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# 1. Description

## 1.1 General Description



The Red source color devices are made with AlGaInp on Substrate Light Emitting Diode .  
 Product Package:2.7mmX2.0mmX0.6mm.

LED AlGaInp

2.7mmX2.0mmX0.6mm.

## 1.2 Features

PLCC Package.PLCC

Extremely wide viewing angle.

Suitable for all SMT assembly and solder process.

SMT

Available on tape and reel.

Moisture sensitivity level: Level 2.

Level2

RoHS compliant. RoHS

Qualifications: The product qualification test plan is based on the guidelines of AEC-Q102 Stress Test Qualification for Automotive Grade Discrete Semiconductors

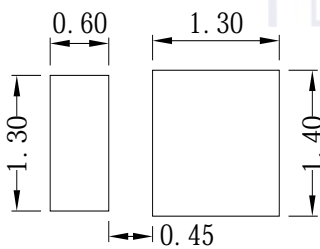
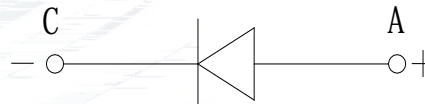
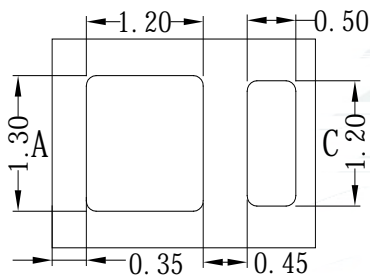
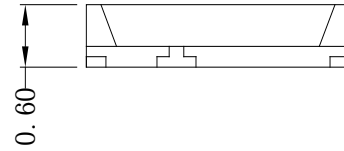
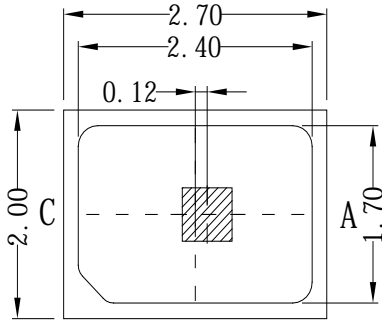
AEC-Q102

## 1.3 Application

Automotive Lighting Interior and Exterior.



## 1.4 Package Dimension



### Notes

1. All dimensions units are millimeters.
2. All dimensions tolerances are  $\pm 0.05\text{mm}$  unless otherwise noted.


 $\pm 0.05$

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life Innovation enrich

width. 10ms, 1/10.

Measurement allowance tolerance is  $\pm 0.1V$ .  $\pm 0.1V$ .

Measurement allowance tolerance is  $\pm 0.005$ .  $\pm 0.005$ .

Measurement allowance tolerance  $\pm 10\%$ .

Power dissipation does not exceed the absolute maximum rating of the product.

Test under the standardized environment of Refond.

Maximum current should be decided after measuring the package temperature should not exceed the maximum rate. LED

ESD (HBM). ESD protection during products handling is needed. 90% LED

### Forward Voltage and Luminous Flux (IF=150mA)

Table 1-3

		C0	D0	E0
		2.0-2.2	2.2-2.4	2.4-2.6
	Im	KB	LA	LB
		21.8-24.2	24.2-26.9	26.9-30.0
	WD(nm)	D2	E1	E2
		617.5-620	620-622.5	622.5-625



