SPECIFICATION

REFOND P/N

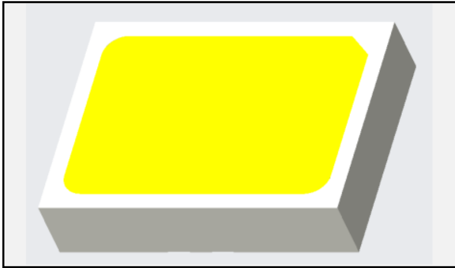
RF-A3E27-W57H-B2

R&D

Mass Production

1. Description

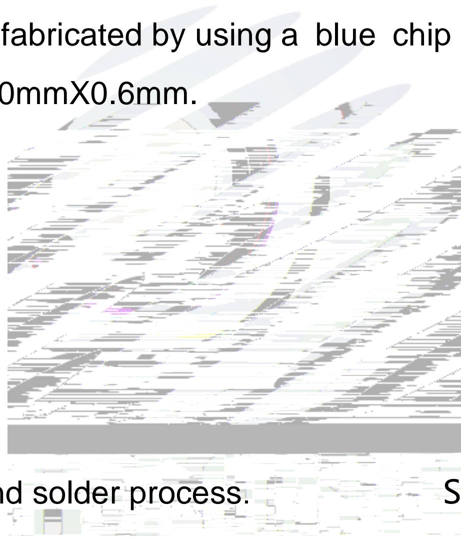
1.1



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

Product Package:2.75mmX2.0mmX0.6mm.

LED 2.75mmX2.0mmX0.6mm



1.2Features

►EMC Package.EMC

►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.满足RoHS要求

►Qualifications: The product qualification test plan is based on the guidelines of AEC-Q102Stress Test Qualification for Automotive Grade Discrete Semiconductors

AEC-Q102

1.3Application

►Automotive Lighting Interior and Exterior.

