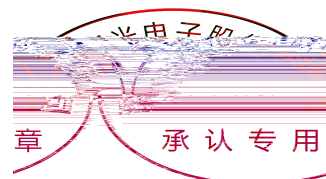
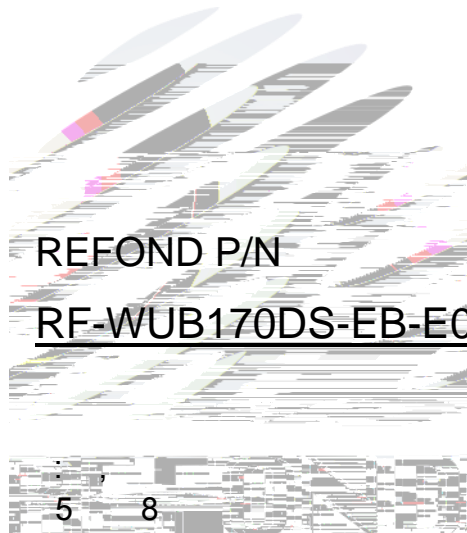
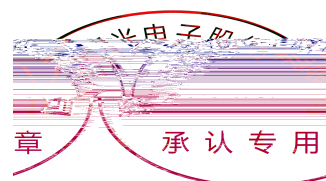


SPECIFICATION



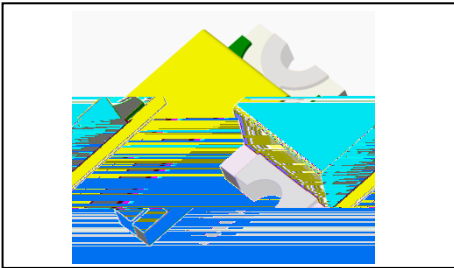
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1. Description

1.1 General Description



The White LED, which was fabricated by using a blue chip and the phosphor.
Product Package:2.0mmX1.25mmX0.7mm.

2.0mmX1.25mmX0.7mm

1.2 Features

Extremely wide viewing angle.

Suitable for all SMT assembly and solder process.

Moisture sensitivity level: Level 3.

RoHS compliant.

RoHS

Level 3

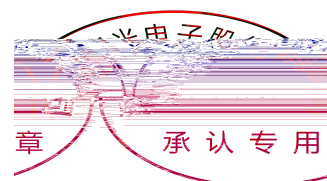
SMT

1.3 Application

Optical indicator.

Switch and Symbol, Display.

General use.



