客　　户：_____

型　　号：　TJ-3528QESRC-T30

制　　表：_____

业务联系人:_____

产 品 承 认 书

客户名称		供应商产品名称	3528 四脚红光 30 度
客户物料编号		供应商产品料号	0535060058
产品规格		版本号	A0

供应商确认			
拟定	审核	批准	日期
胡德美	文思	王小辉	2018-1-8

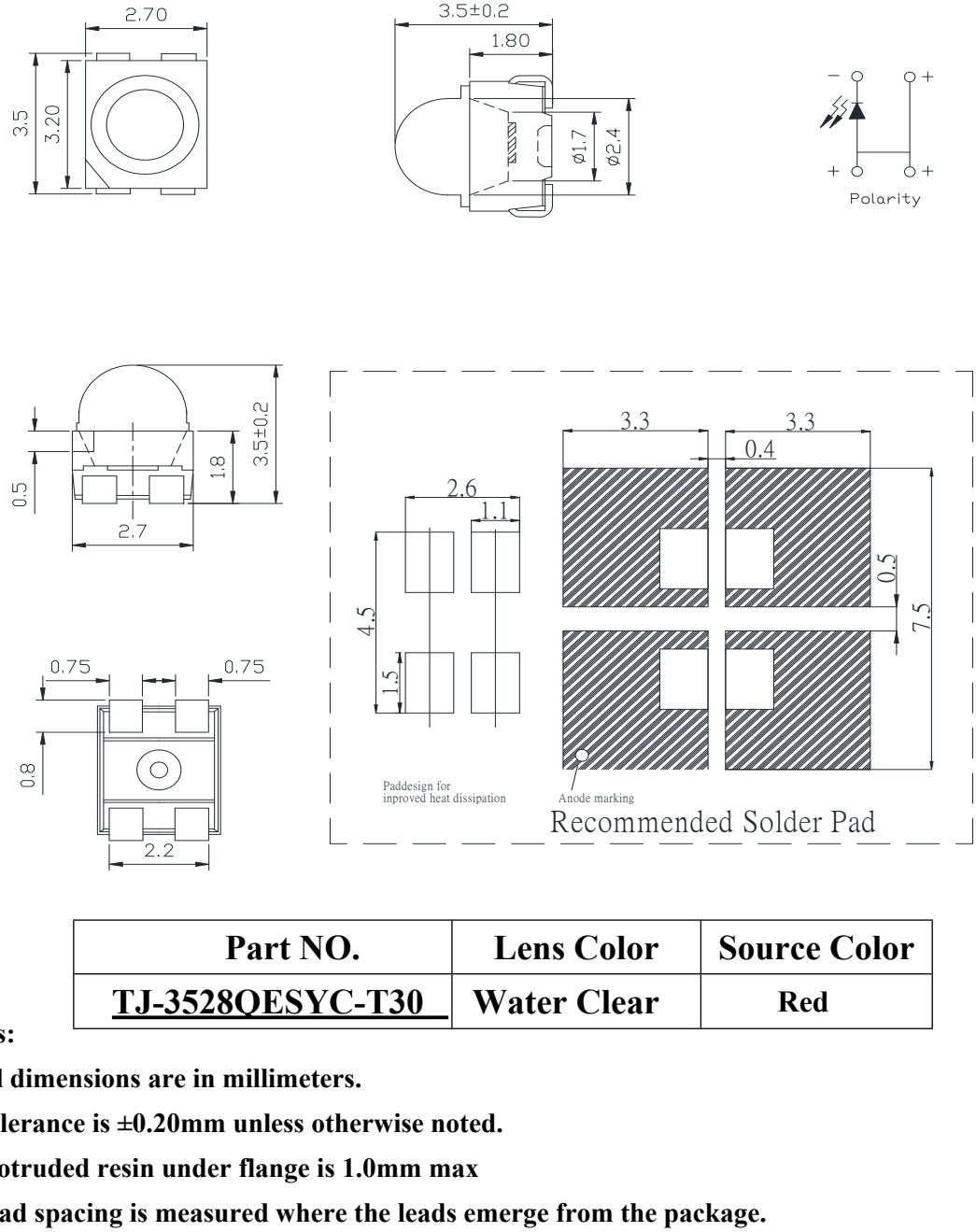
客户确认			
采购	工程	品管	日期

深圳市光明新区公明镇楼村世峰科技园 F 栋 5 楼
Tel.: 86-755-29694811 23403866
Fax: 86-755-29536086
Http: //www.tengjie-led.com, http://www.led818.com
E-mail: led@tengjie-led.com