1.4Package Dimension

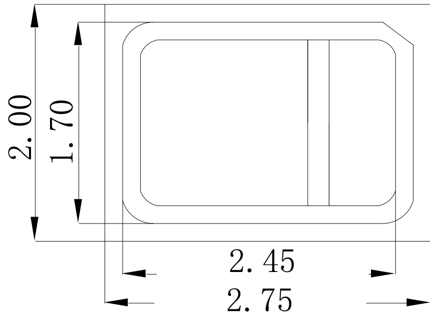


Fig.1-1 Top View

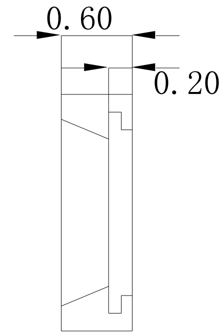


Fig.1-2SideView

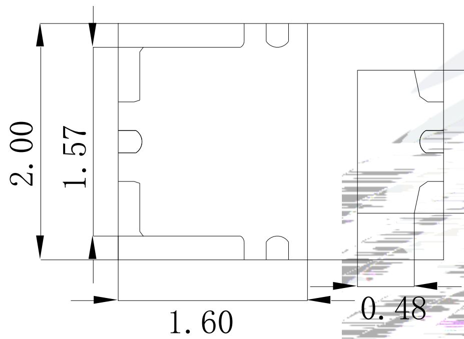


Fig.1-3BottomView

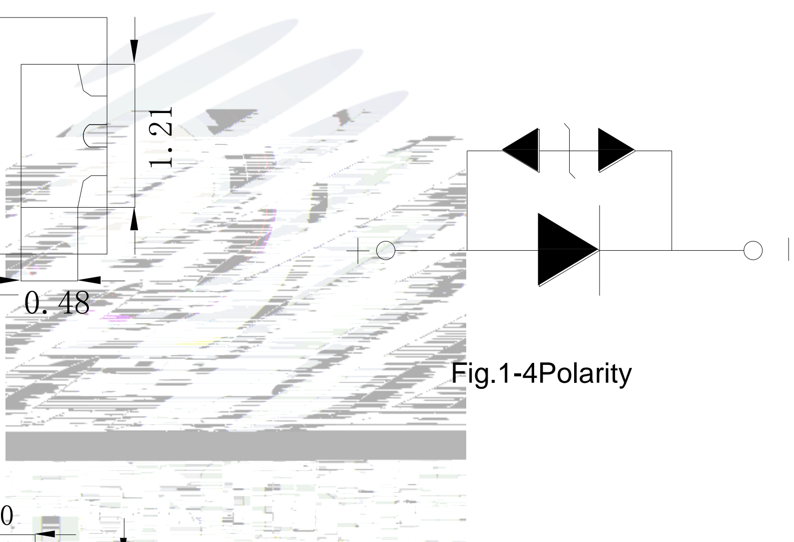


Fig.1-4Polarity

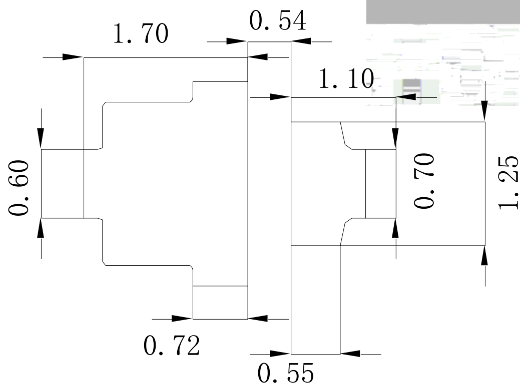


Fig.1-5Soldering Patterns

Notes

1. All dimensions units are millimeters.

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

1.5Product 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=350mA	2.8	---	3.4	V
Reverse Current	I_R	V_R=5V	Not designed for reverse operation			uA
Luminous Flux	Φ	I_F=350mA	93.2	---	144	lm
Viewing Angle	2θ1/2	I_F=350mA	---	120	---	deg
Thermal Resistance.	R_{THJ-S}	I_F=350mA	---	20	---	K/W

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

Parameter	Symbol	Rating	Units
Power Dissipation	P_D	1700	mW
Forward Current	I_F	500	mA
Peak Forward Current	I_{FP}	700	mA
Reverse Voltage	V_R	Not designed for reverse operation	V
Electrostatic Discharge (HBM)	E_{SD}	8000	V
Operating Temperature	T_{OPR}	-40 ~ +105	℃
Storage Temperature	T_{OPR}	-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.

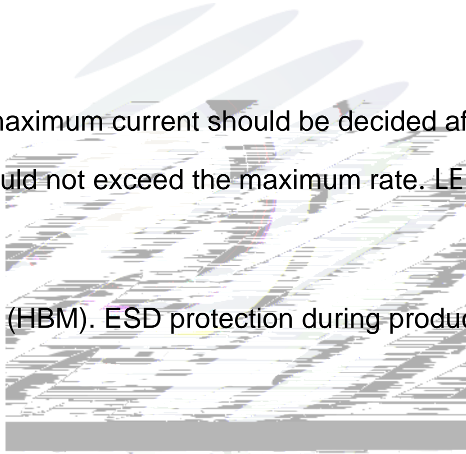
3. The above color coordinates measurement allowance tolerance is ±0.005. ± 0.005.

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 8000V ESD (HBM). ESD protection during products handing is needed. 90% LED ESD8000V ,

1.6 Bin Range Of Forward Voltage and Luminous Flux (IF= 350mA)

BIN (IF=350mA)

Table 1-3

V_F（V）	G1	G2	H1	H2	I1	I2
	2.8-2.9	2.9-3.0	3.0-3.1	3.1-3.2	3.2-3.3	3.3-3.4
φ（lm）	RA	SA	SB	TA		
	93.2-105	105-117	117-130	130-144		

