

SPEC FOR APPROVAL

Customer	
Model	CL-SFD281PT-06
PartNo.	
EditDate	2021-06-01
Edition	A1

Approval	Check	Edit

Customer Signatures		



CIEL LIGHT 2835 PT940 ALS is a high sensitivity optical sensor, in SMD package. It's the ideal substitute for traditional CDS photosensitive resistor.

Features

- Photosensitive peak wavelength $\lambda_p=940\text{nm}$
- High reliability
- Low Power Consumption
- RoHS compliant RoHS

Applications

- Replacement of conventional CDS photosensitive resistors
- Suitable for all kinds of light products.
- Products which need to adjust background light automatically, LCD, mobile phone, camera, computer camera etc.
- Control all kinds of light and shadow controlled toys
- All kinds of infrared light detection and testing equipment

Customization

- Complete varieties, short production cycle, small batch inventory
 - Customize different shapes and angles
 - Customize most suitable specifications to make the product be more competitive
-

Absolute Maximum Ratings(Ta=25°C)

Electrical characteristics	Symbol	Rated Value	Unit
Collector-emitter Voltage	V _{CEO}	30	V
Emitter-Collector Voltage	V _{ECO}	6	V
Power Dissipation	PC	70	mW
Operating Temperature	T _{opr}	-30--+85	°C
Storage Temperature	T _{stg}	-40--+100	°C

Elector-Optical Characteristics (Ta=25°C)

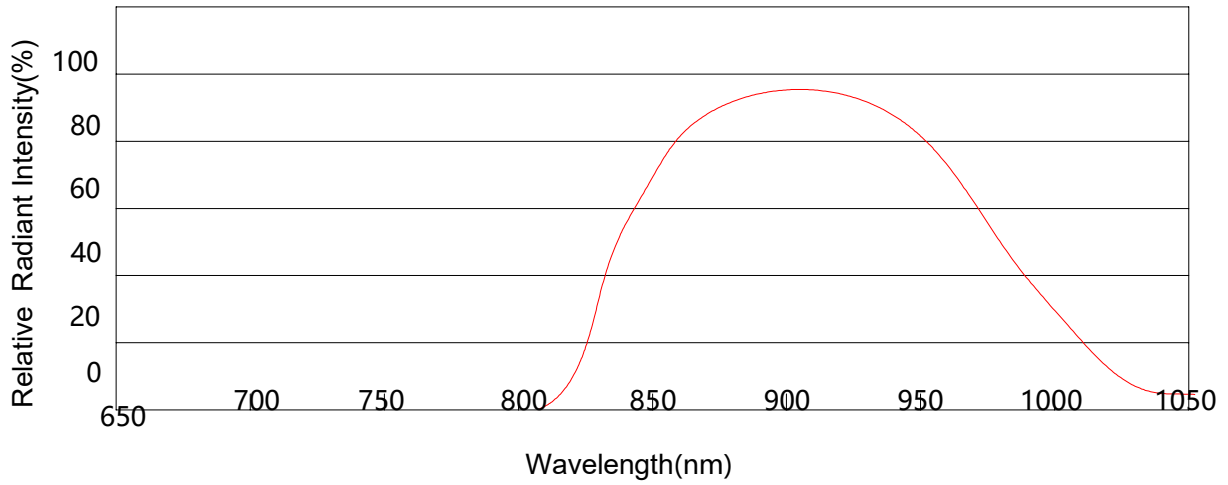
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Photosensitive peak wavelength	λ_p	\	--	940	--	nm
Sensitivity wave width	λ	\	820	--	1100	nm
Collector-emitter Breakdown Voltage	B _{vceo}	I _c =100 μ A E _e =0mW/cm ²	30	--	--	V
Emitter-Collector Breakdown Voltage	B _{veco}	I _E =10 μ A E _e =0mW/cm ²	6	--	--	V
Collector-Emitter saturation voltage	V _{ce (sat)}	I _c =2mA E _e =1mW/cm ²	--	--	0.4	V
Photocurrent	I _{L(1)}	V _{CE} =5V E _e =1mW/cm ²	1.0	1.7	2.5	mA
dark current	I _{ceo}	V _{CE} =5V E _v =0Lux	--	--	0.1	μ A
Rise time	t _r	V _{CE} =5V I _C =1mA R _L =1000 Ω	15			us
Fall time	t _f		15			
Emission Angle	2 θ _{1/2}	I _F =100mA	--	30	--	Deg.

