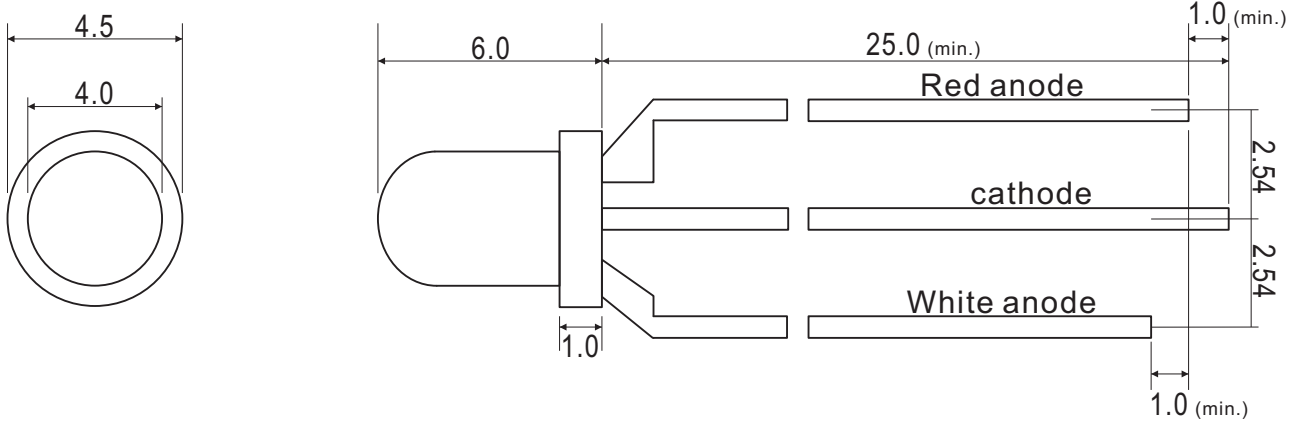


### Features:

- 1) Chip Material: AlGaInP & InGaN
- 2) Lens Color: Water Clear
- 3) Source Color: Red & White
- 4) Pb free
- 5) The product itself will remain within RoHS compliant version.

### Dimensions:



### Notes:

The tolerance is  $\pm 0.25\text{mm}$ .

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

| Parameter                                       | Symbol          | Maximum                                                                 | Unit |
|-------------------------------------------------|-----------------|-------------------------------------------------------------------------|------|
| Power Dissipation                               | Pd              | 70                                                                      | mW   |
| Peak Forward Current<br>(Duty 1/10 @ 1KHz)      | I <sub>FP</sub> | 40-100                                                                  | mA   |
| Forward Current                                 | I <sub>F</sub>  | 20                                                                      | mA   |
| Reverse Voltage                                 | V <sub>R</sub>  | 5                                                                       | V    |
| Operating Temperature Range                     | Topr            | -25°C to +80°C                                                          |      |
| Storage Temperature Range                       | Tstg            | -40°C to +100°C                                                         |      |
| Lead Soldering Temperature<br>[2.0mm from body] | Tsol            | Reflow Soldering: 260°C for 10 sec.<br>Hand Soldering: 350°C for 3 sec. |      |

### Electrical / Optical Characteristics at Ta=25°C: ( Red )

| Parameter           | Symbol             | Test Condition       | Min. | Typ. | Max. | Unit |
|---------------------|--------------------|----------------------|------|------|------|------|
| Luminous Intensity  | I <sub>v</sub>     | I <sub>F</sub> =20mA | 500  | 530  | 600  | mcd  |
| Dominant Wavelength | λ <sub>d</sub>     | I <sub>F</sub> =20mA | 620  | -    | 630  | nm   |
| Viewing Angle       | 2 θ <sub>1/2</sub> | I <sub>F</sub> =20mA | -    | 46   | -    | deg  |
| Forward Voltage     | V <sub>F</sub>     | I <sub>F</sub> =20mA | 1.9  | 2.0  | 2.2  | V    |
| Reverse Current     | I <sub>R</sub>     | V <sub>R</sub> =5V   | -    | -    | <10  | uA   |

#### Notes:

- 1) Tolerance of Luminous Intensity ±10%.
- 2) Tolerance of Forward Voltage ±0.1V.

