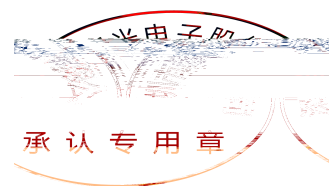
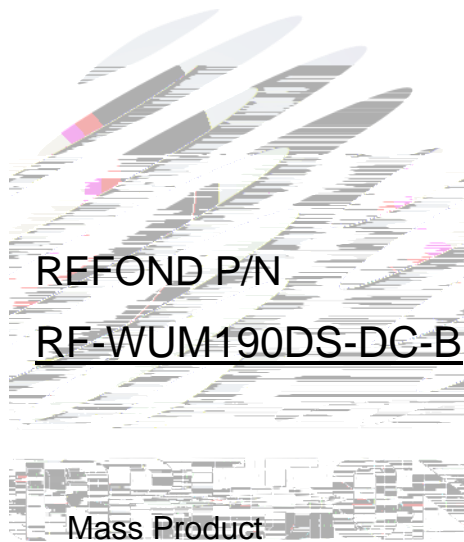


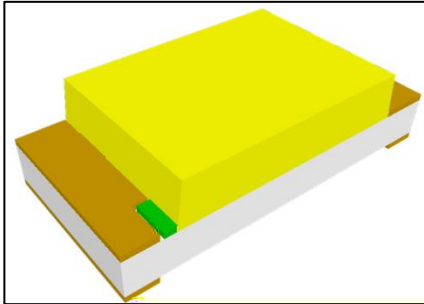
# SPECIFICATION





# 1. Description

## 1.1 General Description



The White LED, which was fabricated by using a blue chip and the phosphor.  
 Product Package:1.6mmX0.8mmX0.4mm.

## 1.2 Features

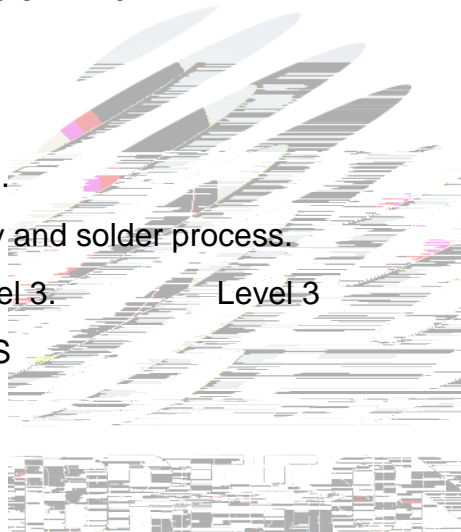
Extremely wide viewing angle.

Suitable for all SMT assembly and solder process.

Moisture sensitivity level: Level 3.

RoHS compliant.

RoHS



1.6mmX0.8mmX0.4mm

SMT

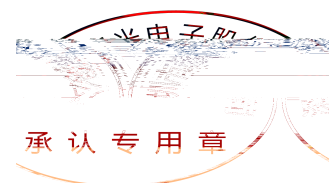
Level 3

## 1.3 Application

Optical indicator.

Switch and Symbol, Display.

General use.



