SPECIFICATION

REFOND P/N

RF-A4A31-WYS8-A4

□ R&D

■ Mass Production

0755-2967-5000
0755-6683-9322
sales@refond.com

1. Description

1.1

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

Product Package: 3.50mmX2.80mmX1.85mm.

LED 3.50mmX2.80mmX1.85mm.

1.2Features

► PLCC4 Package. PLCC4

► Extremely wide viewing angle.

► Suitable for all SMT assembly and solder process. SMT

► Available on tape and reel.

► Moisture sensitivity level: Level 2. Level2

► RoHS compliant. RoHS

► Qualifications: The product qualification test plan is based on the guidelines of AEC-Q102 Stress Test Qualification for Automotive Grade Discrete Semiconductors

AEC-Q102

1.3Application

► Automotive Interior and Exterior Lighting.

► Switches.

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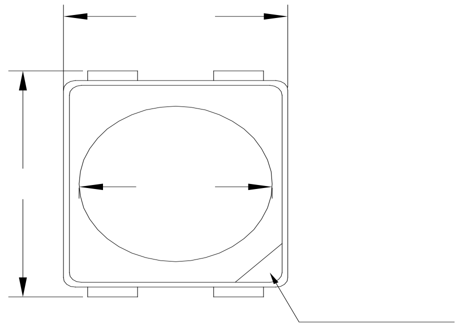
1.4Package Dimension



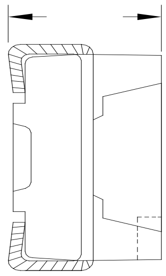


Fig. 1-2 SideView侧面视图

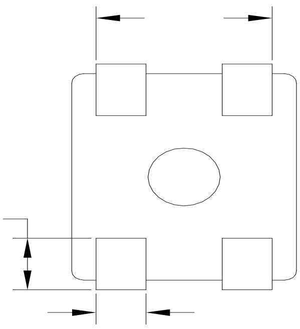


Fig. 1-3 BottomView背面视图

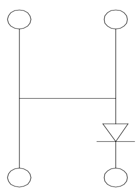


Fig. 1-4 Polarity极性

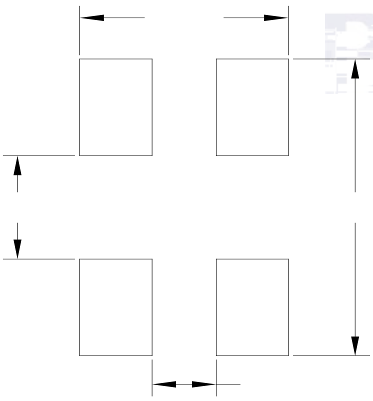


Fig. 1-5 Soldering Patterns推荐焊盘

Notes

1. All dimensions units are millimeters.

2. All dimensions tolerances are ±0.2mm unless otherwise noted. ± 0.2

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1.5Product Parameters

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

Item	Symbol	Test Condition	Value			Unit
			Min.	Typ.	Max.	
Forward Voltage	V_F	IF=50mA	2.8	---	3.3	V
Reverse Current	I_R	V_R=5V	---	---	10	uA
Luminous Intensity	IV	IF=50mA	3500	---	6500	mcd
Viewing Angle	2θ1/2	IF=50mA	---	120	---	deg
Thermal Resistance (Junction to Solder)	$R_{th\ JS}$ real	I_F=50mA	---	115	135	℃/W
	$R_{th\ JS}$el	I_F=50mA	---	80	95	℃/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}	100	mA
Reverse Voltage	V_R	5	V
Electrostatic Discharge (HBM)	E_{SD}	2000	V
Operating Temperature	T_{OPR}	-40 ~ +110	
Storage Temperature	T_{STG}	-40 ~ +110	
Junction Temperature	T_J	125	

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Notes

1. 1/10 Duty cycle, 10ms pulse width. 10ms, 1/10.

2. The above forward voltage measurement allowance tolerance is ±0.1V. ± 0.1V.

3. The above color coordinates measurement allowance tolerance is ±0.005. ± 0.005.

4. The above luminous intensity measurement allowance tolerance ±10%.
± 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. LED

8.At 25 , pulse mode test, photoelectric conversion efficiency 2 5 ,
p 8 h o t
8a

