

SPECIFICATION



REFOND P/N

RF-AURA30TS-BB-Z

R&D

Mass Production



Contents

1. Description	3
1.1 General Description	3
1.2 Features	3
1.3 Application	3
1.4 Package Dimension	4
1.5 Product Parameters	5
1.6 Bin Range Of Forward Voltage and Luminous Intensity and Dominant wavelength (IF=20mA)	
BIN (IF=20mA)	6
1.7 Typical Optical Characteristics Curves	7
2. Packaging	11
2.1 Packaging Specification	11
2.1.1 Carrier Tape Dimension	11
2.1.2 Reel Dimension	11
2.1.3 Label Form Specification	12
2.2 Moisture Resistant Packing	12
2.3 Cardboard Box	12
2.4 Reliability Test Items And Conditions	13
2.5 Criteria For Judging Damage	14
3. SMT Reflow Soldering Instructions SMT	15
3.1 SMT Reflow Soldering Instructions SMT	15
4. Handling Precautions	17
4.1 Handling Precautions	17



1. Description

1.1 General Description



The Yellow source color devices are made with AlGaInP on Substrate Light Emitting Diode .
 Product Package:3.50mmX2.80mmX1.84mm.

LED AlGaInP

3.50mmX2.80mmX1.84mm

1.2 Features

PLCC Package. PLCC

Extremely wide viewing angle.

Suitable for all SMT assembly and solder process.

SMT

Available on tape and reel.

Moisture sensitivity level: Level 2.

Level2

RoHS compliant. RoHS

Qualifications: The product qualification test plan is based on the guidelines of AEC-Q101
 Stress Test Qualification for Automotive Grade Discrete Semiconductors

AEC-Q101

1.3 Application

Automotive Interior Lighting. 汽 内 照 明
 Switches. 开 关



1.4 Package Dimension

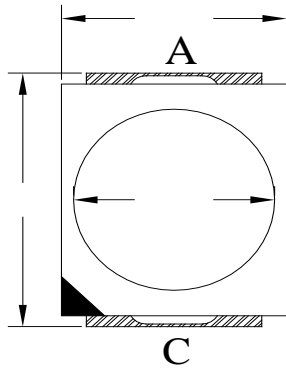


Fig. 1-1 Top View

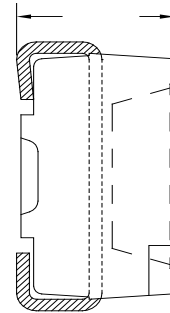


Fig. 1-2 Side View

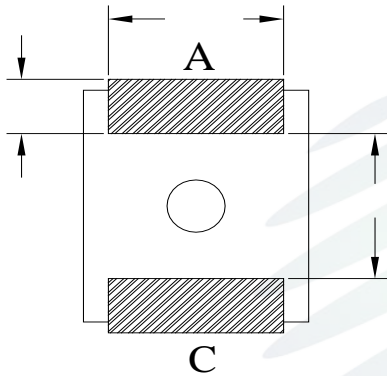


Fig. 1-3 Bottom View

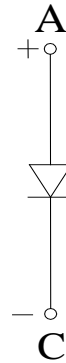


Fig. 1-4 Polarity

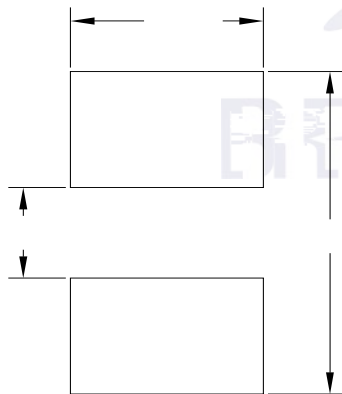


Fig. 1-5 Soldering Patterns

Notes

1. All dimensions units are millimeters.
2. All dimensions tolerances are $\pm 0.2\text{mm}$ unless otherwise noted.



1.5 Product Parameters

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

Item	Symbol	Test Condition	Value			Unit
			Min.	Typ.	Max.	
Forward Voltage	V_F	$I_F=20mA$	1.8	2.2	2.4	V
Reverse Current	I_R	$V_R=5V$	---	---	10	μA
Luminous Intensity	I_V	$I_F=20mA$	800	970	1500	mcd
Dominant wavelength	λ_d	$I_F=20mA$	584.5	589	594.5	nm
Viewing Angle		$I_F=20mA$	---	120	---	deg
Thermal Resistance.	R_{THJ-S}	$I_F=20mA$	---	---	260	/W

