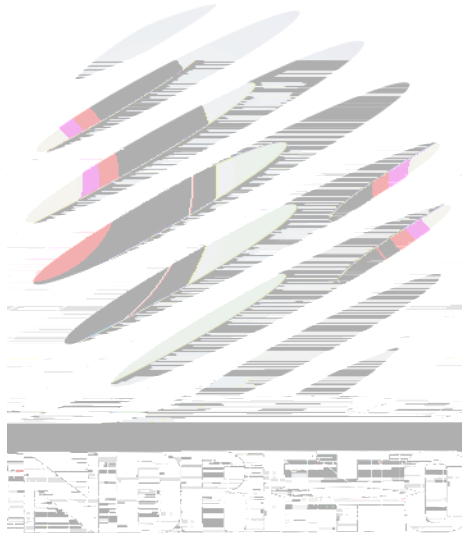
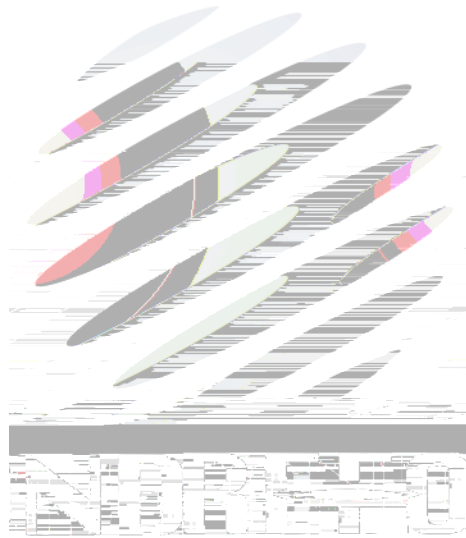


# SPECIFICATION



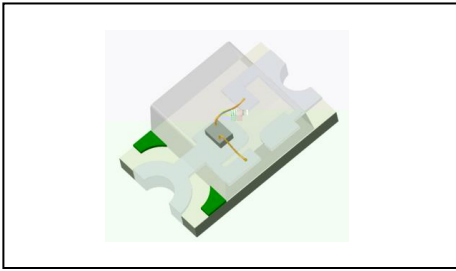
R&D

Mass Product



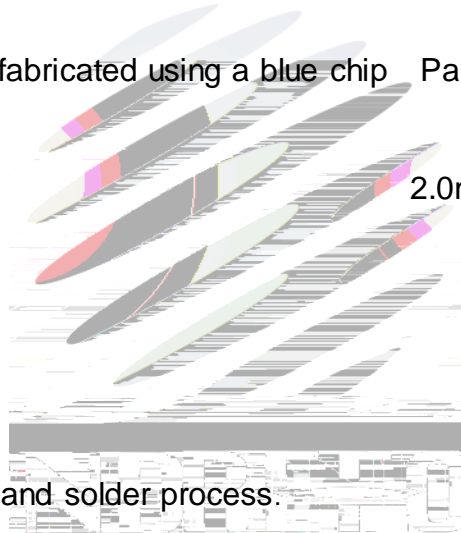
# 1. Description

## 1.1 General Description



The Colour LED which was fabricated using a blue chip Package Dimension :  
2.0mmX1.25mmX0.7mm.

LED



2.0mmX1.25mmX0.7mm

## 1.2 Features

Extremely wide viewing angle.

Suitable for all SMT assembly and solder process. SMT

Moisture sensitivity level: Level 3. Level3

RoHS compliant. RoHS

## 1.3 Application

Optical indicator.

Switch and symbol, display.

General use.



