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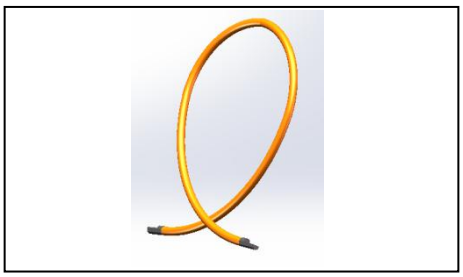
# 1. Description

## 1.1



TheWhiteLED whichwas fabricatedusing abluechipandthephosphor

LED .

## 1.2Features

IntegratedPackage.

360 ° Full Angle Luminescence.360°

Suitable for spot welding process.

Moisture sensitivity level: Level 5. Level 5

RoHS compliant. RoHS

Product size:Length* width*thick 300mmX1.7mmX1.9mm

## 1.3 Application

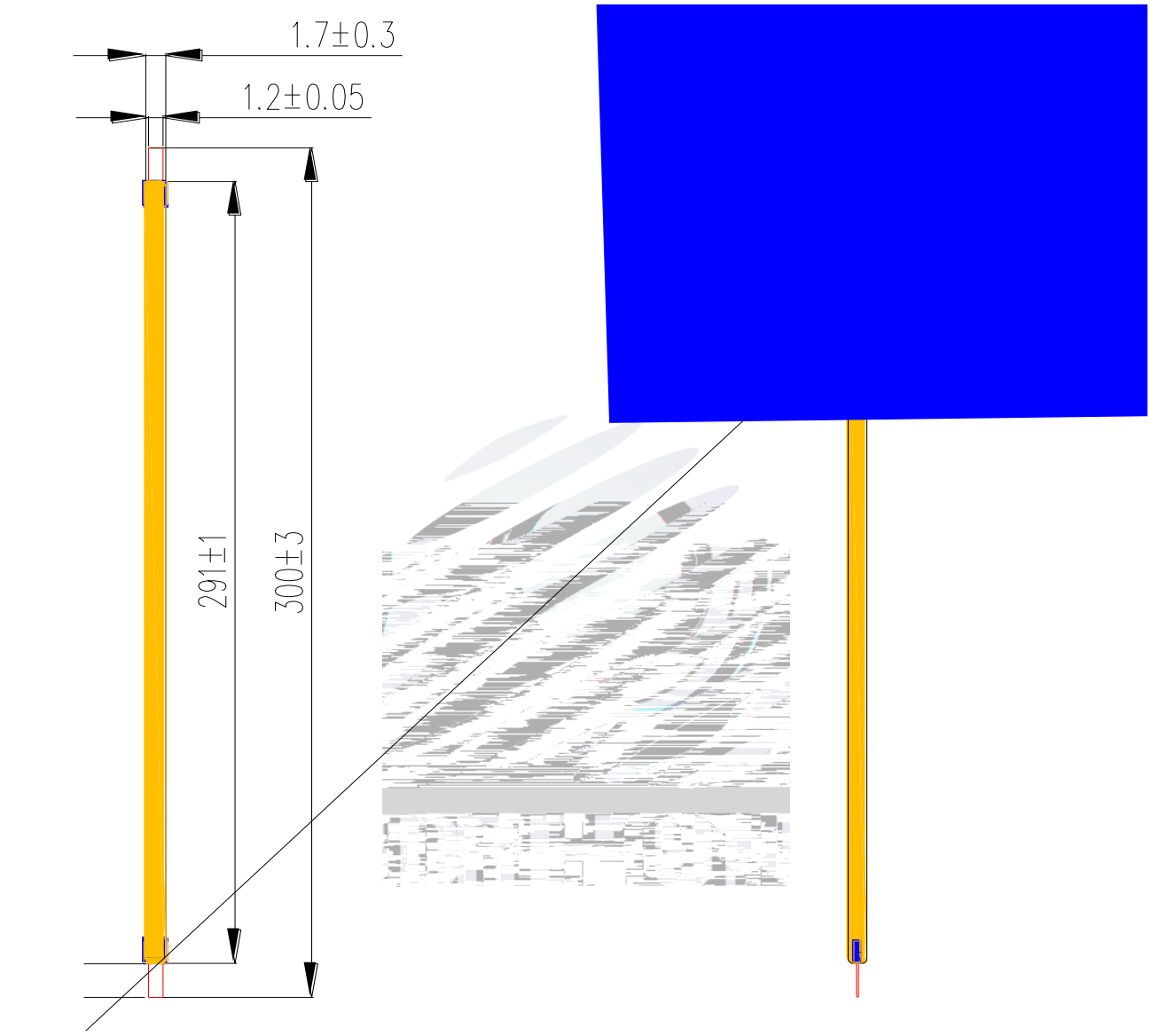
Decorative applications.