1.4 Package Dimension

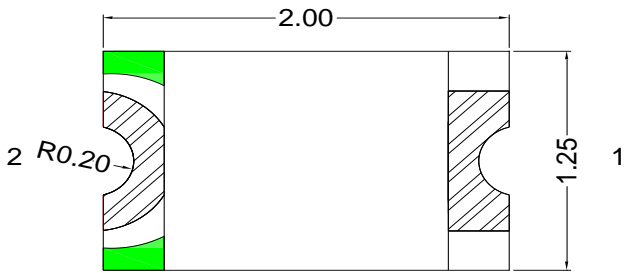


Fig.1-1 Top view

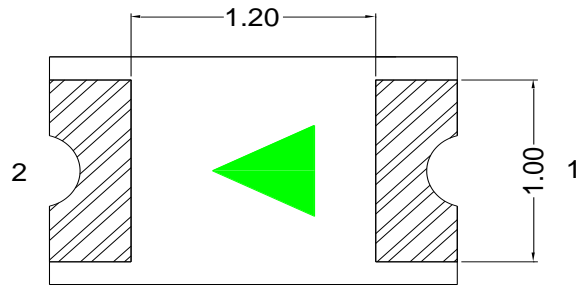


Fig.1-2 Bottom view

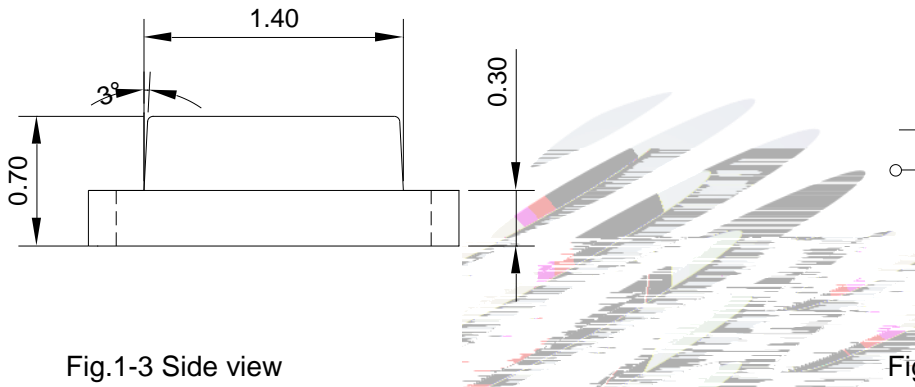


Fig.1-3 Side view

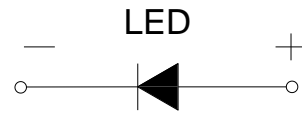


Fig.1-4 Polarity

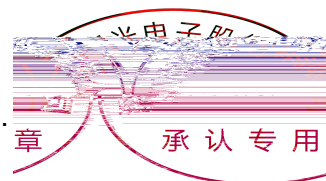


Fig.1-5 Soldering patterns

Notes

All dimensions units are millimeters.

All dimensions tolerances are 0.2mm unless otherwise noted.



1.5 Product Parameters

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

Item	Test Condition	Symbol	Value			Unit	
			Min.	Typ. ()	Max. ()		
Forward Voltage	I _F =20mA	V _F	F1	2.6	--	2.7	V
			F2	2.7	--	2.8	V
			G1	2.8	--	2.9	V
			G2	2.9	--	3.0	V
			H1	3.0	--	3.1	V
			H2	3.1	--	3.2	V
			I1	3.2	--	3.3	V
			I2	3.3	--	3.4	V
Luminous Intensity	I _F =20mA	I _v	1HP	600	--	800	mcd
			L10	800	--	1000	mcd
			L20	1000	--	1200	mcd
			M10	1200	--	1500	mcd
Viewing Angle	I _F =20mA		--	140	--	deg	
Reverse Current	V _R =5V/10ms	I _R	--	--	10	A	
Thermal Resistance.	I _F =20mA	R _{THJ-S}	--	--	450	/W	

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

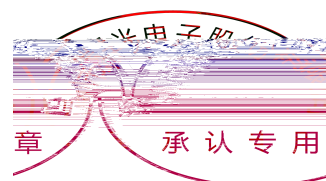
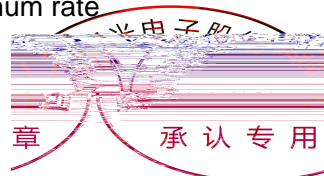


Table 1-2 Absolute Maximum Ratings at Ts=25°C

Parameter	Symbol	Rating	Units
Power Dissipation	P_d	105	mW
Forward Current	I_F	30	mA
Peak Forward Current Of Pulse	I_{FP}	60	mA
Electrostatic Discharge (HBM)	E_{SD}	1000	V
Operating Temperature	T_{opr}	-40 ~ +85	°C
Storage Temperature	T_{stg}	-40 ~ +85	°C
Junction Temperature	T_j	95	°C

Notes

- 1/10 Duty cycle, 0.1ms pulse width.
- The above forward voltage measurement allowance tolerance is $\pm 0.1V$.
- The above color coordinates measurement allowance tolerance is ± 0.005 .
- The above luminous intensity measurement allowance tolerance $\pm 10\%$.
- Care is to be taken that power dissipation does not exceed the absolute maximum rating of the product.
- All measurements were made under the standardized environment of Refond.
- 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



1.6 Bin Range Of Forward Voltage and Luminous Flux (IF=20mA)

BIN (IF=20mA)

