



洲光源  
CHAULIGHT

# 产品规格书 SPECIFICATION

客户名称: \_\_\_\_\_

Customer Name

产品类型: 红外接收头

Product Name

产品型号: ZSIRM-Z3QN88P(LXM)

Part No.

<input type="checkbox"/> 技术参考 Technical Reference		<input type="checkbox"/> 样品 Sample		<input type="checkbox"/> 量产供货 Mass Product	
客户审核 (加盖公章) Client approval (Stamp)			洲光源审核 Chaulight approval		
核准 Approval	确认 Checked	核准 Approval	确认 Checked	制作 Edited	
		谢小金	杨培续	赖华棋	
<input type="checkbox"/> 接收 Qualified		<input type="checkbox"/> 不接收 Disqualified		日期 Date: 2020.08.14	

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广东洲光源红外半导体有限公司  
Guangdong Chaulight Infrared Semiconductor Co., Ltd.

ZSIRM-Z3QN88P(LXM) 是一种红外接收器，用于远程控制和其他需要改进环境光抑制的应用。单独的 PIN 二极管和前置放大器 IC 电路组装在单个引线框架上。环氧树脂包装包含一个特殊的红外过滤器。该模块即使在受干扰的环境光应用中也具有良好的性能，并提供保护，防止不受控制的输出脉冲。

The ZSIRM-Z3QN88P(LXM) is infrared receivers for remote control and other applications requiring improved ambient light rejection.

The separate PIN diode and preamplifier IC are assembled on a single leadframe. The epoxy package contains a special IR filter.

This module has excellent performance even in disturbed ambient light applications and provides protection against uncontrolled output pulses.

### 特性 Feature

--光电探测器和前置放大器放在一个包中

Photo detector and preamplifier in one package

--PCM 频率的内部滤波器

Internal filter for the PCM frequency

对环境光的高免疫力

High immunity against ambient light

改进了对电场干扰的屏蔽能力

Improved shielding against electric field disturbance

3.0 伏供电电压；低功耗

3.0-Volt supply voltage; low power consumption

TTL 和 CMOS 兼容性

TTL and CMOS compatibility

### 应用 Application

--电视,录像机,音响设备,空调,汽车立体声收音机,玩具,家庭电脑,所有需遥控设备

TV, VCR, audio equipment, air conditioning, car stereo radio, toys, home computer, all require remote control equipment

### 最大额定值 Absolute Maximum Ratings

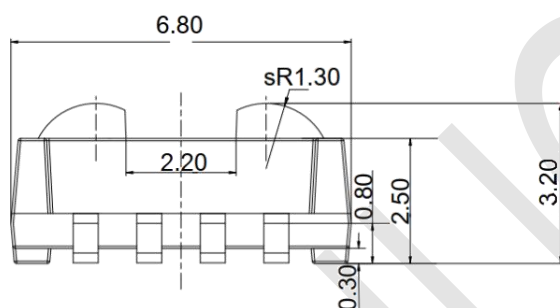
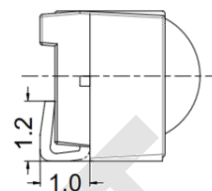
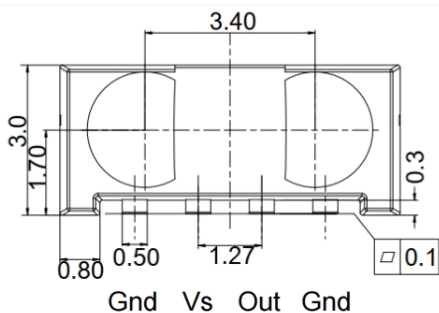
测试项目 Parameter (Ta=25°C)	符合 Symbol	范围 Ratings	单位 Unit
电源电压 Supply voltage	Vcc	-0.2-0.6	V
工作温度 Operating Temperature	Topr	-20~+85	°C
储存温度 Storage Temperature	Tstg	-40~+125	°C
焊接温度 Lead Soldering Temperature*3	Tsol	260 (<5s)	°C

