

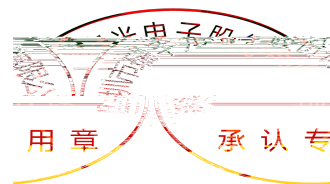
# SPECIFICATION



REFOND P/N

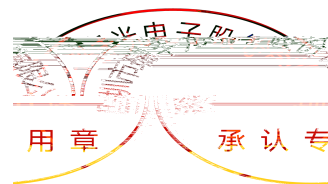
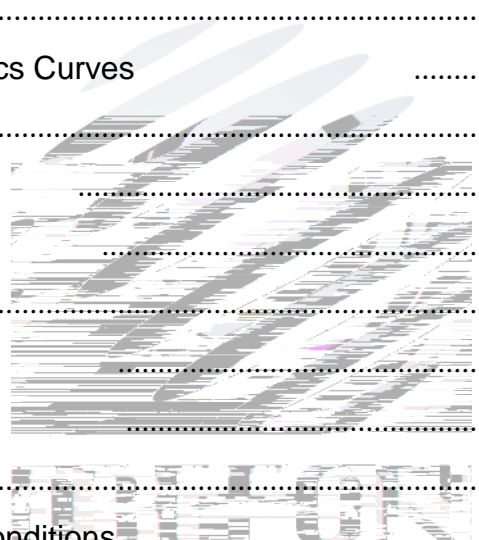
**RF-BNRA30TS-BB**

Mass Production



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# 1. Description

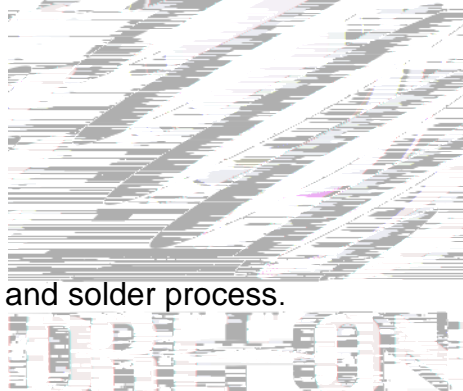
## 1.1



The Blue source color devices are made with GaN on Substrate Light Emitting Diode .  
 Product Package:3.50mmX2.80mmX1.84mm.

GaN

3.50mmX2.80mmX1.84mm



## 1.2 Features

PLCC2 Package.

Extremely wide viewing angle.

Suitable for all SMT assembly and solder process.

Available on tape and reel.

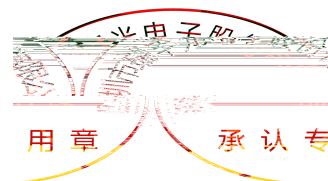
Moisture sensitivity level: Level 2.

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-Q101  
 Stress Test Qualification for Automotive Grade Discrete Semiconductors

