

# SPECIFICATION

REFOND P/N

RF-WNRA30DS-ED(1)

Mass Production



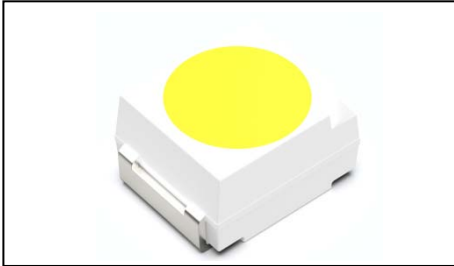
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## 1. Description 产品介绍

### 1.1 产品描述



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

Product Package:3.50mmX2.80mmX1.84mm.

3.50mmX2.80mmX1.84mm.

### 1.2 Features 产品特征

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.      RoHS    REACH

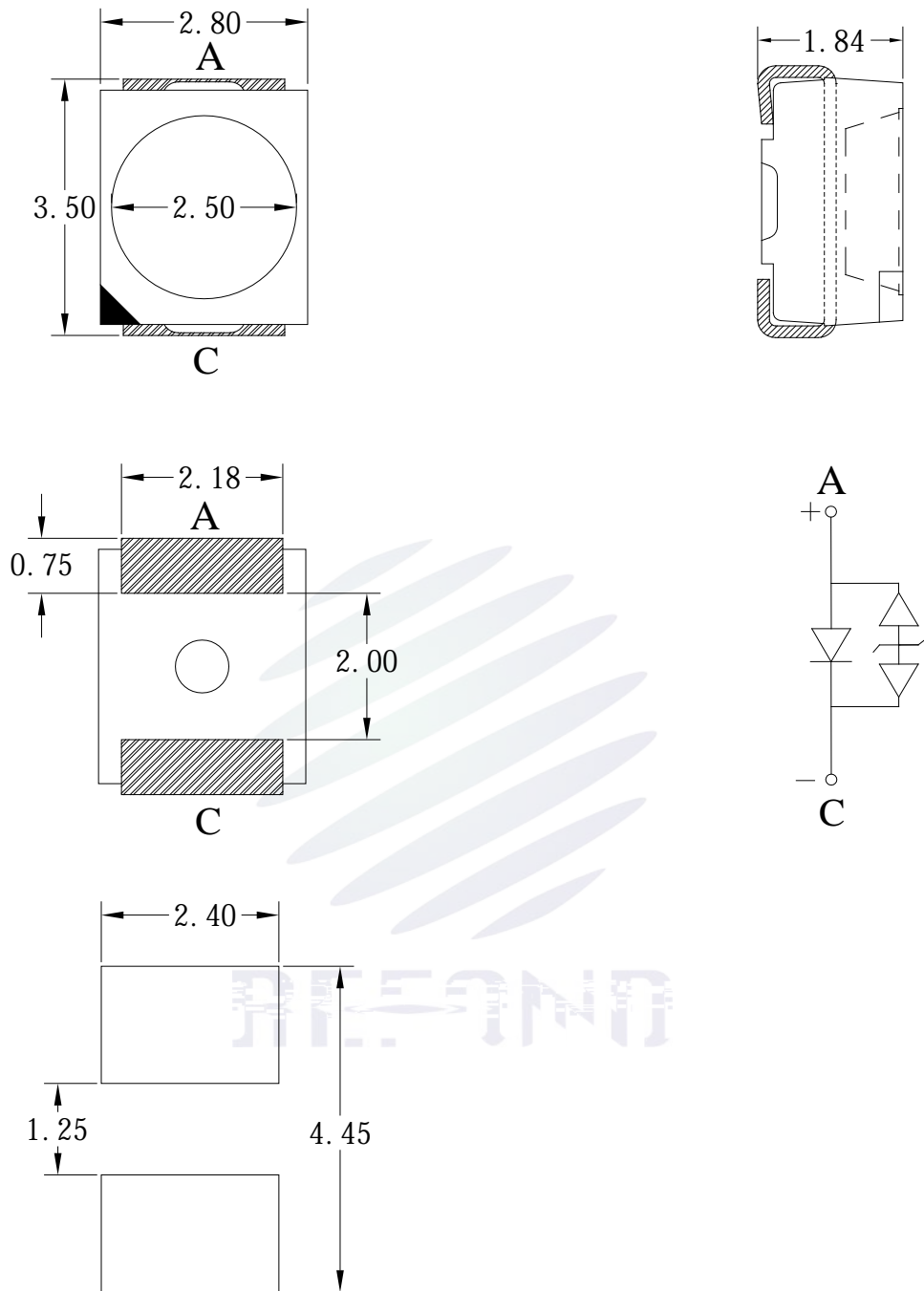
Qualifications: The product qualification test plan is based on the guidelines of AEC-Q101 Stress Test Qualification for Automotive Grade Discrete Semiconductors

