



Applying the
technology of light

SPECIFICATION

PART NO. : L07R3000F1

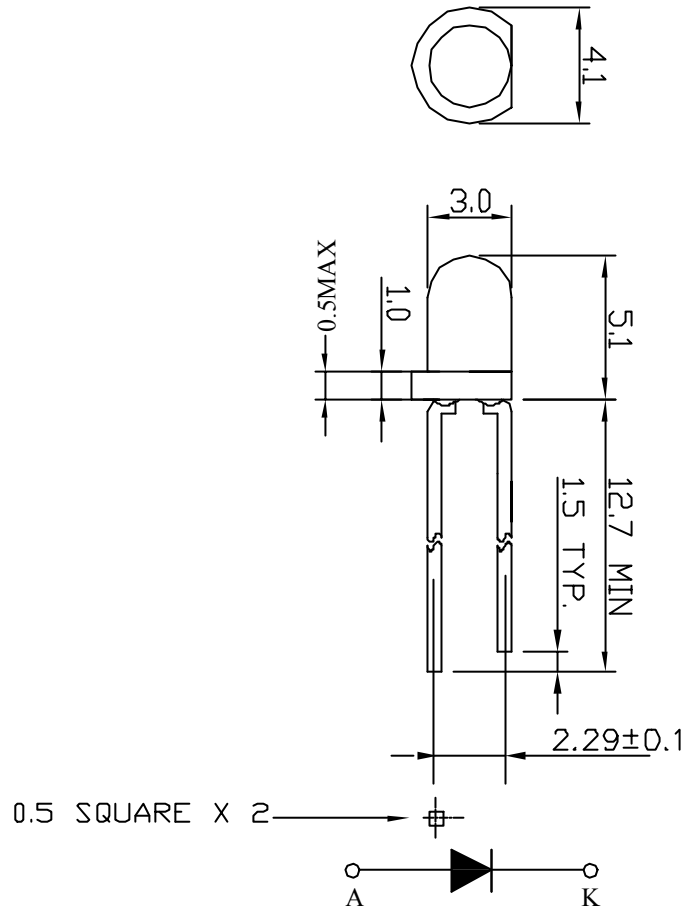
3.0MM ROUND LED LAMP

| Approved by | Checked by | Prepared by |
|-------------|----------------|-------------|
| <i>R.S.</i> | <i>J.W.-J.</i> | <i>A.W.</i> |

Package Dimensions

Description

This lamp is made with
 AlGaAs/GaAs Super red chip
 and Red diffused epoxy resin.



Notes:

- 1.All dimensions are in millimeters.
- 2.Tolerance is ± 0.25 mm unless otherwise noted.

| Part No. | LED Chip | | Lens Color |
|------------|-------------|----------------|--------------|
| | Material | Emitting Color | |
| L07R3000F1 | AlGaAs/GaAs | Super red | Red diffused |



3.0MM ROUND LED LAMP
PART NO. : LT0371-21

Page : 2/7

Absolute Maximum Ratings at Ta=25°C :

| Parameter | Symbol | Rating | Unit |
|---|----------|-------------|---------|
| Power Dissipation | Pd | 66 | mW |
| Reverse Voltage | Vr | 4 | V |
| D.C. Forward Current | If | 30 | mA |
| Reverse (Leakage) Current | Ir | 100 | μ A |
| Peak Current (1/10 Duty Cycle , 0.1 ms Pulse Width) | If(Peak) | 100 | mA |
| Operating Temperature Range | Topr | -25 to +85 | °C |
| Storage Temperature Range | Tstg | -40 to +100 | °C |
| Lead Soldering Temp.(1.6mm from body) for 5 seconds | | 260 | °C |

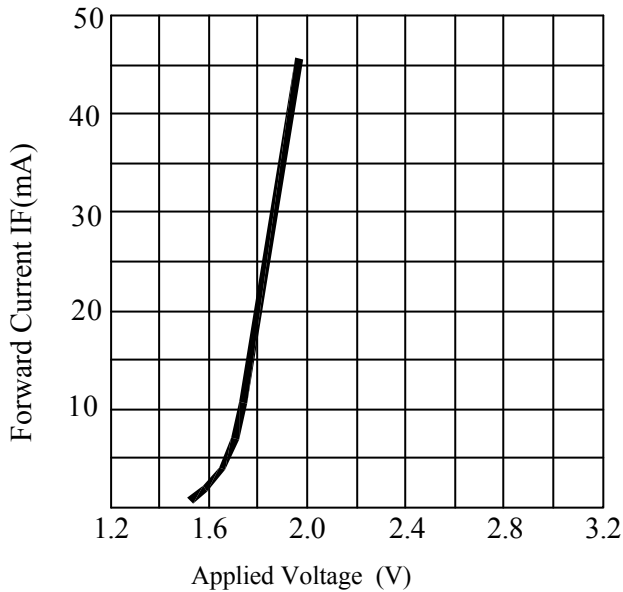
Electrical and Optical Characteristics :