■Applications

1. Interior and exterior automotive lighting
2. Substitution of micro incandescent lamp
3. Marker lights
4. Backlighting
5. Traffic lights

■ Package Dimensions



Part NO.	Lens Color	Source Color
TJ-3528QESYC-T30	Water Clear	Red

Notes:

1. All dimensions are in millimeters.

2. Tolerance is ±0.20mm unless otherwise noted.

3. Protruded resin under flange is 1.0mm max

4. Lead spacing is measured where the leads emerge from the package.

5. Caution in ESD:

Static Electricity and surge damages the LED. lt is recommend to use a wrist band or anti-electrostatic glove when handling the LED.All devices, equipment and machinery must be properly grounded.

■Absolute Maximum Ratings (Ta = 25℃)

Items	Symbol	Absolute maximum Rating	Unit
Power Dissipation	P_D	180	mW
Forward Current(DC)**	I_F	70	mA
Peak Forward Current*	I_{FP}	200	mA
Operation Temperature	T_{opr}	-40~ +95	℃
Storage Temperature	T_{stg}	-40 ~ +100	℃

* Pulse width≦0.1msec duty≦1/10

■ Typical Electrical & Optical Characteristics (Ta = 25℃)

Items	Symbol	Condition	Min.	Typ.	Max.	Unit
Forward Voltage	V_F	I_F = 50mA	---	2.2	---	V
Reverse Current	I_R	V_R = 5V	---	---	10	μA
Dominant Wavelength	λ_D	I_F = 50mA	---	622	---	nm
Luminous Intensity	I_V	I_F = 50mA		11000		mcd
50% Power Angle	$2\theta_{1/2}$	I_F = 50mA	---	30	---	deg

■ **Ranks Combination (IF = 50mA)**

Rank(IF=50mA)	0P	0Q	0R	0S	
Luminous Intensity(mcd)	7500-9000	9000-11250	11250-14050	14050-17625	
Rank(IF=50mA)	SR	SR	SR		
Dominant Wavelength(nm)	620-625	625-630	630-635		
Rank(IF=50mA)	A	B	C		
Forward Voltage(v)	1.8-2.0	2.0-2.2	2.2-2.4		

■ Notes:

1. Tolerance of measurement of luminous intensity : ±15%
2. Tolerance of measurement of dominant wavelength : ±1.0nm
3. Tolerance of measurement of forward voltage : ±0.1V

■ Typical Electrical/ Optical Characteristics Curves

(Ta=25°C Unless Otherwise Noted)

