SPECIFICATION

REFOND P/N

RF-W2S155TS-A12

Mass Product

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Contents

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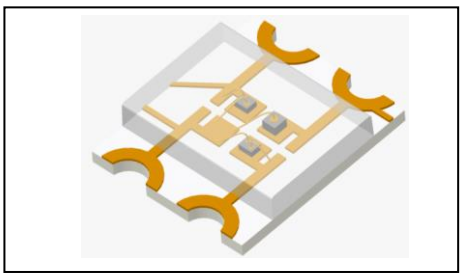
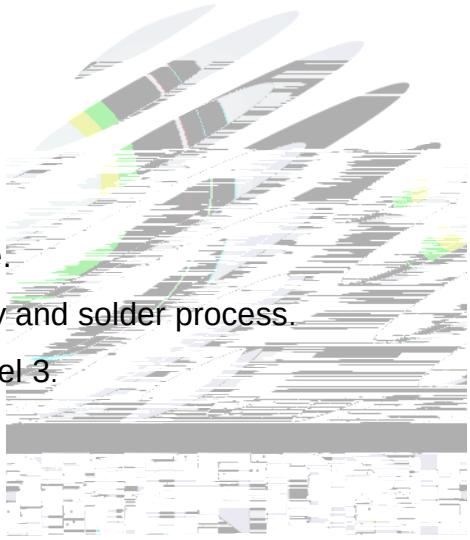
1. Description

1.1 General Description



The Colour LED which was fabricated using blue green and orange chip Package Dimension : 3.2mmX2.7mmX0.7mm.

3.2mmX2.7mmX0.7mm



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.

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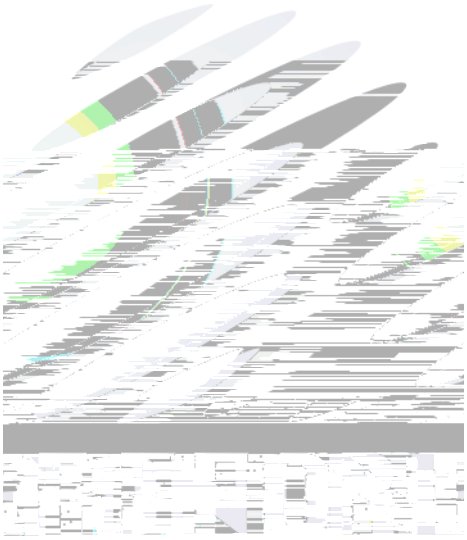

1.5 Product Parameters

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	Δ	O	/	--	15	--	nm
			G		--	30	--	
			B		--	30	--	
Forward Voltage	I_F=20mA	V_F	O	1L	1.8	--	2.4	V
			G	3F	2.8	--	3.4	
			B	3F	2.8	--	3.4	
Dominant wavelength	I_F=20mA	$_d$	O	E00	620	--	625	nm
				F00	625	--	630	
			G	D10	515	--	517.5	
				D20	517.5	--	520	
				E10	520	--	522.5	
				E20	522.5	--	525	
			B	D10	465	--	467.5	
				D20	467.5	--	470	
				E10	470	--	472.5	
				E20	472.5	--	475	
Luminous Intensity	I_F=20mA	I_V	O	1AP	90	--	120	mcd
				G00	120	--	150	
				1AW	150	--	200	
			G	1AU	260	--	330	

				1AV	330	--	430	
				1CG	430	--	560	
				1CL	560	--	700	
				1CM	700	--	900	
			B	1DM	60	--	90	
				1AP	90	--	120	
				G20	120	--	150	
				1AW	150	--	200	
				1GK	200	--	260	
Viewing Angle	I_F=20mA				--	140	--	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

Parameter	Symbol	Rating			Units
		O	G	B	
Power Dissipation	P_d	48	68	68	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			℃
Storage Temperature	T_{stg}	-40 ~ +85			℃
Junction Temperature	T_j	95			℃

