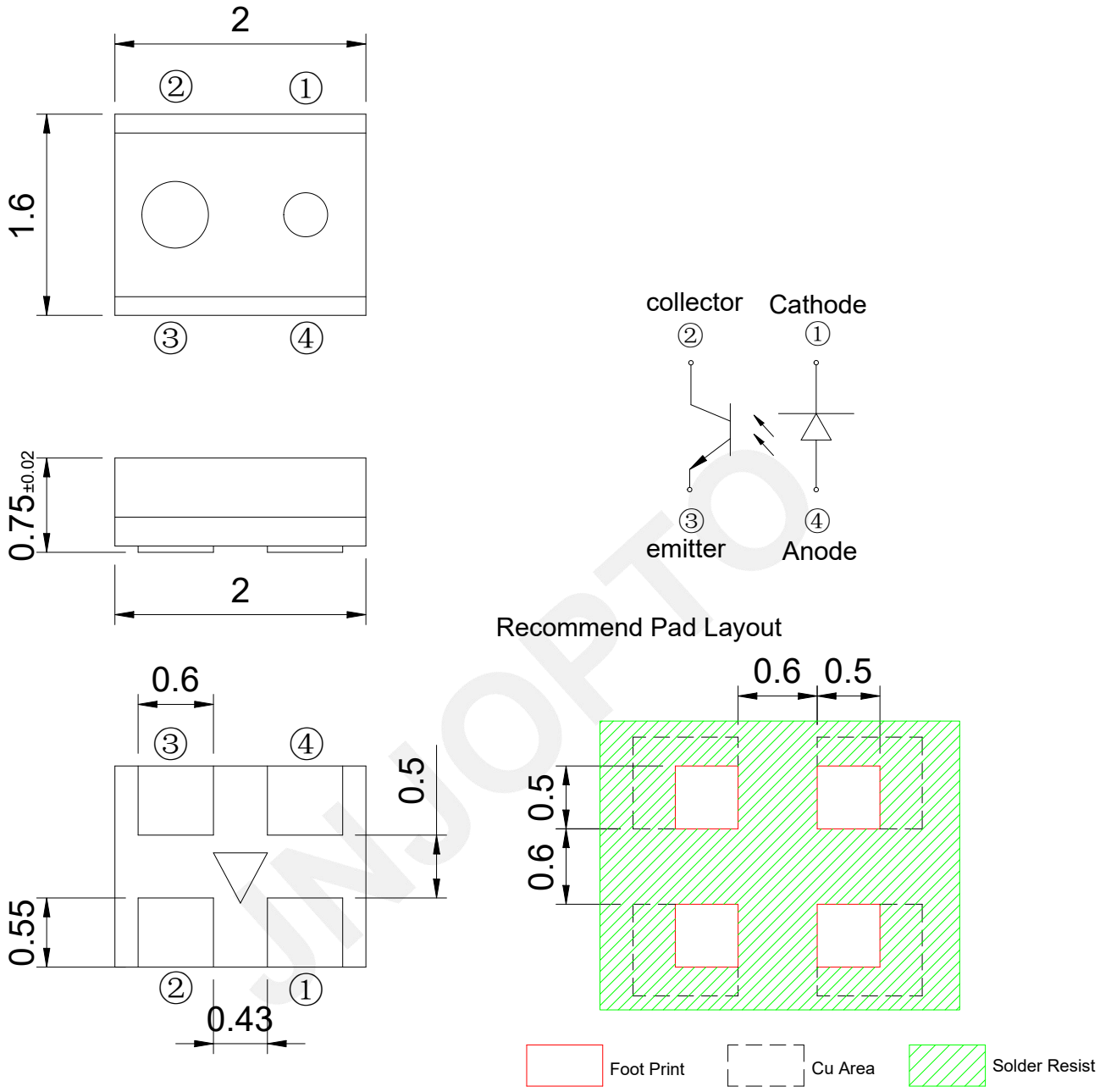
- **入耳式耳机 in-ear monitor**
- **智能穿戴 Smart wear**

工作流程：用IO口控制传感器的红外发光部份工作时另一个IO口同时测量传感器的VOUT脚位上是否有高电平？接收到反射信号后VOUT脚输出对应的线性电压，信号越强电压越高。应用电图实测80%输出入耳检测距离>2mm。
例如采用250us工作50ms休息（平均电流在30uA）；待机电流180nA