### 1.7 Typical Optical Characteristics Curves

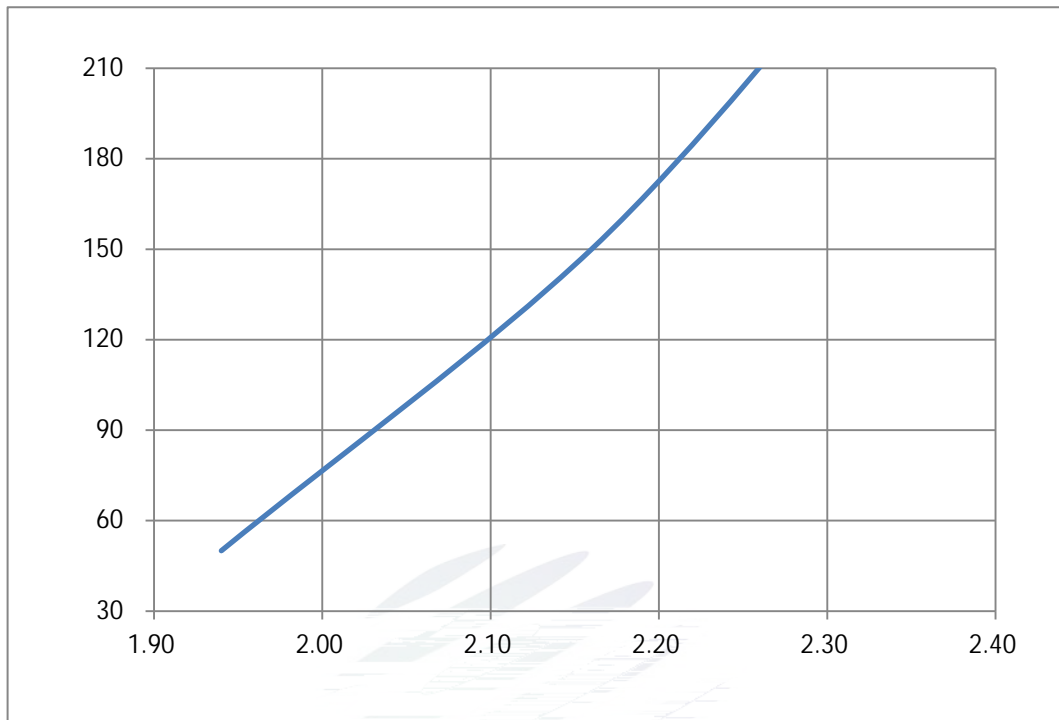


Fig. 1-7 Forward Voltage Vs Forward Current

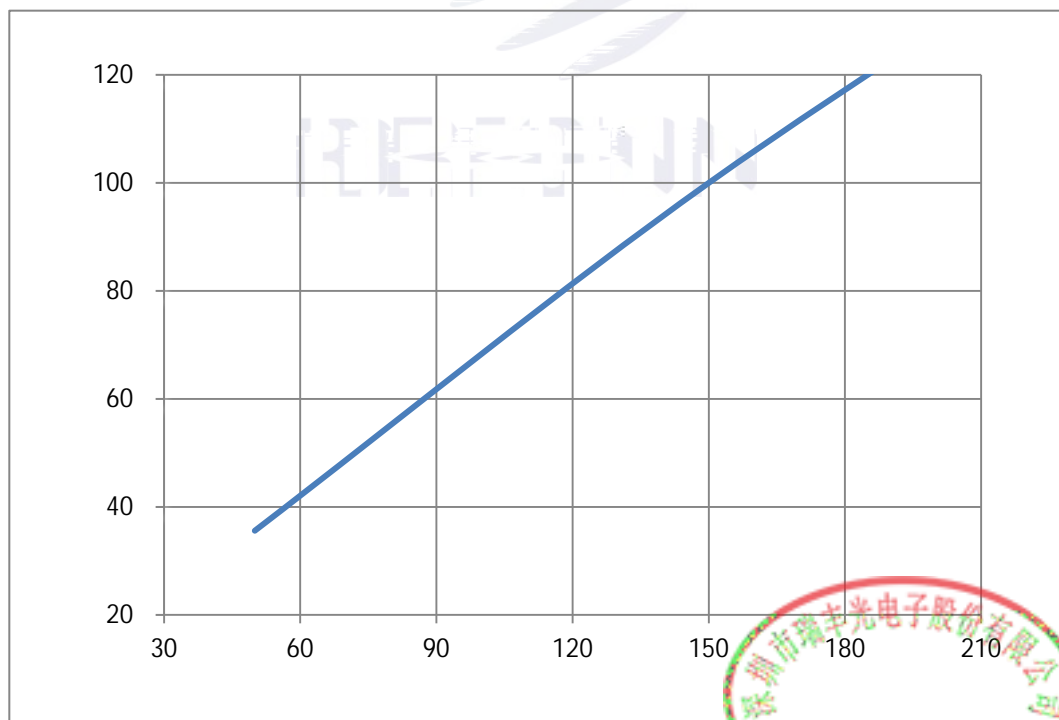
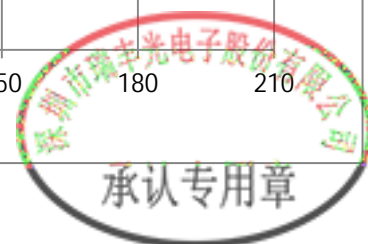


