

SPECIFICATION



REFOND P/N

RF-A3H20-2W2F-E2

D&D

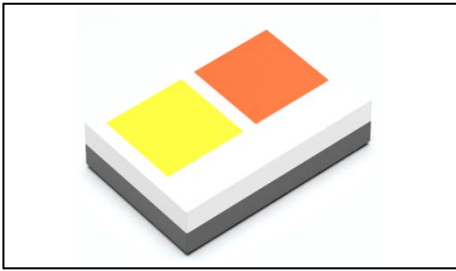
Mass Production

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1. Description

1.1 General Description



This product uses the ceramics package, it has a high reliability. it also be widely application for Automotive Exterior Lighting. Size(mm):2.0X1.6X0.8mm.

2.0X1.6X0.8mm

1.2 Features

Ceramic Package.

High Power Output and High Luminance.

Pb-free reflow soldering application.

Moisture sensitive level:Level2. Level 2

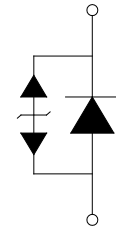
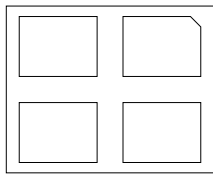
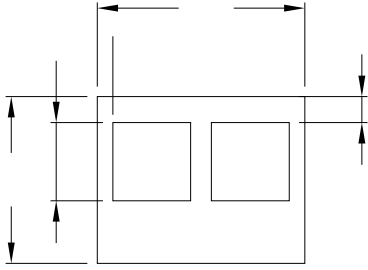
Compliance with RoHS and REACH. Da: E DEAC:

Qualifications: The product qualification test plan is based on the guidelines of AEC-Q102
Stress Test Qualification for Automotive Grade Discrete Semiconductors
AEC-C102

1.3 Application

Automotive Exterior Lighting, Daytime Running Lamp, Headlamp, Fog lamp.

1.4 Package Dimension



Notes

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

f 0.2

1.5 Product Parameters

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

Item	Symbol	Test Condition	White			Unit
			Min.	Typ	Max.	
Forward Voltage	V_F	$I_F=200mA$	2.8	---	3.4	V
Reverse Current	I_R	$V_R=5V$	---	---	10	μA
luminous flux ()		$I_F=200mA$	75	---	120	lm
Viewing Angle		$I_F=200mA$	---	120	---	deg
Color Rendering Index ()	R_a	$I_F=200mA$	---	---	---	---
Thermal Resistance.	R_{THJ-S}	$I_F=200mA$	---	---	8.2	/W

Item	Symbol	Test Condition	Amber			Unit
			Min.	Typ	Max.	
Forward Voltage	V_F	$I_F=200mA$	2.8	---	3.4	V
Reverse Current	I_R	$V_R=5V$	---	---	10	μA
luminous flux ()		$I_F=200mA$	50	---	90	lm
Viewing Angle		$I_F=200mA$	---	120	---	deg
Color Rendering Index ()	R_a	$I_F=200mA$	---	---	---	---
Thermal Resistance.	R_{THJ-S}	$I_F=200mA$	---	---	9	/W