Notes

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

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

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

4. The above luminous intensity measurement allowance tolerance ±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

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1.6 Typical Optical Characteristics Curves

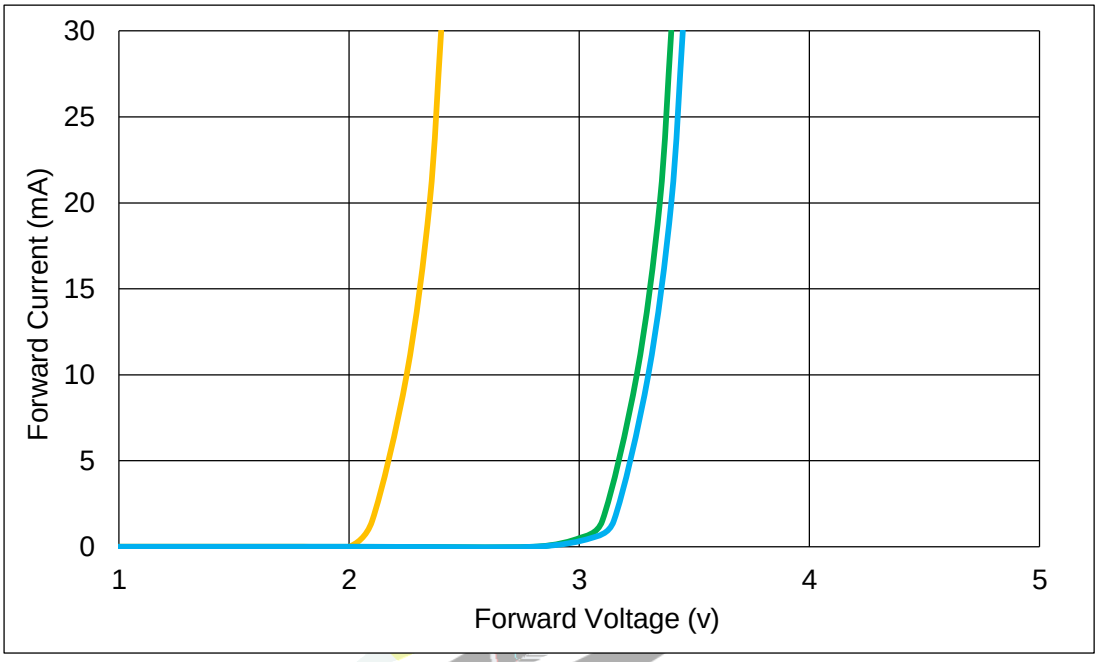

Fig.1-6 Forward Voltage Vs Forward Current

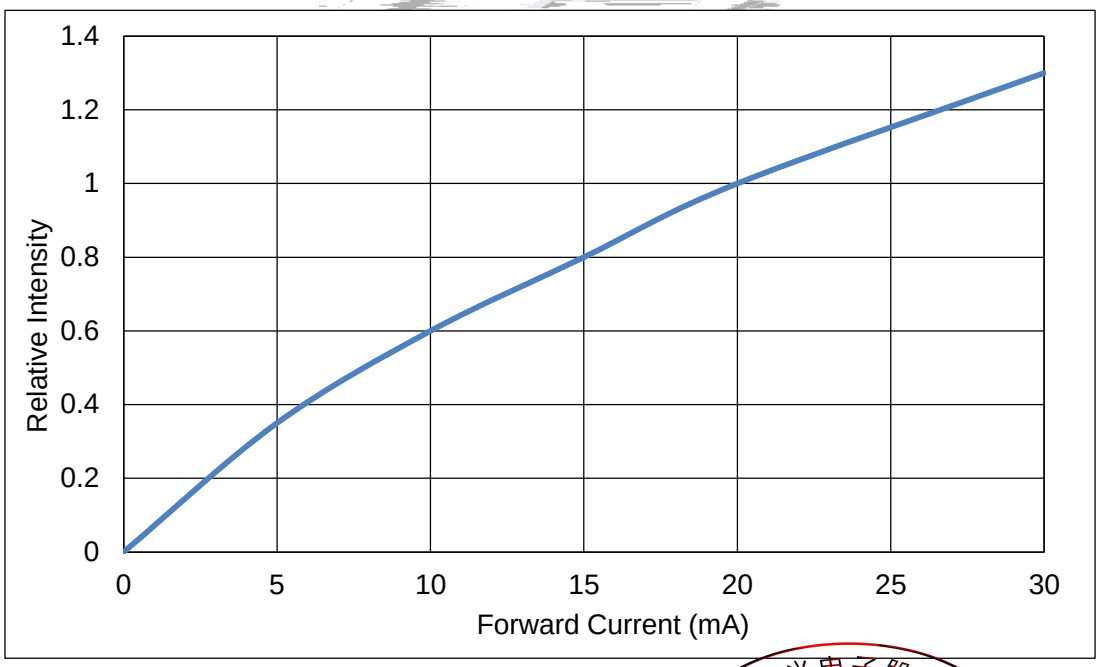

Fig.1-7 Forward Current Vs Relative Intensity

Fig.1-8 Pin Temperature Vs Relative Intensity

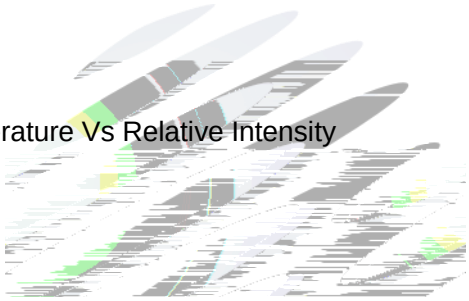

Fig.1-9 Pin Temperature Vs Forward Current

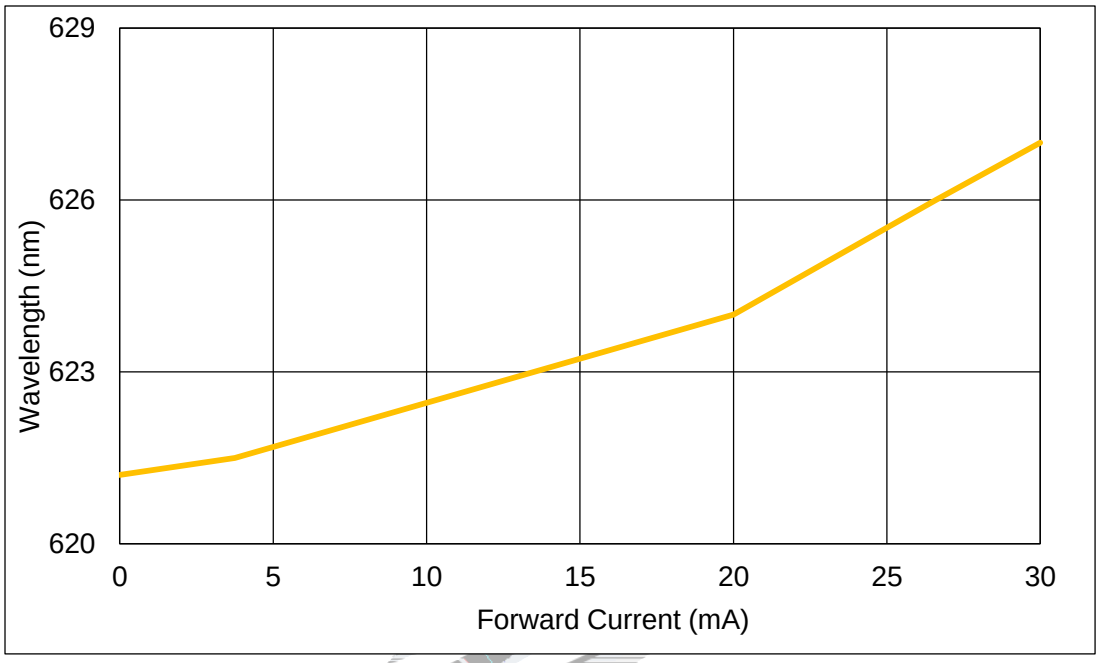

Fig.1-10 Forward Current Vs Dominate Wavelength (Ta=25)

