SPECIFICATION

Ö

REFOND P/N

□R&D

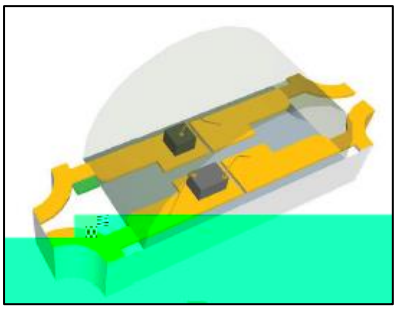
■Mass Product

Contents

flow /Sp S1 TmoJEld11/Lang 1i06 nlTJET I AMCID 2trucCID t9/L6ng MC .S1 TmMETT.1 0 0 1 347.71 721.9 Tm

1. Description

1.1 General Description



The Colour LED which was fabricated using a yellow chip and green chip, Package Dimension : 3.2mmX1.0mmX1.48mm.

3.2mmX1.0mmX1.48mm

1.2 Features

Extremely wide viewing angle.

Suitable for all SMT assembly and solder process.

Moisture sensitivity level: Level 3.

RoHS compliant.

1.3 Application

Optical indicator.

Switch and symbol, display.

General use.

1.4 Package Dimension

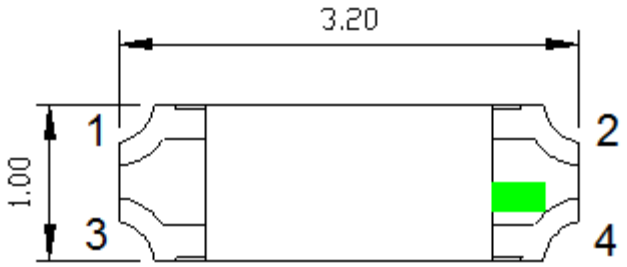


Fig.1-1 Top view

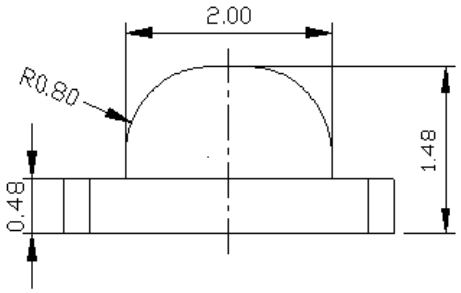


Fig.1-2 Side view

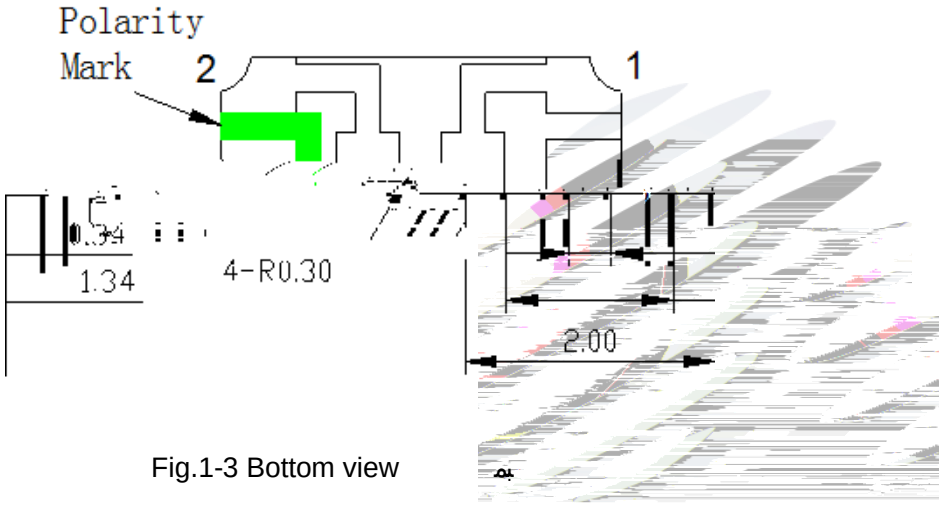


Fig.1-3 Bottom view

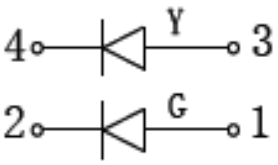