Reliability Test

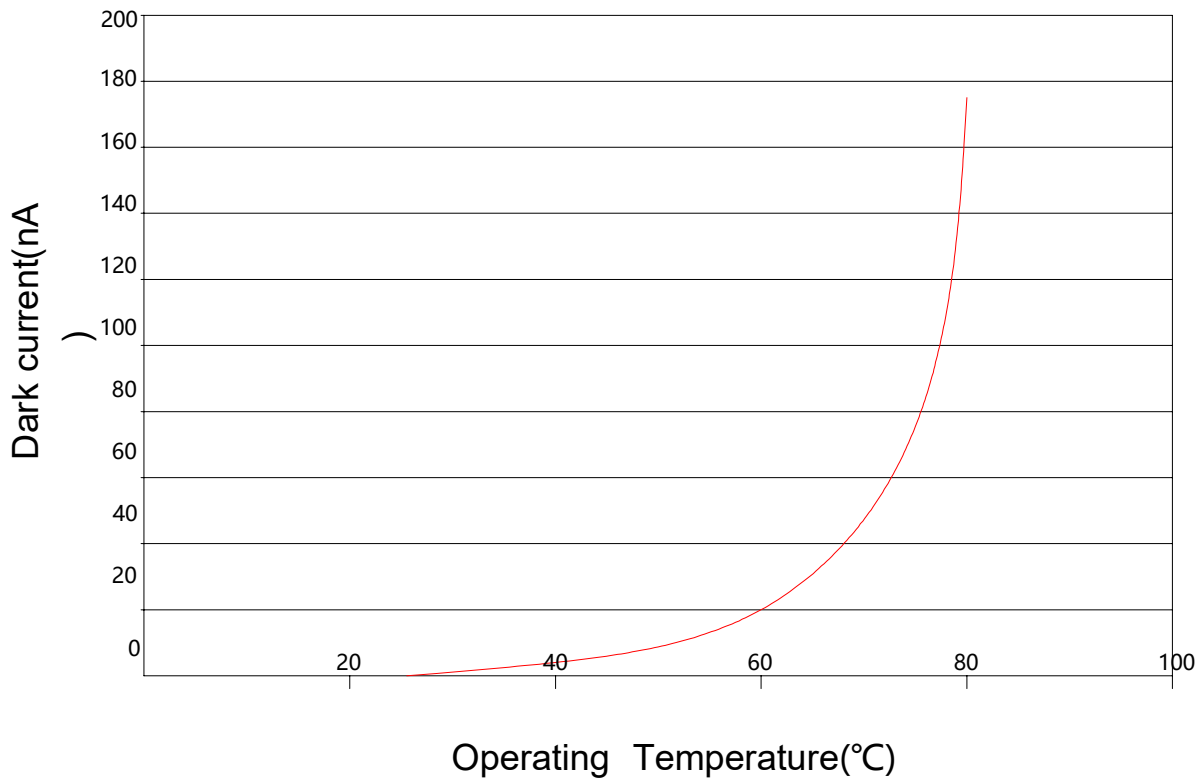
Test Parameter	Reference Criterion	Test Condition	Time	Quantity	Ac/Re
Resistance to Soldering Heat	JESD22-B106	220°C±5°C	5 sec	22PCS	0/1
Thermal Shock	JESD22-A104	+105°C(30min)5min -40°C(30min)	100 cycles	22PCS	0/1
High Temperature storage	JESD22-A103	TC=+100°C	1000H	22PCS	0/1
Low Temperature storage	JESD22-A119	TC -40°C	1000H	22PCS	0/1
Life Test	JESD22-A108	Vce=5V	1000H	22PCS	0/1
High Temperature High Humidity	JESD22-A101	TC=85°C RH=85%	1000H	22PCS	0/1

