SPECIFICATION

REFOND P/N

RF-GNRL30TS-CG-G

Mass Production

用章 承认专

Contents

用章 承认专

1. Description

1.1

The Green source color devices are made with InGaN on Substrate Light Emitting Diode .

Product Package:3.50mmX2.80mmX3.50mm.

LED InGaN ：3.50mmX2.80mmX3.50mm。

1.2Features

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 2. Level2

Compliance with RoHS and REACH. 符合RoHS和REACH要求

Qualifications: The product qualification test plan is based on the guidelines of AEC-Q101Stress Test Qualification for Automotive Grade Discrete Semiconductors

AEC-Q101

1.3Application

Automotive Interior Lighting.汽 内 照明

Switches.开关

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1.4Package Dimension

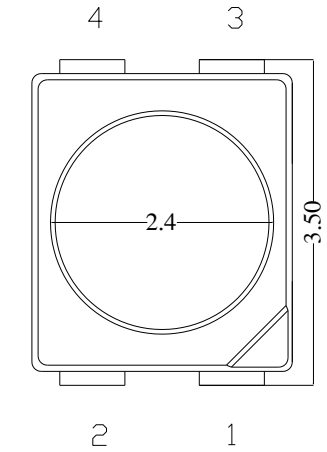

Fig.1-1 Top View

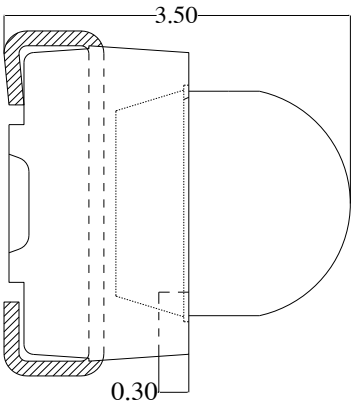

Fig.1-2SideView

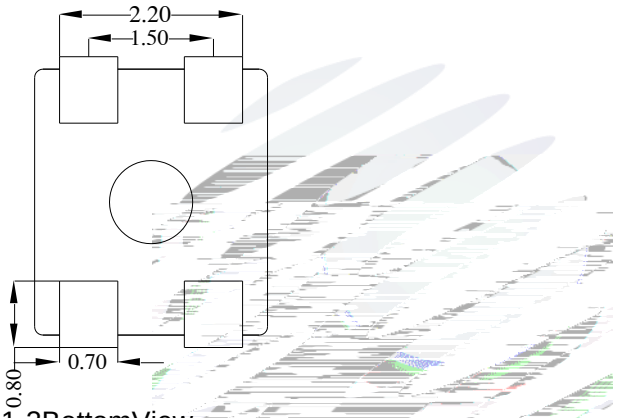

Fig.1-3BottomView

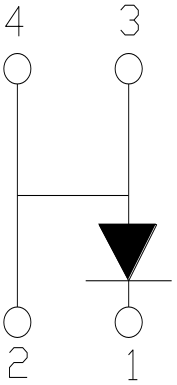

Fig.1-4Polarity

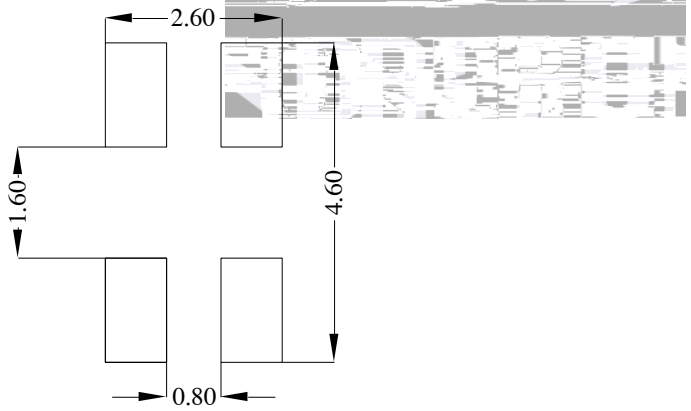

Fig.1-5Soldering Patterns

Notes

1. All dimensions units are millimeters.
2. All dimensions tolerances are ±0.2mm unless otherwise noted.

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1.5Product Parameters

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

Item	Symbol	Test Condition	Value			Unit
			Min.	Typ.	Max.	
Forward Voltage	V_F	I_F=50mA	2.8	3.2	3.5	V