## 1.3 Application

Automotive Interior Lighting. 汽 内 照明  
 Switches. 开关



### 1.4 Package Dimension

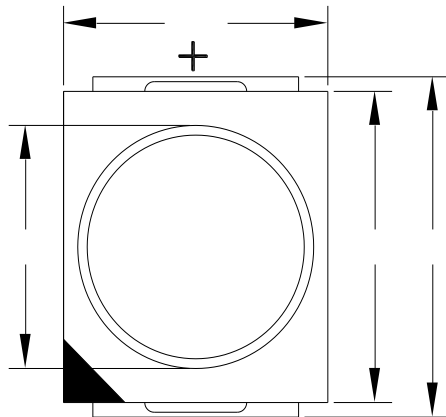


Fig.1-1 Top View

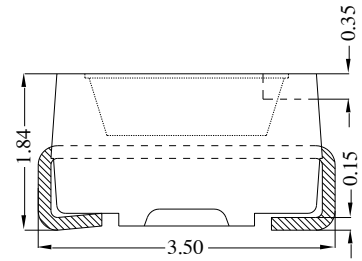


Fig.1-2 Side View

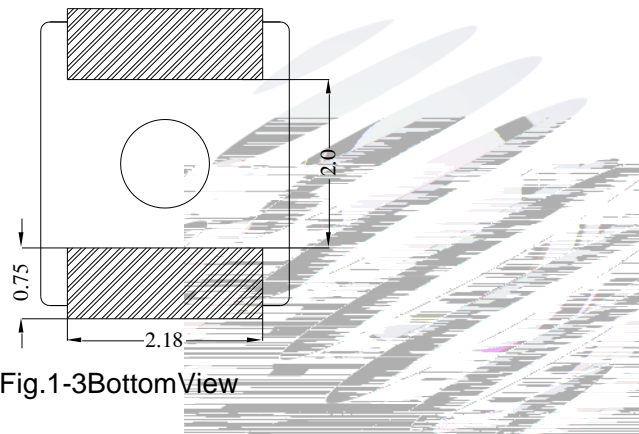


Fig.1-3 Bottom View

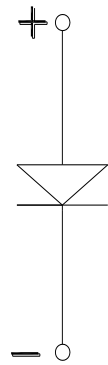


Fig.1-4 Polarity

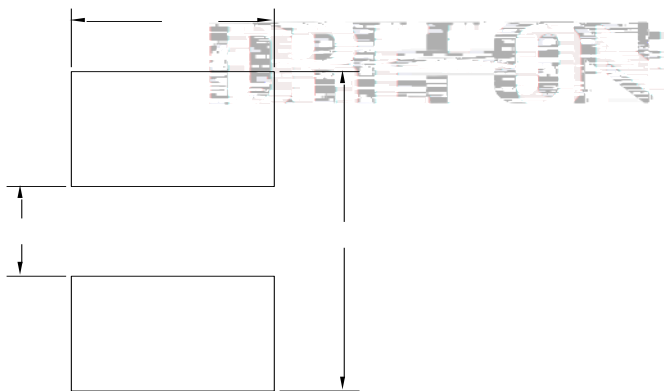
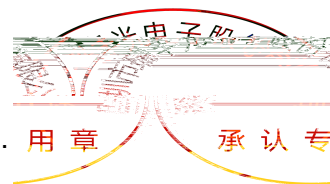


Fig.1-5 Soldering Patterns

#### Notes

All dimensions units are millimeters.

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



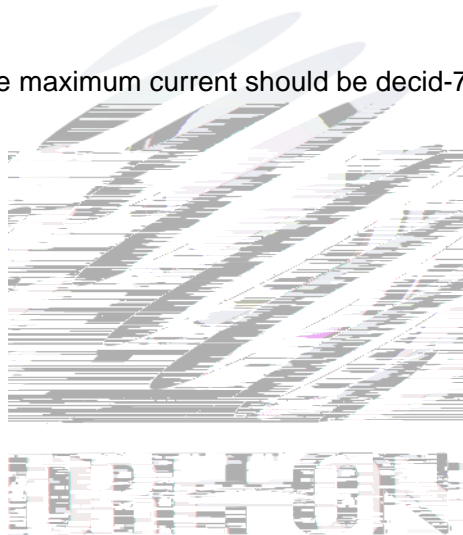


Notes

1. 1/10 Duty cycle, 10ms pulse width.
2. The above forward voltage measurement allowance tolerance is  $\pm 0.1V$ .
3. The above color coordinates measurement allowance tolerance is  $0.005$ .
4. The above luminous intensity measurement allowance tolerance  $\pm 10\%$ .
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.

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7. When the LEDs are in operation the maximum current should be decided under the following conditions:



