

# 5mm (T-1 3/4) Round Flangeless LED - Red

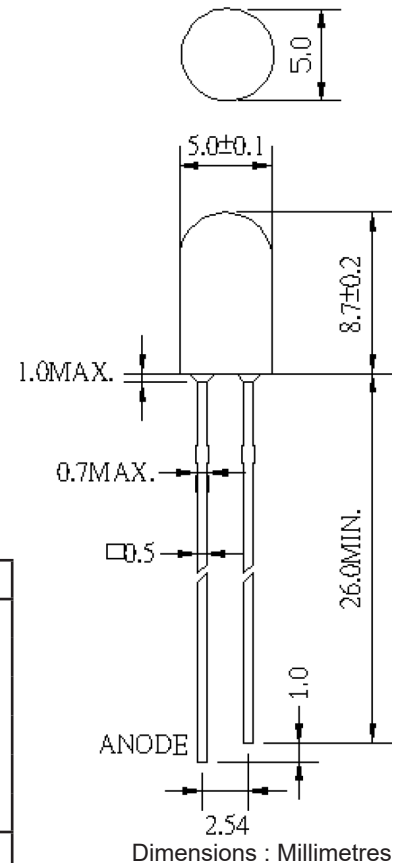
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**RoHS  
Compliant**



## Features

|                       |                                      |
|-----------------------|--------------------------------------|
| Package Size          | : 5mm Round Type Flangeless LED Lamp |
| Dice Material         | : AlInGaP                            |
| Peak Wave Length (nm) | : 650                                |
| Emitted Colour        | : Super Red                          |
| Viewing Angle (deg)   | : 16                                 |
| Lens Colour           | : Red Transparent                    |
| IV (mcd)              | : 550                                |



## Electrical / Optical Characteristics at Ta = 25°C

| Parameter                | Symbol | Min. | Typ. | Max. | Unit | Condition |
|--------------------------|--------|------|------|------|------|-----------|
| Luminous Intensity       | IV     | 400  | 550  | 850  | mcd  | IF = 20mA |
| Viewing Angle            | 2θ1/2  |      | 15   |      | deg  |           |
| Peak Emission Wavelength | λp     |      | 650  |      | nm   |           |
| Dominant Wavelength      | λD     | 635  | 640  | 645  | nm   |           |
| Spectral Line Half-Width | Δλ     |      | 20   |      | nm   |           |
| Forward Voltage          | VF     | 1.8  | 1.9  | 2.2  | V    |           |
| Reverse Current          | Ir     | -    | -    | 10   | uA   | VR=5V     |

▲ Luminous intensity (IV) ±10%, Forward Voltage (VF) ±0.1V, Wavelength (λd) ±0.5nm

## Absolute Maximum Ratings: ( Ta = 25°C)

| Parameter  | Symbol  | Rating      | Unit |
|--|---|-------------|------|
| Power Dissipation  | Pd  | 85          | mW   |
| Peak Forward Current ( Duty 1/10 @ 1KHz )                          | IF (Peak)   | 100         | mA   |
| Recommended Operating Current                                      | IF (Rec)  | 30          | mA   |
| Electrostatic Discharge  | ESD <sub>HBM</sub>  | 2000        | V    |
| Operating Temperature Range  | T <sub>OPR</sub>  | -40 to +85  | °C   |
| Storage Temperature Range  | T <sub>STG</sub>  | -40 to +100 | °C   |
| Lead Soldering Temperature Range<br>(1.6 mm (1/16 inch) from body) | Reflow Soldering: 260°C for 5 sec. Hand Soldering: 350°C for 3 sec. |             |      |