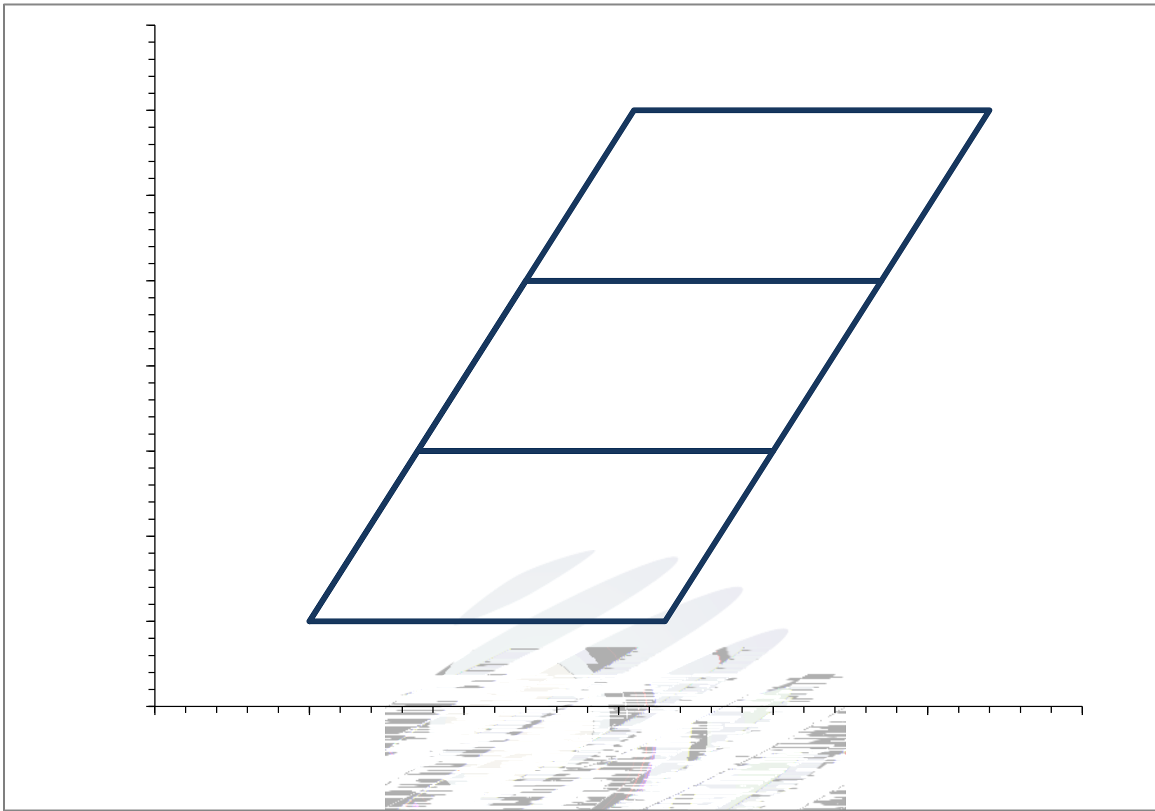


Fig. 1-6 The C.I.E Chromaticity Diagram CIE

Table 1-4

BIN CODE	CIE-X1	CIE-Y1	CIE-X2	CIE-Y2	CIE-X3	CIE-Y3	CIE-X4	CIE-Y4
	0.3150	0.3300	0.3185	0.3400	0.3300	0.3400	0.3265	0.3300
	0.3185	0.3400	0.3220	0.3500	0.3335	0.3500	0.3300	0.3400
	0.3220	0.3500	0.3255	0.3600	0.3370	0.3600	0.3335	0.3500

