SPECIFICATION

REFOND P/N

RF-P13025TS-B37

□R&D

■Mass Product

深圳市瑞丰光电子股份有限公司 承认专用章

Contents

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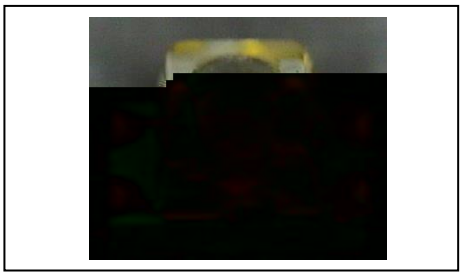
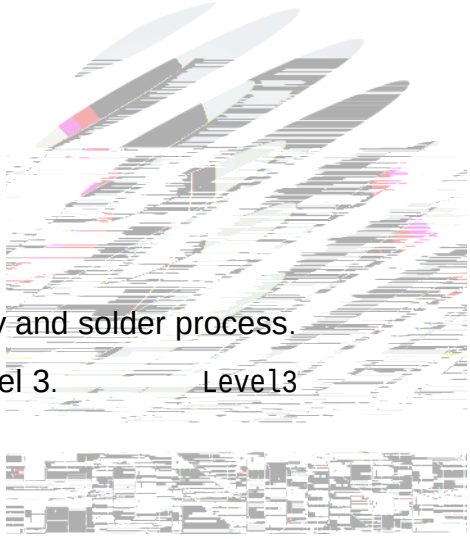
1. Description

1.1 General Description



The Colour LED which was fabricated using a orange and blue chip Package Dimension : 3.0mmX2.5mmX1.4mm.

LED 3.0mmX2.5mmX1.4mm



1.2 Features

Narrow 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.

