SPECIFICATION

REFOND P/N

RF-W*HP32DS-FH-I3

R&D

Mass Product

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1. Description

1.1

The White LED which was fabricated using a bule chip and the phosphor

Product Package: 2.8mmX3.5mmX0.7mm.

LED 2.8mmX3.5mmX0.7mm

1.2Features

- ►PLCC-2 Package.
- ►Extremely wide viewing angle.
- ►Suitable for all SMT assembly and solder process. SMT
- ►Available on tape and reel.b‘AQ5‘€ U ñ ñ 1 p fE“ W5’€ @ Q G
- ►Moisture

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1.4 Package Dimension

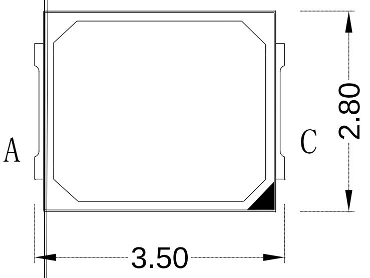

Fig.1-1 Top view

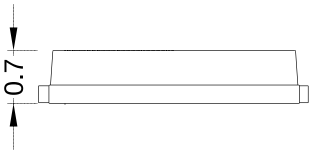

Fig.1-2 Side view

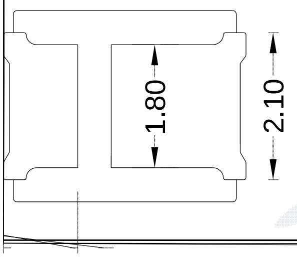

Fig.1-3 Bottom view

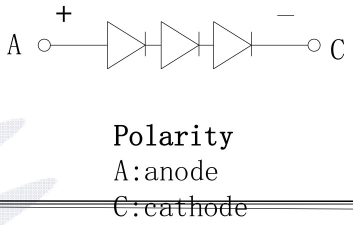

Fig.1-4 Polarity

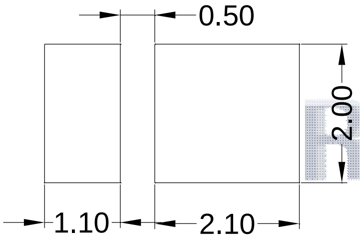

Fig.1-5 Soldering patterns

Notes

1. All dimensions units are millimeters.
2. All dimensions tolerances are 0.05mm unless otherwise noted. ±0.05

1.5 Product Parameters

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

Item	Code	Symbol	Test Condition	RF-Value			Unit
				Min.	Max.	Typ.	
Forward Voltage	Rank Y0	V_F	I_F =100mA	8.6	9.0	8.9	V
	Rank Z0			9.0	9.4		V
RF-W57HP32DS-FH-I3	Rank FC6	Φ	I_F =100mA	140	150	155	lm
	Rank FC7			150	160		lm
	Rank FC8			160	170		lm
RF-W6HP32DS-FH-I3	Rank FC6	Φ	I_F =100mA	140	150	155	lm
	Rank FC7			150	160		lm
	Rank FC8			160	170		lm
Reverse Current		I_R	V_R=15V	---	10	---	μA
Viewing Angle		2θ1/2	I_F =100mA	---	---	120	Deg
Color Rendering Index(		CRI		80	---	81.5	---
Thermal resistance		R_{THJ-S}		---	---	15	/W

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

Parameter	Symbol	Rating	Units
Power Dissipation	P_D	1080	mW
Forward Current	I_F	120	mA
Peak Forward Current	I_{FP}	220	mA
Reverse Voltage	V_R	15	V
Electrostatic Discharge(HBM)	ESD	2000	V
Operating Temperature	T_{OPR}	-40 ~ +105	
Storage Temperature	T_{STG}	-40 ~ +105	
Junction Temperature	T_J	125	

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. ±0.1V.