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

Notes

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

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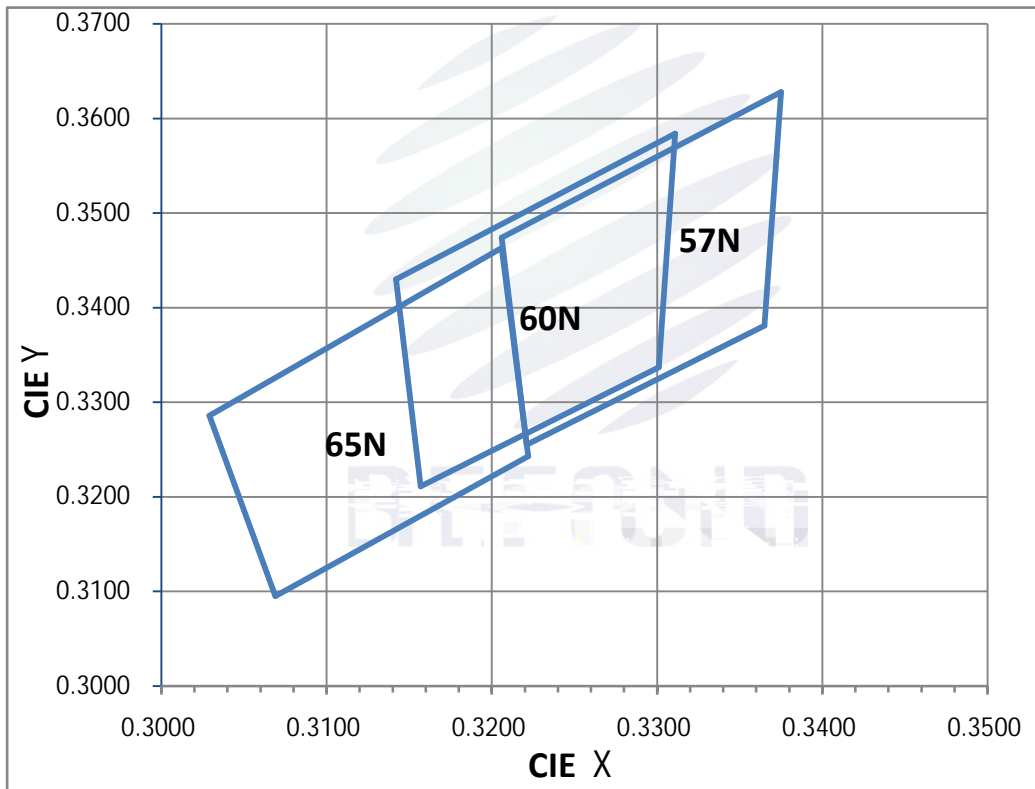
1.6 Bin Range Of Forward Voltage and Luminous Flux (IF=200mA)

BIN (IF=200mA)

Table 1-3

V_F		G0	H0	I0
		2.8-3.0	3.0-3.2	3.2-3.4
(lm)	White	AB	AC	AD
		75-90	90-105	105-120
	Amber	FI	AA	AB
		50-60	60-75	75-90

The Chromaticity Diagram



Bin data

BIN CODE	X1	Y1	X2	Y2	X3	Y3	X4	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



