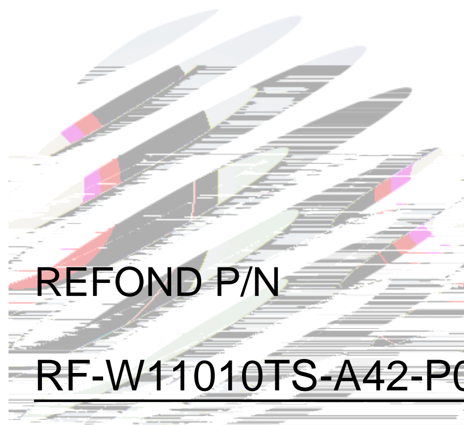
SPECIFICATION

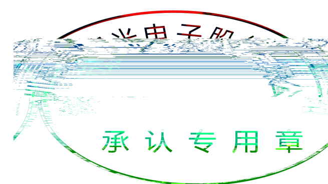


REFOND P/N

RF-W11010TS-A42-P0

R&D

Mass Product



1. Description

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3.1 SMT Reflow Soldering Instructions SMT

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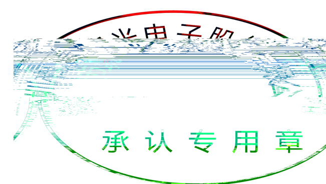
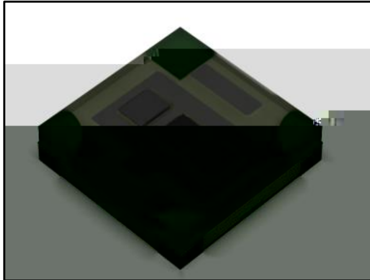
4.1 Handling Precautions



1. Description

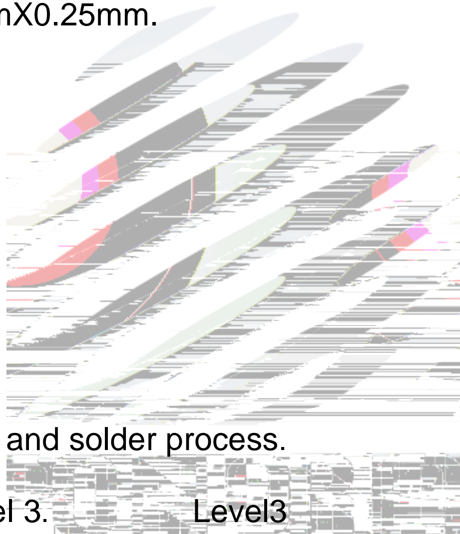
1.1 General Description



The Colour LED which was fabricated using blue green and orange chip Package Dimension : 1.0mmX1.0mmX0.25mm.

LED

1.0mmX1.0mmX0.25mm



1.2Features

Extremely wide viewing angle.

Suitable for all SMT assembly and solder process. SMT

Moisture sensitivity level: Level 3. Level3

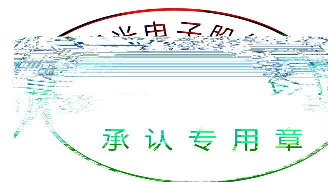
RoHS compliant. RoHS

1.3 Application

Optical indicator.

Switch and symbol, display.

General use.