Reverse Current	I_R	V_R=5V	---	---	10	uA
Luminous Intensity	IV	I_F=50mA	18000	33000	43000	mcd
Dominant wavelength	Wd	IF=50mA	515	520	525	nm
Viewing Angle		I_F=50mA	---	30	---	deg
Thermal Resistance.	R_{THJ-S}	I_F=50mA	---	---	130	K/W

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

Parameter	Symbol	Rating	Units
Power Dissipation	P_D	245	mW
Forward Current	I_F	70	mA
Peak Forward Current	I_{FP}	100	mA
Reverse Voltage	V_R	5	V
Electrostatic Discharge (HBM)	E_{SD}	2000	V
Operating Temperature	T_{OPR}	-40	

Notes

1. 1/10 Duty cycle, 10ms pulse width. 10ms, 1/10.

2. The above forward voltage measurement allowance tolerance is ±0.1V.

3. The above color coordinates measurement allowance tolerance is ±0.005. ± 0.005.

4. The above luminous intensity measurement allowance tolerance ±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 handing is needed. 90% LED ESD2000V ,

1.6Bin Range Of Forward Voltage and Luminous Intensity and Dominant wavelength (IF=50mA) BIN (IF=50mA)

Table 1-3

V_F V	G1	G2	H1	H2	I1	I2	J1
	2.8-2.9	2.9-3.0	3.0-3.1	3.1-3.2	3.2-3.3	3.3-3.4	3.4-3.5
IV mcd	AB3	AB4	AB5	AB6			
	18000-23000	23000-28000	28000-35000	35000-43000			
WD(nm)	D1	D2	E1	E2			
	515-517.5	517.5-520	520-522.5	522.5-525			

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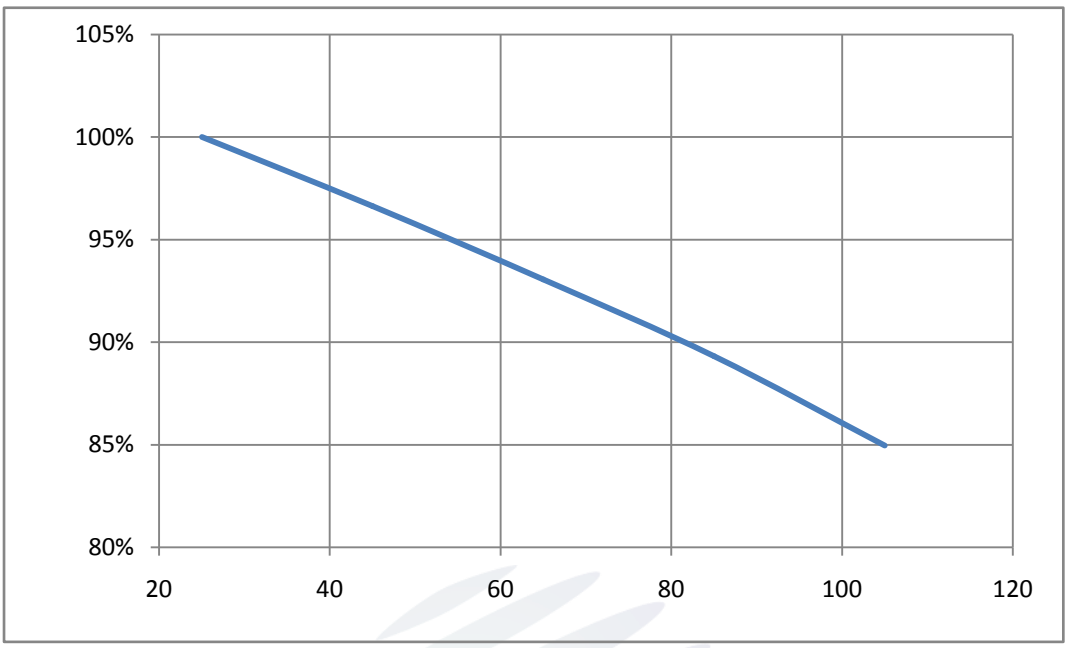