Fig.1-4 Polarity

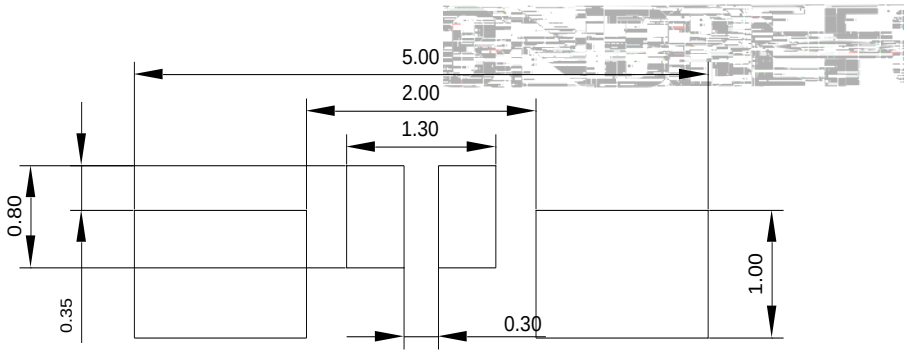
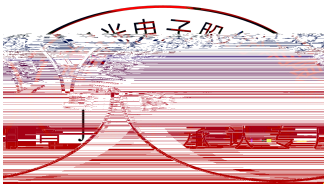


Fig.1-5 Soldering patterns

Notes

1. All dimensions units are millimeters.

   All dimensions tolerances are 0.2mm unless otherwise noted.



±0.2

1.5 Product Parameters

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

Item	Test Condition	Symbol	Code	Value	Unit

Notes : V_R=5V For test conditions. V_R=5V

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

Parameter ĩ	Symbol `	Rating ẅ		Units ٧ r
		Y	G	
Power Dissipation ٠	P_d	48	68	mW
Forward Current ٩	I_F	20		mA
Peak Forward Current Of Pulse “ ẅ	I_{FP}	60		mA
Electrostatic Discharge (HBM)	E_{SD}	1000		V
Operating Temperature ɾ	T_{opr}	-40 ~ +85		℃
Storage Temperature Ỵ	T_{stg}	-40 ~ +85		℃
Junction Temperature	T_j	95		℃

Notes

1. 1/10 Duty cycle, 0.1ms pulse width. 0.1ms, ٧ 1/10.

