SPECIFICATION

REFOND P/N

RF-A3H50-W60P-E5

□ R&D

■ Mass Production

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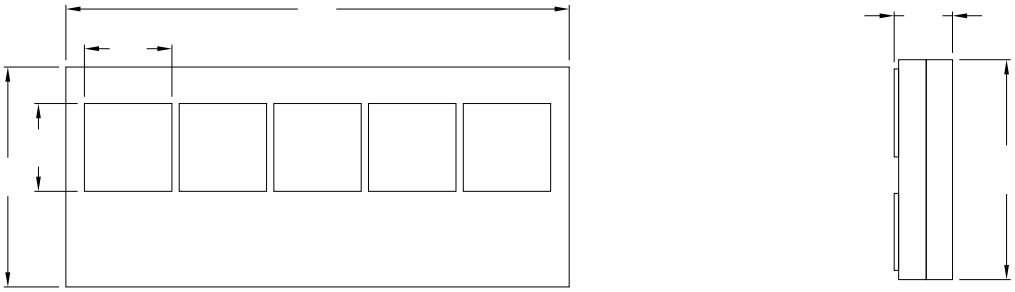
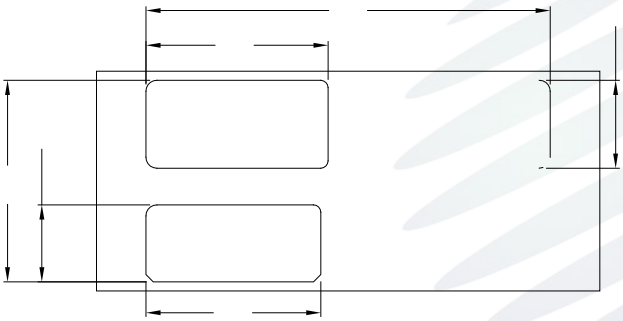
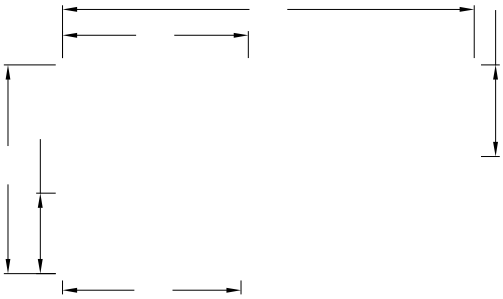
1. Description

1.1

1.4 Package Dimension







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	Symbol	Test Condition	Value			Unit
			Min.	Typ.	Max.	
Forward Voltage	V_F	I_F=1000mA	15	---	18	V
Reverse Current	I_R	V_R=25V	---	---	10	uA
Luminous Flux	Φ	I_F=1000mA	1600	---	2200	lm
Viewing Angle	2θ1/2	I_F=1000mA	---	120	---	deg
Thermal Resistance.	R_{THJ-S}	I_F=1000mA	---	0.7	0.95	℃/W

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

Parameter	Symbol	Rating	Units
Power Dissipation	P_D	27000	mW
Forward Current	I_F	1500	mA
Peak Forward Current	I_{FP}	2000	mA
Reverse Voltage	V_R	25	V
Electrostatic Discharge (HBM)	E_{SD}	8000	V
Operating Temperature	T_{OPR}	-40 ~ +125	
Storage Temperature	T_{STG}	-40 ~ +125	
Junction Temperature	T_J	150	

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Notes

1. 1/10 Duty cycle, 10ms pulse width. 10ms, 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 8000V ESD (HBM). ESD protection during products handing is needed. 90% LED ESD8000V ,

1.6 Bin Range Of Forward Voltage and Luminous Flux (IF=1000mA)

BIN (IF=1000mA)