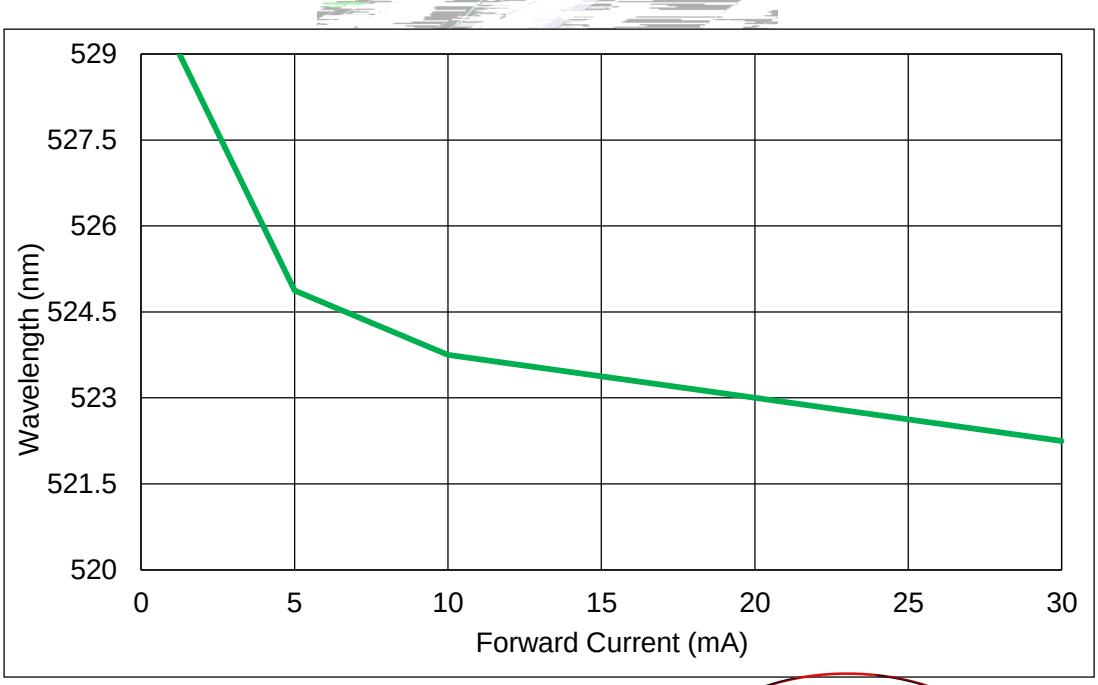

Fig.1-11 Forward Current Vs Dominate Wavelength (Ta=25℃)