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

Parameter	Symbol	Rating	Units
Power Dissipation	P_D	72	mW
Forward Current	I_F	30	mA
Peak Forward Current	I_{FP}	50	mA
Reverse Voltage	V_R	5	V
Electrostatic Discharge (HBM)	E_{SD}	2000	V
Operating Temperature	T_{OPR}	-40 ~ +100	
Storage Temperature	T_{OPR}	-40 ~ +100	
Junction Temperature	T_J	120	

Notes

1. 1/10 Duty cycle, 10ms pulse width. 10ms, 1/10.
2. The above forward voltage measurement allowance tolerance is $\pm 0.1V$. $\pm 0.1V$.
3. The above color coordinates measurement allowance tolerance is ± 0.005 . ± 0.005 .
4. The above luminous intensity measurement allowance tolerance $\pm 10\%$. $\pm 10\%$.
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
8. ESD yield is over 90% at 2000V ESD (HBM). ESD protection during products handling is needed. 90% LED ESD2000V

1.6Bin Range Of Forward Voltage and Luminous Intensity and Dominant wavelength (IF=20mA) BIN (IF=20mA)

Table 1-3

V _F	B1	B2	C1	C2	D1	D2
	1.8-1.9	1.9-2.0	2.0-2.1	2.1-2.2	2.2-2.3	2.3-2.4
IV()	L1	L2	M1			
	800-1000	1000-1200	1200-1500			
WD(nm)	A2	B1	B2	C1		
	584.5-587	587-589.5	589.5-592	592-594.5		