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

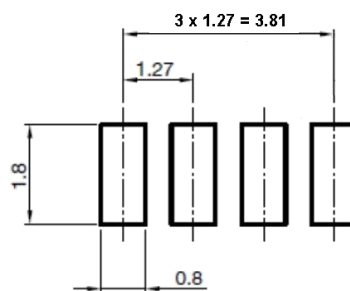
\*2、脉宽少于等于 100us，占空比 1% Pulse width  $\leq$  100 $\mu$ s, Duty cycle= 1%

\*3、离胶体 2.5mm 以上焊接 5s 内 2.5mm form body for 5 seconds

## 产品尺寸 Package Dimension



建议焊盘布局(仅供参考)  
Proposed pad layout



备注 Notes:

--所有尺寸为毫米标识

All dimensions are in millimeters

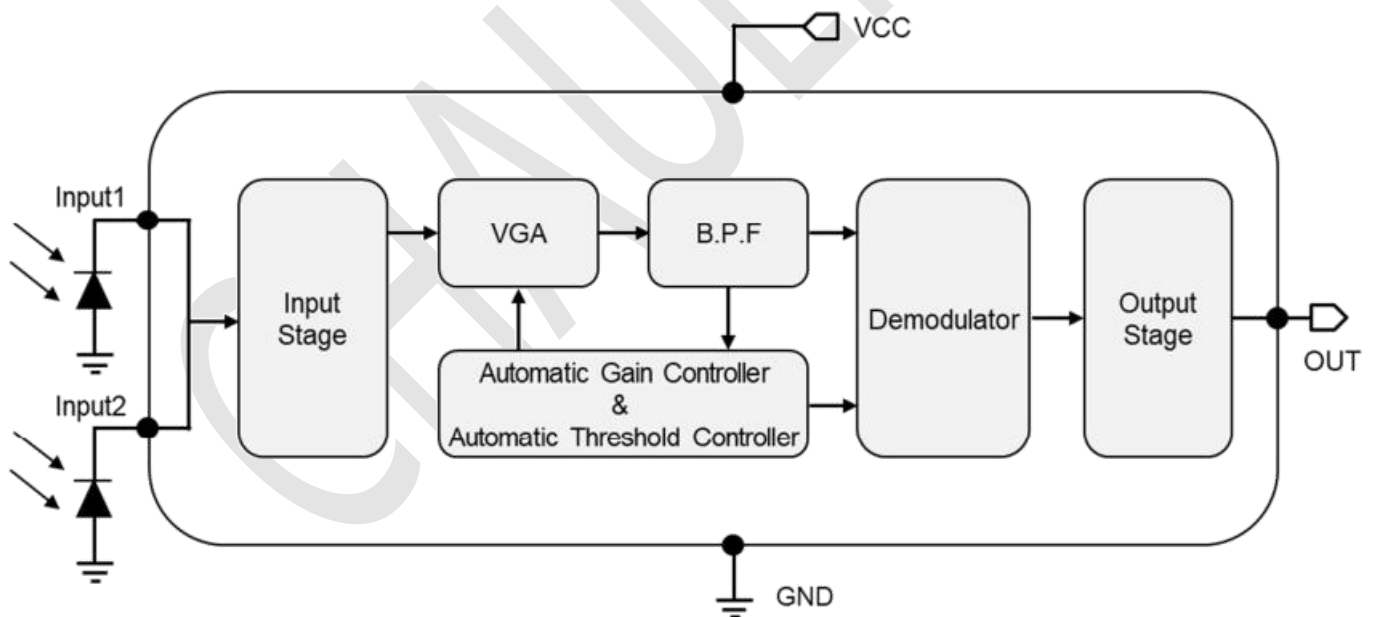
--未标识尺寸正负公差为 0.3mm

Tolerances unless dimensions  $\pm 0.3\text{mm}$

## 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
工作电压 working voltage	Vcc	--	2.7	--	5.5	V
静态电流 Supply Current	Icc	Vcc=5.0v	--	0.27	0.60	mA
载波频率 B.P.F. Center Frequency	fo	--	--	37.9	--	kHz
峰值波长 Peak Wavelength	$\lambda_p$	--	--	940	--	nm
低电平输出 Low Level Output Voltage	Vol	--	-0.2	--	0.40	mV
高电平输出 High Level Output Voltage	Voh	--	-0.4	--	0.2	V
脉冲宽度 pulse width	Tpw	--	400	--	800	$\mu$ S
接收距离 Arrival Distance	L1	( $\theta = 0^\circ$ )	40	--	--	m
	L2	( $\theta = 45^\circ$ )	25	--	--	m
半角 Half angle	$2\theta_{1/2}$	--	--	$\pm 45$	--	Deg