Fig. 1-9 Solder Temperature Vs Relative Intensity

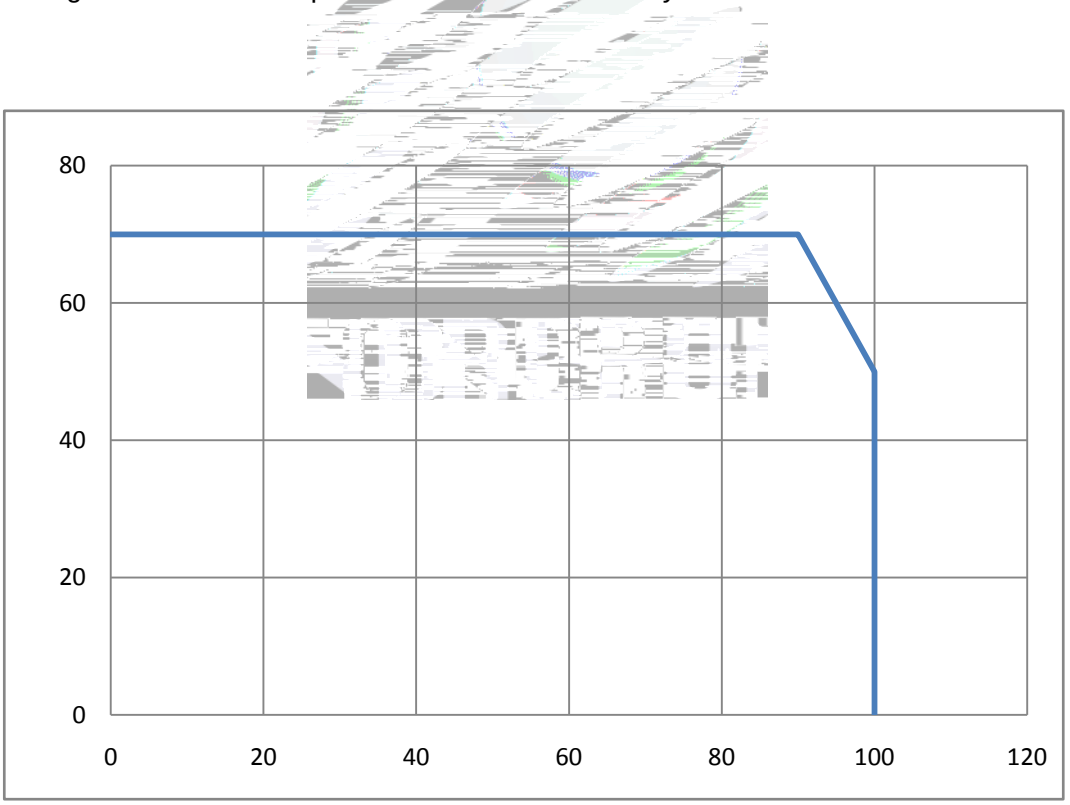

Fig. 1-10 Solder Temperature Vs Forward Current

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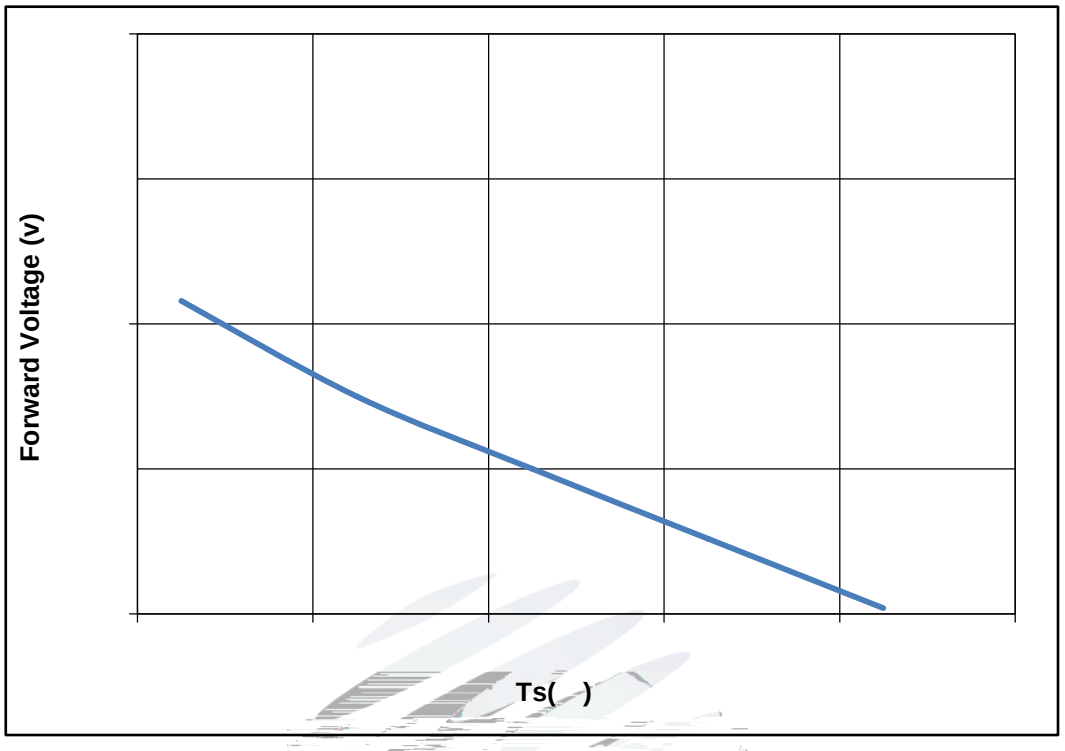