# 1.4 Package Dimension

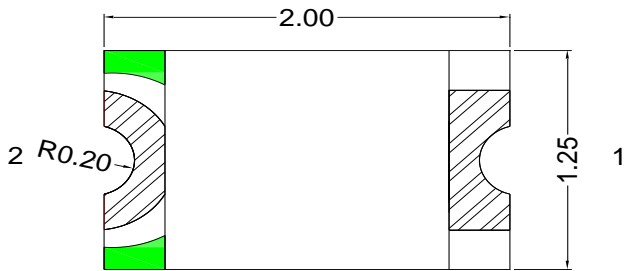


Fig.1-1 Top view



Fig.1-2 Bottom view

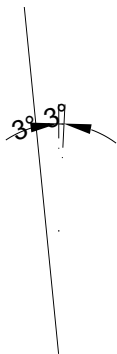


Fig.1-3 Side view

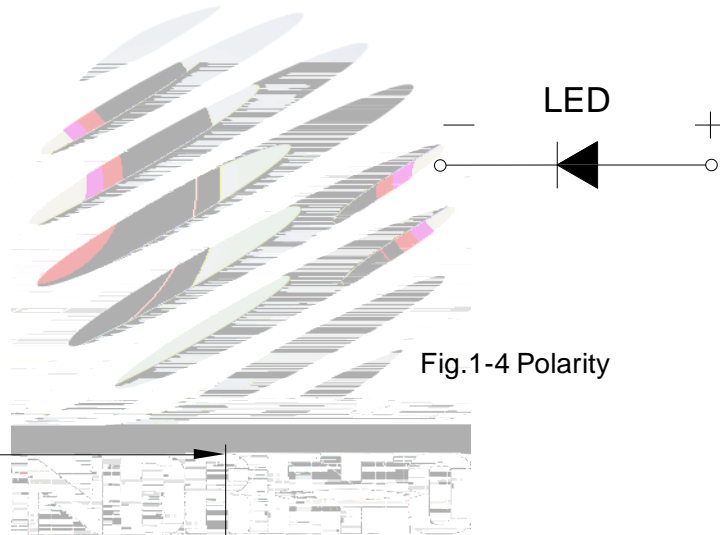


Fig.1-4 Polarity

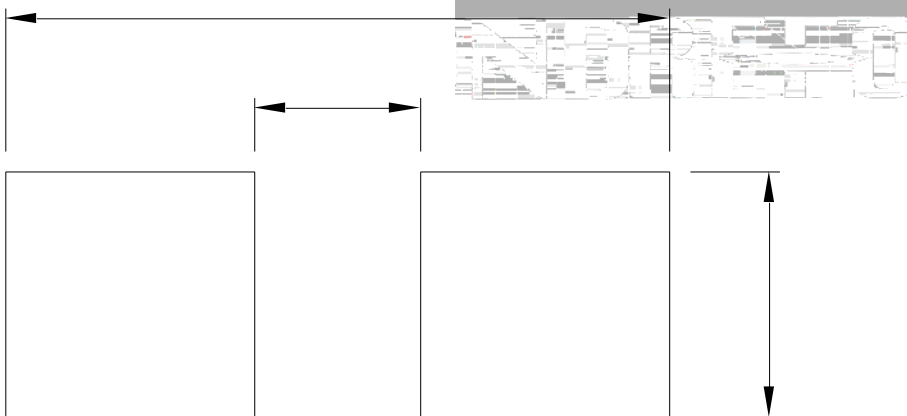


Fig.1-5 Soldering patterns

**Notes**

1. All dimensions units are millimeters.

All dimensions tolerances are  $\pm 0.2$ mm 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.		
Spectral Half Bandwidth	I <sub>F</sub> =20mA	Δ	--	15	--	nm	
Forward Voltage	I <sub>F</sub> =20mA	V <sub>F</sub>	G0	2.8	--	3.0	V
			H0	3.0	--	3.2	V
			I0	3.2	--	3.4	V
			J0	3.4	--	3.6	V
Dominant Wavelength	I <sub>F</sub> =20mA	D	C00	460	--	465	nm
					--		nm
					--		nm
					--		nm
Luminous Intensity	I <sub>F</sub> =20mA	I <sub>v</sub>			--	mcd	
			H00	150	--	230	mcd
					--		mcd
Viewing Angle	I <sub>F</sub> =20mA		--	140	--	deg	
Reverse Current	V <sub>R</sub> =5V	I <sub>R</sub>	--	--	10	A	
Thermal Resistance.	I <sub>F</sub> =20mA	R <sub>THJ-S</sub>	--	--	450	/W	