## 方框图 Block Diagram



## 试验方法 Test Method

### A. Standard Transmitter

ON/OFF pulse width satisfied from 25 cm to detection limit

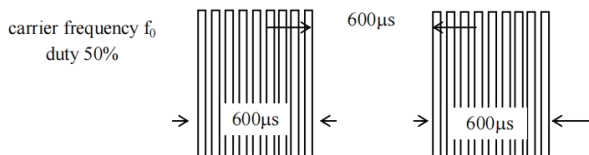


Fig 1. Burst Wave

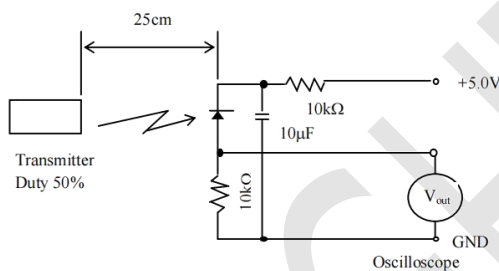
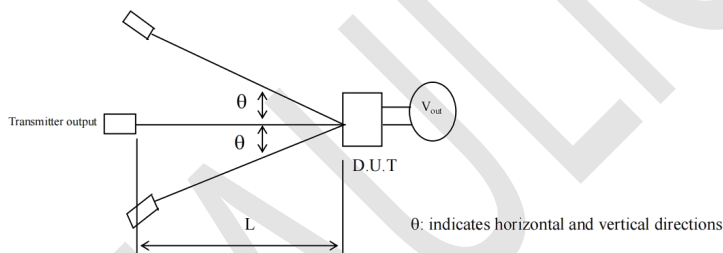
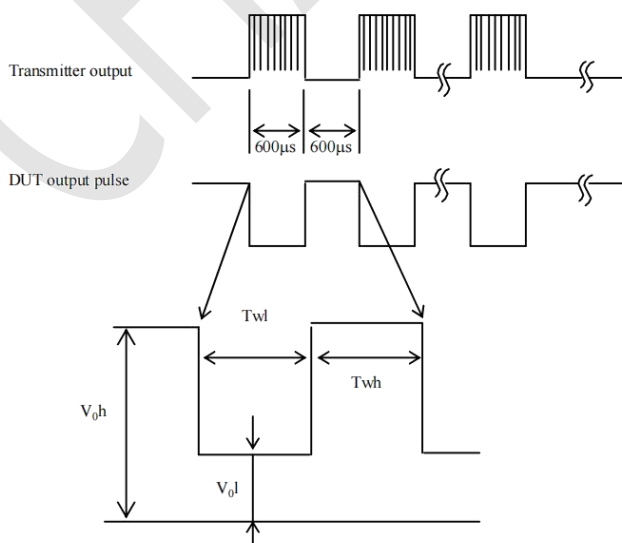