Fig. 1-11 Forward Voltage Vs Solder Temperature

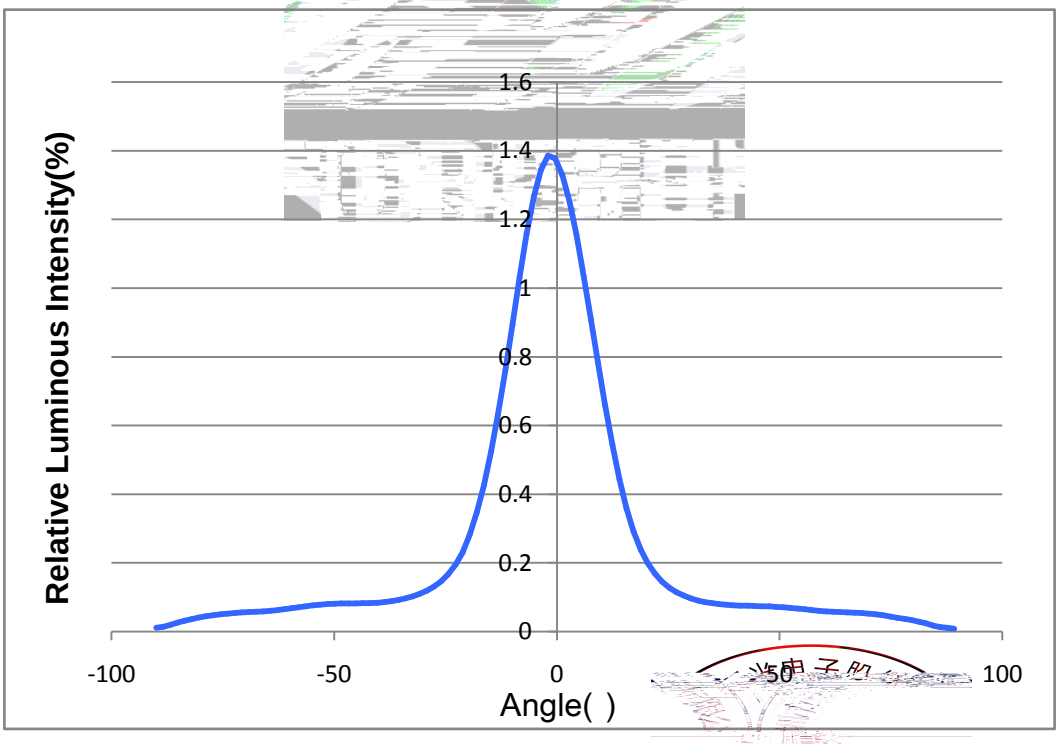

Fig. 1-12 Radiation diagram

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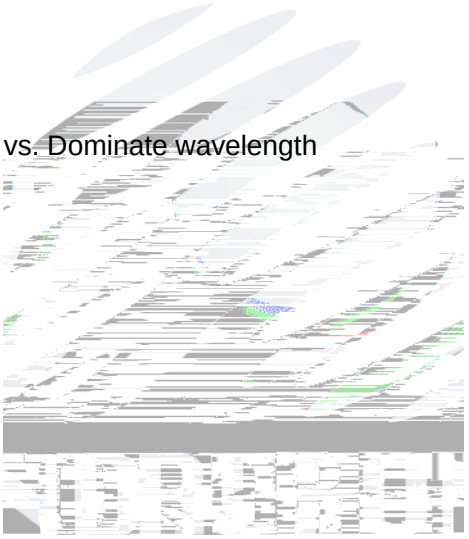