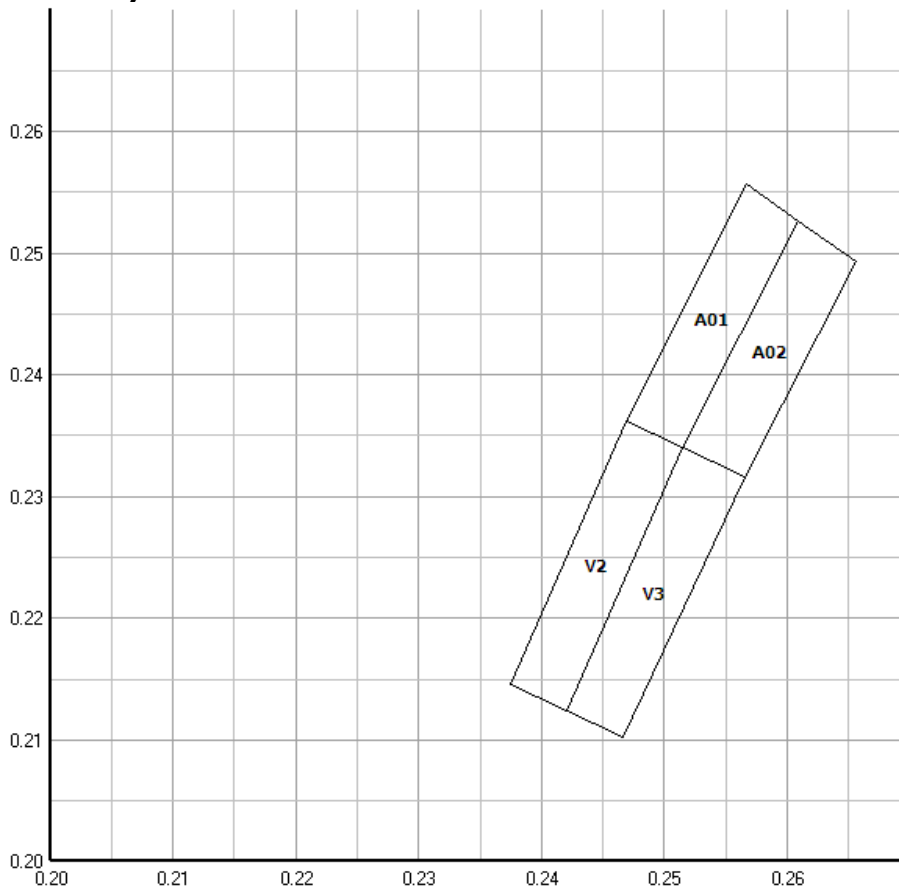


Fig. 1-6 The C.I.E Chromaticity Diagram CIE

Table 1-3 Bin Date Bin

BIN	X1	Y1	X2	Y2	X3	Y3	X4	Y4
A01	0.2514	0.2339	0.2468	0.2361	0.2566	0.2555	0.2608	0.2525
A02	0.2565	0.2315	0.2514	0.2339	0.2608	0.2525	0.2655	0.2492
V2	0.2420	0.2123	0.2374	0.2145	0.2468	0.2361	0.2514	0.2339
V3	0.2466	0.2101	0.2420	0.2123	0.2514	0.2339	0.2565	0.2315

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1.7 Typical Optical Characteristics Curves

