

# SPECIFICATION

REFOND P/N

RF-A2A31-H50C-H4

R&D

Mass Production



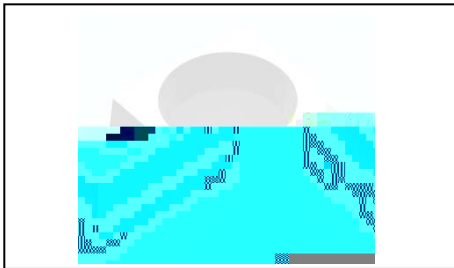
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# 1. Description

## 1.1 General Description



The IR source color devices are made with AlGaAs on Substrate Light Emitting Diode

The LED package dimension: 3.5mmX2.8mmX1.85mm.

LED AlGaAs

3.5mmX2.8mmX1.85mm

## 1.2 Features

PLCC4 Package. PLCC4

Extremely wide viewing angle.

Suitable for all SMT assembly and solder process. SMT

Available on tape and reel.

Moisture sensitivity level: Level 3. Level3

Compliance with RoHS and REACH. RoHS REACH

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

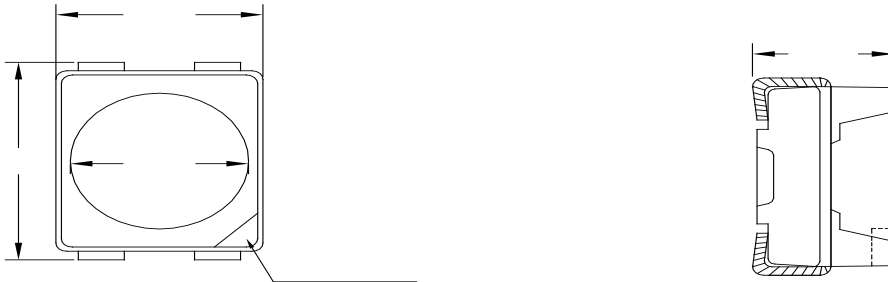
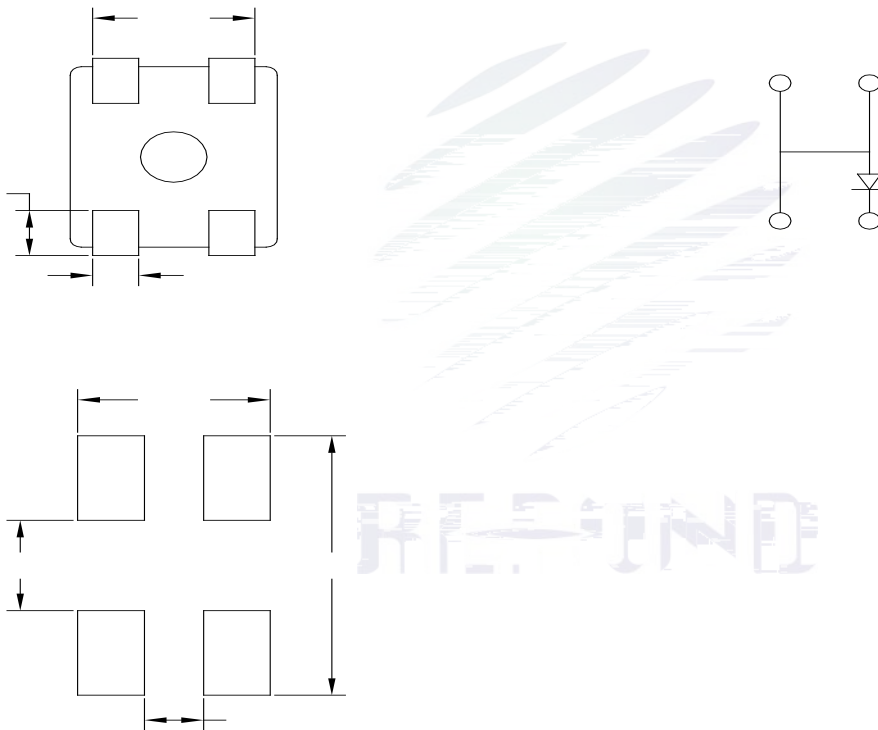


Fig. 1-1 Top View



#### Notes

1. All dimensions units are millimeters.
2. All dimensions tolerances are  $\pm 0.2\text{mm}$  unless otherwise noted.



## 1.5 Product Parameters

Table 1-1 Electrical / Optical Characteristics at Ts=25°C

Item	Symbol	Test Condition	Value			Unit
			Min.	Typ.	Max.	