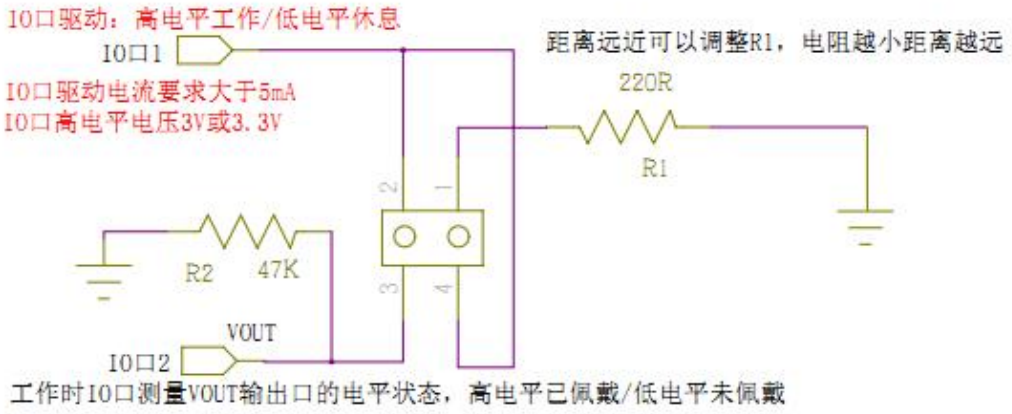
产品外形尺寸 Package outline dimensions：



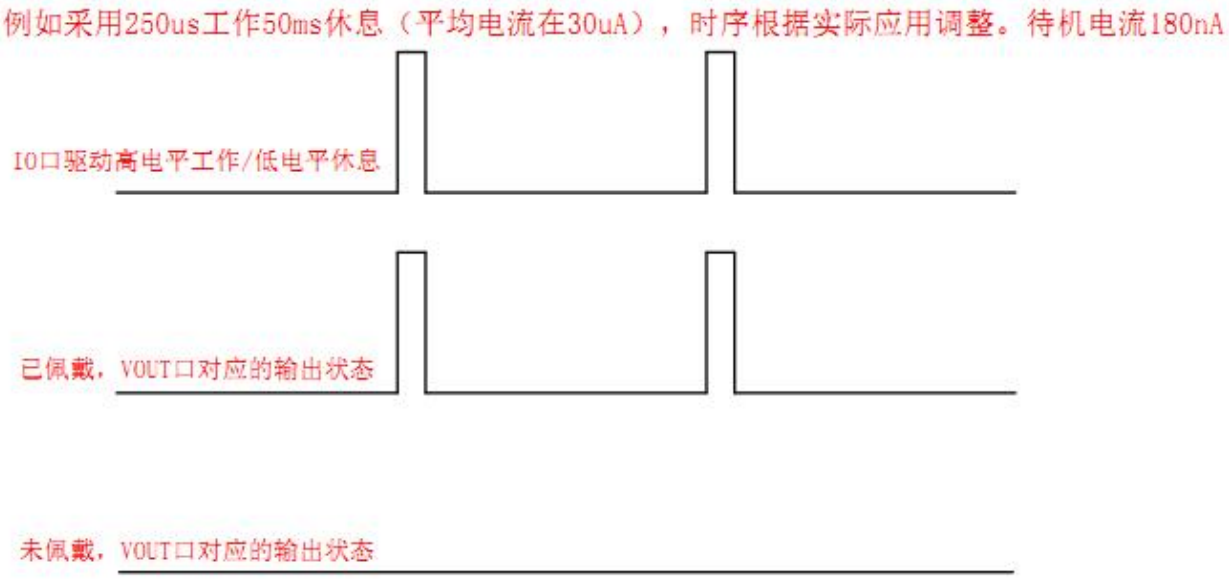
备注(Note)：

1. 标注尺寸单位为毫米
   Dimensions are in millimeters.
2. 除特别标注外，所有尺寸允许公差± 0.1mm .
   Tolerances unless mentioned are ± 0.1mm.