Fig. 1-8 Forward Current Vs Relative Intensity



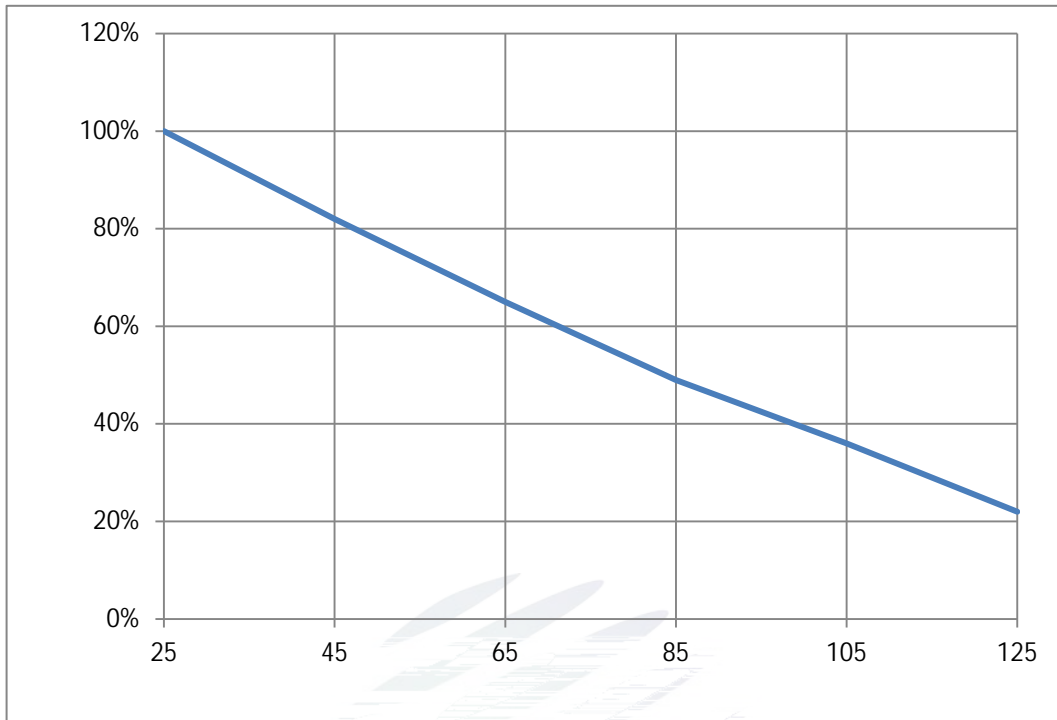


Fig. 1-9 Solder Temperature Vs Relative Intensity

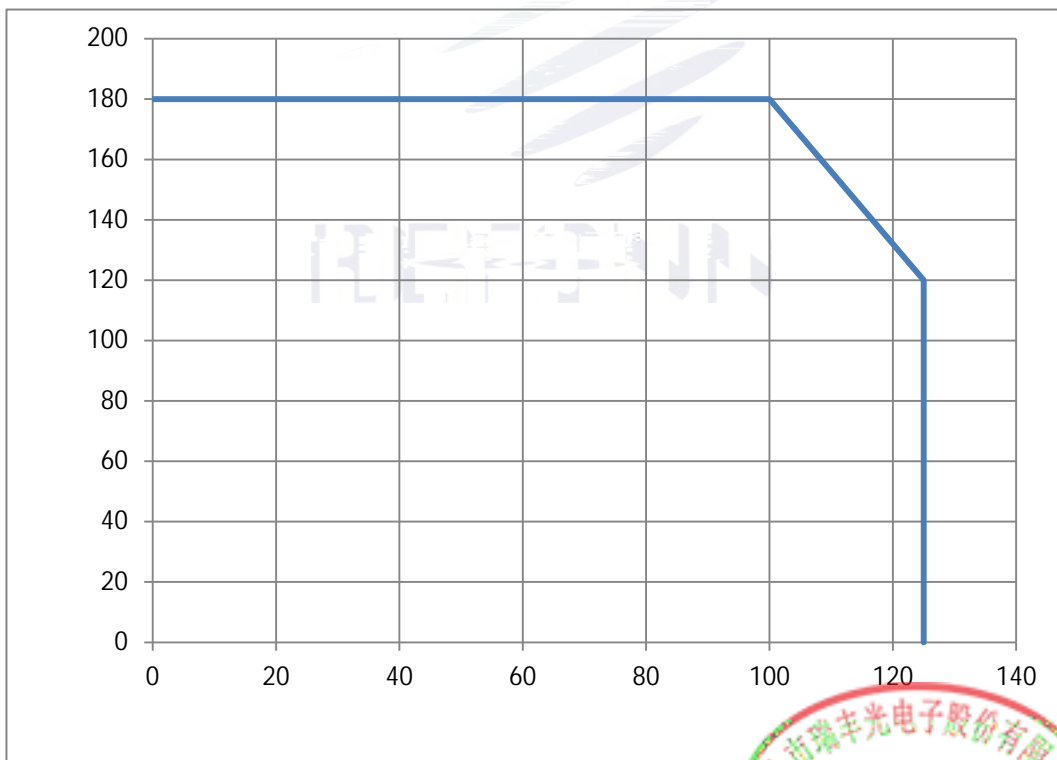
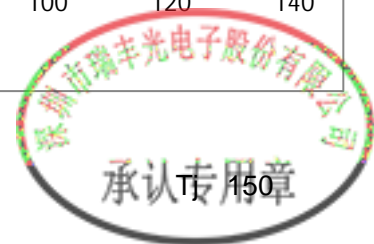