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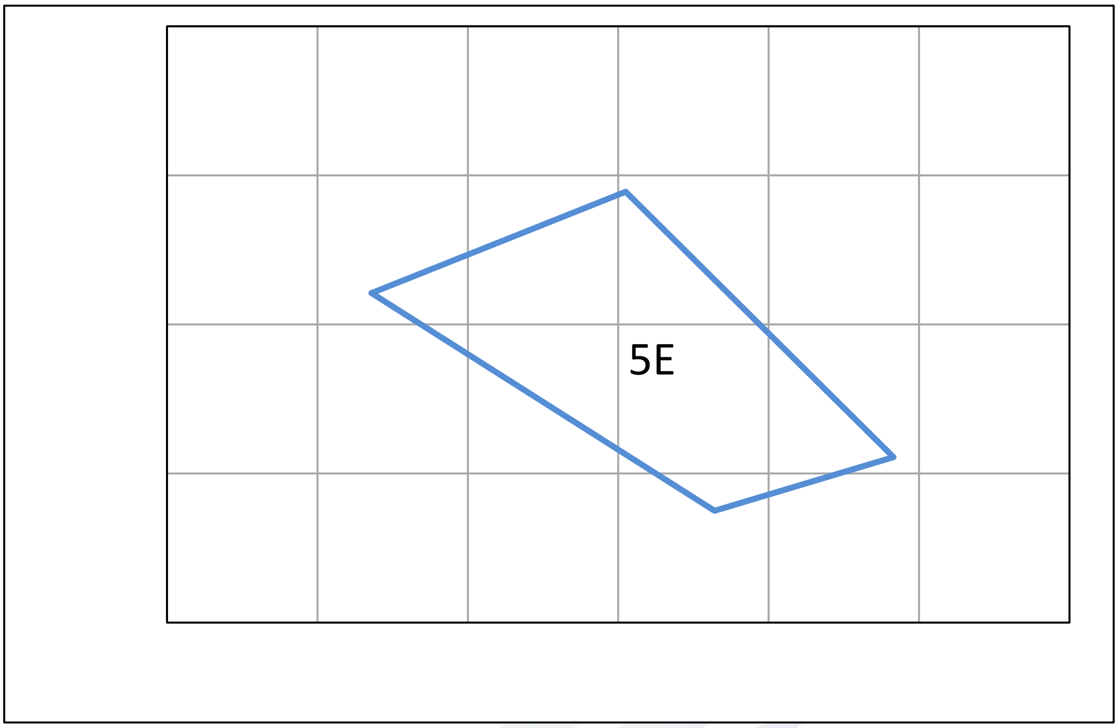

Fig. 1-6 The C.I.E Chromaticity Diagram CIE

Table 1-4

BIN CODE	CIE-X1	CIE-Y1	CIE-X2	CIE-Y2	CIE-X3	CIE-Y3	CIE-X4	CIE-Y4
5E	0.5536	0.4221	0.5764	0.4075	0.5883	0.4111	0.5705	0.4289

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1.7 Typical Optical Characteristics Curves