1.7 Typical Optical Characteristics Curves

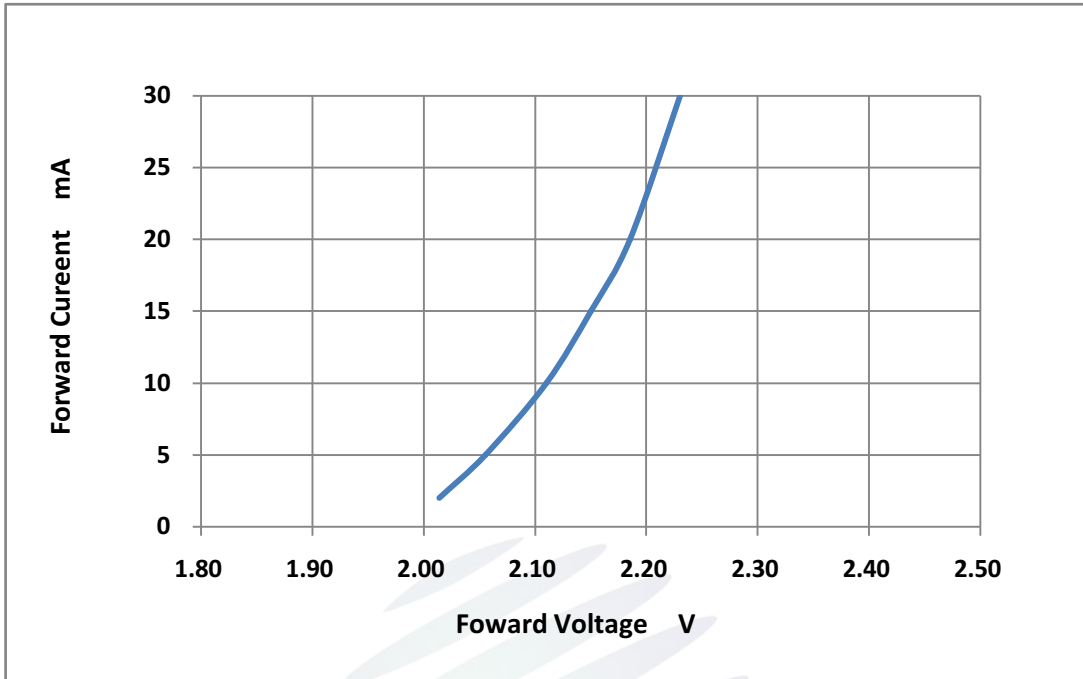


Fig. 1-7 Forward Voltage Vs Forward Current

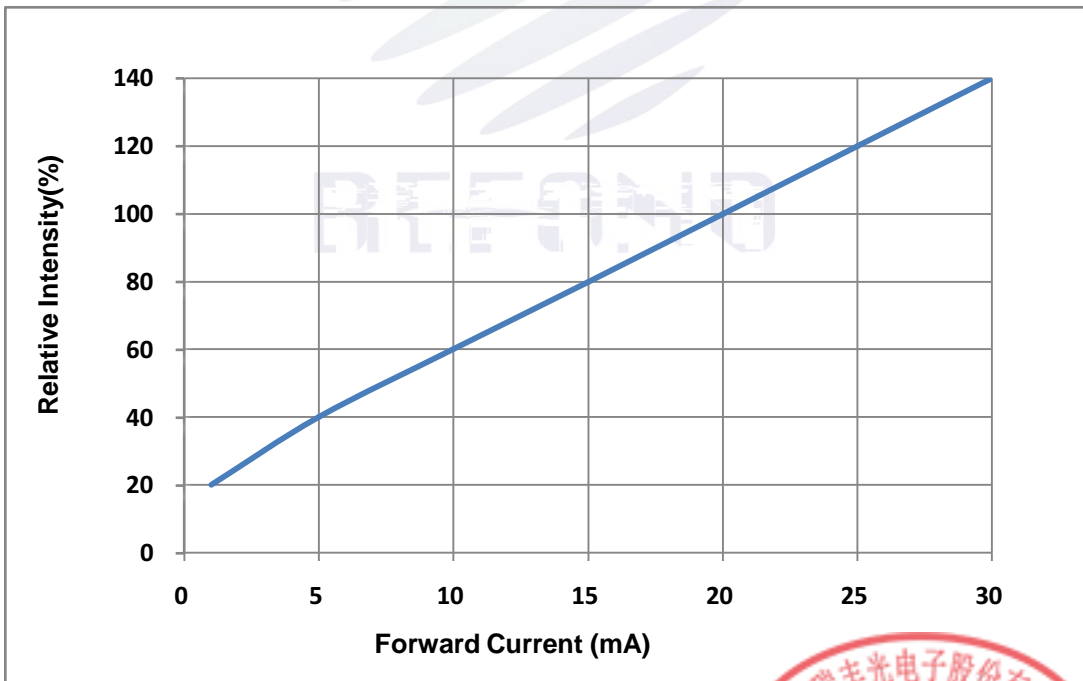