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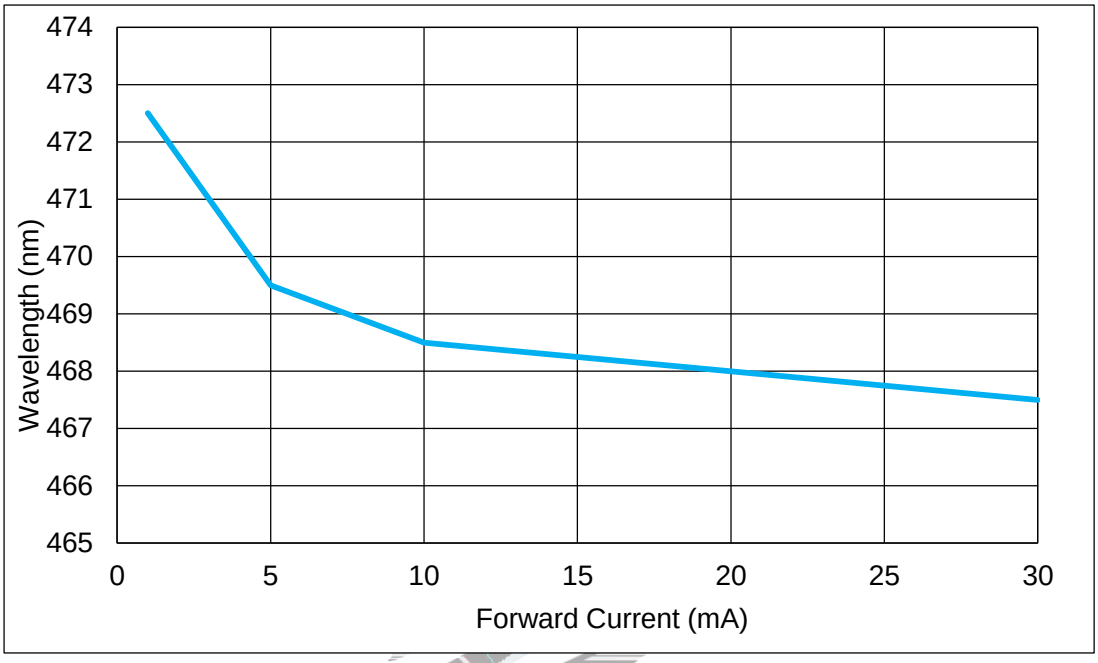

Fig.1-12 Forward Current Vs Dominate Wavelength (Ta=25℃)

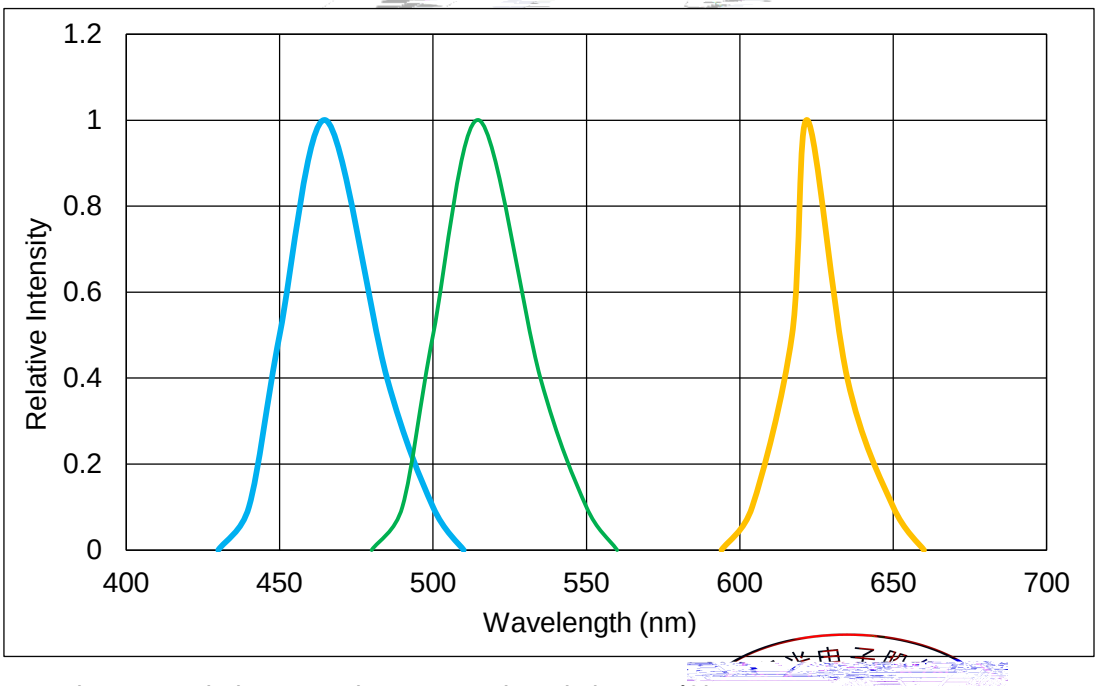

Fig.1-13 Relative Intensity Vs Wavelength (Ta=25℃)