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1.4 Package Dimension

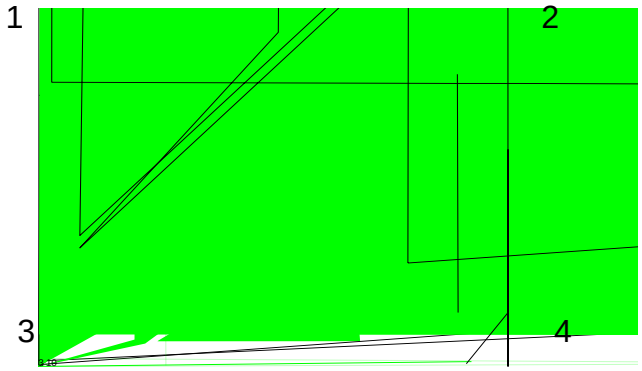

Fig.1-1 Top view

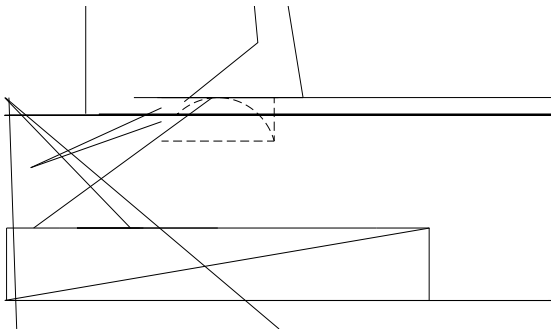

Fig.1-2 Side view

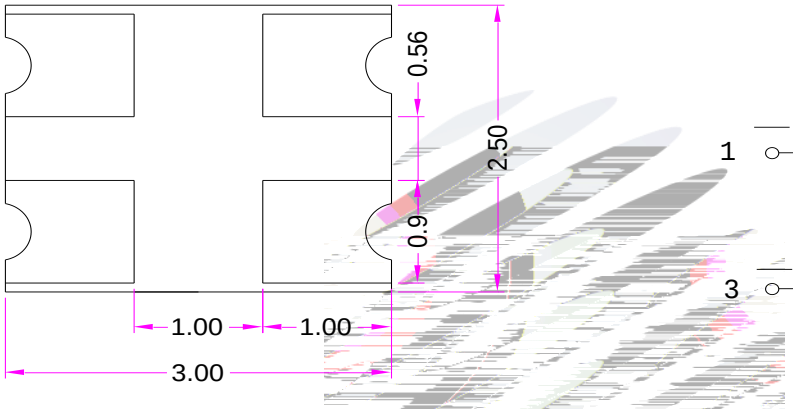

Fig.1-3 Bottom view

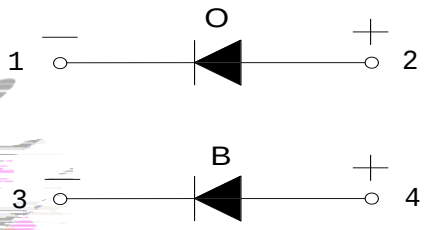

Fig.1-4 Polarity

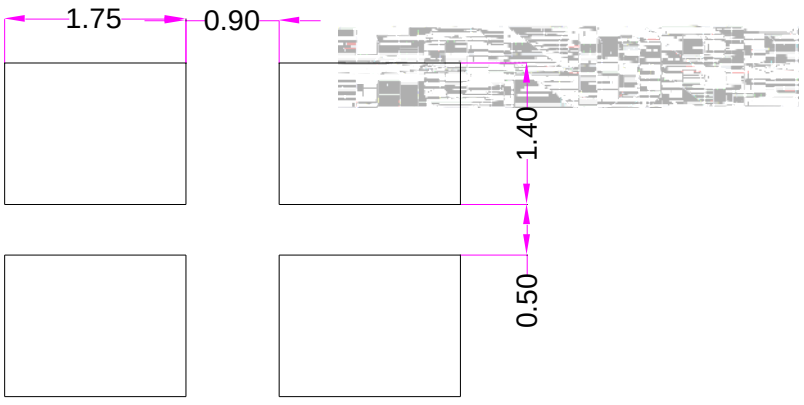

Fig.1-5 Soldering patterns

Notes

1. All dimensions units are millimeters.

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

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1.5 Product Parameters

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

Item	Test Condition	Symbol		Code	Value			Unit
					Min. ( )	Typ.	Max.	
Spectral Half Bandwidth	I_F=20mA		O	/	--	15	--	nm
			B		--	15	--	
Forward Voltage	I_F=20mA	V_F	O	B1	1.8	--	1.9	V
				B2	1.9	--	2.0	
				C1	2.0	--	2.1	
				C2	2.1	--	2.2	
				D1	2.2	--	2.3	
				D2	2.3	--	2.4	
			B	G0	2.8	--	3.0	
				H0	3.0	--	3.2	
				I0	3.2	--	3.4	
				J0	3.4	--	3.6	
Dominant wavelength	I_F=20mA	$_d$	O	D00	615	--	620	nm
				E00	620	--	625	
				F00	625	--	630	
			B	C00	460	--	465	
				D00	465	--	470	
Luminous Intensity	I_F=20mA	I_V	O	I00	230	--	350	mcd

				J00	350	--	530	
				K00	530	--	800	
				L00	800	--	1200	
			B	I00	230	--	350	
				J00	350	--	530	
				K00	530	--	800	
				L00	800	--	1200	
Viewing Angle	I_F=20mA				--	60	--	deg
Reverse Current	V_R=5V	I_R			--	--	10	A
Thermal Resistance.	I_F=20mA	R_{THJ-S}			--	--	450	/W

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

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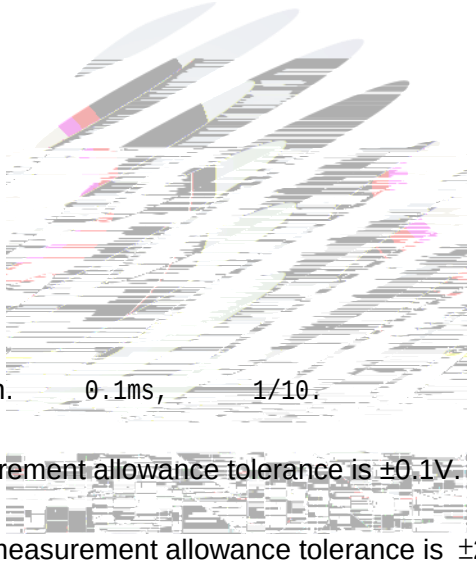
Table 1-2 Absolute Maximum Ratings at Ts=25°C



Notes

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

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

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

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.

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1.6 Typical Optical Characteristics Curves