Typical electro-optical characteristics curves

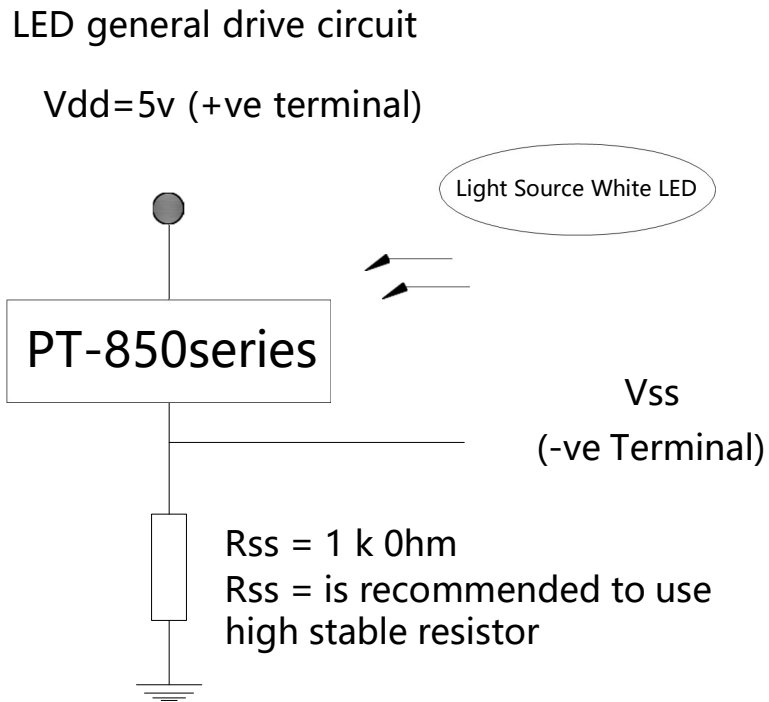
Photographic property Curve

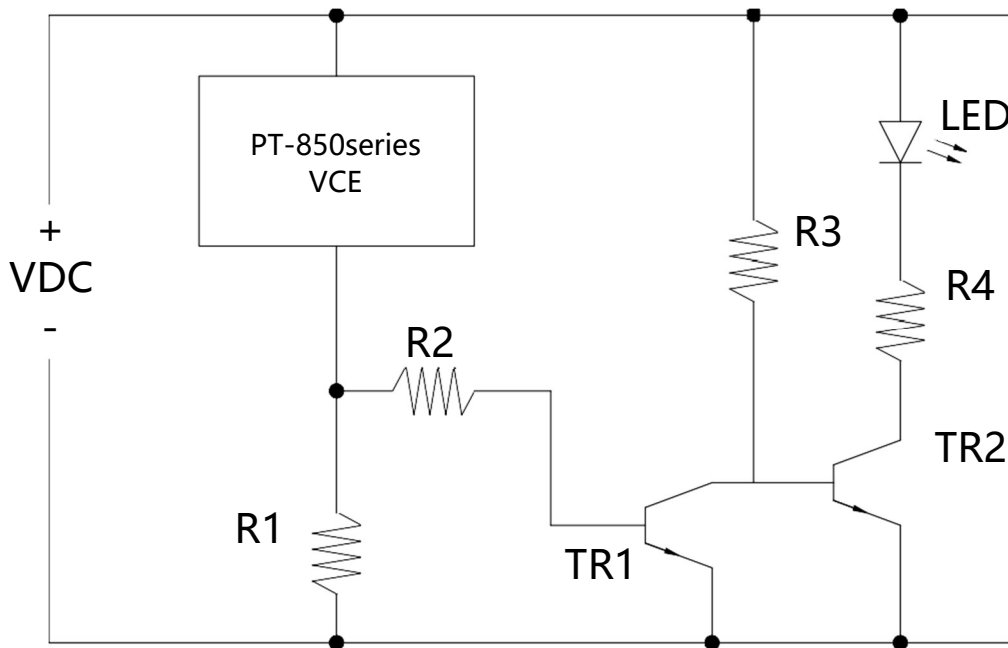


Operating Temperature&Dark current Curve

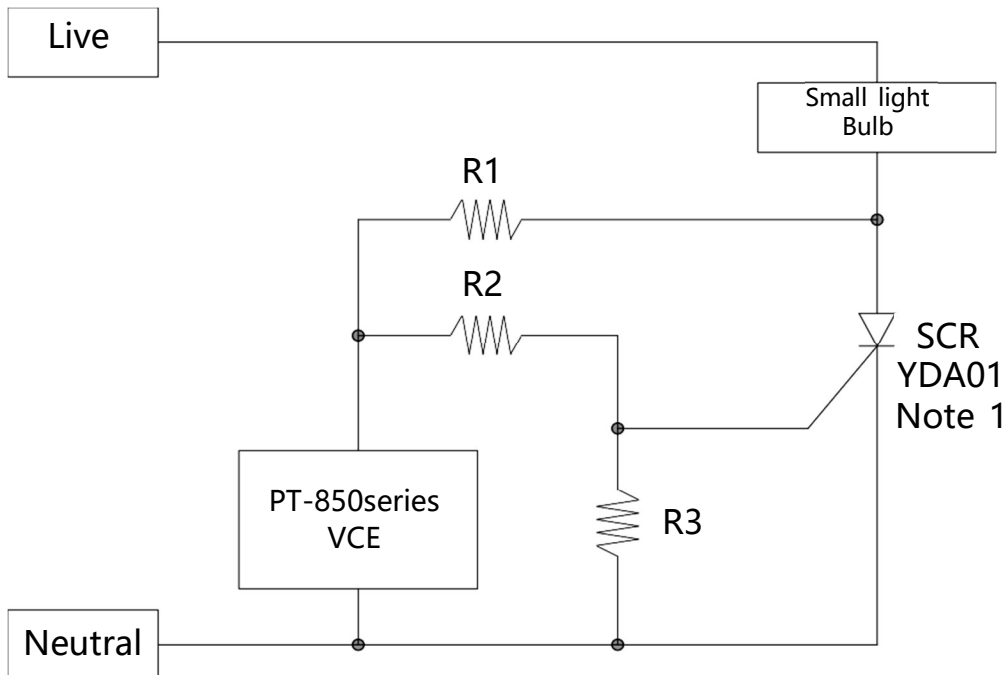


General application diagram



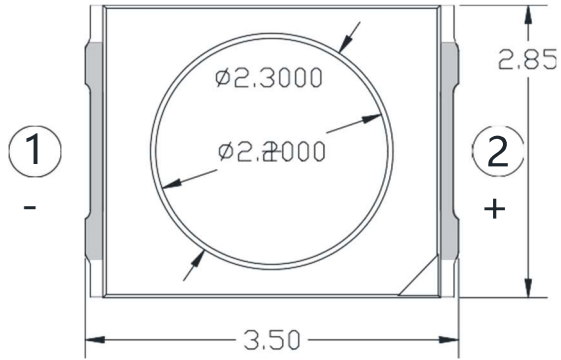


When the illumination is lower than the illumination threshold, the TR1 transistor is turned off, the TR2 transistor is turned on, and the LED is turned on. When the ambient light is greater than the light threshold, TR1 reduces the current and turns off TR2, and the LED does not conduct.

