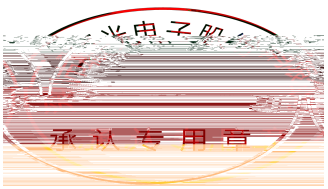
SPECIFICATION

REFOND P/N

RF-WNS150DS-DD

□R&D

■Mass Product



Contents

1. Description

1.1 General Description

The White LED, which was fabricated by using a blue chip and the phosphor.

Product Package:3.2mmX1.6mmX0.7mm.

LED 3.2mmX1.6mmX0.7mm

1.2 Features

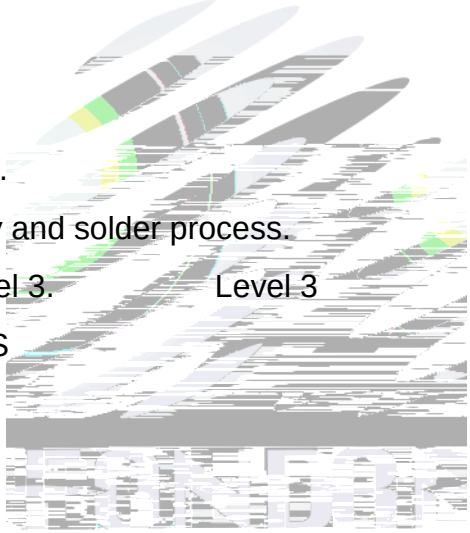
Extremely wide viewing angle.