Fig. 1-10 Solder Temperature Vs Forward Current





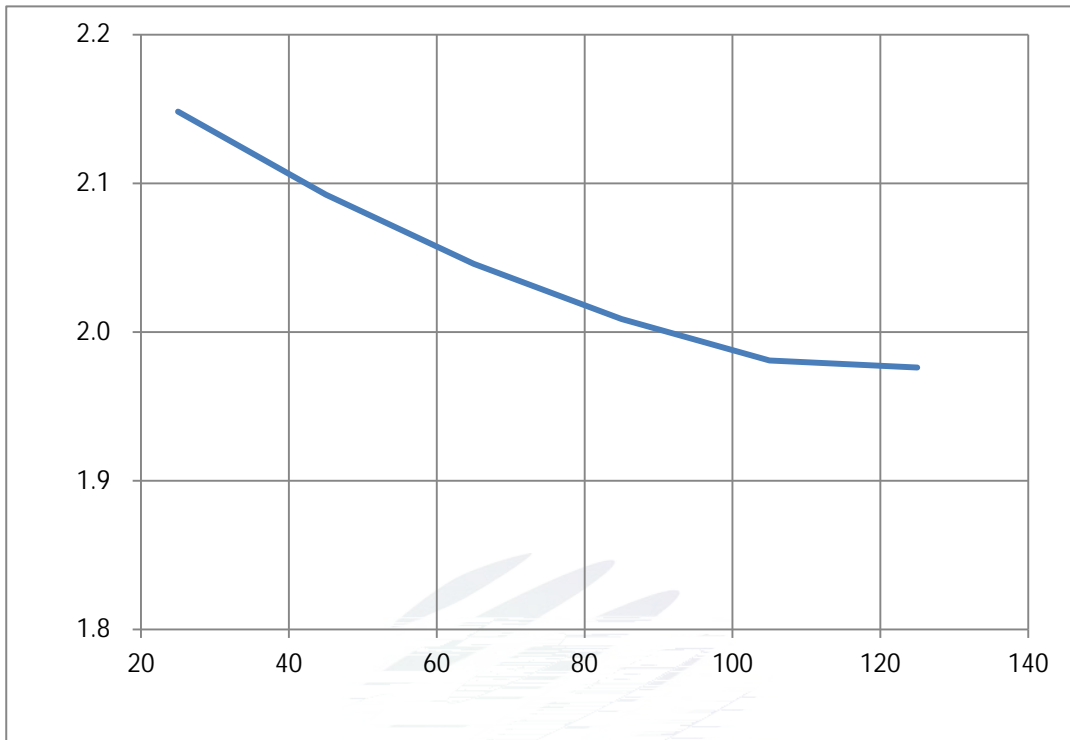


Fig. 1-11 Forward