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

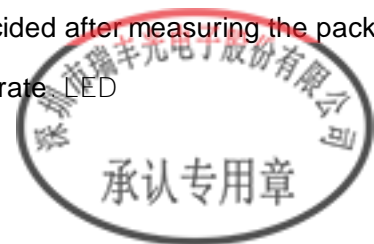


Table 1-2 Absolute Maximum Ratings at Ts=25°C

Parameter	Symbol	Rating	Units
Power Dissipation	$P_d$	72	mW
Forward Current	$I_F$	20	mA
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. 0.1ms, 1/10.
- The above forward voltage measurement allowance tolerance is  $\pm 0.1V$ .  $\pm 0.1V$ .
- The above dominant wavelength measurement allowance tolerance is  $\pm 2nm$ .  $\pm 2nm$ .
- The above luminous intensity measurement allowance tolerance  $\pm 10\%$ .  $\pm 10\%$ .
- 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 LED.



## 1.6 Typical Optical Characteristics Curves

Fig 1-6 Forward Voltage Vs Forward Current

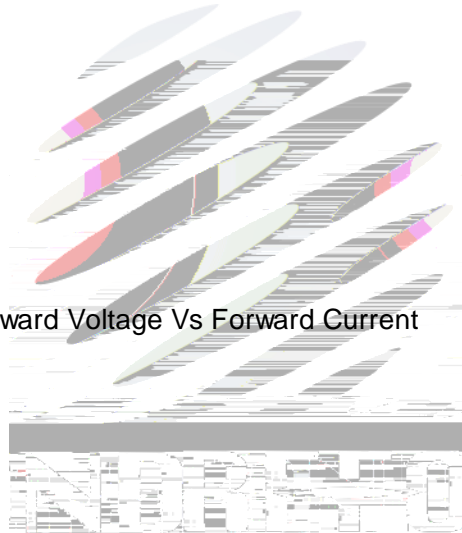


Fig 1-7



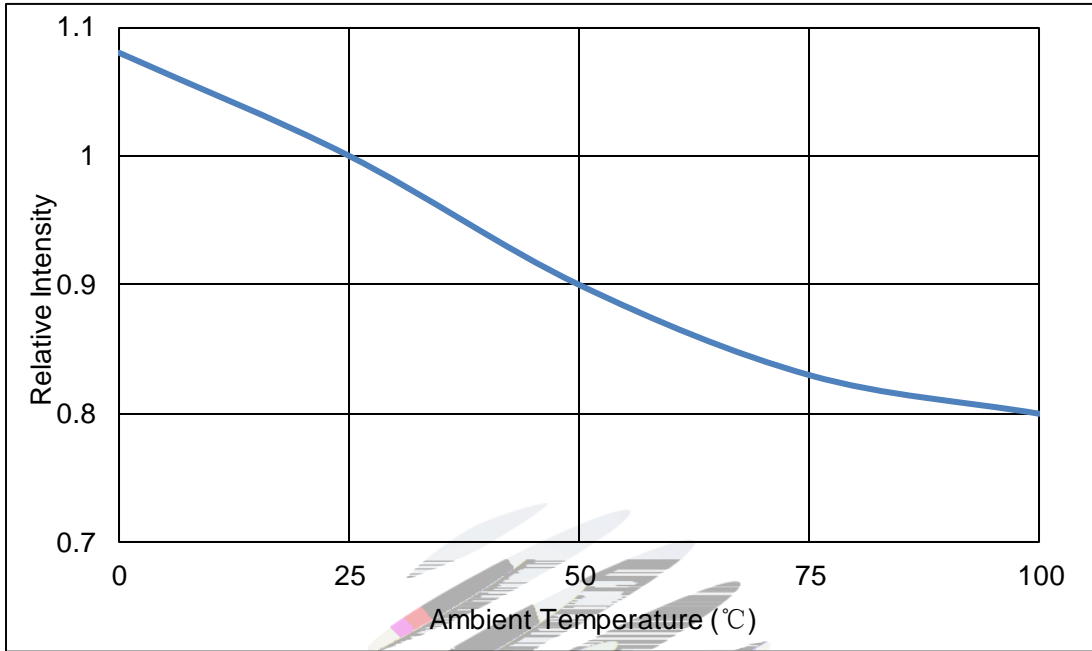


Fig 1-8 Pin Temperature Vs Relative Intensity

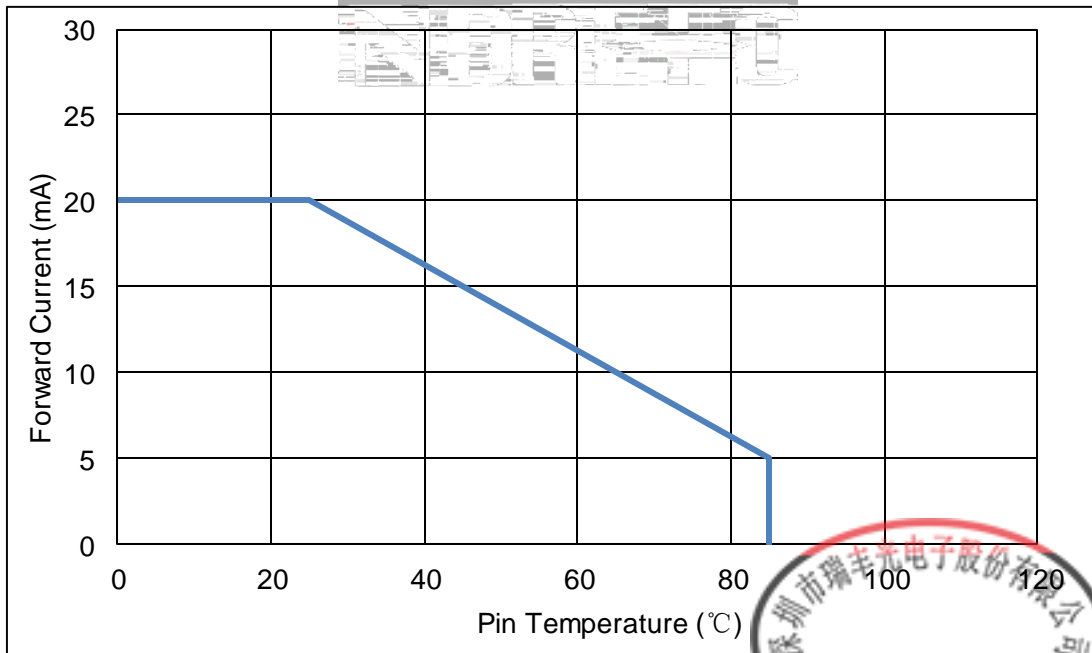
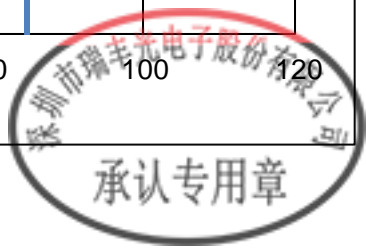