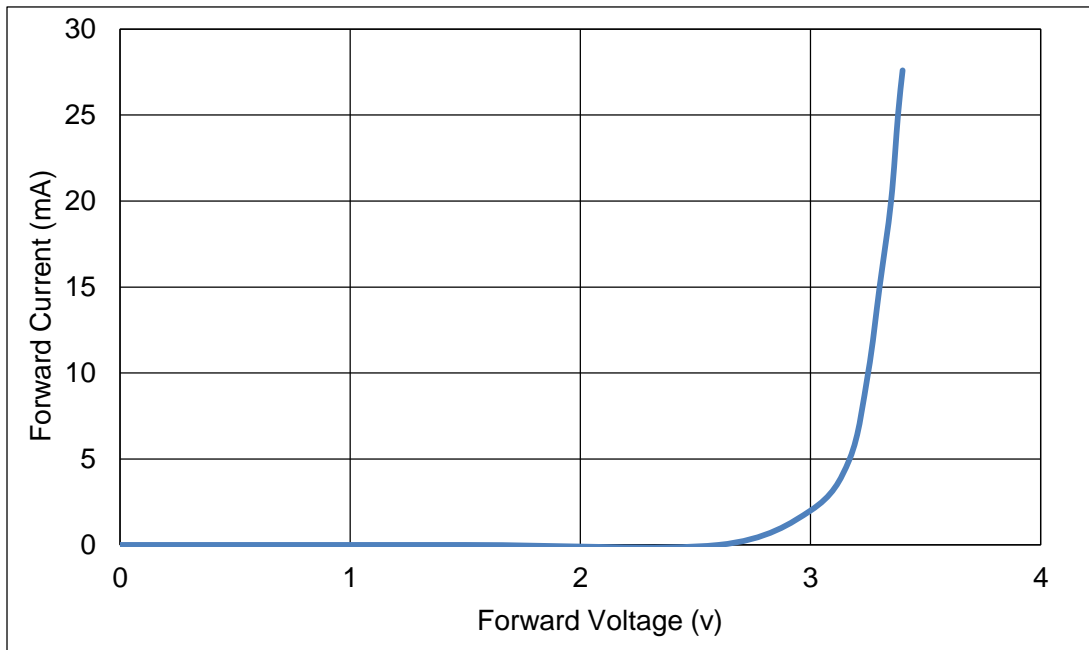


Fig 1-8 Forward Voltage Vs Forward Current

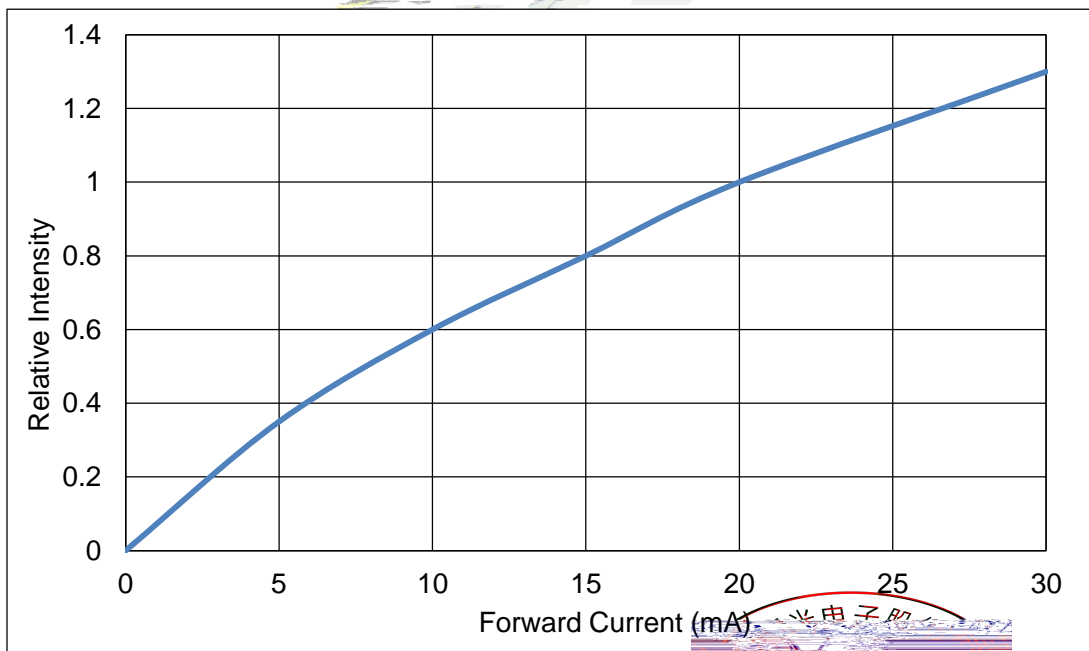
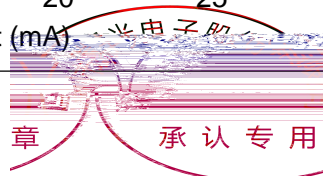
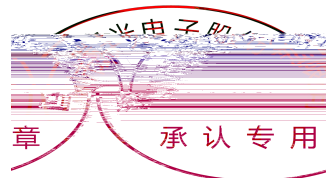