Fig. 1-8 Forward Current Vs Relative Intensity



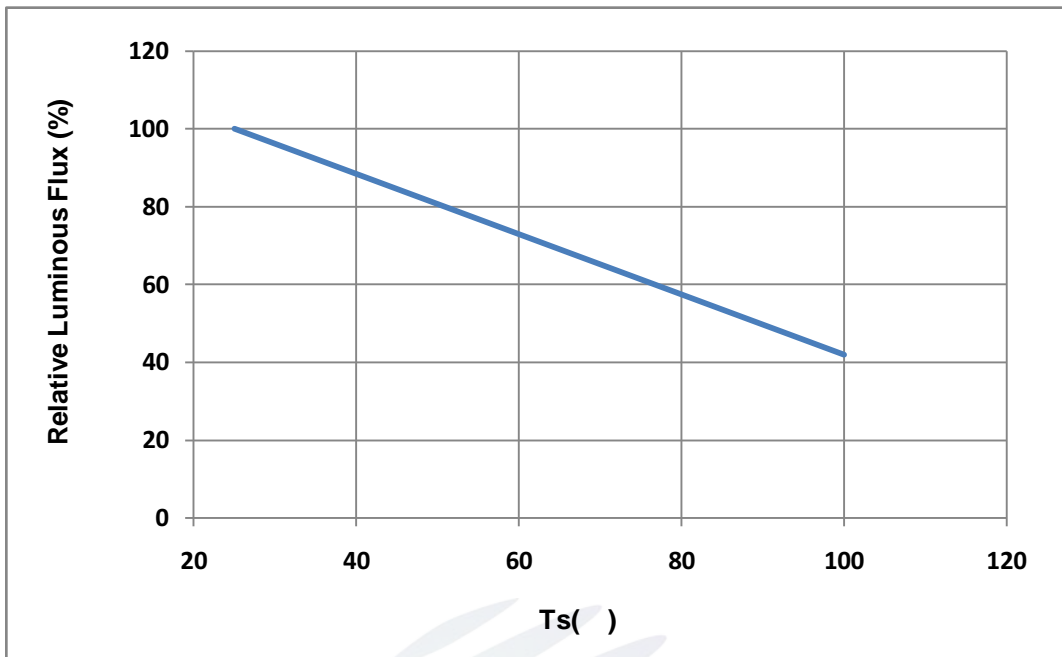


Fig. 1-9 Solder Temperature Vs Relative Intensity

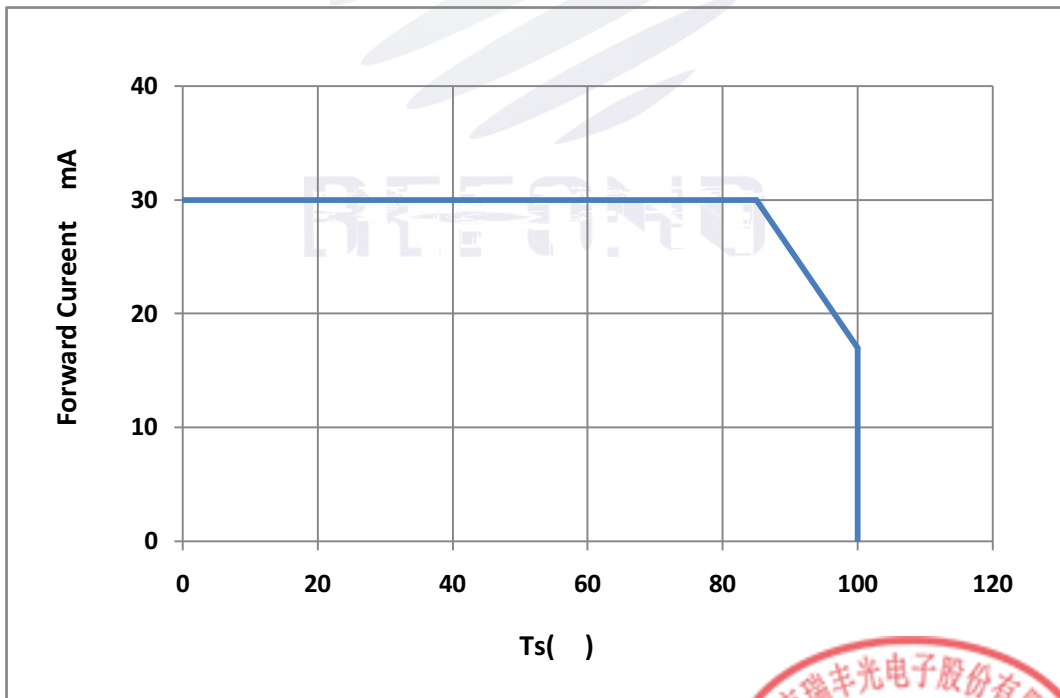


Fig. 1-10 Solder Temperature Vs Forward Current