Other indoor lighting.

## 1.4 Package Dimension

Fig.1-1 Top view

Fig.1-2Bottom view




Notes

1. All dimensions units are millimeters.

2. All dimensions tolerances are ±0.5mm unless otherwise noted. 0.5

2. The above forward voltage measurement allowance tolerance is ±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 ,

9.The filament is a non-spectroscopic product, and the commitment batch meets the optical/electrical parameter range of more than 90 %. / 90%

## 1.6 Bin Range Of Luminous Flux and The Chromaticity Diagram (IF=20mA)

## BIN (IF=20mA)

Table 1-3

| RF-FPR6W2C1K-C5 2200K | Rank500 | |
|---|---|---|
| | 460 | 540 |

RF-FPR6

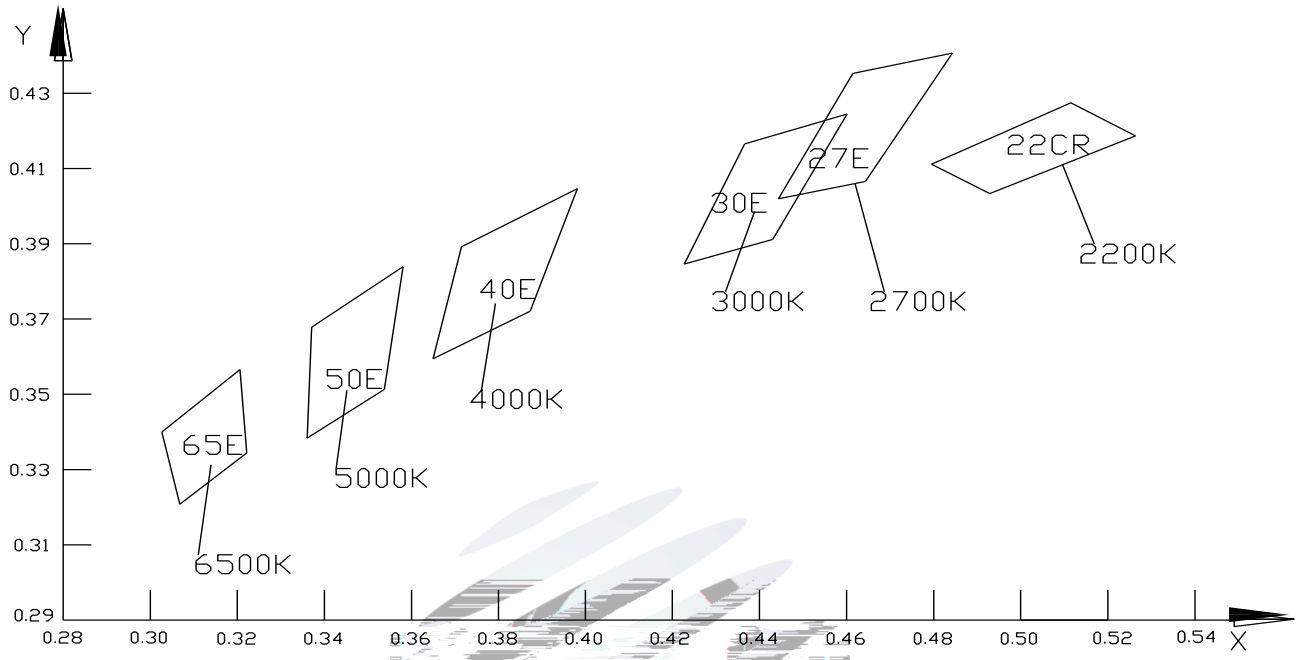



Fig 1-3 The C.I.E Chromaticity Diagram CIE

Table 1-4

| BIN C0DE | CIE-X1 | CIE-Y1 | CIE-X2 | CIE-Y2 | CIE-X3 | CIE-Y3 | CIE-X4 | CIE-Y4 |
|---|---|---|---|---|---|---|---|---|
| 22CR | 0.4795 | 0.4111 | 0.5116 | 0.4274 | 0.5264 | 0.4187 | 0.4929 | 0.4033 |
| 27E | 0.4443 | 0.4019 | 0.4615 | 0.4353 | 0.4843 | 0.4407 | 0.4643 | 0.4065 |