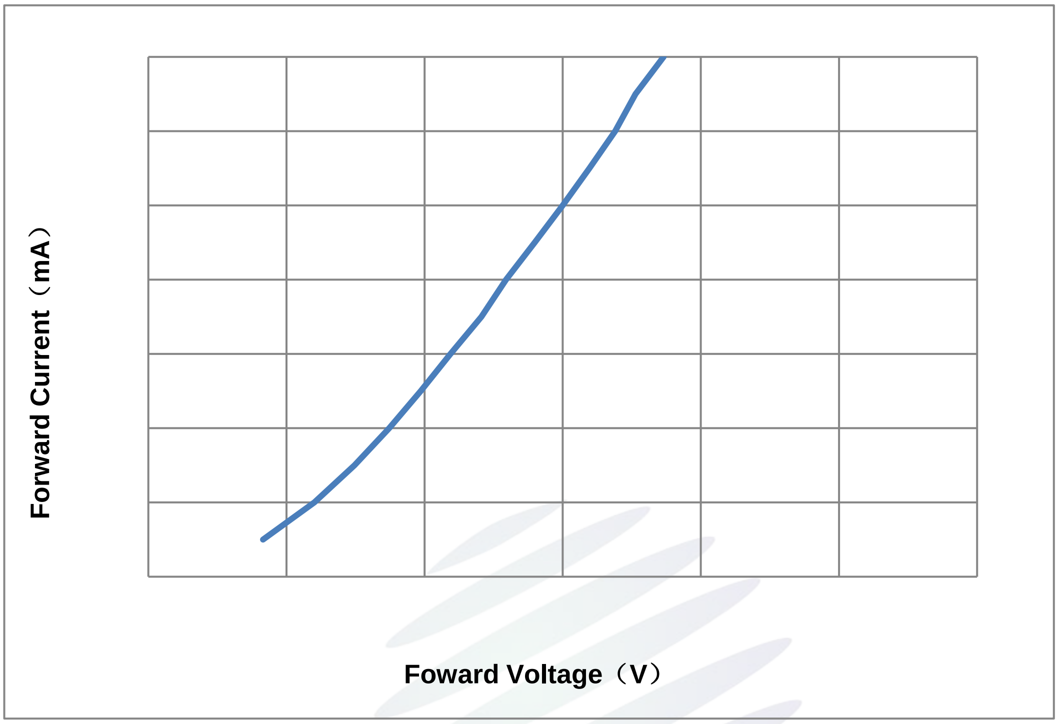

Fig. 1-7 Forward Voltage Vs Forward Current

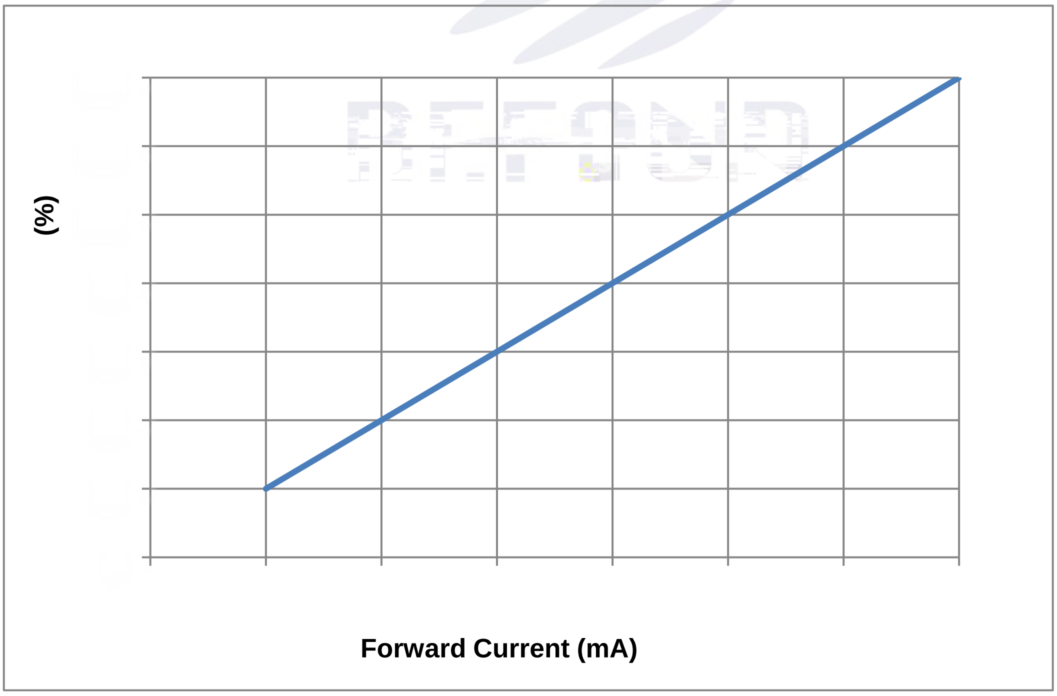

Fig. 1-8 Forward Current Vs Relative Intensity

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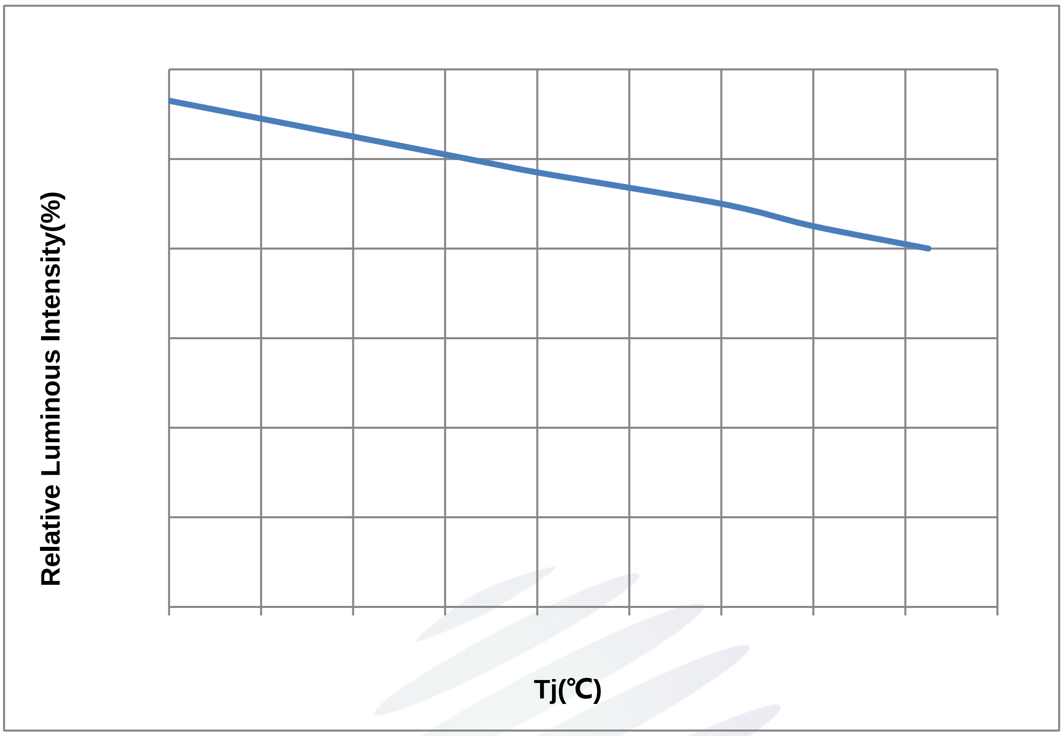