## 1.7 Typical Optical Characteristics Curves



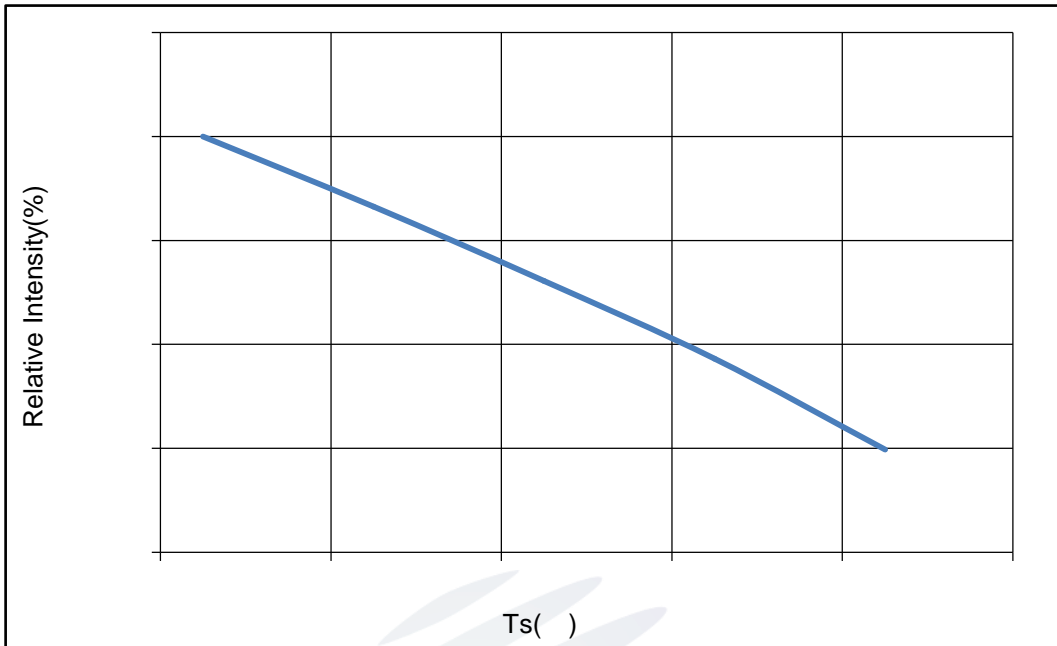


Fig. 1-9 Solder Temperature Vs Relative Intensity

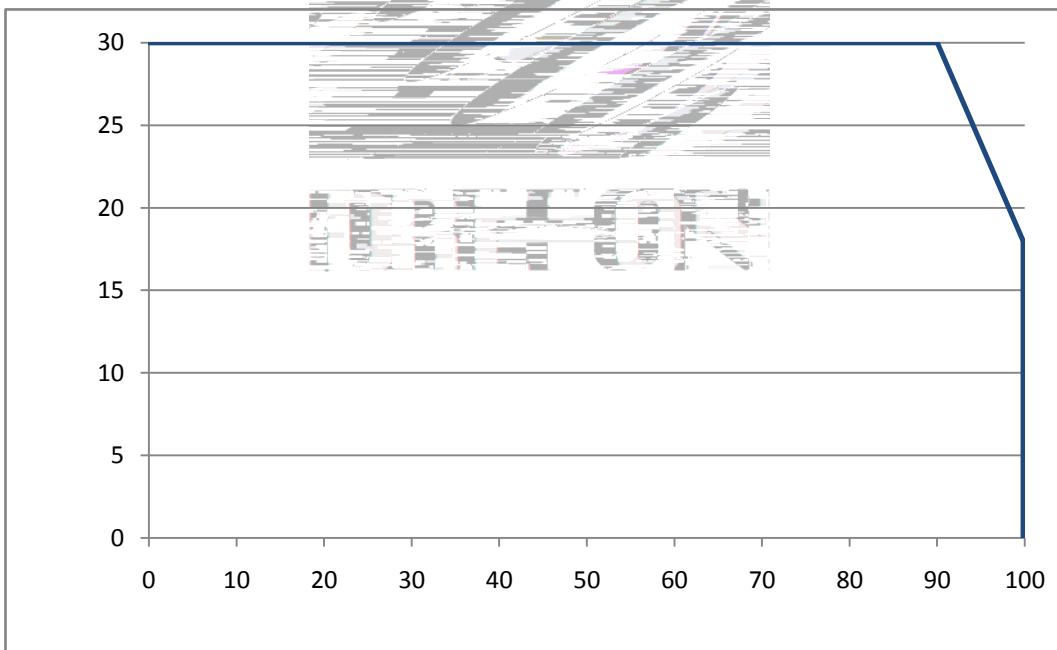


Fig. 1-10 Solder Temperature Vs Forward Current

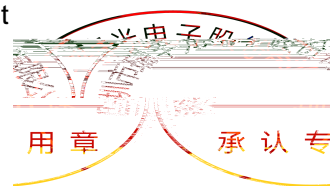