Table 1-3

V_F	G1	H1	J1	/
	15.0-16.0	16.0-17.0	17.0-18.0	/
φ	EC	ED	EE	EF
	1600-1750	1750-1900	1900-2050	2050-2200

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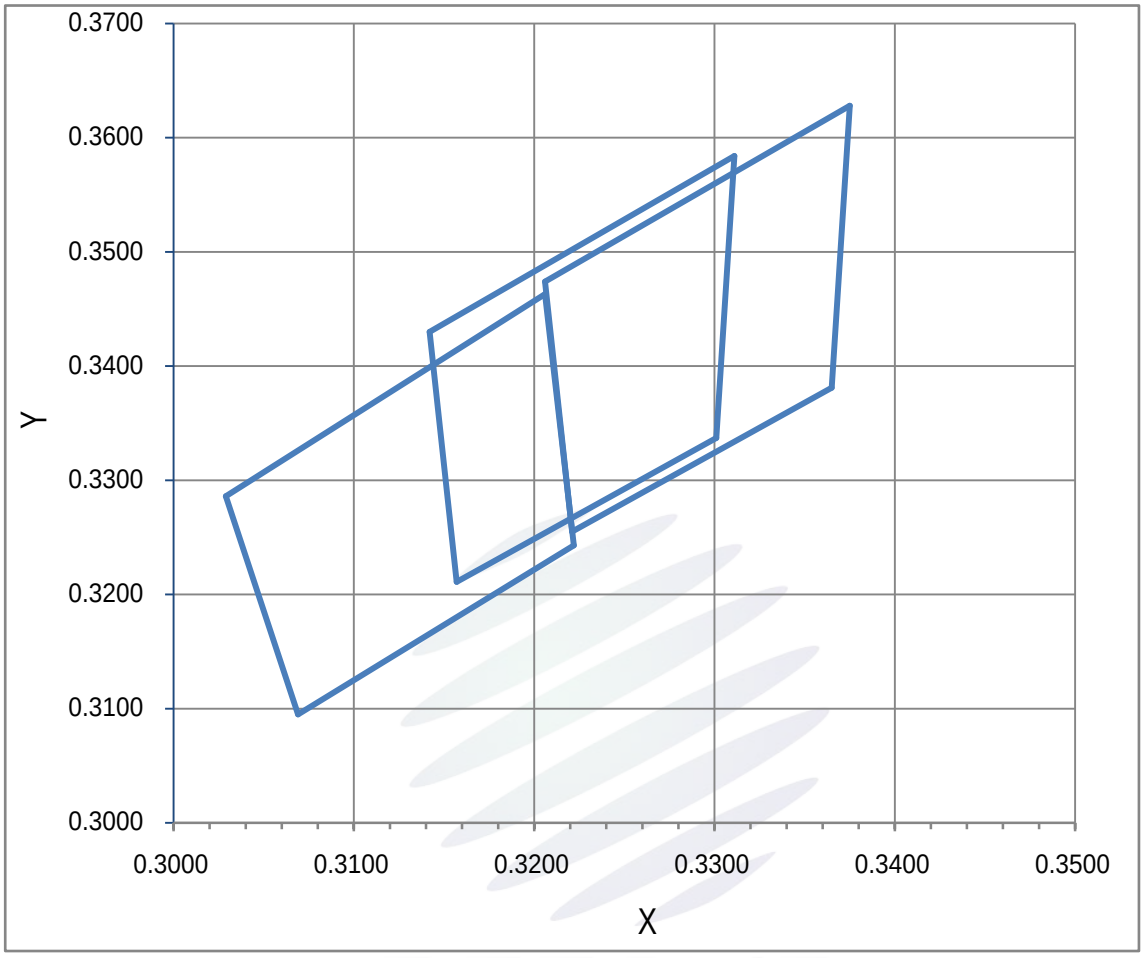

Fig. 1-6 The C.I.E Chromaticity Diagram CIE

Table 1-4

BIN CODE	CIE-X1	CIE-Y1	CIE-X2	CIE-Y2	CIE-X3	CIE-Y3	CIE-X4	CIE-Y4
57N	0.3221	0.3255	0.3206	0.3474	0.3375	0.3628	0.3365	0.3381
60N	0.3157	0.3211	0.3142	0.3430	0.3311	0.3584	0.3301	0.3337
65N	0.3029	0.3286	0.3206	0.3463	0.3222	0.3243	0.3069	0.3095