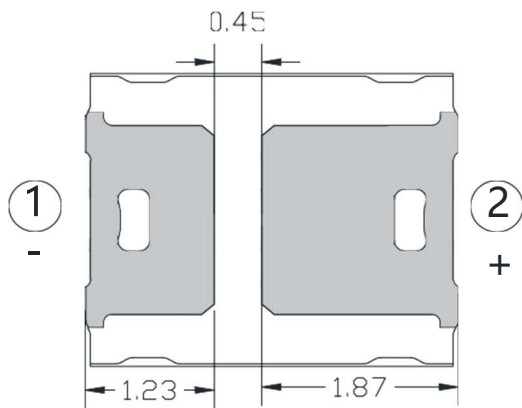
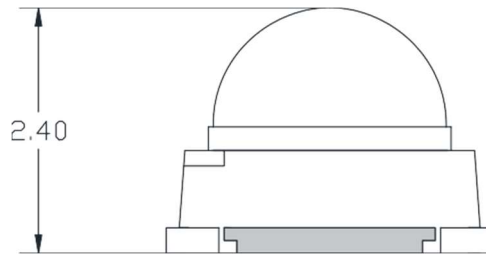
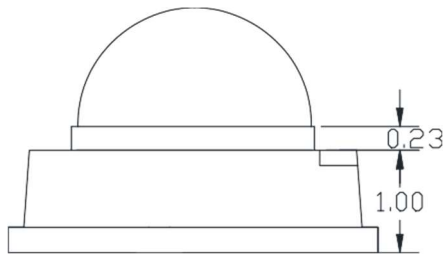


This circuit requires a sensitive thyristor. The bulb's current is driven by the sensitive thyristor switch. This current between the VC and VE pins diverts the gate current of the thyristor when the amount of light exceeds the threshold. The optical switching threshold can be adjusted by choosing different values for R2 and R3.