### 1.3 Application 产品应用

Automotive Interior Lighting.  
Switches.



### 1.4 Package Dimension 封装尺寸



#### Notes

All dimensions units are millimeters.

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



## 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	$V_F$	$I_F=20\text{mA}$	2.8	2.85	3.4	V
Reverse Current	$I_R$	$V_R=5\text{V}$	---	---	10	$\mu\text{A}$
Luminous Intensity	IV	$I_F=20\text{mA}$				

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



## Notes

1. 1/10 Duty cycle, 10ms pulse width.
2. The above forward voltage measurement allowance tolerance is  $\pm 0.1V$ .  $\pm 0.1V$ .
3. The above color coordinates measurement allowance tolerance is  $\pm 0.005$ .  $\pm$
4. The above luminous intensity measurement allowance tolerance  $\pm 10\%$ .  $\pm 10\%$ .
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.
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
8. ESD yield is over 90% at 2000V ESD (HBM). ESD protection during products handling is needed. 90%

V

## 1.6 Bin Range Of Forward Voltage and Luminous Intensity (IF=20mA) 电压与光强分 BIN 范围(IF=20mA)

Table 1-3

V <sub>F</sub> V	G1	G2	H1	H2	I1	I2
	2.8-2.9	2.9-3.0	3.0-3.1	3.1-3.2	3.2-3.3	3.3-3.4
IV(mcd)	N5	N6	O3	O4		
	2300-2550	2550-2800	2800-3150	3150-3500		