Table 1-2 Absolute Maximum Ratings at Ts=25°C



## Notes

1. 1/10 Duty cycle, 10ms pulse width.      10ms,      1/10.
2. The above forward voltage measurement allowance tolerance is  $\pm 0.1V$ .       $\pm 0.1V$ .
3. The above color coordinates measurement allowance tolerance is  $\pm 0.005$ .       $\pm 0.005$ .
4. The above luminous intensity measurement allowance tolerance  $\pm 10\%$ .       $\pm 10\%$ .
5. Care is to be taken that power dissipation does not exceed the absolute maximum rating of the product.
6. All measurements were made under the standardized environment of Refond.
7. When the LEDs are in operation the maximum current should be decided after measuring the package temperature, junction temperature should not exceed the maximum rate. LED
8. ESD yield is over 90% at 2000V ESD (HBM). ESD protection during products handling is needed. 90% LED ESD2000V

## 1.6 Bin Range Of Forward Voltage and Luminous Intensity and Dominant wavelength(IF=100mA)

**BIN (IF=100mA)**

Table 1-3

VF V	0		
	1.2-1.8		
Ie mW/sr	M	N	P
	18-28.5	28.5-45	45-71.5
nm	0		
	840-860		



### 1.7 Typical Optical Characteristics Curves

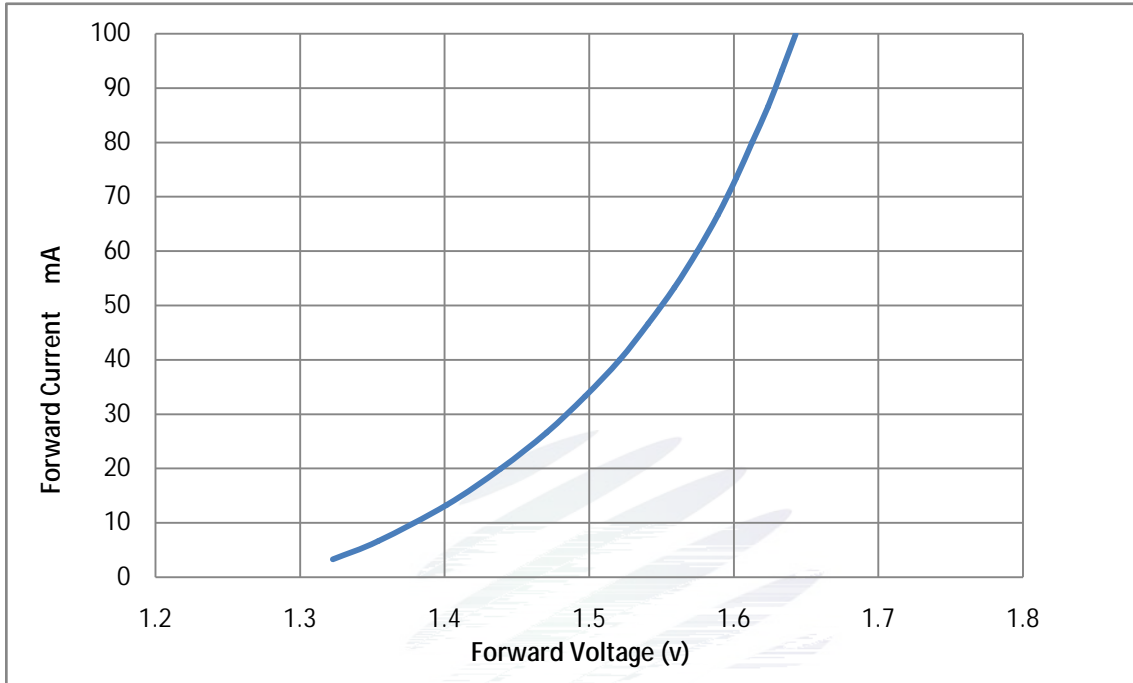


Fig. 1-7 Forward Voltage Vs Forward Current

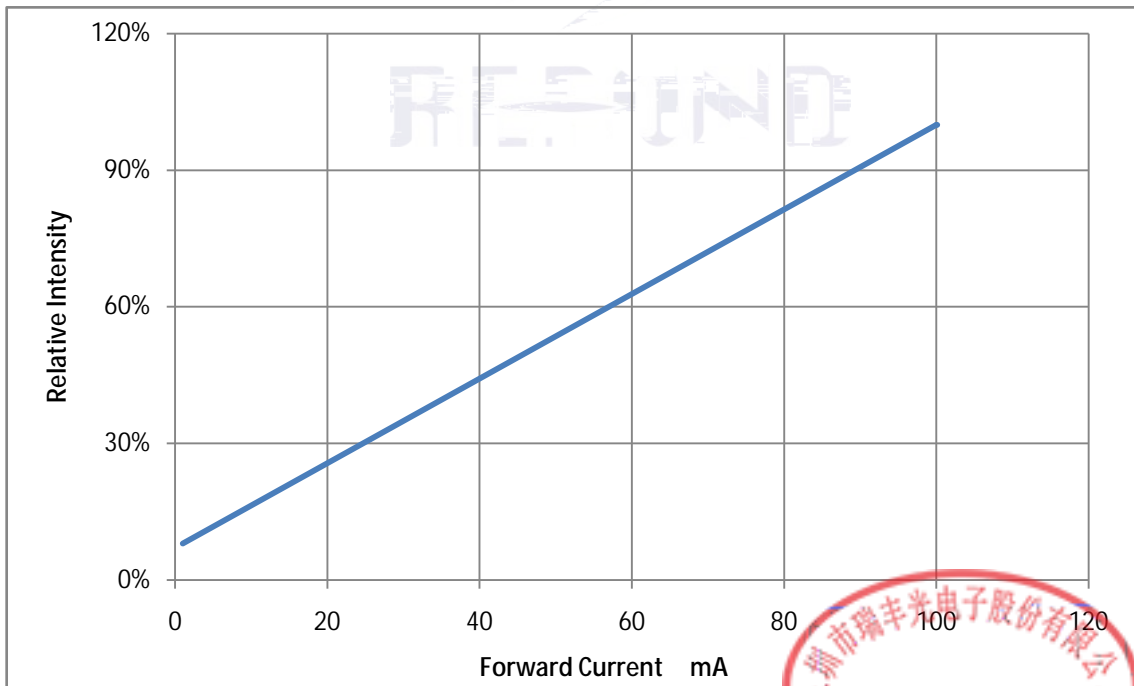


Fig. 1-8 Forward Current Vs Relative Intensity



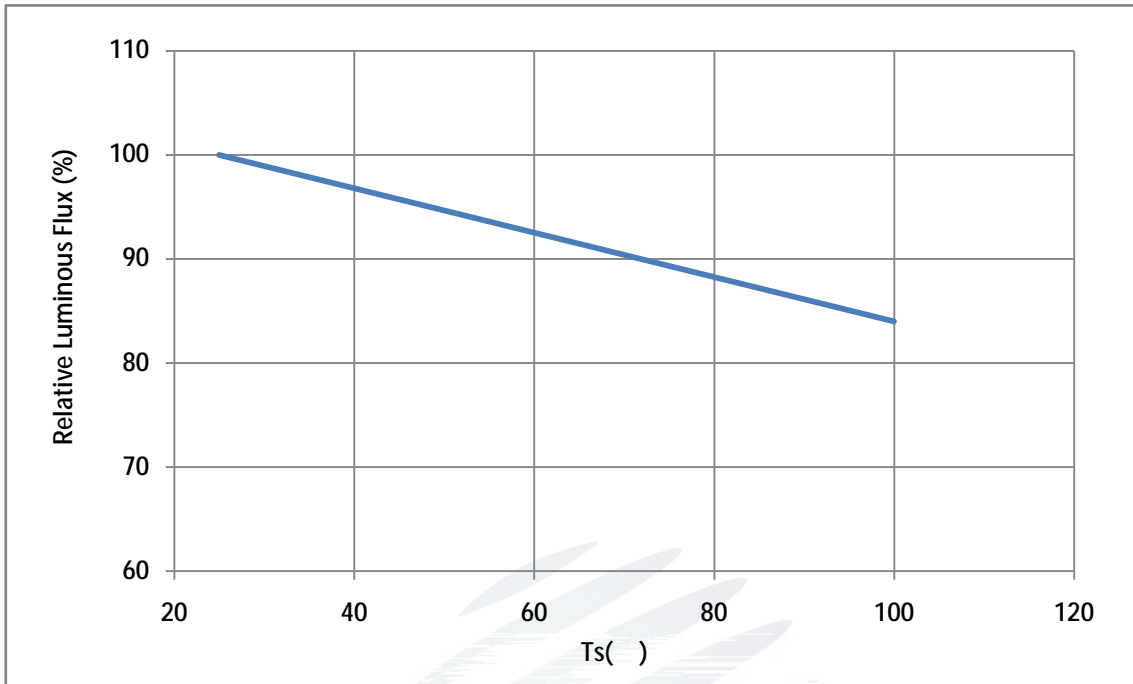


Fig. 1-9 Solder Temperature Vs Relative Intensity

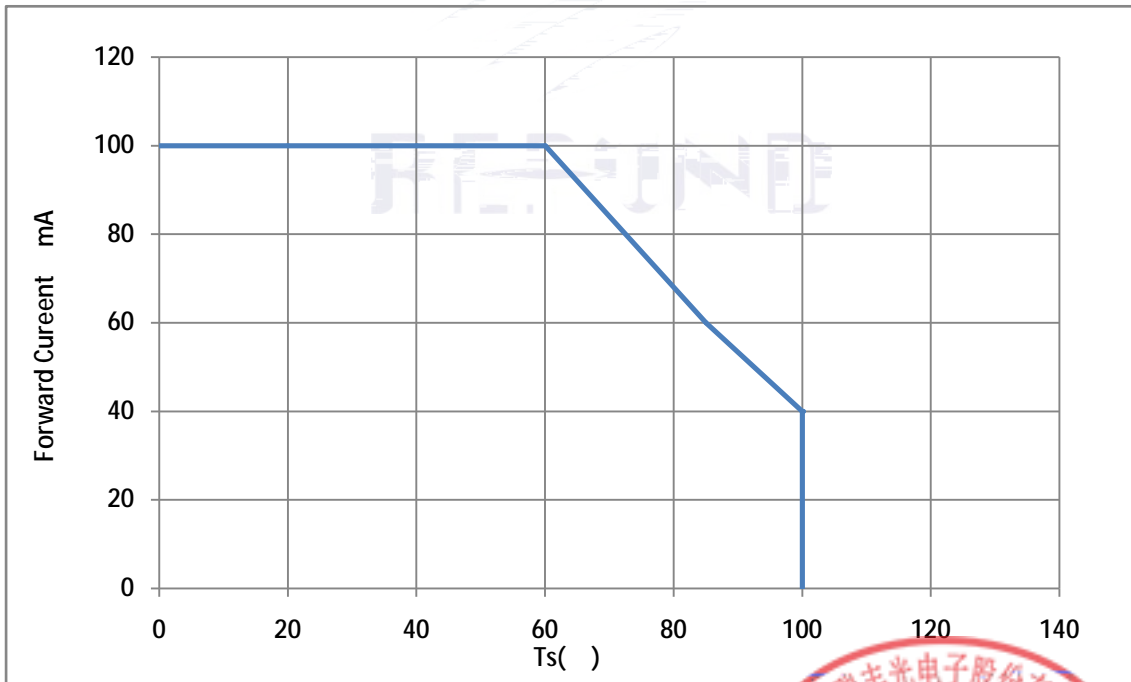
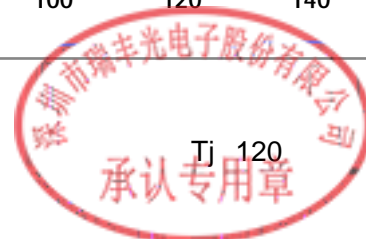