Fig. 1-9 Junction Temperature Vs Relative Intensity

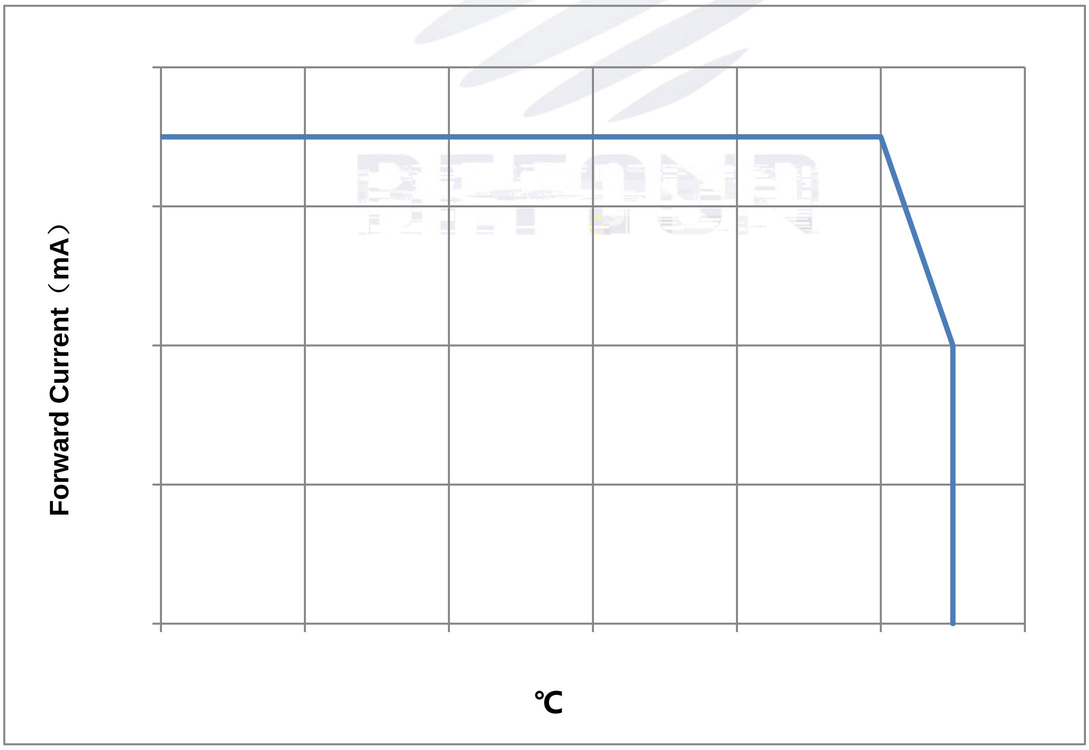

Fig. 1-10 Solder Temperature Vs Forward Current

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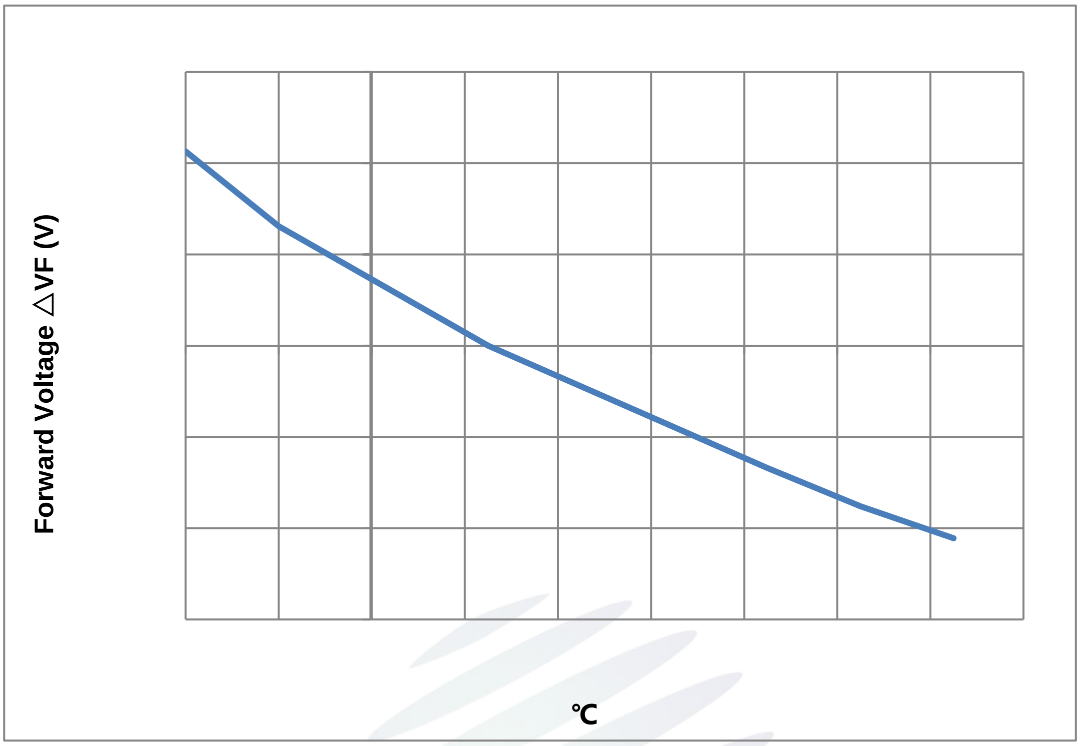