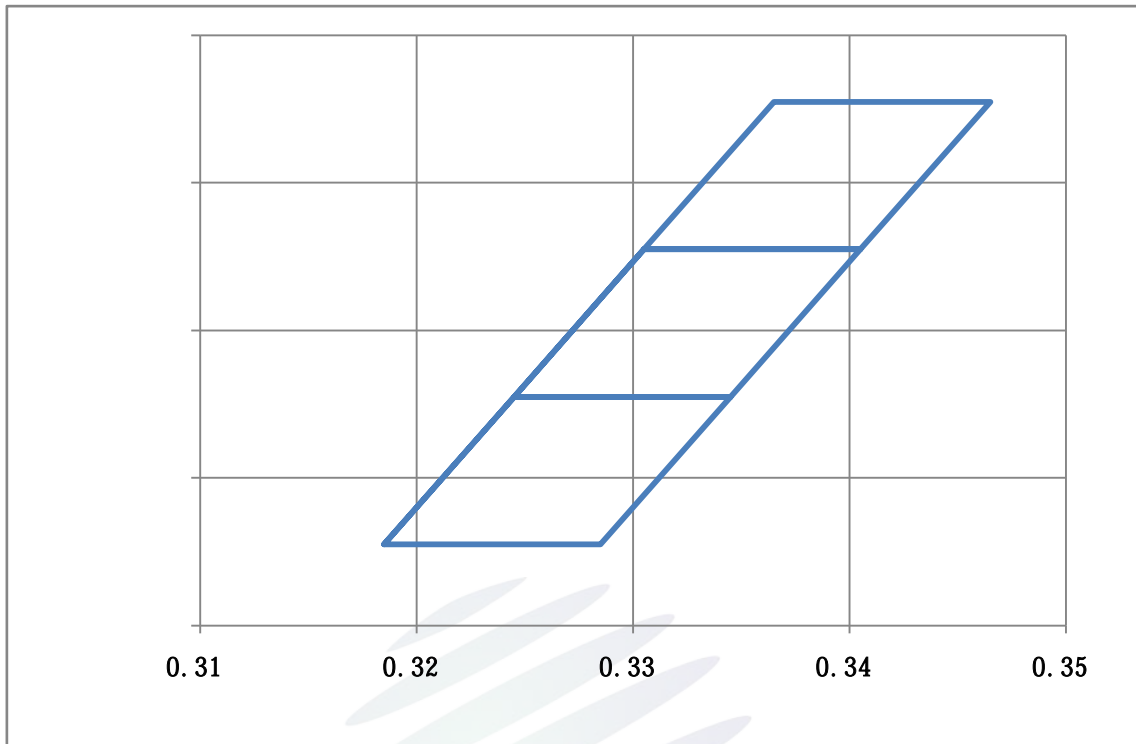


Fig. 1-6 The C.I.E Chromaticity Diagram CIE

Table 1-4

BIN CODE	CIE-X1	CIE-Y1	CIE-X2	CIE-Y2	CIE-X3	CIE-Y3	CIE-X4	CIE-Y4
CO2	0.3185	0.3255	0.3245	0.3355	0.3345	0.3355	0.3285	0.3255
CO1	0.3245	0.3355	0.3305	0.3455	0.3405	0.3455	0.3345	0.3355
CT1	0.3305	0.3455	0.3365	0.3555	0.3465	0.3555	0.3405	0.3455