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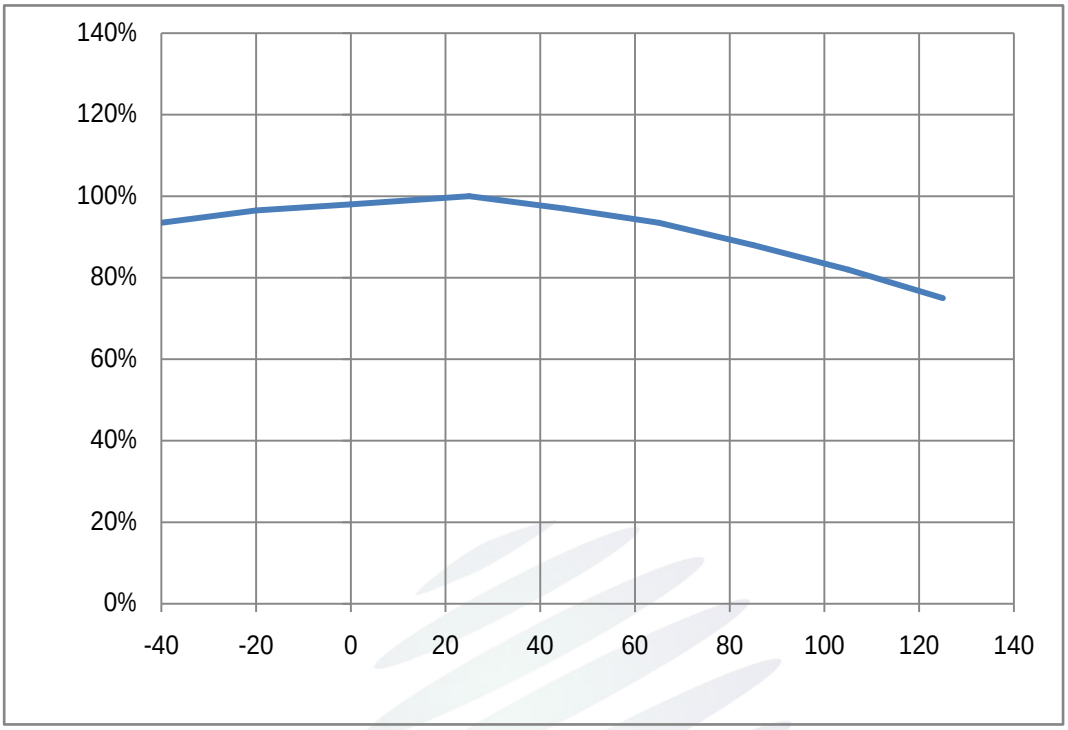