Fig. 1-11 Voltage shift Vs Junction Temperature

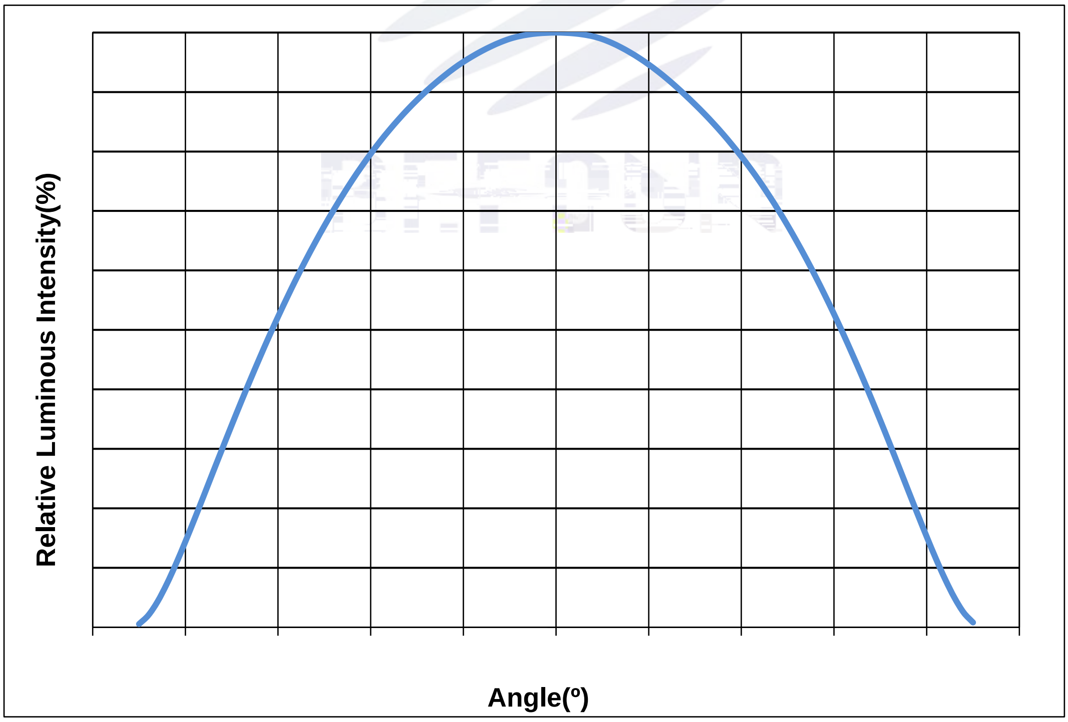

Fig. 1-12 Radiation diagram

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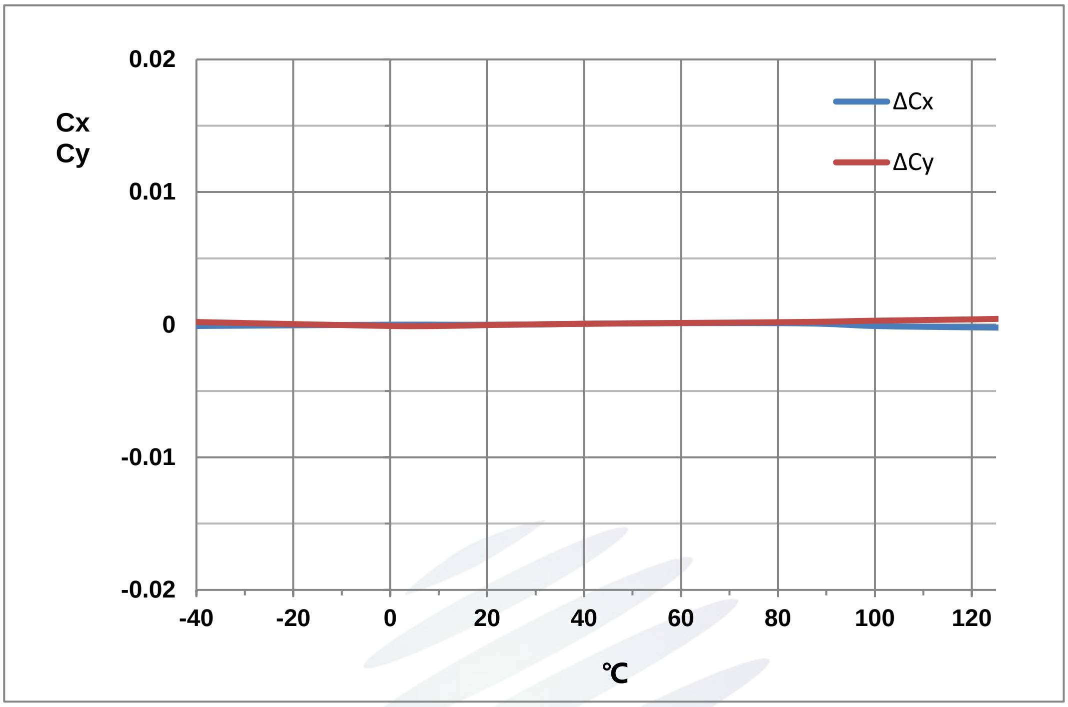