Fig 2. Standard Transmitter Measurement circuit

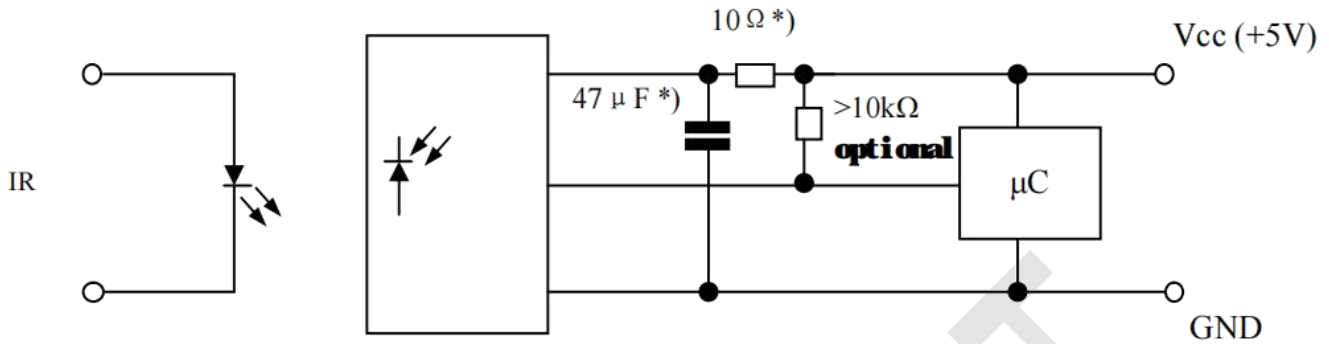
### B. Detection Length Test



### C. Pulse Width Test

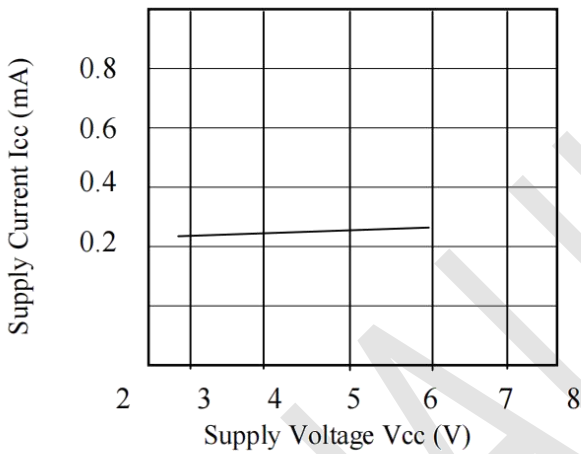


## 应用电路 Application Circuit

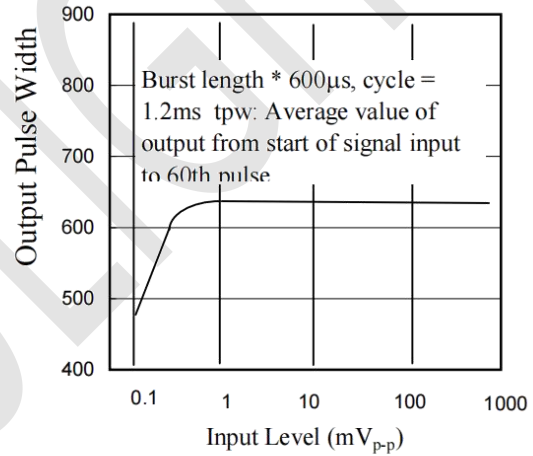


\*) recommended to suppress power supply disturbances

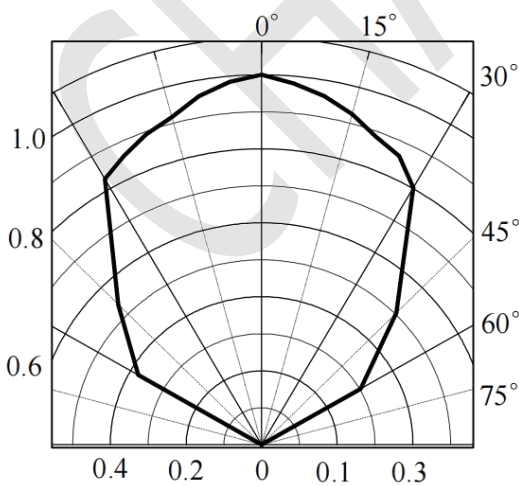
## 典型光电特性曲线图 Typical Electro-Optical Characteristics Curves