## 1.7 Typical Optical Characteristics Curves 典型光学特性曲线

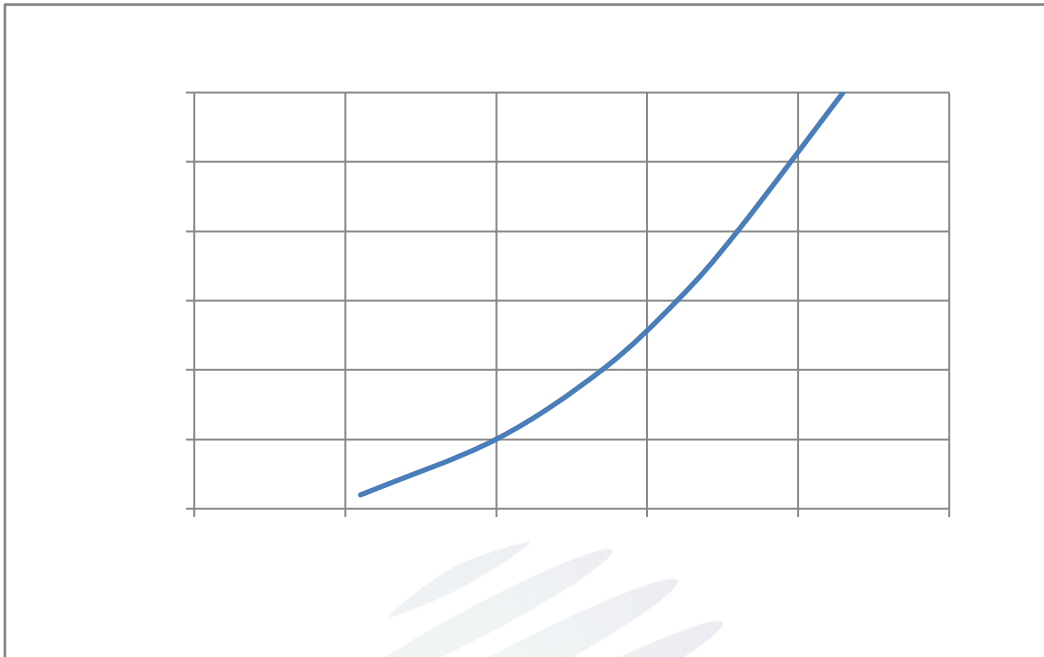


Fig. 1-7 Forward Voltage Vs Forward Current

