

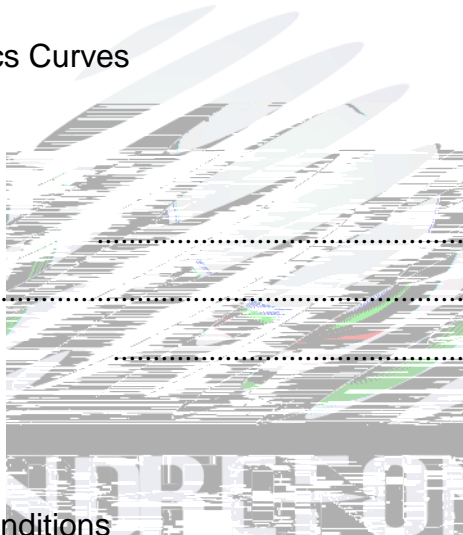
# SPECIFICATION



Mass Production

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(IF=60mA)	
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4.1 Handling Precautions	



## 1. Description

### 1.1

The White LED, which was fabricated by using a blue chip and the phosphor.

Product Package: 3.00mmX1.40mmX0.55mm.

3.00mmX1.40mmX0.55mm

### 1.2 Features



## 1.4 Package Dimension



Fig.1-3 Bottom View

Fig.1-4 Polarity

Fig.1-5 Soldering Patterns

## 1.5 Product Parameters

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

Item	Symbol	Test Condition	Value			Unit
			Min.	Typ.	Max.	
Forward Voltage	$V_F$	$I_F=60\text{mA}$	2.8	3.1	3.4	V
Reverse Current	$I_R$	$V_R=5\text{V}$	Not designed for reverse operation			$\mu\text{A}$
Luminous Flux		$I_F=60\text{mA}$	17.7	24	26.9	lm
Viewing Angle		$I_F=60\text{mA}$	---	120	---	deg
Thermal Resistance.	$R_{THJ-S}$	$I_F=60\text{mA}$	---	---	21	$^{\circ}\text{C}/\text{W}$

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

Parameter	Symbol	Rating	Units
Power Dissipation	$P_D$	238	mW
Forward Current	$I_F$	70	mA
Peak Forward Current	$I_{FP}$	120	mA
Reverse Voltage	$V_R$	Not designed for reverse operation	V
Electrostatic Discharge (HBM)	$E_{SD}$	8000	V
Operating Temperature	$T_{OPR}$	-40 ~ +110	
Storage Temperature	$T_{OPR}$	-40 ~ +110	
Junction Temperature	$T_J$	125	