## 1.7 Typical optical characteristics curves

Fig 1-1 Forward Voltage Vs. Forward Current

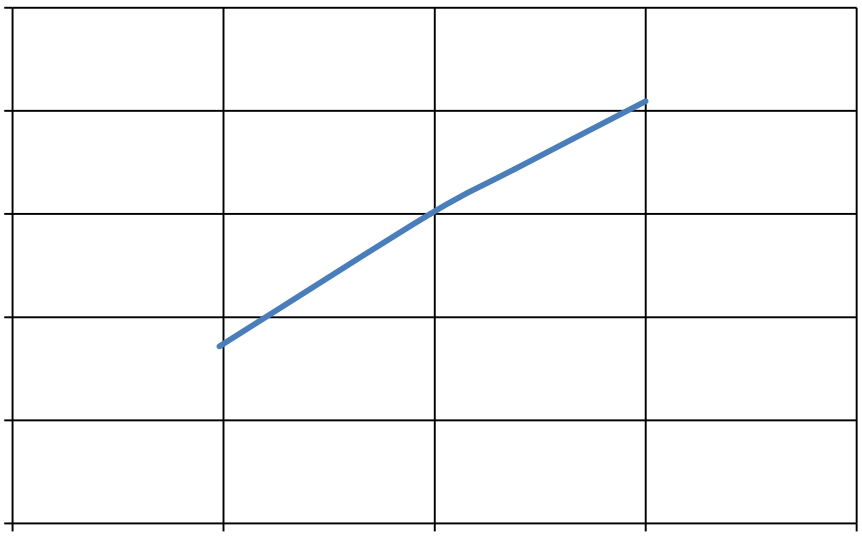


Fig 1-2 Forward Current Vs. Relative Intensity

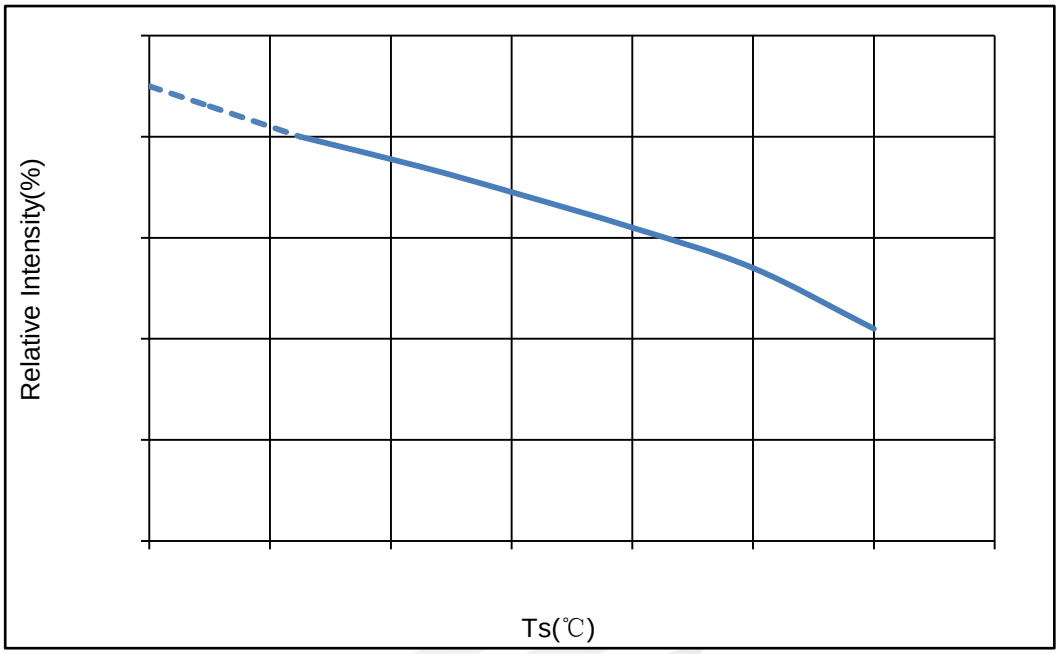



Fig 1-3 Central surface temperature Vs Relative Intensity

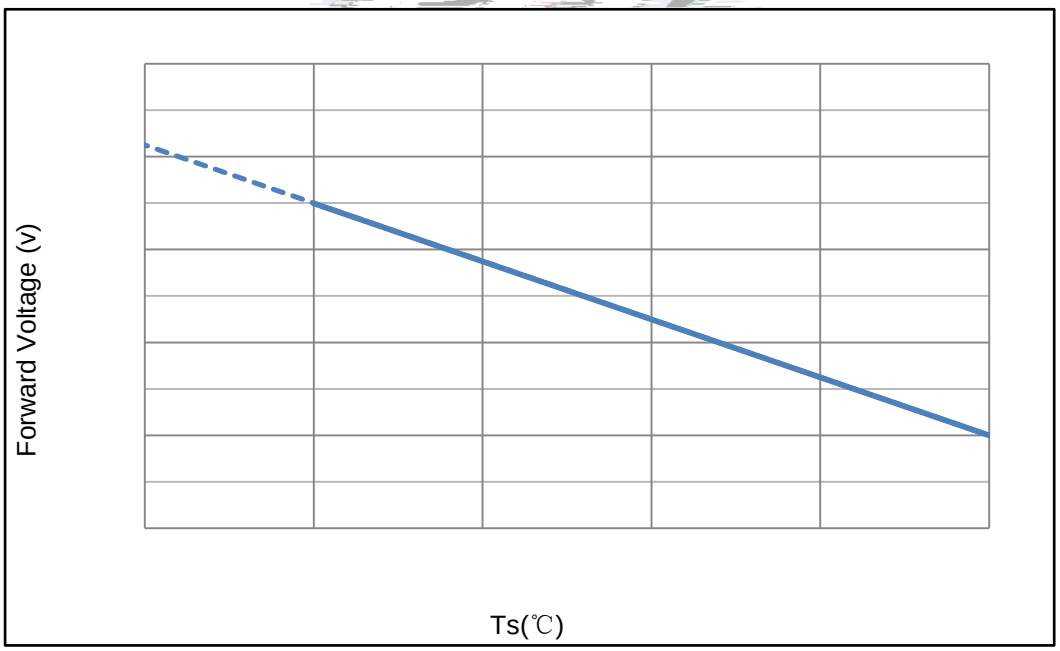



Fig 1-4 Forward Voltage Vs Central surface temperature