Suitable for all SMT assembly and solder process. SMT

Moisture sensitivity level: Level 3. Level 3

RoHS compliant. RoHS

1.3 Application



1.4 Package Dimension

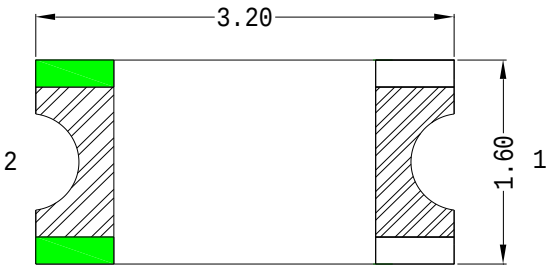


Fig.1-1 Top view

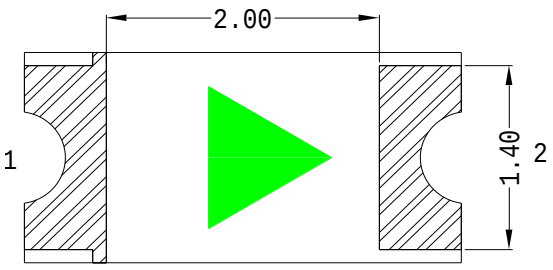


Fig.1-2 Bottom view

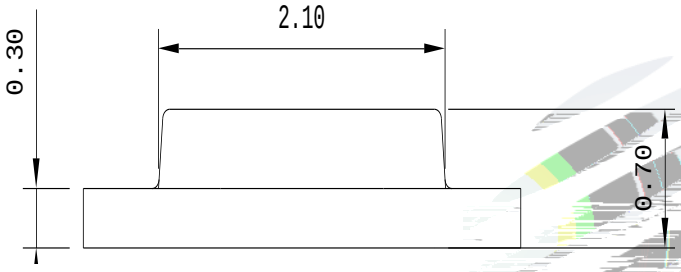


Fig.1-3 Side view

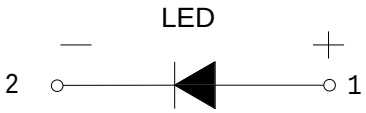


Fig.1-4 Polarity

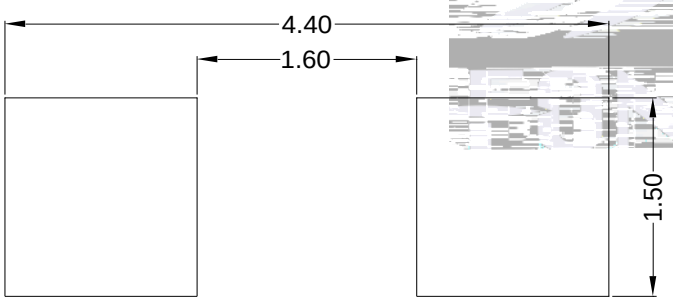


Fig.1-5 Soldering patterns

Notes

1. All dimensions units are millimeters.

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

1.5 Product Parameters

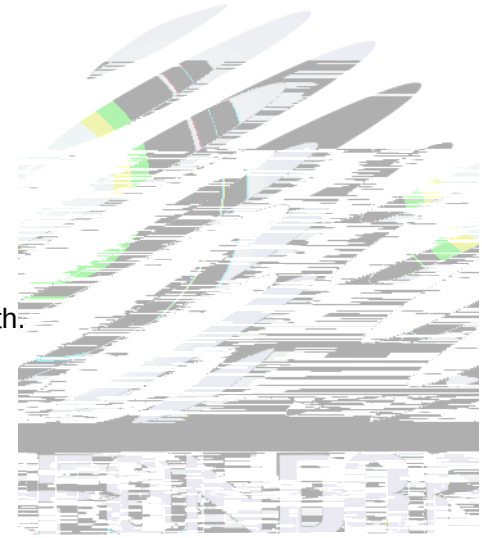
Table 1-1 Electrical / Optical Characteristics at Ts=25°C

Item	Test Condition	Symbol		Value			Unit
				Min.	Typ. ( )	Max. ( )	
Forward Voltage	I_F=20mA	V_F	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
[redacted]							
Luminous Intensity	I_F=20mA	I_V	1BB	400	--	450	mcd
			1BC	450	--	500	mcd
			1BD	500	--	550	mcd
			1BE	550	--	600	mcd

[redacted]

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

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



Notes

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

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

BIN (IF=20mA)