Fig. 1-9 Solder Temperature Vs Relative Intensity

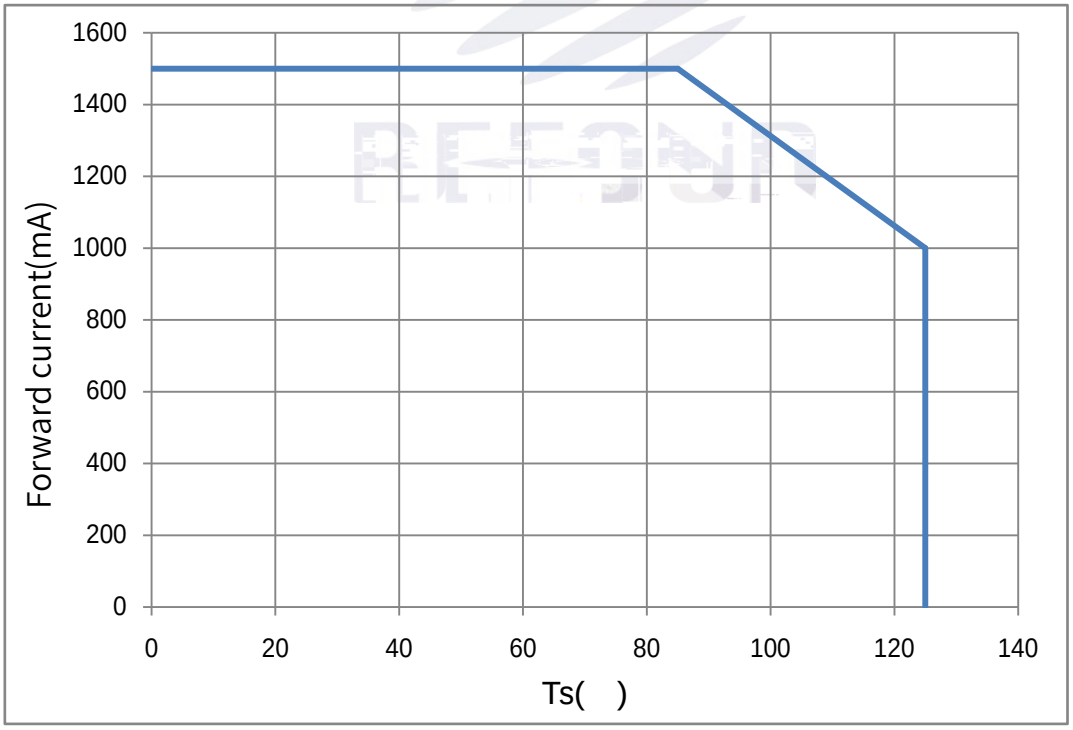

Fig. 1-10 Solder Temperature Vs Forward Current

Tj ≤ 150

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Fig. 1-11 Forward Voltage Vs Solder Temperature