1.7 Typical optical characteristics curves

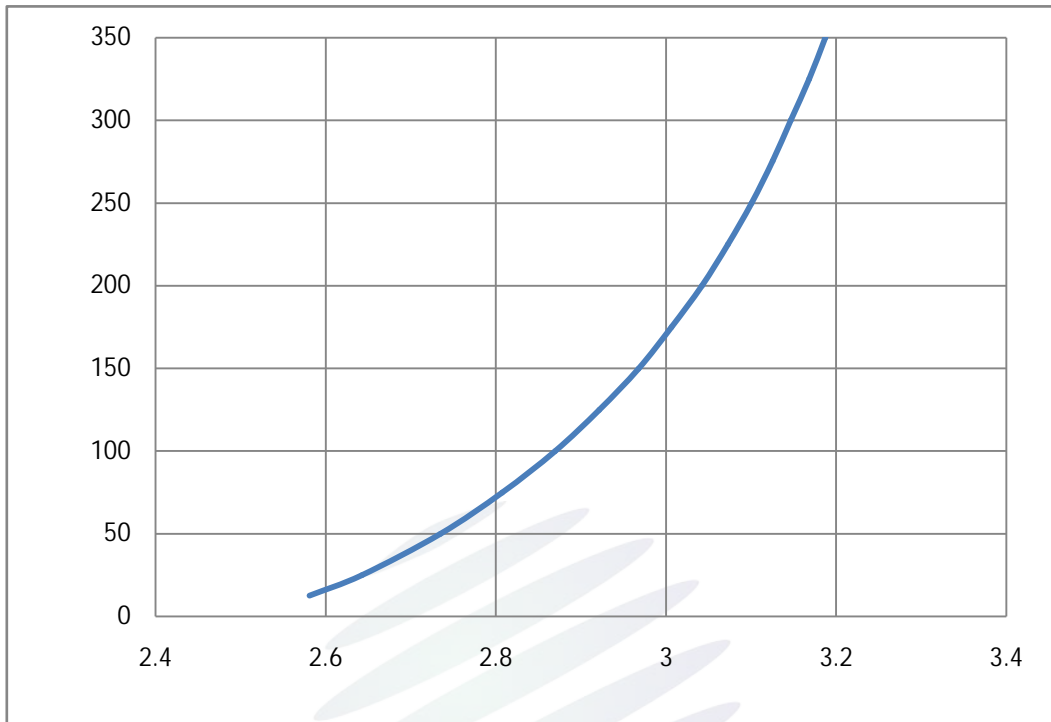


Fig 1-6 Forward Voltage Vs. Forward Current

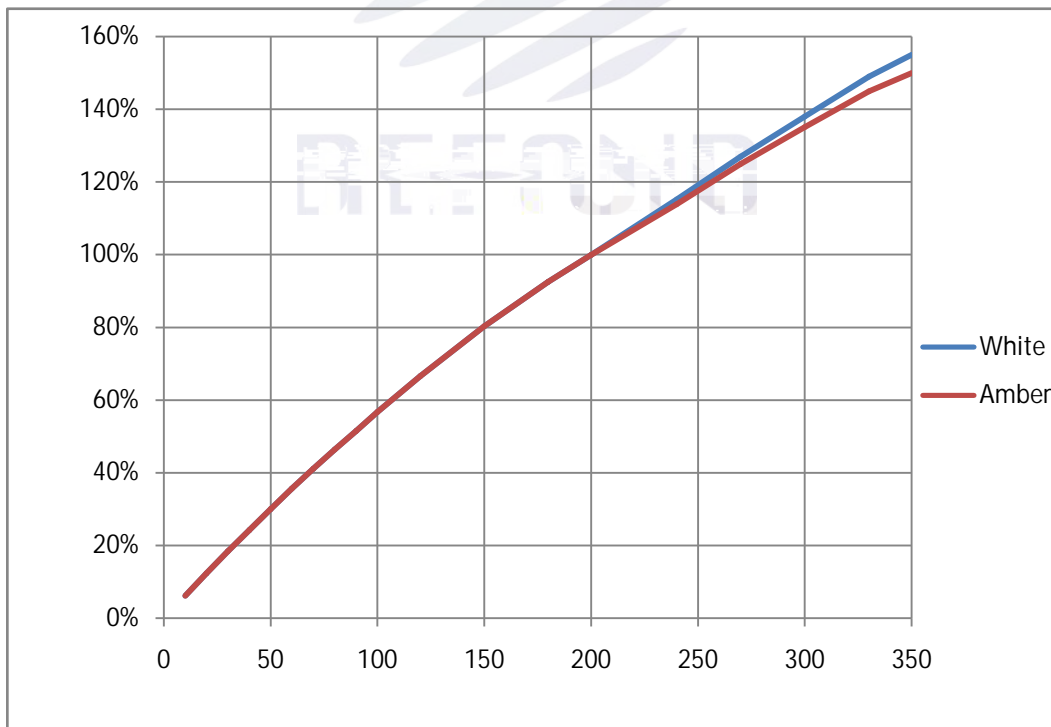