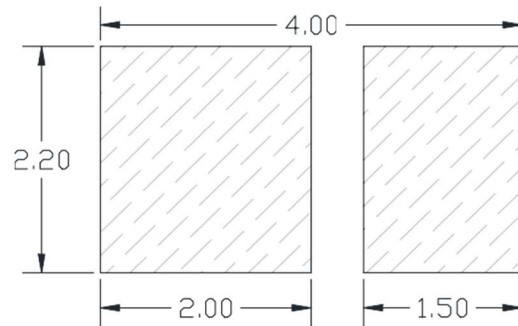
Package outline dimensions



- ① Emitter
- ② Collector



Recommend Pad size



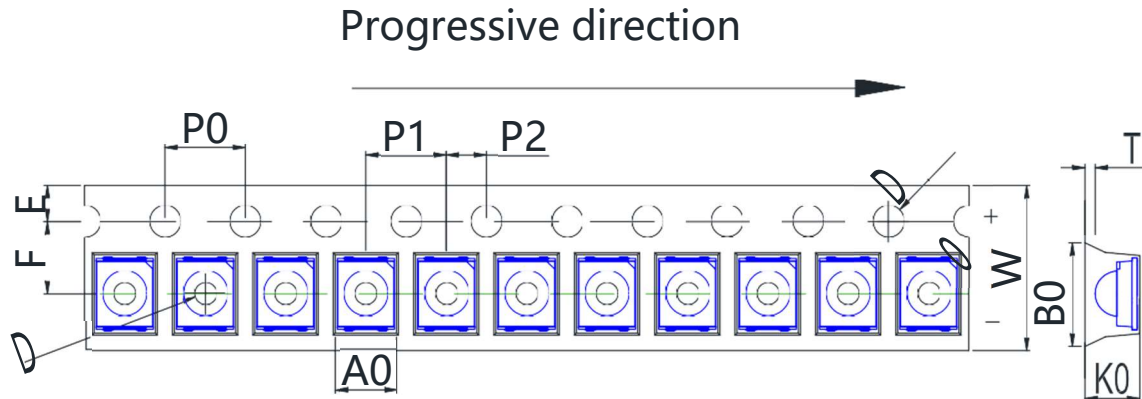
Note: All dimensions in mm, tolerance is $\pm 0.15\text{mm}$ unless otherwise noted

Packing

Specification ■

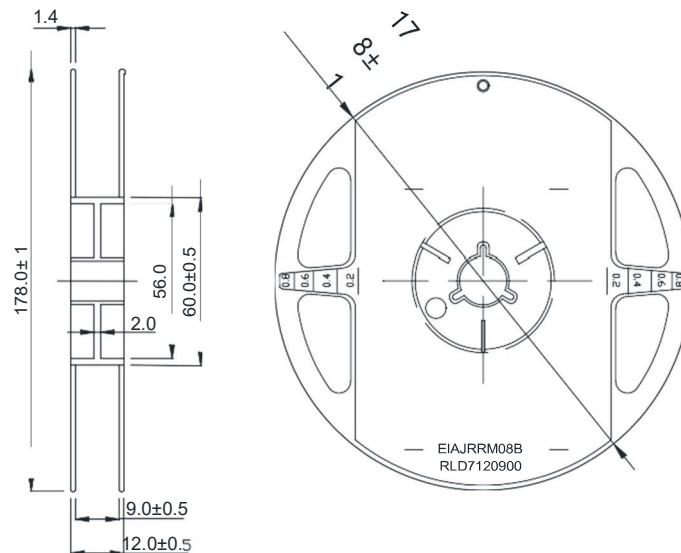
Carrier Tape

Taping 2000pcs/roll Quantity 2000 pcs Per
 Scroll Taping product front space 50pcs,
 back space ≥ 100pcs