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

| Parameter                                       | Symbol           | Maximum                                                                 | Unit |
|-------------------------------------------------|------------------|-------------------------------------------------------------------------|------|
| Power Dissipation                               | Pd               | 100                                                                     | mW   |
| Peak Forward Current<br>(Duty 1/10 @ 1KHz)      | I <sub>FP</sub>  | 120                                                                     | mA   |
| Forward Current                                 | I <sub>F</sub>   | 30                                                                      | mA   |
| Electrostatic Discharge (HBM)                   | ESD              | 2000                                                                    | V    |
| Reverse Voltage                                 | V <sub>R</sub>   | 5                                                                       | V    |
| Operating Temperature Range                     | T <sub>opr</sub> | -25°C to +80°C                                                          |      |
| Storage Temperature Range                       | T <sub>stg</sub> | -40°C to +100°C                                                         |      |
| Lead Soldering Temperature<br>[2.0mm from body] | T <sub>sol</sub> | Reflow Soldering: 260°C for 10 sec.<br>Hand Soldering: 350°C for 3 sec. |      |

### Electrical / Optical Characteristics at Ta=25°C: ( White )

| Parameter                    | Symbol             | Test Condition       | Min. | Typ. | Max. | Unit |
|------------------------------|--------------------|----------------------|------|------|------|------|
| Luminous Intensity           | I <sub>v</sub>     | I <sub>F</sub> =20mA | 3000 | 3210 | 3350 | mcd  |
| Correlated Color Temperature | CCT                | I <sub>F</sub> =20mA | 6000 | 6500 | 7000 | K    |
| Viewing Angle                | 2 θ <sub>1/2</sub> | I <sub>F</sub> =20mA | -    | 65   | -    | deg  |
| Forward Voltage              | V <sub>F</sub>     | I <sub>F</sub> =20mA | 3.0  | 3.3  | 3.6  | V    |
| Reverse Current              | I <sub>R</sub>     | V <sub>R</sub> =5V   | -    | -    | <10  | uA   |

Notes:

- 1) Tolerance of Luminous Intensity ±10%.
- 2) Tolerance of Forward Voltage ±0.1V.

### Reliability test items and conditions:

The reliability of products shall be satisfied with items listed below.

Confidence level: 97%

LTPD: 3%

| No | Item                             | Test Conditions                                     | Test Hours/ Cycle | Sample Size | Failure Judgment Criteria                                     | Ac/ Re |
|----|----------------------------------|-----------------------------------------------------|-------------------|-------------|---------------------------------------------------------------|--------|
| 1  | Solder Heat                      | TEMP: 260°C ± 5°C                                   | 10 SEC            | 76 PCS      | $I_v \leq I_{vt} * 0.5$ or<br>$V_f \geq U$ or<br>$V_f \leq L$ | 0/1    |
| 2  | Temperature Cycle                | H : +100°C 15min<br>$\int$ 5 min<br>L : -40°C 15min | 300 CYCLES        | 76 PCS      |                                                               | 0/1    |
| 3  | Thermal Shock                    | H : +100°C 5min<br>$\int$ 10 sec<br>L : -40°C 5min  | 300 CYCLES        | 76 PCS      |                                                               | 0/1    |
| 4  | High Temperature Storage         | TEMP: 100°C                                         | 1000 HRS          | 76 PCS      |                                                               | 0/1    |
| 5  | Low Temperature Storage          | TEMP: -40°C                                         | 1000 HRS          | 76 PCS      |                                                               | 0/1    |
| 6  | DC Operating Life                | TEMP: 25°C, I <sub>F</sub> =20mA                    | 1000 HRS          | 76 PCS      |                                                               | 0/1    |
| 7  | High Temperature / High Humidity | 85°C / 85% RH                                       | 1000 HRS          | 76 PCS      |                                                               | 0/1    |

### Notes:

I<sub>vt</sub>: To test I<sub>v</sub> value of the chip before the reliability test

I<sub>v</sub>: The test value of the chip that has completed the reliability test

U: Upper Specification Limit

L: Lower Specification Limit

### 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 linear 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, avoid applying external force, stress and excessive vibration until the products go to cooling process (normal temperature). <Same for products with terminal leads>

##### (1) Solder measurements:

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

##### (2) Dip soldering:

Pre-heat: 90°C max. (Backside of PDB), within 60 seconds.

Solder bath: 260 ±5°C (Solder temperature), within 5 seconds.

##### (3) Hand soldering: 350°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.