Fig 1-9 Forward Current Vs Relative Intensity





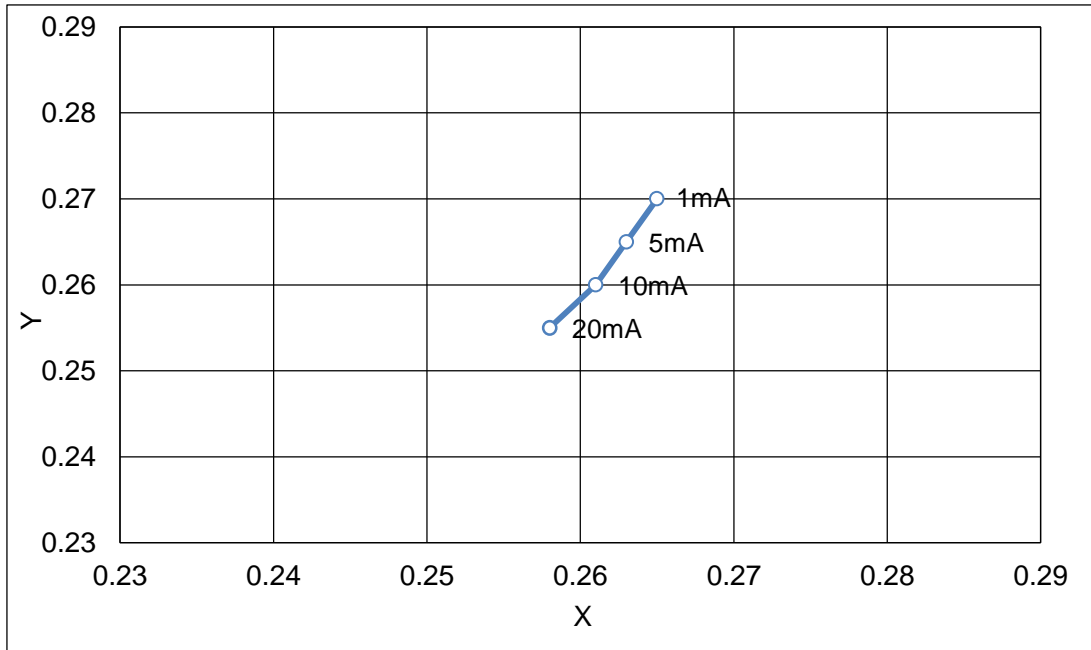


Fig.1-12 Forward Current Vs Dominant Wavelength (Ta=25°C)

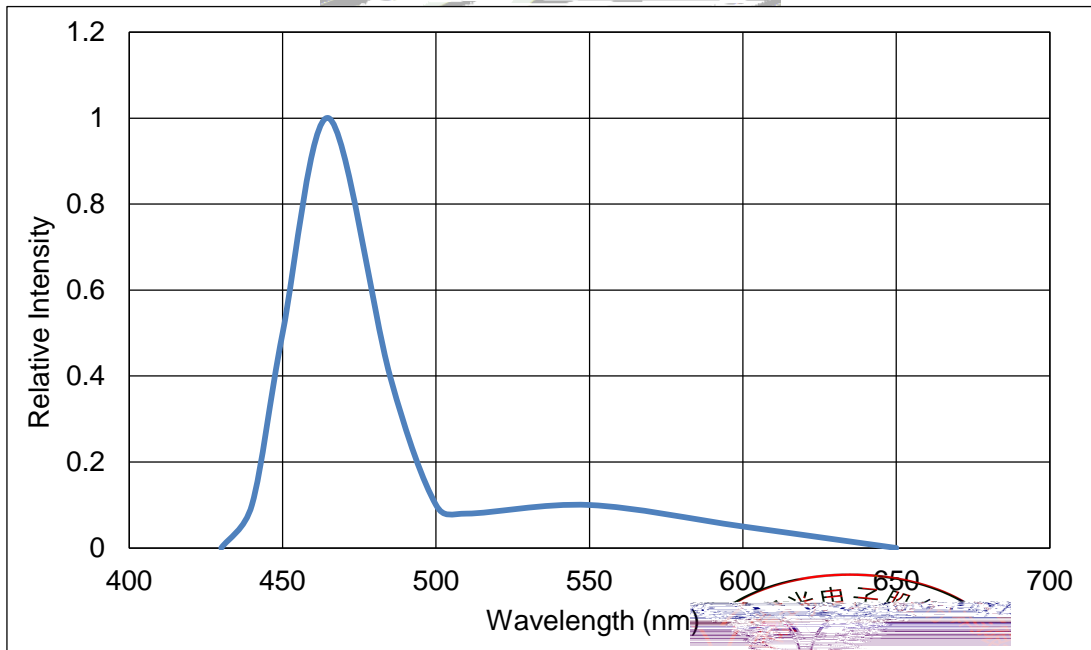


Fig.1-13 Relative Intensity Vs Wavelength (Ta=25°C)