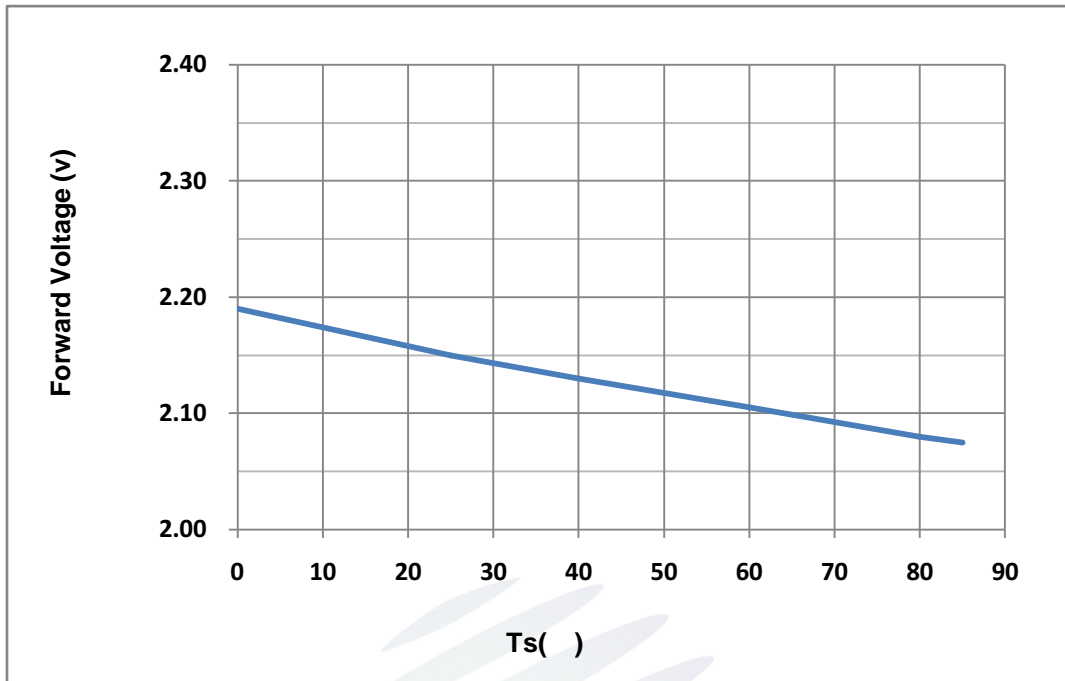


Fig. 1-11 Forward Voltage Vs Solder Temperature

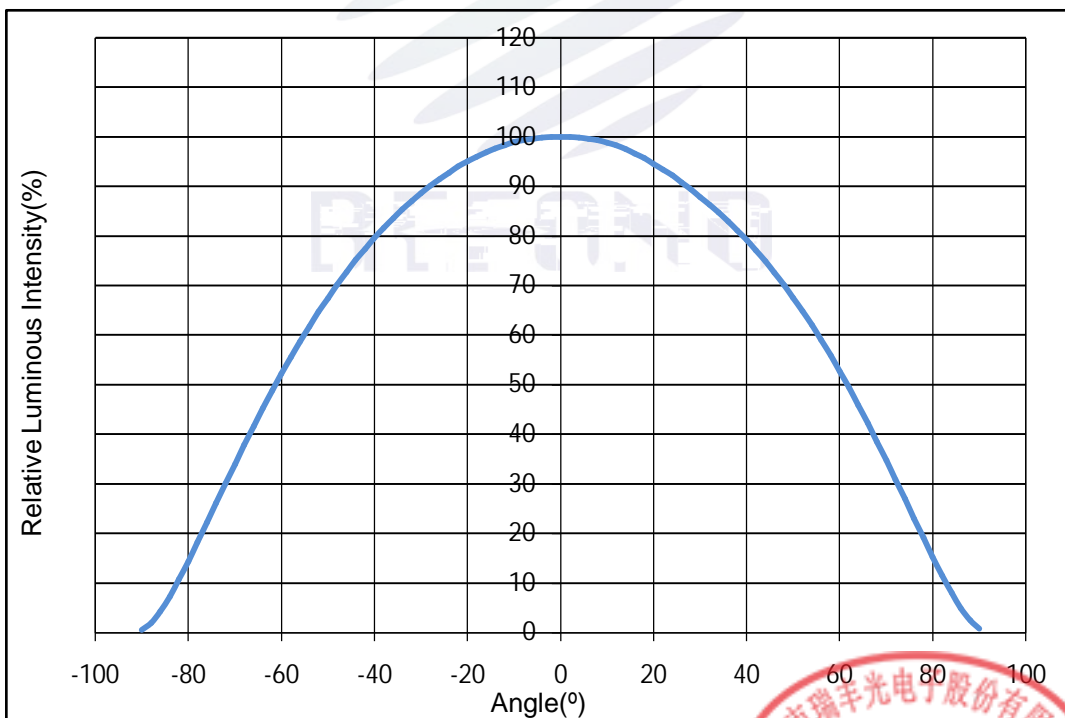
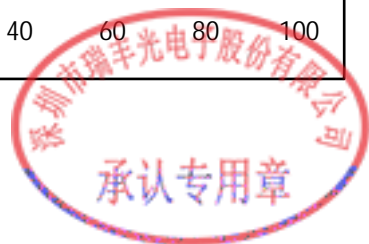