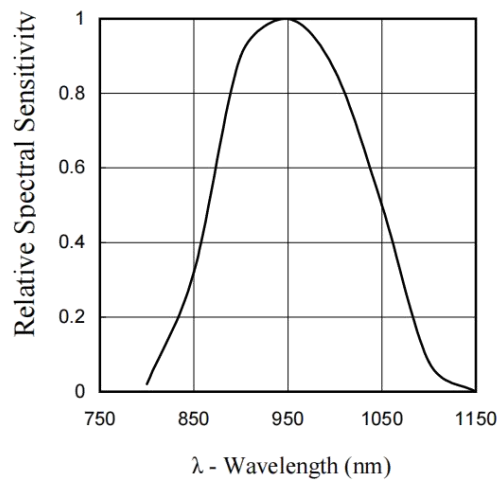
SUPPLY VOLTAGE vs. SUPPLY CURRENT



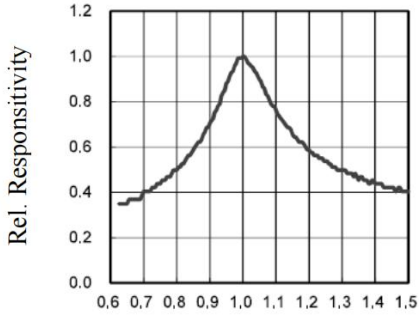
INPUT LEVEL vs. OUTPUT PULSE WIDTH



RELATIVE TRANSMISSION



RELATIVE SPECTRAL SENSITIVITY vs. WAVELENGTH



f/fo - Relative Frequency  
FREQUENCY DEPENDENCE OF RESPONSIVITY

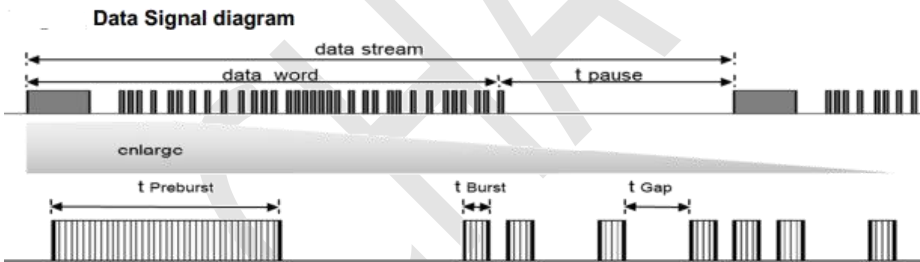
## 数据信号限制和合适的数据格式 Data signal limitation & Suitable Data format

Item	Symbol	limitation criteria
Minimum burst length	$t_{Burst}$	300us
Minimum gap time after each burst	$t_{Gap}$	325us
Minimum pause time in the data stream	$t_{Pause}$	$t_{actual\_Gap} \geq 0.5 \times t_{actual\_Burst}$
Maximum number of continuous data	-	1700 Bit/sec
Data Format	AEHA code	yes
	Mitsubishi code (40KHz application)	yes
	NEC & Toshiba code	yes
	RC5 / RC6 code	yes
	RCA / TCL code	yes
	SONY code (12bit / 15bit / 20bit)	yes
	Powermeter code(Standard code)	yes
	Powermeter code(0X00 byte code)	More than 200bytes
Short Burst code (RCMM, XMP, etc.)	<u>Not Recommended</u>	
Continuous Data		yes

$$\text{Required pause time : } t_{actual\_Gap} \geq 0.5 \times t_{actual\_Burst}$$

$$(t_{actual\_Burst} = t_{preburst} + \sum_{n=1}^n t_{Burst} ; t_{actual\_Gap} = t_{pause} + \sum_{n=1}^n t_{Gap})$$

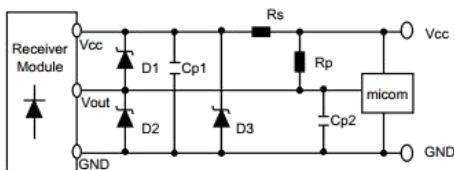
Protocol compatibility is based on the assumption that the carrier frequency of the transmitter matches the center frequency of the receiver's IC chip.



### External Application Circuit (Power Noise reduction & ESD Protection)

A further influence to the IR receiver modules may come from a supply voltage which is not stable. This application circuit will filter the disturbed supply voltage.