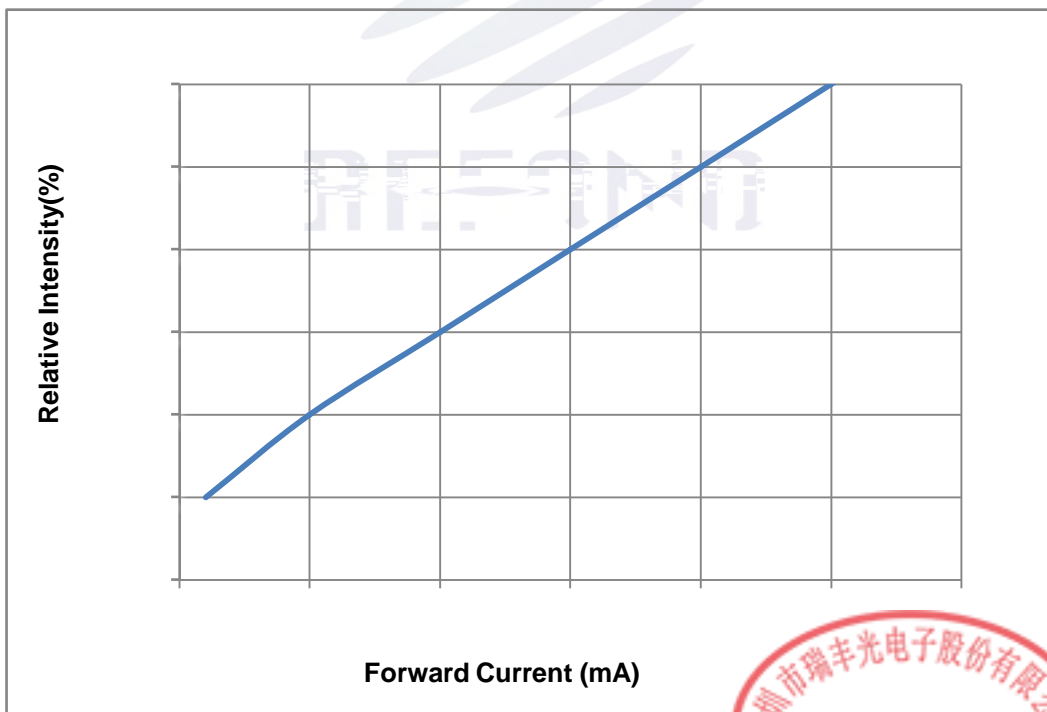


Fig. 1-8 Forward Current Vs Relative Intensity





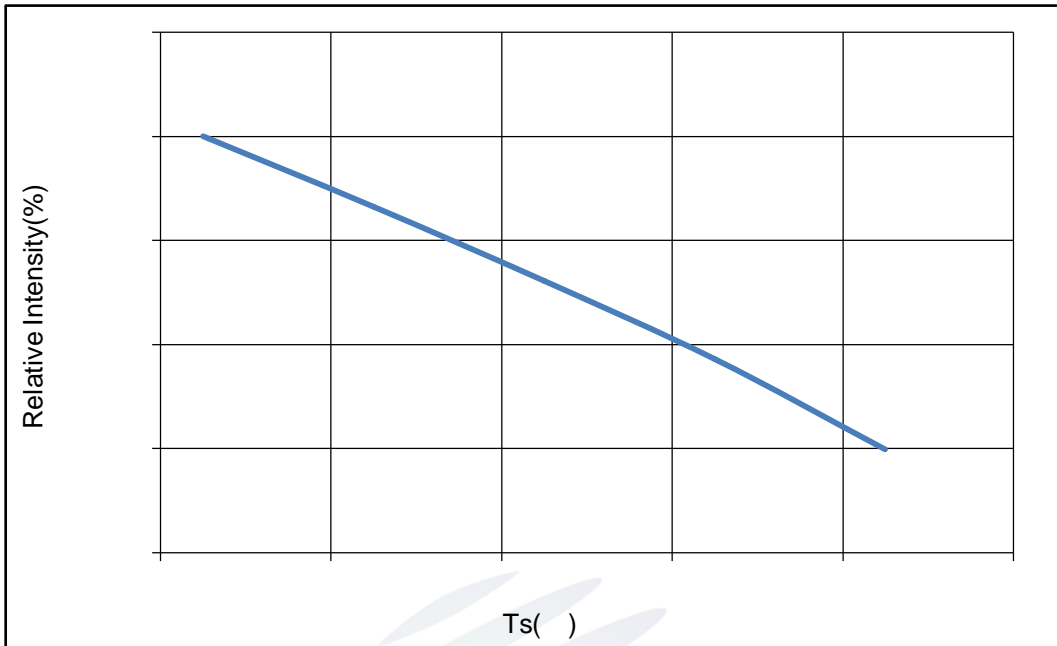


Fig. 1-9 Solder Temperature Vs Relative Intensity