Fig. 1-10 Solder Temperature Vs Forward Current





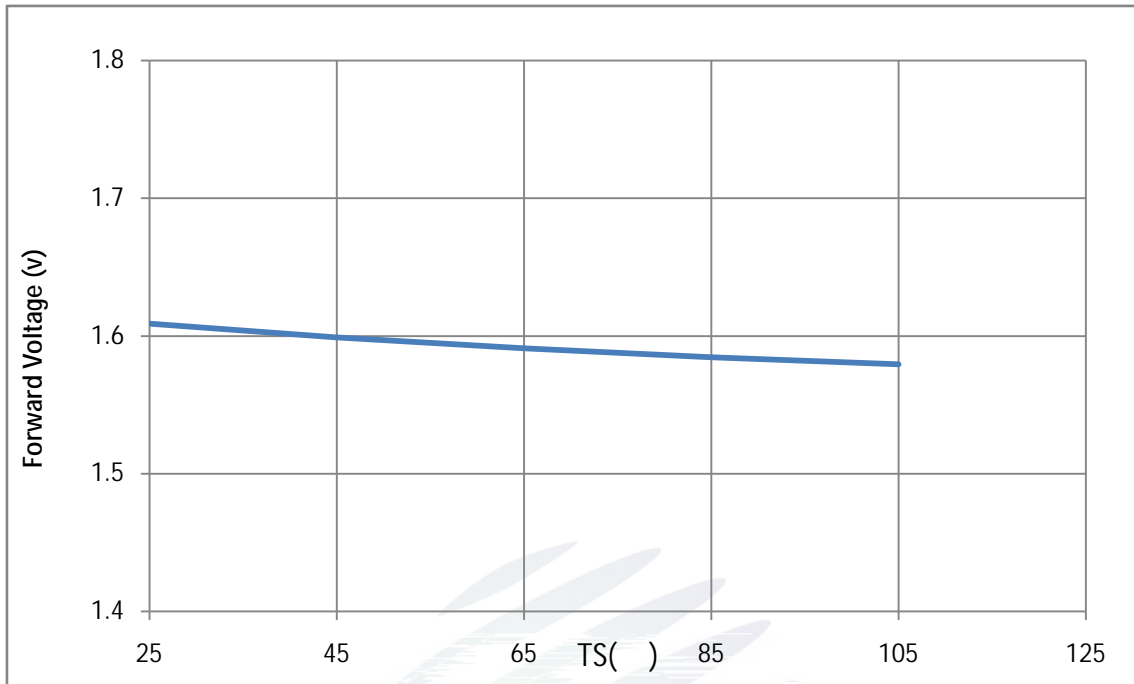


Fig. 1-11 Forward Voltage Vs Solder Temperature

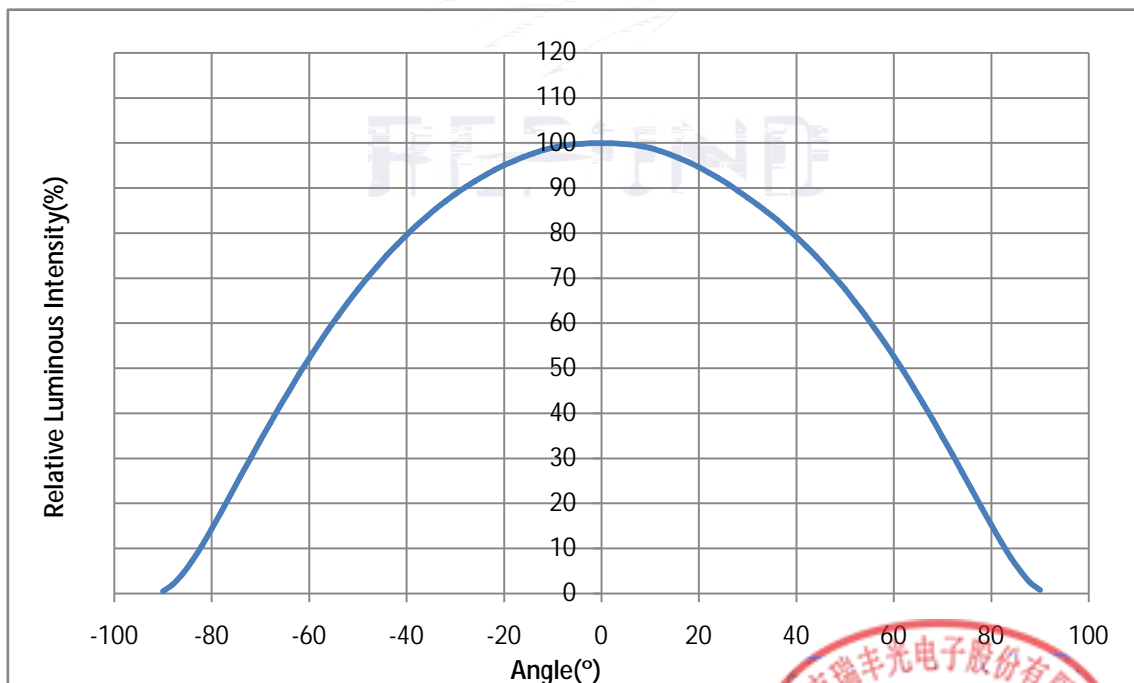
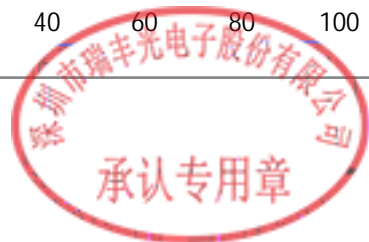