Fig 1-7 Forward Current Vs. Relative Intensity

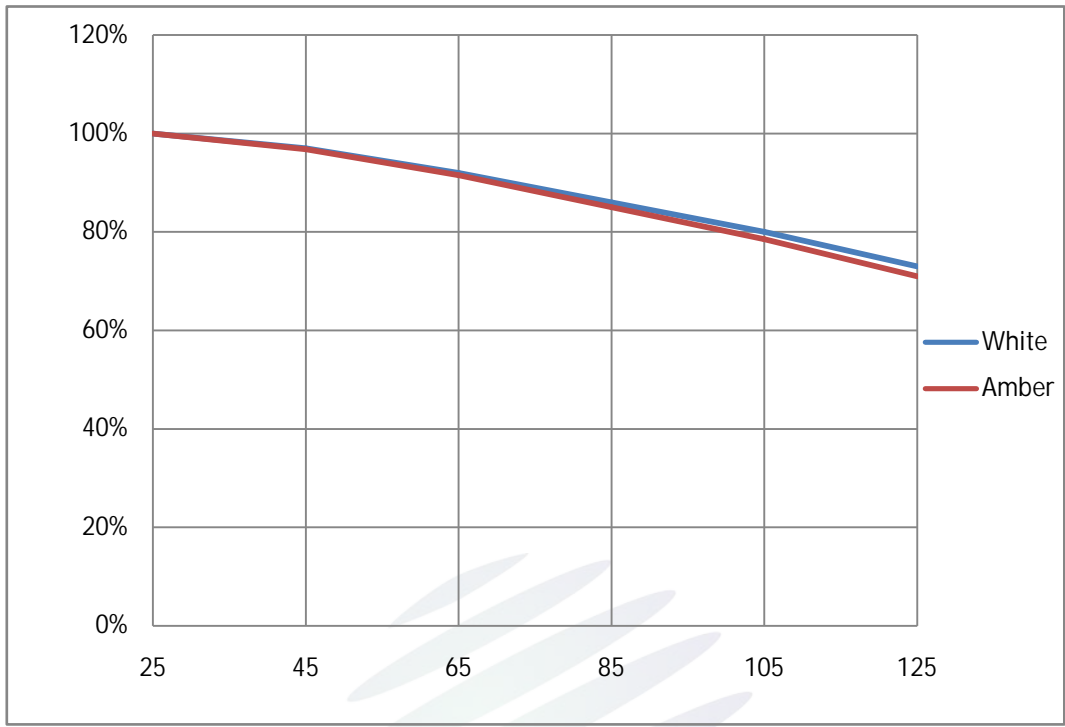


Fig 1-8 Ts Temperature Vs Relative Intensity

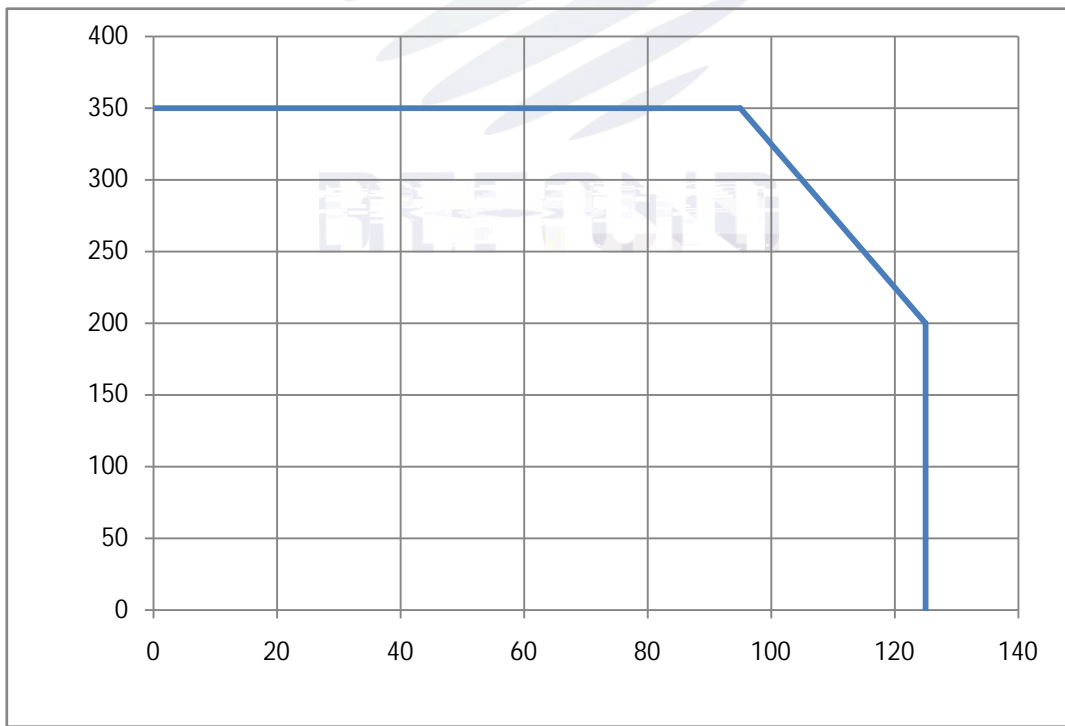


Fig 1-9 Ts Temperature Vs Forward Current