1.4 Package Dimension

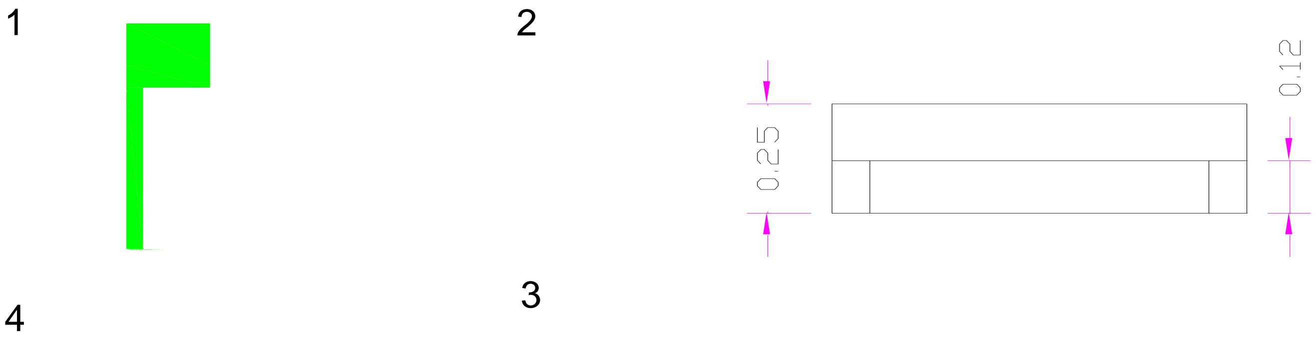


Fig.1-1 Top view

Fig.1-2 Side view

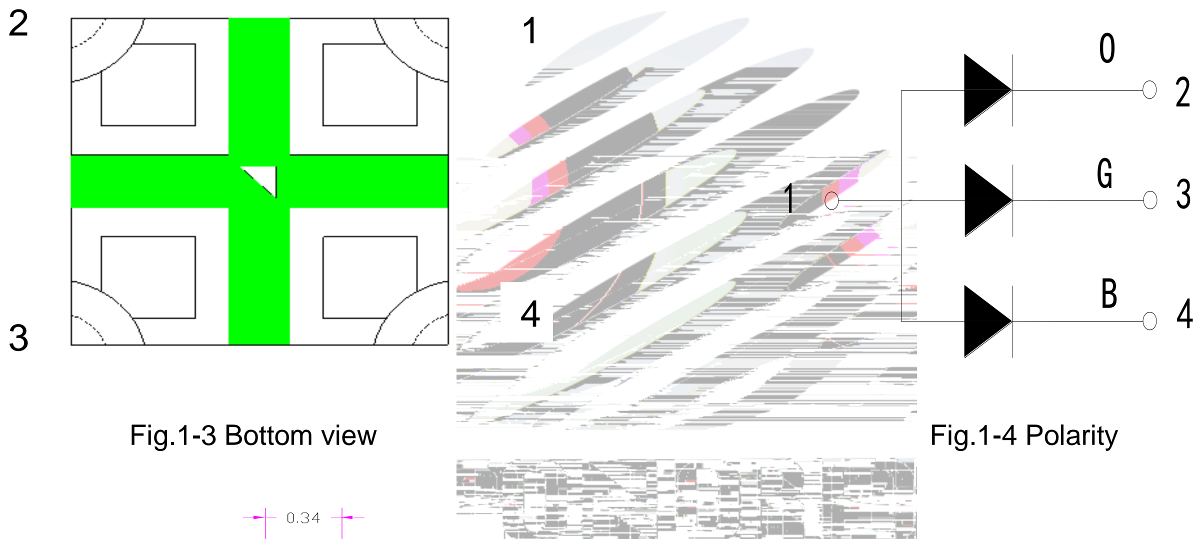


Fig.1-3 Bottom view

Fig.1-4 Polarity

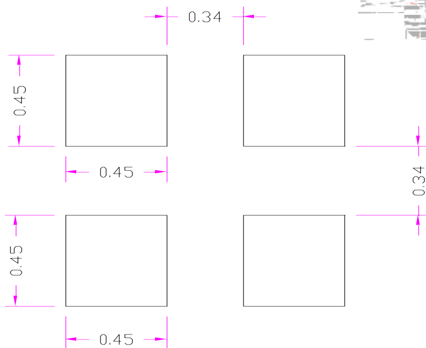
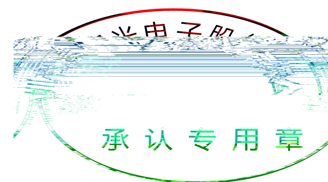


Fig.1-5 Soldering patterns

Notes

1. All dimensions units are millimeters.

   All dimensions tolerances are 0.1mm unless otherwise noted.



0.1

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=2mA		O	/	--	15	--	nm
			G		--	30	--	
			B		--	30	--	
Forward Voltage	I_F=2mA	V_F	O	2Q	1.6	--	2.2	V
			G	2O	2.4	--	3.0	
			B	2O	2.4	--	3.0	
Dominant wavelength	I_F=2mA	d	O	D00	615	--	620	nm
				E00	620		625	
				F00	625	--	630	
			G	E00	520	--	525	
				F00	525	--	530	
				G00	530		535	
				H00	535		540	
			B	C00	460	--	465	
				D00	465	--	470	
				E00	470		475	
				F00	475	--	480	

Luminous Intensity

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

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

Parameter	Symbol	Rating			Units
		O	G	B	
Power Dissipation	P_d	44	60	60	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. 0.1ms, 1/10.