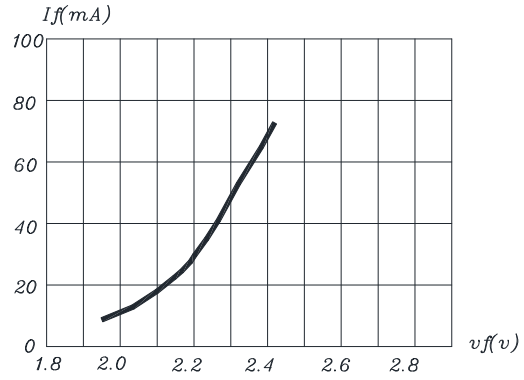


Fig.1 Forward current vs. Forward Voltage

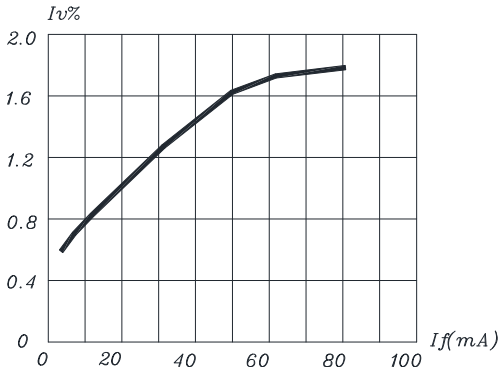


Fig.2 Releative luminous Intensity vs. Forward Current

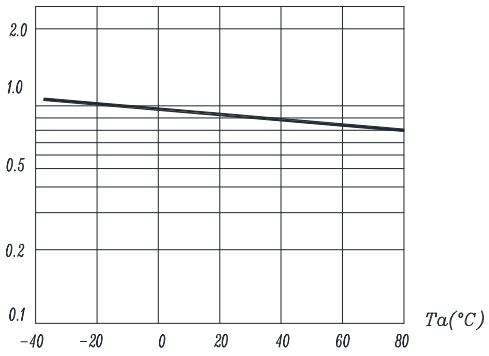


Fig.3 Releative luminous Intensity vs. Ambient Temperature

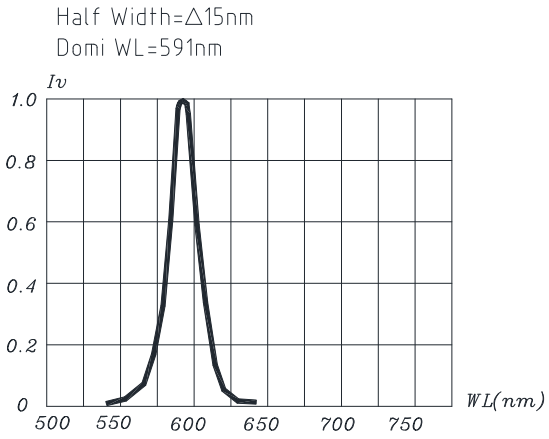


Fig.4 Releative luminous Intensity vs. Wavelength

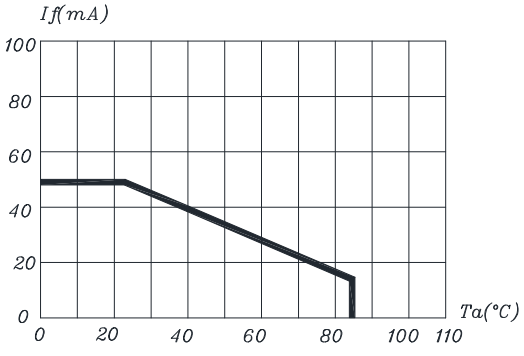


Fig.5 Maximum Forward Current vs. Ambient Temperature

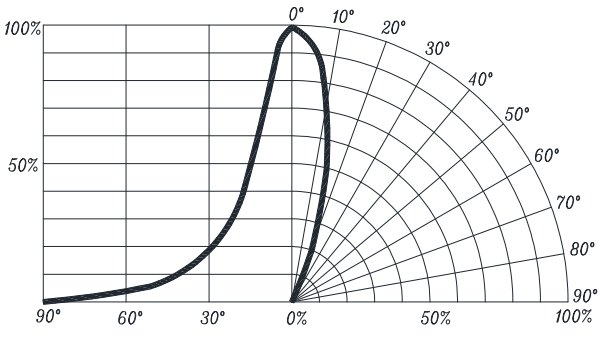
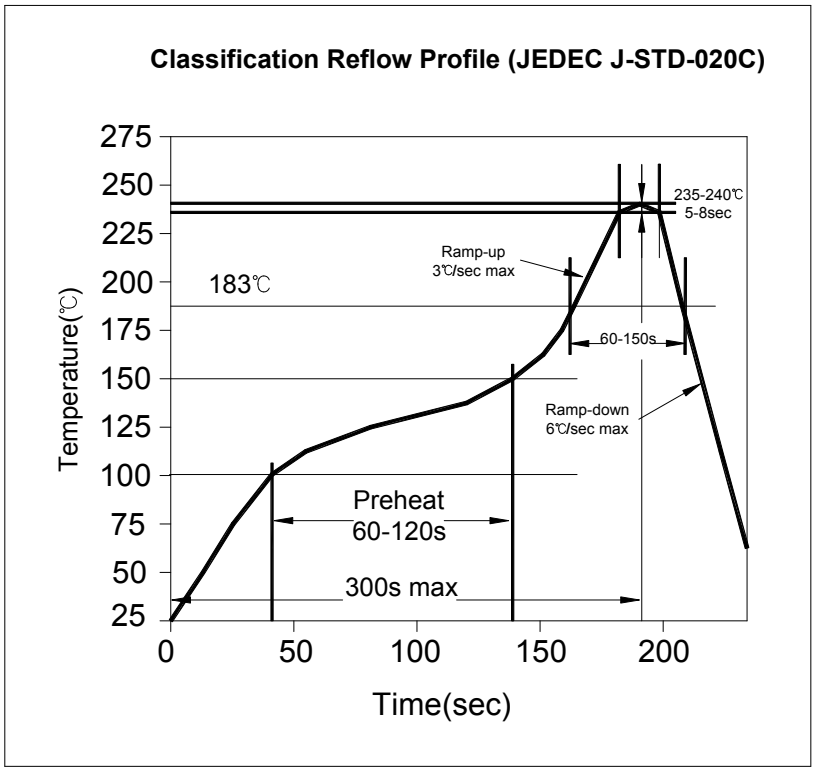