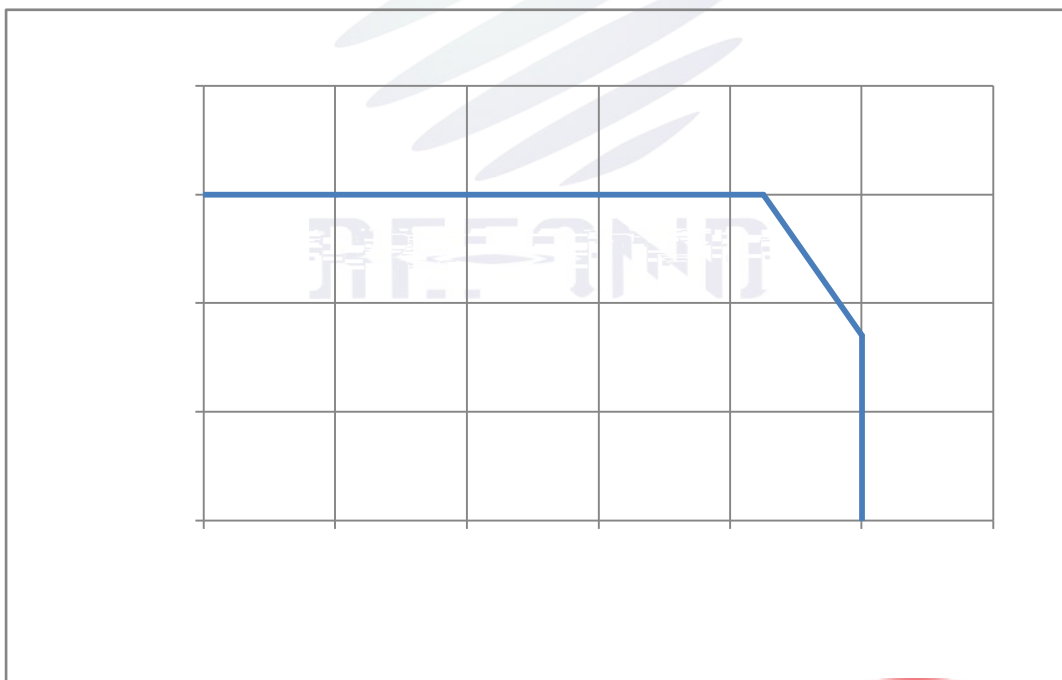


Fig. 1-10 Solder Temperature Vs Forward Current



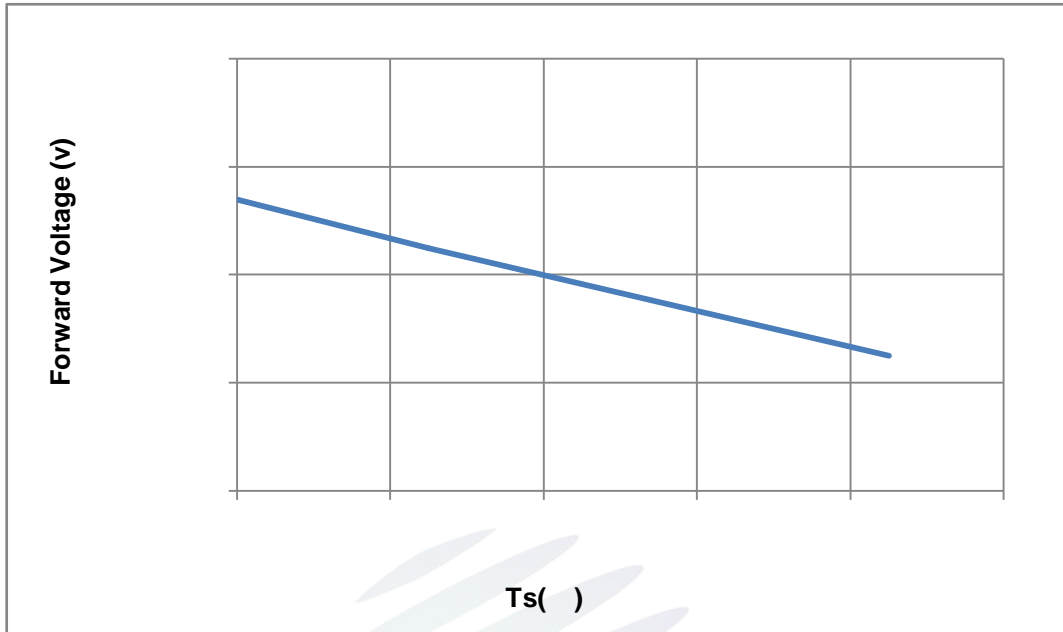