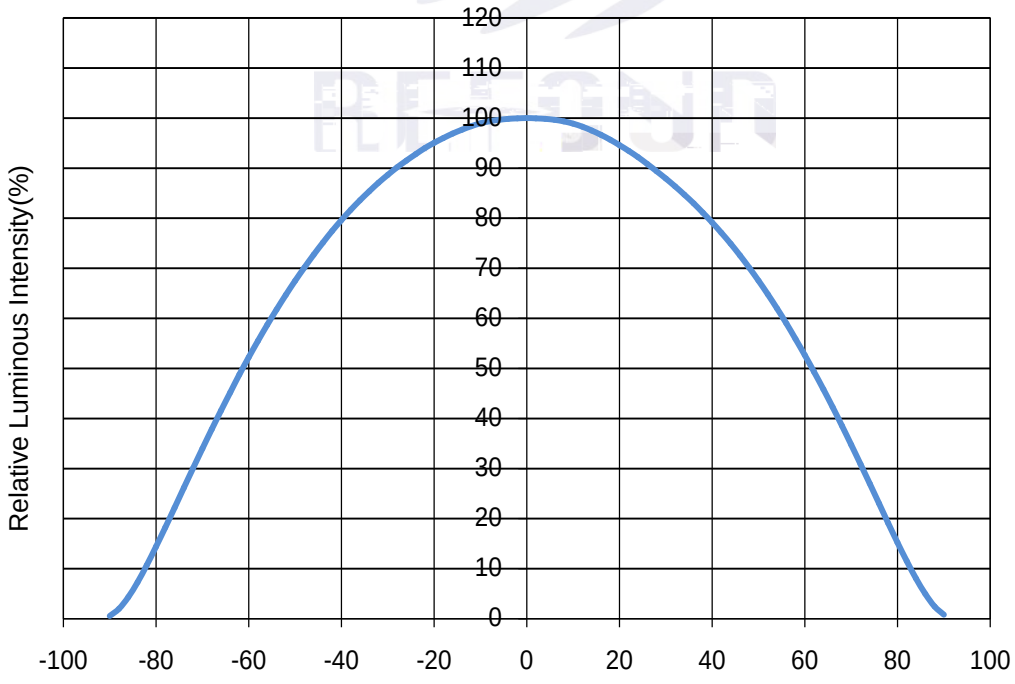

Fig. 1-12 Radiation diagram

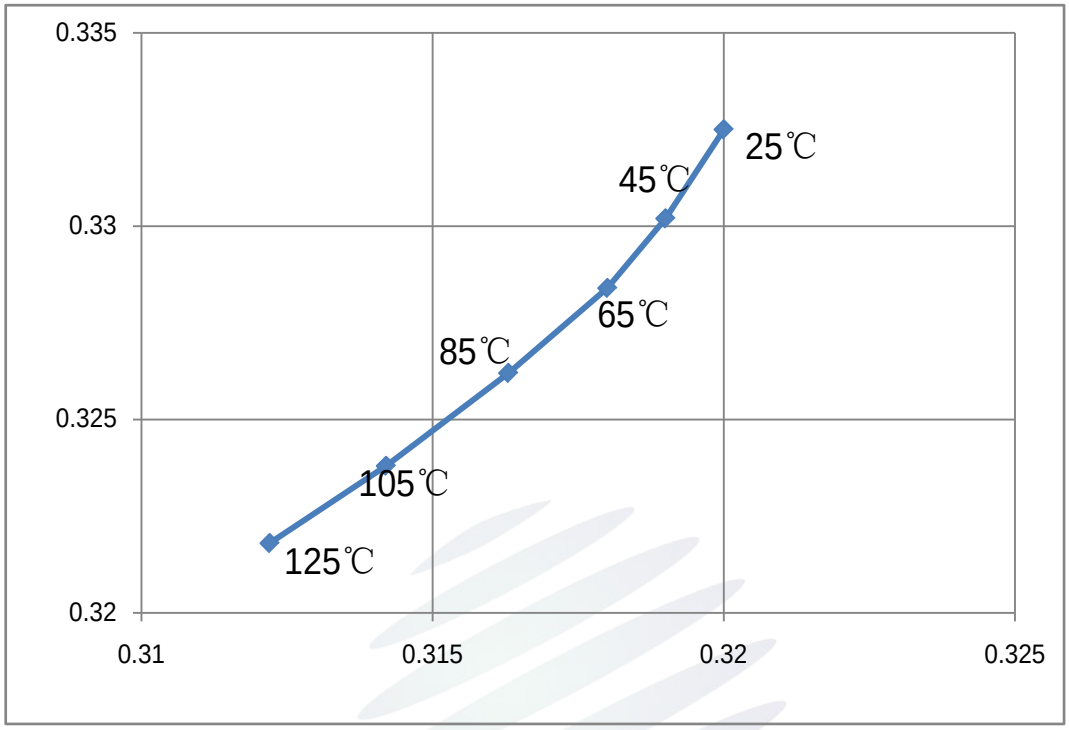

Fig. 1-13 Chromaticity Coordinate Vs Solder Temperature

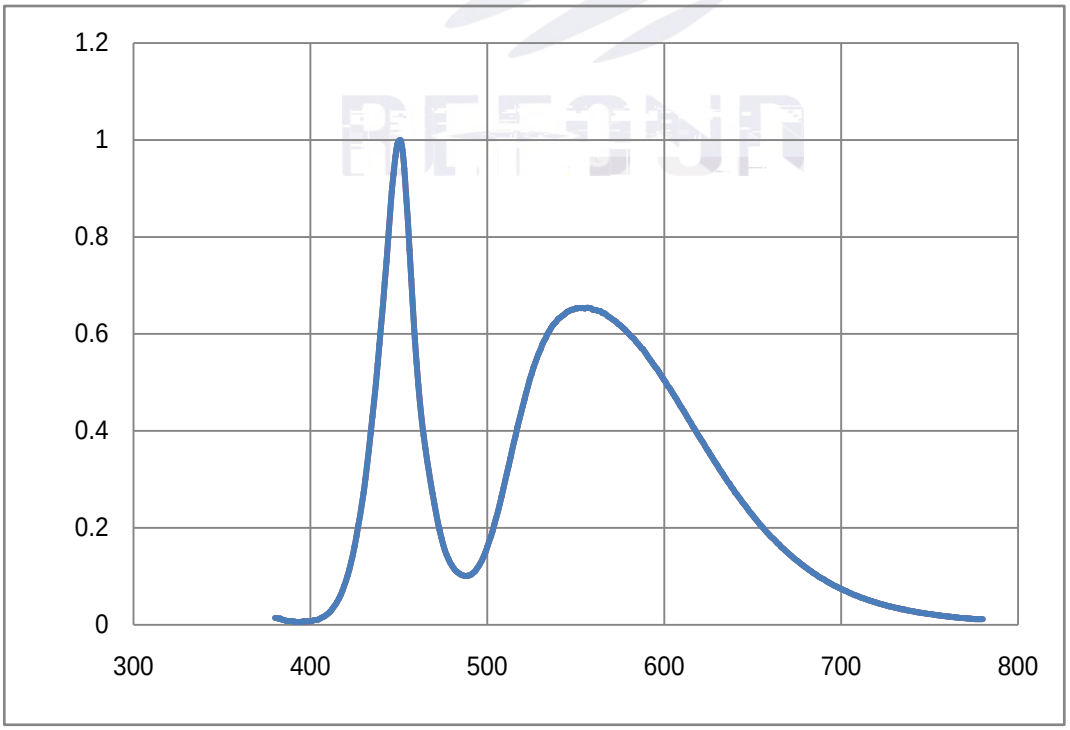

Fig. 1-14 Spectrum Distribution

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2. Packaging

2.1 Packaging Specification

Package: 4000pcs/reel. 4000pcs

2.1.1 Carrier Tape Dimension

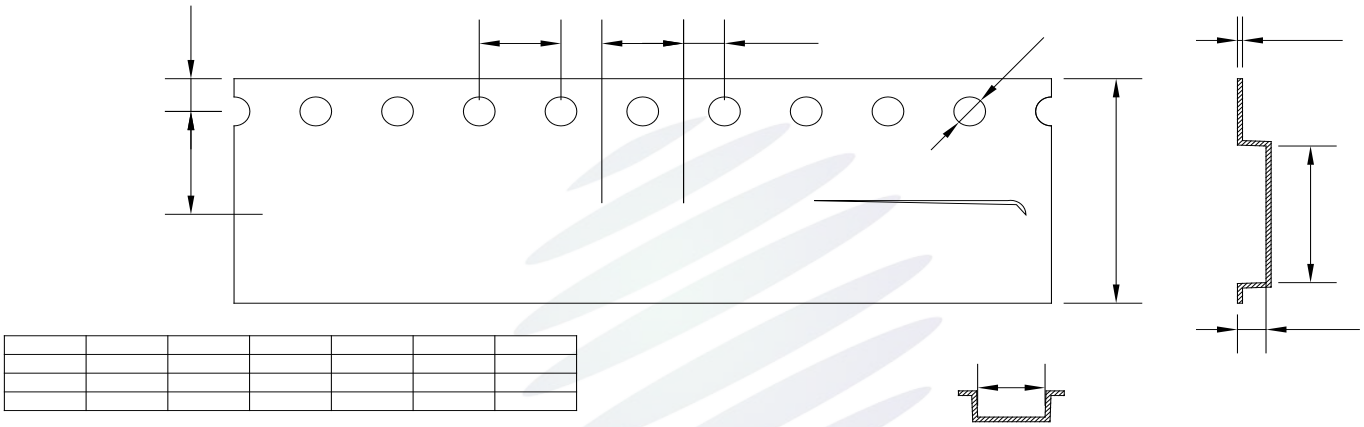