2. The above forward voltage measurement allowance tolerance is ±0.1V. ıı ٠ ±0.1V.

3. The above dominant wavelength measurement allowance tolerance is±2nm. ıı ±2nm.

4. The above luminous intensity measurement allowance tolerance ±10%. ĩ Ọ ώ ˝ ±10%.

5. Care is to be taken that power dissipation does not exceed the absolute maximum rating of the product. ə٩ ٠ ẅ

6. All measurements were made under the standardized environment of Refond. ɲ !! ˆ

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 ə٩ Ł ẅ

1.6 Typical Optical Characteristics Curves

Fig.1-6 Forward Voltage Vs Forward Current

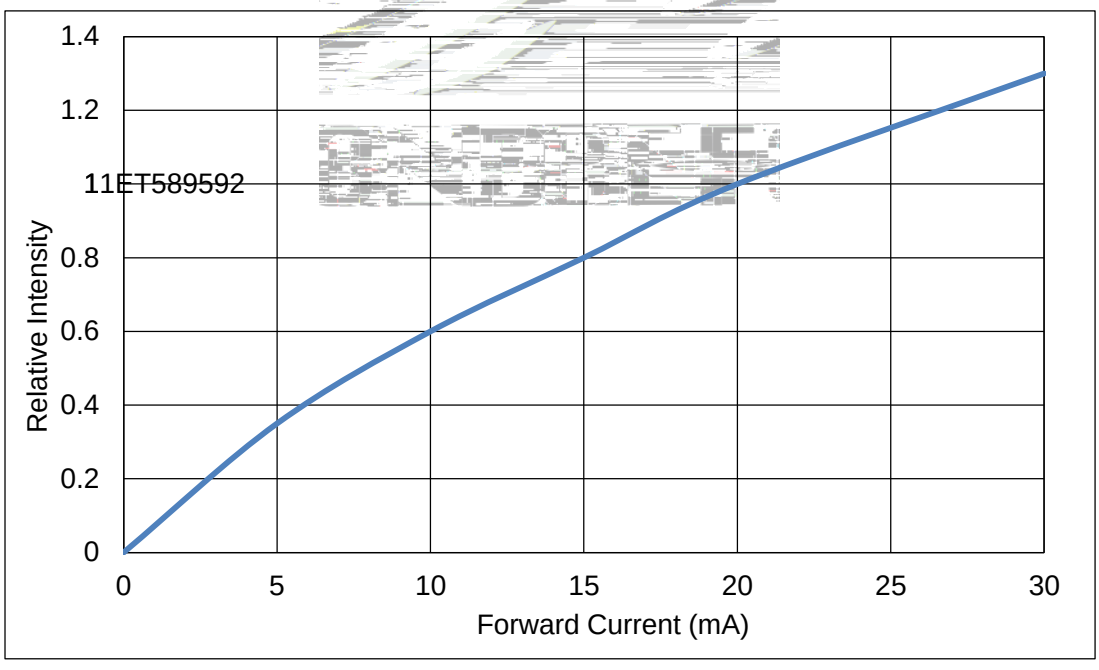


Fig.1-7 Forward Current Vs Relative Intensity

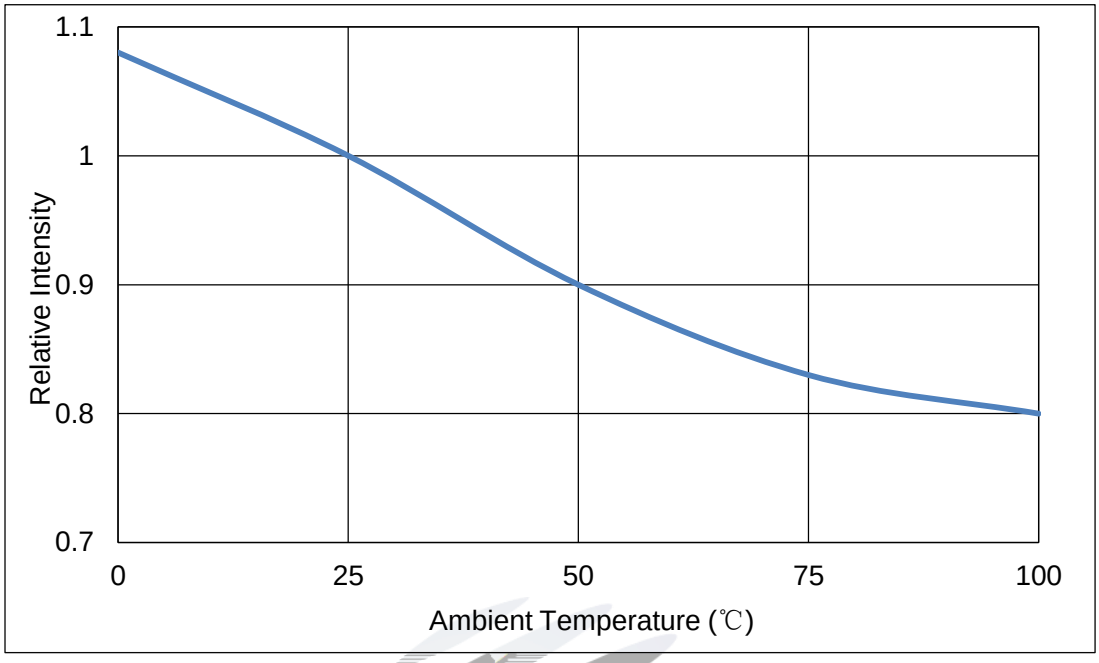


Fig.1-8 Pin Temperature Vs Relative Intensity

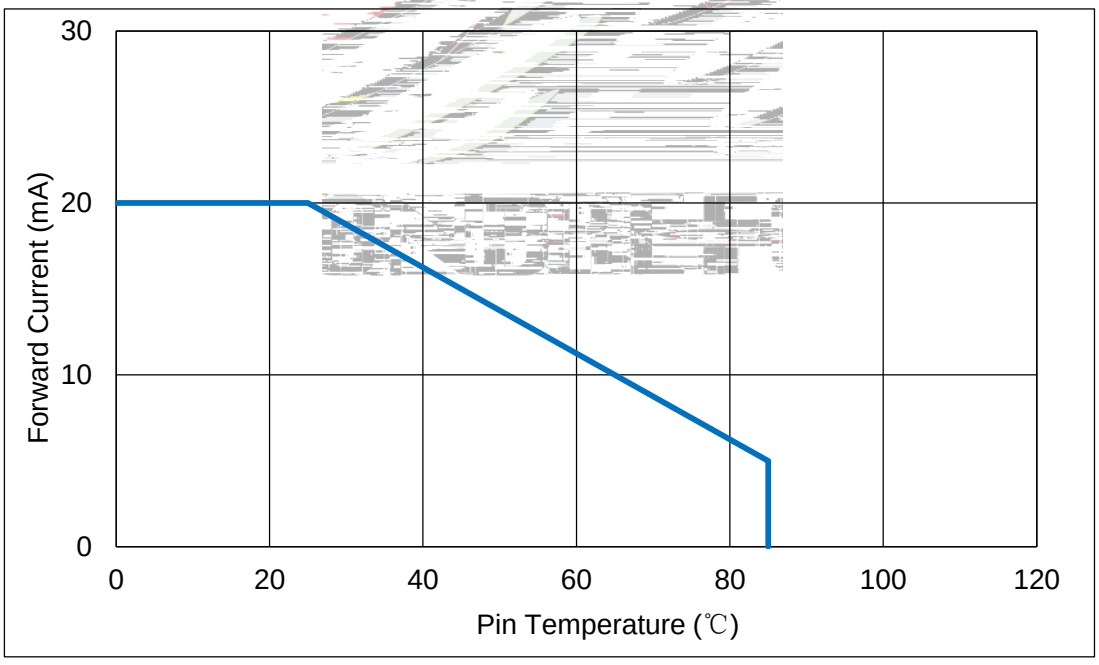


Fig.1-9 Pin Temperature Vs Forward Current

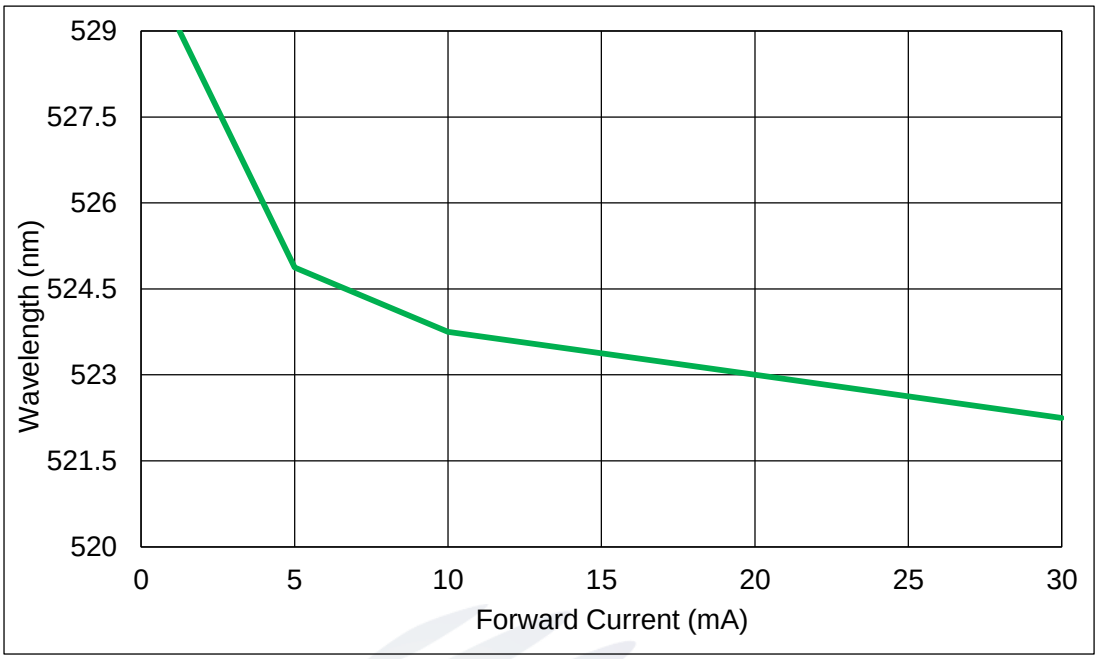


Fig.1-10 Forward Current Vs Dominate Wavelength (Ta=25)