## 1.4 Package Dimension

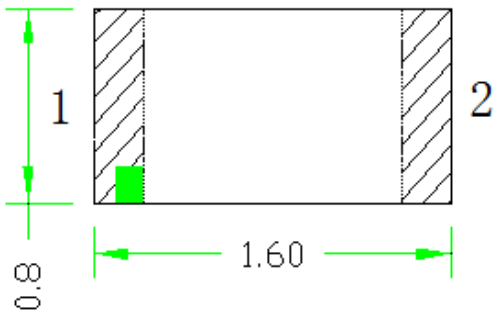


Fig.1-1 Top view

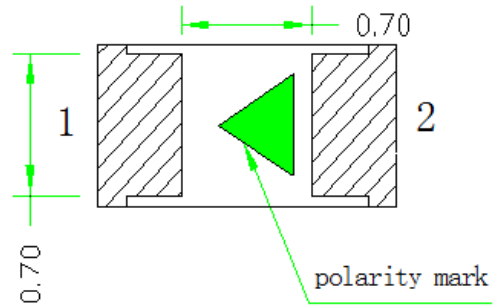


Fig.1-2 Bottom view

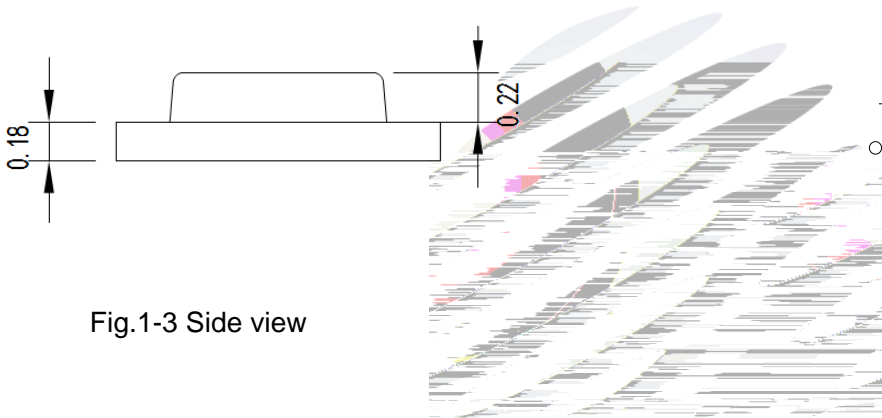


Fig.1-3 Side view

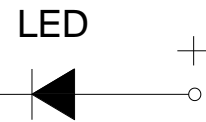


Fig.1-4 Polarity

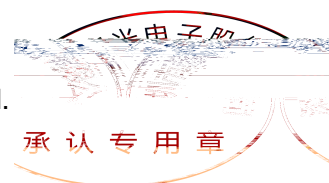


Fig.1-5 Soldering patterns

### Notes

All dimensions units are millimeters.

All dimensions tolerances are 0.2mm unless otherwise noted.



## 1.5 Product Parameters

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

Item	Test Condition	Symbol		Value			Unit
				Min.	Typ. ( )	Max. ( )	
Forward Voltage	I <sub>F</sub> =5mA	V <sub>F</sub>	F1	2.6	--	2.7	V
			F2	2.7	--	2.8	V
		G2	G1	[REDACTED]	--	2.9	V
			G2	2.9	--	3.0	V



Notes : V<sub>R</sub>=5V For test conditions. V<sub>R</sub>=5V

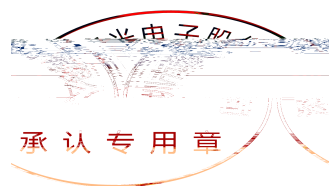
Table 1-2 Absolute Maximum Ratings at Ts=25°C

Parameter	Symbol	Rating	Units
Power Dissipation	$P_d$	68	mW
Forward Current	$I_F$	20	mA
Reverse voltage	$V_r$	5	V
Peak Forward Current Of Pulse	$I_{FP}$	60	mA
Electrostatic Discharge (HBM)	$E_{SD}$	1000	V
Operating Temperature	$T_{opr}$	-40 ~ +85	°C
Storage Temperature	$T_{stg}$	-40 ~ +85	°C
Junction Temperature	$T_j$	95	°C

## Notes

- 1/10 Duty cycle, 0.1ms pulse width.
- The above forward voltage measurement allowance tolerance is  $\pm 0.1V$ .
- The above color coordinates measurement allowance tolerance is  $\pm 0.005$ .
- The above luminous intensity measurement allowance tolerance  $\pm 10\%$ .
- Care is to be taken that power dissipation does not exceed the absolute maximum rating of the product.
- All measurements were made under the standardized environment of Refond.
- 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


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## 1.7 Typical Optical Characteristics Curves