Fig. 1-11 Forward Voltage Vs Solder Temperature

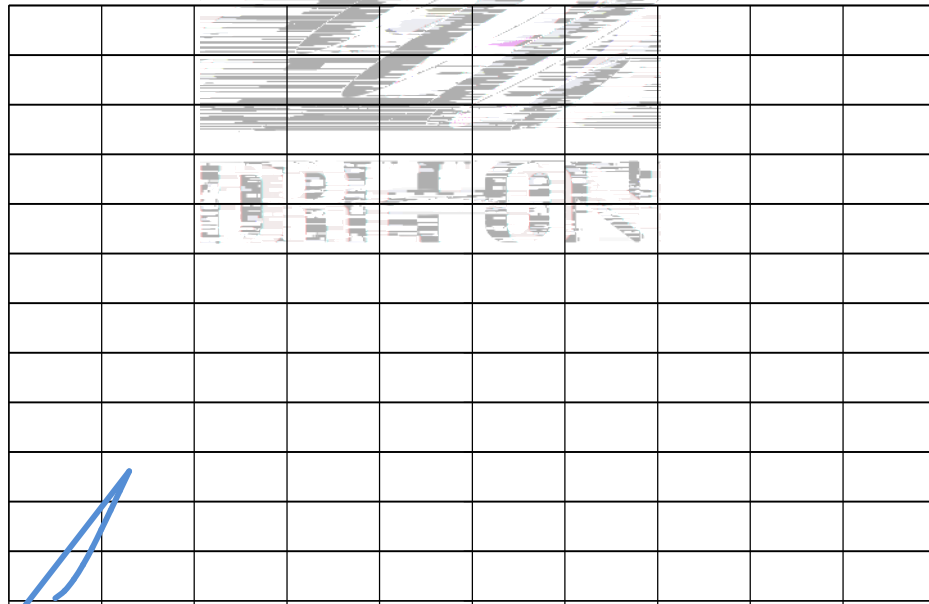
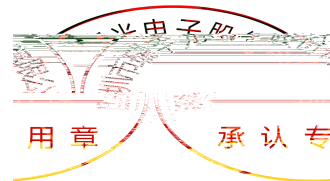


Fig. 1-12 Radiation diagram



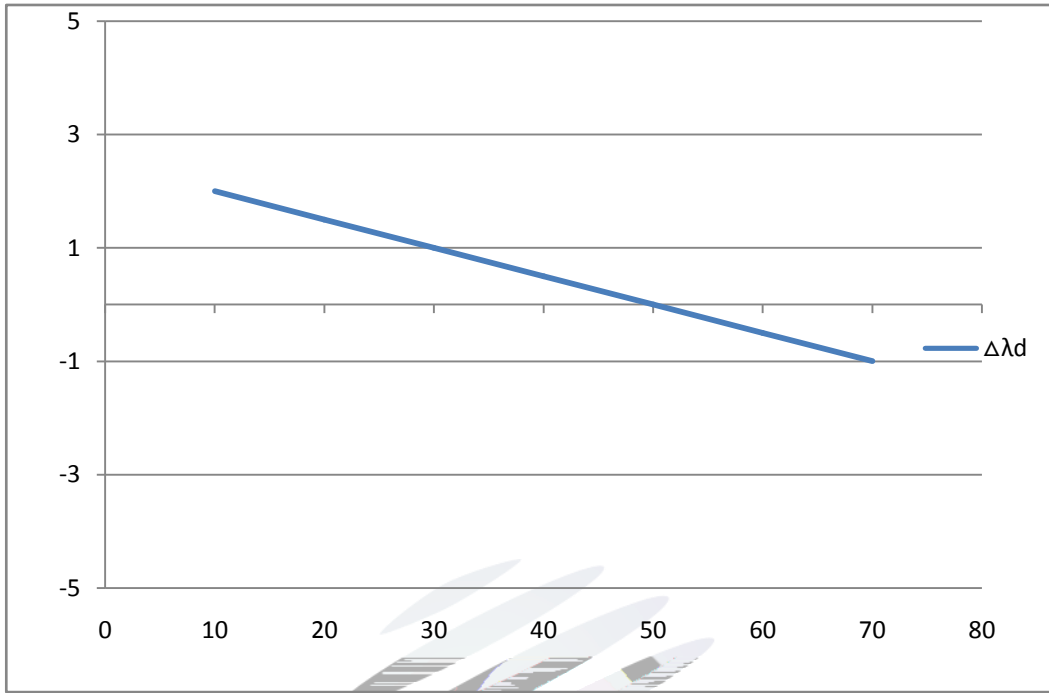


Fig. 1-13 Forward current vs. Dominate wavelength (Ts=25°C)