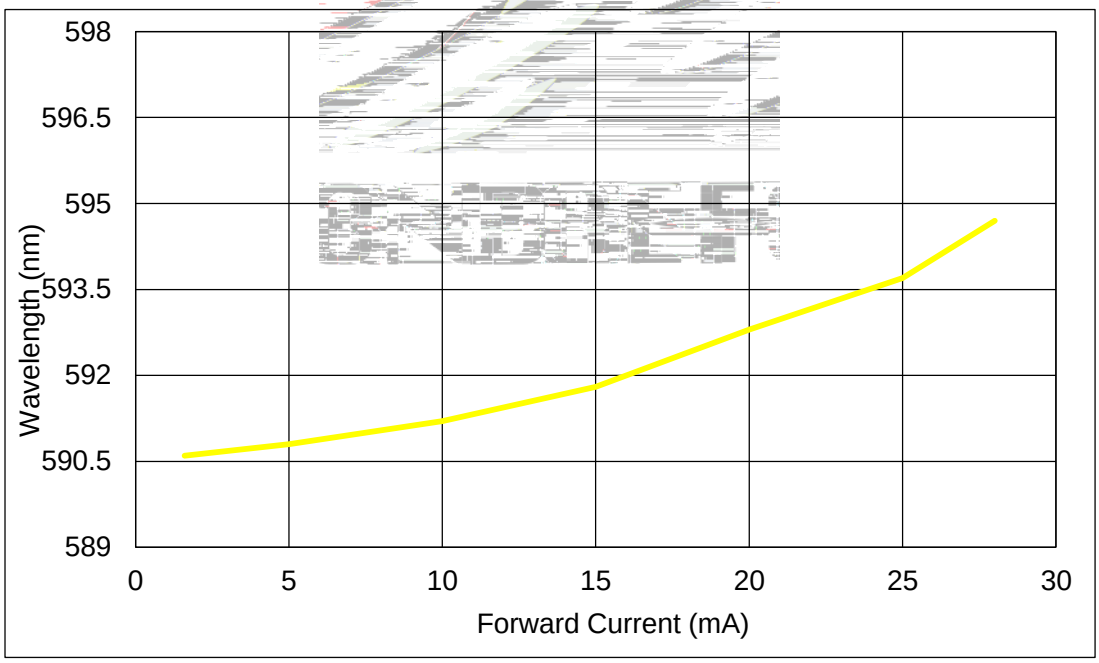


Fig.1-11 Forward Current Vs Dominate Wavelength (Ta=25℃)

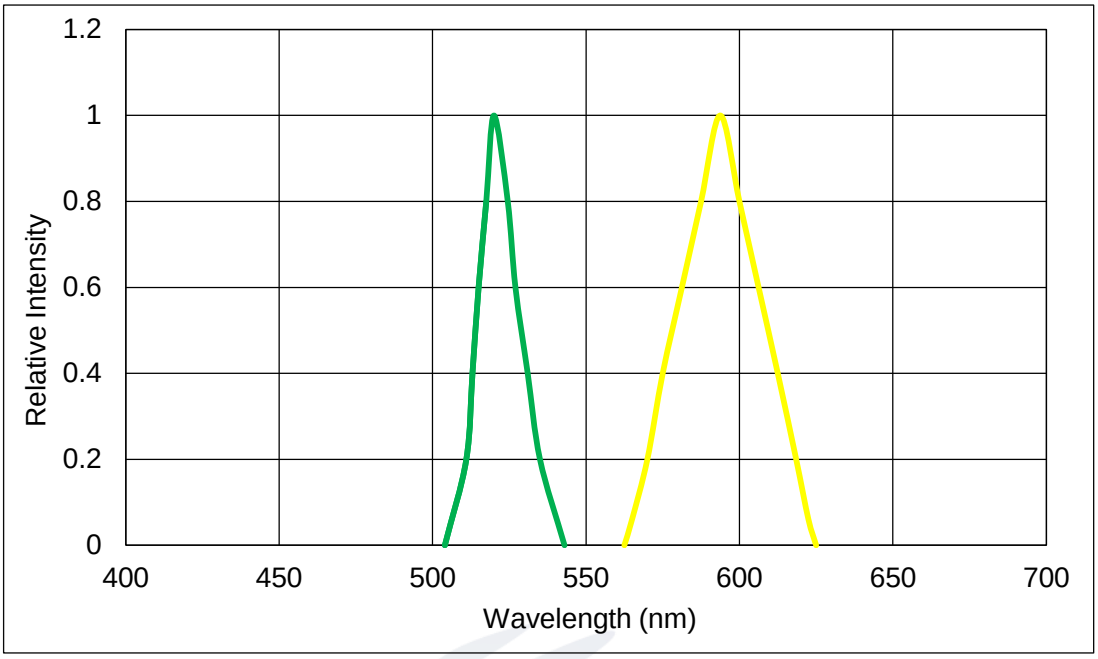


Fig.1-12 Relative Intensity Vs Wavelength (Ta=25℃)