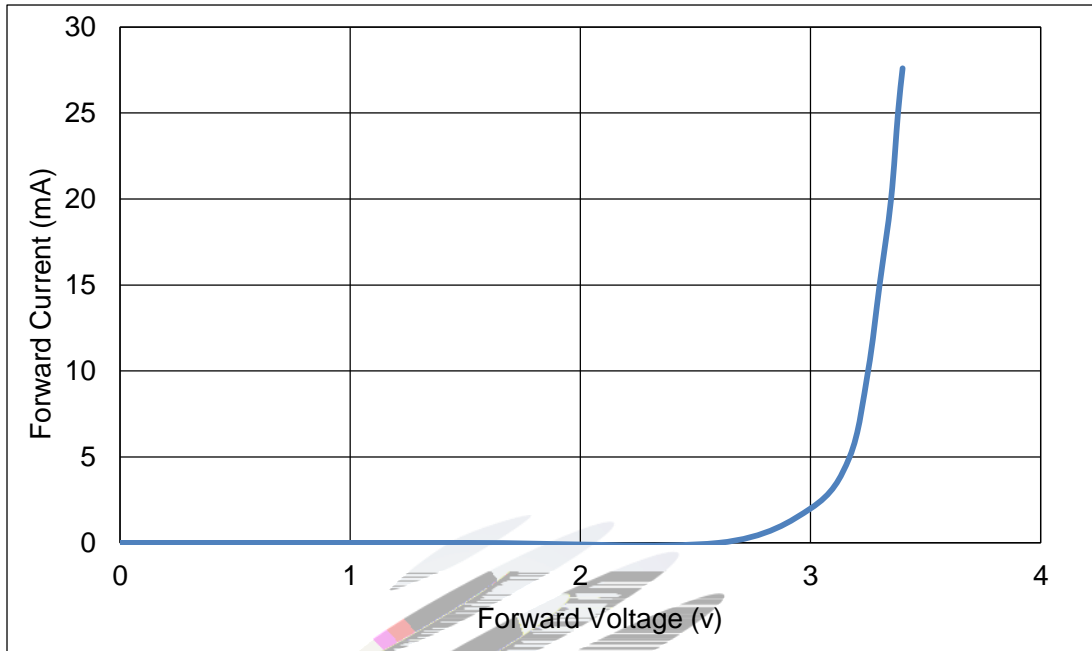


Fig 1-8 Forward Voltage Vs Forward Current

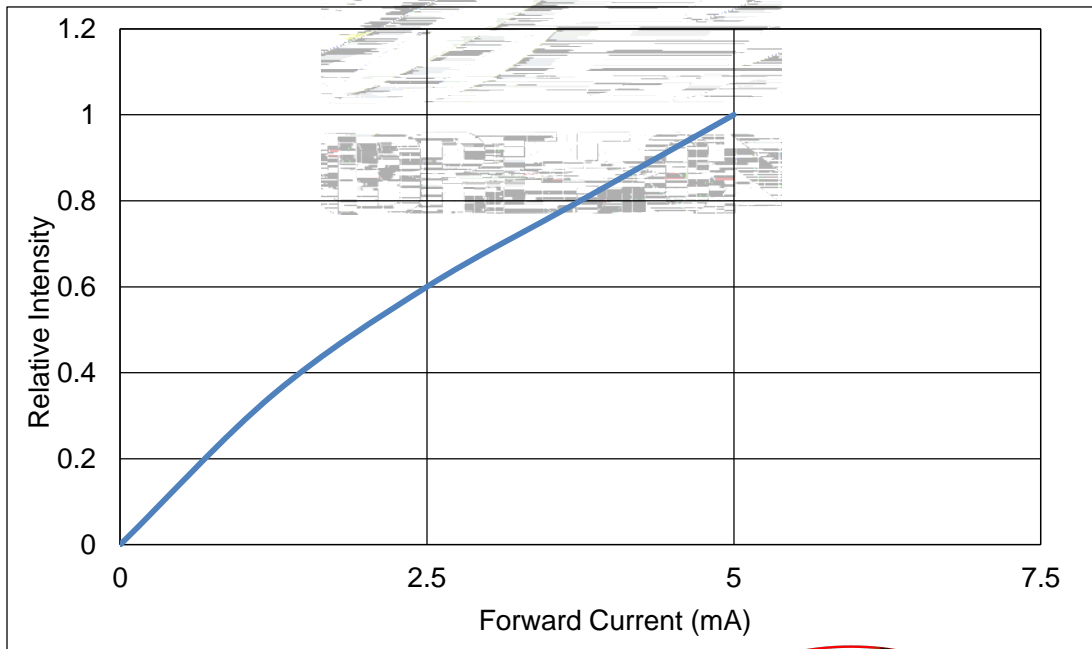
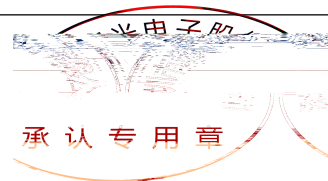