Tj 150

Fig. 1-10 Forward Voltage Vs Solder Temperature



Fig 1-11 Radiation diagram
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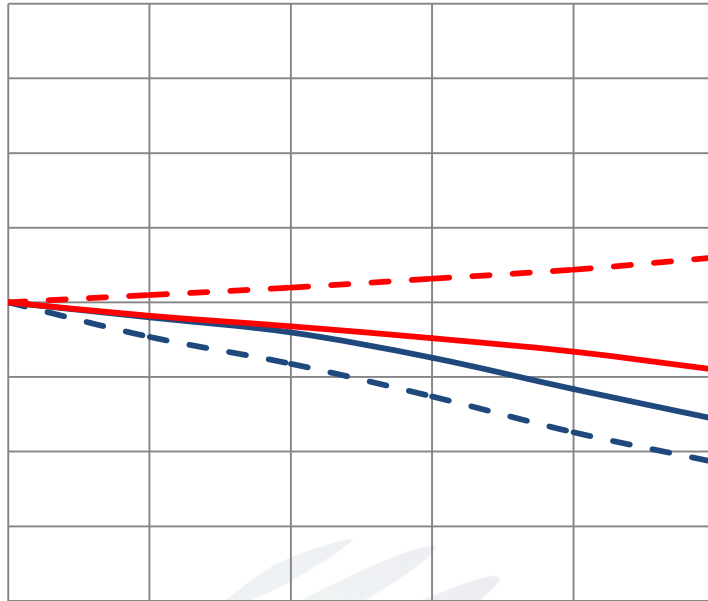