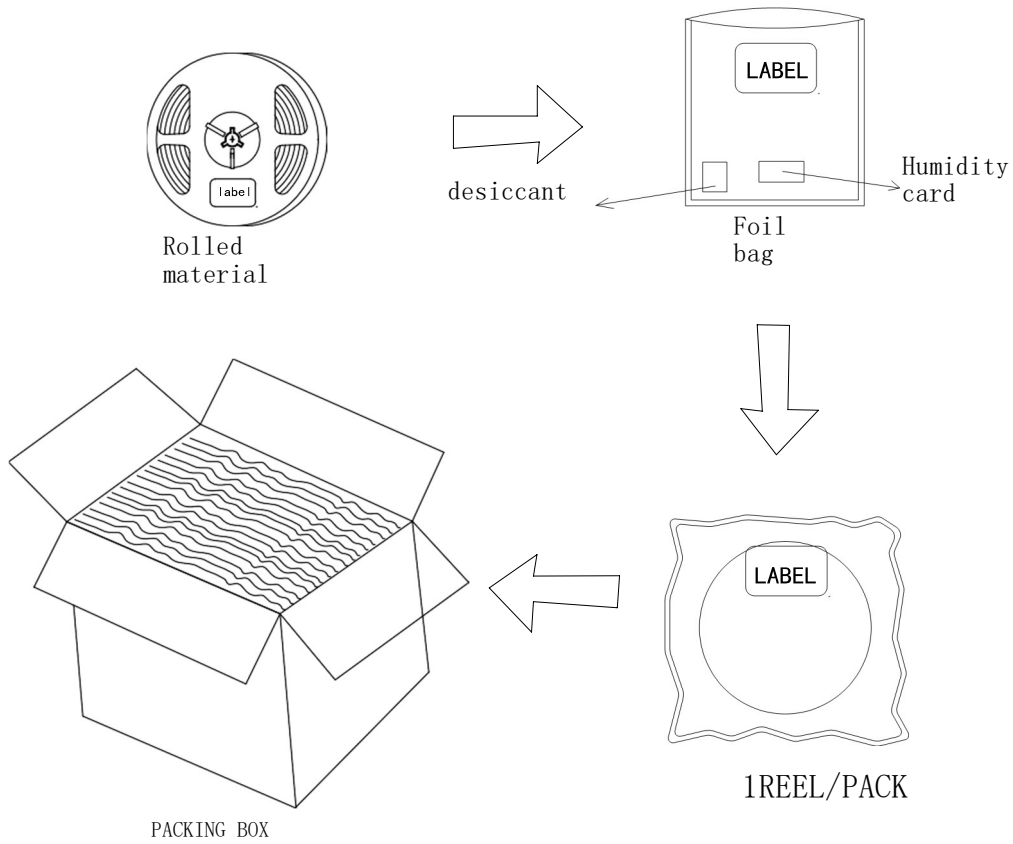
Symbol	A0	B0	K0	P0	P1	P2
SPEC	3.05±0.1	3.75±0.1	2.65±0.1	4.0±0.1	4.0±0.1	2.0±0.1
Symbol	W	T	E	F	D0	D1
SPEC	8.0±0.1	0.25±0.05	1.75±0.10	3.5±0.1	1.5±0.1	1.1±0.05

■ **Reel Dimensions**



Note: Tolerance s unless mentioned ±0.01mm. Unit=mm

Moisture Resistant Packing Process



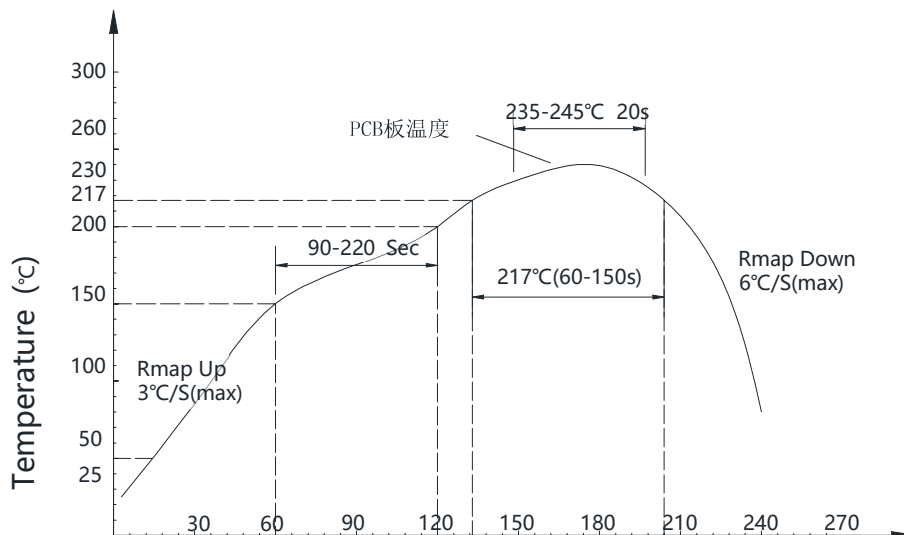
Label specification

The label specification template includes the following elements:

- Logos:** Ciel Light logo and RoHS logo.
- Fields:** Part No : , Lot No : , Q'ty : , Date : , BIN: , COLOR : , VF: , IV : , AD: , CRI: .
- Quality Control:** Q.A: QC3 PASSED (indicated by a circular stamp).
- Barcode:** A barcode with the number 38120367 below it.