Fig 1-5 Radiation diagram

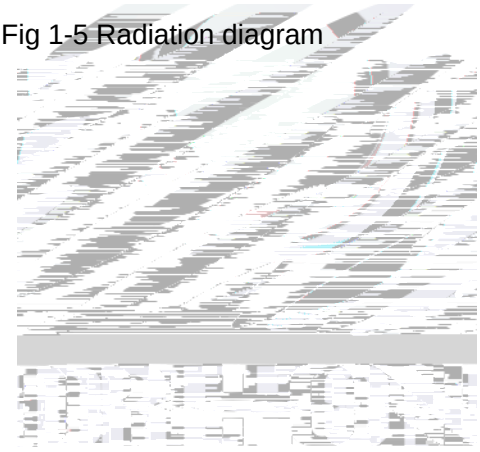


Fig 1-6 Spectrum Distribution

# 2. Packaging

## 2.1 Packaging Specification

SinglePackage:200pcs/box. 200pcs

The whole piece ofPackage:200pcs/box. 200pcs

2.1.1 Suction box Dimension

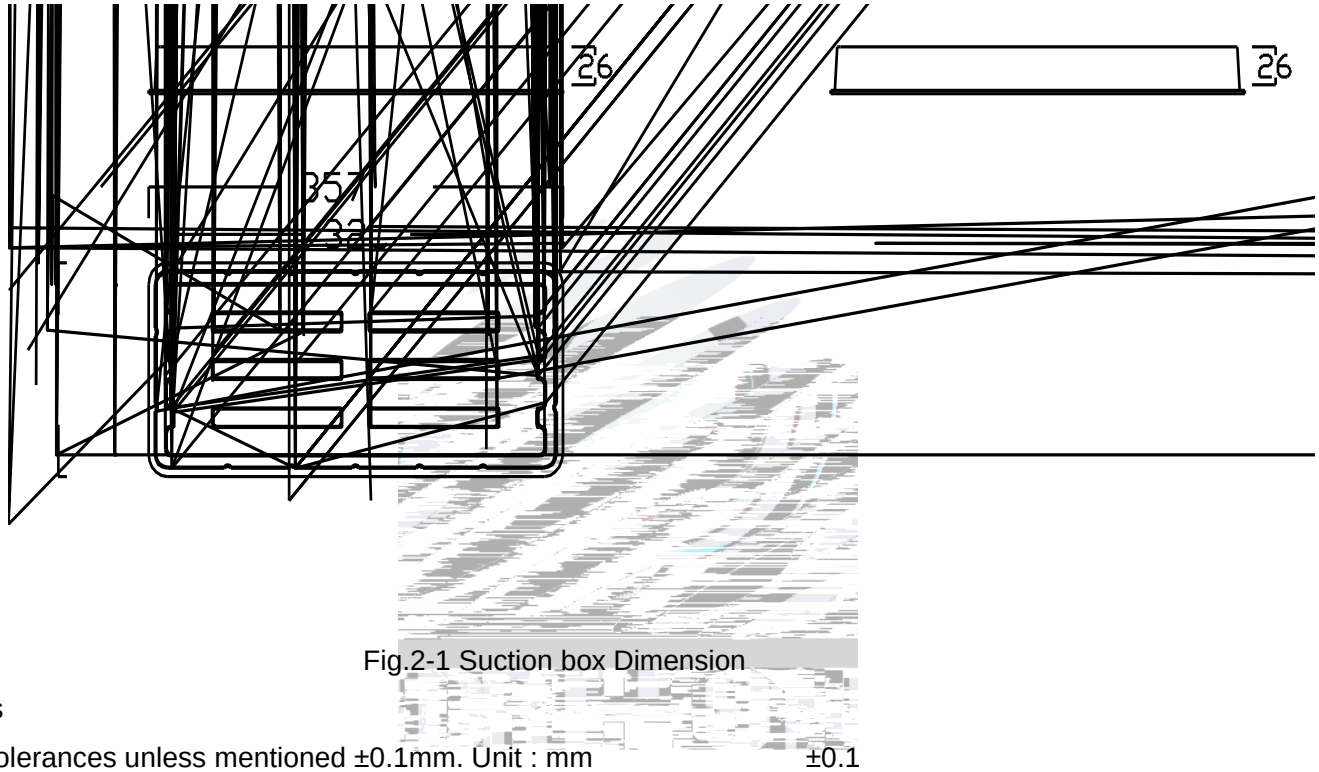



Fig.2-1 Suction box Dimension

Notes

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