3. The above color coordinates measurement allowance tolerance is 0.005. 0.005.

4. The above luminous intensity measurement allowance tolerance ±10%. ±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 handing is needed. 90% LED ESD2000V ,

REFOND

1.6 Bin Range Of Forward Voltage and Luminous Flux (IF=100mA)

BIN (IF=100mA)

Table 1-3

V_F V	Y0	Z0	
	8.6-9.0	9.0-9.4	
φ lm RF-W57HP32DS-FH-I3 RF-W6HP32DS-FH-I3	FC6	FC7	FC8
	140-150	150-160	160-170

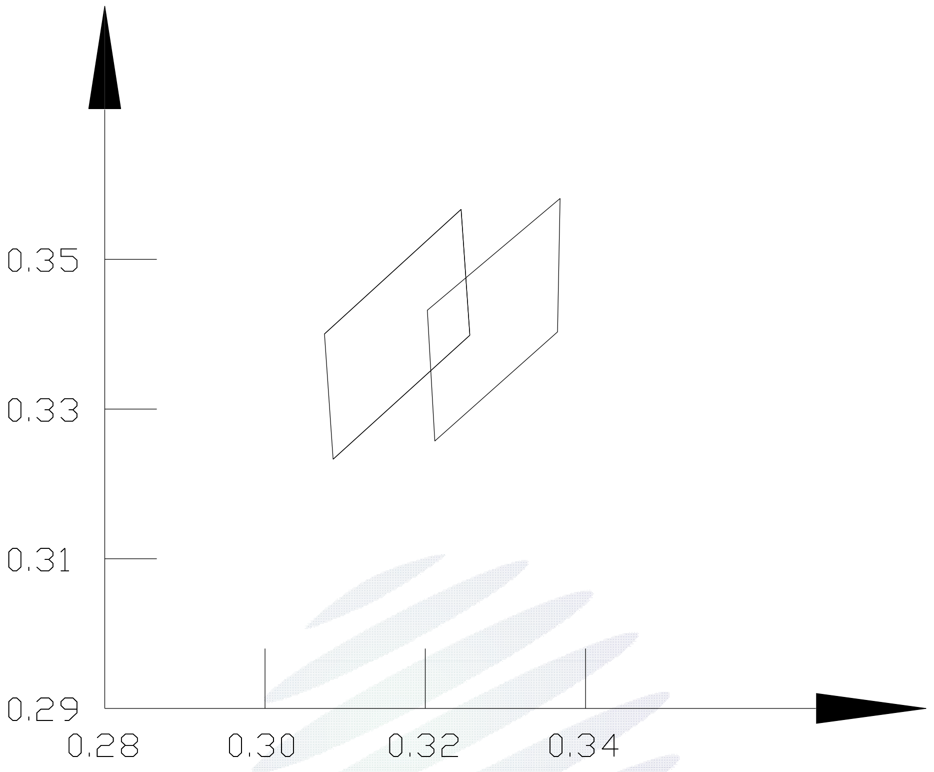

Fig 1-6　The C.I.E Chromaticity Diagram CIE

Table 1-4

6-step								
BIN CODE	**X1**	**Y1**	**X2**	**Y2**	**X3**	**Y3**	**X4**	**Y4**
A57	0.3203	0.3432	0.3368	0.3581	0.3365	0.3403	0.3212	0.3257
A65	0.3245	0.3567	0.3074	0.3400	0.3085	0.3233	0.3256	0.3399

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1.7 Typical optical characteristics curves