Fig. 1-12 Chromaticity Coordinate Vs Solder Temperature

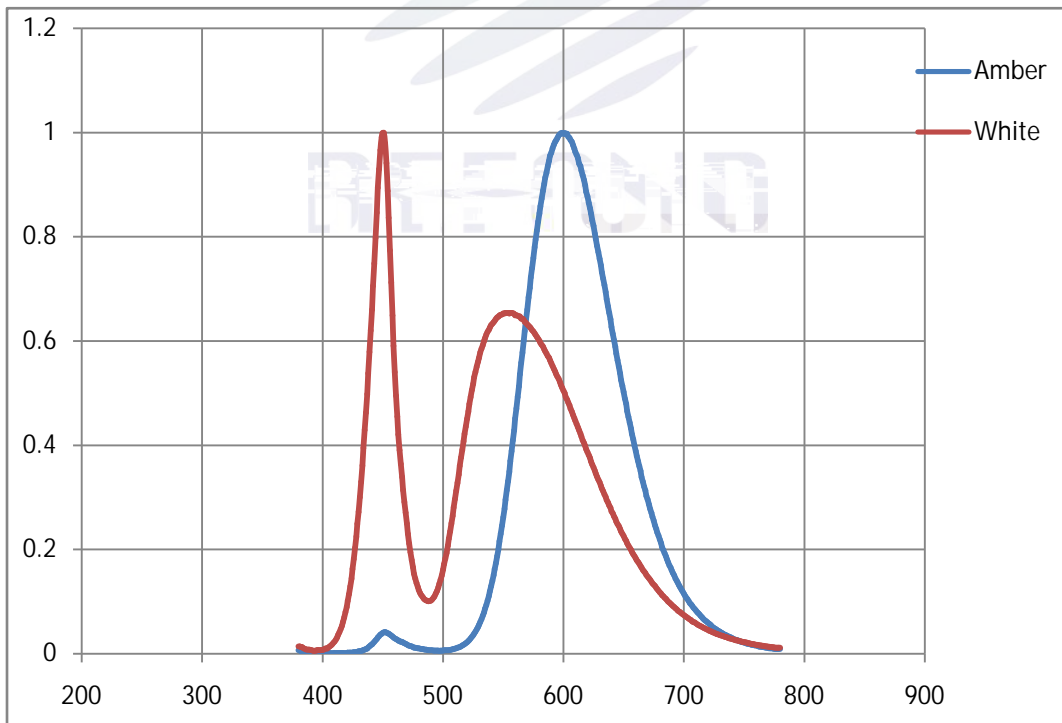


Fig 1-13 Spectrum Distribution

2. Packaging

2.1 Packaging Specification

Package: 4000pcs/reel. :4000bUe

2.1.1 Carrier Tape Dimension

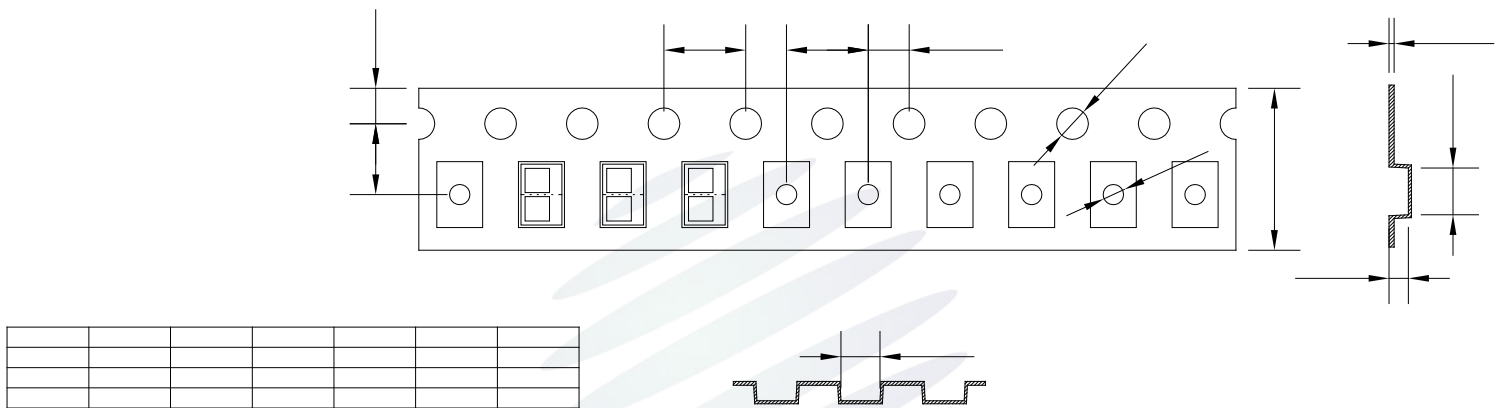


Fig.2-1 Carrier Tape Dimension

2.1.2 Reel Dimension

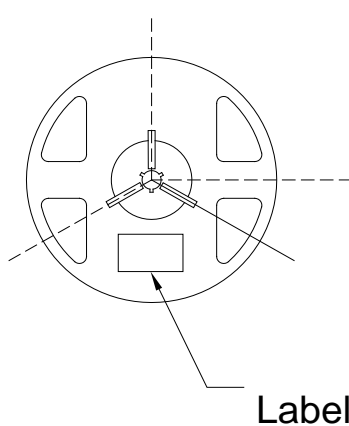


Fig.2-2 Reel Dimension

Table 2-1 Dimension

A	12 0.3mm
B	180±2mm
C	60.0±1mm
D	13.0±0.2mm

Notes

The tolerances unless mentioned ± 0.1 mm. Unit : mm

± 0.1

2.1.3 Label Form Specification

Table 2-2 Label Form Specification

PART NO	Part Number
SPEC NO	Spec Number
LOT NO	Lot Number
BIN CODE	Bin Code
	Luminous flux
X/Y	Chromaticity Bin
V _F	Forward Voltage
QTY	Packing Quantity
DATE	Made Date

