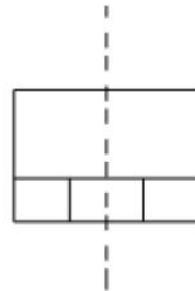
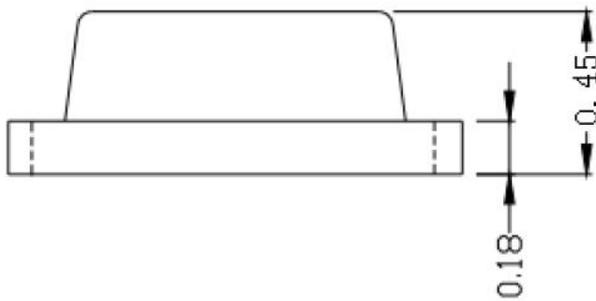
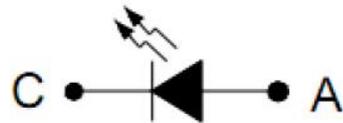
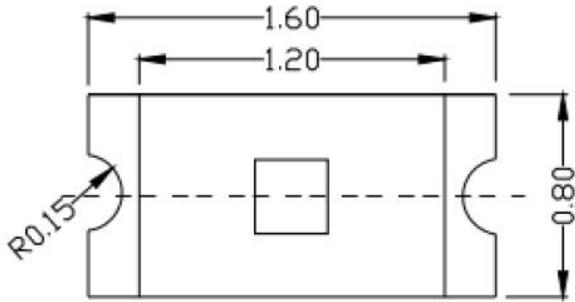


**1. Features:**

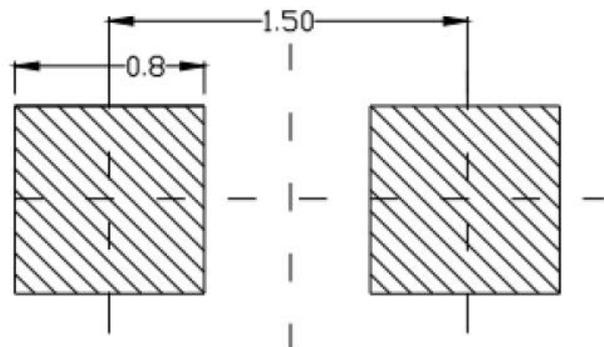
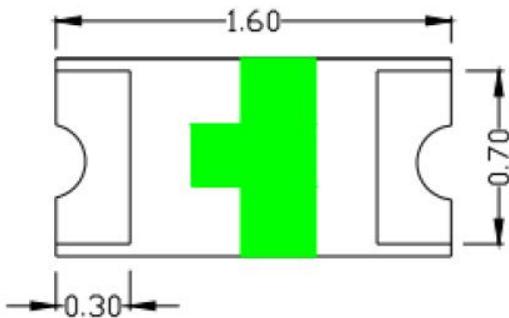
Lighting Color: Ultra Bright Pure White

Lens Color: Water Clear Flat Mold

**2. (Package Dimensions):**



**Soldering PAD Suggested:**



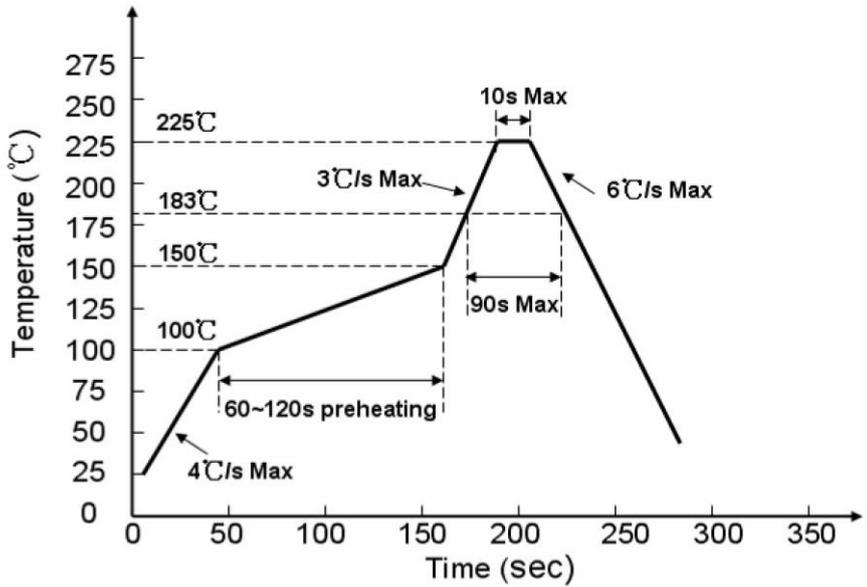
**Notes:**

All dimensions are in millimeters.