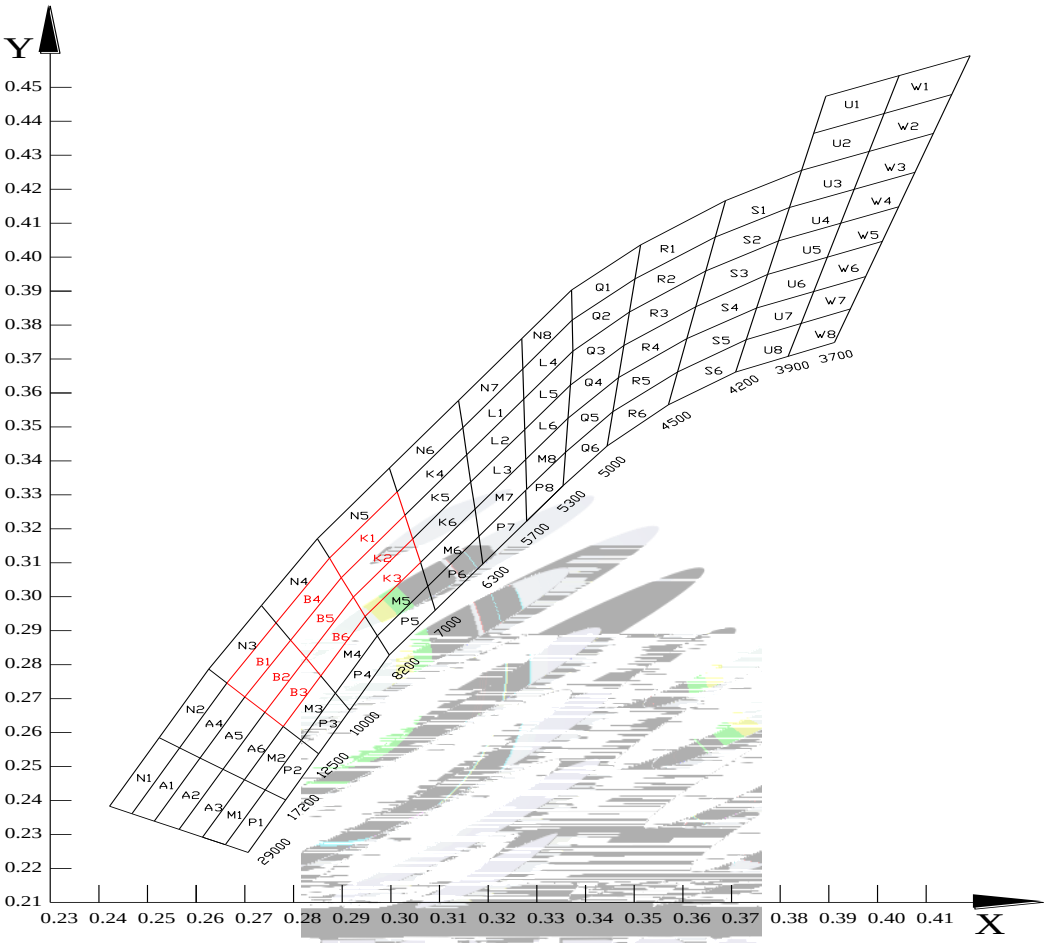


Fig. 1-6 The C.I.E Chromaticity Diagram CIE

Table 1-3 Bin Date Bin

BIN C0DE	CIE-X1	CIE-Y1	CIE-X2	CIE-Y2	CIE-X3	CIE-Y3	CIE-X4	CIE-Y4
B01	0.2700	0.2705	0.2663	0.2746	0.2764	0.2923	0.2794	0.2872
B02	0.2741	0.2660	0.2700	0.2705	0.2794	0.2872	0.2826	0.2819
B03	0.2779	0.2618	0.2741	0.2660	0.2826	0.2819	0.2856	0.2767
B04	0.2794	0.2872	0.2764	0.2923	0.2874	0.3114	0.2898	0.3056
B05	0.2826	0.2819	0.2794	0.2872	0.2898	0.3056	0.2923	0.2999
B06	0.2856	0.2767	0.2826	0.2819	0.2923	0.2999	0.2947	0.2942
K01	0.2898	0.3056	0.2874	0.3114	0.3013	0.3309	0.3029	0.3240
K02	0.2923	0.2999	0.2898	0.3056	0.3029	0.3240	0.3045	0.3170
K03	0.2947	0.2942	0.2923	0.2999	0.3045	0.3170	0.3061	0.3101