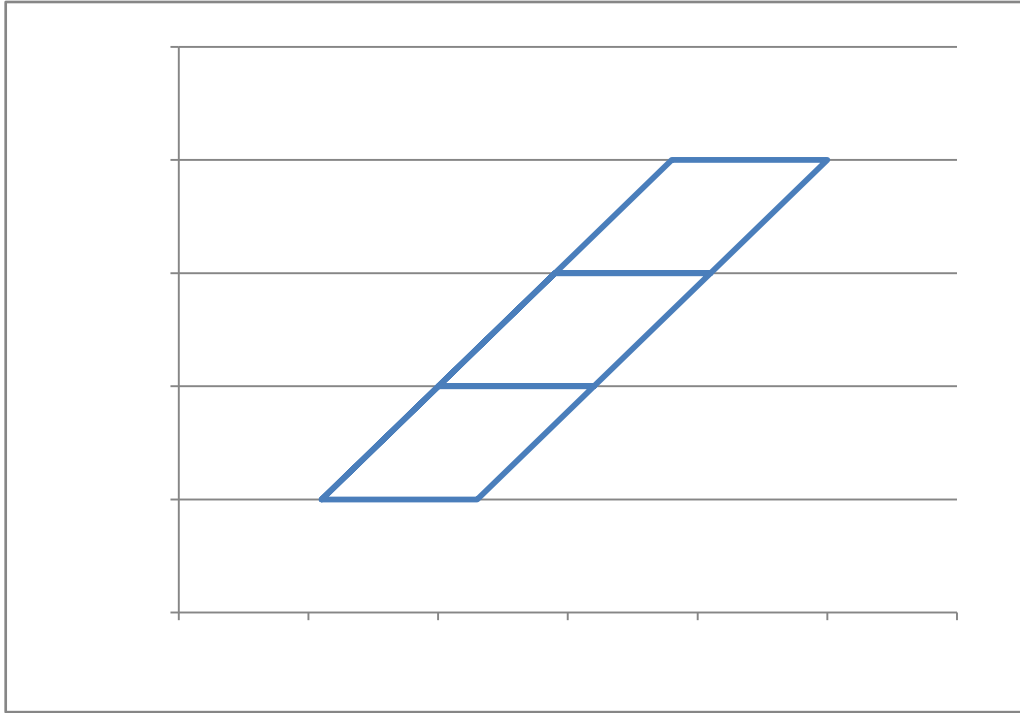


Fig. 1-6 The C.I.E Chromaticity Diagram CIE

Table 1-4

BIN CODE	CIE-X1	CIE-Y1	CIE-X2	CIE-Y2	CIE-X3	CIE-Y3	CIE-X4	CIE-Y4
IA7	0.4310	0.4000	0.4400	0.4100	0.4520	0.4100	0.4430	0.4000
IA8	0.4400	0.4100	0.4490	0.4200	0.4610	0.4200	0.4520	0.4100
IA9	0.4490	0.4200	0.4580	0.4300	0.4700	0.4300	0.4610	0.4200