Fig. 1-12 Radiation diagram



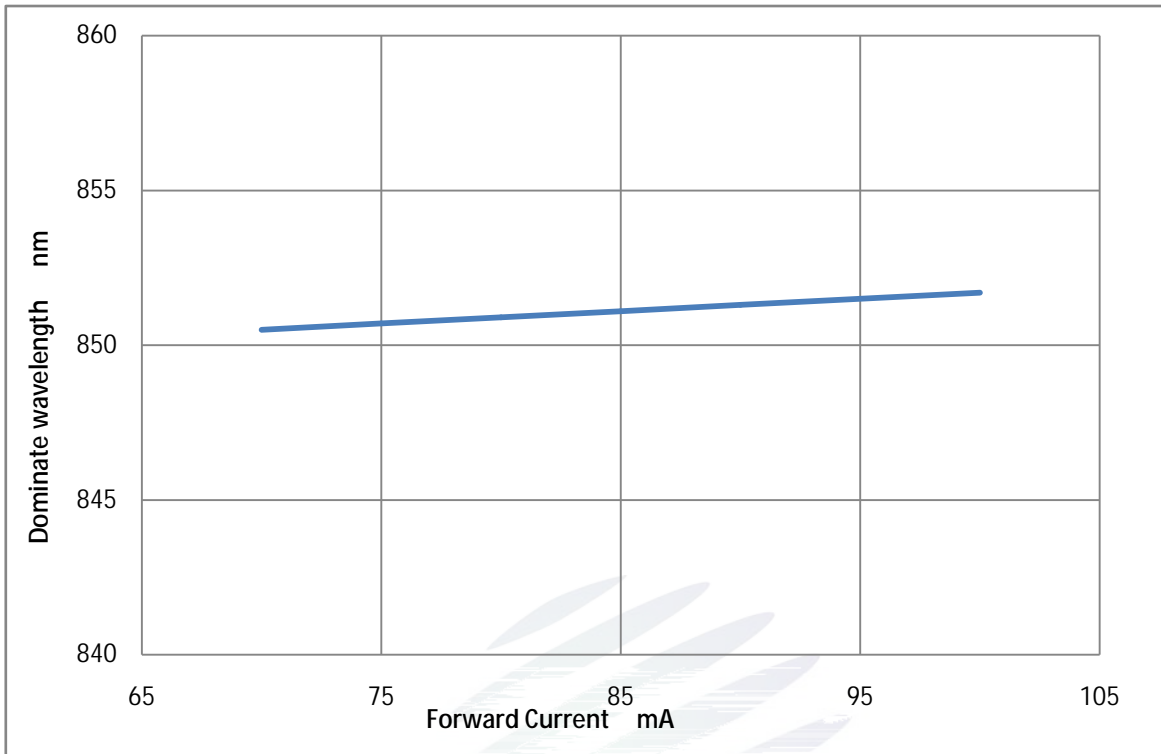


Fig. 1-13 Forward current vs. Dominate wavelength (Ts=25°C)

(Ts=25°C)