### 2.1.2 Label Form Specification

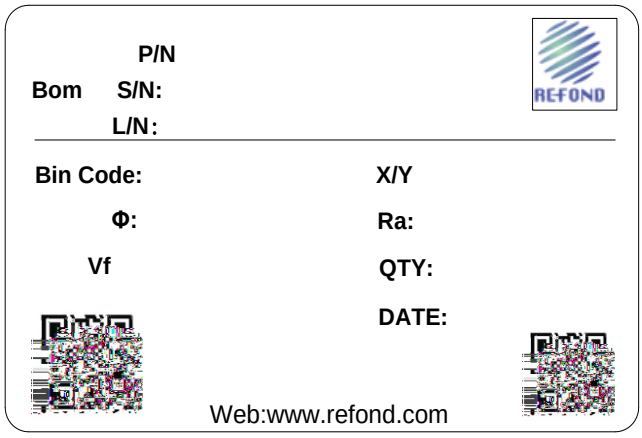



Fig 2-3 Title

Table 2-2 Title

| | |
|---|---|
| P/ N | Part Number |
| S/N | Spec Number |
| L/N | Lot Number |
| Bin Code | Bin Code |
| | Luminous flux |
| X/Y | Chromaticity Bin |
| $V_F$ | Forward Voltage |
| Ra | Color Rendering Index |
| QTY | Packing Quantity |
| DATE | Made Date |