Fig.6 Releative luminous Intensity vs. Radiation Angle

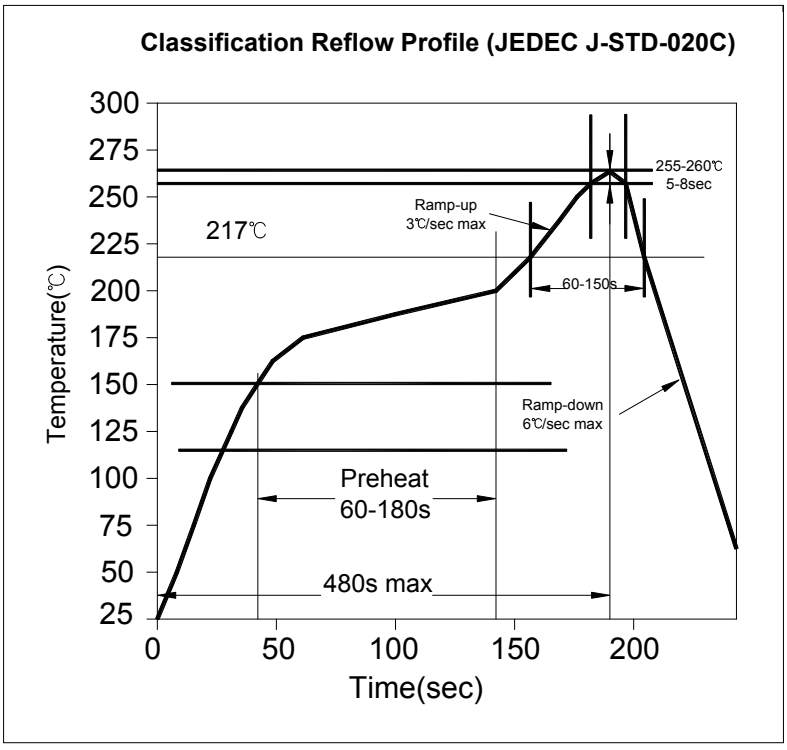
Note: The data shown above are typical curves. Every LED component may have some variations of characteristics.

■ Soldering heat reliability:

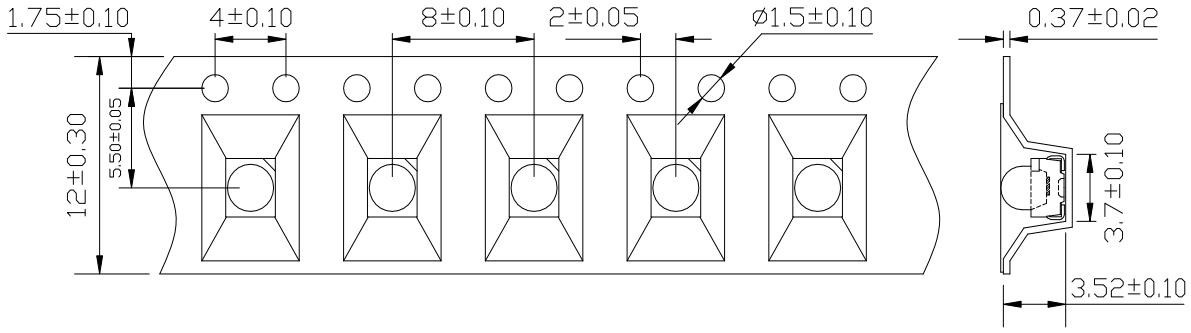
Lead Solder

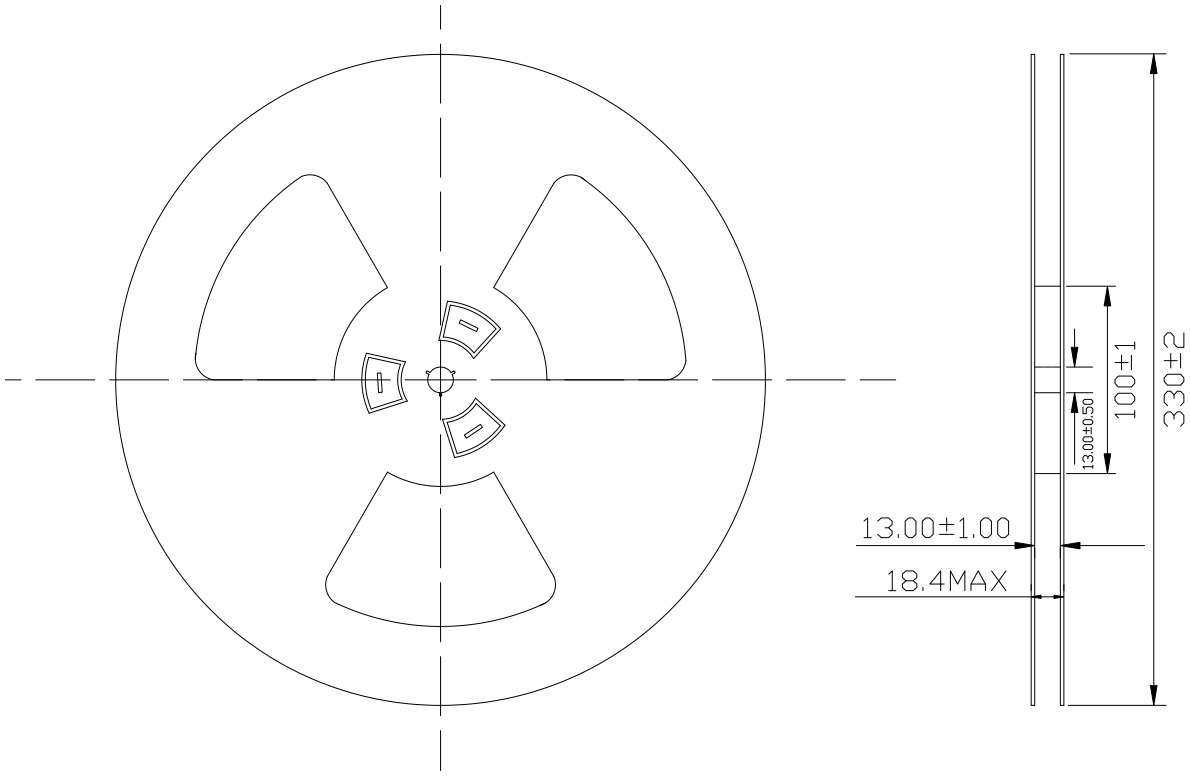


Lead-Free Solder



■ Packing Specifications:





Dimensions ate specified as follows:mm

Notes:

1) The packing only appropriate for TJ.
2) Normal packing quantity: 2,000pcs/reel

Precaution of Application 应用预防措施

1: Circuit layout

Due to the forward voltage of LED will vary with temperature and its driving current, the current- limited protective circuit should be considered in the LED circuit design.

When LEDs are arrayed as parallel circuit, different inherent resistance of LED will cause unbalance current. The unbalanced driving current which exists in every parallel circuit may make LED to be driven at different power. Therefore, the LED driven at higher power may be damaged by over driving current, and the LED driven at lower power may be dimmer than the others.

To solve this situation, a suitable resistor is recommended to put in series with each LED circuit. The resistor will limit and balance the driving current which flows through every parallel circuits.

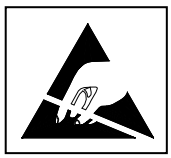
1：电路设计

由于 LED 的正向电压随温度和驱动电流的变化而变化，在 LED 电路设计中应考虑限制电流保护电路的设计。

LED 作为并联电路时，LED 固有电阻的不同会引起不平衡电流。每一并联电路中存在的不平衡驱动电流可能使驱动电源处于不同的功率状态。因此，高功率驱动的 LED 可能受到过驱动电流的破坏，低功率驱动的 LED 可能比其他 LED 更亮。

针对这种情况，推荐一种合适的电阻与每个 LED 电路串联。电阻将限制和平衡流经每个并联电路的驱动电流。

2: Electric Static Discharge (ESD) Protection



All kinds of LED materials, such as GaP, AlGaAs, AllnGaP, GaN, or InGaN chips, are STATIC SENSITIVE device. ESD protection or surge voltages shall be considered and taken care in the initial design stage, and whole production process.