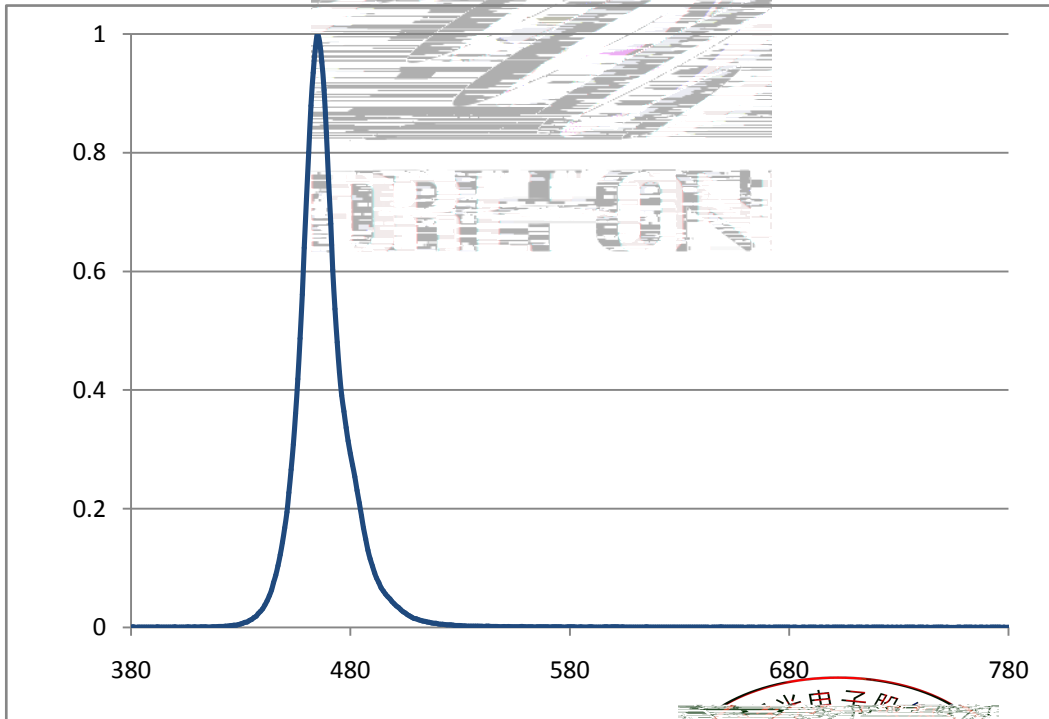
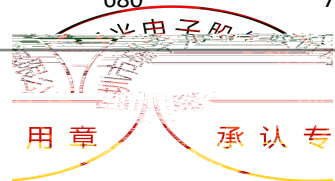