## 1.7 Typical Optical Characteristics Curves





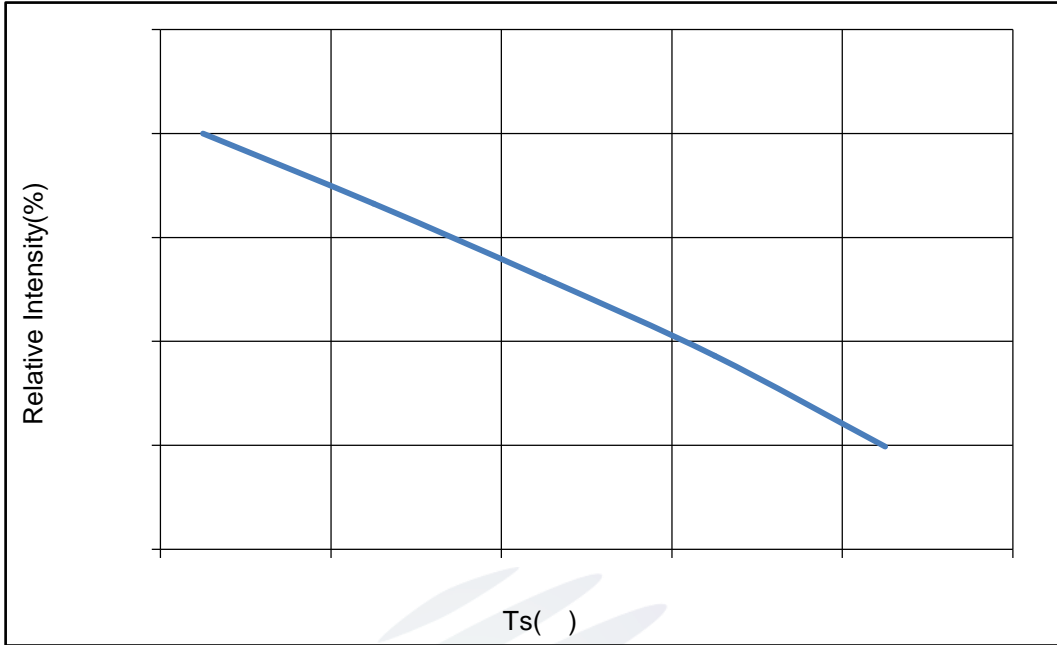


Fig. 1-9 Solder Temperature Vs Relative Intensity

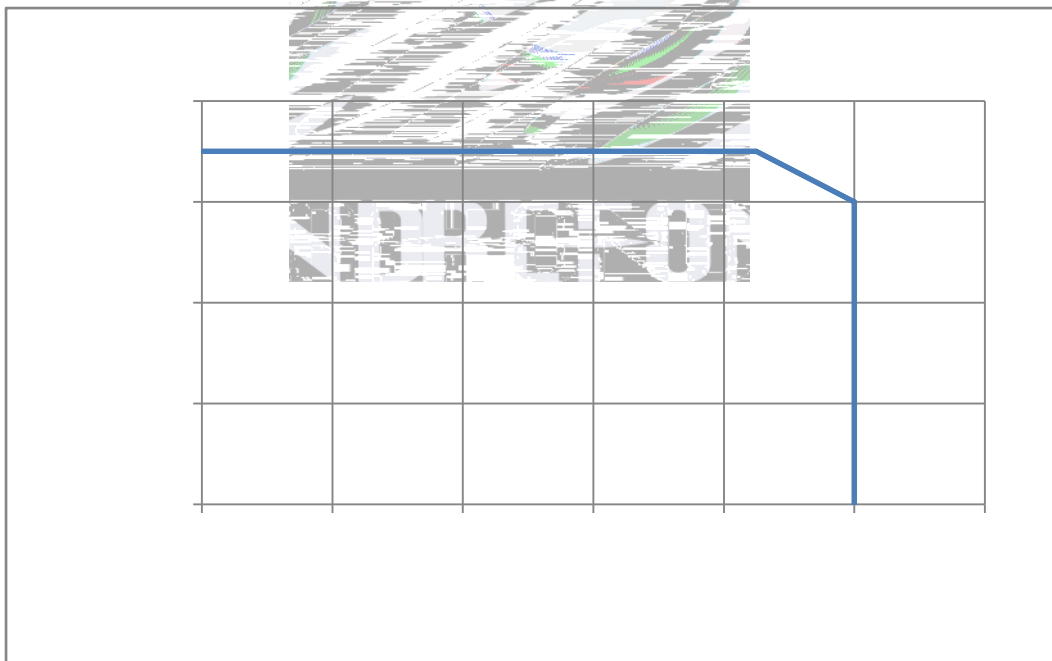