## 2.2 Moisture Resistant Packing

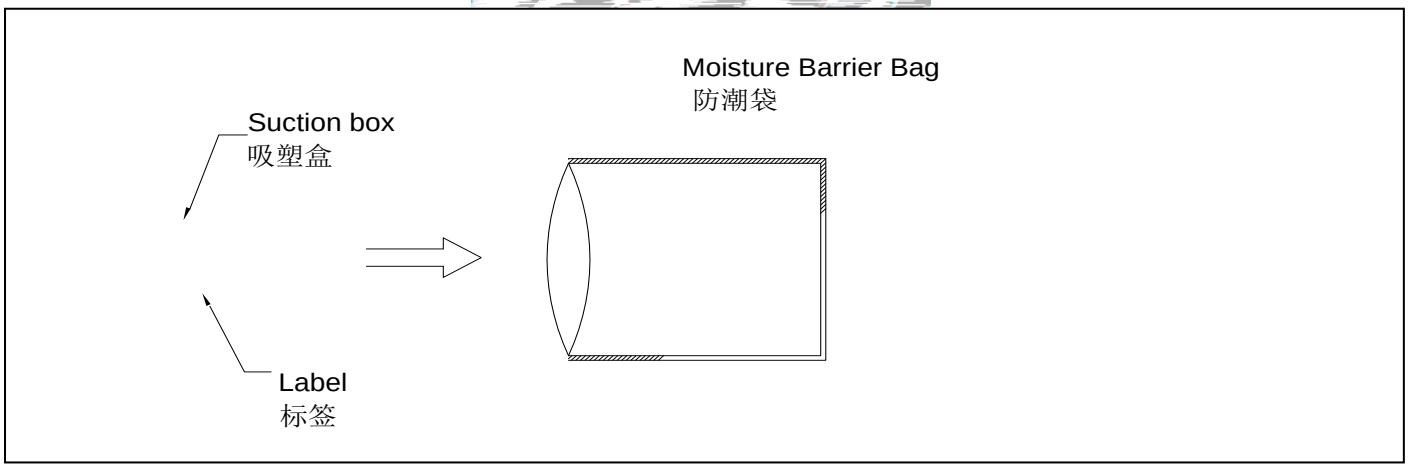



Fig.2-3Moisture Resistant Packing

## 2.3 Cardboard Box

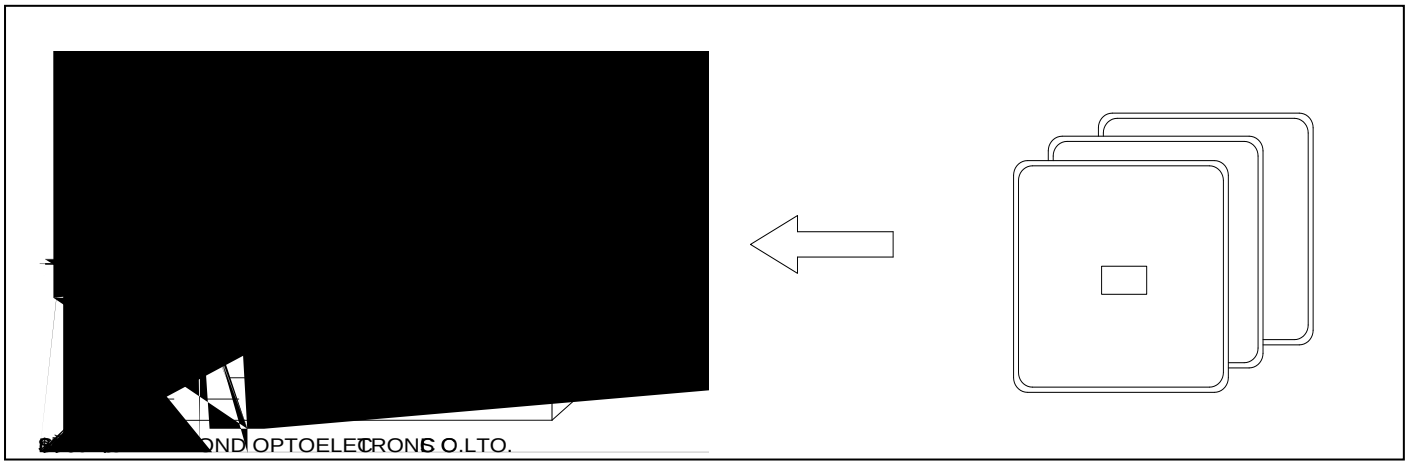



Fig.2-4Cardboard Box

## 2.4 Reliability Test Items And Conditions

Table 2-3 Reliability Test Items And Conditions

| TestItems | Ref.Standard | Test Condition | Time | Quantity | Ac/Re<br>/ |
|---|---|---|---|---|---|
| Thermal Shock | JEITAED-4701 300307 | -40 15min<br>10s<br>100 15min | 100 cycle | 20pcs | 0/1 |
| Switching Test | / | 25℃, On 2.5min<br>Off 2.5min | 2500cycle | 20pcs | 0/1 |
| Life Test | JESD22-A108 | Ta=25<br>$I_F$=20mA | 1000hrs | 10pcs | 0/1 |