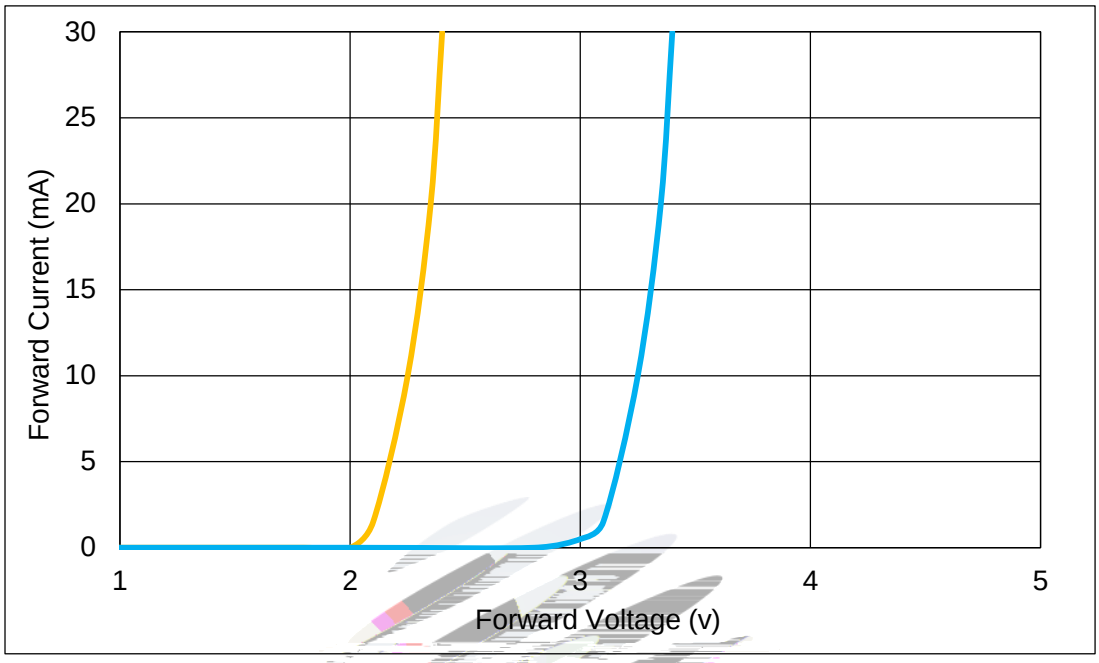

Fig.1-6 Forward Voltage Vs Forward Current

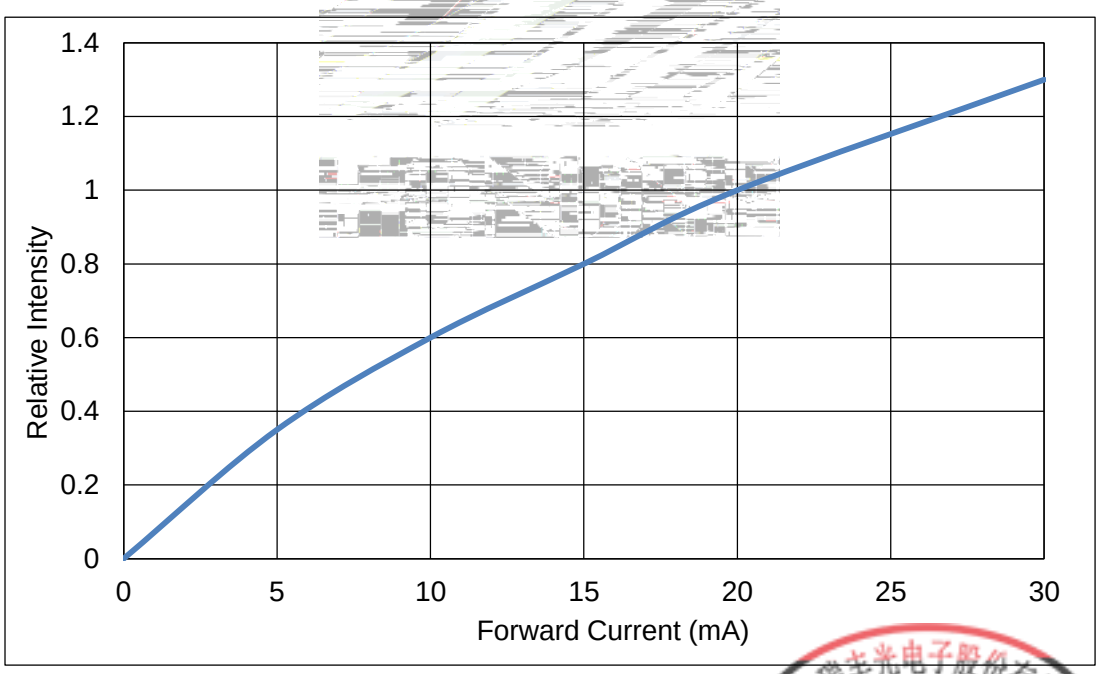

Fig.1-7 Forward Current Vs Relative Intensity

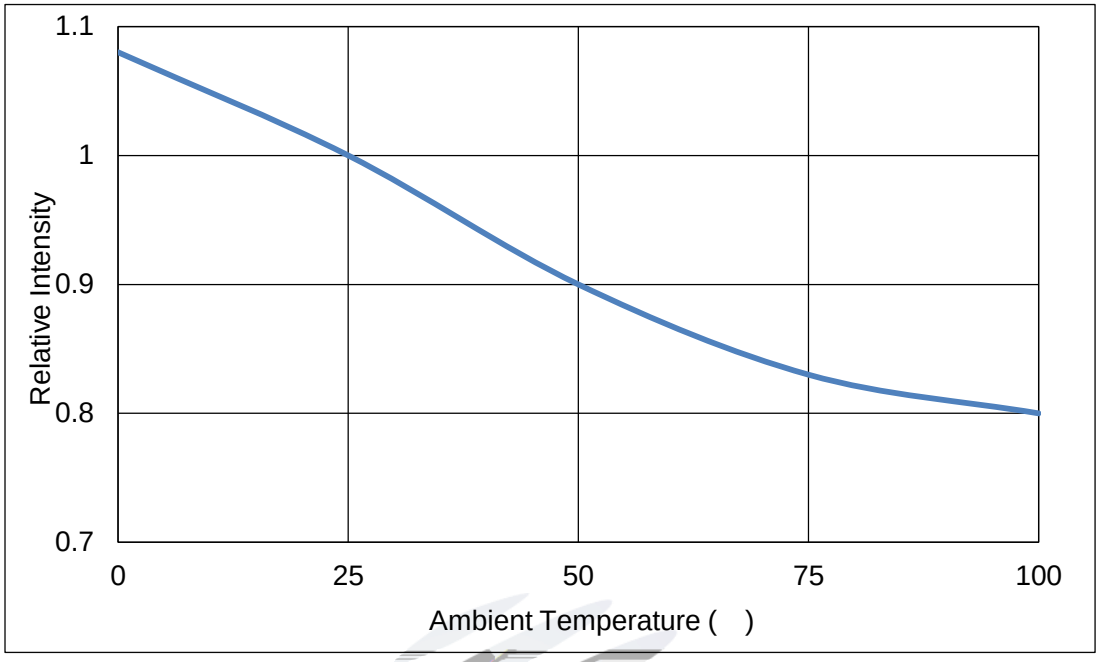