Fig. 1-10 Solder Temperature Vs Forward Current

Fig. 1-11 Forward Voltage Vs Solder Temperature

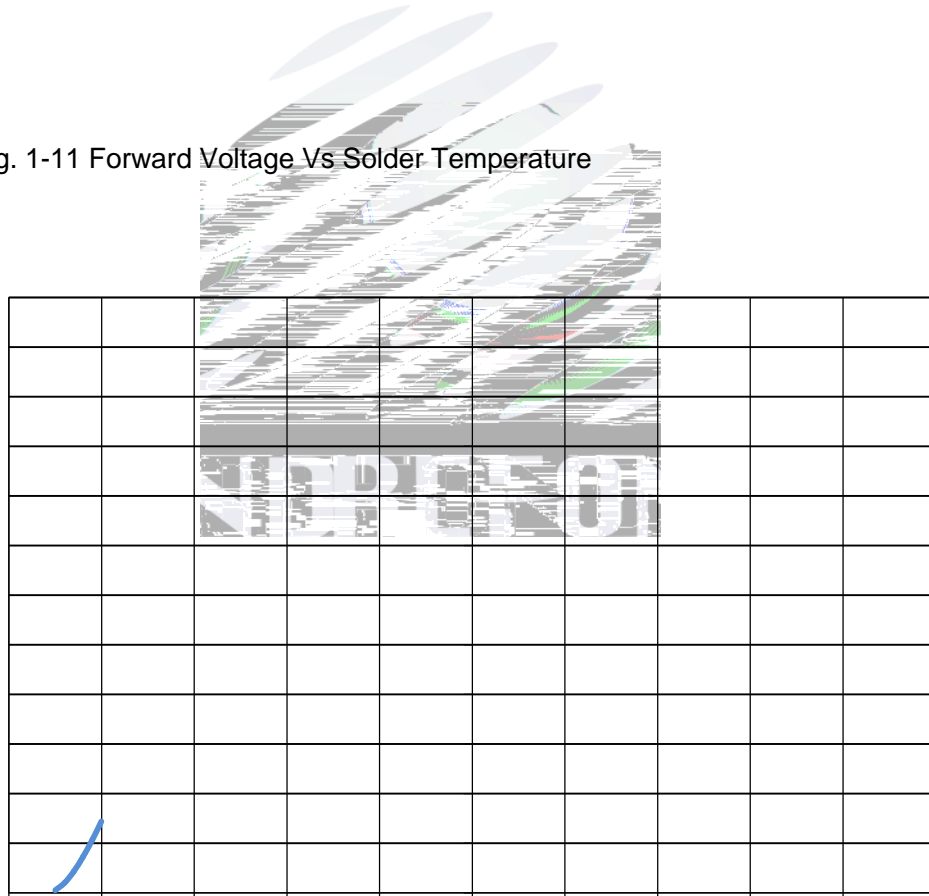
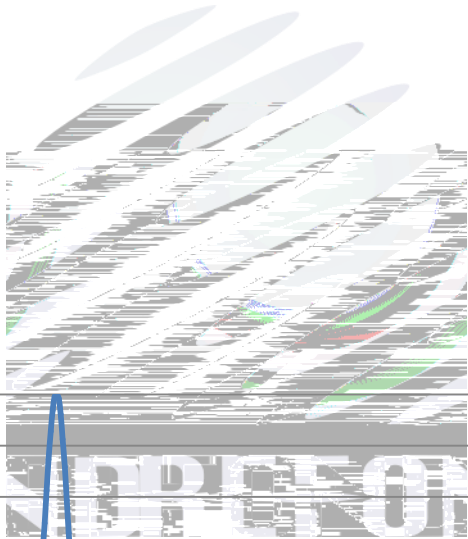


Fig. 1-12 Radiation diagram