The following protection is recommended:

(1) A wrist band or an anti-electrostatic glove shall be used when handling the LEDs
(2) All devices, equipment and machinery must be properly grounded

If LED is damaged by ESD or surge voltage, damaged LED may show some unusual characteristics. It may appear leakage current, and LED does not emit at low current.

And when using microscope to inspect damaged LED chip at low driving current, it may have some black dots within the emitting area.

2：静电放电（ESD）保护

各种 LED 材料，如 GaP, AlGaAs, AlInGaP, GaN, InGaN 芯片，是静电敏感器件。静电放电保护或浪涌电压应在初始设计阶段和整个生产过程中加以考虑和采取措施。

建议采取以下防护措施：
（1）在处理 LED 时应使用手环或防静电手套
（2）所有装置、设备和机器必须接地。

如果 LED 被静电放电或浪涌电压损坏，损坏的 LED 可能会显示一些不寻常的特性。它可能出现漏电，并且 LED 在低电流时不会发光的。

低驱动电流时，当用显微镜检查受损 LED 芯片，可能会在发光区域内有一些黑点。

3: Pick and Place

The following items should be paid attention in assembly process:

(1) It should be avoided to load stress on the resin during pick and place process, especially at high temperature.
(2) Avoid rubbing or scraping the resin by any object, and avoid leaving fingerprints on the lens.
(3) Electric-static may cause damage to the component. Please confirm that the equipment is grounding well.

3：拾起和放置

装配过程中应注意以下事项：

（1）在拾起和放置过程中，特别是在高温下，应避免在胶体上施加重力。
（2）避免任何物体摩擦或刮伤胶体，避免在胶体上留下指纹。
（3）静电可能会对 LED 造成损坏。请确认该设备接地良好。

4: Storage

It’s recommended to store the products in the following conditions:

(1) Shelf life in sealed bag: 3 months at T_A<40℃ and Hum.<30%RH.(Base on aluminum laminated moisture barrier bag.)
(2) After the package bag is opened and kept in the following environment, the LED products should be used completely as soon as possible:

Humidity (Hum.) : 60%RH Max.

Temperature (T_A) : 5℃ ~ 30℃ (41°F ~ 86°F)

Assembly duration: within 48 hours, after bag is opened.

If the some of LED are not used, they need to be kept at Hum.≦10%RH in zip-locked sealed bags. And if the duration exceeds 48 hours, re-baking process is required to keep LED from moisture.

Please avoid rapid transitions in ambient temperature, especially in high humidity environment where condensation can occur.

4：**储存**

建议在下列条件下储存产品：
(1) 在密封袋内保质期:在温度< 40℃及湿度< 30% RH 的条件下，3 个月。(铝制层压防潮袋。)
(2)包装袋打开后，在以下环境下，应尽快使用 LED 产品：湿度：＞60%RH 温度：5℃ ~ 30℃(41℉ ~ 86℉)
装配时间:打开包后，在 48 小时内使用完。

如果有 LED 没有使用，则需要保存在有密封链的密封袋中，湿度≦10%RH。
如果使用时间超过 48 小时，则需要重新烘烤。
请避免快速移动，特别是在高湿度环境下，会发生凝结。

5: Cleaning

An alcohol-based solvent such as isopropyl alcohol (IPA) is recommended to clean the LED, after soldering process, if cleaning is necessary. Before cleaning, a pre-test should be done to confirm whether any damage to the LEDs will occur.

It is not recommended to use unspecified chemical liquids as cleaning material for cleaning the LED. It's also not recommended to use ultrasonic power to clean the LED device. The chemical and ultrasonic power could harm the LED devices.

5：**清洁**

在焊接过程中，如果需要清洁，建议使用醇基溶剂，如异丙醇(IPA)清洗 LED。在清洗之前，应该做一个预先测试，以确定是否会对 LED 造成损坏。

不建议使用不明的化学液体作为清洗材料。也不建议使用超声波电源清洗 LED。这种化学和超声波的力量会对 LED 造成伤害。

6: Manual Soldering and Rework

The manual soldering process is not recommended for quality consideration. When it is absolutely necessary, the LEDs may be mounted in this fashion but the user will assume responsibility for any problems.

The the following conditions are recommended :

(1) Soldering material : SN60 (60% tin and 40% lead) solder or solder with silver content is recommended.

