

SPECIFICATION

REFOND P/N
RF-A4E31-R30E-R4

R&D

Mass Production



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1. Description

1.1 General Description

The Red source color devices are made with AlGaInP on Substrate Light Emitting Diode .

Product Package: 3.0*3.0*0.55mm.

LED AlGaInP

3.0*3.0*0.55mm

1.2 Features

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

1.4 Package Dimension

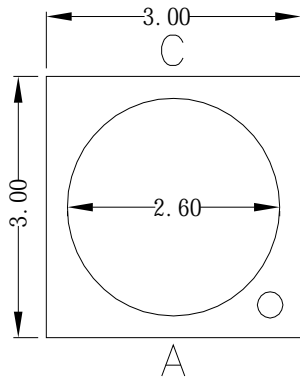


Fig.1-1 Top View

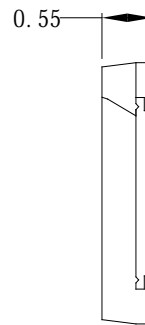


Fig.1-2 Side View

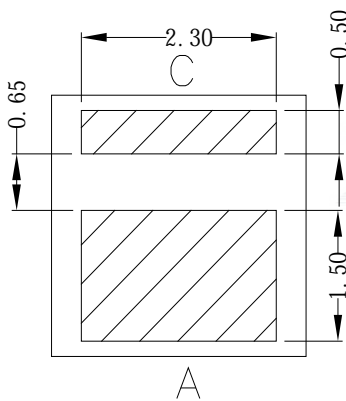


Fig.1-3 Bottom View



Fig.1-4 Polarity

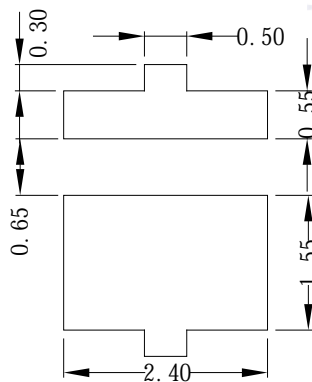


Fig.1-5 Soldering Patterns

Notes

1. All dimensions units are millimeters.
2. All dimensions tolerances are $\pm 0.05\text{mm}$ unless otherwise noted.



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 | | | | | | |

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

Notes

1. 1/10 Duty cycle, 10ms pulse width. 10ms, 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 . ± 0.005 .
4. The above luminous intensity measurement allowance tolerance $\pm 10\%$.
 $\pm 10\%$.
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

1.6 Bin Range Of Forward Voltage and Luminous Flux (IF=150mA)

BIN (IF=150mA)

Table 1-3

| | | | |
|----------------|-----------|-----------|-----------|
| V _F | C0 | D0 | E0 |
| | 2.0-2.2 | 2.2-2.4 | 2.4-2.6 |
| Im | JA | JB | KA |
| | 16-17.7 | 17.7-19.6 | 19.6-21.8 |
| WD(nm) | F2 | G1 | G2 |
| | 627.5-630 | 630-632.5 | 632.5-635 |