Fig 1-9 Forward Current Vs Relative Intensity





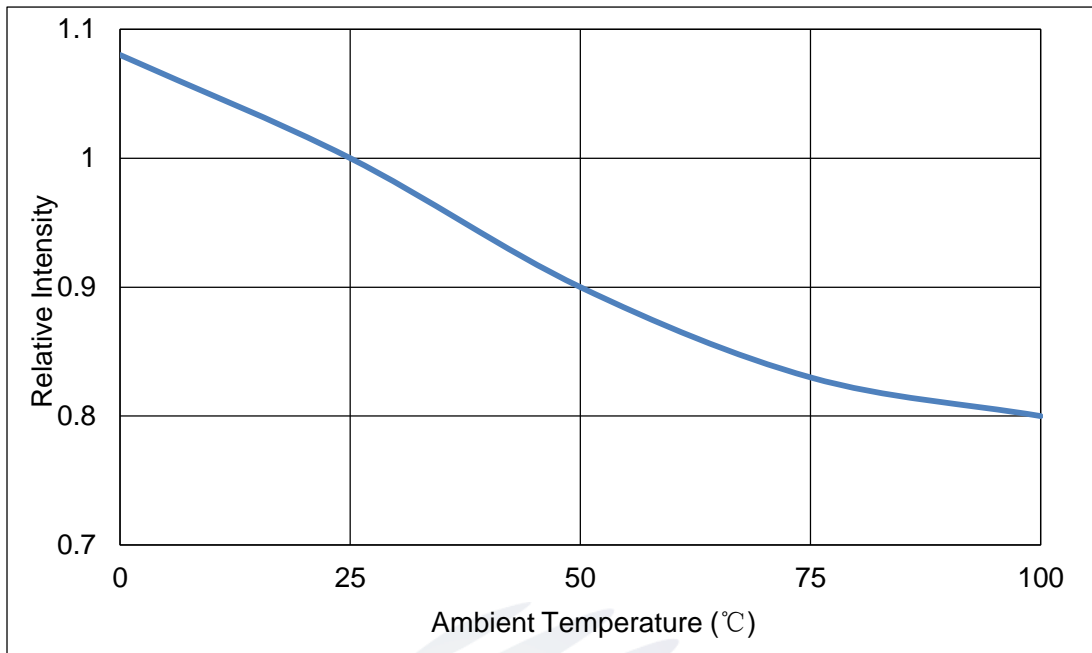


Fig 1-10 Pin Temperature Vs Relative Intensity

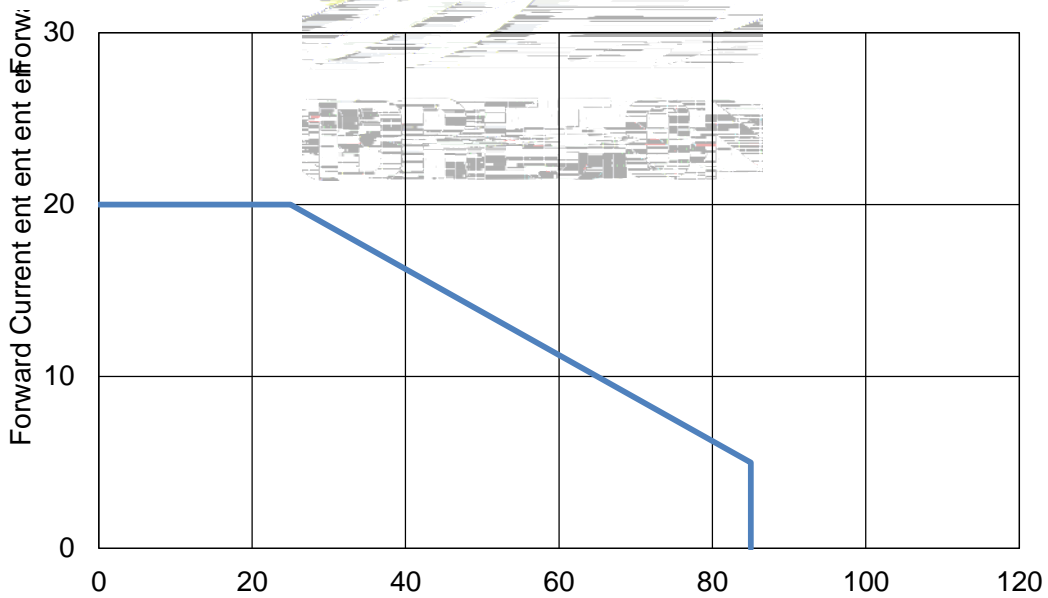


Fig 1-11 Pin Temperature Vs Forward Current