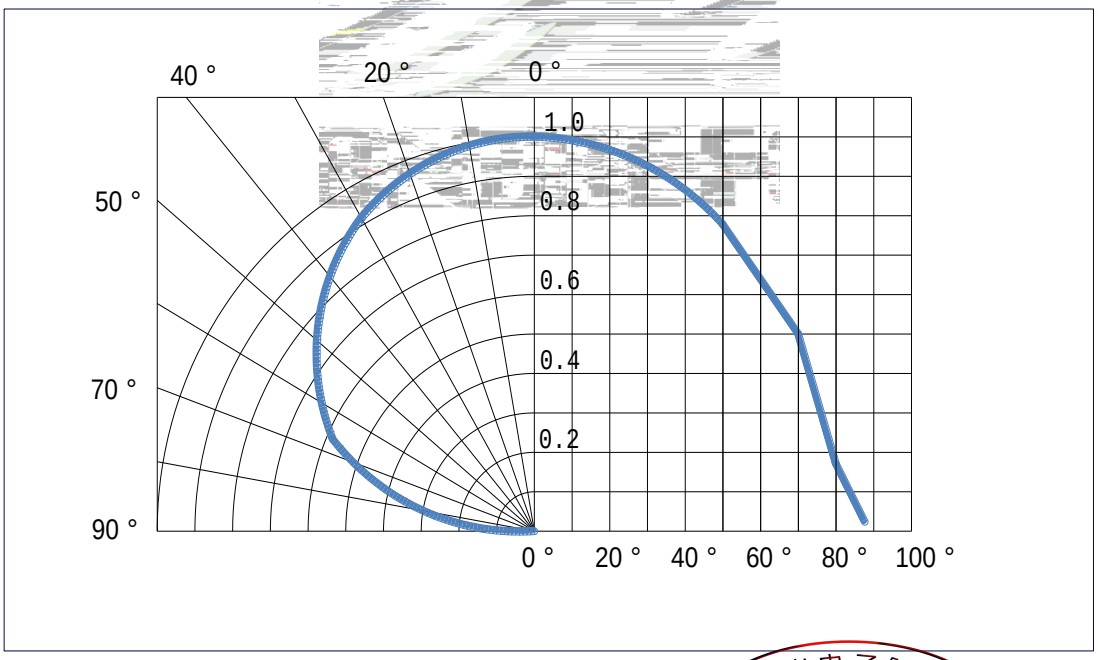


Fig.1-13 Diagram characteristics of radiation

2. Packaging

2.1 Packaging Specification

Package:3000pcs/reel. 3000pcs

2.1.1 Carrier Tape Dimension

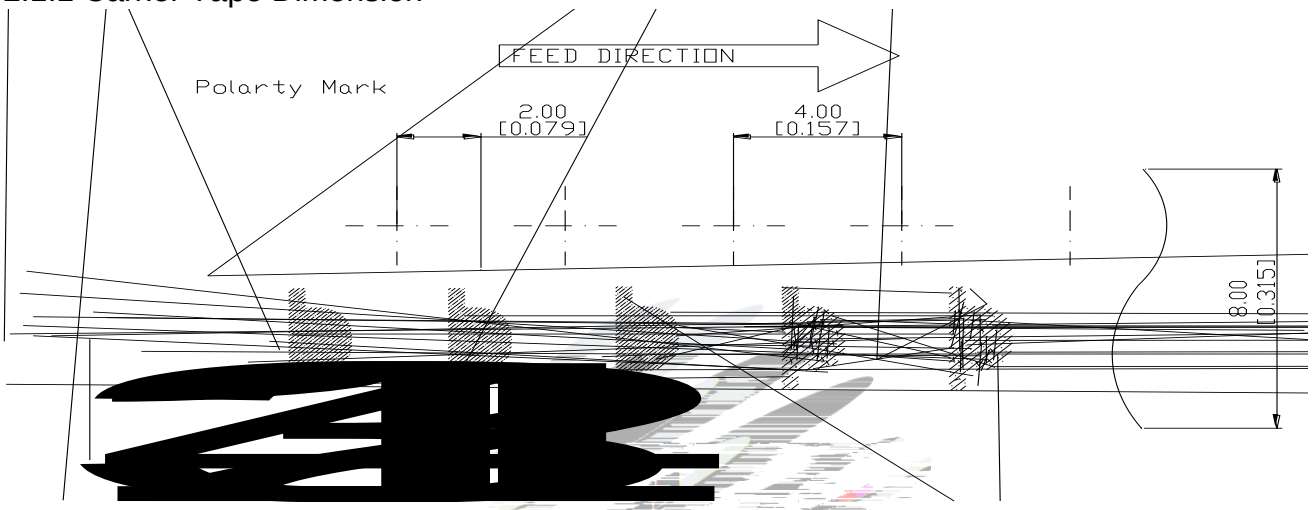


Fig.2-1 Carrier Tape Dimension

2.1.2 Reel Dimension

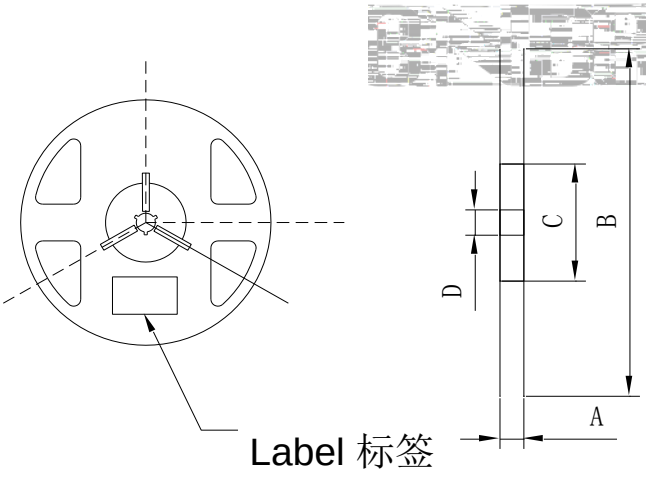


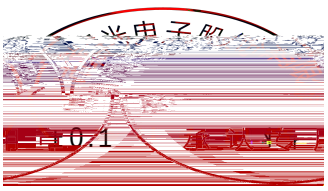