Fig. 1-14 Spectrum Distribution



## 2. Packaging

### 2.1 Packaging Specification

Package:2000pcs/reel.      2000pcs

#### 2.1.1 Carrier Tape Dimension

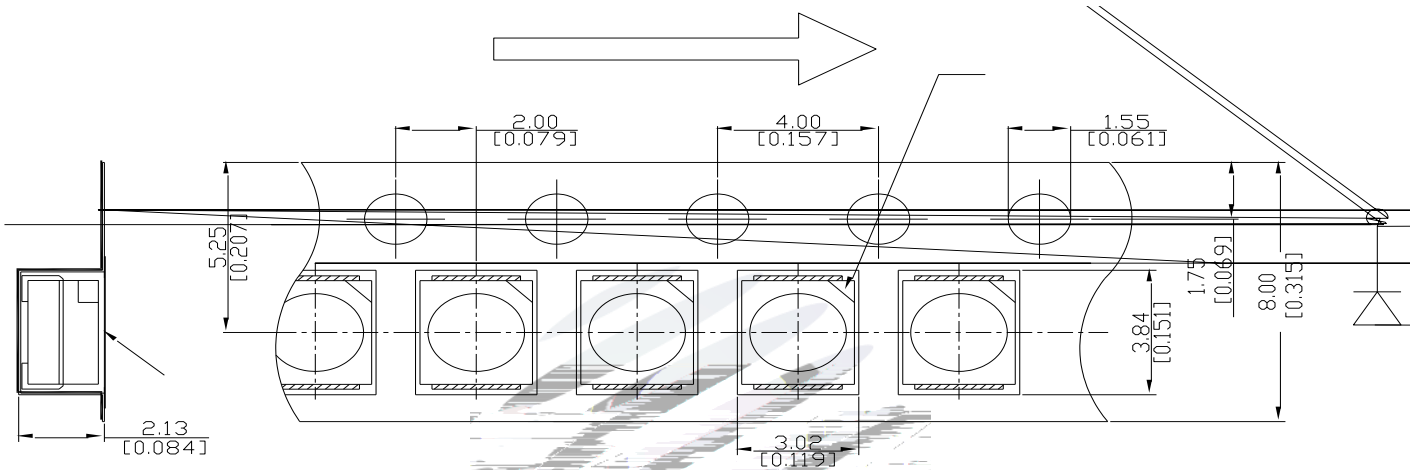


Fig.2-1 Carrier Tape Dimension

#### 2.1.2 Reel Dimension

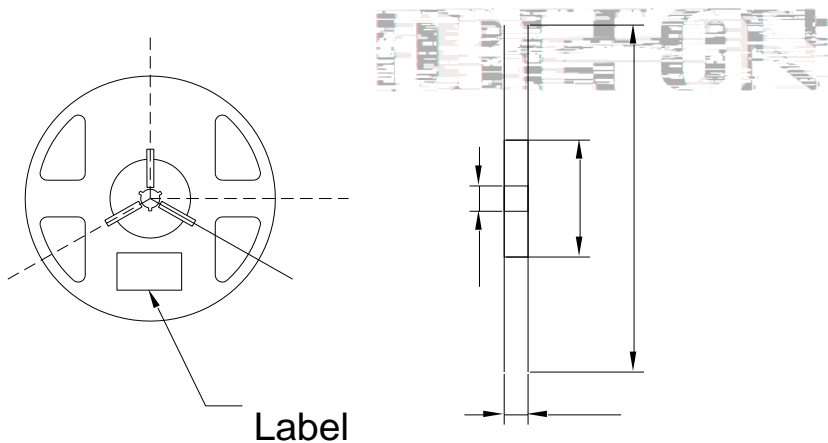


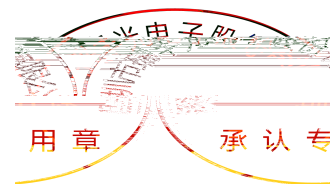
Fig.2-2 Reel Dimension

Reel Dimension

A	8.0 0.1mm
B	178 1mm
C	60 1mm
D	13.0 0.5mm

#### Notes

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



### 2.1.3 Label Form Specification

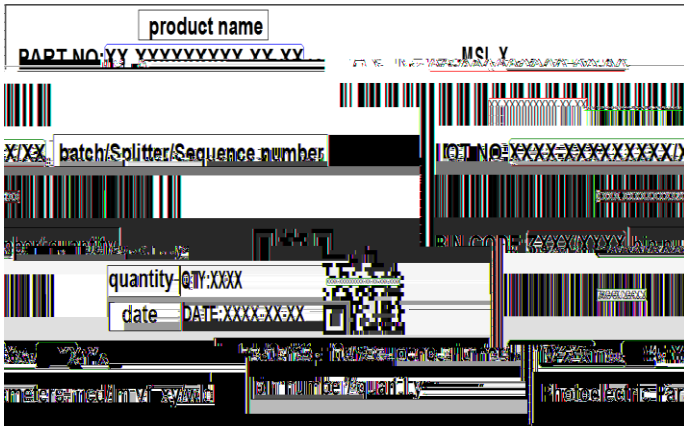


Fig. 2-3 Label Form Specification

#### 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

### 2.2 Moisture Resistant Packing

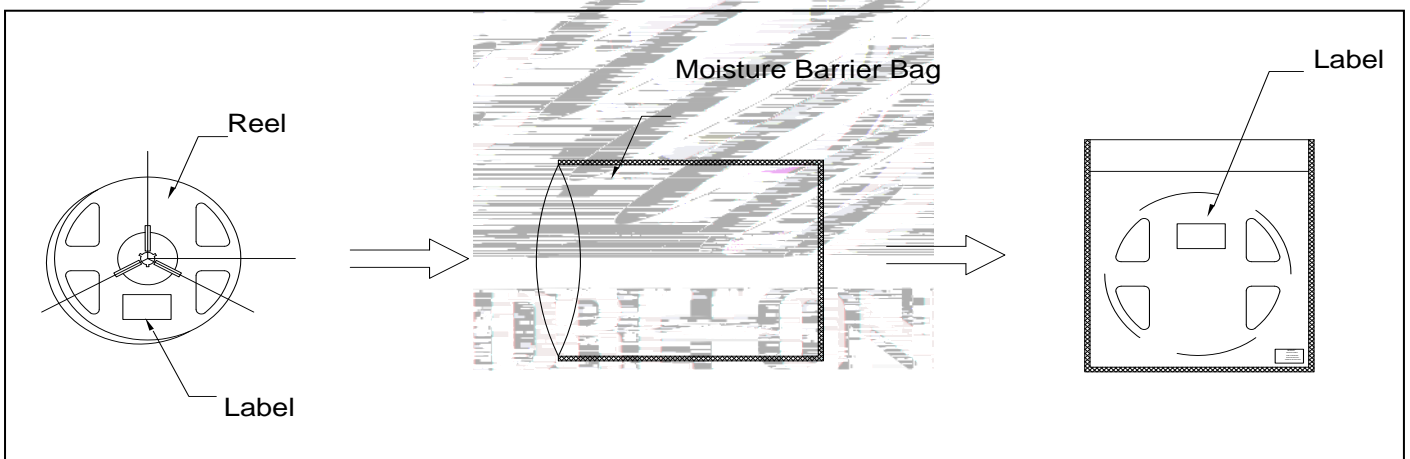
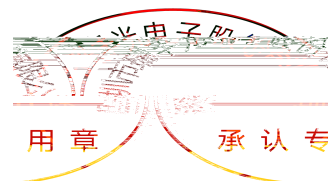