Voltage Vs Solder Temperature

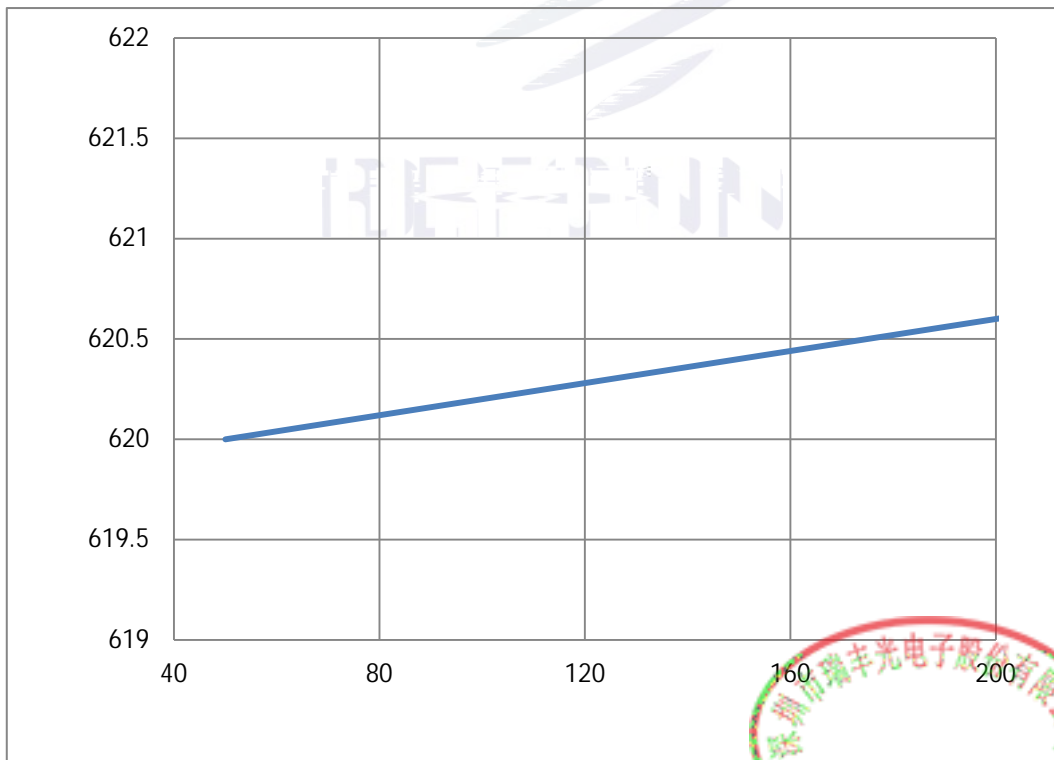
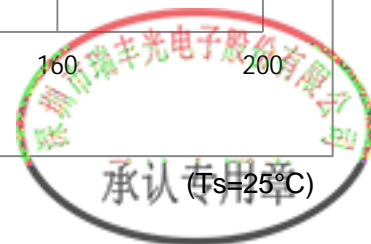