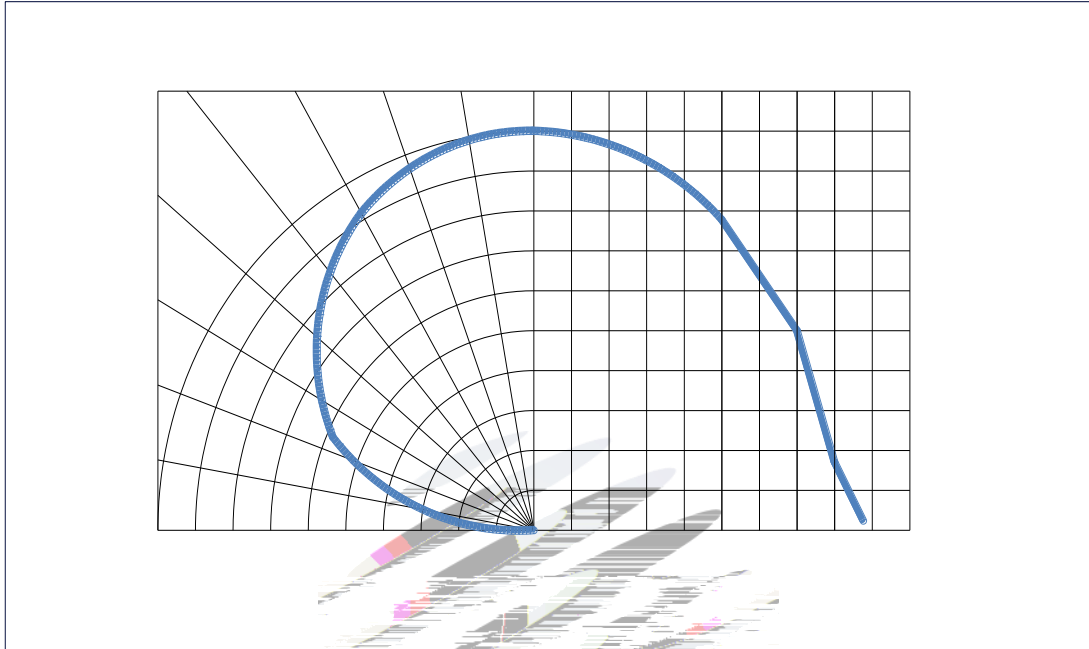
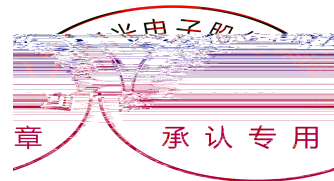
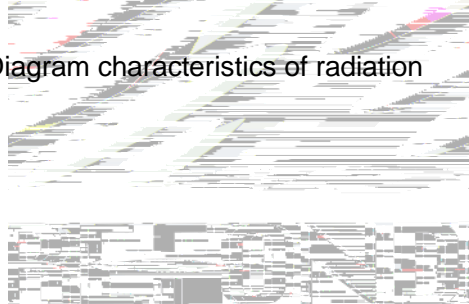