Fig. 1-13 Color coordinate shift Vs Junction Temperature

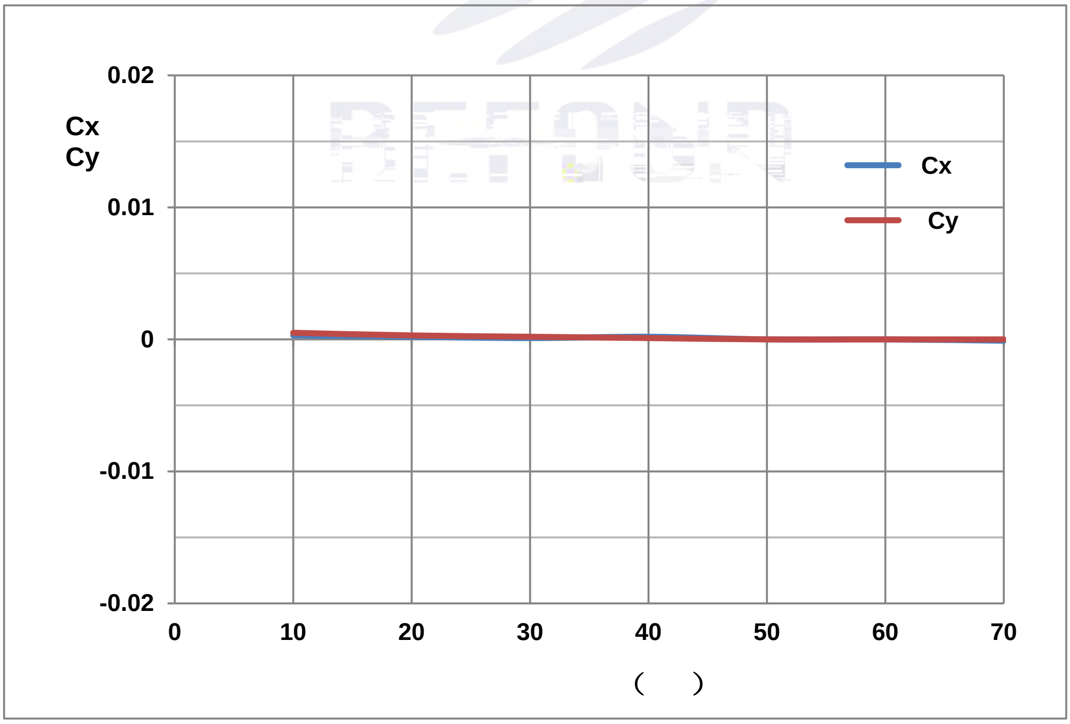

Fig. 1-14 Color coordinate shift Vs Forward Current

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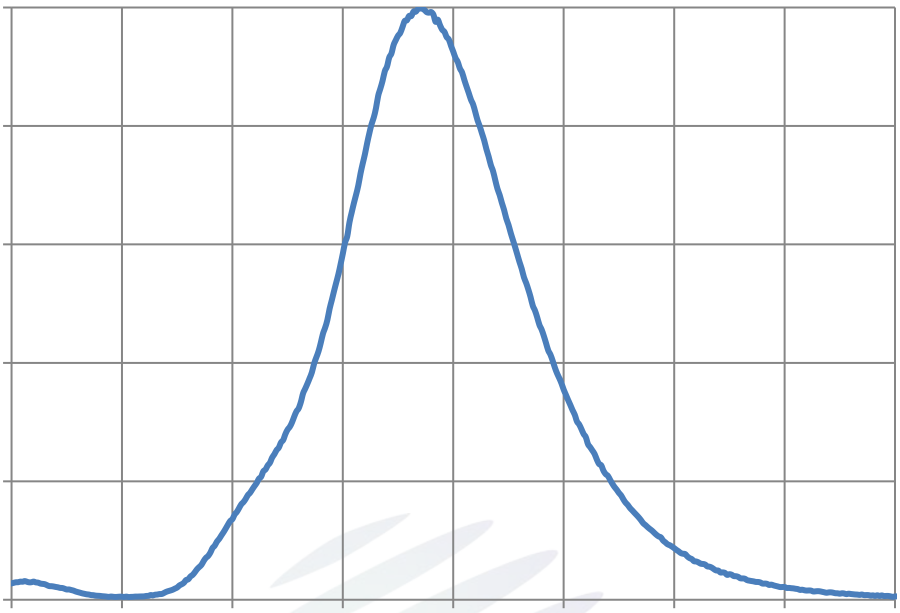

Fig. 1-15 Spectrum Distribution

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2. Packaging

2.1 Packaging Specification

Package:2000pcs/reel. 2000pcs

2.1.1Carrier Tape Dimension

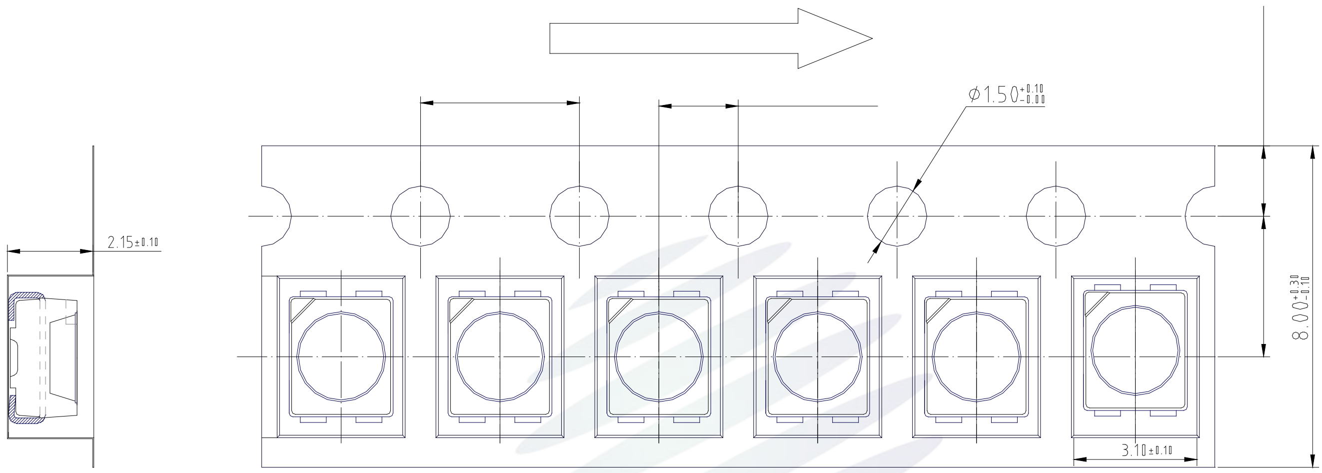

Fig.2-1 Carrier Tape Dimension

2.1.2Reel Dimension

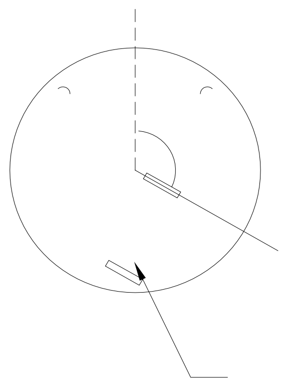

Fig.2-2Reel Dimension

Table 2-1Reel Dimension

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

Notes

The tolerances unless mentioned ±0.1mm. Unit : mm ± 0.1

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2.1.3Label Form Specification

able 2-2 Specification

PART NO.	Part Number
SPEC NO.	Spec Number
LOT NO.	Lot Number
BIN CODE	Bin Code
IV	Luminous Intensity
XY	Chromaticity Bin
V_F	Forward Voltage
WLD	Wavelength
QTY	Packing Quantity
DATE	Made Date