Fig. 1-13 Forward current vs. Dominate wavelength



2. Packaging

2.1 Packaging Specification

Package:2000pcs/reel. 2000pcs

2.1.1Carrier Tape Dimension

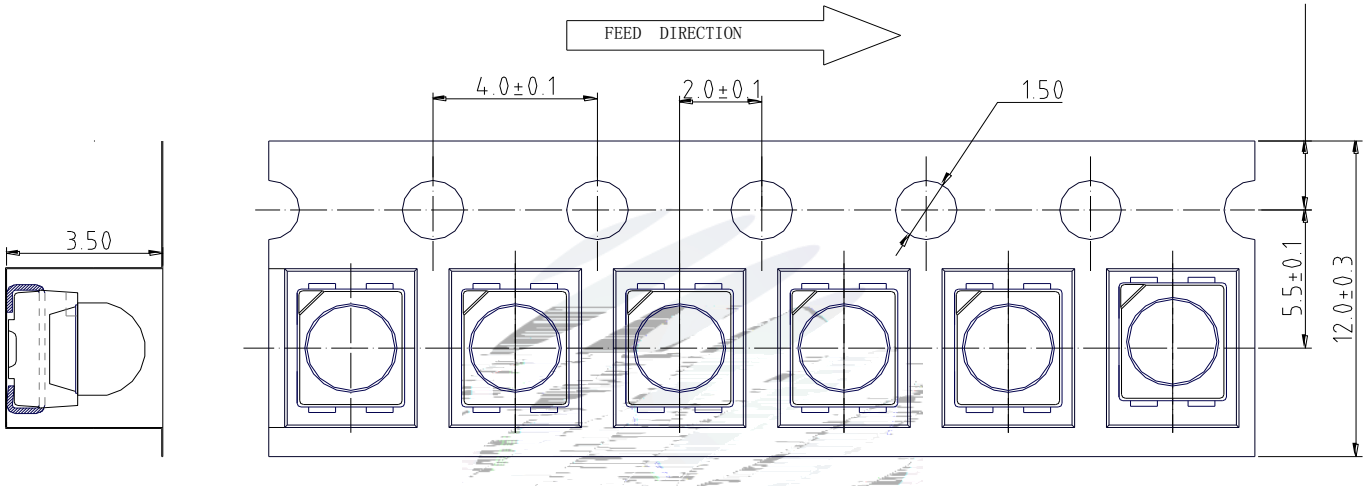
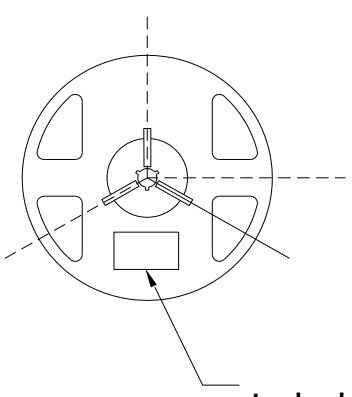