Fig.2-1 Carrier Tape Dimension

2.1.2 Reel Dimension

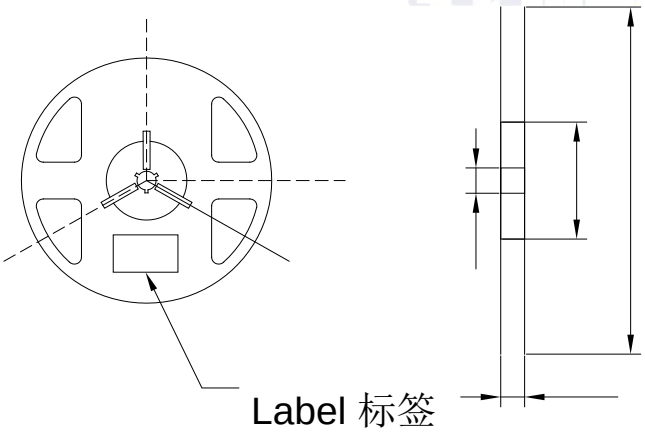

Fig.2-2 Reel Dimension

Table 2-1 Reel Dimension

A	13.6 ± 0.1mm
B	180 ± 1mm
C	100 ± 1mm
D	13.0 ± 0.5mm

Notes

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

Form Specification

Table 2-2 Specification

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
WLD	Wavelength
QTY	Packing Quantity
DATE	Made Date