Table 2-1 Dimension

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

Fig.2-2 Reel Dimension

Notes

The tolerances unless mentioned ±0.1mm. Unit : mm



2.1.3 Label Form Specification

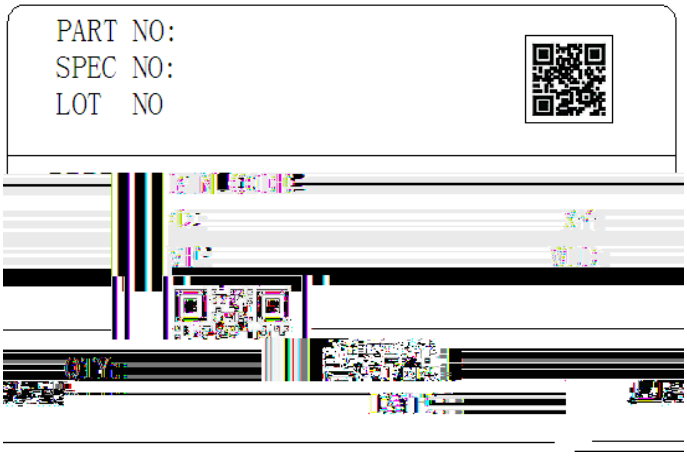


Fig. 2-3 Label Form Specification

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_F	Forward Voltage
WLD	Wavelength
QTY	Packing Quantity
DATE	Made Date