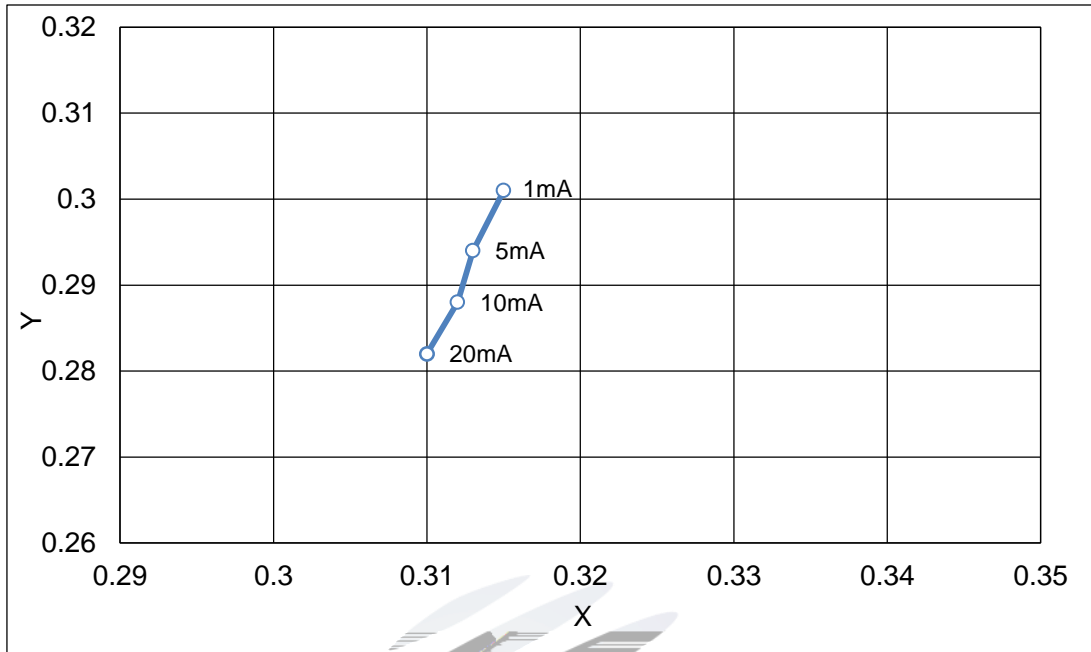


Fig.1-12 Forward Current Vs Dominate Wavelength (Ta=25°C)

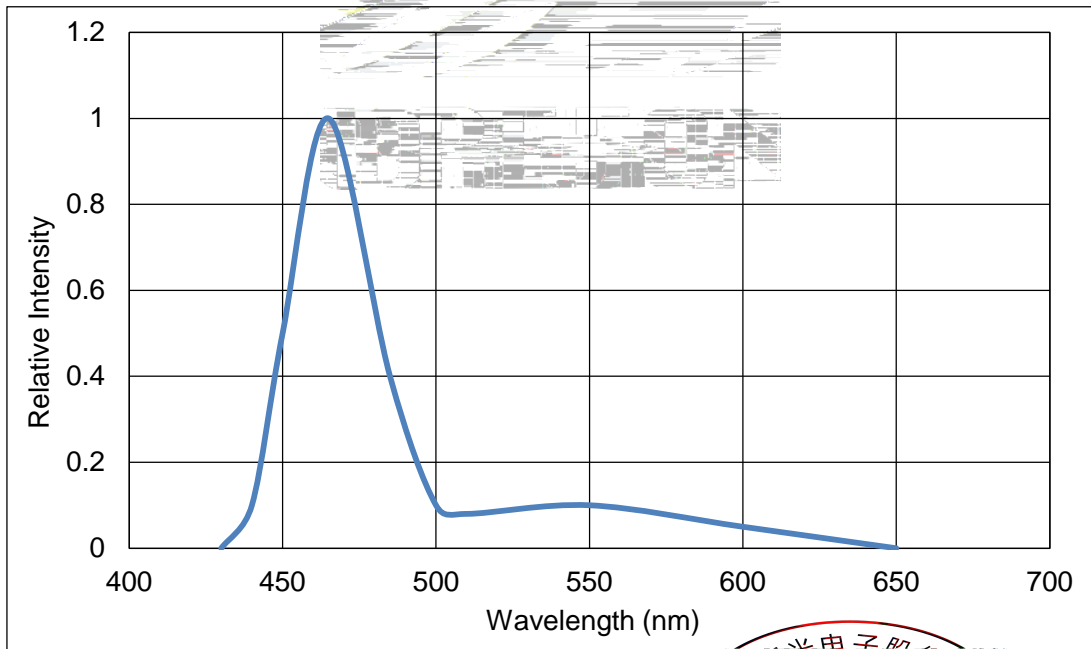


Fig.1-13 Relative Intensity Vs Wavelength (Ta=25°C)