1.7 Typical Optical Characteristics Curves

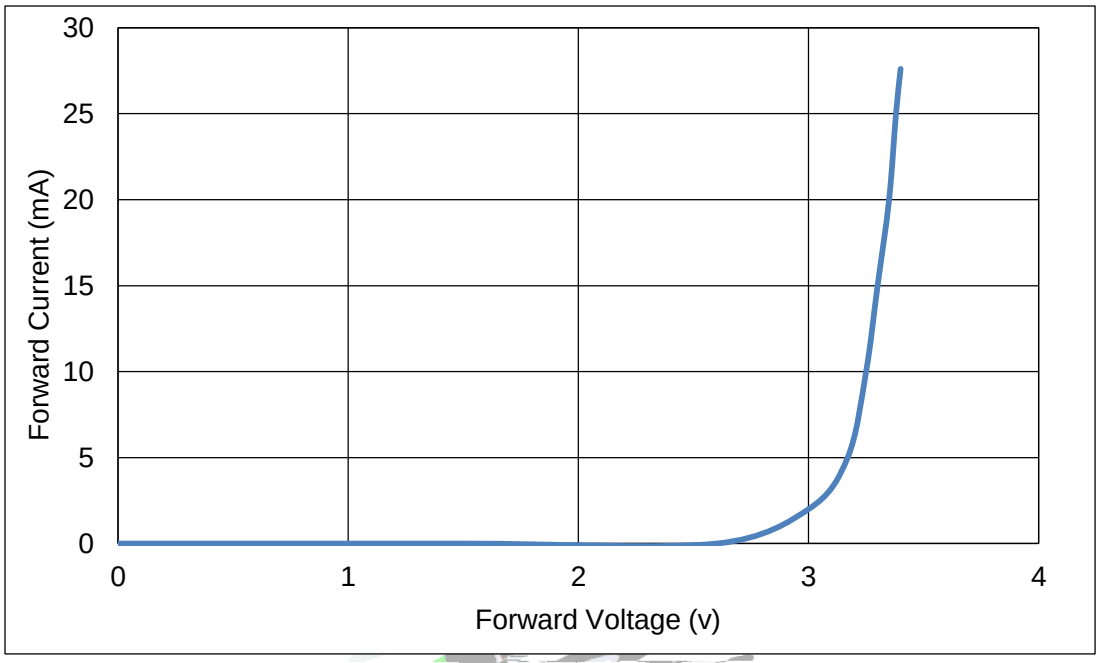


Fig 1-7 Forward Voltage Vs Forward Current

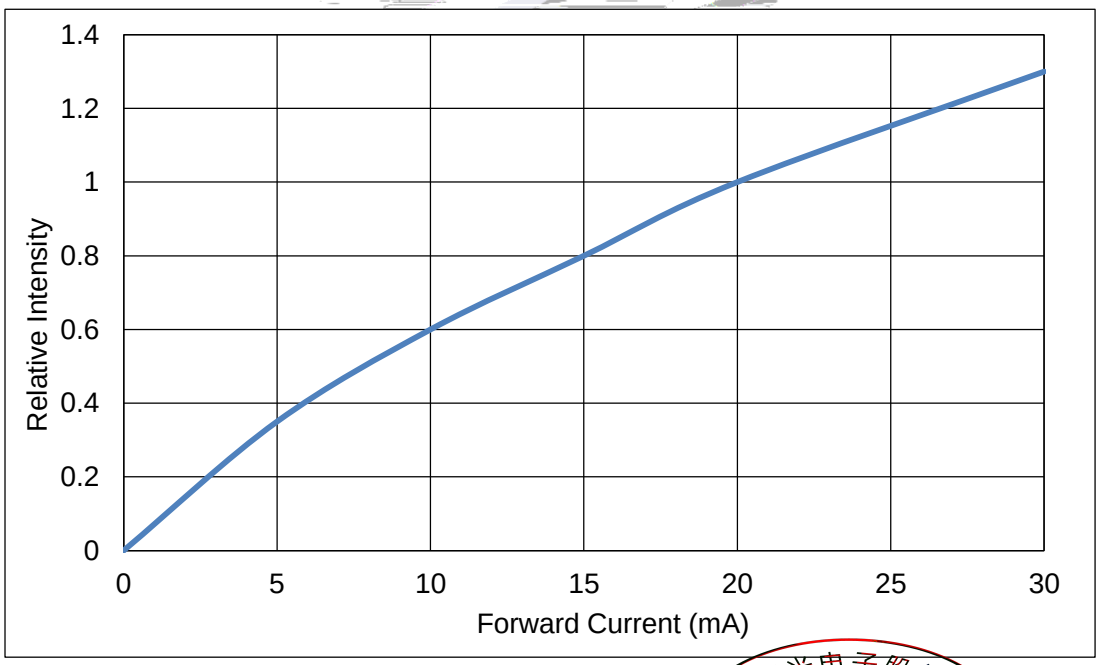


Fig 1-8 Forward Current Vs Relative Intensity