Fig.2-4 Moisture Resistant Packing



### 2.3 Cardboard Box

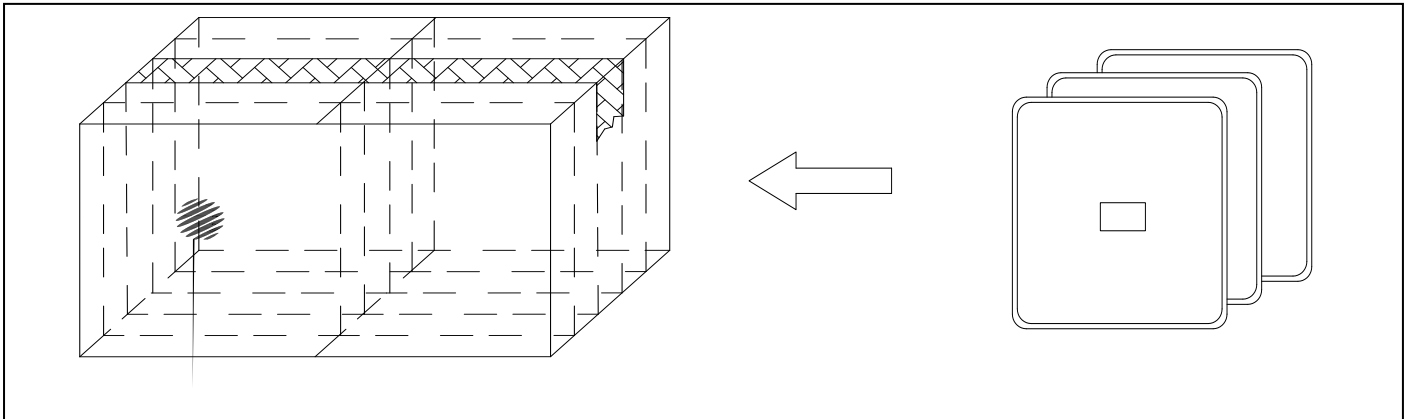
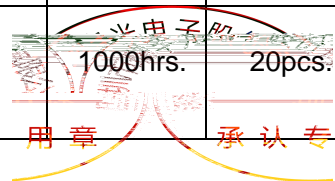


Fig.2- Cardboard Box

### 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
Thermal Shock	JEITAED-4701 300307	-40 15min 10s 125 15min	1000 cycle	20pcs.	0/1
High Temperature Storage	JEITAED-4701 200 201	Temp:125	1000hrs.	20pcs.	0/1
Low Temperature Storage	JEITA ED-4701 200 202	Temp:-40	1000hrs.	20pcs.	0/1
Life Test	JESD22-A108	Ta=25 If=20mA	1000hrs.	20pcs.	0/1



High Temperature  
High Humidity Life Test JESD22-A101 85 / 85%RH



3.The technical information shown in the data sheets is limited to the typical characteristics and circuit examples of the referenced products. It does not constitute the warranting of industrial property nor the granting of any license.