典型应用电路

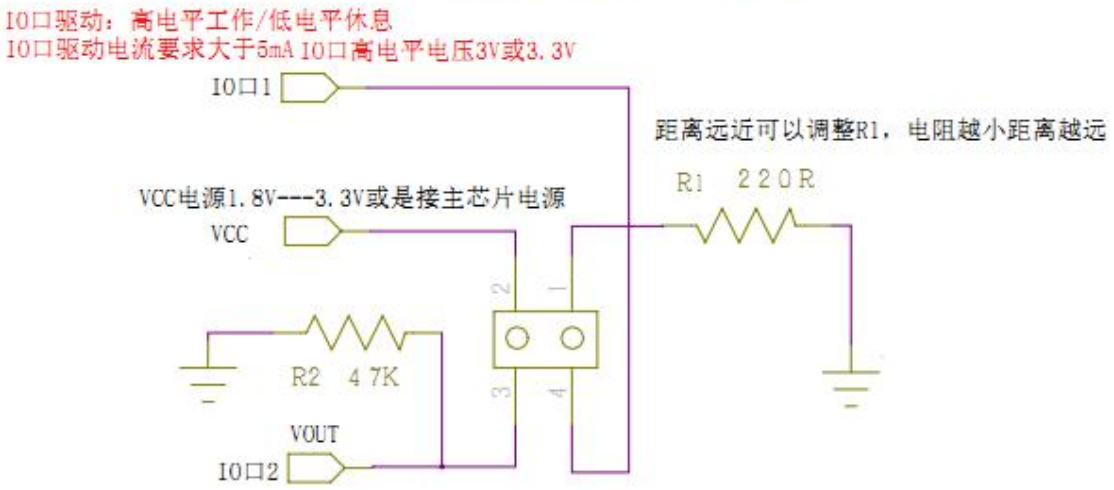


应用电路时序

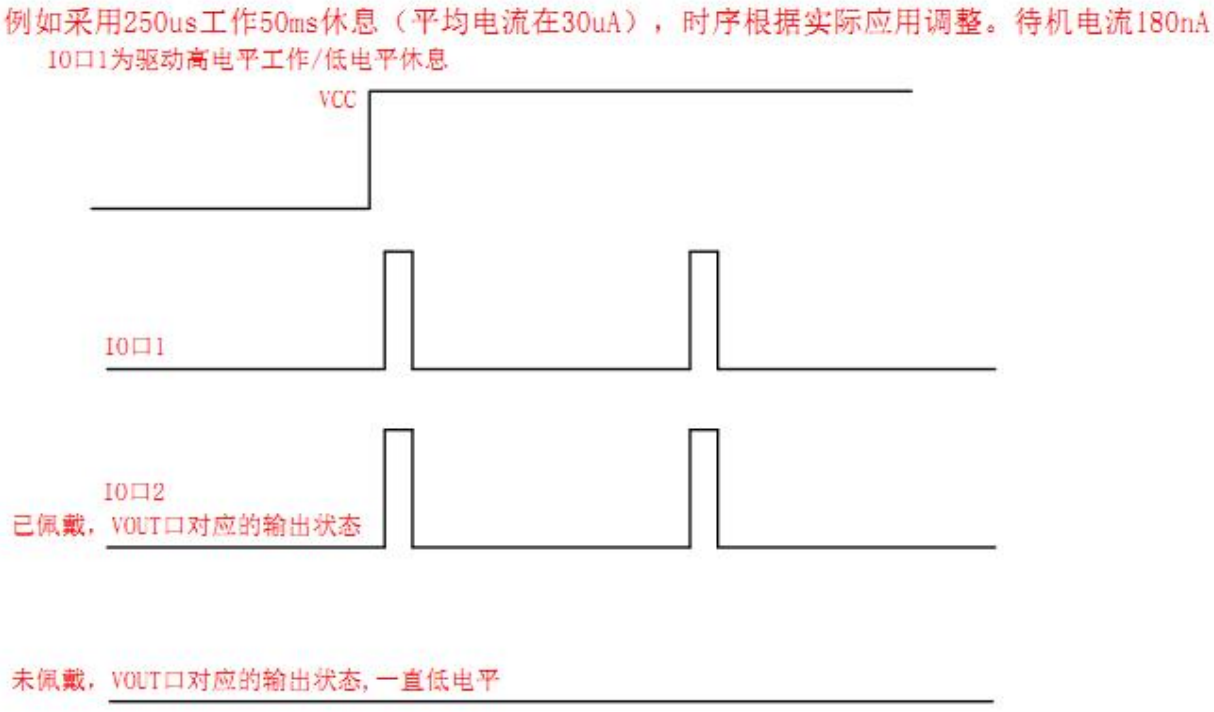


工作状态	驱动口 IO口1	检测口 IO口2	结果
工作中	1	1	已佩戴
	1	0	未佩戴
休眠中	0	0	

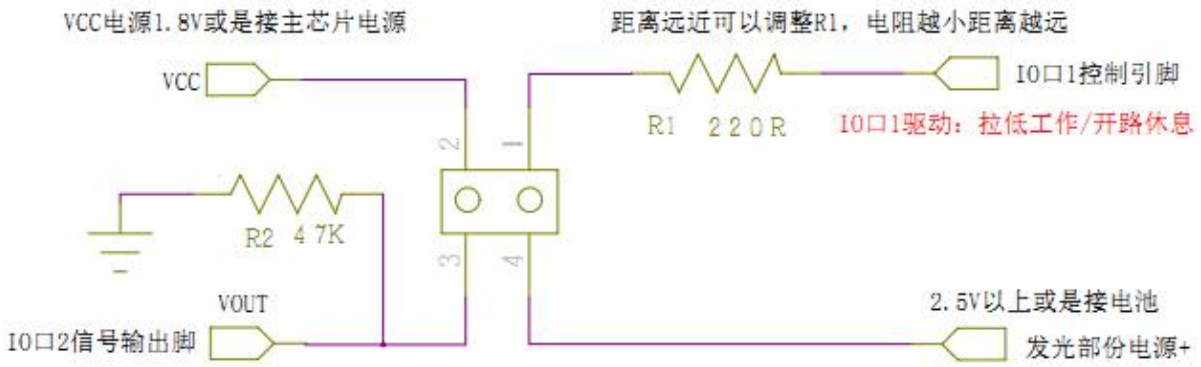
抗太阳光误动作应用电路 3VIO口驱动



应用电路工作时序

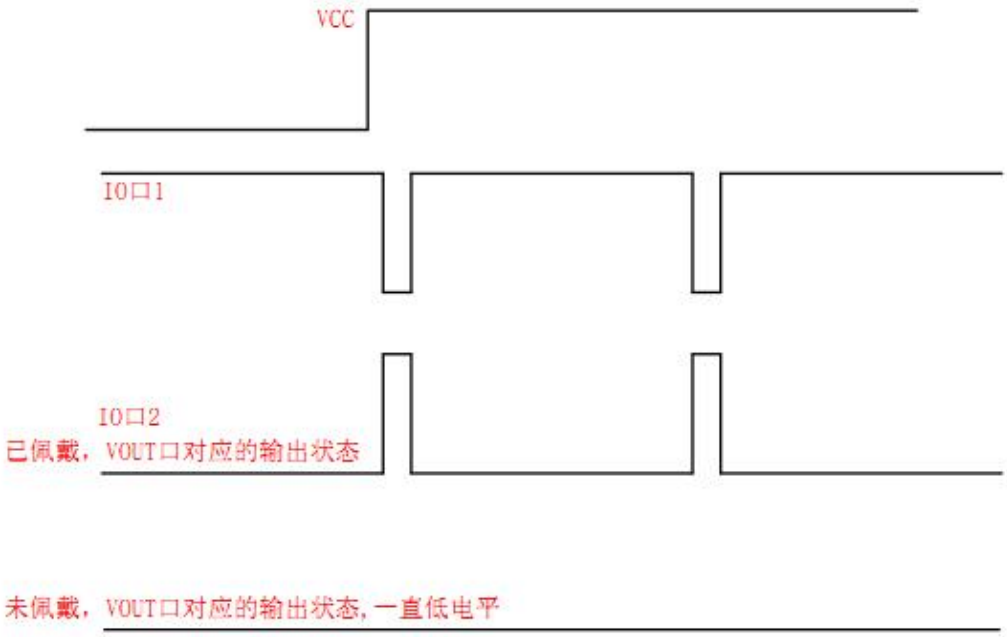


抗太阳光误动作应用电路 1.8VIO 口驱动

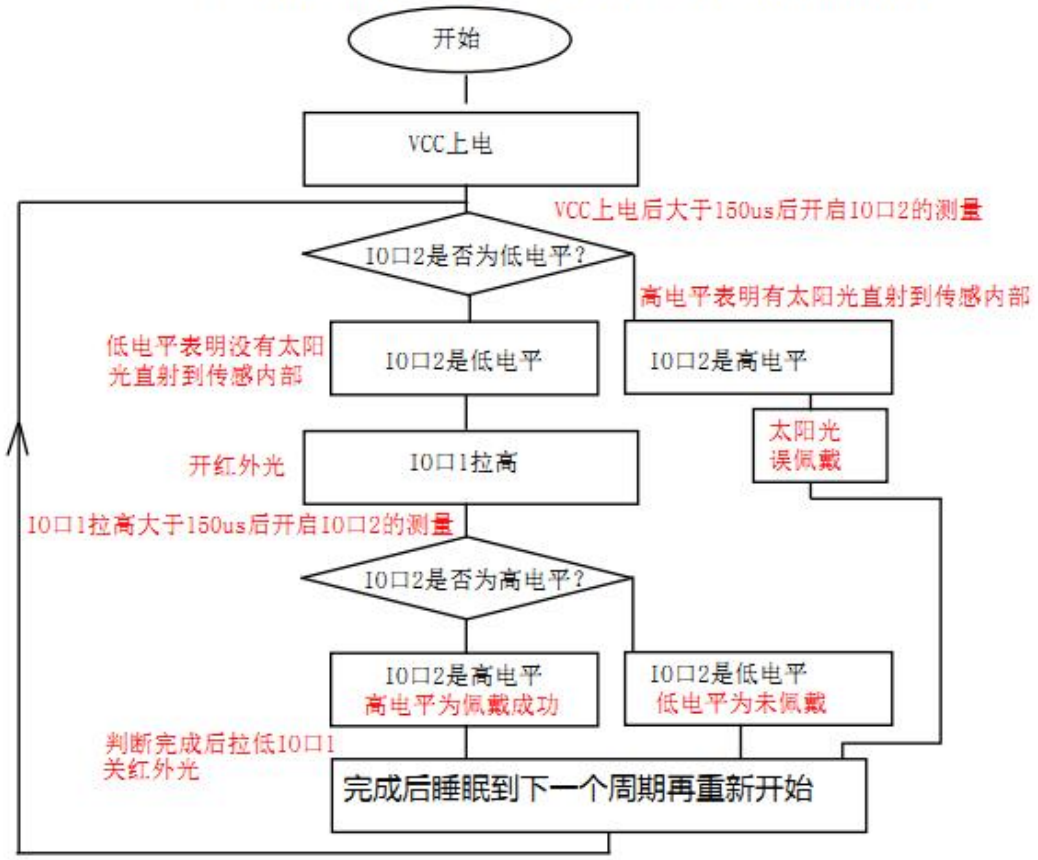


应用电路工作时序

例如采用250us工作50ms休息（平均电流在30uA），时序根据实际应用调整。待机电流180nA

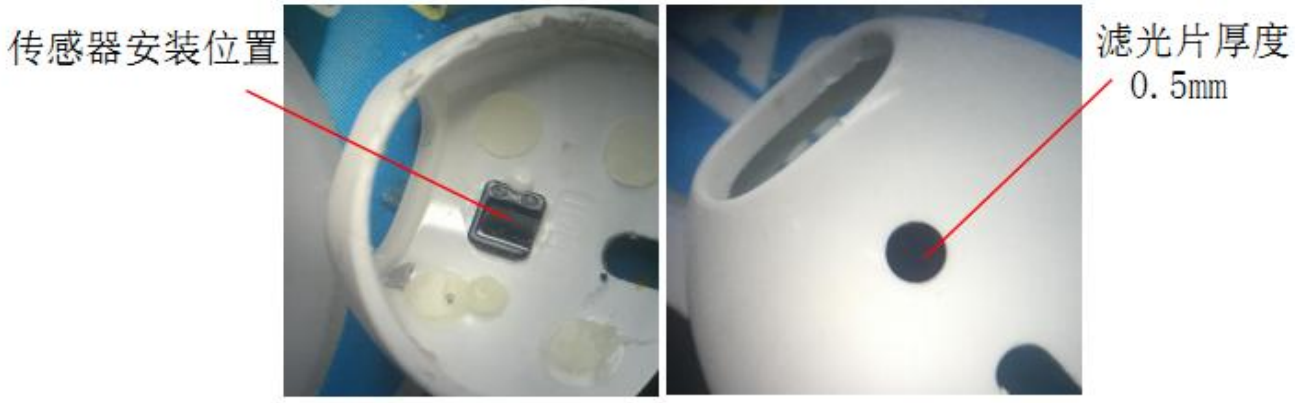


应用电路250 us工作内的软件流程



结构安装

传感器要紧贴到滤光片的定位区域中，滤光片过滤800nm以下的波长。



极限参数 Absolute Maximum Rating sat：

参数 Parameter	符号 Symbol	额定值 Rated Value	单位 Unit	环境温度 condition Temperature
最大脉冲工作电流*Max Pulse Current	IFP	7	mA	Ta=25°C
反向电压 Reverse Voltage	VR	5	V	Ta=25°C
工作温度 Operating Temperature	Topr	-30℃to +80℃	°C	
存储温度 Storage Temperature	Tstg	-40℃to +85℃	°C	
回流焊温度 Reflow Soldering Temperature	Tsol	245℃for 10sec	°C	
结温 Junction Temperature	Tj	115	°C	