Fig. 2-3 Label Form Specification

2.2Moisture Resistant Packing

Fig.2-4Moisture Resistant Packing

2.3Cardboard Box

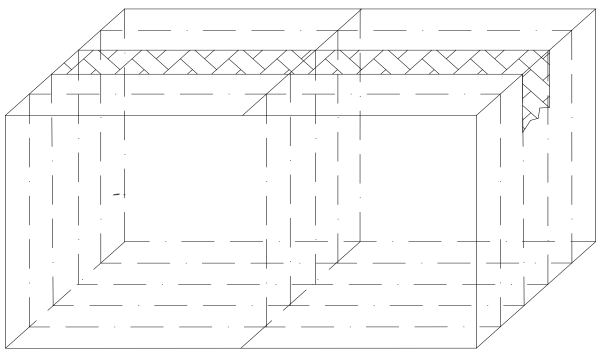

Fig.2-5Cardboard Box

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2.5 Criteria For Judging Damage

Table 2-4Criteria For Judging Damage

Test Items	Symbol	Test Condition	Criteria For Judgement	
			Min.	Max.
Forward Voltage	V_F	IF=50mA	-	U.S.L*)x1.1
Reverse Current	I_R	V_R = 5V	-	U.S.L*)x2.0
Luminous Flux	Φ	IF=50mA	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. / LED

LED

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.

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3. SMT Reflow Soldering Instructions SMT

3.1SMT Reflow Soldering Instructions SMT

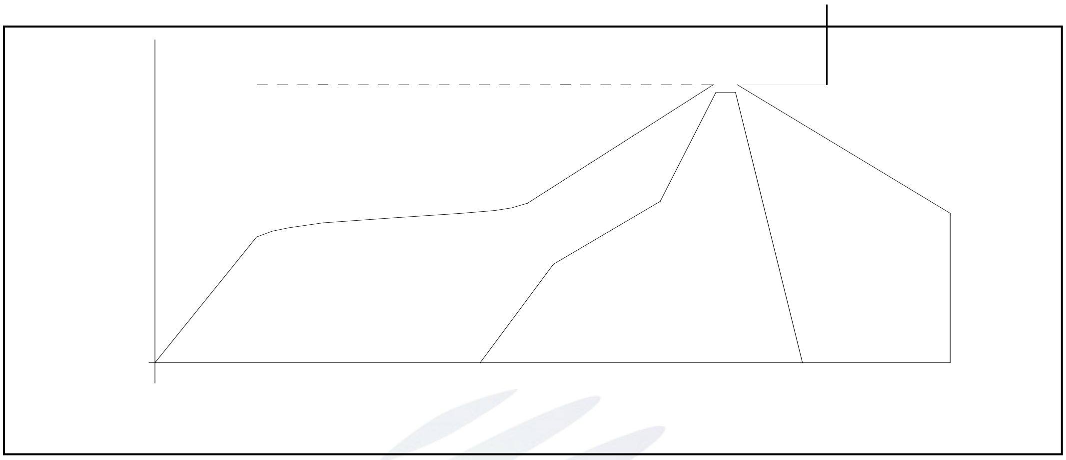

Fig.3-1SMT Reflow Soldering Instructions SMT

Table 3-1Reflow parameters

Average temperature rise speed Tsmax TP	3 °C/ Max 3 °C/ s
Preheating: minimum temperature (Tsmin)	150 °C
Preheating: Max temperature (Tsmax)	200 °C
Preheating: Time Tsmin Tsmax	60 - 120 60s-120s
Time limited to maintain high temperature: the temperature (TL)	217 °C
Time limited to maintain high temperature: The Time (tL)	60 Max 60s
Peak /Classification of temperature: / (TP)	260 °C
Time limit classification of peak temperature time tp	10 Max 10s
(TP) 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 Tp	8 Max 8 minutes tp

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Notes

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

(2)When soldering , do not put stress on the LEDs during heating.

3.1.1 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 LED

3.1.2 Cautions

The encapsulated material of the LEDs is silicone. Therefore the LEDs have a soft surface on the top of package. The pressure to the top surface will be impacted on the reliability of the LEDs. Precautions should be taken to avoid the strong pressure on the encapsulated part. So when use the picking up nozzle, the pressure on the silicone resin should be proper. LED LED

(2) Components should not be mounted on warped (non coplanar) portion of PCB. After soldering, do not warp the circuit board.LED PCB

(3) Do not apply mechanical force or excess vibration during the cooling process to normal temperature after soldering. Do not rapidly cool device after soldering.

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4. Handling Precautions

4.1 Handling Precautions

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Table 4-1Storage

Conditions		Temperature	Humidity	Time
Storage 储存	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 60 5 for above 24 hours.

60±5 24

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). LED

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

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