Fig 2-3 Label Form Specification

2.2 Moisture Resistant Packing

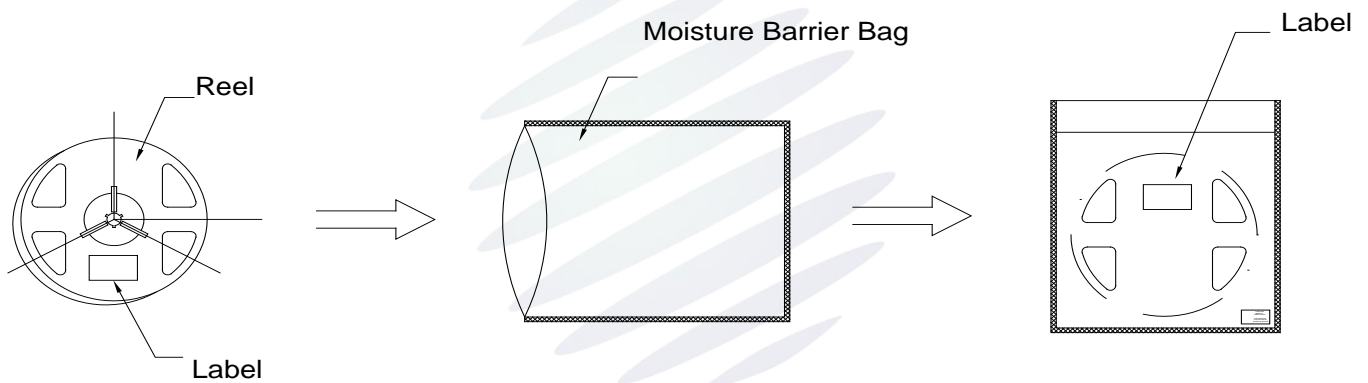


Fig.2- Moisture Resistant Packing

2.3 Cardboard Box

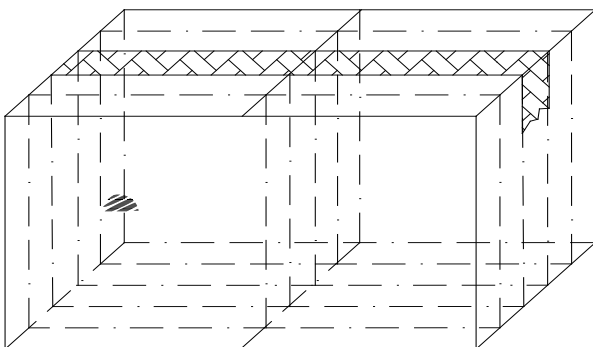


Fig.2-5 Cardboard Box

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	2times	20pcs.	0/1
MSL2 2	JESD22-A113	85 / 60%RH	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=125 If=200mA	1000hrs.	20pcs.	0/1
High Temperature High Humidity Life Test	JESD22-A101	85 / 85%RH If=200mA	1000hrs.	20pcs.	0/1

2.5 Criteria For Judging Damage

Table Criteria For Judging Damage

Test Items	Symbol	Test Condition	Criteria For Judgement	
			Min.	Max.
Forward Voltage	V_F	$I_F=200\text{mA}$	-	U.S.L*)x1.1
Reverse Current	I_R	$V_R = 5\text{V}$	-	U.S.L*)x2.0
Luminous Flux		$I_F=200\text{mA}$	L.S.L*)x0.7	-

Notes

- U.S.L: Upper standard level L.S.L: Lower standard level
- 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. / >ED
>ED
- The $t_{e7}/Sp00073$ 0 T.Tc -0.001 Tw 0.273 0 Td (and)Tj 0 Tc 0 Tw 1 0 T<ea Tc 0.011 Tw Tw

3. SMT Reflow Soldering Instructions SMT

3.1 SMT Reflow Soldering Instructions SMT

Fig.3-1 SMT Reflow Soldering Instructions SMT

Table 3-1 SMT Reflow Soldering Instructions SMT

Average temperature rise speed	T _{max}	T _P	3 °C/	Max 3 °C/ s
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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

>ED

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

3.1.1 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

>ED

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 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 >ED

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

(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

(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.

>ED

100BB? .

(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.

>ED

>ED

900BB?

900BB?

1500BB? .

(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 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.

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(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.

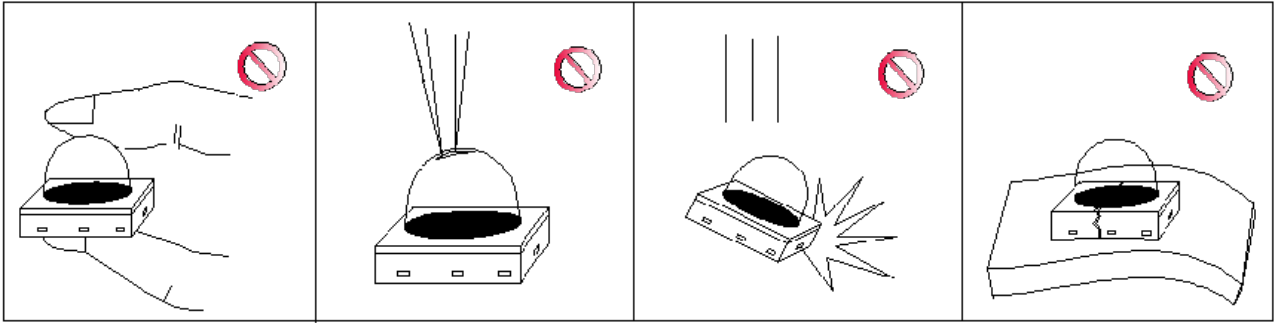


Fig 4-



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%	168hours 168
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

f 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). >ED

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



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Declare

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