Fig.2-1 Carrier Tape Dimension

2.1.2Reel Dimension



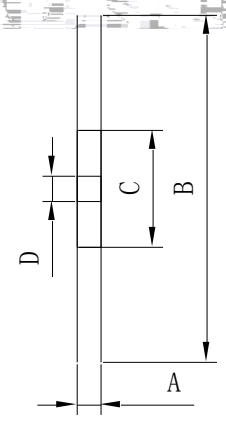


Fig.2-2Reel Dimension

Table 2-1Reel Dimension

A	8.0 0.1mm
B	330 1mm
C	100 1mm
D	13.0 0.5mm

Notes

The tolerances unless mentioned ±0.1mm. Unit : mm

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2.1.3Label Form Specification

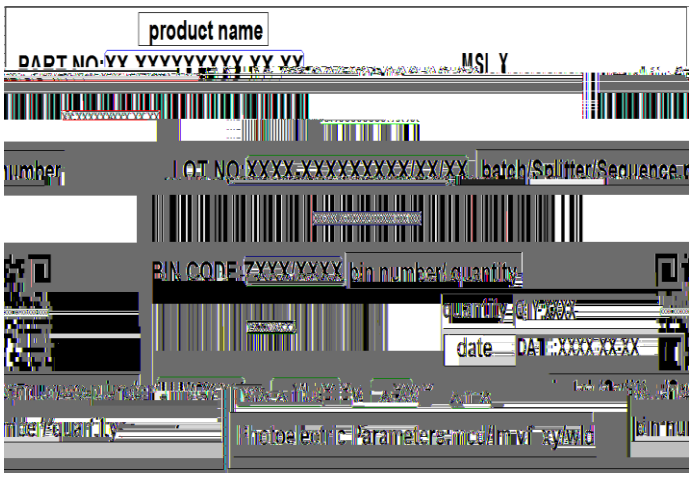

Fig. 2-3 Label

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

2.2Moisture Resistant Packing

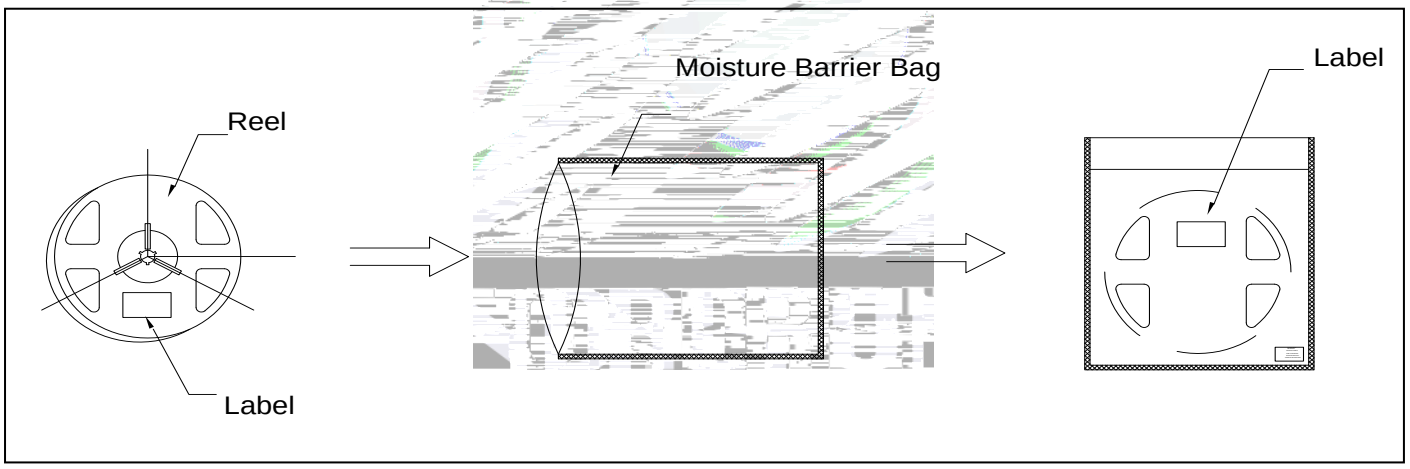

Fig.2-4Moisture Resistant Packing

High Temperature High Humidity Life Test	JESD22-A101	85 / 85%R_H I_F=50mA	1000hrs.	20pcs.	0/1
Temperature Humidity Storage	JEITA ED-4701 100 103	T_A=85 R_H=85%	1000hrs.	20pcs.	0/1

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=50mA	-	U.S.L*)x1.1
Reverse Current	I_R	V_R = 5V	-	U.S.L*)x2.0
Luminous Flux		I_F=50mA	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

3.The technical information shown in the data sheets is

(TP) 5 °C Hold time within 5 C with the actual peak temperature (TP)	30 Max 30s
Cooling speed	6 °C/ Max 6 °C/ s
25 °C Needed time from 25 °C to Tp	8 Max 8 minutes

Notes

(1)Reflow soldering should not be done more than twice. If more than 24 hours between the two solderings ,LED will be damaged. 24 LED

(2)When soldering , do not put stress on the LEDs during heating.

3.1.1 Soldering Iron

(1) When do soldering by hand, keep the temperature of iron below less 300℃ less than 3 seconds. , 300 3

(2) Soldering by hand should be done only one time.

3.1.2 Repairing

Repairing 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 whether the characteristics of LEDs will or not be damaged by repairing.

LED

LED

3.1.3 Cautions