Fig 1-9 Pin Temperature Vs Forward Current





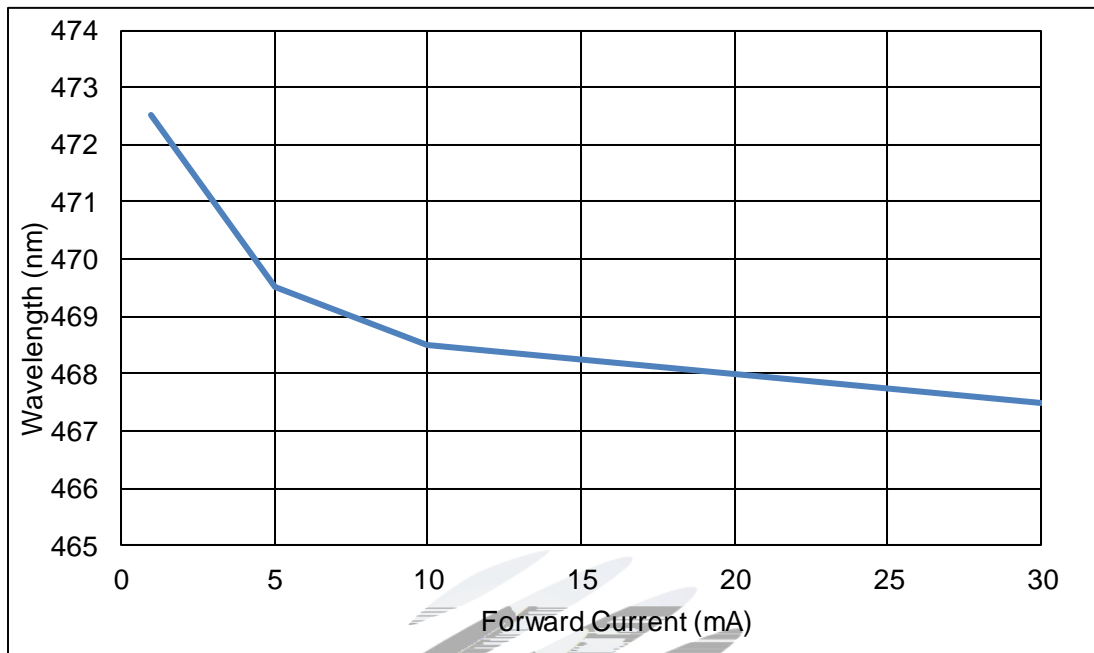


Fig 1-10 Forward Current Vs Dominate Wavelength (Ta=25°C)

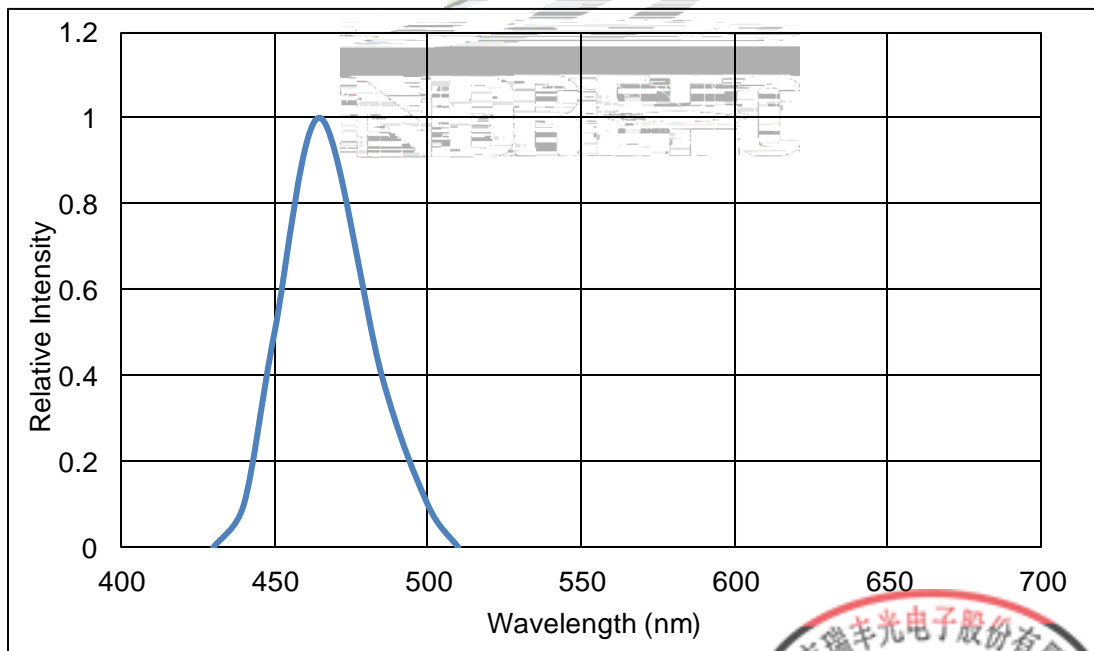
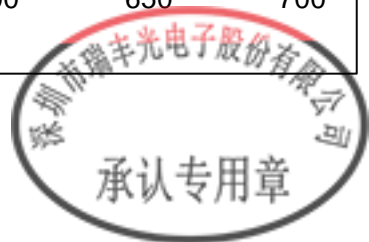


Fig 1-11 Relative Intensity Vs Wavelength (Ta=25°C)