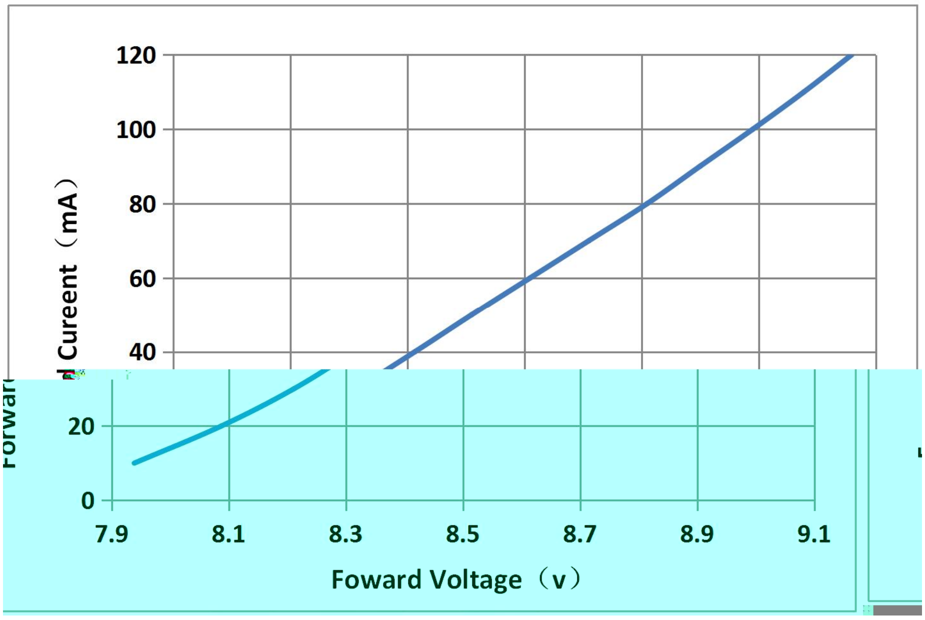

Fig 1-7 Forward Voltage Vs. Forward Current

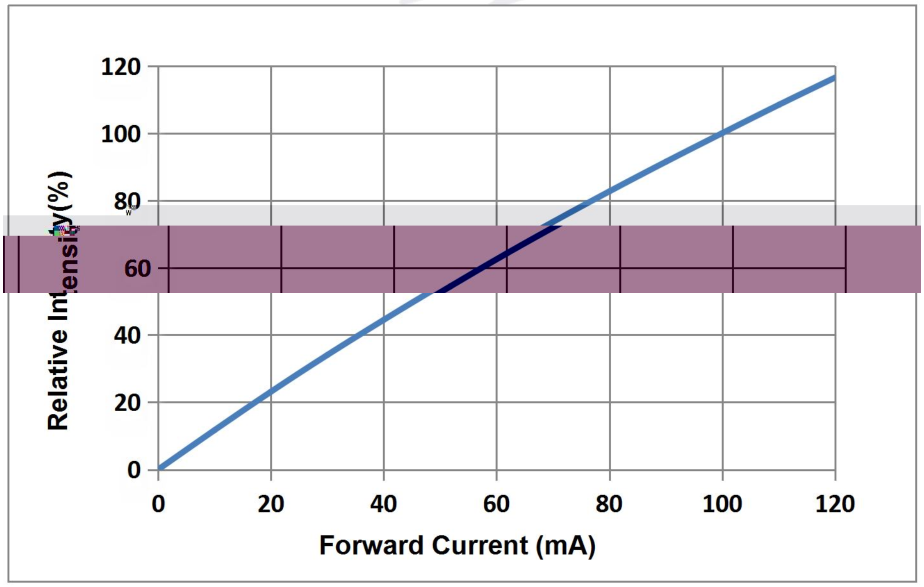

Fig 1-8 Forward Current Vs. Relative Intensity

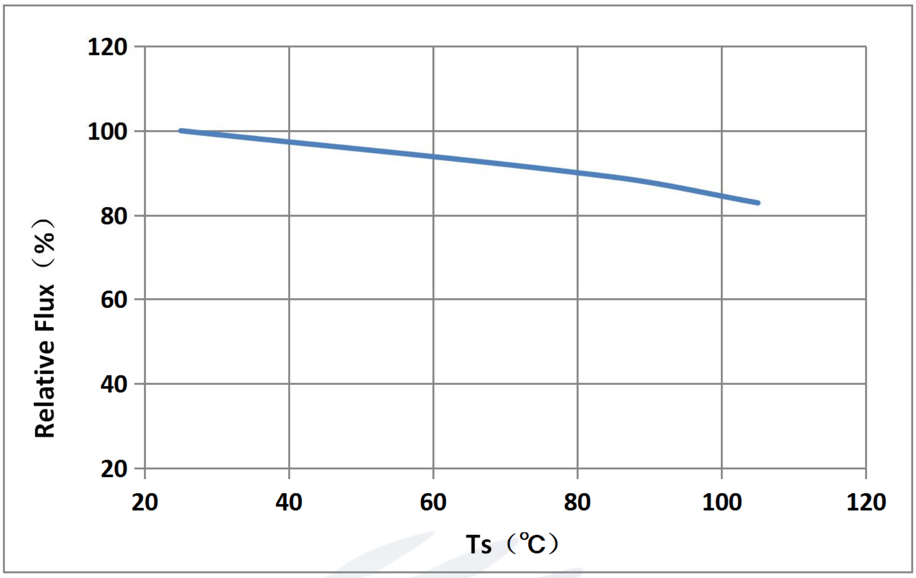

Fig 1-9 Solder Temperature Vs Relative Intensity

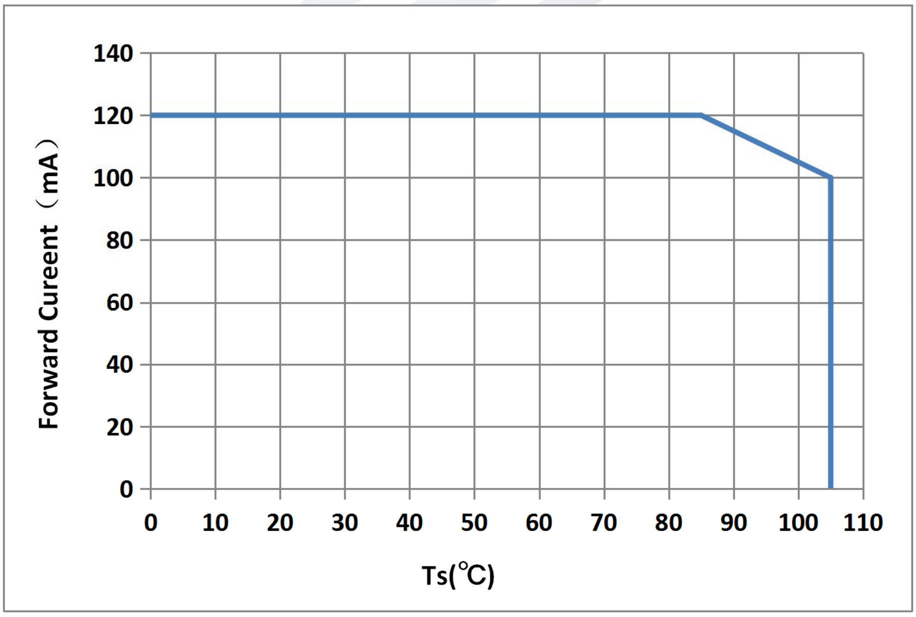

Fig 1-10 Solder Temperature Vs.Forward Current

Tj≤125

REFOND

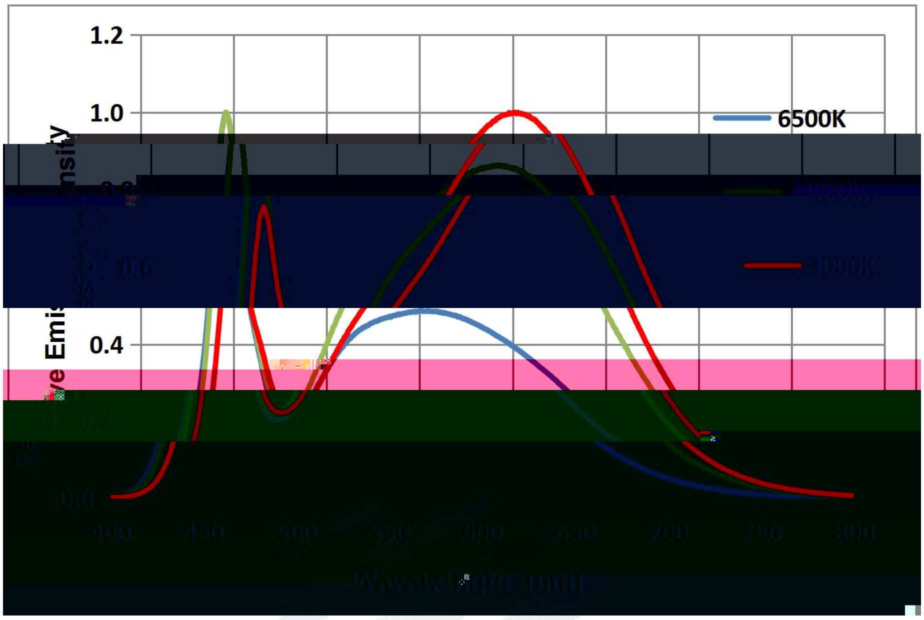

Fig 1-13 Spectrum Distribution

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2. Packaging

2.1 Packaging Specification