*Pulse condition : pulse width (tp) =100us, duty cycle=10%

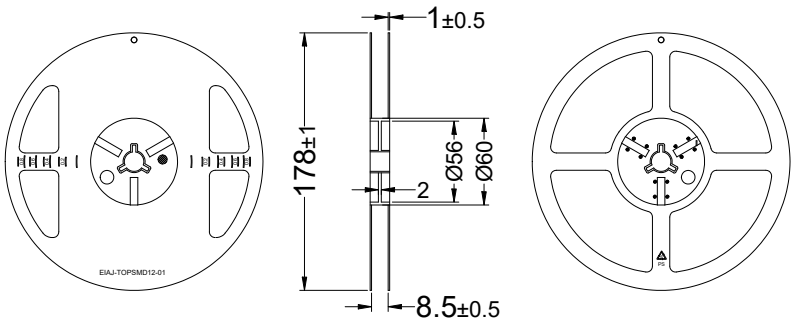
光性能特点 Optical Characteristics：(Ta=25°C)

芯片 Chip	参数 Parameter	符号 Symbol	测试条件 test condition	最小 Min	典型 Typ	最大 Max	单位 Unit
Vcsel	阈值电流 Threshold Current	Ith	T_C=25℃	---	0.9	1.2	mA
	光功率 Output Power	Lop	IF=7mA	5	6	---	mW
	正向电压 Forward Voltage	V_F	IF=7mA	---	1.9	2.2	V
	波长 Wavelength	λp	IF=7mA	---	940	---	nm
	斜率效率 Slop Efficiency	SE	T_C=25℃	0.9	1.0	---	W/A
	转换效率 Power Conversion Efficiency	PCE	IF=7mA	40	42	---	%
	发散角 Divergence Angle(1/e2)	2θ1/2	IF=7mA	---	21	---	Deg
PT	集电极-发射极反向击穿电压	BV_{CEO}	I_C=100μA；I_B=0	90	120	160	V
	发射极-基极反向击穿电压	BV_{EBO}	I_E=100μA；I_C=0	7	9	11	V
	集电极暗电流	I_{CEO}	V_{CE} =50V；H=0mW/cm²	---	10	60	nA
	集电极-基极反向击穿电压	BV_{CBO}	I_B=10uA；I_E=0	100	---	350	V
	集电极-发射极饱和压降	V_{CES}	I_C=2mA；I_B=100μA	---	---	0.2	V
	电流增益	h_{FE}	V_{CE}=5V；I_C=2mA	500	---	2500	---
抗静电 Electrostatic Discharge Threshold		ESD	Human Body Model	---	---	2000	V

备注(Note)：

1. 上述辐射通量的测试允许公差是±10% ，电压测量误差±0.1v，波长测量误差±1nm
   The test of the above radiation flux allows a tolerance of ± 10%, voltage measurement error of ± 0.1v, and wavelength measurement error of ± 1nm
2. **使用时请用恒流驱动，恒压驱动时电流会偏差较大。**
   Please use constant current drive, and the current deviation of constant voltage drive will be large.