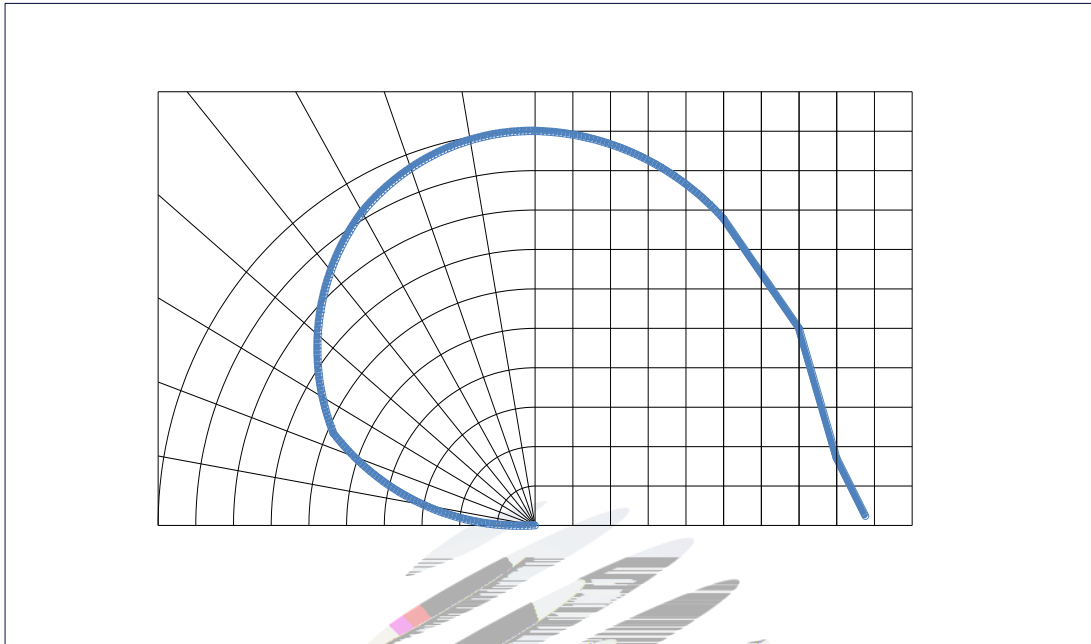
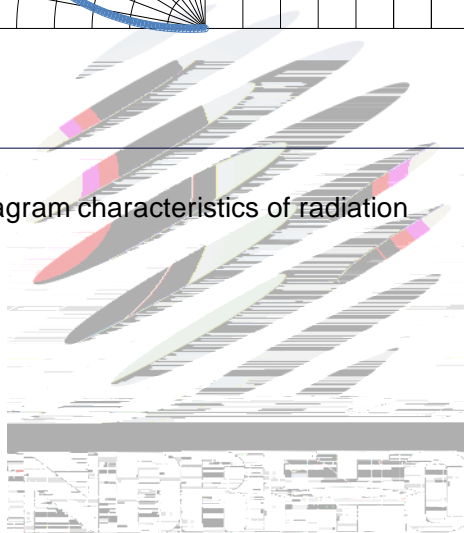
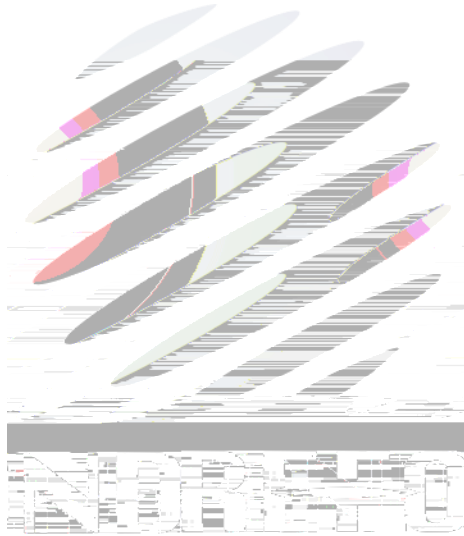
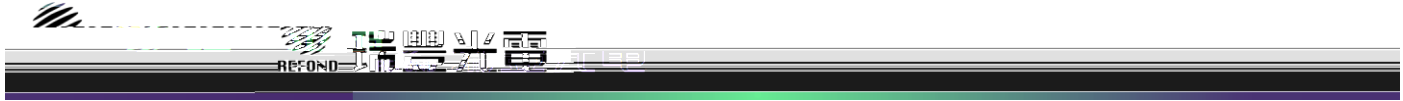