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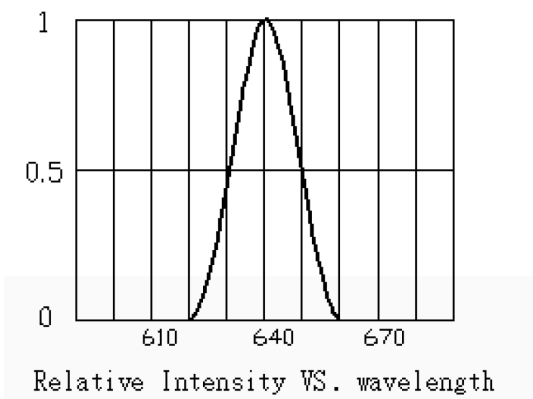
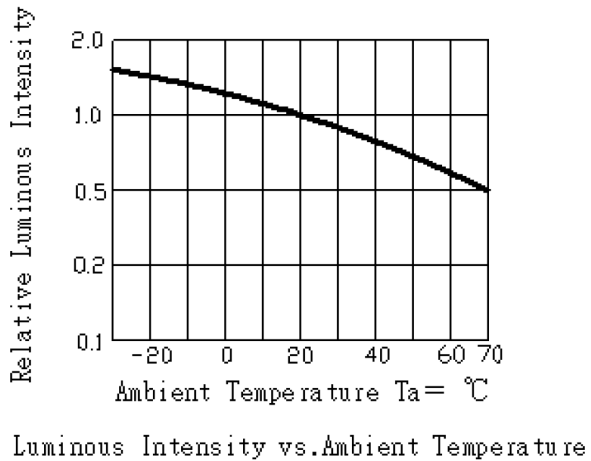
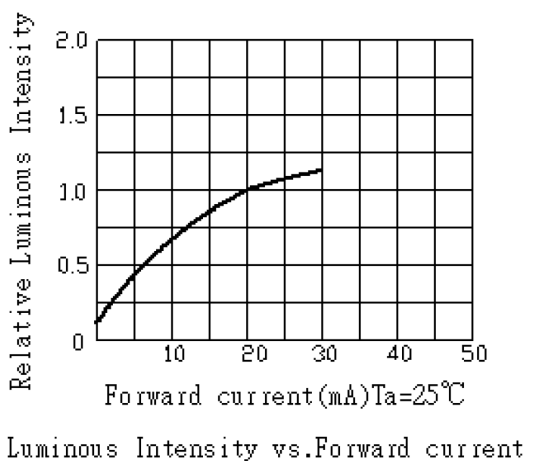
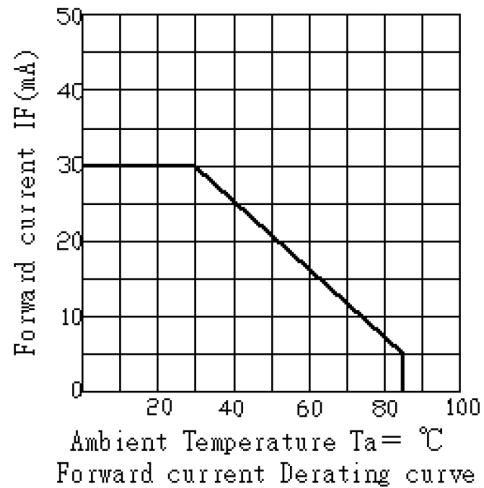
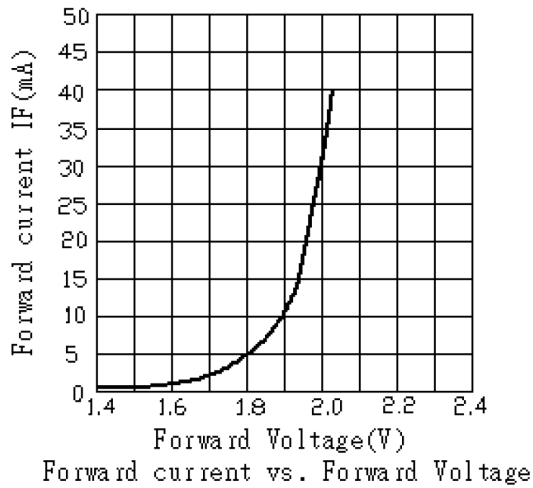
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## Typical Electro-Optical Characteristics Curves

### Super Red (AlInGaP $\lambda_d=640\text{nm}$ )



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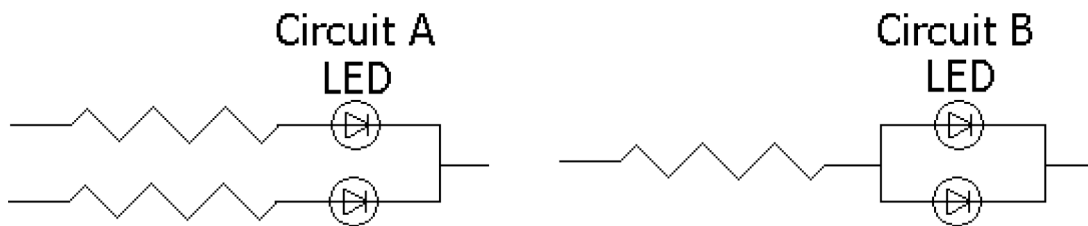
## Reliability Test

| NO. | Item                           | Test Conditions                        | Test Time/ Cycle | Sample Size | Ac/Re |
|-----|--------------------------------|--|------------------|-------------|-------|
| 1   | DC Operating Life              | Temperature:25°C IF:20mA               | 1000 HRS         | 20 PCS      | 0/1   |
| 2   | High Temperature High Humidity | Temperature:85°C 85%RH                 |                  |             |       |
| 3   | High Temperature Storage       | Temperature:100°C                      |                  |             |       |
| 4   | Low Temperature Storage        | Temperature:-40°C                      |                  |             |       |
| 5   | Temperature Cycling            | 85°C~ 25°C~-35°C<br>15min~ 5min~ 15min | 15 Cycles        |             |       |
| 6   | Thermal Shock                  | 85°C~ 25°C~-10°C<br>5min~ 10sec~ 5min  |                  |             |       |
| 7   | Solder Heat                    | Temperature:260°C±5°C                  | 10 sec.          |             |       |