Fig. 1-12 Forward current vs. Color Shift



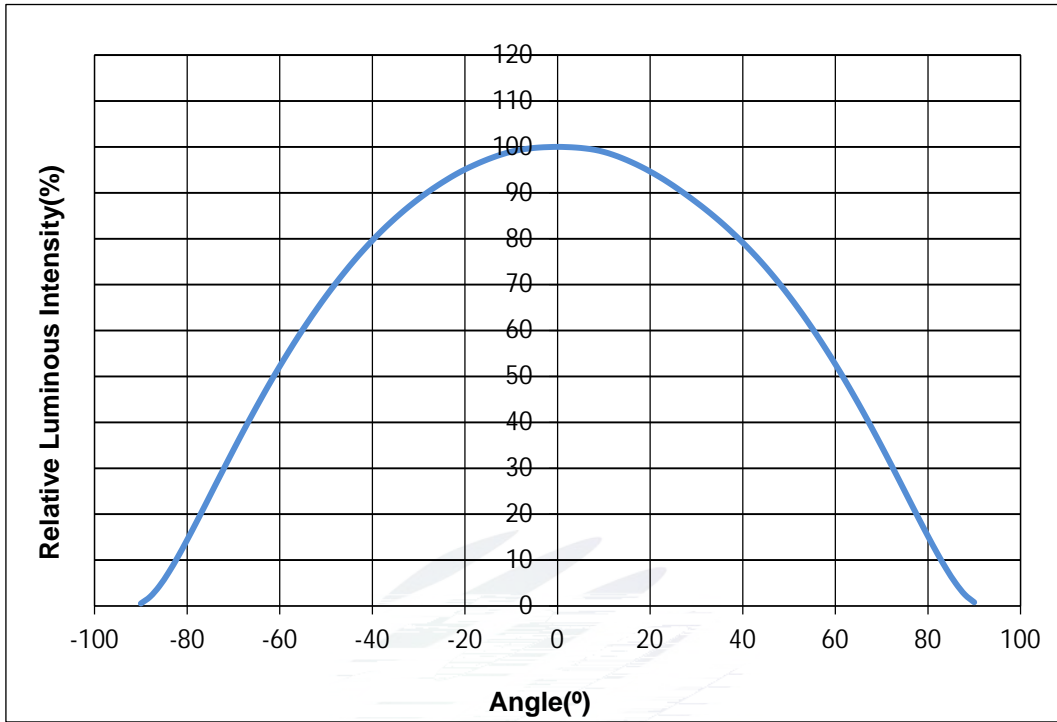


Fig. 1-13 Radiation diagram

Fig. 1-14 Spectrum Distribution



## 2. Packaging

### 2.1 Packaging Specification

Package:4000pcs/reel.                      4000pcs

#### 2.1.1 Carrier Tape Dimension



Fig.2-1 Carrier Tape Dimension

#### 2.1.2 Reel Dimension

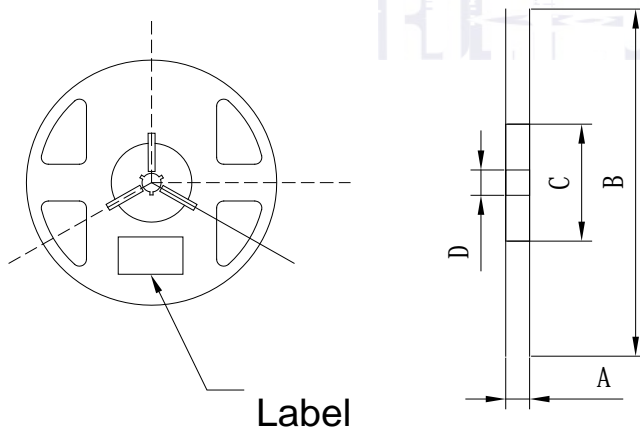


Fig.2-2 Reel Dimension

Table 2-1 Reel Dimension

A	12± 0.1mm
B	180± 1mm
C	60± 1mm
D	13.0± 0.5mm

#### Notes

The tolerances unless mentioned  $\pm 0.1$ mm. Unit : mm

$\pm 0.1$



### 2.1.3 Label Form Specification

Table 2-2 Specification

PART NO.	Part Number
SPEC NO.	Spec Number
LOT NO.	Lot Number
BIN CODE	Bin Code
	Luminous flux
XY	Chromaticity Bin
$V_F$	Forward Voltage
WLD	Wavelength
QTY	Packing Quantity
DATE	Made Date