#### Examples of application circuits



Component	Recommend
1) Rs	Typ. 100ohm (47 Ω~470Ω)
2) Cp1	Typ. 100uF (47uF~470uF)
3) Rp	Optional (10kΩ or more)
4) Cp2	Typ. 1nF (0.1nF ~ 2nF)
5) D1~D3	Zener diode or TVS (ESD Protection device)





### 注意事项 Note

#### --过流保护 Over-current-proof

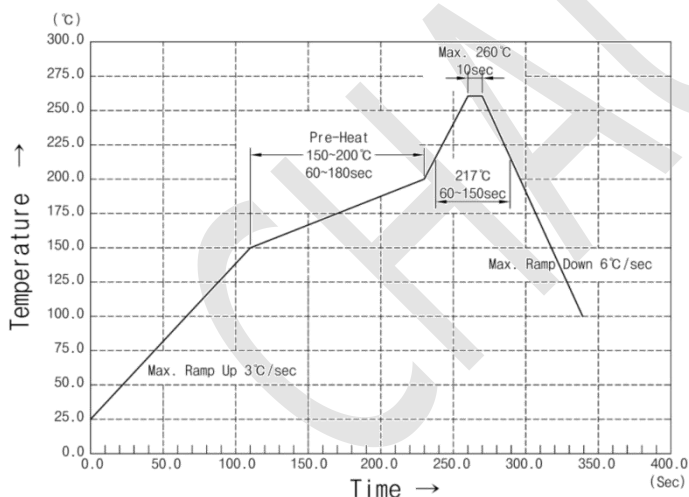
1、客户必须应用电阻进行保护，否则会造成轻微电压偏移大电流变化（烧毁将发生）。Customer must apply resistors for protection, otherwise slight voltage shift will cause big current change (Burn out will happen).

#### --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°C~30°C 和 90%RH 或以下。Before opening the package, the LED should be kept at 10°C~30°C 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°C~30°C 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°C~30°C 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)

#### --焊接条件 Soldering Condition

##### 1、铅焊料温度剖面 Lead solder temperature profile



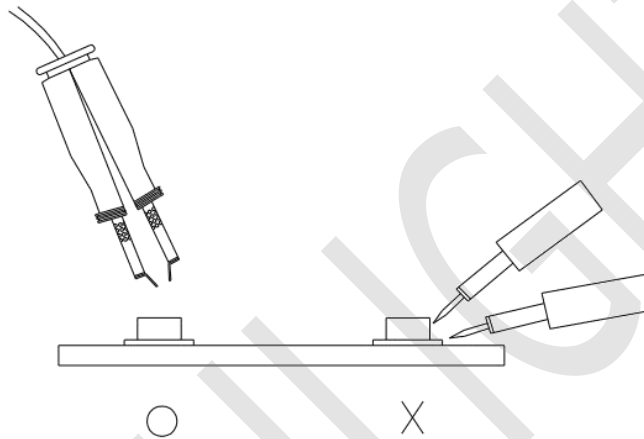
- 2、回流焊不应做两次以上。Reflow soldering should not be done more than two times.
- 3、焊接时，不要在加热过程中对 LED 施加压力。When soldering, do not put stress on the LEDs during heating.
- 4、焊接后，不要使电路板翘曲。After soldering, do not warp the circuit board.

### --烙铁条件 Soldering Iron

每个端子都要去烙铁尖端温度低于 350°C 为 3 秒内一次少于烙铁功率 25W。离开两秒钟然后更多的间隔，并做焊接每个终端。手工焊料通常在开始的时候容易损坏产品。Each terminal is to go to the tip of soldering iron temperature less than 350°C for 3 seconds within once in less than the soldering iron capacity 25W. Leave two seconds and more intervals, and do soldering of each terminal. Be careful because the damage of the product is often started at the time of the hand solder.

### --手工补数 Repairing

修理不应在 LED 焊接后进行。当修理是不可避免的是，应该使用双头烙铁（如下图所示）。应该是事先确认 LED 的特性是否会或不会损坏通过修理。Repair should not be done after the LEDs have been soldered. When repairing is unavoidable, a double-head soldering iron should be used (as below figure). It should be confirmed beforehand whether the characteristics of the LEDs will or will not be damaged by repairing.



### --其他 Other

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## 更改记录表 Engineering Change Notice-Record

版本 Edition	更改日期 Date	主要更改内容 Main Content	拟制 Prepared	确认 Checked
A/0	2020-08-14	新版本发布 New Edition	谢育国	郝三强