## 2. Packaging

### 2.1 Packaging Specification

Package:5000pcs/reel.

#### 2.1.1 Carrier Tape Dimension

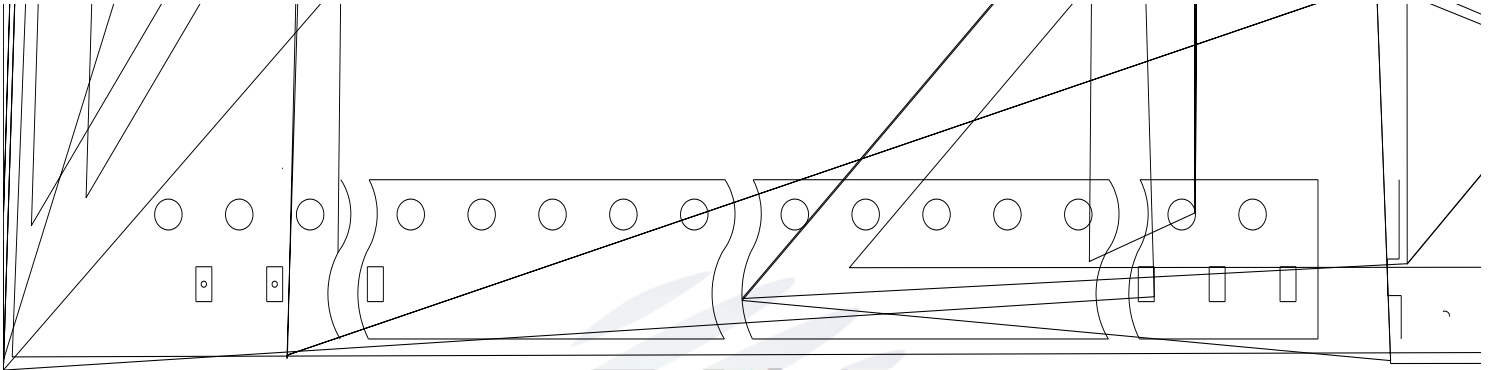
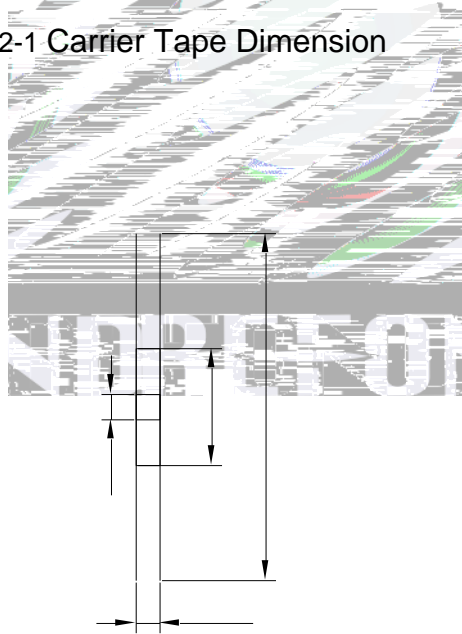
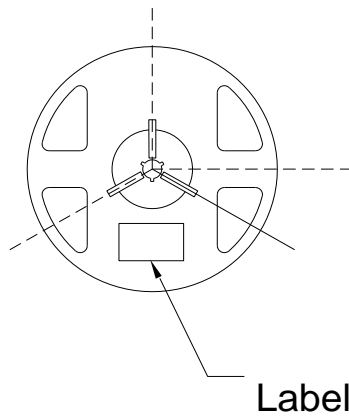