Fig. 2-3 Label

### 2.2 Moisture Resistant Packing

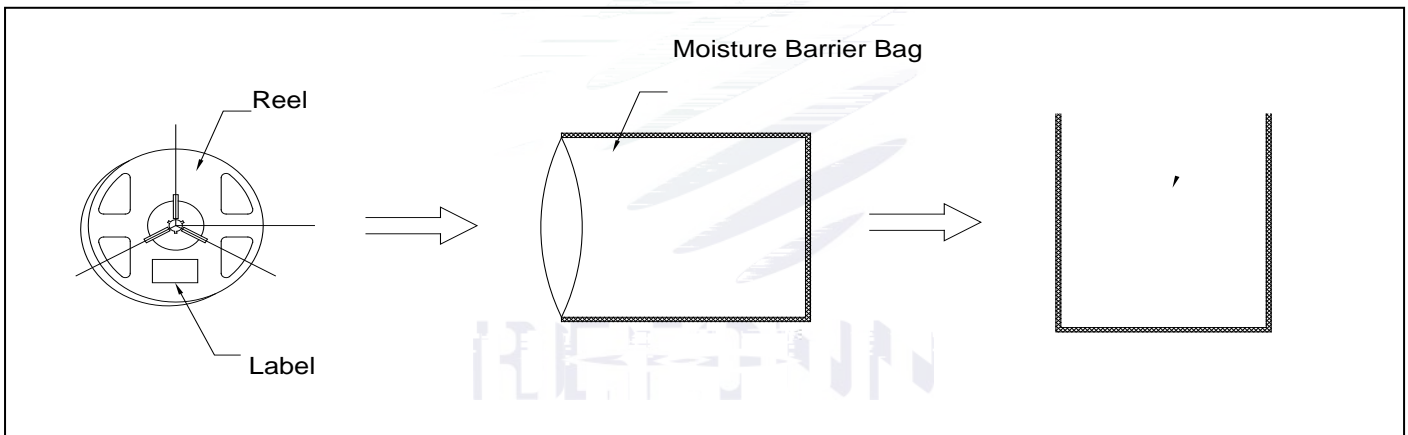


Fig.2-4 Moisture Resistant Packing

### 2.3 Cardboard Box



Fig.2-5 Cardboard Box

## 2.4 Reliability Test Items And Conditions

Table 2-3 Reliability Test Items And Conditions

Test Items	Ref.Standard	Test Condition	Time	Quantity	Ac/Re /
Reflow	JESD22-B106	Temp:260 max T=10 sec	2times	20pcs.	0/1
MSL2 2	JESD22-A113	85 / 60%RH	168 hrs.	20pcs.	0/1
Thermal Shock	JEITAED-4701 300307	-40 15min 10s 125 15min	1000 cycle	20pcs.	0/1
Life Test	JESD22-A108	Ta=105 If=150mA	1000hrs.	20pcs.	0/1
High Temperature High Humidity Life Test	JESD22-A101	85 / 85%RH If=150mA	1000hrs.	20pcs.	0/1