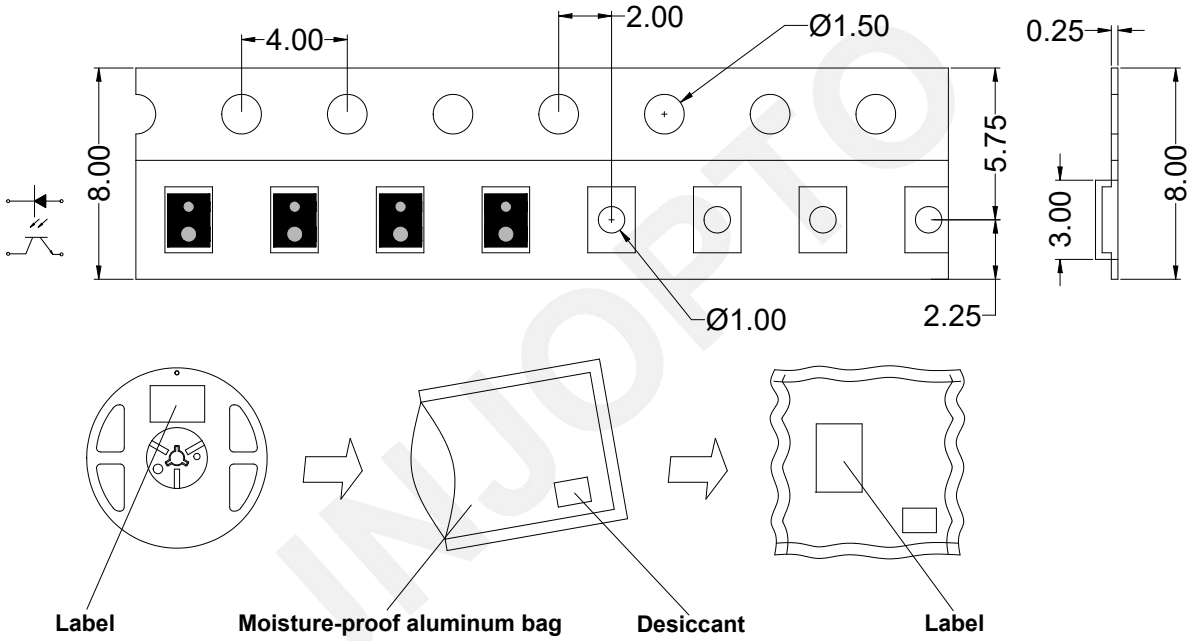
卷轴尺寸 **Reel Dimensions:**



使用方向及尺寸 **Progressive direction and Dimensions:**

Loaded quantity 4000PCS per reel

Progressive direction 使用方向



标签规格 **Label Form Specification:**

产品名称:	XXXXXXXXXXXXX	
产品料号:	XXXXXXXXXXXXX	
批次号:	XXXXXXXXXXXXX	
规格型号:	XXXXXXXX	XXXXXXXX
色温/波段:	XXXX-XXXX K	XXX nm-XXX nm
电压(**XX**mA):	X.XX V-X.XX V	X.XX V-X.XX V
色区/功率:	XXXXXXXX	XXXXXXXX
数　量:	XXXX pcs	
日　期:	XXXX-XX-XX	

注：开封后请于24小时内完成使用

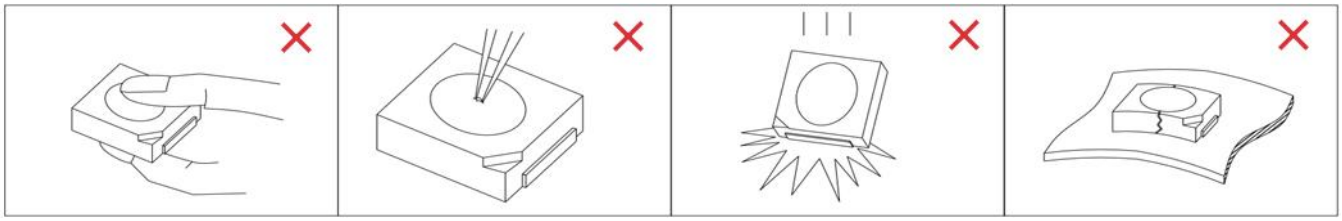
应用注意事项 Application precautions:

保存及使用 Preservation and use:

1.大尺寸传感器产品在贴片使用前必须先除湿处理，除湿条件：80±5℃ / 24 Hr 或以上。
Large-size sensor products must undergo dehumidification treatment prior to surface-mount application. Dehumidification conditions: 80±5℃ for 24 hours or longer.
2.传感器在除湿完成后须在 12H 之内使用（贴片完成并过完回流焊）；为了避免环境的影响，建议已拆封除湿没用完传感器需及时做抽真空包装处理（包装袋用防潮铝袋）并存放在防潮柜中，下次使用前经过 80±5℃ / 24 Hr 除湿后使用，避免再次使用时发生失效。
The sensor must be used within 12 hours after dehumidification (after the patch is completed and reflow soldering is finished). To avoid environmental interference, it is recommended to promptly perform vacuum packaging (using moisture-proof aluminum bags) and store the unused sensor in a moisture-proof cabinet. Before reuse, it should be dehumidified at 80±5° C for 24 hours to prevent failure during subsequent use.
3.为了防潮，传感器要存放在干燥通风的环境中，在打开包装前，传感器应存放在 30℃/60%RH 或以下的环境中。除湿后，传感器应置于 20-30℃/30%RH 或以下的环境中使用。
To prevent moisture, sensor should be stored in a dry and well-ventilated environment. Before opening the packaging, the photosensitizer should be kept at 30° C/60%RH or below. After dehumidification, the sensor should be stored at 20-30° C/30%RH or below for use.
4.请不要使用不明的化学液体清洗传感器。
Do not use unknown chemical liquids to clean sensor materials.
5.传感器的胶体表面易沾灰尘，需要做好相关防尘措施。
The sensor colloidal surface is prone to dust accumulation, requiring appropriate dust-proof measures.
6.已安装在 PCB 上组件，若客人暂不装机使用，建议用 PE/PP 胶袋密封保存，不可接触含有硫化物质的相关包装物料，及避免存放于酸性/碱性等化学物质存在的环境。
For components mounted on PCBs that customers do not plan to install immediately, it is recommended to store them in PE/PP bags. Avoid contact with sulfur-containing packaging materials and store them away from acidic or alkaline chemicals.
7.回流焊工艺优先推荐采用低温焊膏制程，次选中温锡膏制程，避免使用高温锡膏制程。
The reflow soldering process should prioritize low-temperature solder paste, with medium-temperature solder paste as the secondary option, and avoid high-temperature solder paste.