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. LED

1.6 Typical Optical Characteristics Curves

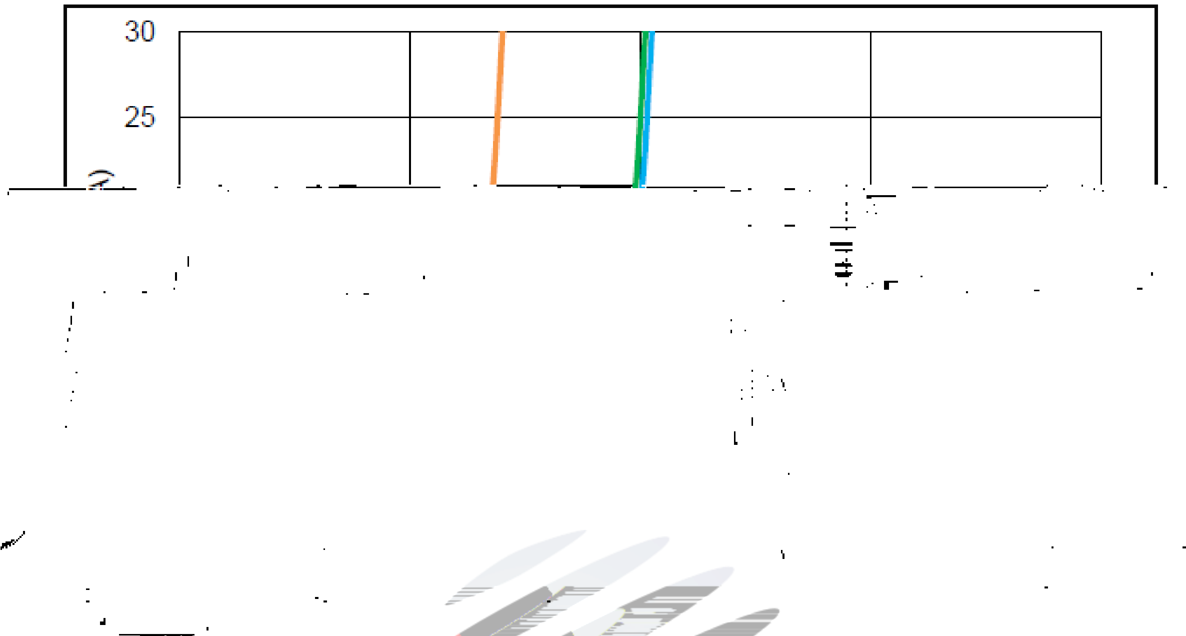


Fig.1-6 Forward Voltage Vs Forward Current

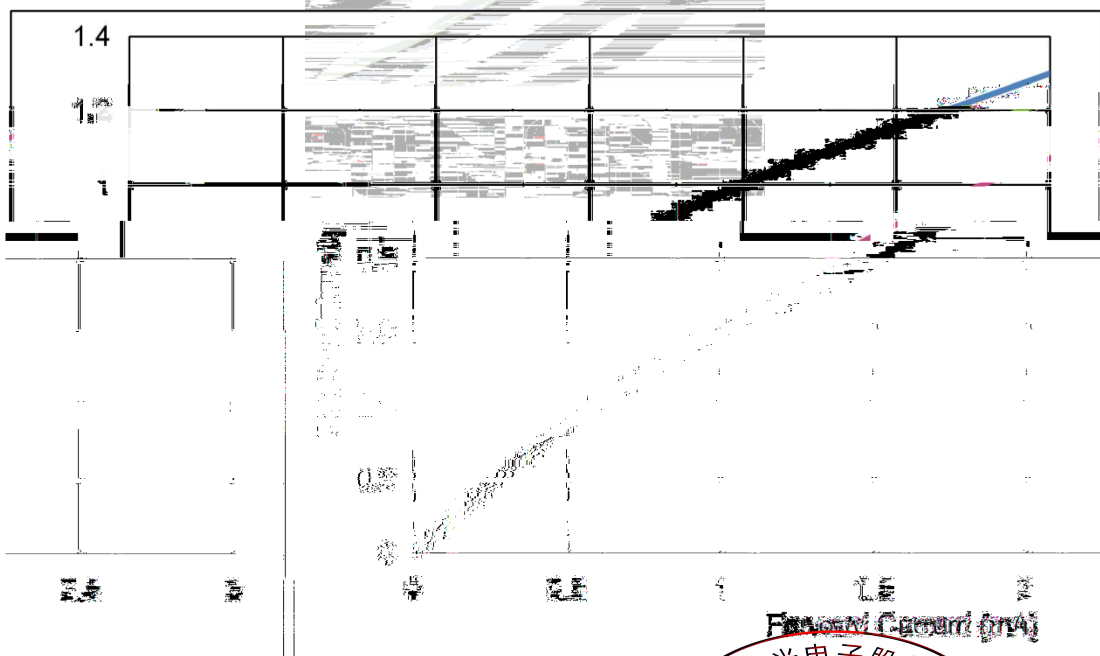


Fig.1-7 Forward Current VsRelative Intensity

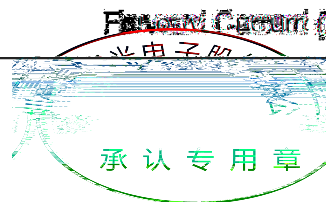
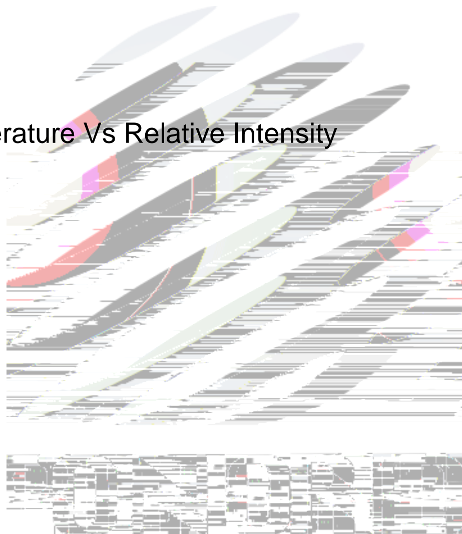