Fig.2-1 Carrier Tape Dimension

#### 2.1.2 Reel Dimension



Reel Dimension 卷盘尺寸

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

Fig.2-2 Reel Dimension 卷盘尺寸

#### Notes

The tolerances unless mentioned ±0.1mm. Unit : mm

±0.

### 2.1.3 Label Form Specification

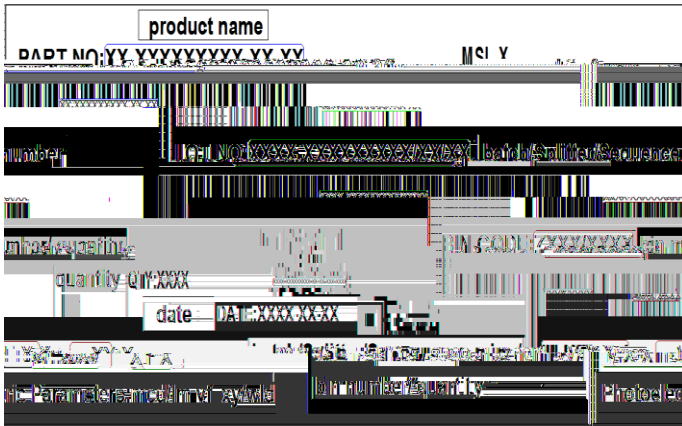


Fig. 2-3 Label Form Specification

#### 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

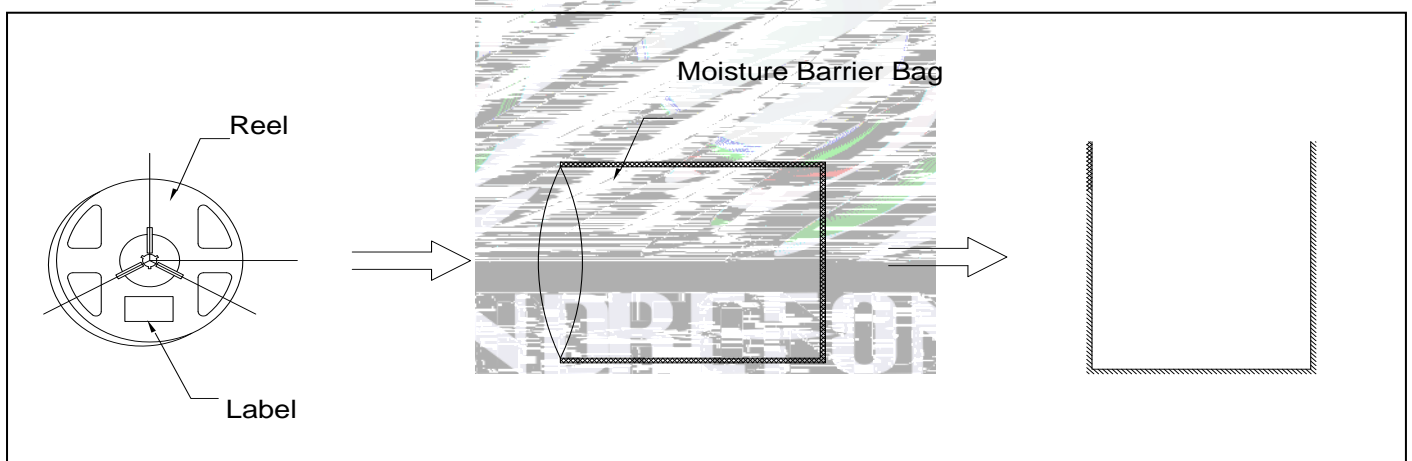


Fig.2-4 Moisture Resistant Packing 防潮包装

### 2.3 Cardboard Box

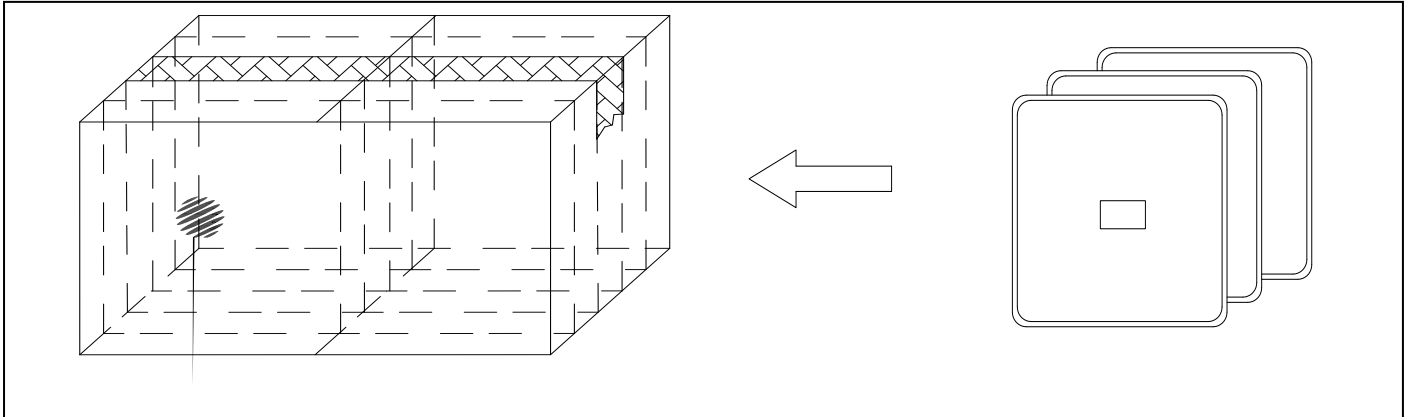


Fig.2- Cardboard Box 包装纸箱

### 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=60mA	1000hrs.	20pcs.	0/1

High Temperature High Humidity Life Test	JESD22-A101	85 / 85%RH I <sub>F</sub> =60mA	1000hrs.	20pcs.	0/1
Temperature Humidity Storage	JEITA ED-4701 100 103	T <sub>A</sub> =85 RH=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 <sub>F</sub>	I <sub>F</sub> =60mA	-	U.S.L*)x1.1
Reverse Current	I <sub>R</sub>	V <sub>R</sub> = 5V	-	U.S.L*)x2.0
Luminous Flux		I <sub>F</sub> =60mA	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 the LED to the series and parallel circuit, should take consideration of all the factors such as the current, voltage distribution, heat dissipation and others.