Fig. 1-12 Radiation diagram



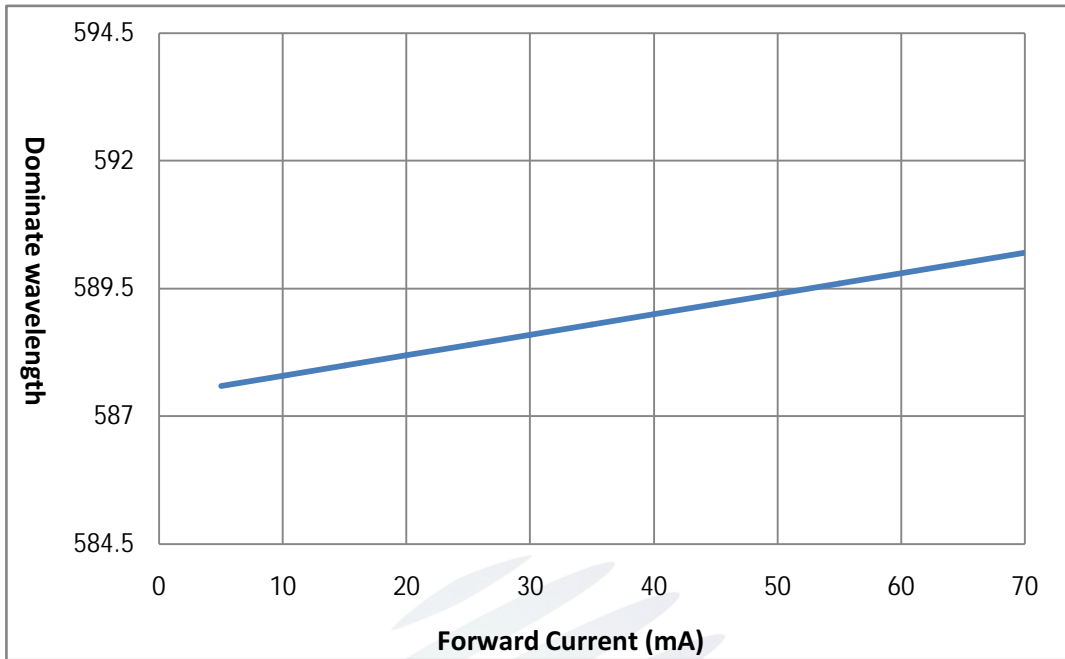


Fig. 1-13 Forward current vs. Dominate wavelength (Ts=25°C)