Fig.1-8 Pin Temperature Vs Relative Intensity



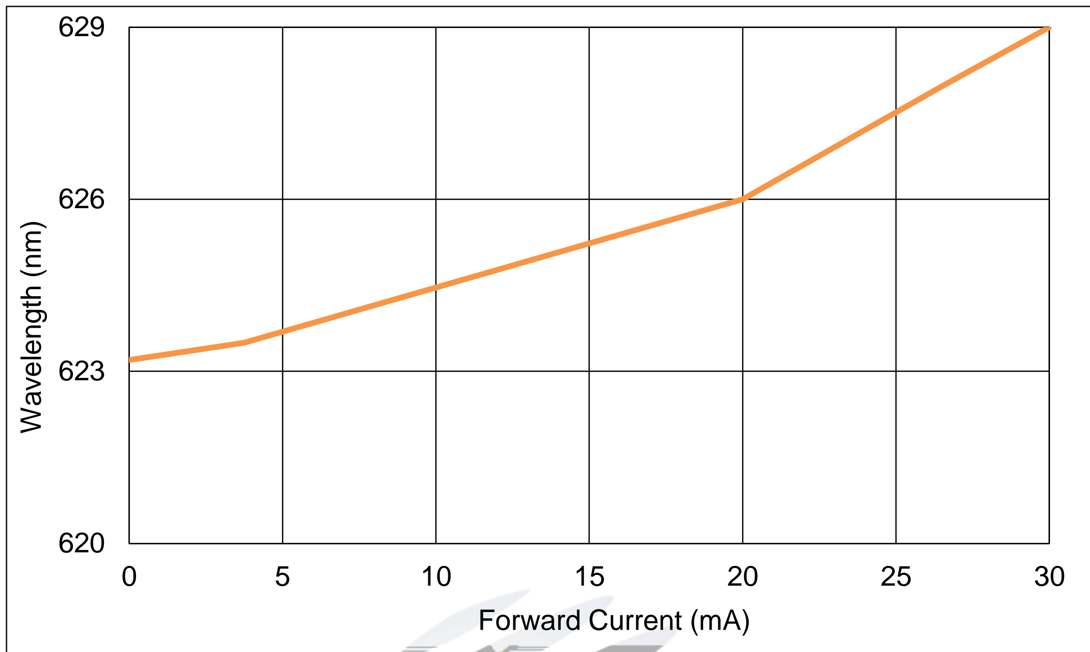


Fig.1-10 Forward Current Vs Dominate Wavelength (Ta=25)

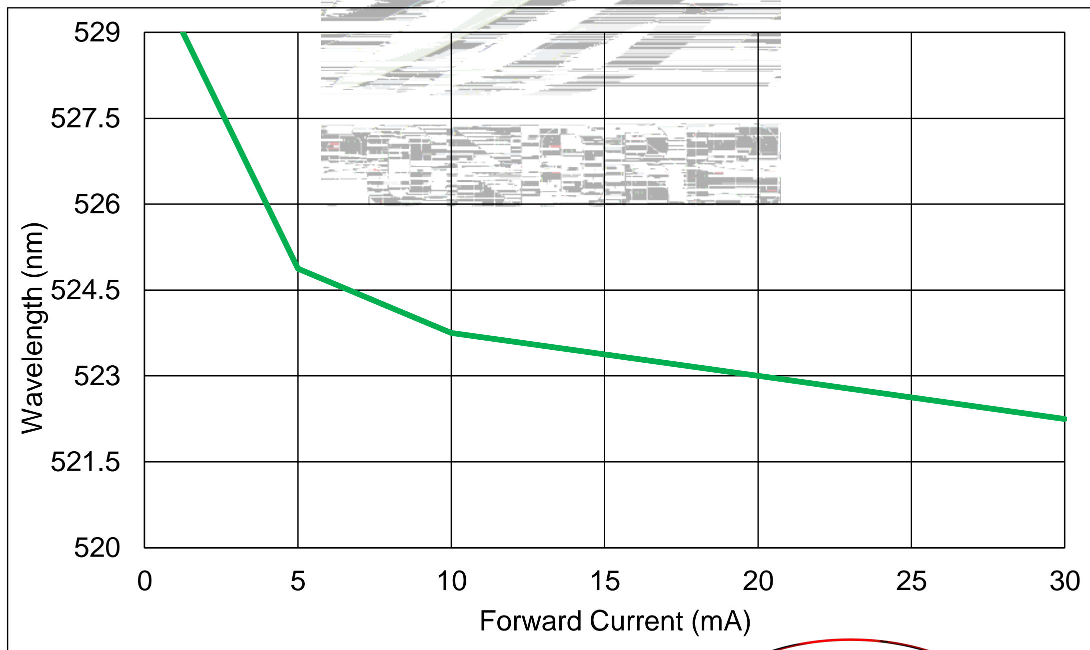
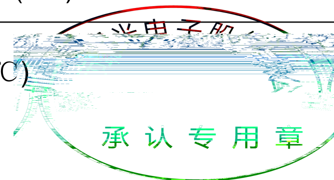