Fig 1-12 Diagram characteristics of radiation







### 2.1.3 Label Form Specification



Fig. 2-3 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

### 2.2 Moisture Resistant Packing

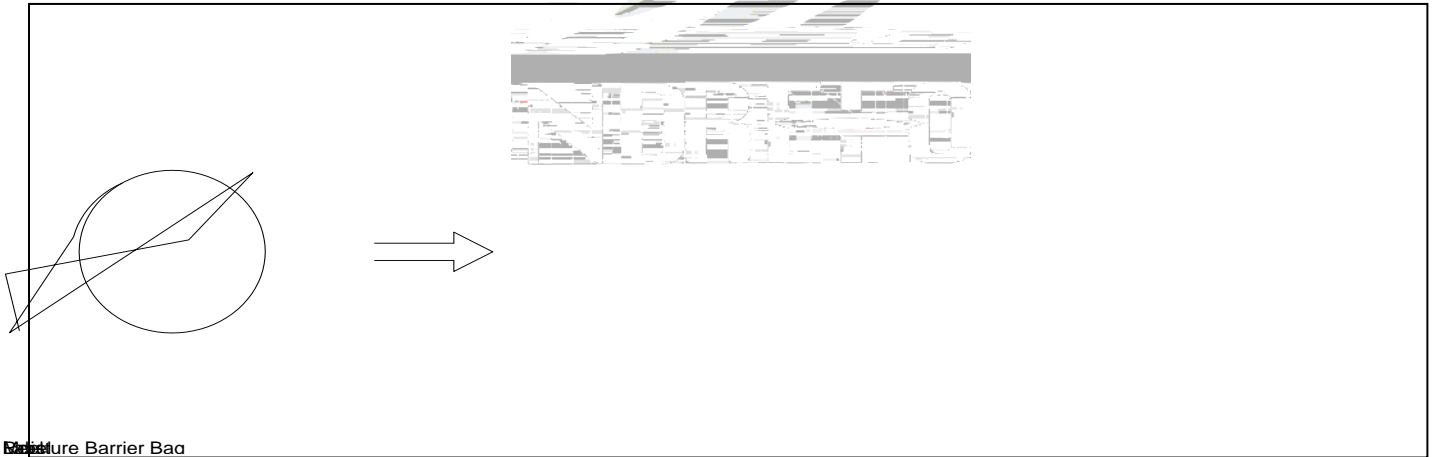


Fig.2-4 Moisture Resistant Packing



## 2.3 Cardboard Box

Fig.2-5 Cardboard Box

## 2.4 Reliability Test Items And Conditions

Table 2-3 Reliability Test Items And Conditions

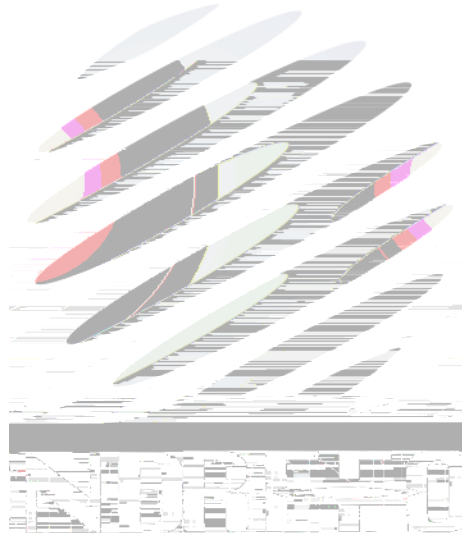
Test Items	Ref.Standard	Test Condition	Time	Quantity	Ac/Re /
Reflow	JESD22-B106	T <sub>emp</sub> :260 max T=10 sec	2 times	22Pcs.	0/1
Temperature Cycle	JESD22-A104	100 30 min 5 min -40 30 min	50 cycles	22Pcs.	0/1
Thermal Shock	JESD22-A106	-40 15min 100 15min	150 cycles	22Pcs.	0/1
High Temperature Storage	JESD22-A103	T <sub>emp</sub> :100	500 hrs.	22Pcs.	0/1
Low Temperature Storage	JESD22-A119	T <sub>emp</sub> :-40	500 hrs.	22Pcs.	0/1
Life Test	JESD22-A108	T <sub>a</sub> =25 I <sub>F</sub> =20mA	500		