Fig. 1-11 Forward Voltage Vs Solder Temperature

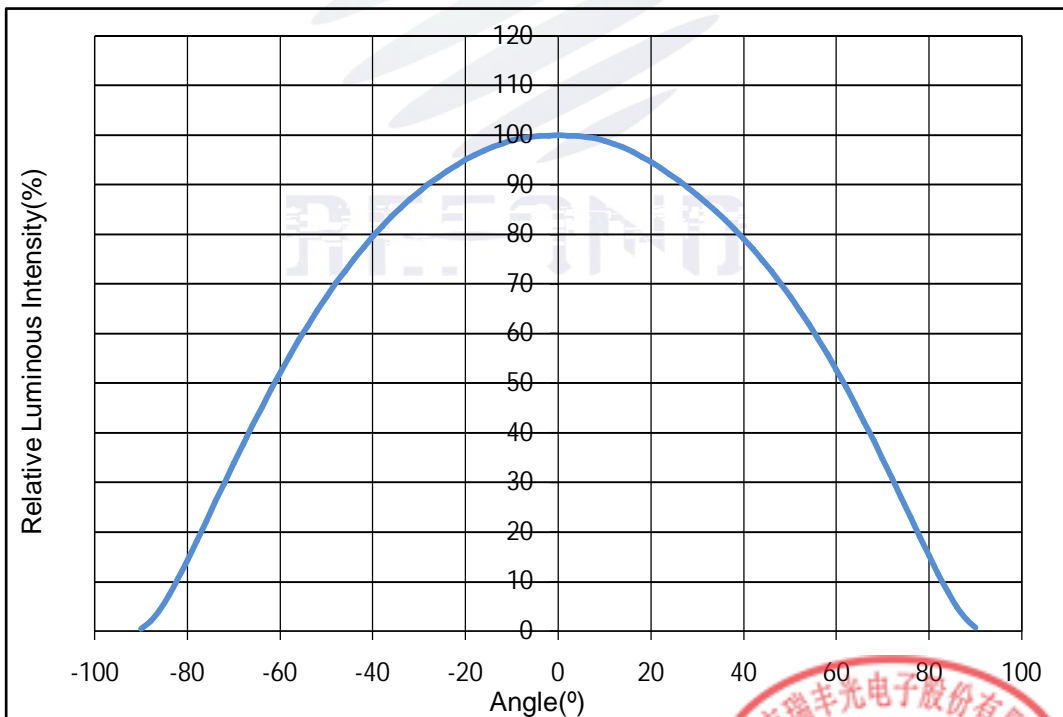
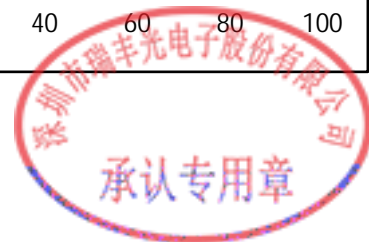
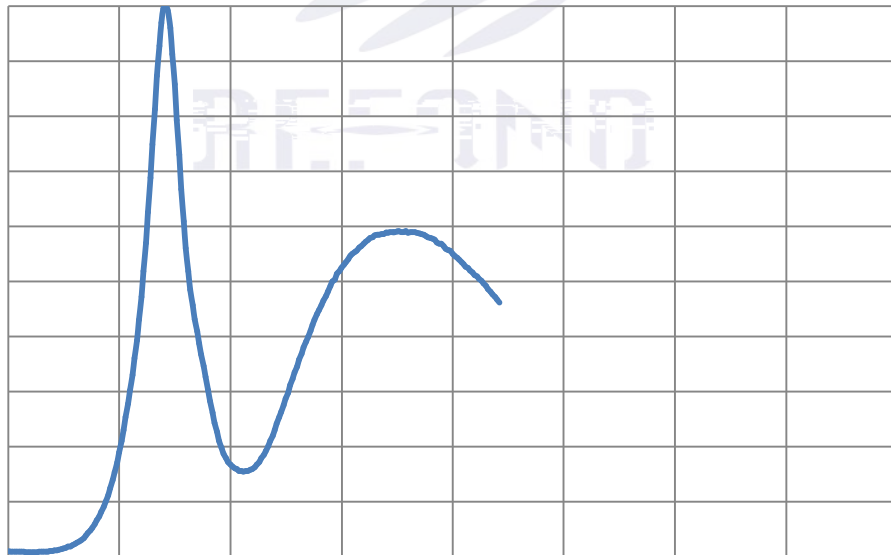