1.7 Typical Optical Characteristics Curves

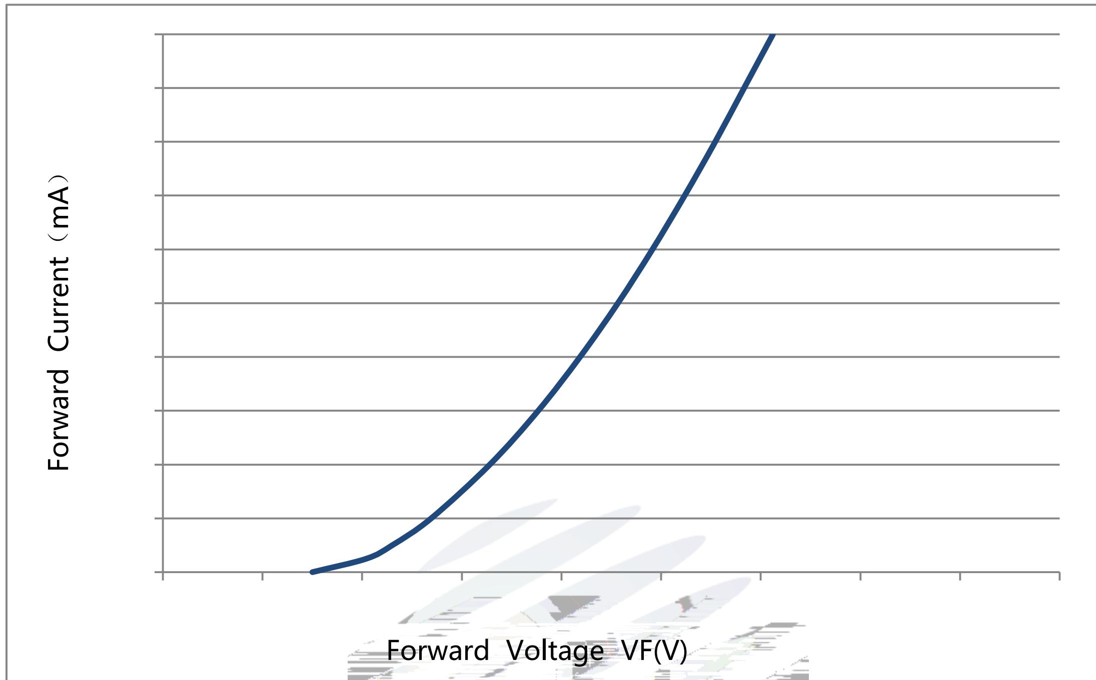


Fig. 1-7 Forward Voltage Vs Forward Current

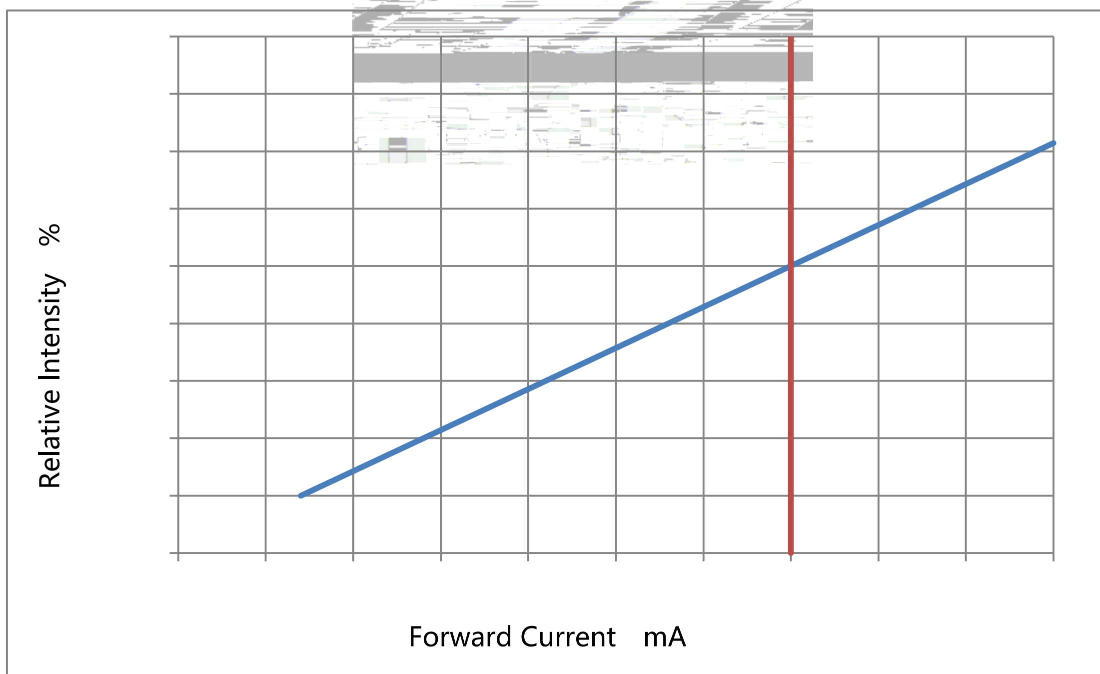


Fig. 1-8 Forward Current Vs Relative Intensity