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

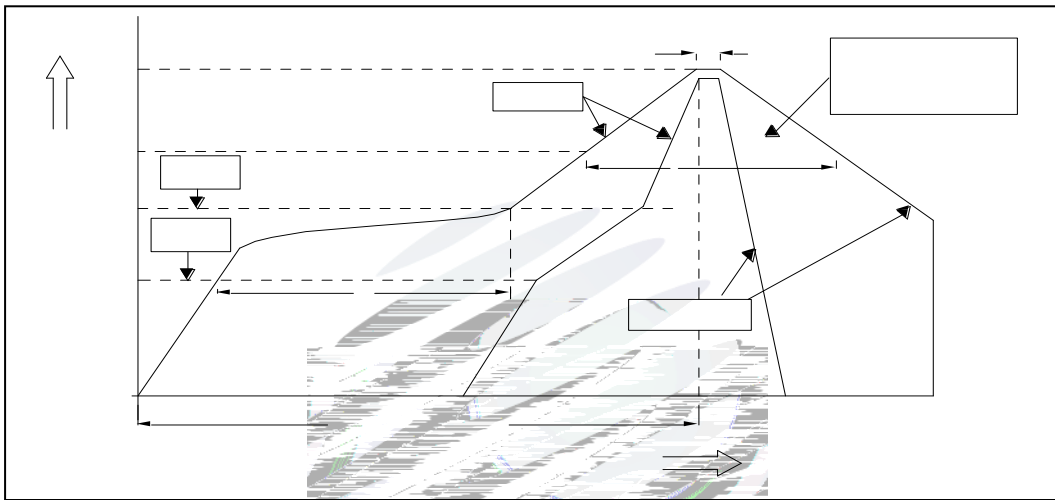


Fig.3-1 SMT Reflow Soldering Instructions SMT 回流焊说明

Table 3-1 Reflow parameters 回流焊参数

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
( $T_p$ ) 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 $T_p$	8	Max 8 minutes

#### Notes

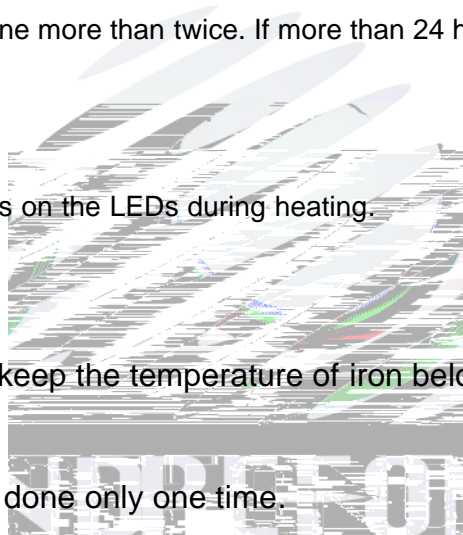
(1)Reflow soldering should not be done more than twice. If more than 24 hours between the two solderings , LED will be damaged.

(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°C less than 3 seconds

(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

#### 3.1.3 Cautions



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.

(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.



af/F13 12 TF7 12 Tf1 0 0 1 365.478l2249FB1 Tm[ )]Taf BDC BTB7349eW\* nE5ET12 d

(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.

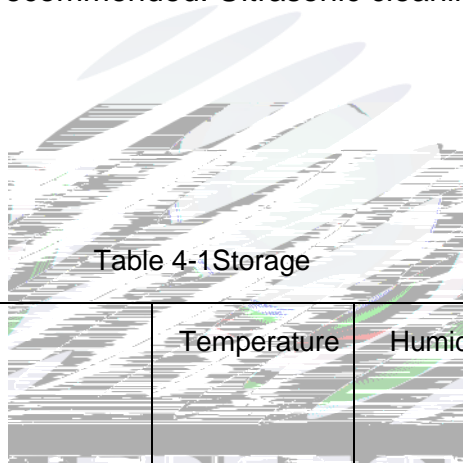


Table 4-1 Storage

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
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) °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).

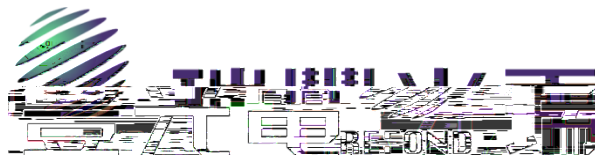
(10) Other points for attention, please refer to our relevant information.



Version History/

Date	Revisor	Version	Verifier	Remarks
2021/5/20		E0		





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Declare

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