| High Temperature High Humidity Life Test | JESD22-A101 | 60 / 90%$R_H$<br>$I_F$=20mA | 500hrs | 10pcs | 0/1 |

## 2.5 Criteria For Judging Damage

Table 2-4 Criteria For Judging Damage Ton nt

| Test Items | Symbol | Test Condition | Criteria For Judgement |
|---|---|---|---|

re g38 Tm[(Cd )-279m[(o )-279m[(h51 g85. )-278 6 68 685.pFocal(-.0 )-278 cd

# 3. Handling Precautions

## 3.1 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.

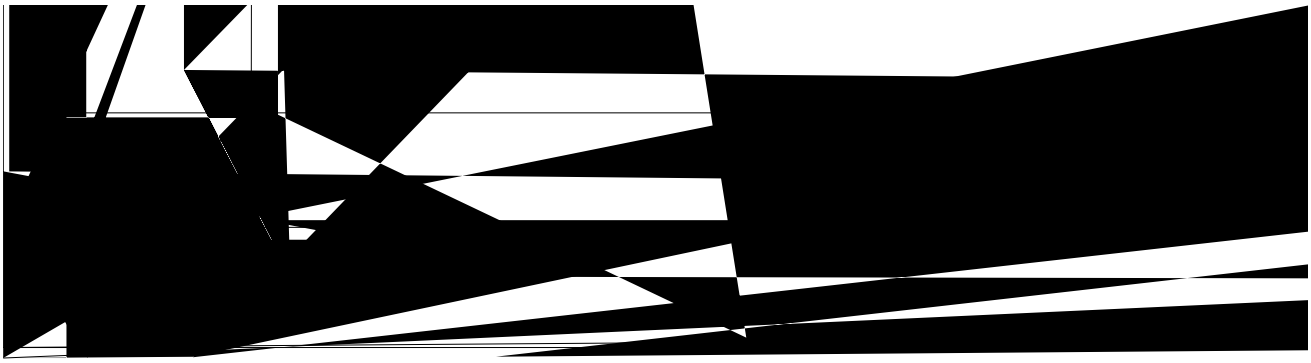


Fig 4-1Clip filament specification

(5) In designing a circuit,the current through each LED must be 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, 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

Declare

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