Fig. 1-9 Solder Temperature Vs Relative Intensity

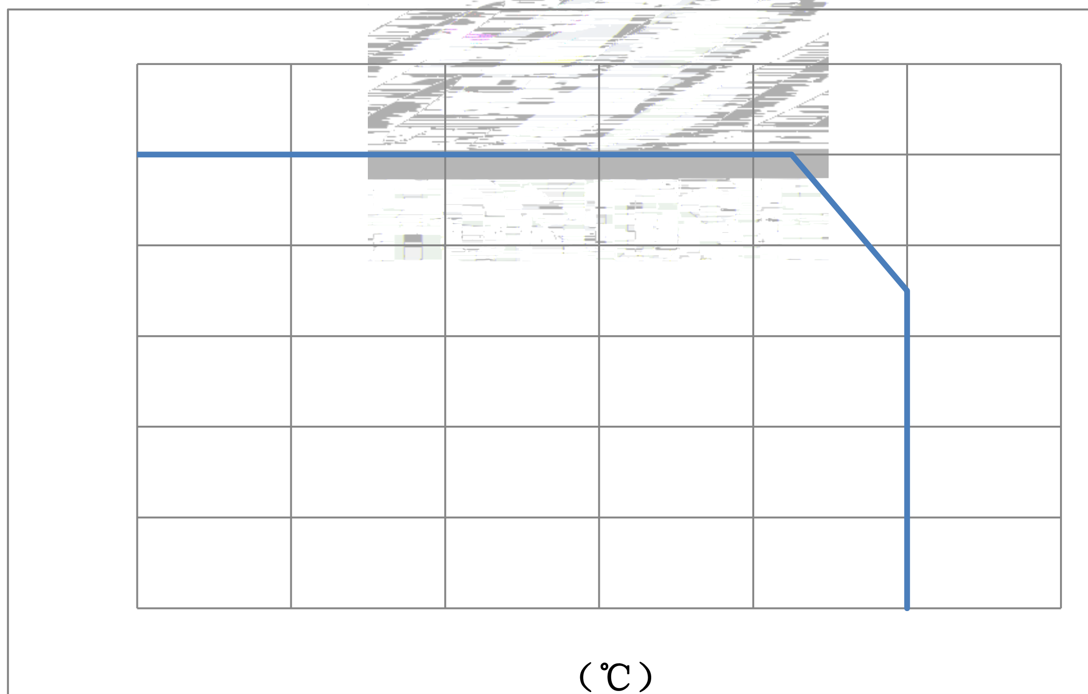


Fig. 1-10 Solder Temperature Vs Forward Current

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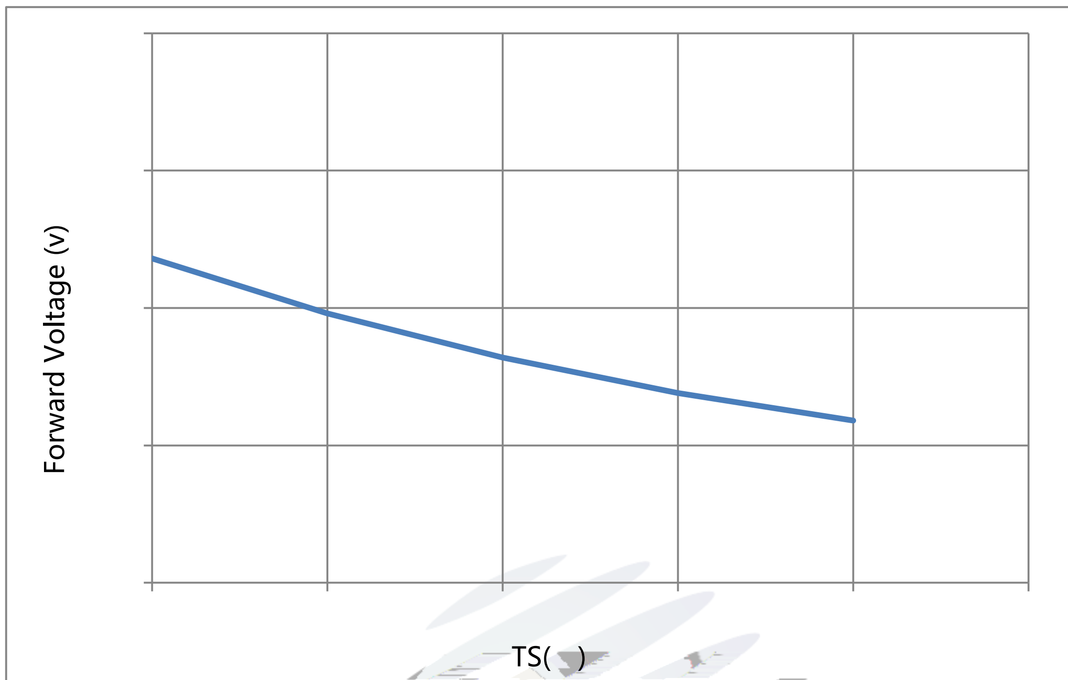