Fig.1-11 Forward Current Vs Dominate Wavelength (Ta=25℃)



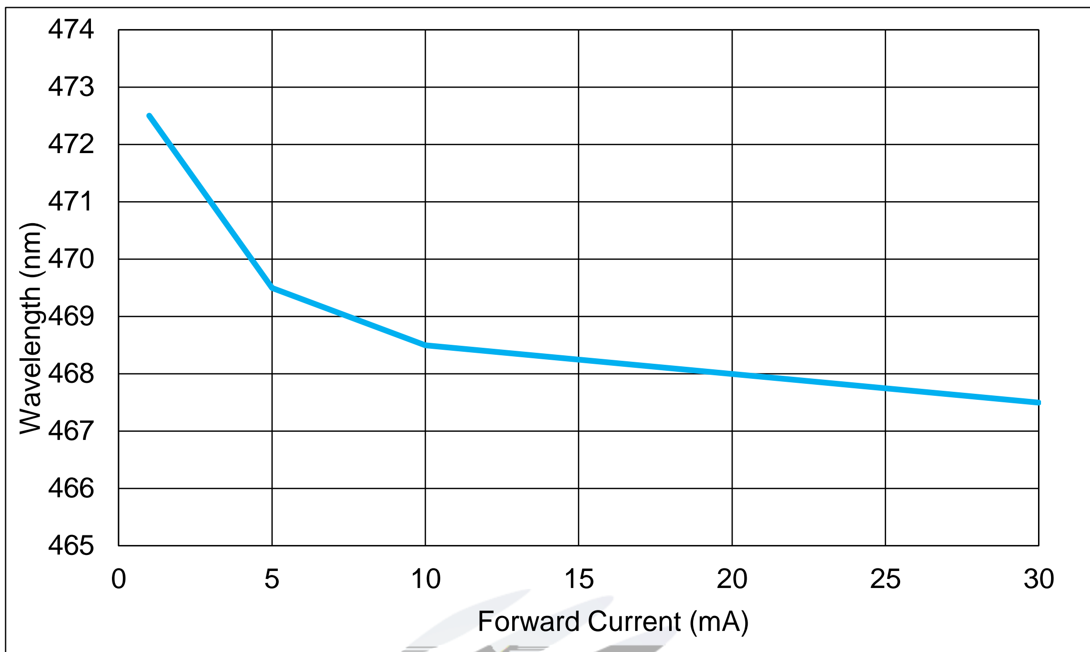


Fig.1-12 Forward Current Vs Dominate Wavelength (Ta=25℃)