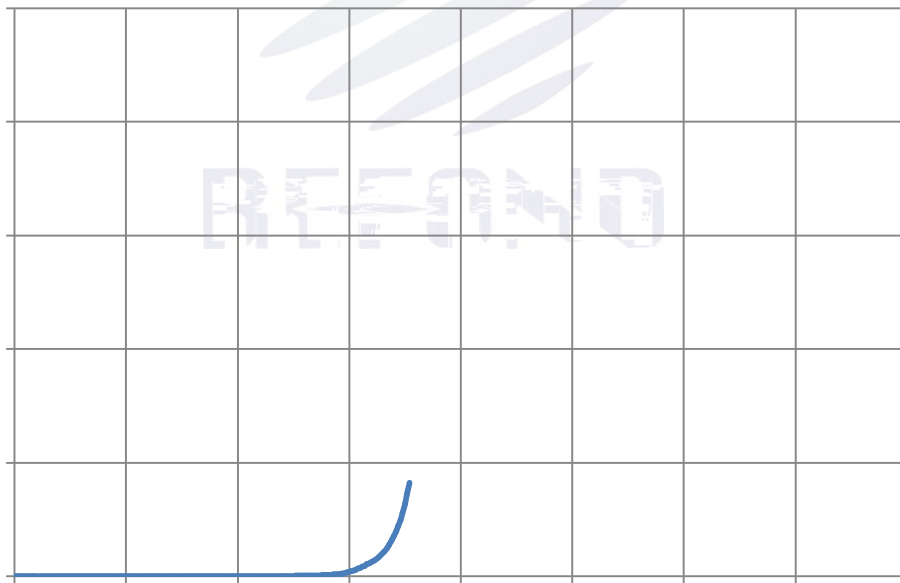


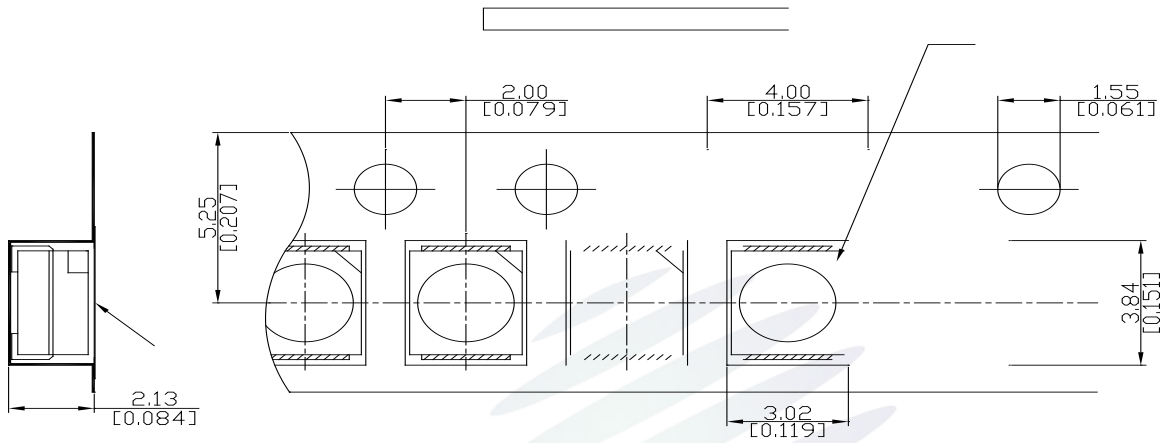
Fig. 1-14 Spectrum Distribution

2. Packaging

2.1 Packaging Specification

Package: 2000pcs/reel. 2000pcs

2.1.1 Carrier Tape Dimension mm mm



REFOND

2.1.3 Label Form Specification

Fig. 2-3 Label Form

2.2 Moisture

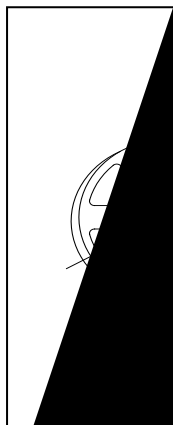


Fig.2- Cardboard Box

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

Table 2-4 Criteria For Judging Damage

Test Items	Symbol	Test Condition	Criteria For Judgement	
			Min.	Max.
Forward Voltage	V_F	$I_F=20\text{mA}$	-	U.S.L*)x1.1