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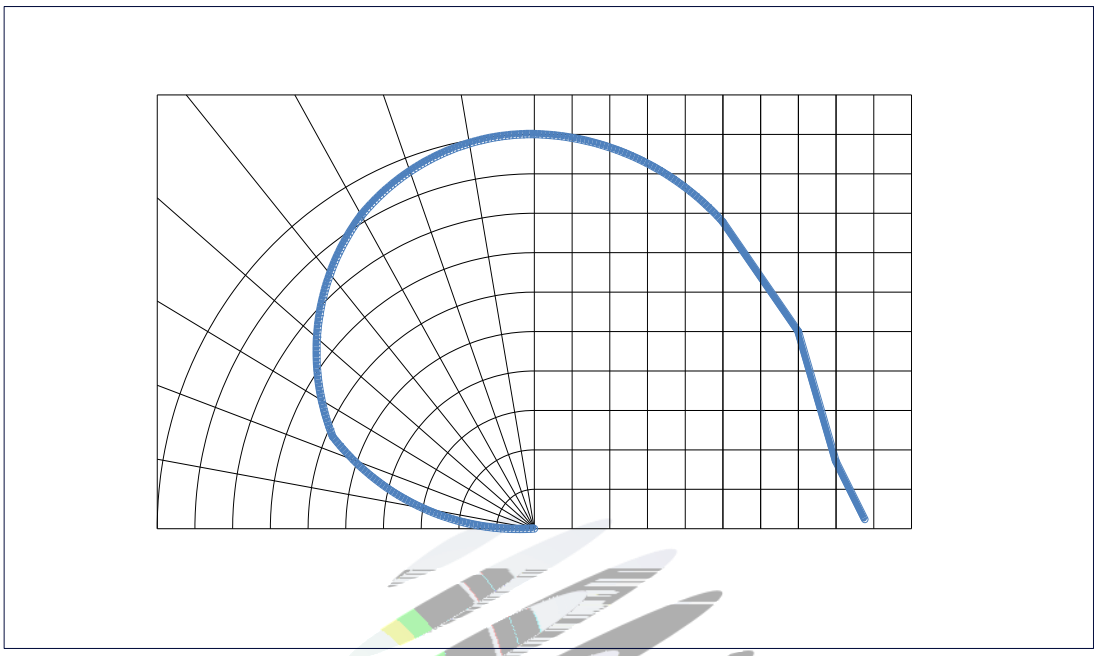