### 3. SMT Reflow Soldering Instructions SMT

#### 3.1 SMT Reflow Soldering Instructions SMT

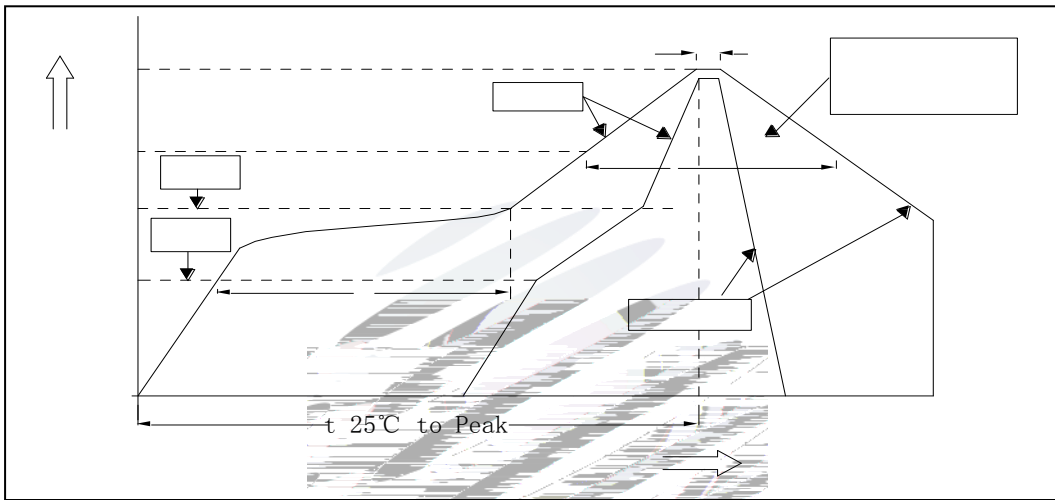


Fig.3-1 SMT Reflow Soldering Instructions SMT

Table 3-1 Reflow parameters

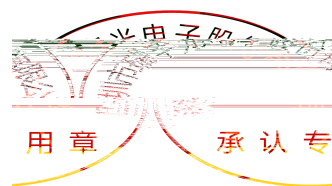
Average temperature rise speed	$T_{smax}$	$T_p$	3 °C/	Max 3 °C/ s
Preheating: minimum temperature	(T <sub>smin</sub> )		150 °C	
Preheating: Max temperature	(T <sub>smax</sub> )		200 °C	
Preheating: Time	T <sub>smin</sub>	T <sub>smax</sub>	60 - 120	60s-120s
Time limited to maintain high temperature: the temperature (T <sub>L</sub> )			217 °C	
Time limited to maintain high temperature: The Time (t <sub>L</sub> )			60	Max 60s
Peak /Classification of temperature:	/	(T <sub>P</sub> )	260 °C	

Time limit classification of peak temperature time $t_p$	10      Max 10s
(TP)      5 °C      Hold time within 5 °C with the actual peak temperature (TP)	30









(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

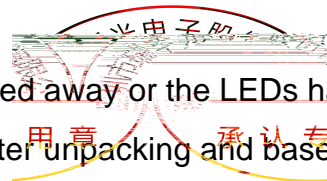
(7) Compared to standard encapsulants, silicone is generally softer, and the surface is more likely to attract dust, requiring special care during processing. In cases where a minimal level of dirt and dust particles cannot be guaranteed, a suitable cleaning solution must be applied to the surface after the soldering of components. Refond suggests using isopropyl alcohol for cleaning. In case other solvents are used, it must be assured that these solvents do not dissolve the package or resin. Ultrasonic cleaning is not recommended. Ultrasonic cleaning may cause damage to the LED.



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

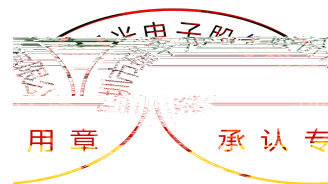


following condition 65 5 for above 24 hours.

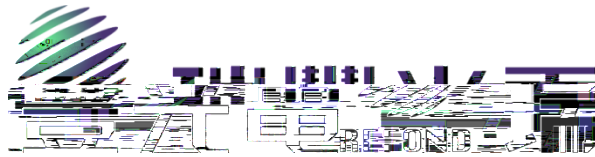
If the package is flatulence or damaged, please notify the sales staff to assist.

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

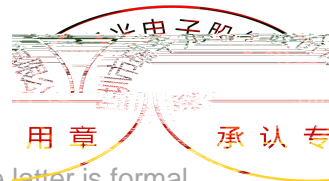
(10) Other points for attention, please refer to our relevant information.







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Declare

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