Fig.1-14 Diagram characteristics of radiation



2. Packaging

2.1 Packaging Specification

Package: 4000pcs/reel. 4000pcs

2.1.1 Carrier Tape Dimension

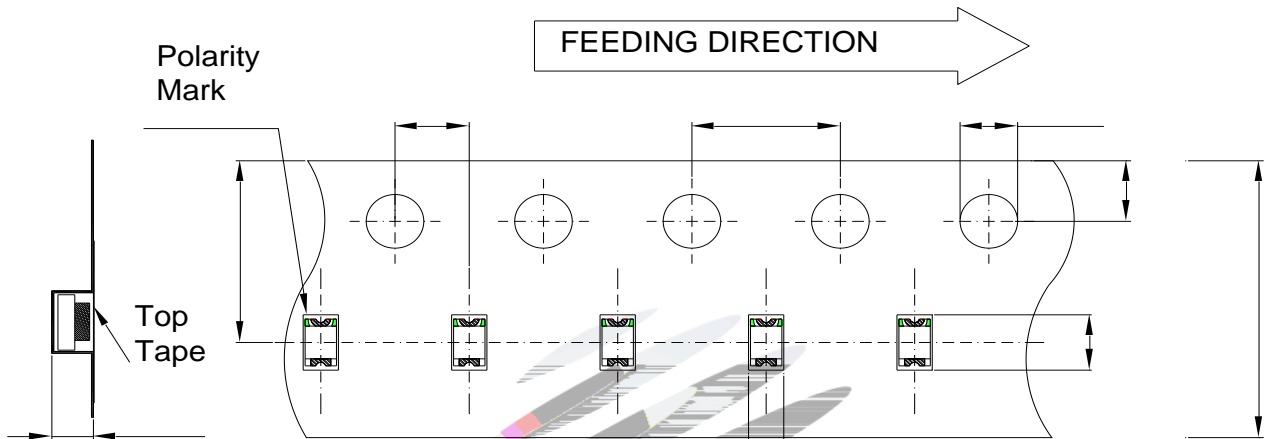


Fig.2-1 Carrier Tape Dimension

2.1.2 Reel Dimension

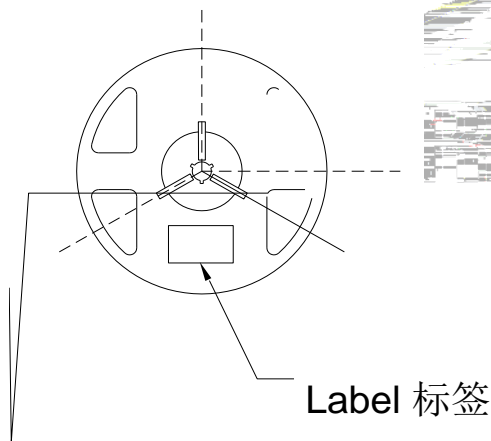


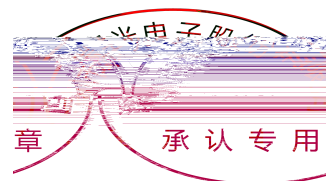
Fig.2-2 Reel Dimension

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 $\pm 0.1\text{mm}$. Unit : mm



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

PART NO:
 SPEC NO:
 LOT NO

BIN CODE:
 Φ:
 VF:

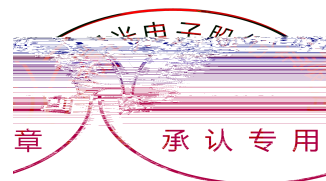
XY:
 WLD:
 QTY:
 DATE:

Fig. 2-3 Label Form Specification

2.2 Moisture Resistant Packing



Fig.2-4 Moisture Resistant Packing



2.3 Cardboard Box

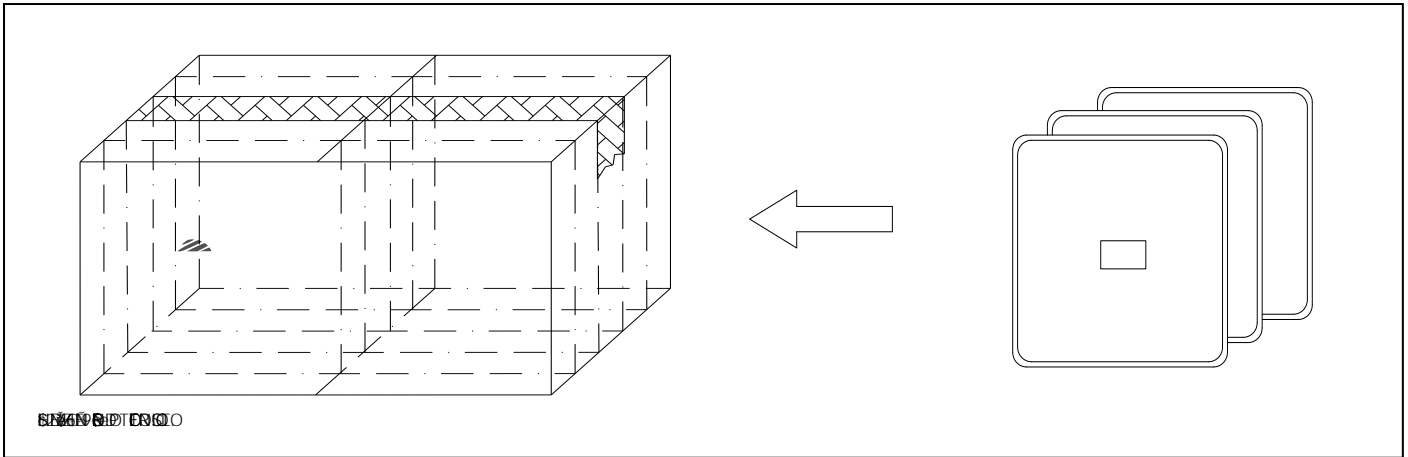


Fig.2-5 Cardboard Box

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	Temp: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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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	-