Package:12000pcs/reel. 12000pcs

2.1.1Carrier Tape Dimension

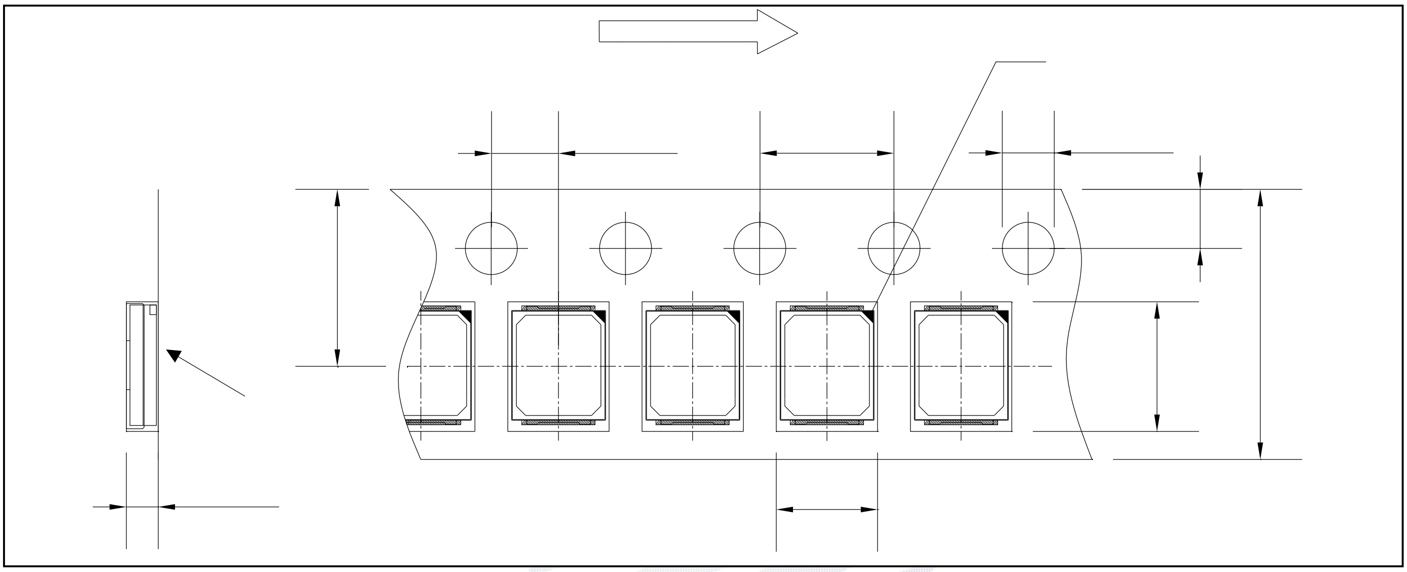

Fig.2-1 Carrier Tape Dimension

2.1.2Reel Dimension

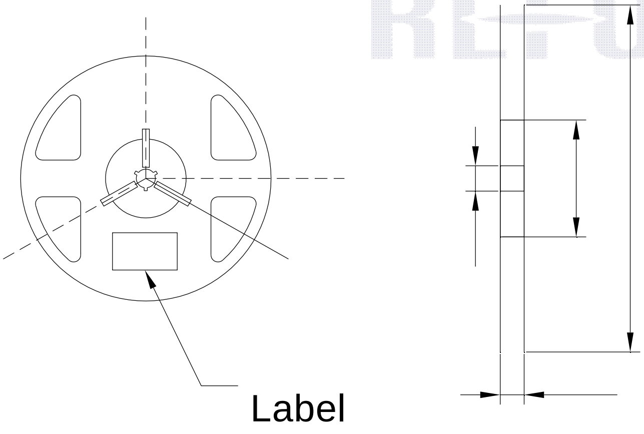

Fig.2-2Title

Table 2-1 Title

A	12.2±0.3mm
B	290±2mm
C	79.6±0.2mm
D	14.2±0.2mm

Notes

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

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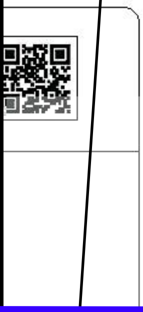
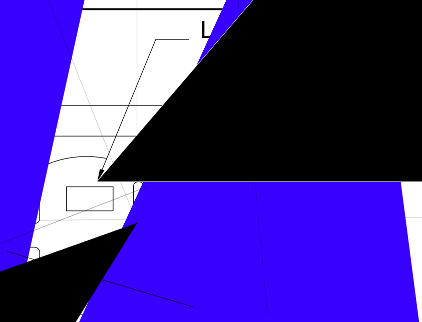


Table 2-2 Title

PART NO.	Part Number
SPEC NO.	Spec Number
LOT NO.	Lot Number
BIN CODE	Bin Code