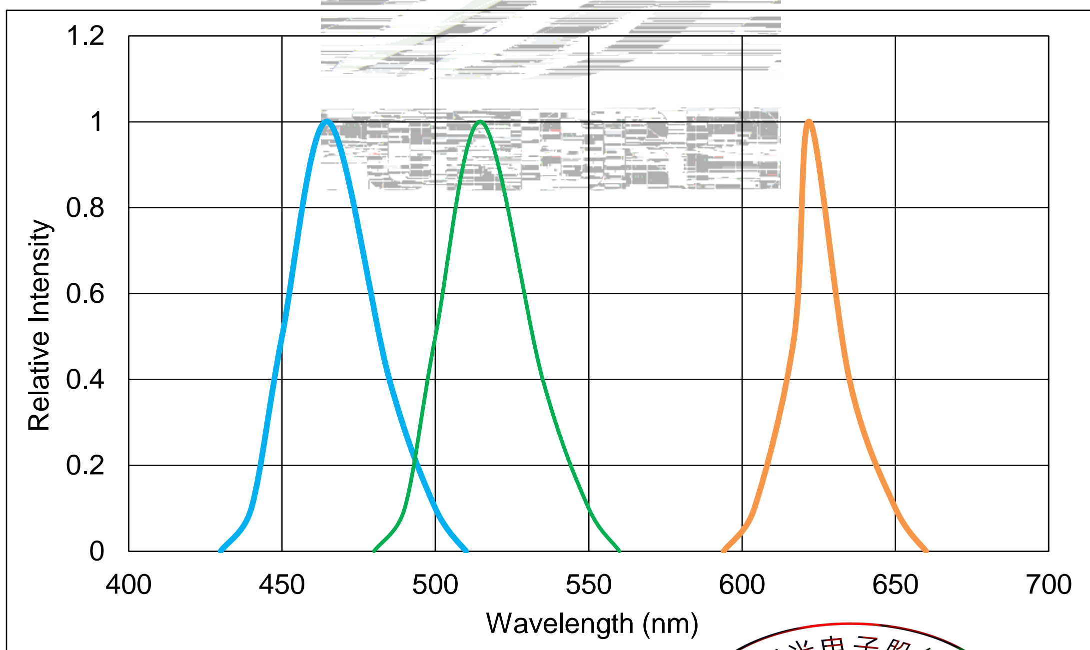
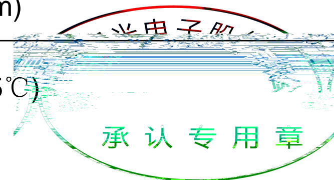
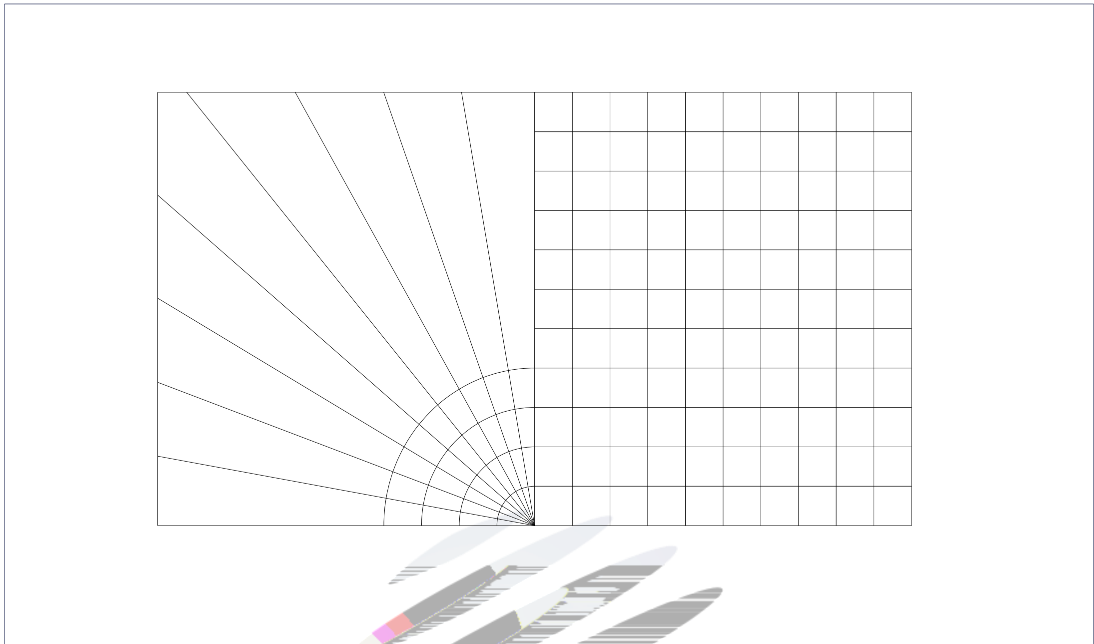


Fig.1-13 Relative Intensity Vs Wavelength (Ta=25℃)





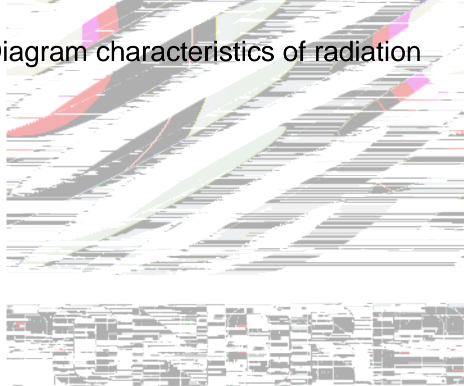
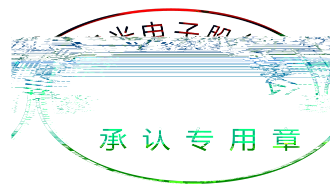


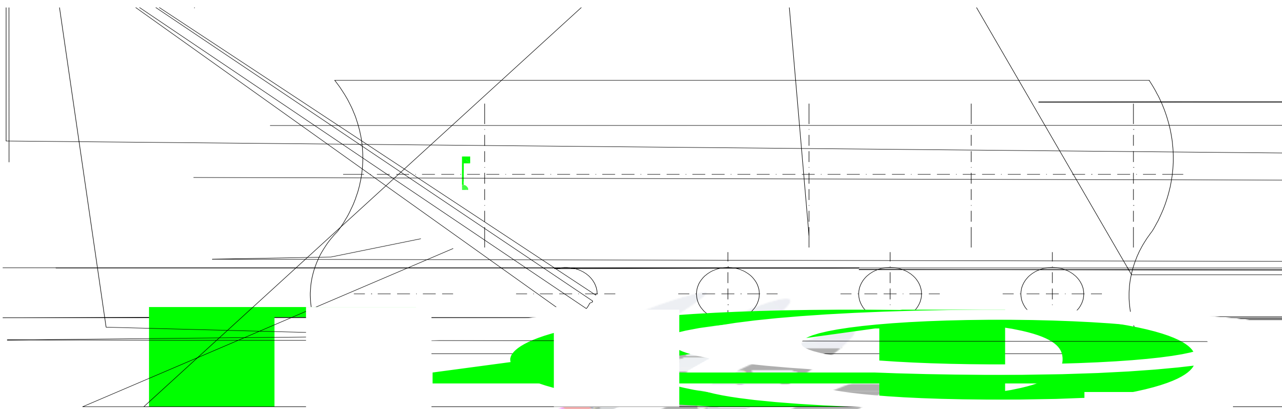
Fig.1-14 Diagram characteristics of radiation