(2) Temperature of the iron : lower than 300°C

(3) Soldering time : maximum 3 seconds

(4) Operation cautions:

- Please avoid overheating of LED component in any process. Overheating may damange the LED package.

- Please don't place any stress on the lens of LED, especially at high temperature

6：手动焊接和返工

对于质量考虑，不推荐手工焊接。当绝对必要时，LED 可以手工焊接，但焊接方将承担任何问题的责任。建议以下条件:

(1)焊接材料:建议采用 SN60(60%锡，40%铅)焊锡或使用银焊料。
(2)焊铁的温度:低于 300° C
(3)焊接时间:最高 3 秒
(4)操作注意事项:
-请在任何过程中避免 LED 过热。
-过热可能会损坏 LED 的封装。
-请不要把任何重力放在 LED 透镜上，尤其是在高温的时候

7: Application

(1) The strong light from LEDs may injure human eyes. Precautions should be taken to prevent looking directly at the LEDs with unaided eyes.

(2) In order to get maximum light output during the duration of LED's long life, designer should consider how to make excellent thermal dissipation when making the whole system design. It's recommended to avoid intense heat generation and to operate within the maximum ratings given in this approval sheets.

(3) Every piece of LED will be sorted and LEDs with the same binning grade will be taped into the same reel or put into the same bag. It is recommended to use the same bin-grade LED to assembly the unit module. This will ensure the LED unit module with good uniformity of brightness, hue, and so on.

7：应用

(1) led 强光可能会伤害人眼。应采取预防措施，以防止眼睛直视发光二极管。

(2) 在 LED 正常寿命内，为了获得最大的光能输出，设计者应考虑如何在整个系统的设计过程中进行良好的散热。建议避免高温产生，并在本规格书内的最大额定值内操作。

(3) 每个 LED 灯珠都将被分类，相同 BIN 号的 LED 灯珠将被放在同一个卷盘里或放在同一个袋子里。建议使用相同 BIN 号的 LED 来装配单个成品。这将确保 LED 单个成品颜色,亮度的一致性。

Terms and Conditions

1. TJ warrants all sold LEDs which conform to the specifications approved by the customers.
2. Any LED supplied by TJ is found not conform to the specifications that both parties agreed upon, customer should claim within 30days of receipt. TJ will repair or replace the LEDs at TJ's option.

3. TJ will not hold any responsibility for the failed LEDs, which are caused by mishandling or misusing the LEDs exceeding the operating conditions that TJ suggested.

4. TJ's LED products are designed and manufactured for general electronic equipment (such as car light appliances, indoor & outdoor light, communication equipment, office equipment, electronic instrumentation and so on). If customer's application requires exceptional quality or reliability, which might concern human safety, it is recommended to consult with TJ in advance.

5. All the information published is considered to be reliable. However, TJ does not assume any liability arising out of the application or use of any product described herein. TJ's liability for defective LED lamps shall only be limited to replacement, in no event shall TJ be liable for consequential damages or loss.

6. TJ and customer shall both confirm the specifications herein, and all quality related matters will base on the specifications both parties agreed upon.

7. Any modification of the design or manufacturing process taken place, which will affect the characteristics, performance or reliability of LED, customer's approval will be required.

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条款与条件

1，腾杰保证所有销售的 LED 符合客户认可的规格。

2，腾杰所提供的任何 LED 不符合双方约定的规格，客户应在收到后 30 天内提出索赔。腾杰将选择修复或更换 LED。

3，腾杰将不承担因处理不当或误使用 LED 而导致 LED 故障而造成的任何责任。

4，腾杰的 LED 产品可用于一般的电子设备设计和制造（如汽车灯、室内外照明、通讯设备、办公设备、电子仪器等）。如果客户的申请需要特殊的质量或可靠性，这可能涉及到他人的安全，建议先咨询腾杰。

5，所公布的信息都被认为是可靠的。然而，腾杰并不承担任何因使用本规格书或使用本规格书所描述的产品而产生的任何责任。腾杰对有质量问题的 LED 的责任仅限更换，在任何情况下都不承担相应的损害赔偿责任。

6，腾杰与客户均应确认本规格书的内容，所有质量相关事宜均应按照双方的约定进行。

7，任何对设计或制造过程的修改，都会影响到产品的特性、性能或稳定性，需要客户的批准。