| Parameter | Symbol | Condition | Min. | Typ. | Max. | Unit |
|-------------------------|------------------|-----------|------|------|------|---------|
| Luminous Intensity | Iv | If=20mA | 20 | 45 | | mcd |
| Forward Voltage | Vf | If=20mA | | 1.8 | 2.2 | V |
| Peak Wavelength | λ P | If=20mA | | 660 | | nm |
| Dominant Wavelength | λ D | If=20mA | | 643 | | nm |
| Reverse(Leakage)Current | Ir | Vr=4V | | | 100 | μ A |
| Viewing Angle | 2 θ 1/2 | If=20mA | | 74 | | deg |
| Spectrum Line Halfwidth | $\Delta \lambda$ | If=20mA | | 20 | | nm |

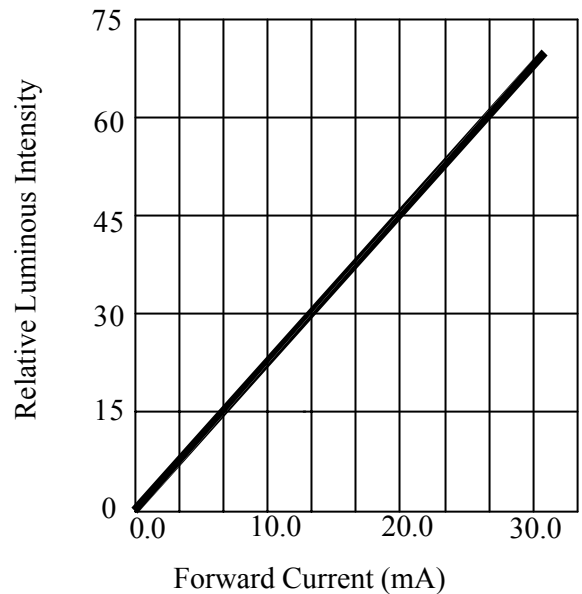


**3.0MM ROUND LED LAMP
PART NO. :L07R3000F1**

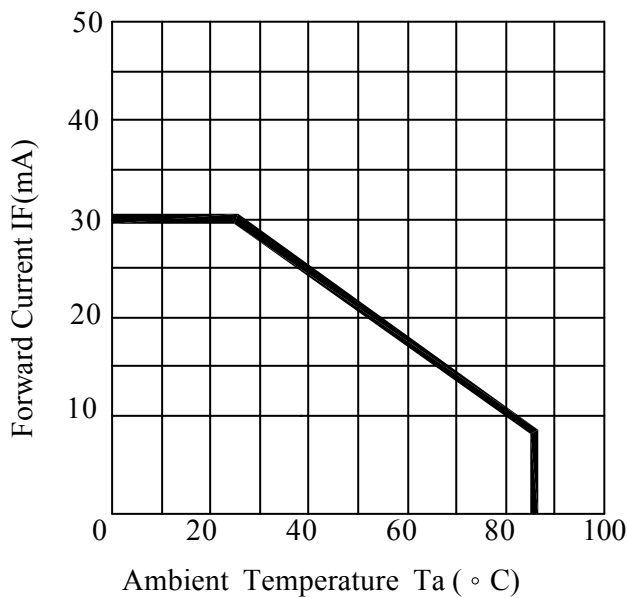
Typical Electrical / Optical Characteristics Curves :