3. SMT Reflow Soldering Instructions SMT

3.1 SMT Reflow Soldering Instructions SMT

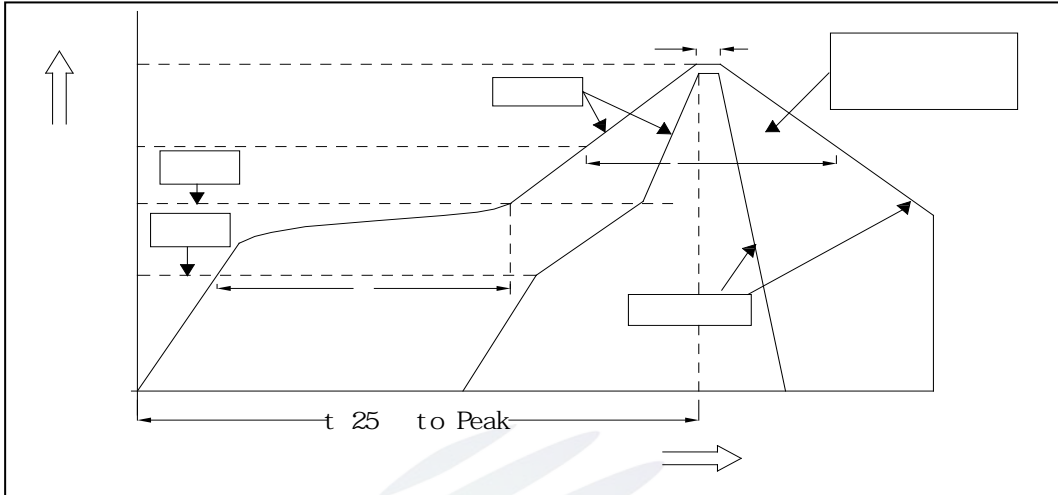


Fig.3-1 SMT Reflow Soldering Instructions SMT

Table 3-1 Reflow parameters

Average temperature rise speed	$T_{\text{max}} - T_{\text{p}}$	3 °C/ s	Max 3 °C/ s
Preheating: minimum temperature	(T_{min})	150 °C	
Preheating: Max temperature	(T_{max})	200 °C	
Preheating: Time	$T_{\text{min}} - T_{\text{max}}$	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
$(T_{\text{p}}) - 5\text{ °C}$ actual peak temperature (TP)	Hold time within 5 °C with the	30	Max 30s
Cooling speed		6 °C/ s	Max 6 °C/ s
25 °C	Needed time from 25 °C to T_{p}	8	Max 8 minutes

4. Handling Precautions

4.1 Handling Precautions

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

LED

100PPM.

(2) In order to prevent external 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 element is 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 the use of any chemicals or materials that have been found or are suspected to have an adverse effect 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.



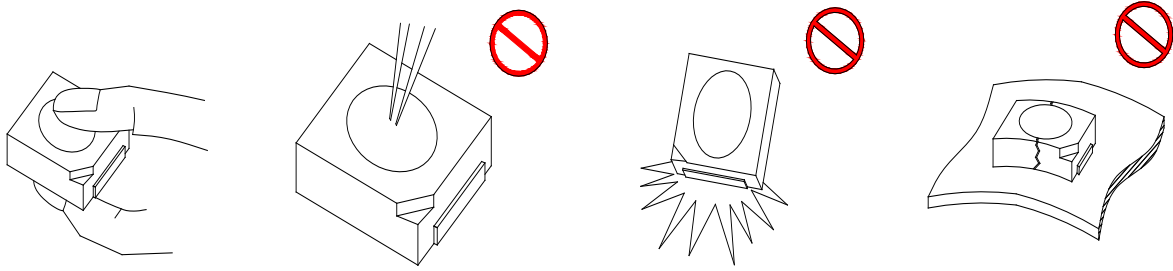


Fig 4-1 Handling Precautions

(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

(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 4-1 Storage

Conditions		Temperature	Humidity	Time
Storage	Before Opening Aluminum Bag	30	75%	Within 1 Year From Date
	After Opening Aluminum Bag	30	60%	Recommended for use within 24 hours 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 60 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.





www.refond.com

REFOND



Declare

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