Reflow

- Reflow Soldering: Use the conditions shown in the under Figure o Reflow Soldering.



■ Reflow Soldering

- Reflow soldering should not be done more than once, or ALS will be damaged.
- When soldering, do not put stress on the ALS during heating.
- Please be sure the speed of the chain is 80-100cm/min (The reflow furnace is based on 8 temperature zone, the more temperature zone, the faster speed of the chain is recommended.)

■ Soldering iron

- If manual soldering is used, the use of a soldering iron of less than 25W is recommended, and the temperature of the iron must be kept below 300°C, with soldering time within 2 seconds.
- When soldering, do not put stress on the LEDs during heating
- The hand solder should be done only one time
- Handling of the SMD LED should be done when the package has been cooled down to below 40°C or less. This is to prevent LED failures due to thermal-mechanical stress during handling

■ Cleaning

- It is recommended that alcohol be used as the solvent for cleaning after soldering. Cleaning should be done under 30°C for 3 minutes or 50°C for 30 seconds. When using other solvents, it should be confirmed beforehand whether the solvents will dissolve the package and the resin or not.

■ Repairing

- 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 in advance the characteristics of LEDs will not be damaged by repairing.

Note: This general guideline may not be suitable for all PCB designs or configurations of all soldering equipment. The technique in practice is influenced by many factors, it should be specialized based on the PCB designs and configurations of the soldering equipment.

Precautions

Thanks for using relevant LED products of CIEL LIGHT Co., Ltd. in order to enhance your understanding of the characteristics of our products, as far as possible to reduce or avoid unnecessary damage to the product due to human factors, and make it can better service your production. We give corresponding instructions, According to the characteristic in the process of standard use. At the same time, even if the same specifications LED, in the practical application field its reliability are related to overall system design level, mode of operation and conditions of use. This Instructions can't cover all questions may encounter during customer use process, We sincerely apologize for any inconvenience this may cause!

■ Product declaration

- In order to confirm if the product is right for using purpose, pretest is necessary before use. The product application introduction may contravene any patent. The corresponding import and export legal responsibility should be taken by customers. Please verify relevant provision about the LED product in your Target market beforehand. We may change specifications from time to time in the interest of product development, without prior notification or public announcement. An agreement of formal product specifications is required prior to mass production.

■ Storage

- The products are stored in sealed anti-moisture and anti-static package with moisture absorbent. Unopened package can be stored 2 months.
 - Before opening the package, the product should be kept at 30°C or less and humidity less than 60%RH.
 - Humidity of sealed anti-static bag is subject to the humidity value shows in humidity card at the moment opening the bag. If humidity shows equal or less than 30%, the products should be baked before use.
 - After opening the package, the product should be soldered within 24 hours. If not, please store at 30°C or less and humidity less than 10%RH. It is recommended that the product be operated at the workshop condition of 30 °C or less and humidity less than 60%RH.
 - For the LED doesn't solder, if the moisture absorbent material lose efficacy or the storage condition doesn't conform to the above description, baking can help some extent performance recovery. Baking condition : 65±5 °C for 24 hours.
-

■ Static Electricity

The following operations may decrease the possibility of ESD damage.

- Minimize friction between the product and surroundings to avoid static.
- All production machinery and test instruments must be grounded.
- Operators must wear anti-static bracelets.
- Wearing anti-static garment when entering into electric devices working areas.
- All workstations that operate IC and ESD-sensitive components must maintain an electrostatic protection of 150V or less.

■ The safe temperature for LEDs working

- The high temperature will make the LED's luminous intensity decreased radically. If LED worked in high temperature environment for a long time, it would lose efficacy easily. When LEDs are working in a closed array, it is suggested that the LED's surface temperature be lower than 55°C and the pin's temperature be lower than 75°C.

■ Others

- Do not touch or operate the lens surface directly, it may damage the internal circuitry. Handle the component along the side surfaces by using tweezers or appropriate tools.
- The base of LED is fragile, so please avoid scratch or friction over the epoxy resin surface. While handing the product with tweezers, do not hold by the epoxy resin, be careful.