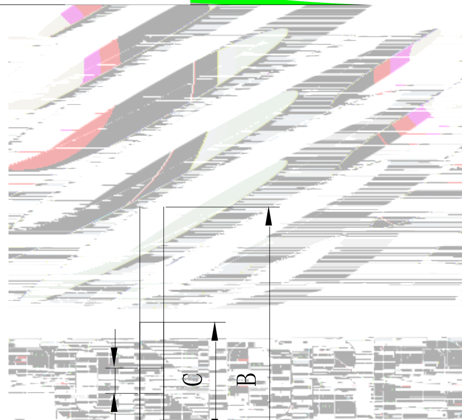
2. Packaging

2.1 Packaging Specification

Package:4000pcs/reel. 4000pcs



2.1.1Reel Dimension



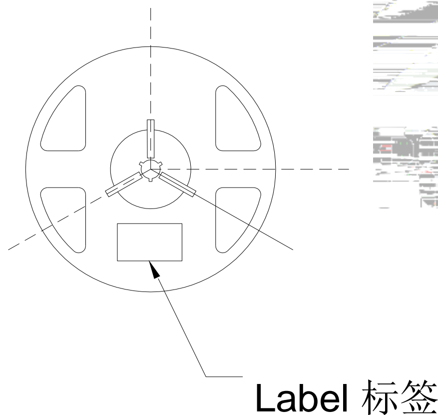


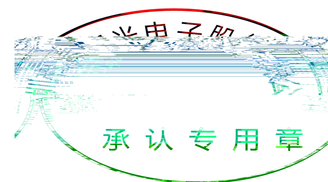
Fig.2-2 Reel Dimension

Table 2-1 Dimension

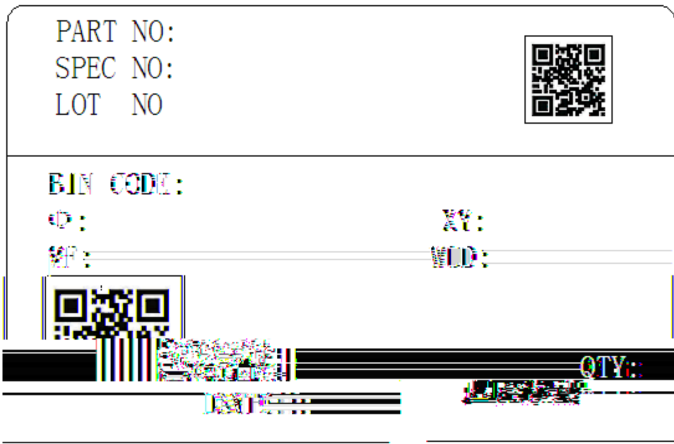
A	8.0 0.1mm
B	178 1mm
C	60 1mm
D	13.0 0.5mm

Notes

The tolerances unless mentioned ±0.1mm. Unit : mm 1



2.1.2Label Form Specification



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

2.2Moisture ResistantPacking

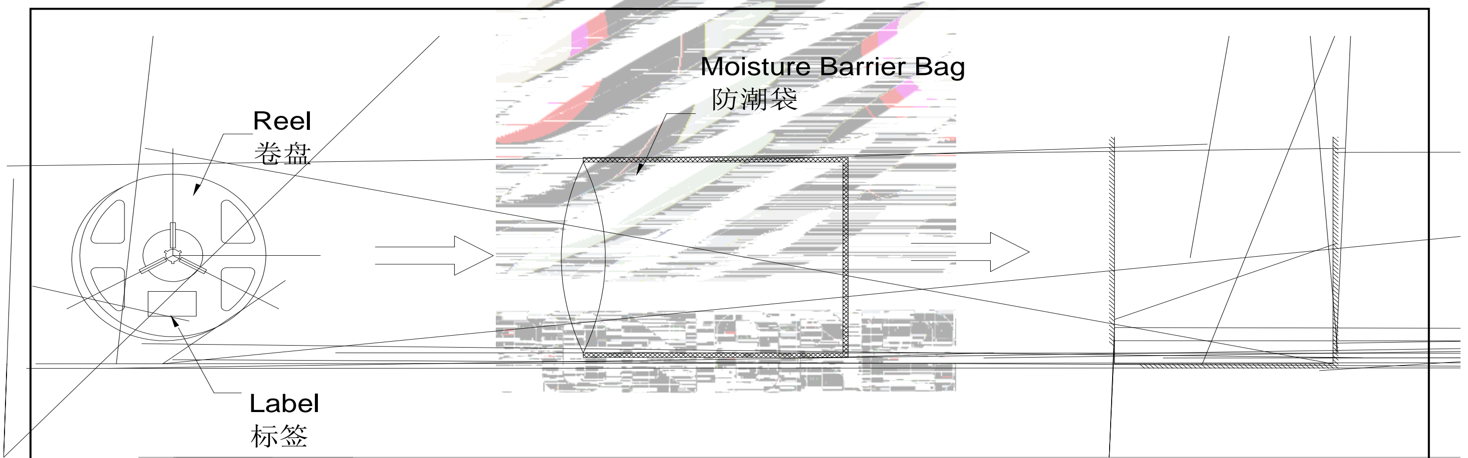
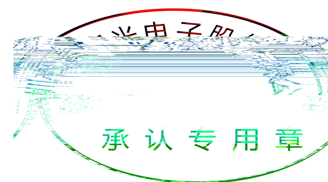