Φ	Luminous flux
XY	Chromaticity Bin
V_F	Forward Voltage
	uantity
	e



2.4 Reliability Test Items And Conditions

Table 2-3 Title

TestItems	Ref.Standard	Test Condition	Time	Quantity	Ac/Re /
Reflow	JESD22-B106	Temp:260　max T=10 sec	2times	10pcs	0/1
Thermal Shock	JEITAED-4701 300307	-40　15min ↑↓10s 100　15min	200cycles	10pcs	0/1
High Temperature Storage	JEITAED-4701 200　201	Temp:100	1000hrs	10pcs	0/1
Low Temperature Storage	JEITA ED-4701 200 202	Temp:-40	1000hrs	10pcs	0/1
Life Test	JESD22-A108	Ta=25 I_F=100mA	1000hrs	10pcs	0/1
High Temperature High Humidity　Life Test	JESD22-A101	60　/ 90%R_H I_F=100mA	1000hrs	10pcs	0/1
Temperature Humidity Storage	JEITA ED-4701 100 103	T_A=85 R_H=85%	1000hrs	10pcs	0/1
Sulfur test	/	80　4H　0.6	4hrs	10pcs	0/1

2.5 Criteria For Judging Damage

Table 2-4 Title

Test Items	Symbol	Test Condition	Criteria For Judgement	
			Min.	Max.
Forward Voltage	V_F	I_F=100mA	-	(U.S.L*)x1.1
Reverse Current	I_R	V_R = 15V	-	(U.S.L*)x2.0
Luminous Flux	Φ	I_F=100mA	(L.S.L*)x0.7	-

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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. / LED