操作注意事项 Handling Precautions

*符合 RoHS 和 REACH Compliance with RoHS and REACH
1.LED 工作环境和硫元素组成在 LED 配合使用材料中不能超过 100PPM。此信息仅供参考，不作任何保证或背书。
LED operating environment and sulfur element composition cannot be over 100PPM in the LED mating usage material. This is provided for informational purposes only and is not a warranty or endorsement.
2.为了防止外部物质进入 LED 内部，导致 LED 故障，要求溴元素的单一含量低于 900PPM，氯元素的单一成分含量低于 900PPM，要求应用产品外部材料中溴元素和氯元素的总含量低于 1500PPM。此信息仅供参考，不作任何保证或背书。
In order to prevent ex-ternal material from getting into the inside of LED, which may cause the malfunction of LED, the single content of Bromine element is required to be less than 900PPM,the single content of Chlorine elementis required to be less than 900PPM,the total content of Bromine element and Chlorine element in the external materials of the application products is required to be less than1500PPM . This is provided for informational purposes only and is not a warranty or endorsement.
3.灯具结构中使用的材料释放的挥发性有机化合物（VOC）会渗透到 LED 的硅胶封装中，并在暴露于热量和光子能时变色。结果可能会导致灯具的光输出大幅损失。了解用于制造夹具的材料的特性有助于防止这些问题。我们建议不要使用任何已发现或怀疑对设备性能或可靠性有不利影响的化学品或材料。为了验证兼容性，建议所有化学品和材料在其预期使用的特定应用和环境中进行测试。此外，在安装 LED 时，避免使用会释放有机蒸气的粘合剂。
VOCs (Volatile organic compounds) emitted from materials used in the construction of fixtures can penetrate silicone encapsulants of LEDs and discolor when exposed to heat and photonic energy. The result can be a significant loss of light output from the fixture. Knowledge of the properties of the materials selected to be used in the construction of fixtures can help prevent these issues. We advises against the use of any chemicals or materials that have been found or are suspected to have an adverse affect on device performance or reliability. To verify compatibility, it is recommended to test all chemicals and materials in their specific intended application and environment. Additionally, when attaching LEDs, avoid adhesives that outgas organic vapor.
4.使用镊子或合适的工具沿侧面搬运组件；请勿直接触摸或触碰硅胶镜片表面，否则可能会损坏内部电路。
Handle the component along the side surface by using forceps or appropriate tools; Do not directly touch or Handle the silicone lens surface, it may damage the internal circuitry.



5.SMT 操作后不要堆叠。
Do not stack after SMT operation.
6.不要将 LED 存放在存在高湿度或腐蚀性化学物质的环境中，因为它们会使 LED 的金属表面退化。
Do not store LEDs in an environment where high humidity or corrosive chemicals are present, as they will degrade the LED's metallic surfaces.
7.LED 引线框和焊盘表面镀有金、锡或其他金属。在长期暴露于露天环境下，暴露的引脚和焊盘可能会被氧化，导致可焊性差。因此，打开但未使用的零件必须存放在密封容器中。建议将未使用的零件存放在原始防潮袋中。
LED leadframe and soldering pad surfaces are plated with gold, tin, or other metals. Under long-term exposure to open air, the exposed pins and pads may become oxidized and cause poor solderability. Therefore, opened but unused parts must be stored in sealed containers. Suggest to store unused parts in the original moisture barrier bag, if possible.
8.已安装在 PCB 上的元件的湿度控制：如果 PCB 不进行额外的回流焊接或高温处理，则安装的湿度敏感 SMD 元件不需要特殊处理。如果 PCB 将进行额外的回流焊接或其他高温工艺，包括返工，那么 SMD 组件在最终高温工艺之前的累积暴露时间必须控制在规定的暴露寿命期限内。
Moisture control for components already mounted on PCB: If the PCB will not undergo additional reflow soldering or high-temperature processes, then no special treatment is required for the mounted moisture-sensitive SMD components. If the PCB will undergo additional reflow soldering or other high-temperature processes, including rework, then the SMD component's cumulative exposure time until the final high-temperature process must be controlled to within the specified floor life time limit.

热量处理 Heat treatment

在过大电流驱动时 LED 的 Tj（节点温度）会超过期限制值，这导致 LED 的寿命严重缩短，热量 处理措施要有效的减小应用产品的热阻。比较通用的做法：把 LED 封装器件安装在金属基质的 PCB 板上。1W LED 产品要求金属基板的表 面散热面积至少 30cm²（3W 产品建议 80cm²以上），且其导热系数要高于 2.0W/mK。LED 和金 属基板结合靠导热性较好的导热胶，要求导热系数高于 1.0W/mK，厚度小于 100um。
When driven by excessive current, the Tj (node temperature) of LED will exceed the period limit value, which leads to a serious shortening of LED life. Thermal treatment measures should effectively reduce the thermal resistance of application products.Common practice: install LED packages on metal matrix PCB boards.1W LED products require the surface heat dissipation area of the metal substrate to be at least 30cm squared (over 80cm squared is recommended for 3W products), and its thermal conductivity is higher than 2.0w /mK.LED and gold substrate are combined by thermal conductive adhesive with good thermal conductivity. The thermal conductivity coefficient is required to be higher than 1.0w /mK and the thickness is less than 100um.

清洁 Clean

需要清洁的话，用干净的软碎布沾点酒精轻力擦除异物，不可以采用诸如丙酮之类的清洁剂以免可能造成腐蚀破坏。
If you need to clean, use a clean, soft cloth dipped in alcohol to gently remove foreign matter. Do not use a cleaner such as acetone to avoid possible corrosion damage.

电性注意事项 Electrical precautions

1.LED 不允许反向驱动。
Led Reverse drive is not allowed
2.限流措施是必要的，否则轻微的电压变化会导致较大的电流变化，可能造成 LED 失效。
Current limiting measures are necessary, otherwise slight voltage changes will lead to large current changes, which may lead to LED failure.
3.在发光量满足要求的前提下，推荐采用低于额定电流的驱动电流，这样有利于提高产品的可靠性。
Under the premise that the luminous quantity meets the requirements, it is recommended to use the drive current lower than the rated current, which is conducive to improving the reliability of the product.