Fig.2-4 Moisture Resistant Packing



2.3Cardboard Box

Fig.2-5 Cardboard Box

2.4Reliability 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.		

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	I_F=2mA	-	U.S.L*)x1.1
Reverse Current	I_R	V_R= 5V	-	U.S.L*)x2.0
Luminous Flux		I_F=2mA	L.S.L*)x0.7	-

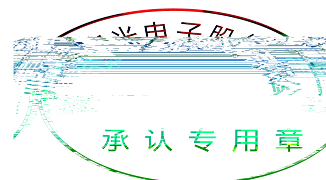
Notes

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 pl atform,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 distr ibution, 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.



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 T_P	3 °C/ Max 3 °C/ s
Preheating: minimum temperature (Tsmin)	150 °C
Preheating: Max temperature (Tsmax)	200 °C

Preheating: Time Tsmin Tsmax

(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)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. , 300 3

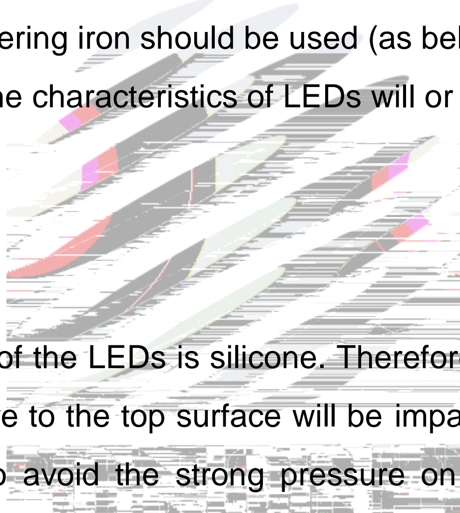
(2) Soldering by hand should be done only one time.

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



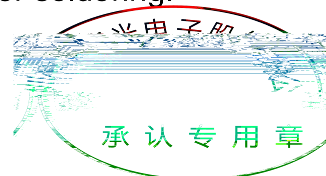
3.1.3 Cautions

(1) 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

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.



4. Handling Precautions

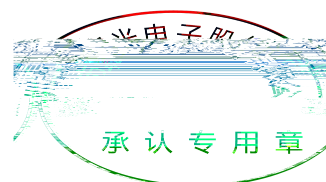
4.1 Handling Precautions

(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

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.

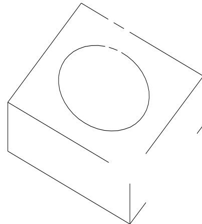
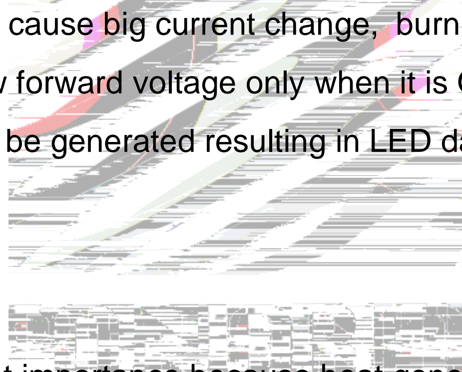


Fig 4-1 产品使用注意事项

(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. 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

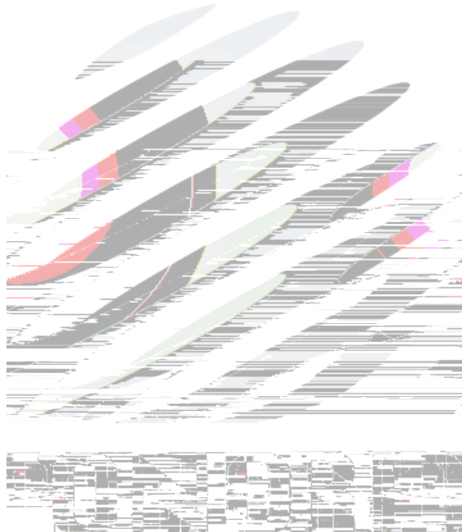
承认专用章

LED.

LED

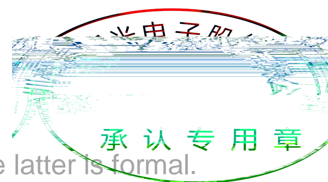
Table 4-1Storage

Conditions



Version History/

Date	Revisor	Version	Verifier	Remarks
2020.11.13		E/0		
2021.08.26		E/1		



Declare

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