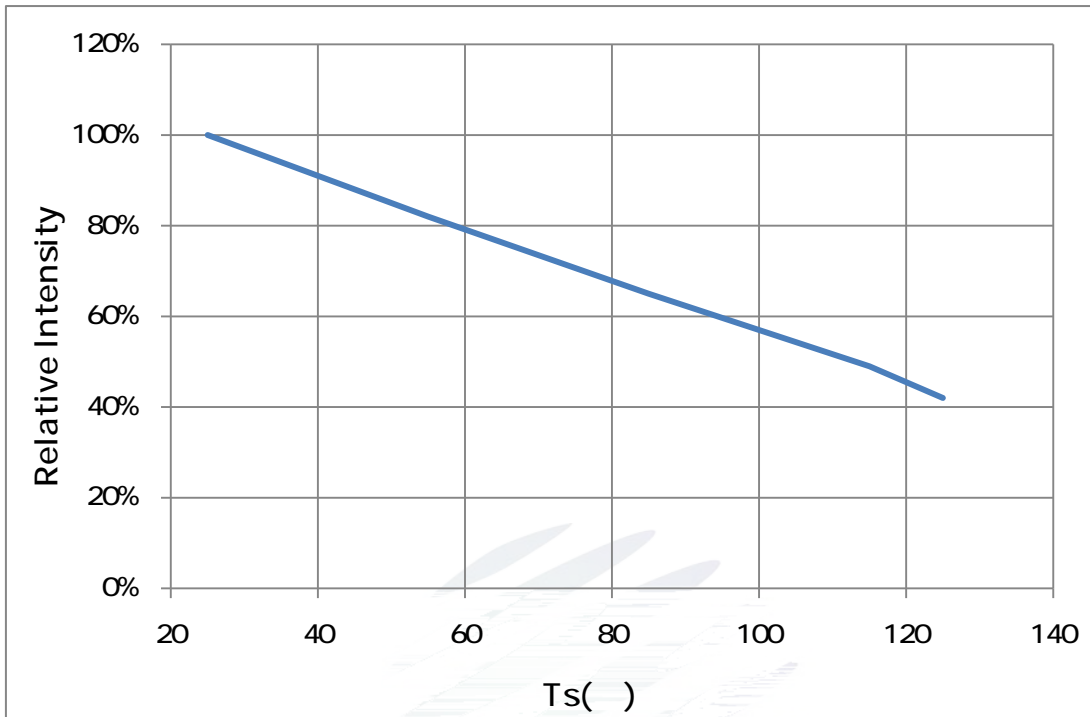


Fig. 1-9 Solder Temperature Vs Relative Intensity

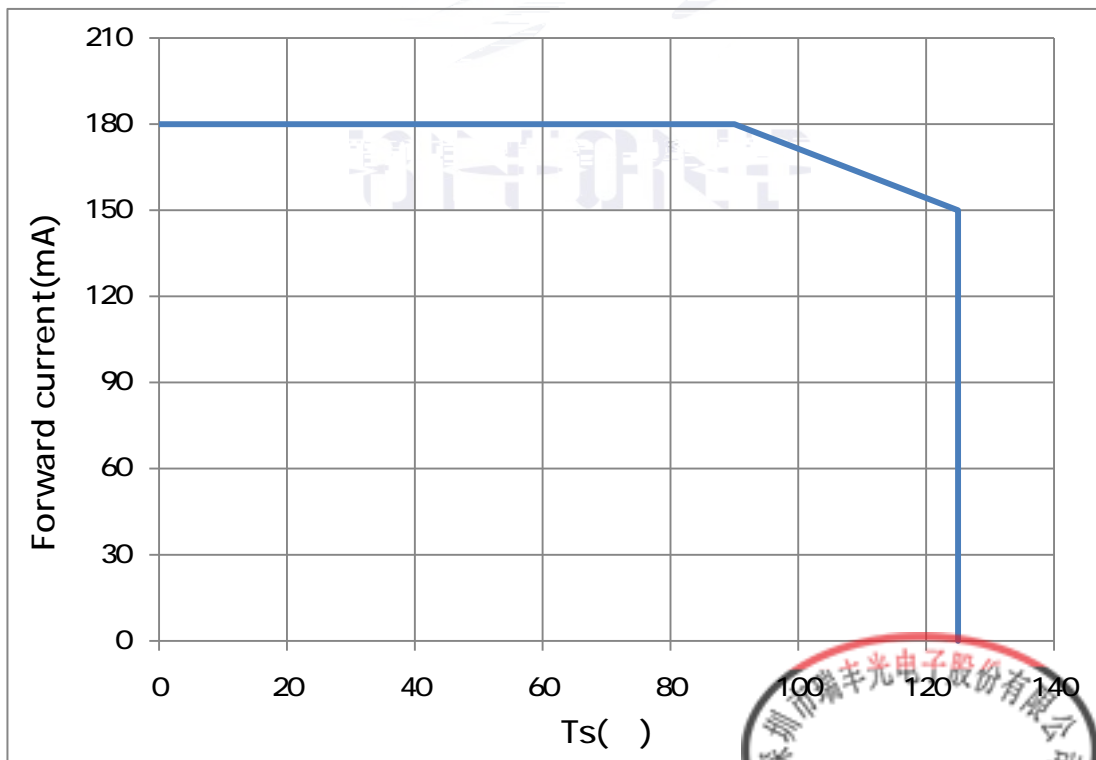


Fig. 1-10 Solder Temperature Vs Forward Current



Fig. 1-11 Forward Voltage Vs Solder Temperature



Fig. 1-12 Radiation diagram

minate wavelength

(Ts=25°C)