Fig 1-9 Pin Temperature Vs Relative Intensity

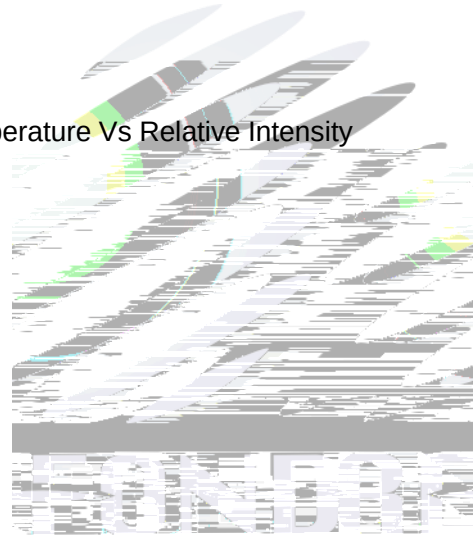


Fig 1-10 Pin Temperature Vs

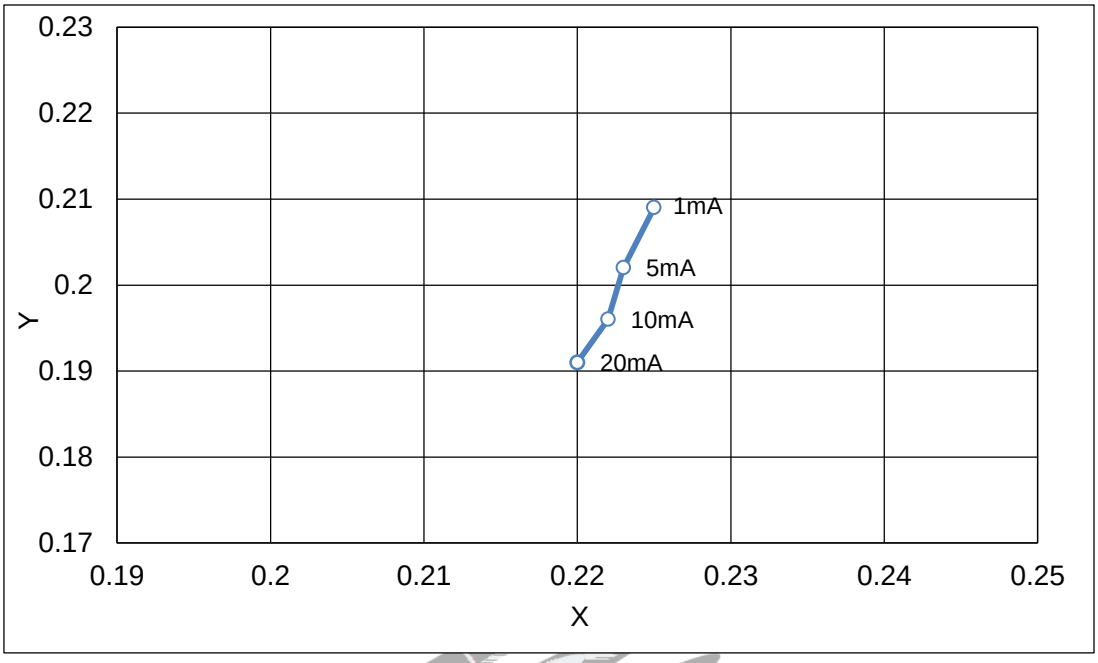


Fig.1-11 Forward Current Vs Dominate Wavelength (Ta=25℃)