防静电措施 anti-static precautions

LED 是静电敏感器件，在保存、使用过程中要采取防静电措施。 静电和电涌会导致产品特性发生改变，例如正向电压降低等，情况严重甚至会损毁产品。所以对于整个工序（生产，测试，包装等）与 LED 直接接触的员工都要做好防止和消除静 电的措施。所有相关的设备和机器都应该正确接地。接地交流

电阻小于 1.0 欧姆，工作台上需垫表面电阻 10^6-10^9 欧姆的桌垫。 在容易产生静电的环境和设备上，还必须安装离子风扇。作业过程中，操作员需使用防静电手环，防静电垫子，防静电工作服，工作鞋，手套，防静电容等。

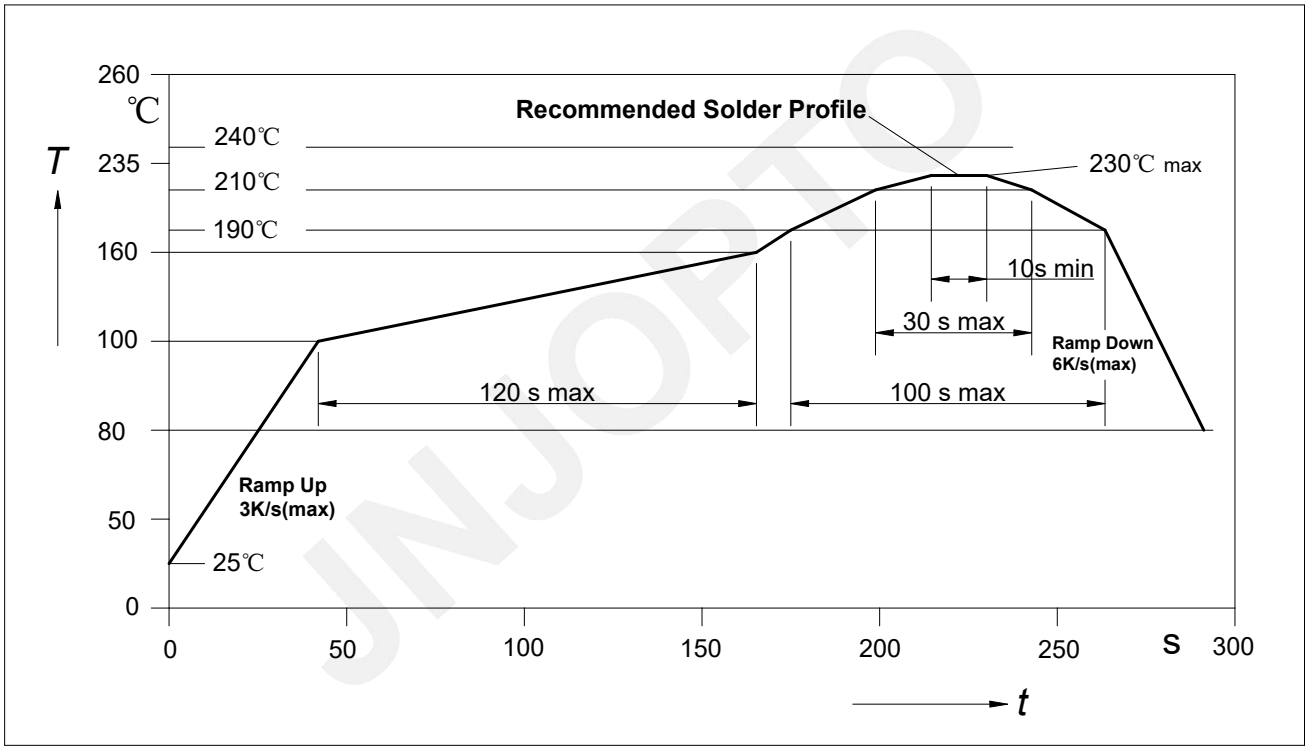
LED is electrostatic sensitive devices, in the process of preservation, use to take anti-static measures.Static electricity and surge can lead to changes in product characteristics, such as forward voltage reduction, which can be serious and even damage the product.So for the whole process (production, testing, packaging, etc.) and LED direct contact staff should do a good job to prevent and eliminate electrostatic measures.All related equipment and machinery should be properly grounded.The grounding ac resistance is less than 1.0 ohm, the table mat with surface resistance of 10^6-10^9 ohm is needed on the work table.Ion fans must also be installed in electrostatic environments and equipment.During the operation, the operator should use anti-static bracelet, anti-static mat, anti-static overalls, working shoes, gloves, anti-static capacity.

电烙铁焊接 An electric soldering iron

建议使用防静电电烙铁，尖端处温度不超过 350℃，每次焊锡时少于 3 秒。电烙铁的功率宜低于 60W。每焊完一次之后间隔 2 秒以上，分别焊好两个电极引脚。焊接时不可对透镜用力施压。LED 如有问题一般都是从焊锡时开始出现。故必须按要求小心作业。

It is recommended to use anti-static electric soldering iron, the temperature at the tip does not exceed 350℃, less than 3 seconds for each soldering.The power of the soldering iron should be less than 60W.Weld two electrode pins more than 2 seconds after each welding.Do not force the lens during welding.Problems with leds usually begin when they are soldered.So you must work carefully as required.

SMT 回流焊说明 Reflow instructions：



注意事项 matters need attention：

1.回流焊只允许做一次。

Reflow soldering is only allowed once.

2.回流焊过程中不要对灯体施加压力。

Do not apply pressure to the lamp body during reflow

3.回流焊完成之后不要压挤散热板、不可压到胶体部分。

After reflow welding is completed, do not press the heat dissipation plate, do not press to the colloidal part.

4.若有比较低熔点的锡膏，TP 可以适当降低。

If there is a lower melting point of solder paste, TP can be appropriately reduced.

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