（1） The encapsulated material of the LEDs is silicone. Therefore the LEDs have a soft surface on the top of package. The pressure to the top surface will be impacted on the reliability of the LEDs. Precautions should be taken to avoid the strong pressure on the encapsulated part. So when use the picking up nozzle, the pressure on the silicone resin should be proper. LED

LED

(2) Components should not be mounted on warped (non coplanar) portion of PCB. After soldering, do not warp the circuit board.LED PCB

(3) Do not apply mechanical force or excess vibration during the cooling process to normal temperature after soldering. Do not rapidly cool device after soldering.

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 LED 100PPM.

(2) In order to prevent ex-ternal 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 elementis 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 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

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.

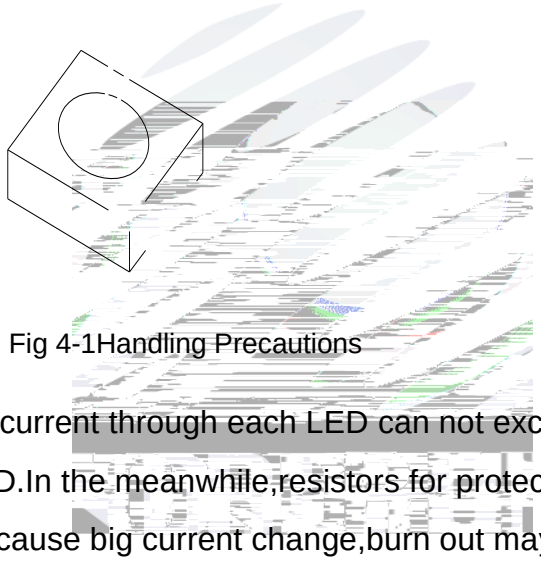

Fig 4-1Handling Precautions

(5) In designing a circuit,thecurrent through each LED can not exceed the absolute maximum rating specified for each LED.In the meanwhile,resistors for protection should be applied,other wise slight voltage shift will cause big current change,burn out may happen. The driving circuit must be designed to allow forward voltage only when it is ON or OFF.If the reverse voltage is applied to LED, migration can be generated resulting in LED damage. LED

LED

(6) Thermal Design is paramount importance because heat generation may result in the Characteristics decline,such as brightness decreased,Color change and so on.Please consider the heat generation of the LEDs when making the system design.LED

LED

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(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.

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Declare

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