| | | | | | | | | |
|--|--|--|--|--|--|--|--|--|
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| | | | | | | | | |

pectrum Distribution



2.1.3 Label Form Specification

Table 2-2 Specification

| | |
|----------------|------------------|
| PART NO. | Part Number |
| SPEC NO. | Spec Number |
| LOT NO. | Lot Number |
| BIN CODE | Bin Code |
| | Luminous flux |
| XY | Chromaticity Bin |
| V _F | Forward Voltage |
| WLD | Wavelength |
| QTY | Packing Quantity |
| DATE | Made Date |

Fig. 2-3 Label Form Specification

2.2 Moisture Resistant Packing



Fig.2-4 Moisture Resistant Packing

2.3 Cardboard Box

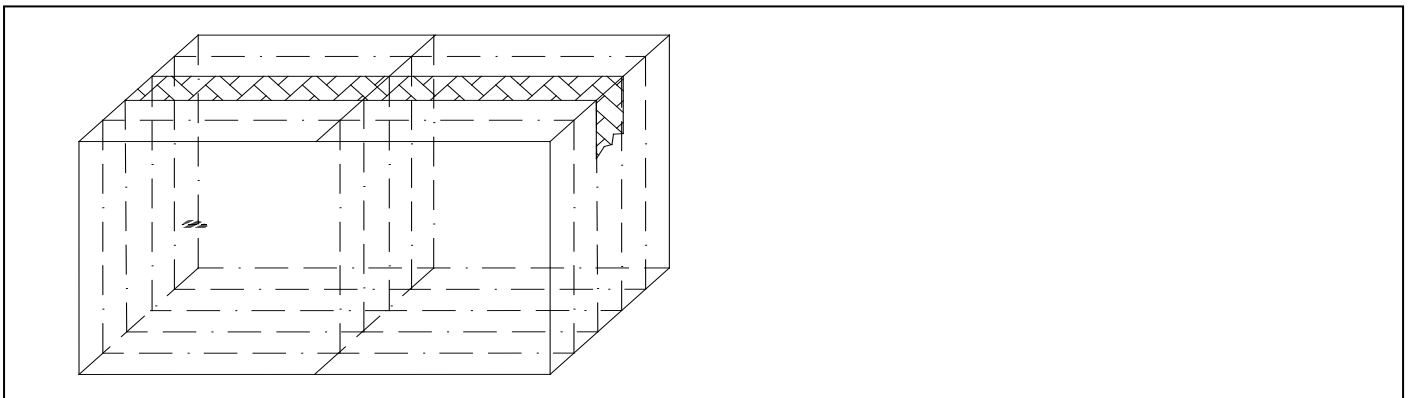


Fig.2-5 Cardboard Box

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=150mA | 1000hrs. | 20pcs. | 0/1 |
| High Temperature High Humidity Life Test | JESD22-A101 | 85 / 85%RH If=150mA | 1000hrs. | 20pcs. | 0/1 |



3. SMT Reflow Soldering Instructions SMT

3.1 SMT Reflow Soldering Instructions SMT

Fig.3-1 SMT Reflow Soldering Instructions SMT

Table 3-1 Reflow parameters

Average temperature rise speed

T_{smax} T_P

3 °C/ Max `s m46...f >!



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 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

(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 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. LED

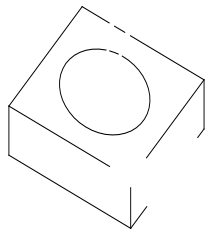


Fig 4-1Cautions

(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 4-1 Storage

| Conditions | | Temperature | Humidity | Time |
|------------|-----------------------------|-------------|----------|--|
| Storage | 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 |







Declare

This specification is written both in English and in Chinese and the latter is form