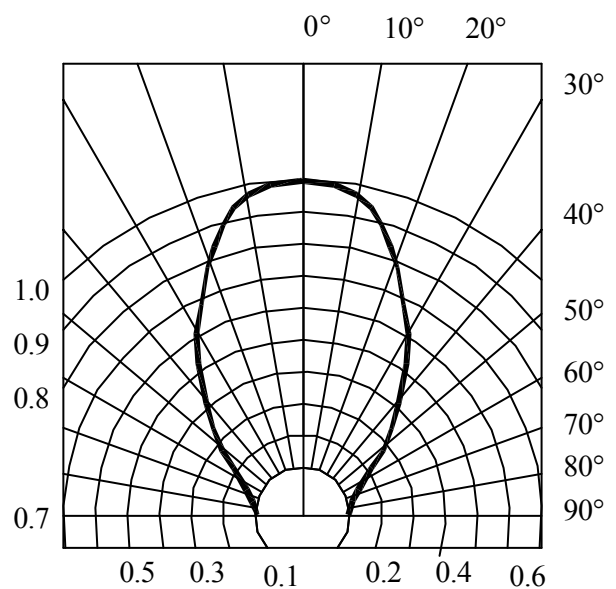
FORWARD CURRENT VS. APPLIED VOLTAGE



FORWARD CURRENT VS. LUMINOUS INTENSITY



AMBIENT TEMPERATURE VS. FORWARD CURRENT



RADIATION DIAGRAM



3.0MM ROUND LED LAMP

PART NO. : L07R3000F1

Page : 4/7

Reliability Test

| NO. | Discription | Test Method | Test Condition |
|-----|--------------------------|-------------------------------------|--|
| 1 | Operational life | 1000 Hrs | IF=20mA, Ta=25 °C |
| 2 | High Temp. Storage | 1000 Hrs | 100 °C |
| 3 | Low Temp. Storage | 1000 Hrs | -40 °C |
| 4 | High Temp./High Humidity | 1000 Hrs | 60 °C, 95 % |
| 5 | Temperature Cycling | 100 Cycles | -30 °C(30min) → +25 °C(5min) → +80 °C(30min) → +25 °C(5min) |
| 6 | Damp Heat Cyclic | 40 Cycles Time of 1 cucle: 6 hrs | IF=20mA, Ta=25 °C -0 °C ±2(2H) → 65 °C ± 90-95%RH(3H) → -0 °C ±2(1H) |
| 7 | Soldering Heat | 5 Sec. | 260±5°C 1.6mm from bottom of case |
| 8 | Solderability | 5±0.2 Sec. Wave soldering. | 260±5°C Speed of immersing and lifting 25 ±2.5mm/sec |
| 9 | Drop | X.Y.Z Direction each 1 time | Maple plate, 75cm |
| 10 | Lead pull | 10 Sec. | Weight 0.5Kg |
| 11 | Lead Bend | 2 times | Weight 0.25Kg, Bending Angle=90 ° |

The result of the above Reliability test will be referred to the Electrical and Optical Characteristic in this Specification and Judgment will be made in accordance with the following criteria listed below.

Reliability Test Failure Judgment Criteria

| Item | Criteria for Judgment |
|---------------------------|--|
| Foward Voltage | More than 120 % X upper limit of spec. |
| Reverse (Leakage) Current | More than 100 % X upper limit of spec. |
| Luminous Intensity | More than 50 % X Lower limit of spec. |
| Solderbility | Less than 95 % |



3.0MM ROUND LED LAMP

PART NO. : L07R3000F1

Page : 5/7

Precautions:

TAKE NOTE OF THE FOLLOWING IN USE OF LED

1. Temperature in use

Since the light generated inside the LED needs to be emitted to outside efficiently, a resin with high light transparency is used; therefore, additives to improve the heat resistance or moisture resistance (silica gel , etc) which are used for semiconductor products such as transistors cannot be added to the resin.

Consequently, the heat resistant ability of the resin used for LED is usually low; therefore, please be careful on the following during use.

Avoid applying external force, stress, and excessive vibration to the resins and terminals at high temperature. The glass transition temperature of epoxy resin used for the LED is approximately 120-130 °C.

At a temperature exceeding this limit, the coefficient of liner expansion of the resin doubles or more compared to that at normal temperature and the resin is softened.

If external force or stress is applied at that time, it may cause a wire rupture.

2. Soldering

Please be careful on the following at soldering.

After soldering, avoided applying external force, stress, and excessive vibration until the products go to cooling process (normal temperature), <Same for products with terminal leads>

(1) Soldering measurements:

Distance between melted solder side to bottom of resin shall be 1.6mm or longer.

(2) Solder dip: Preheat: 90 °C max. (Backside of PCB), Within 120 seconds

Solder bath: 250 °C max. (Solder temperature), Within 5 seconds

(3) Soldering iron : 250 °C max. (Temperature of soldering iron tip), Within 3 seconds

3. Insertion

Pitch of the LED leads and pitch of mounting holes need to be same

4. Others

Since the heat resistant ability of the LED resin is low, SMD components are used on the same PCB, please mount the LED after adhesive baking process for SMD components. In case adhesive baking is done after LED lamp insertion due to a production process reason, make sure not to apply external force, stress, and excessive vibration to the LED and follow the conditions below.

Baking temperature: 120 °C max. Baking time: Within 60 seconds

If soldering is done sequentially after the adhesive baking, please perform the soldering after cooling down the LED to normal temperature.



**3.0MM ROUND LED LAMP
PART NO. : L07R3000F1**

Page : 7/7

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COMPONENT AND MATERIALS:

| ITEM | | MATERIALS |
|-------------------|--------------|--------------------------|
| CUSTOMER PART NO. | | |
| O.M.C. PART NO. | | L07R3000R1 |
| LED CHIP | | AlGaAs ON GaAs |
| LEADFRAME | | Iron covered with Silver |
| ADHESIVE | | SILVER FILLED EPOXY |
| EPOXY RESIN | RESIN | EPOXY |
| | HARDENNER | EPOXY |
| | DIFFUSANT | EPOXY |
| | COLORING DYE | EPOXY |
| BONDING WIRE | | GOLD |

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