LED

3 LED

3. SMT Reflow Soldering Instructions SMT

3.1SMT Reflow Soldering Instructions SMT

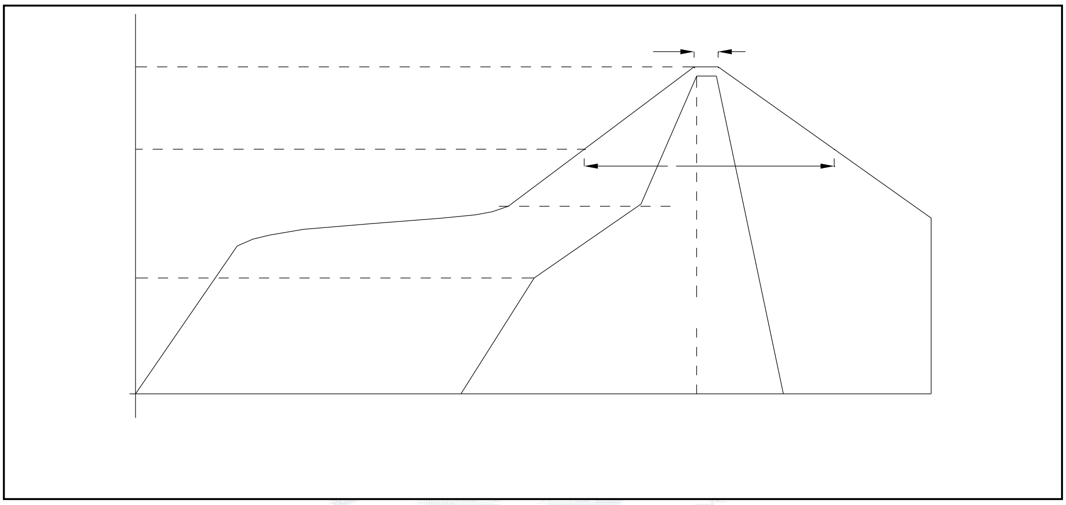

Fig.3-1Title

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Table 3-1Title

Average temperature rise speed Tsmax T_P	3 °C/ Max 3 °C/
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
Hold time within 5 °C with the actual peak temperature (TP) (T_P) 5 °C	30 Max 30s
Cooling speed	6 °C/ Max 6 °C
Needed time from 25 °C to Tp 25 °C	8 Max 8

Notes

(1)Reflow soldering should not be done more than two times. In the case of more than 24 hours passed soldering after first, LEDs will be damaged. 24

LED

(2)When soldering , do not put stress on the LEDs during heating.

3.1.1 Soldering Iron

(1) When hand soldering, keep the temperature of iron below less 300 less than 3 seconds

300 3

(2) The hand solder should be done only one time.

3.1.2 Repairing

Repair 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 will not be damaged by repairing.

LED

LED

3.1.3 Cautions

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 influence to 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

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 LED mating 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 andrChlorine element in the external materials of the application - ŕ products is required to be less than 1500PPM. This is provided for informational purposes only and is not a warranty or endorsement. L- ƒ ق

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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.

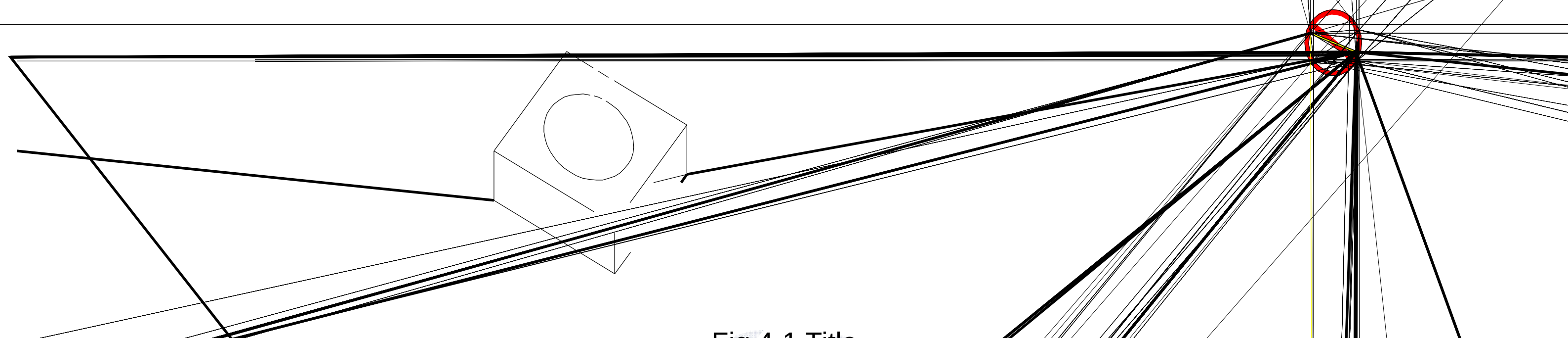

Fig 4-1 Title

(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.

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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

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(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.

Version History/

Date	Revisor	Version	Verifier	Remarks
2020-12-30		E/0		

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www.refond.com

Declare

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