2-3 Label Form Specification

ture Resistant Packing

Fig.2-4 Moisture Resistant Packing

board Box

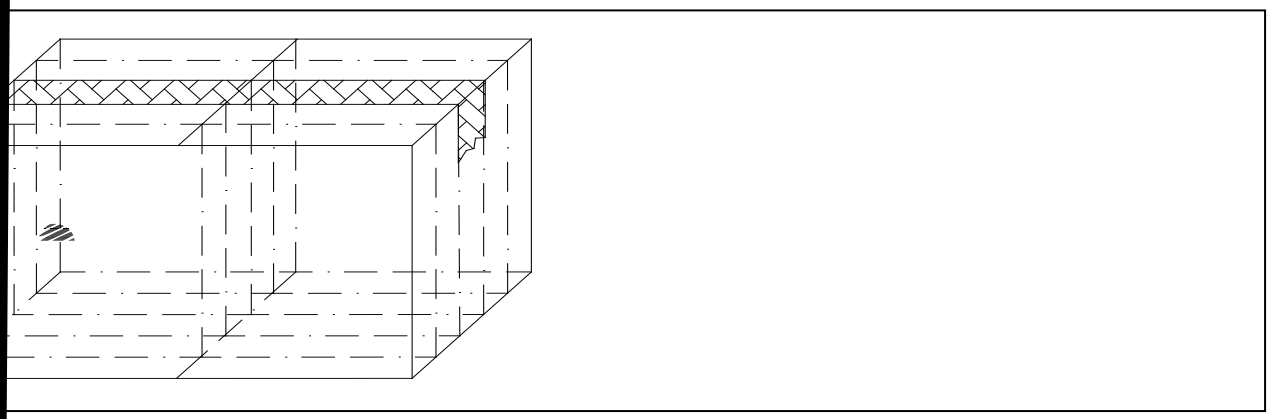

Fig.2- Cardboard Box

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	2times	20pcs.	0/1
MSL2 2	JESD22-A113	85 / 60%R_H	168 hrs.	20pcs.	0/1
Thermal Shock	JEITAED-4701 300307	-40 15min ↑↓10s 125 15min	1000 cycle	20pcs.	0/1
Life Test	JESD22-A108	Ta=105 I_F=1000mA	1000hrs.	20pcs.	0/1
High Temperature High Humidity Life Test	JESD22-A101	85 / 85%R_H I_F=1000mA	1000hrs.	20pcs.	0/1

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2.5 Criteria For Judging Damage

SMT Reflow Soldering Instructions SMT 回流焊说明

3.1 SMT Reflow Soldering Instructions SMT

Fig.3-1 SMT Reflow Soldering Instructions SMT

Table 3-1Reflow parameters 回流焊参数

Average temperature rise speed	Tsmax	T_P	3 °C/	Max 3 °C/ s

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 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

3.1.2 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 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.

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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.

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Fig 4-1 Cautions

(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, sili<B Îc$nâRa óƒ~ÒêÓzWäo7®WÄnba.8v† £âS Fâa&*óƒzå|F¢ 8v† –
H ~g´2? 'a1w\Ç,™´='³[œÅë e ~g#P^ÒcÒâ|@_ª='³¡wk=G ´2öÛ…a\äP0K Þg@—â|ôÀ†[k=D—&‹
-L,&'-…a\ä-k~gEó«Î)B‰v&vâ•pv5Á? '3Òd g™„8n…a\ä03•Jâ•? ð

Table 4-1Storage

Conditions		Temperature	Humidity	Time
Storage 储存	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.

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Version History/

Date	Revisor	Version	Verifier	Remarks
2022/05/10	周贤 Xian Zhou	E0	朱益明 Zhu Yiming	新发行 New issue
2023/09/28	Xian Zhou	E1	Zhu Yiming	Version update

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Declare

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

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