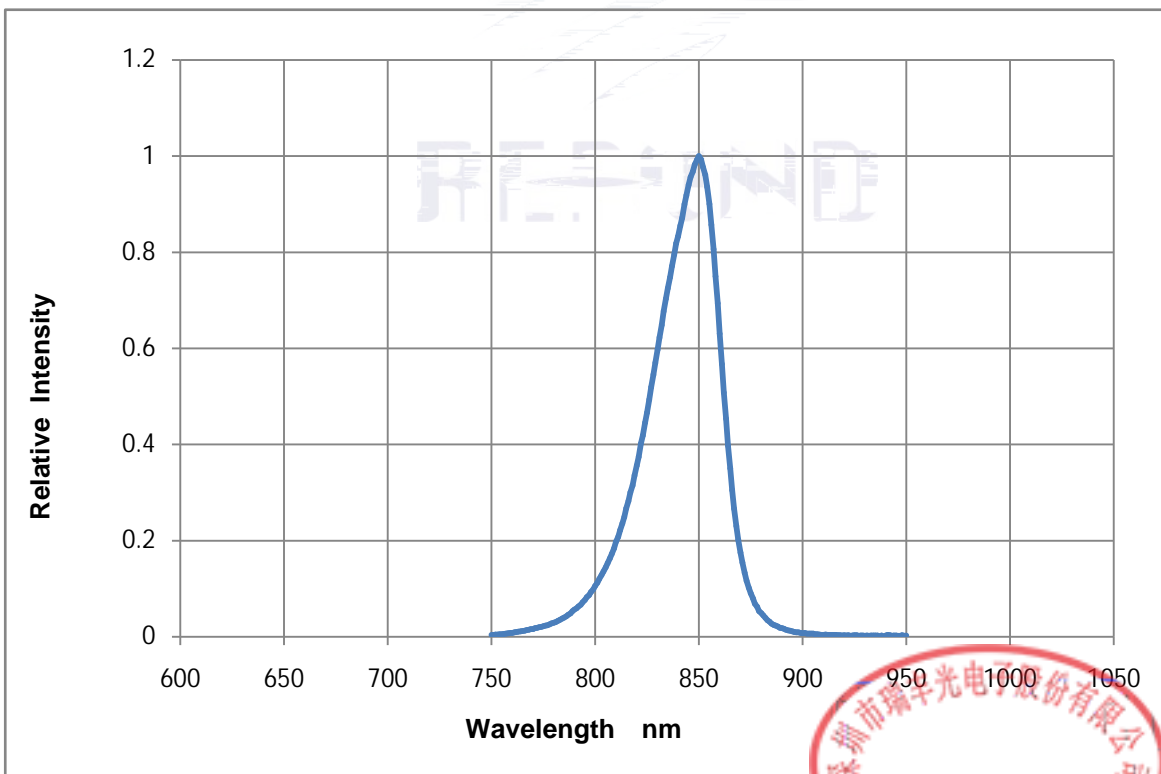


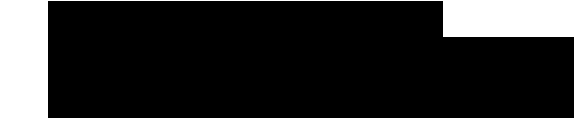
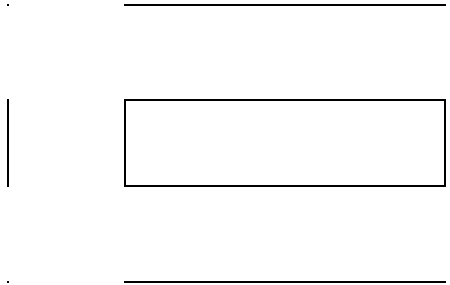
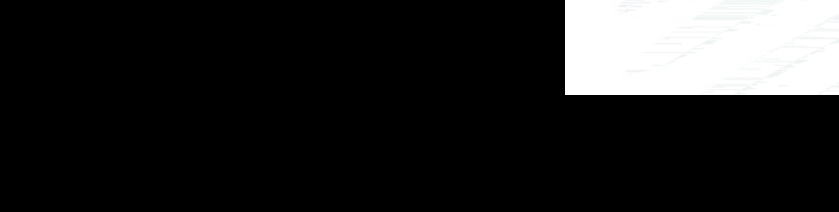
Fig. 1-14 Spectrum Distribution



## 2. Packaging

### 2.1 Packaging Specification

Package: 200 pcs Tray M613S05.44 OT Package:



### 2.1.3 Label Form Specification

able 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 <sub>F</sub>	Forward Voltage
WLD	Wavelength
QTY	Packing Quantity
DATE	Made Date

Fig. 2-3 Label Form Specification

### 2.2 Moisture Resistant Packing

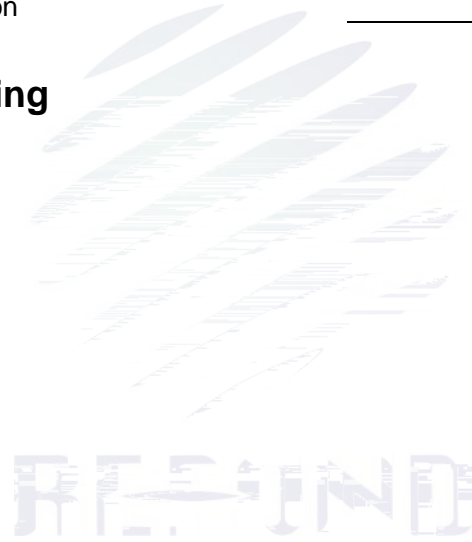


Fig.2-4 Moisture Resistant Packing

### 2.3 Cardboard Box

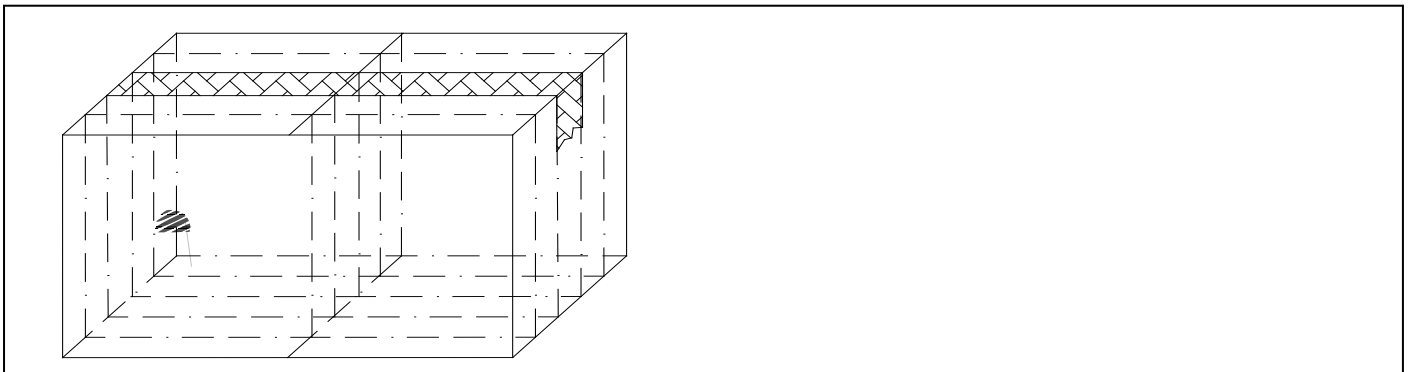


Fig.2-5 Cardboard Box

## 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



## 2.5 Criteria For Judging Damage

Table 2-4 Criteria For Judging Damage

Test Items	Symbol	Test Condition	Criteria For Judgement	
			Min.	Max.
Forward Voltage	$V_F$	$I_F=100\text{mA}$	-	U.S.L*)x1.1
Reverse Current	$I_R$	$V_R = 5V$	-	U.S.L*)x2.0
Luminous intensity	$I_V$	$I_F=100\text{mA}$	L.S.L*)x0.7	-

### Notes

- 1.U.S.L: Upper standard level                      L.S.L: Lower standard level
2. The above reliability tests is based on the verification of a single/strip LED of Refond's existing experimental platform, the reliability experiment was taken under good heat dissipation conditions. when customers applies theLED