Fig.1-14 Diagram characteristics of radiation

2. Packaging

2.1 Packaging Specification

Package:3000pcs/reel. 3000pcs

2.1.1 Carrier Tape Dimension

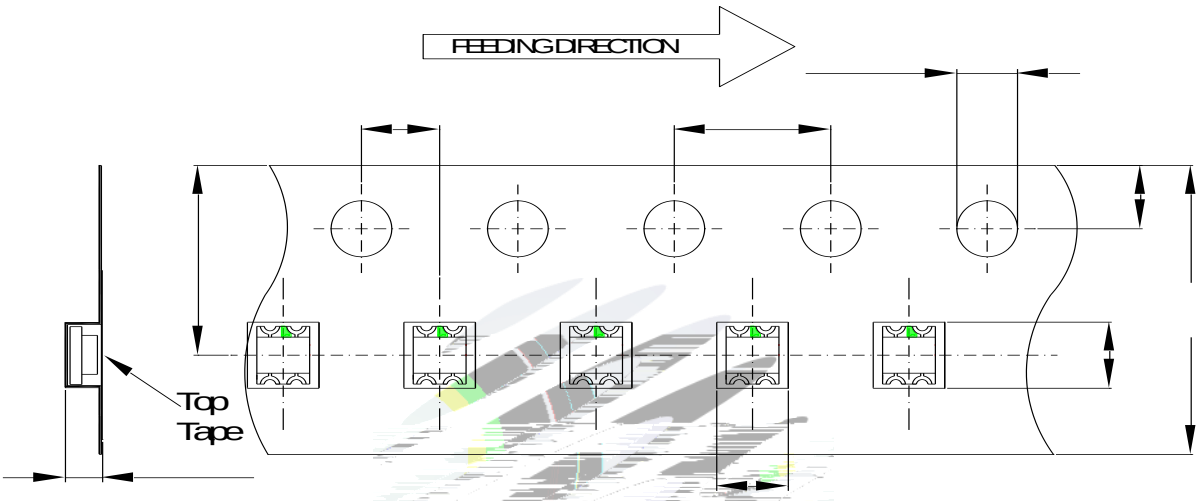

Fig.2-1 Carrier Tape Dimension

2.1.2 Reel Dimension

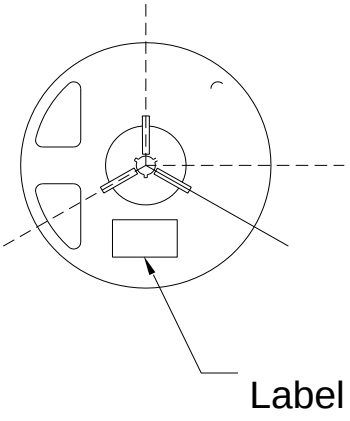

Fig.2-2 Reel Dimension

Table 2-1 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

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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

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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

2.5 Criteria For Judging Damage 信

Table 2-4 Criteria For Judging Damage 信

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 th e LED to the series and parallel circuit,should take consideration of all the factors such as the current, voltage di stribution, 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.

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3. SMT Reflow Soldering Instructions SMT

3.1 SMT Reflow Soldering Instructions SMT

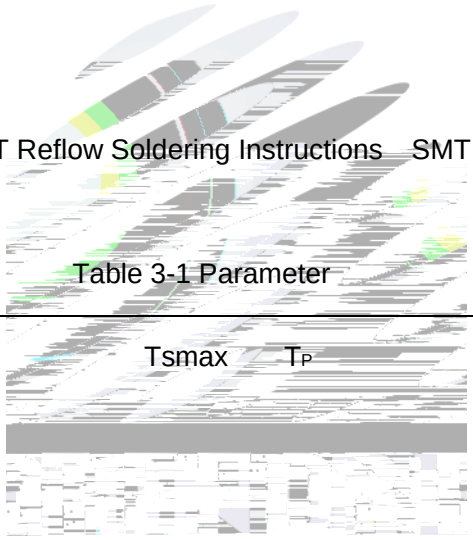


Fig.3-1 SMT Reflow Soldering Instructions SMT

Table 3-1 Parameter

Average temperature rise speed	Tsmax TP	3 °C/	Max 3 °C/ s

Notes

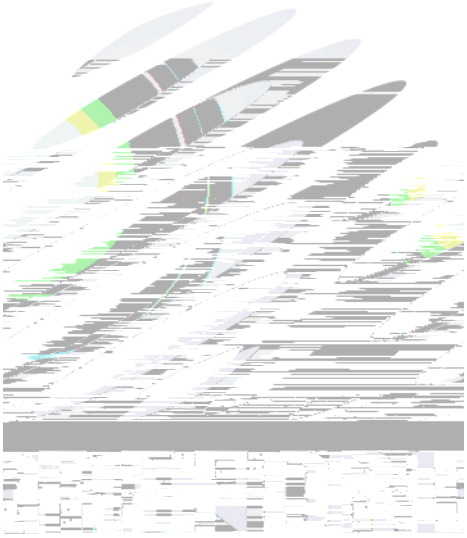
(1)Reflow soldering should not be done more than twice. If more than 24 hours between the two solderings , LED will be damaged.