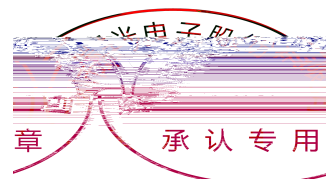
Notes

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

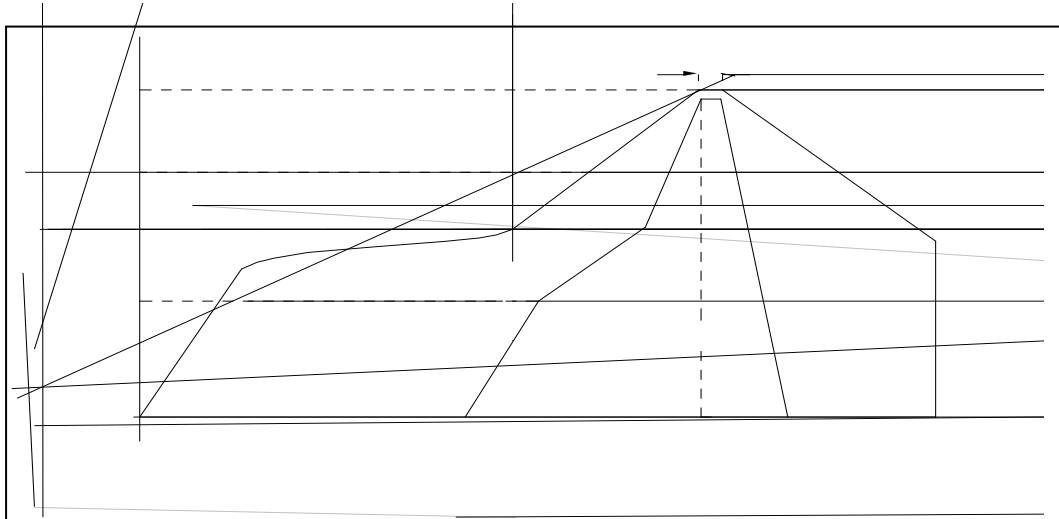


Fig.3-1 SMT Reflow Soldering Instructions SMT

Table 3-1 Parameters

Average temperature rise speed	T_{smax}	T_P	3 °C/ s	Max 3 °C/ s
Preheating: minimum temperature	(T _{min})		150 °C	
Preheating: Max temperature	(T _{smax})		200 °C	
Preheating: Time	T _{min}	T _{smax}	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	Max 60s
Peak /Classification of temperature: / (T _P)			260 °C	
Time limit classification of peak temperature time t _p			10	Max 10s
5 °C with the actual peak temperature (T _P)	5 °C	Hold time within	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.

(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°C less than 3 seconds.

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

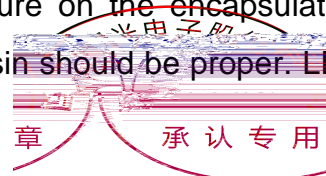
3.1.2 Repairing

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

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 use the picking up nozzle, the pressure on the silicone resin should be proper. LED



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



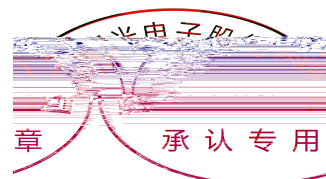
(4) Handle the component along the side surface by using forceps or appropriate tools; Do not directly touch or Handle the silicone lens surface, it may damage the internal circuitry.



Fig 4-1 Handling 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 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



(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.

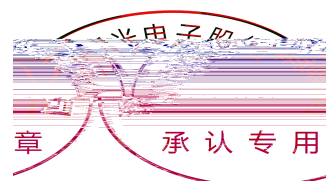
Table 4-1 Storage

Conditions		Temperature	Humidity	Time
Storage	Before Opening Aluminum Bag	30	75%	Within 1 Year From Date
	After Opening Aluminum Bag	30	60%	24hours 24
Baking		60 5	-	24hours 24

(8) If the moisture absorbe15(r) g 36 f138f0.1 383.81 123.02 0.47998 re1 60.12 ref*400 g ()BF71 0 0 1 93

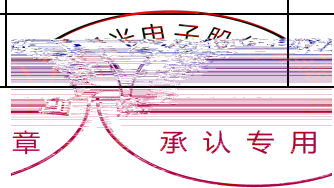
(9) Similar to most Solid state devices; LEDs are sensitive to Electro-Static Discharge (ESD) and Electrical Over Stress (EOS).

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



Version History/

Date	Revisor	Version	Verifier	Remarks
2019.10.28		E/0		





Declare

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