Fig. 1-11 Forward Voltage Vs Solder Temperature

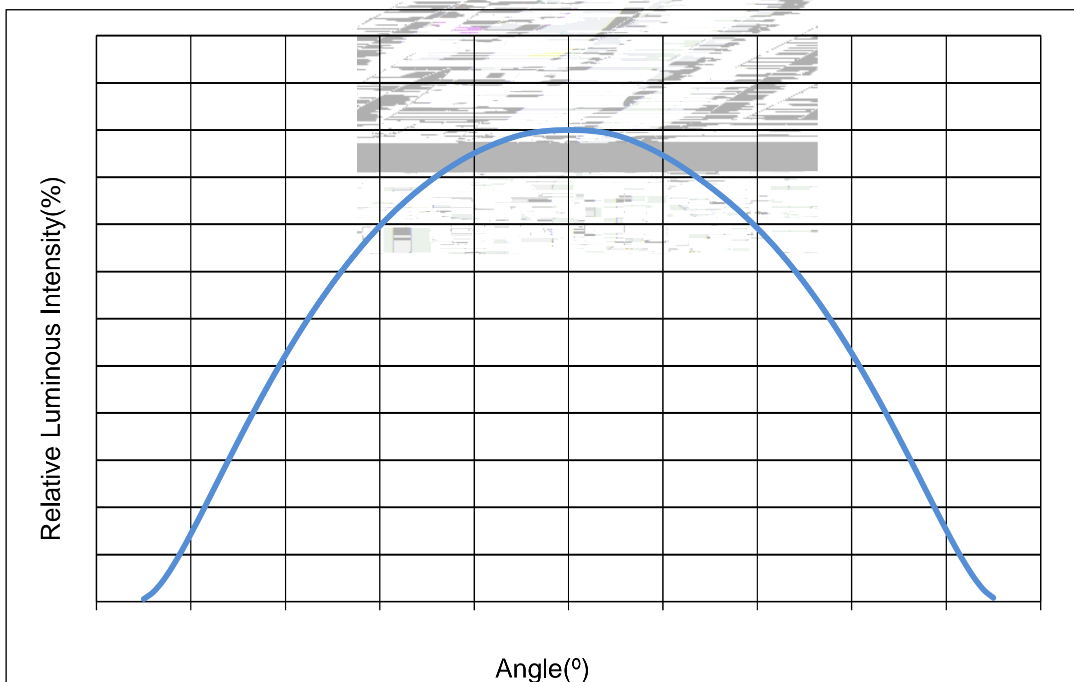


Fig. 1-12 Radiation diagram

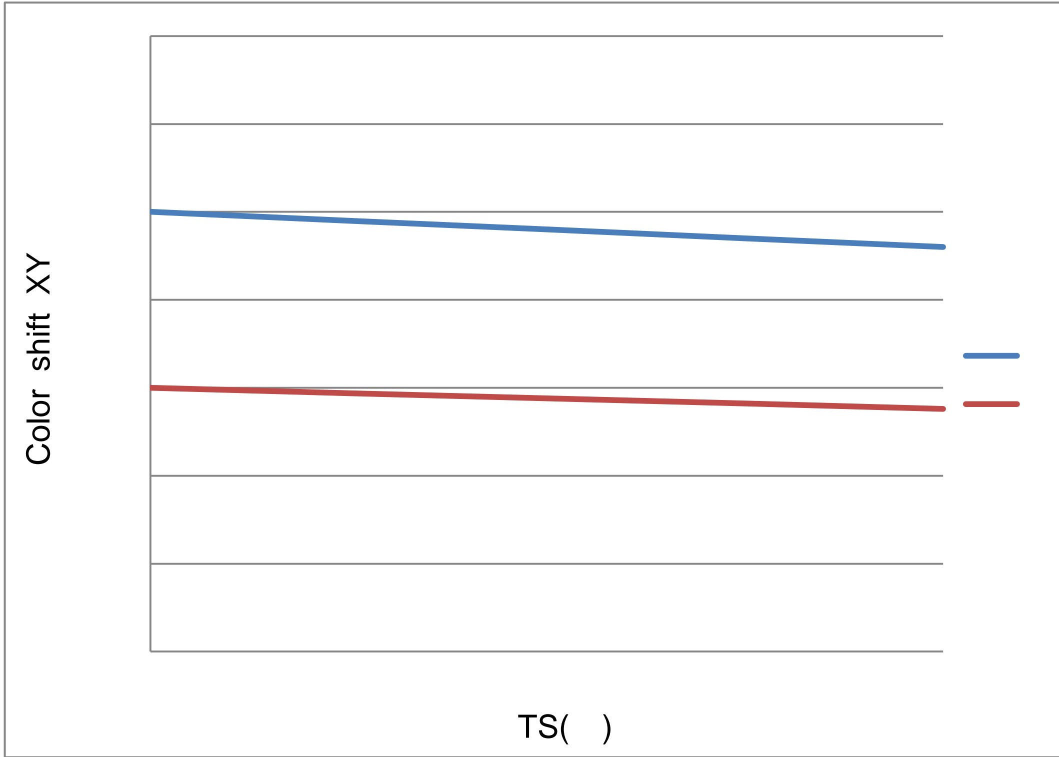


Fig. 1-13 Chromaticity Coordinate Vs Solder Temperature

0.6

Fig. Spe Distr n

2.1.3Label Form Specification

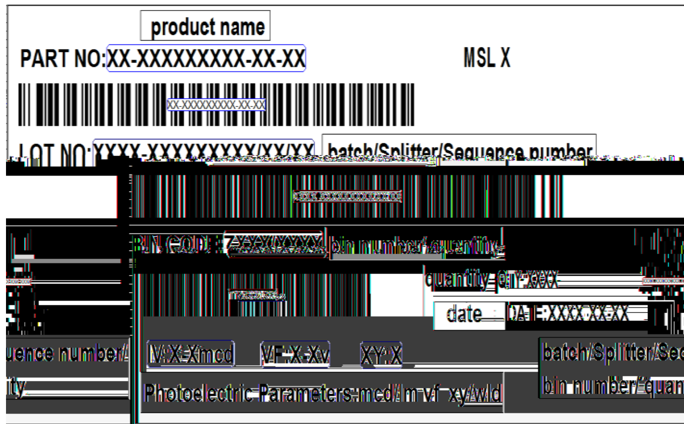


Fig. 2-3 Label Form Specification

able 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

2.2Moisture Resistant Packing

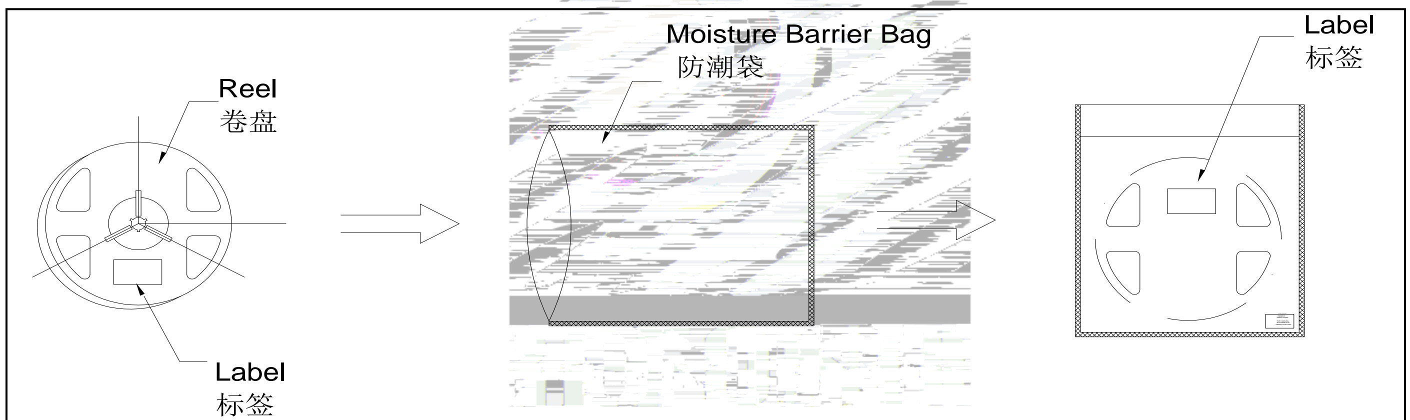


Fig.2-4Moisture Resistant Packing

2.3Cardboard Box

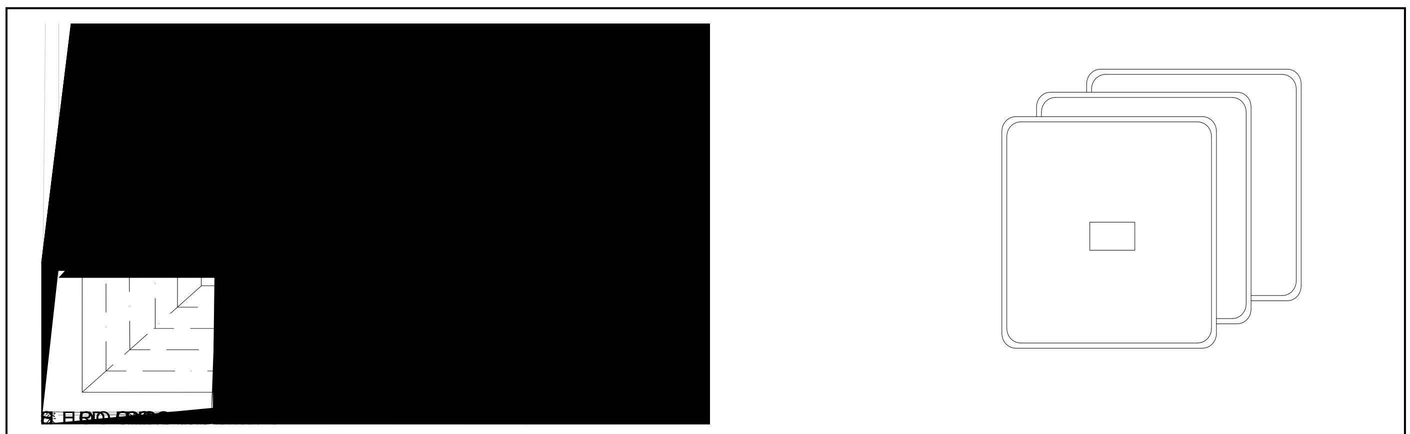


Fig.2-5Cardboard Box

2.4Reliability Test Items And Conditions