2.2 Moisture Resistant Packing

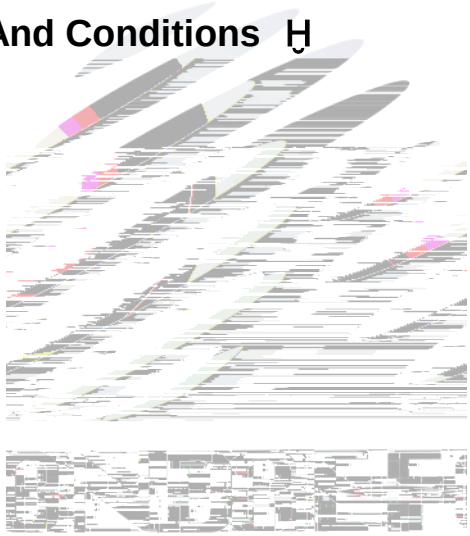
Fig.2-4 Moisture Resistant Packing

2.3 Cardboard Box ˜

Fig.2-5 Cardboard Box ˜

2.4 Reliability Test Items And Conditions Ḥ Ű ł

Table 2-



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_F	I_F=20mA	-	U.S.L*)x1.1
Reverse Current	I_R	V_R= 5V	-	U.S.L*)x2.0
Luminous Flux		I_F=20mA	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

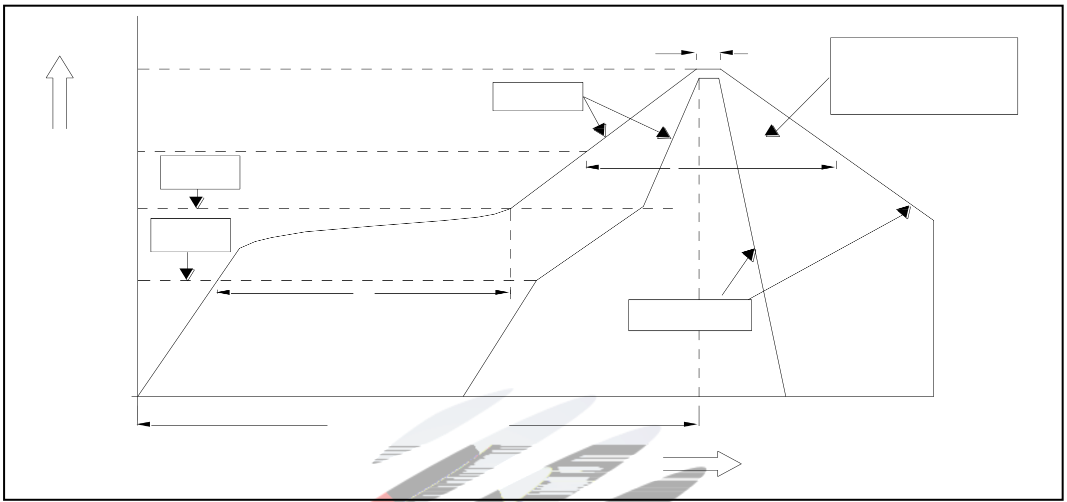


Fig.3-1 SMT Reflow Soldering Instructions SMT

Table 3-1 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)	60-150 Max 60s-150S
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

Notes

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

سد

(2)Whensoldering , do not put stress on the LEDs during heating. سر ŭ Ⱶ ɻ φ

3.1.1 Soldering Iron

(1) When do soldering by hand, keep the temperature of iron below less 300℃ less than 3 seconds. , ɲ300 ˜ 3

(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.

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D سدLED

3.1.3 Cautions Ɛ

300

300

(1) 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 usethe picking up nozzle, the pressure on the silicone resin should be proper. LED

Ⱶ ɻ φ ɻ ı ǐ

4. Handling Precautions

4.1 Handling Precautions

(1) LED operating environment and sulfur element composition cannot be over 100PPM in the LEDmating usage material. This is provided for informational purposes only and is not a warranty or endorsement.LED LED 100PPM.

(2) In order to prevent ex-ternal 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 elementis 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 theuse of any chemicals or materials that have been found or are suspected to have an adverse affect on device performance or reliability. To verifycompatibility, Refond recommends that all chemicals and materials be tested in the specific application and environment for which they are intended tobe used. Attaching LEDs, do not use adhesives that outgas organic vapor. LED LED LED

(4) Handle the component along the side surface by using forceps or appropriate tools; Do not directlytouch 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.

(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.

Table 4-1Storage

Conditions	Temperature

Version History/ ¦ ˊˇ

Date	Revisor ¦	Version	Verifier	Remarks
2017.12.23	ˋ	E/1		┼
2021.10.27		E/2	∏	ë

Declare

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