Fig.1-8 Pin Temperature Vs Relative Intensity

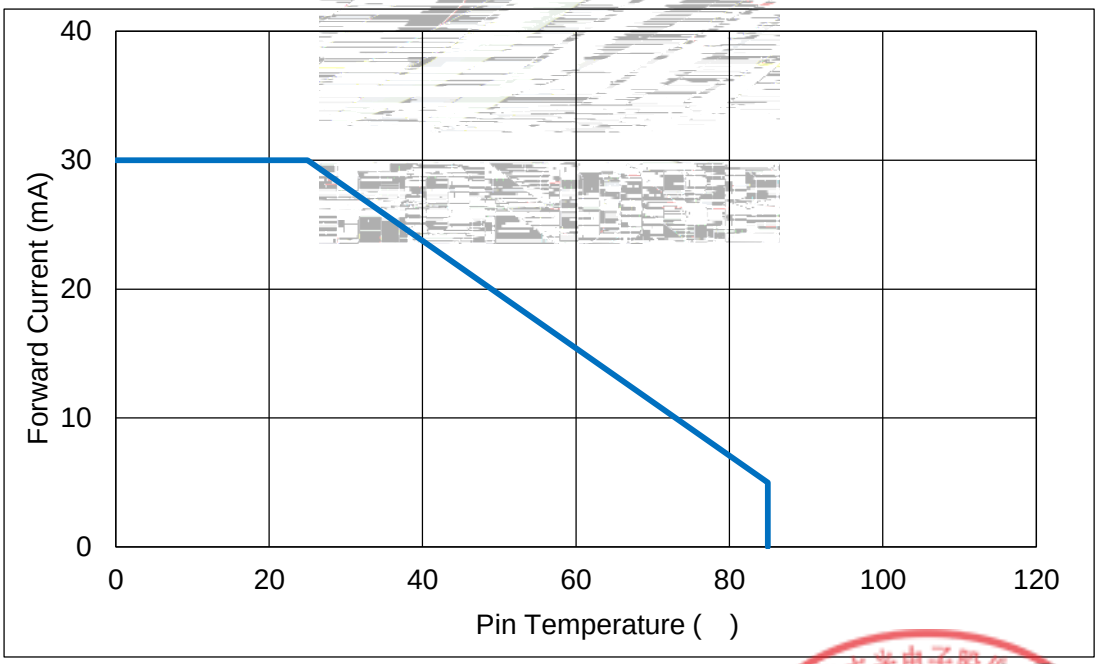

Fig.1-9 Pin Temperature Vs Forward Current

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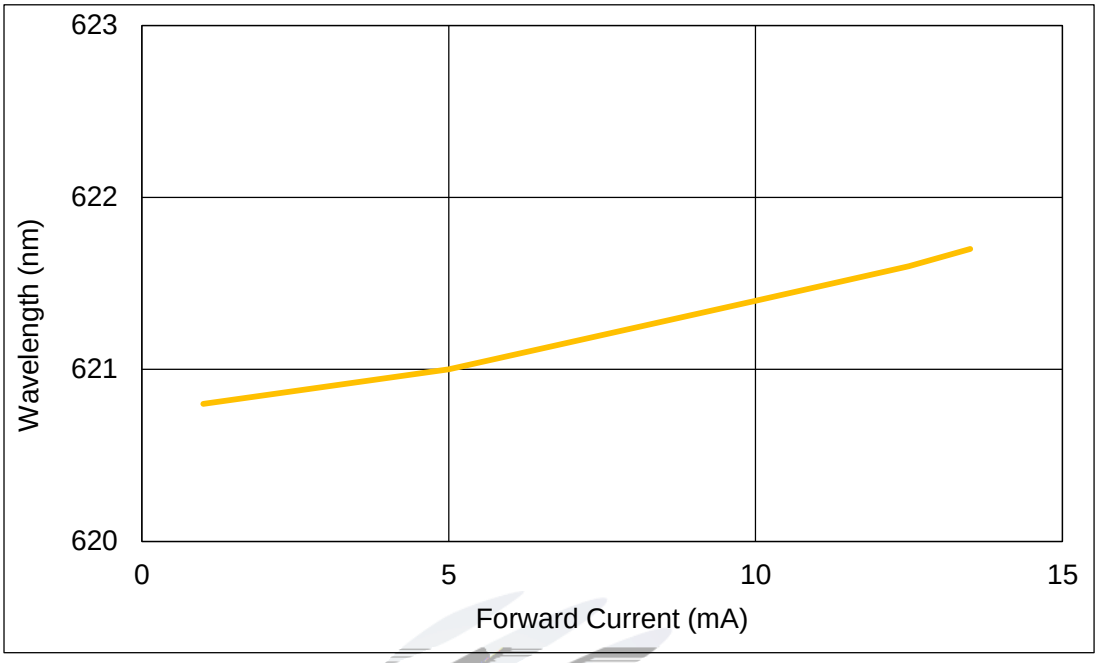