### 3. SMT Reflow Soldering Instructions SMT

#### 3.1 SMT Reflow Soldering Instructions SMT

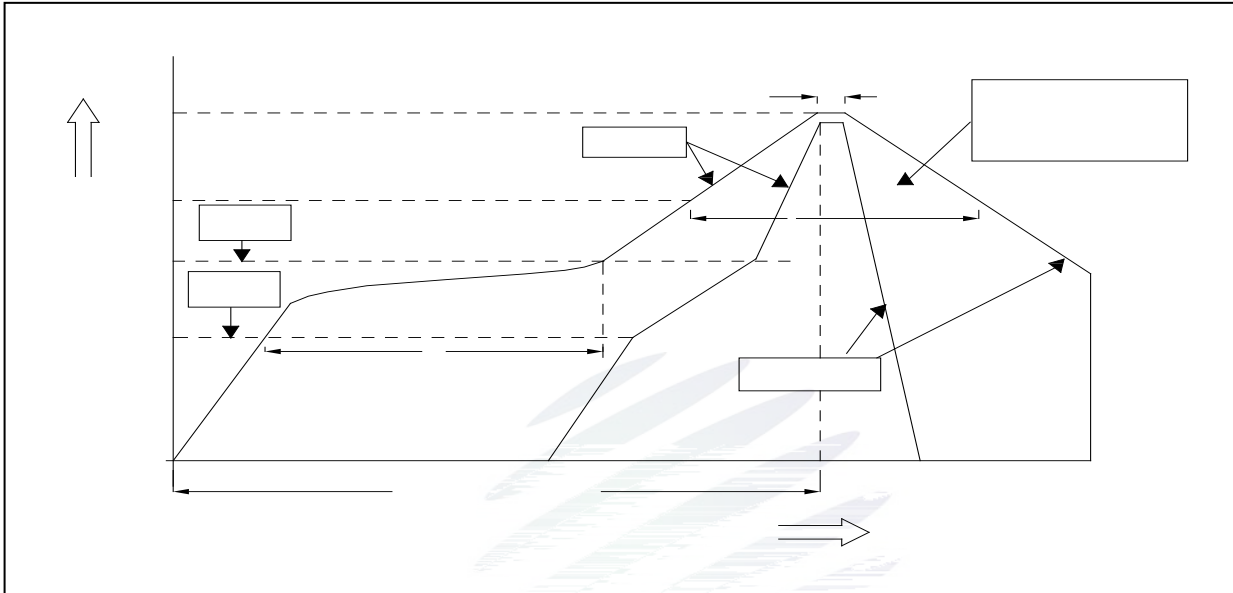
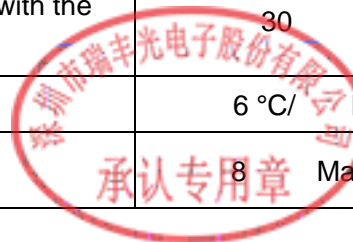


Fig.3-1 SMT Reflow Soldering Instructions SMT

Table 3-1 Reflow parameters

Average temperature rise speed	$T_{smax}$ $T_P$	3 °C/ Max 3 °C/ s
Preheating: minimum temperature	( $T_{smin}$ )	150 °C
Preheating: Max temperature	( $T_{smax}$ )	200 °C
Preheating: Time	$T_{smin}$ $T_{smax}$	60 - 120 60s-120s
Time limited to maintain high temperature: the temperature	( $T_L$ )	217 °C
Time limited to maintain high temperature: The Time	( $t_L$ )	60 Max 60s
Peak /Classification of temperature:	/ ( $T_P$ )	260 °C
Time limit classification of peak temperature time	$t_p$	10 Max 10s
actual peak temperature (TP)	( $T_P$ ) 5 °C Hold time within 5 °C with the	30 Max 30s
Cooling speed		6 °C/ Max 6 °C/ s
25 °C	Needed time from 25 °C to $T_p$	8 Max 8 minutes



Notes

03+AA I cKDsV"1ZUC14éG ÀEN3A Ó8d •





## 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 900PPM  
LED 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 affect 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±5	-	24hours  24

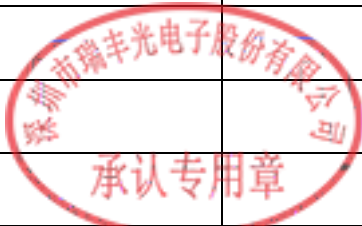
(8) If the moisture absorbent material silica gel has faded away or the LEDs have exceeded the storage time, baking treatment should be performed after unpacking and based on the following condition 60 for above 24 hours. 60  
±5 24

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).

Version History/

Date	Revisor	Version	Verifier	Remarks
2022/08/20	Lu Xian	E0	Zhu Yiming	New issue





Declare

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