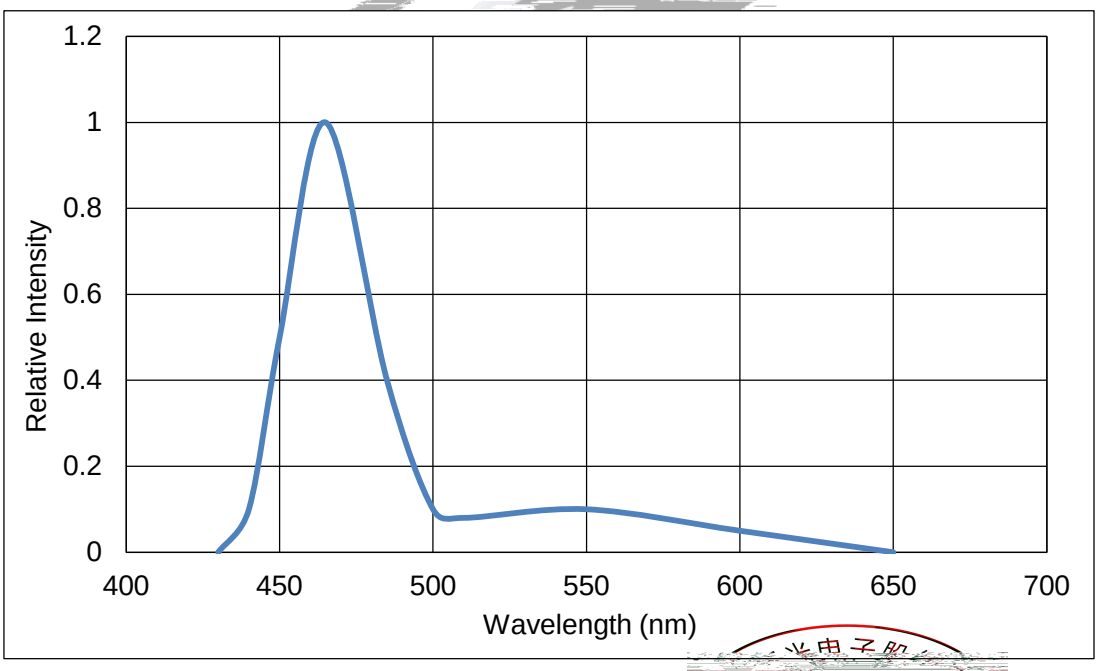


Fig.1-12 Relative Intensity Vs Wavelength (Ta=25℃)