Fig.1-10 Forward Current Vs Dominate Wavelength (Ta=25)

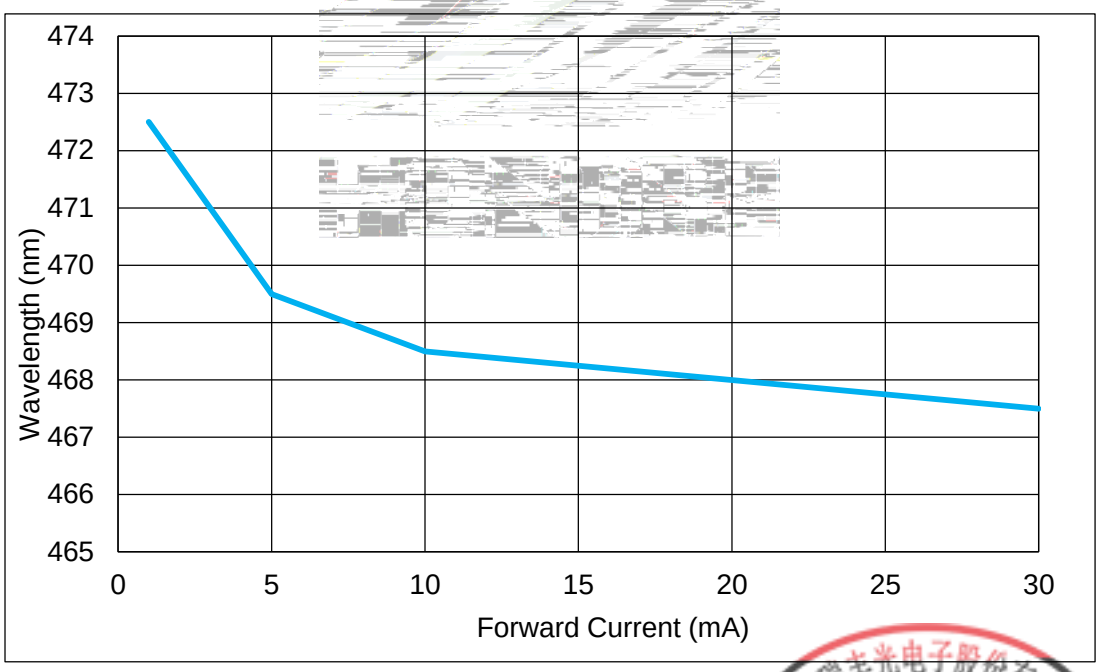

Fig.1-11 Forward Current Vs Dominate Wavelength (Ta=25)