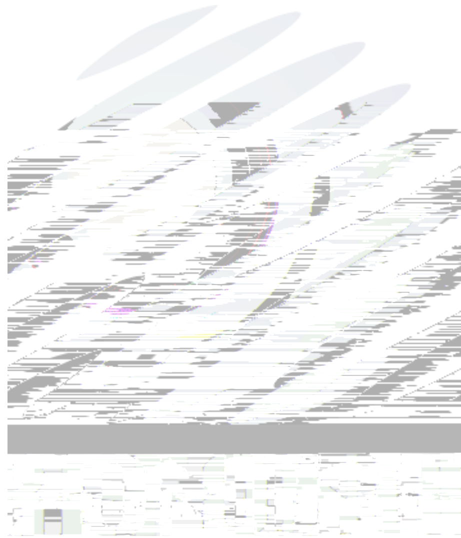
Table 2-3 Reliability Test Items And Conditions

Test Items	Ref.Standard	Test Condition	Time	Quantity	Ac/Re /
Reflow	JESD22-B106	Temp:260 max T=10 sec	2times	20pcs.	0/1
Thermal Shock	JEITAED-4701 300307	-40 15min ↑↓10s 125 15min	1000 cycle	20pcs.	0/1
High Temperature Storage	JEITAED-4701 200 201	Temp:125	1000hrs.	20pcs.	0/1
Low Temperature Storage	JEITA ED-4701 200 202	Temp:-40	1000hrs.	20pcs.	0/1
Life Test	JESD22-A108	Ta=25 I_F=350mA	1000hrs.	20pcs.	0/1
High Temperature High Humidity Life Test	JESD22-A101	85 / 85%R_H I_F=350mA	1000hrs.	20pcs.	0/1
Temperature Humidity Storage	JEITA ED-4701 100 103	T_A=85 R_H=85%	1000hrs.	20pcs.	0/1