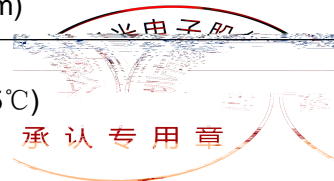
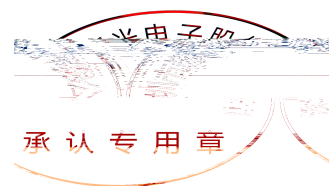


Fig.1-



## 2. Packaging

### 2.1 Packaging Specification

Package:4000pcs/reel.

4000pcs

#### 2.1.1 Carrier Tape Dimension

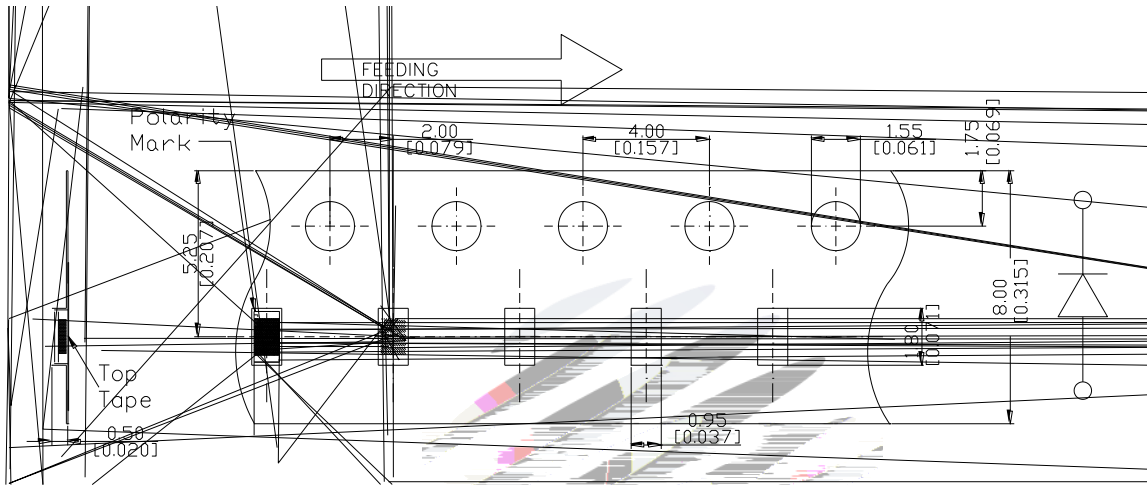


Fig.2-1 Carrier Tape Dimension

#### 2.1.2 Reel Dimension

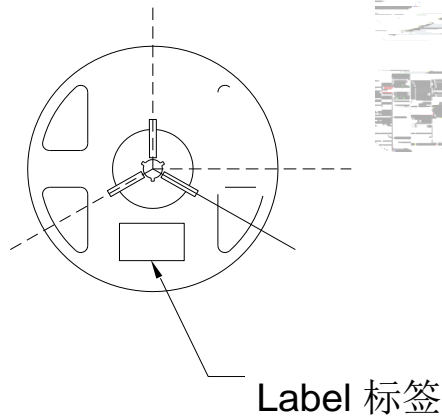


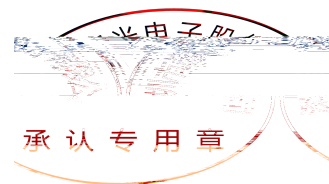
Fig.2-2 Reel Dimension

Table 2-1 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

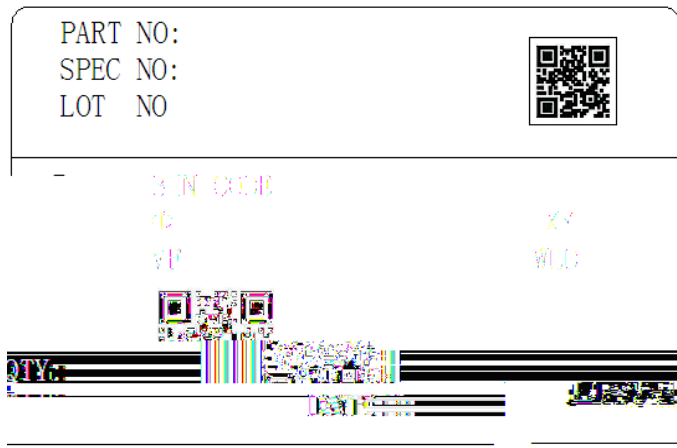


Table 2-2 Parameter

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

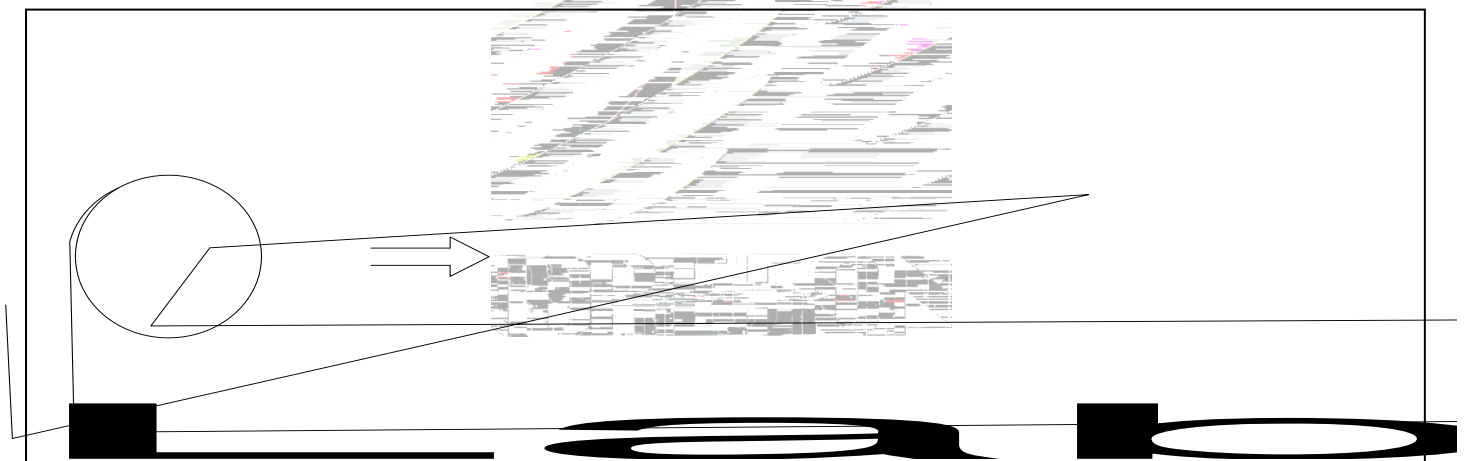
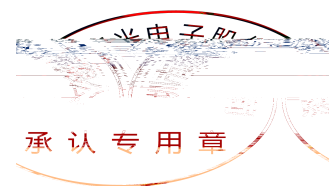


Fig.2-4 Moisture Resistant Packing





## 2.5 Criteria For Judging Damage

Table 2-4 Criteria For Judging Damage

Test Items	Symbol	Test Condition	Criteria For Judgement	
				Max.
Forward Voltage	$V_F$	$I_F=5mA$	-	U.S.L*)x1.1
Reverse Current	$I_R$	$V_R= 5V$	-	U.S.L*)x2.0

Luminous Flux







Notes

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



## 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

(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.

(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.

Table 4-1 Storage

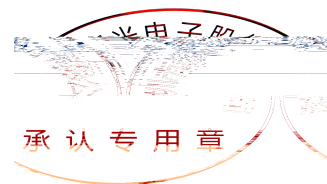
Conditions		Temperature	Humidity	Time
Storage	Before Opening Aluminum Bag	30	75%	Within 1 Year From Date
	After Opening Aluminum Bag	30	60%	24hours 24
Baking		60 5	-	24hours 24

(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  $65 \pm 5 \text{ } ^\circ\text{C}$  for above 24 hours.

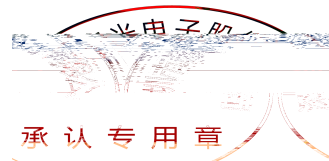
If the package is flatulence or damaged, please notify the sales staff to assist.

(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.







Declare

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