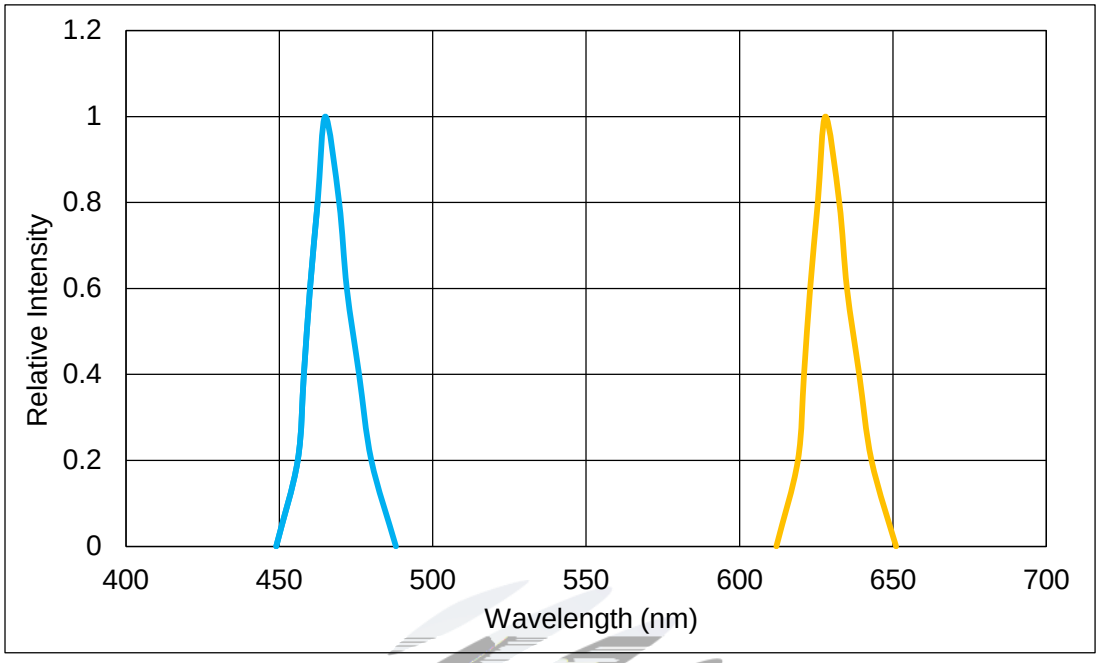

Fig.1-12 Relative Intensity Vs Wavelength (Ta=25)