2.5 Criteria For Judging Damage

Table 2-4Criteria For Judging Damage

Test Items	Symbol	Test Condition	Criteria For Judgement	
			Min.	Max.
Forward Voltage	V_F	I_F=350mA	-	U.S.L*)x1.1
Reverse Current	I_R	V_R = 5 q374.23		



3. SMT Reflow Soldering Instructions SMT

3.1SMT Reflow Soldering Instructions SMT

Fig.3-1SMT Reflow Soldering Instructions SMT

Tab71 Tm Tm-

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

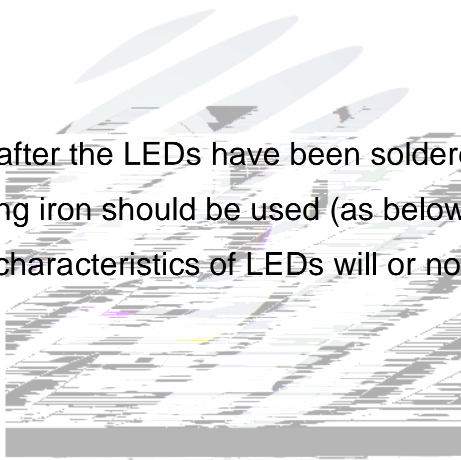
(2)When soldering , do not put stress on the LEDs during heating.

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 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

3.1.3 Cautions

(1) 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 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

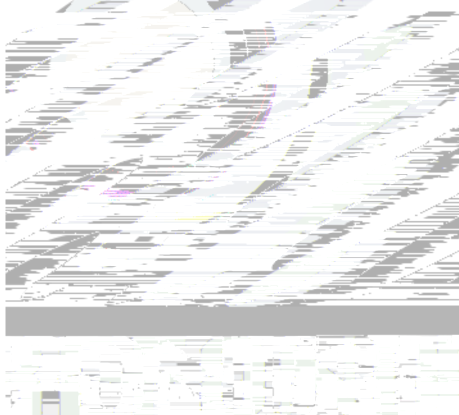
(3) Do not apply mechanical force or excess vibration during the cooling process to normal temperature after soldering. Do not rapidly cool device after soldering.

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 and Chlorine element in the external materials of the application products is required to be less than 1500PPM. This is



(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.

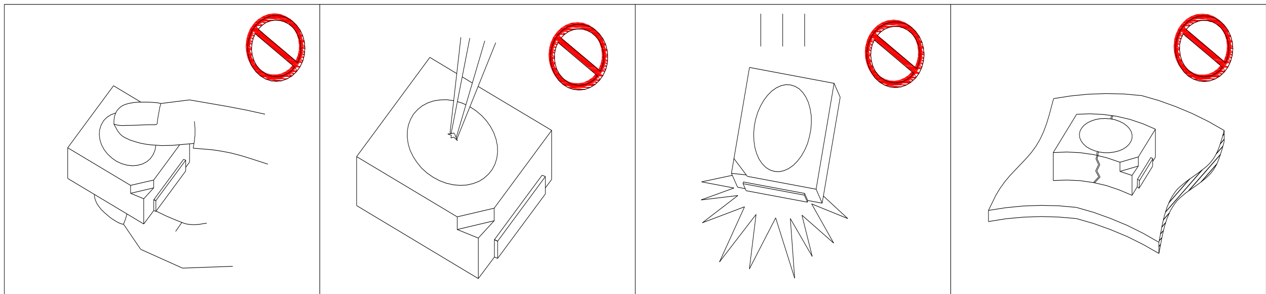
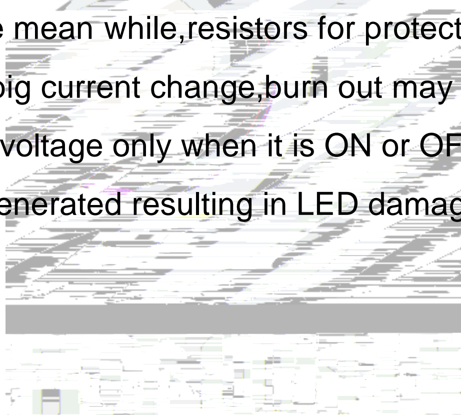


Fig 4-1Cautions

(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,other wise 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 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（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.

Version History/

Date	Revisor	Version	Verifier	Remarks
2020/11/02	周贤	E0	朱益明	新发行

www.refond.com

Declare

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