## 2.5 Criteria For Judging Damage

Table 2-4 Criteria For Judging Damage

Test Items

Symbol



### 3. SMT Reflow Soldering Instructions SMT

#### 3.1 SMT Reflow Soldering Instructions SMT

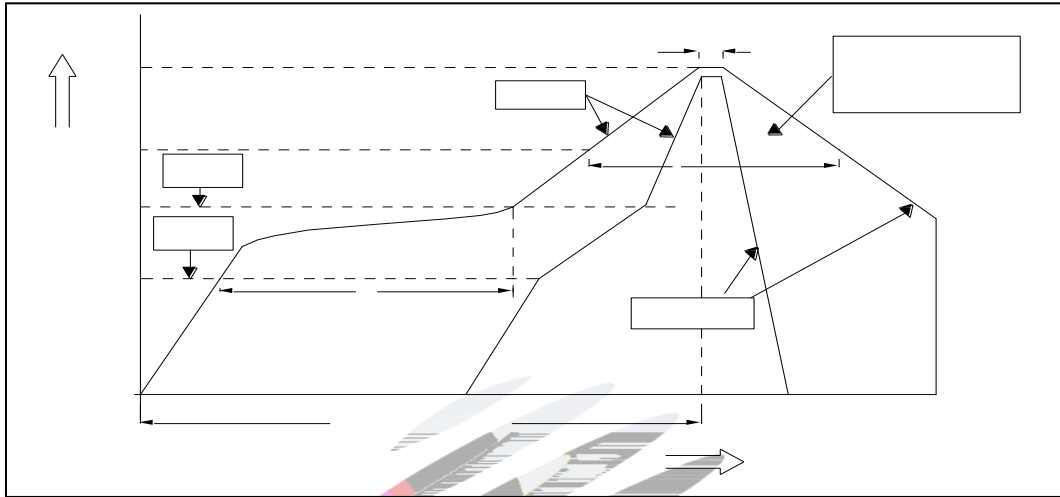
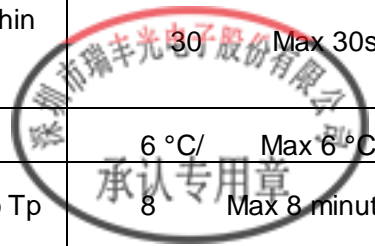
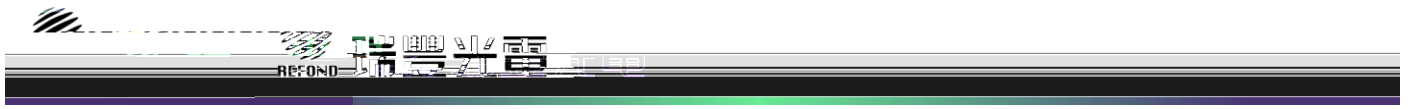


Fig.3-1 SMT Reflow Soldering Instructions SMT

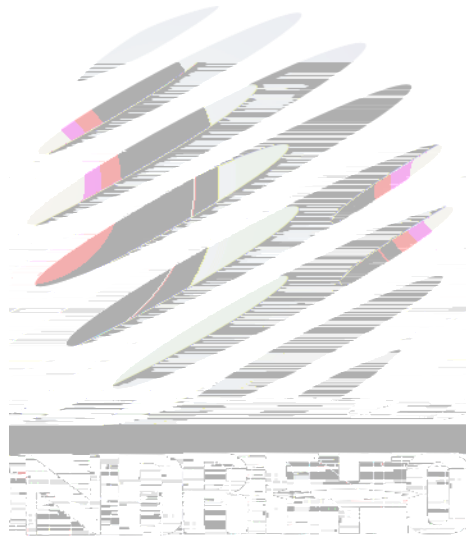
Table 3-1 Parameters

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 -150 60s-150s
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 ( $T_P$ )		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





## 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

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 4-1 产品使用注意事项

(5) In designing a circuit, the current through each LED can not exceed the absolute maximum rating specified for each LED. In the meanwhile, resistors for protection should be applied, otherwise 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

(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 sTm[co]-6(n)5BDC BT/Fded(r)21(e)-6( )-159(m)2cpl(t)28( )-15BDC BT/F6(n)5s, thicone le







Declare

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