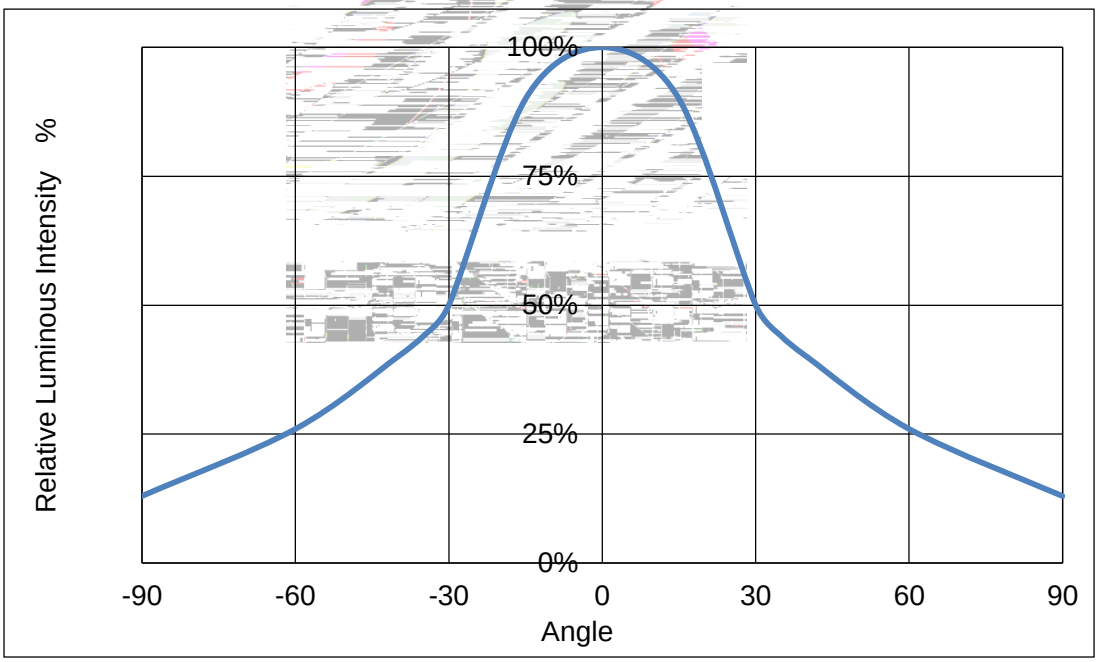

Fig 1-12 Diagram characteristics of radiation

2.1.3 Label Form Specification

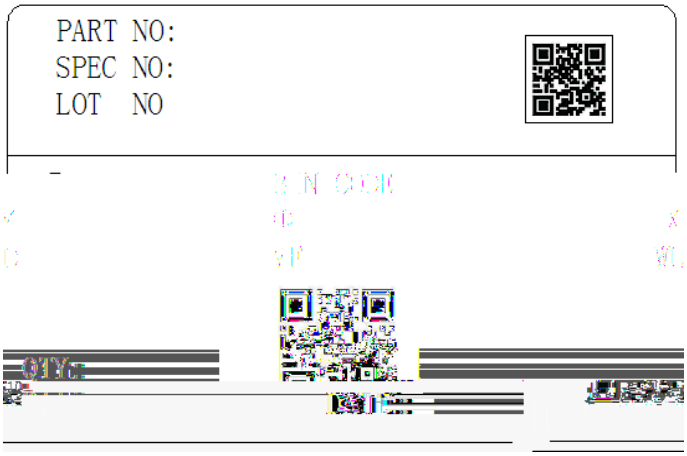

Table 2-2 Parameter

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

Fig. 2-3 Label Form Specification

2.2 Moisture Resistant Packing

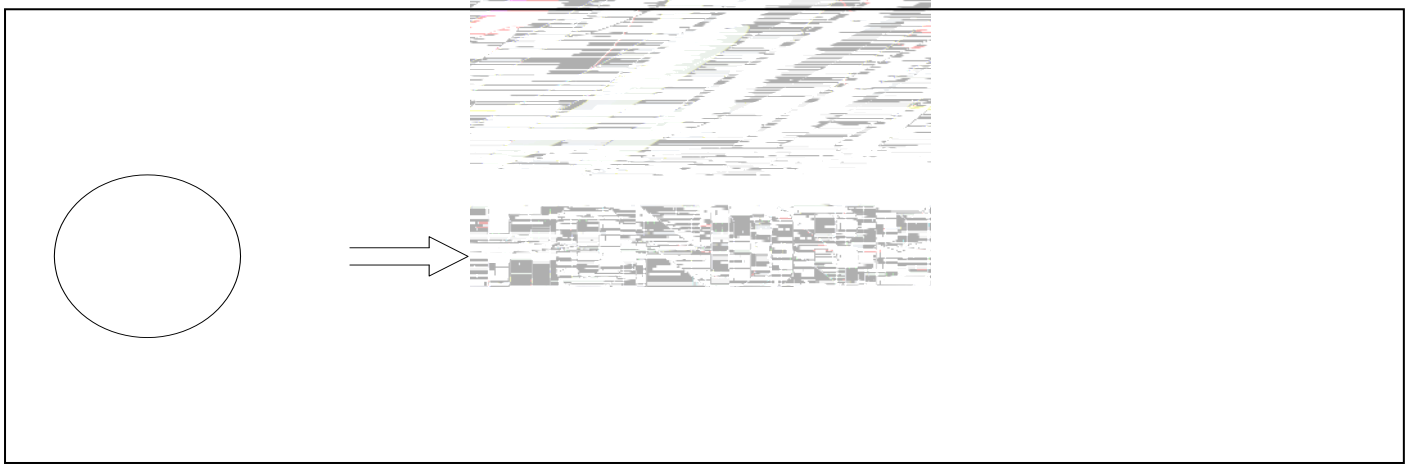

Fig.2-4 Moisture Resistant Packing

2.3 Cardboard Box

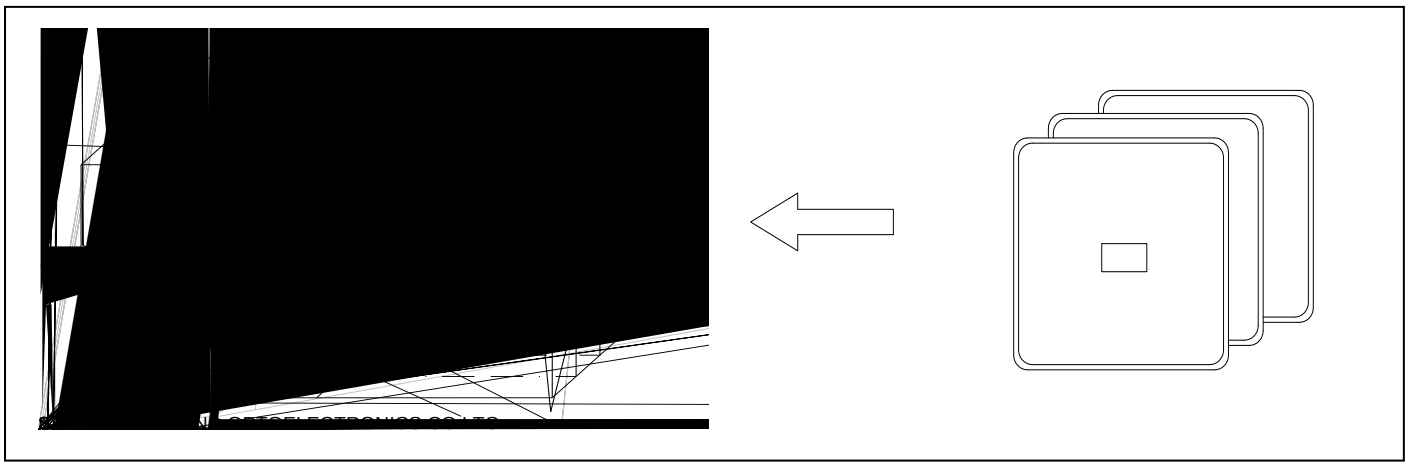

Fig.2-5 Cardboard Box

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_{emp}:260 max T=10 sec	2 times	22Pcs.	0/1
Temperature Cycle	JESD22-A104	100 30 min 5 min -40 30 min	100 cycles	22Pcs.	0/1
Thermal Shock	JESD22-A106	-40 15min 100 15min	300 cycles	22Pcs.	0/1
High Temperature Storage	JESD22-A103	T_{emp}:100	1000 hrs.	22Pcs.	0/1
Low Temperature Storage	JESD22-A119	T_{emp}:-40	1000 hrs.	22Pcs.	0/1
Life Test	JESD22-A108	T_a=25 I_F=20mA	1000 hrs.	22Pcs.	0/1

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3. SMT Reflow Soldering Instructions SMT