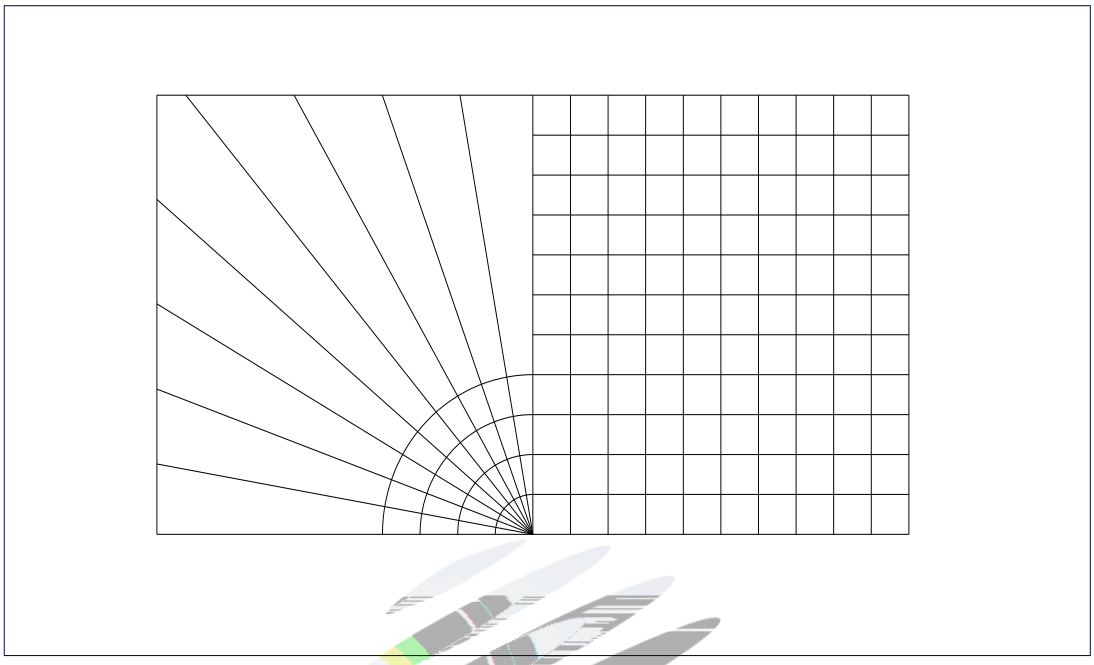


Fig.1-13 Diagram characteristics of radiation

2. Packaging

2.1 Packaging Specification

Package:4000pcs/reel. 4000pcs

2.1.1 Carrier Tape Dimension

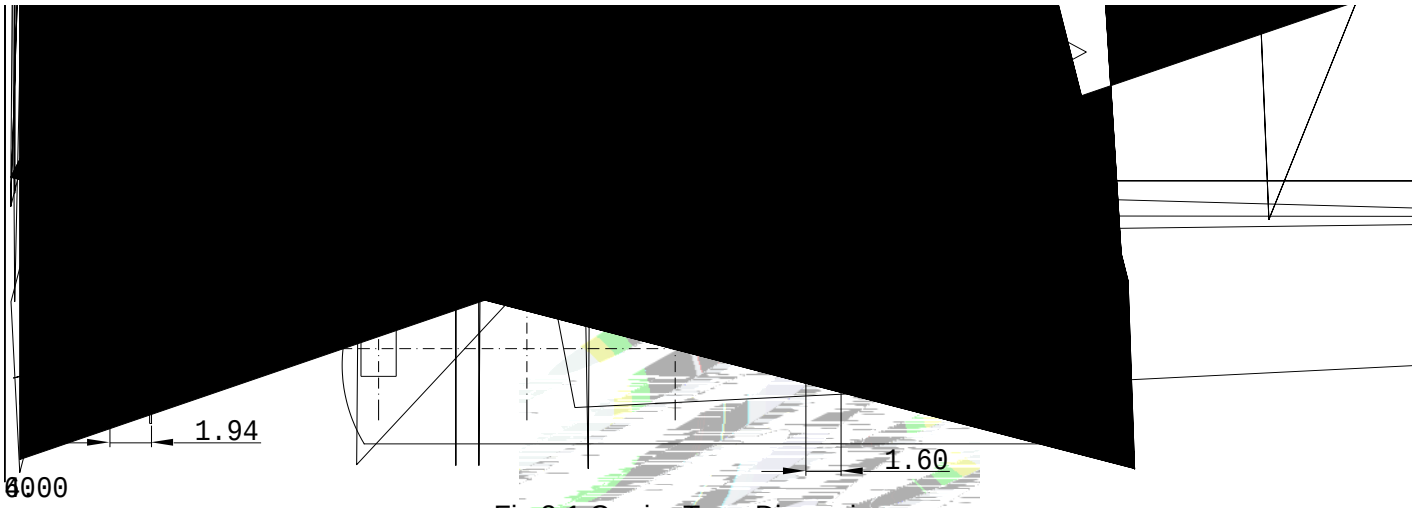


Fig.2-1 Carrier Tape Dimension

2.1.2 Reel Dimension

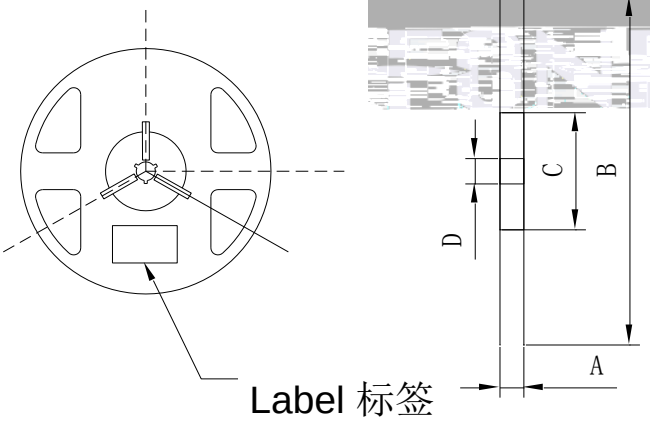


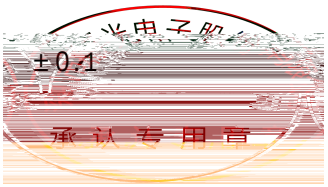
Fig.2-2 Reel Dimension

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 ±0.1mm. Unit : mm

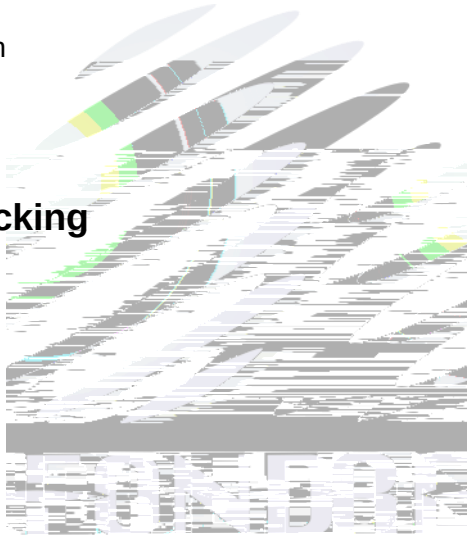


2.1.3 Label Form Specification

Table 2-2 Parameter

PART NO.	Part Number
SPEC NO.	Spec Number
LOT NO.	Lot Number

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				

2.5 Criteria For Judging Damage

Table 2-4 Criteria For Judging Damage

Test Items	Symbol	Test Condition	Criteria For Judgement	
				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. / 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