### 3. SMT Reflow Soldering Instructions SMT

#### 3.1 SMT Reflow Soldering Instructions SMT

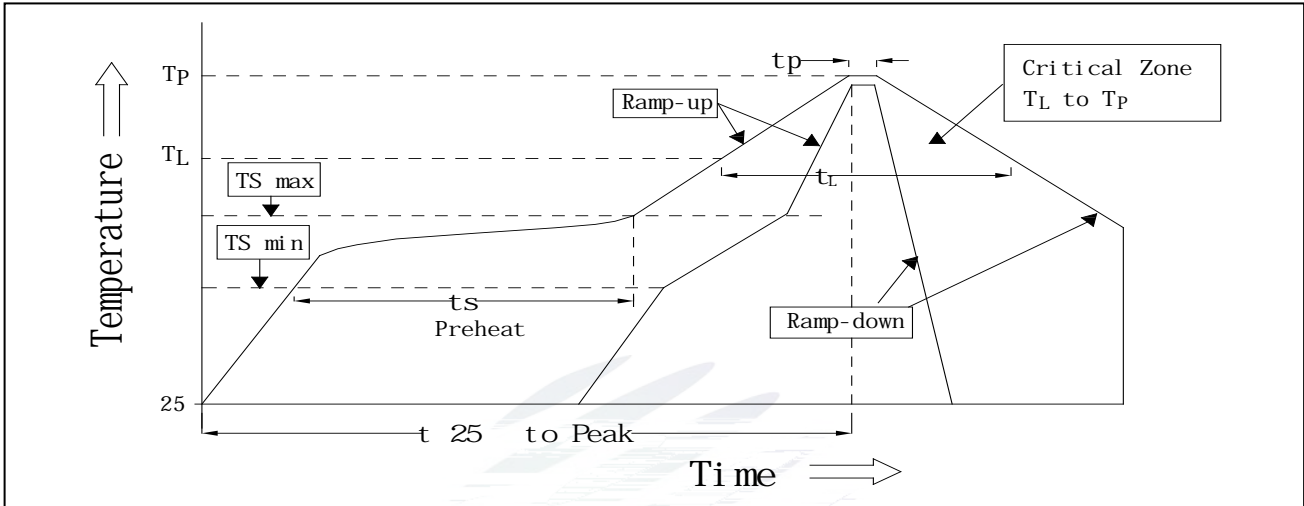
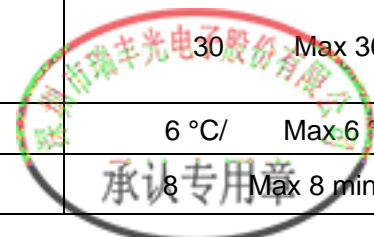


Fig.3-1SMT Reflow Soldering Instructions SMT

Table 3-1Reflow parameters

Average temperature rise speed	Tsmax	TP	3 °C/	Max 3 °C/ s
Preheating: minimum temperature	(Tsmi n)		150 °C	
Preheating: Max temperature	(TSmax)		200 °C	
Preheating: Time	Tsmi n	TSmax	60 - 120	60s-120s
Time limited to maintain high temperature: the temperature	(TL)		217 °C	
Time limited to maintain high temperature: The Time	(tL)		60	Max 60s
Peak /Classification of temperature:	/	(TP)	260 °C	
Time limit classification of peak temperature time	tp		10	Max 10s
Hold time within 5°Cwith the actual peak temperature (TP)	(TP)	5°C	30	Max 30s
Cooling speed			6 °C/	Max 6 °C/ s
Needed time from 25 °C to Tp	25°C		8	Max 8 minutes







## 4. Handling Precautions

### 4.1 Handling Precautions

(1) 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.

LED 100PPM

(2) In order to prevent external 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 element is 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 than 1500PPM. This is provided for informational purposes only and is not a warranty or endorsement.

	LED	LED
	900PPM	900PPM
1500PPM		

(3) 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. Refond advises against the use of any chemicals or materials that have been found or are suspected to have an adverse effect on device performance or reliability. To verify compatibility, Refond recommends that all chemicals and materials be tested in the specific application and environment for which they are intended to be used. Attaching LEDs, do not use adhesives that outgas organic vapor.

LED LED

LED

(4) 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.





Table 4-1 Storage

Conditions		Temperature	Humidity	Time
Storage	Before Opening Aluminum Bag	30	75%	Within 1 Year From Date
	After Opening Aluminum Bag	30	60%	Recommended for use within 24 hours 24
Baking		$60 \pm 5$	-	24hours 24

(8) If the moisture absorbent material silica gel has faded away or the LEDs have exceeded the storage time, baking treatment should be performed after unpacking and based on the following condition  $60 \pm 5$  for above 24 hours.

$60 \pm 5$  24

If the package is flatulence or damaged, please notify the sales staff to assist.

(9) Similar to most Solid state devices; LEDs are sensitive to Electro-Static Discharge (ESD) and Electrical Over Stress (EOS). LED

(10) Other points for attention, please refer to our relevant information.



## Version History/

Date	Revisor	Version	Verifier	Remarks
2022/05/10	Xian Zhou	E0	Zhu Yiming	New issue
2023/04/10	Xian Zhou	E1	Zhu Yiming	Add optical center
				



Declare

This specification is written both in English and in Chinese and the latter is formal.