## Precautions for Using LED

### 1. Drive Method

LED is current-operated device. In order to ensure intensity uniformity on multiple LEDs connected in parallel in an application, it is recommended that a current limiting resistor be incorporated in the drive circuit



(a) Circuit A: it is recommended circuit.

(b) Circuit B: the brightness of each LED might appear different due to the differences in the I-V characteristics of those LEDs.

### 2. Over-current-proof

Customer must apply resistors for protection, otherwise slight voltage shift will cause big current change (Burn out will happen).

### 3. Storage

The Storage Temperature and RH are: 5°C ~ 30°C, RH 60% or less.

Once the package is opened, the products should be used within a week. Otherwise, they should be kept in moisture proof package with moisture absorbent material (silica gel).

We suggest our customers to use the products within a year.

If the moisture absorbent material (silica gel) has faded or the LEDs exceeded the storage time, baking treatment should be performed using the following conditions:

Baking treatment: more than 24 hours at 60°C ±5°C.

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## 4. Electrostatic Discharge (ESD)

Static electricity or surge voltage will damage the LEDs. Suggestions to prevent ESD damage:

Use of a conductive wrist band or ante-electrostatic glove while handling the LEDs.

All devices, equipment, and machinery must be properly grounded.

Work tables storage racks, etc. should be properly grounded.

In the events of manual working in process, make sure the devices are well protected from ESD at any time.

## 5. Others

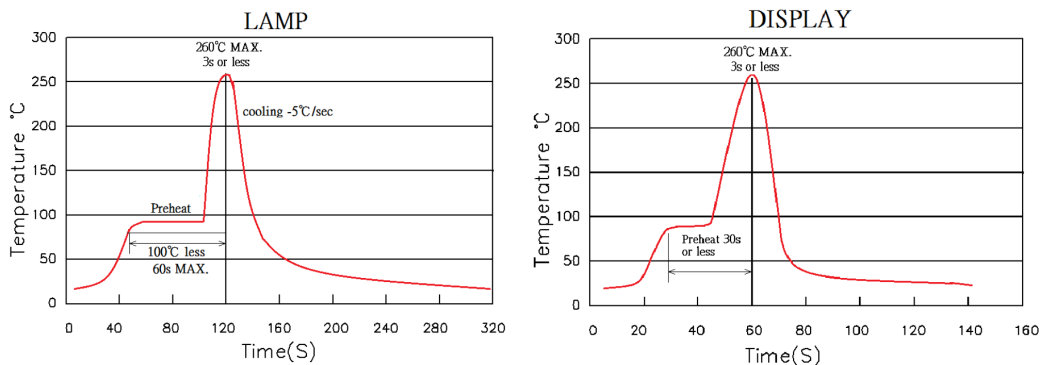
(a) If you want to have the uniform luminance and Colour, please use the same binning number, and components from mixed bins will cause the differences of luminance and Colours.

(b) The appearance and specifications of the product may be modified for improvement without prior notice.

## 6. Soldering

Recommended soldering condition as shown below:

### ● Soldering heat (DIP)



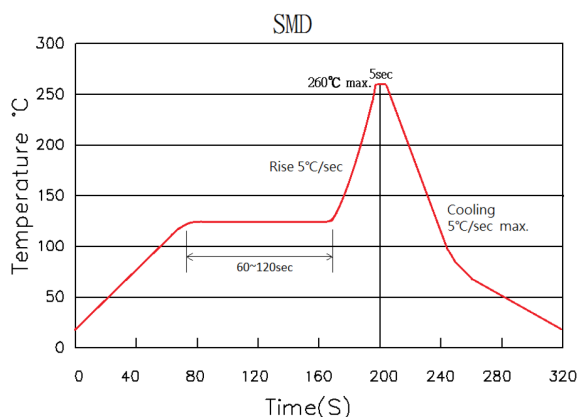
### Soldering Iron

Temperature at tip of iron: 350°C Max.

Soldering Time: 3 sec. ± 1 sec. (one time only)

If temperature is higher, time should be shorter.

### ● Reflow Temp./Time (SMD)



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## Part Number Table

| Description   | Part Number |
|---|-------------|
| 5mm Round Flangeless LED, Red, 650nm, 16°, 550mcd, Through hole | MP006840    |

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