(2)Whensoldering , 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.

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



4. Handling Precautions

4.1 Handling Precautions

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

(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.

(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.

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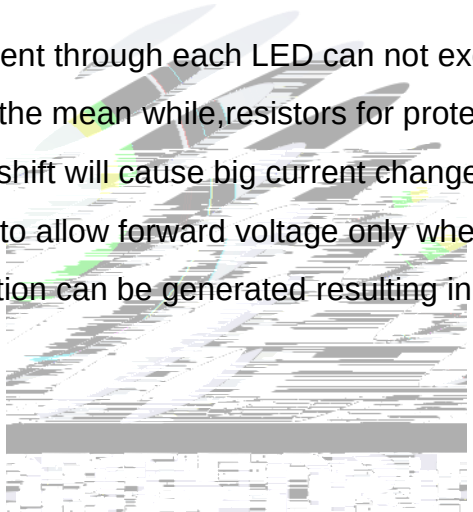
(4) Handle the component along the side surface by using forceps or appropriate tools; Do not directly touch or Handle the silicone lens surface, it may damage the internal circuitry.

Fig 4-1Handling Precautions 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 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.



(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

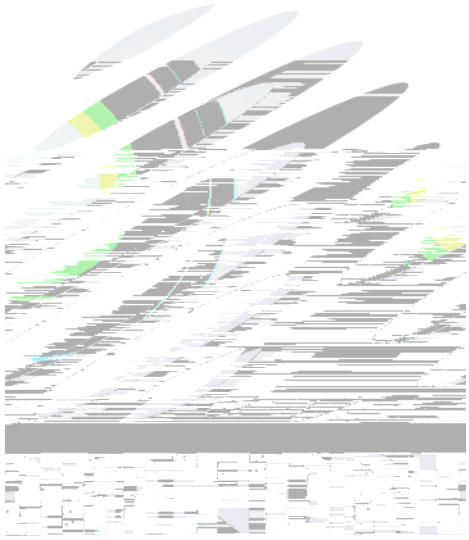
(7) Compared to standard encapsulants, silicone is generally softer, and the surface is more likely to attract dust,requiring special care during processing. In cases where a minimal level of dirt and dust particles cannot be guaranteed, a suitable cleaning solution must be applied te

LED.

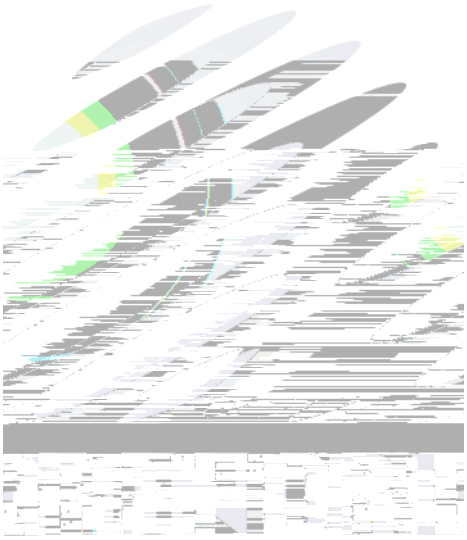
[redacted]

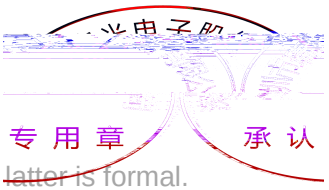
Table 4-1Storage [redacted]

Conditions	Temperature	Humidity	Time
Before Opening Aluminum Bag Storage	[redacted]	75%	W



Date	Revisor	Version	Verifier	Remarks
2017.12.30		E/1		





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