Fig. 1-12 Radiation diagram



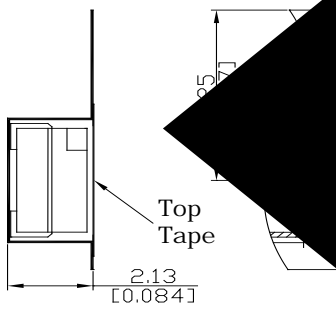


## 2. Packaging 产品包装

### 2.1 Packaging Specification 包装规格

Package: 2000pcs/reel.                      2000pcs

#### 2.1.1 Carrier Tape Dimension mm



REFOND

### 2.1.3 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

Fig. 2-3 Label Form Specification

### 2.2 Moisture Resistant Packing 防潮包装

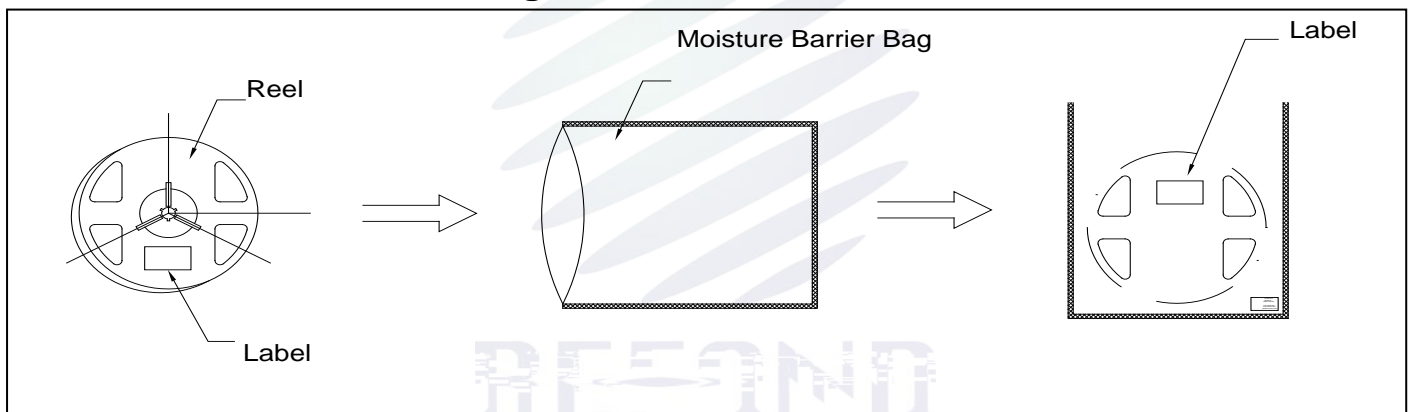


Fig.2-4 Moisture Resistant Packing

### 2.3 Cardboard Box 包装纸箱



Fig.2-5 Cardboard Box

## 2.4 Reliability Test Items And Conditions 信赖性测试项目及条件

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
MSL2 2	JESD22-A113	85 / 60%RH	168 hrs.	20pcs.	0/1
Thermal Shock	JEITAED-4701 300307	-40 15min 10s 125 15min	1000 cycle	20pcs.	0/1
Life Test	JESD22-A108	Ta=100 If=20mA	1000hrs.	20pcs.	0/1
High Temperature High Humidity Life Test	JESD22-A101	85 / 85%RH If=20mA	1000hrs.	20pcs.	0/1





### 3. SMT Reflow Soldering Instructions SMT 回流焊说明

#### 3.1 SMT Reflow Soldering Instructions SMT 回流焊说明

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	( $T_{smin}$ )	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



## 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

### 3.1.2 Repairing

### 3.1.3 Cautions



## 4. Handling Precautions 产品使用注意事项

### 4.1 Handling Precautions 产品使用注意事项

(3) VOCs (Volatile organic compounds) emitted from materials used in the construction of fixtures can

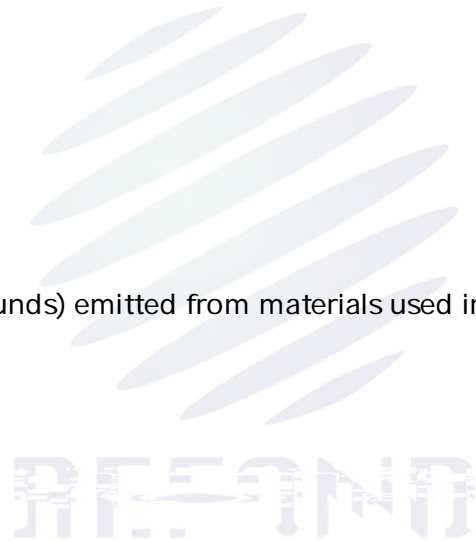


Fig 4-1 Handling Precautions

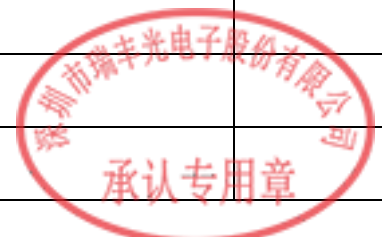
voltage only when it is ON or OFF.If the reverse voltage is applied to LED , migration





## Version History/

Date	Revisor	Version	Verifier	Remarks
2017/7/13		E0		New issue
2021/3/13		E1		
2022/07/07		E2		





Declare

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