3.1 SMT Reflow Soldering Instructions SMT

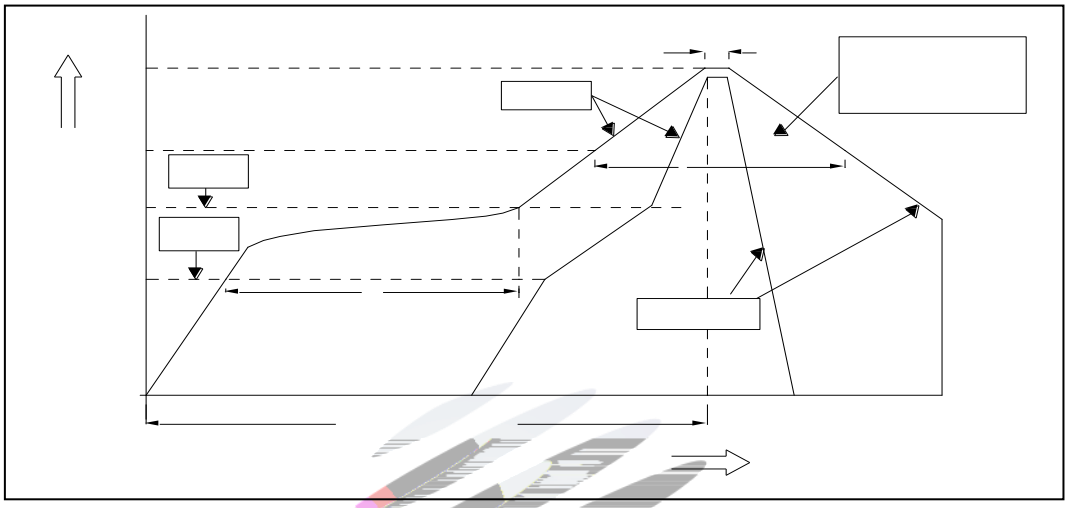


Fig.3-1 SMT Reflow Soldering Instructions SMT

Table 3-1 Parameter

Average temperature rise speed Tsmax T_P	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 (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
Hold time within 5 ° C with the actual peak temperature (TP) (T_P) 5 °C	30 Max 30s
Cooling speed	6 °C/ Max 6 °C/ s
Needed time from 25 °C to Tp 25 °C	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. 24 LED

(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℃ less than 3 seconds , 300 3

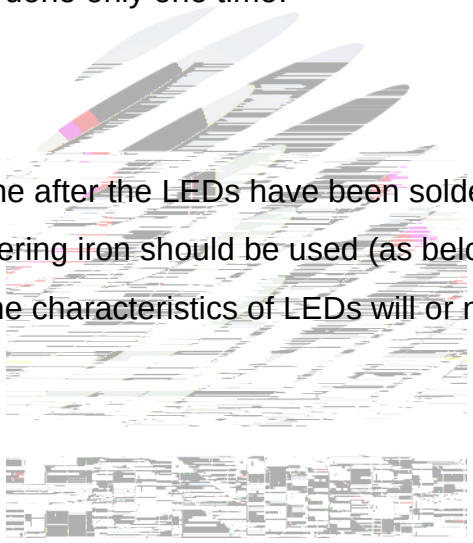
(2) Soldering by hand should be done only one time.

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.

LED

LED



3.1.3 Cautions

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

(2) 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

(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

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(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.

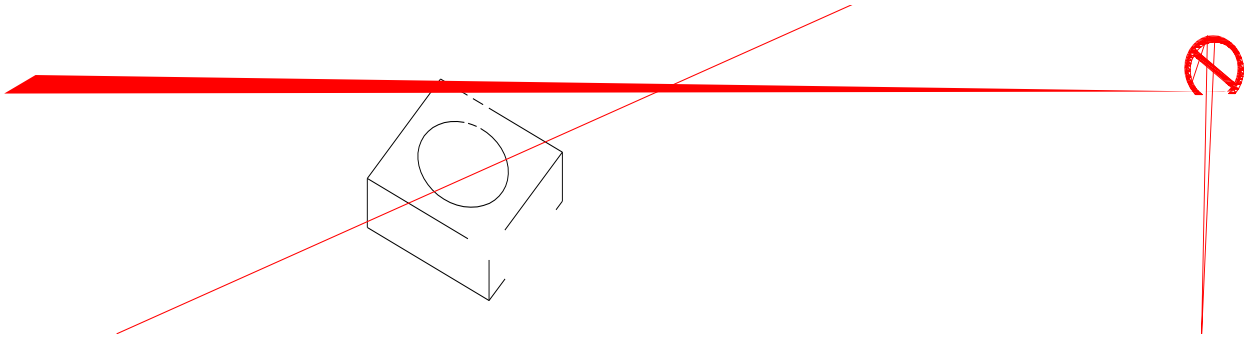

Fig 4-1Handling Precautions

(5) In designing a circuit,the current through each LED can not exceed the absolute maximum rating specified for each LED.In the mean while,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

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

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.

LED

Table 4-1Storage

Conditions	Temperature	Humidity	Time

Storage


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