3.1SMT Reflow Soldering Instructions SMT

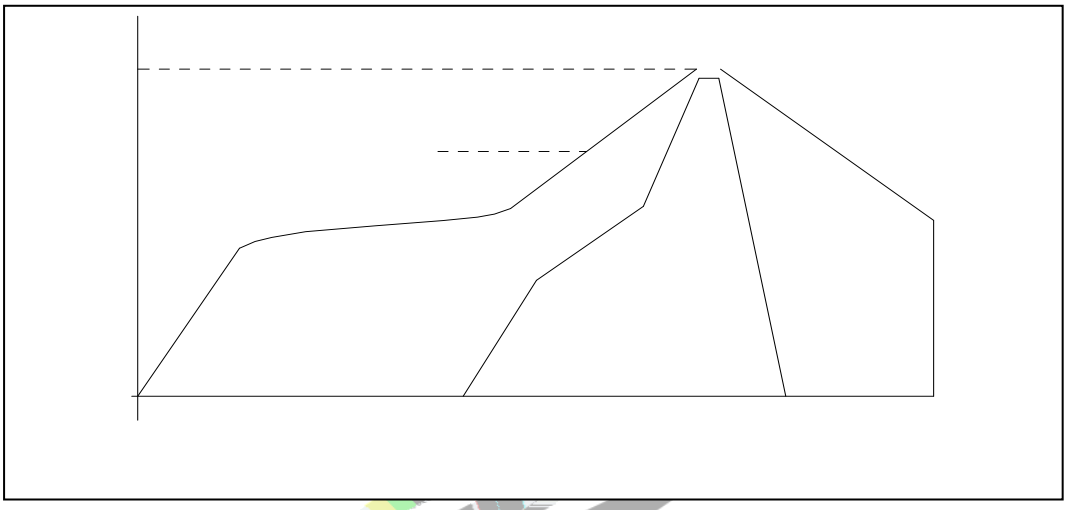


Fig.3-1SMT Reflow Soldering Instructions SMT

Table 3-1Parameters

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 Max 60s
Peak /Classification of temperature: / (T_P)	260 °C
Time limit classification of peak temperature time t_p	10 Max 10s
(T_P) 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. 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

Repair

(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

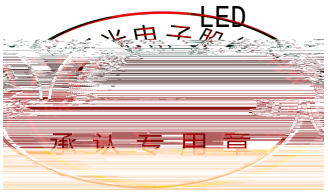
(1) LED operating environment and sulfur element composition cannot be over 100PPM in the LEDmating usage material. This is provided for informational purposes only and is not a warranty or endorsement.LED LED 100PPM.

(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 verify compatibility, Refond recommends that all chemicals and materials be tested in the specific application and environment for which they are intended to be 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 directly touch or Handle the silicone lens surface, it may damage the internal circuitry.

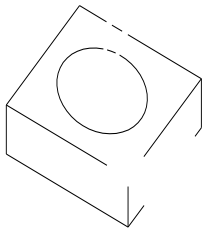


Fig 4-1 产品使用注意事项

(5) In designing a circuit,the current through each LED can not exceed the absolute maximum rating specified for each LED.In the 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	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 absorbent material silica gel has faded away or the LEDs have exceeded the storage time,baking treatment should be performed after unpacking and based on the following condition 65±5 ℃ for above 24 hours.

60 ± 5 24

If the package is flatulence or damaged,please notify the sales staff to assist.

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

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

Date	Revisor	Version	Verifier	Remarks
2019.04.22		E/2		

Declare

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