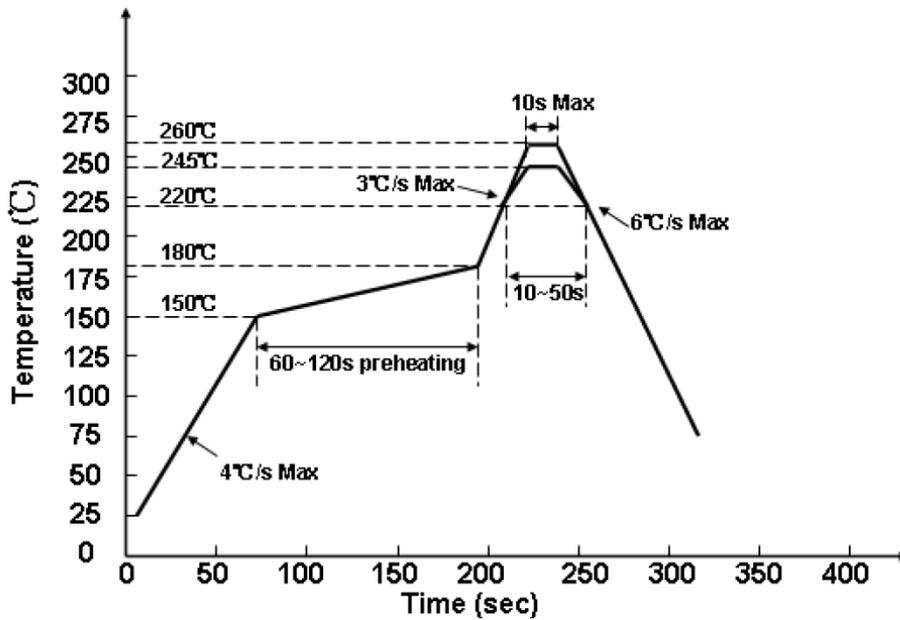
Tolerance is  $\pm 0.10\text{mm}$  unless otherwise noted

### 3. Soldering Profile Suggested

#### 3.1 For Lead Solder



#### 3.2 For Lead Free Solder



Notes:

We recommend the soldering temperature 245±5°C  
The maximum temperature should be limited to 260°C

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

Parameter	Symbol	Rating	Unit
Power Dissipation	Pd	90	mW
Peak Forward Current (1/10 Duty Cycle, 0.1ms Pulse Width)	I <sub>FP</sub>	100	mA
DC Forward Current	I <sub>F</sub>	30	mA
Reverse Voltage	V <sub>R</sub>	5	V
Operating Temperature	T <sub>opr</sub>	-30°C ~ +85°C	
Storage Temperature	T <sub>stg</sub>	-40°C ~ +90°C	
Soldering Condition	T <sub>sol</sub>	Reflow soldering: 260° For 5 Seconds Hand soldering: 300°C For 3 Seconds	

#### 5. Electrical Optical Characteristics (Ta = 25°C):

Parameter	Symbol	Min	Type	Max	Unit	Test Condition
Luminous Intensity	IV	--	350	--	mcd	IF=20mA
Viewing Angle	2θ <sub>1/2</sub>	--	120	--	deg	IF=20mA
CIE 1931 Coordinate	X/Y	--	X: 0.31 Y: 0.31	--		IF=20mA
Color Temperature	K	--	5000	--	Kelvin	IF=20mA
Forward Voltage	VF	2.8	--	3.4	V	IF=20mA
Reverse Current	IR	--	--	10	uA	VR=5V

Notes:

- Luminous intensity is measured with a light sensor and filter combination that approximates the CIE eye-response curve
- θ<sub>1/2</sub> is the off-axis angle at which the luminous intensity is half the axial luminous intensity.
- The dominant wavelength, λ<sub>d</sub> is derived from the CIE chromaticity diagram and represent the Single wavelength which defines the color of the device.

## 6. Typical Electrical-Optical Characteristics Curves

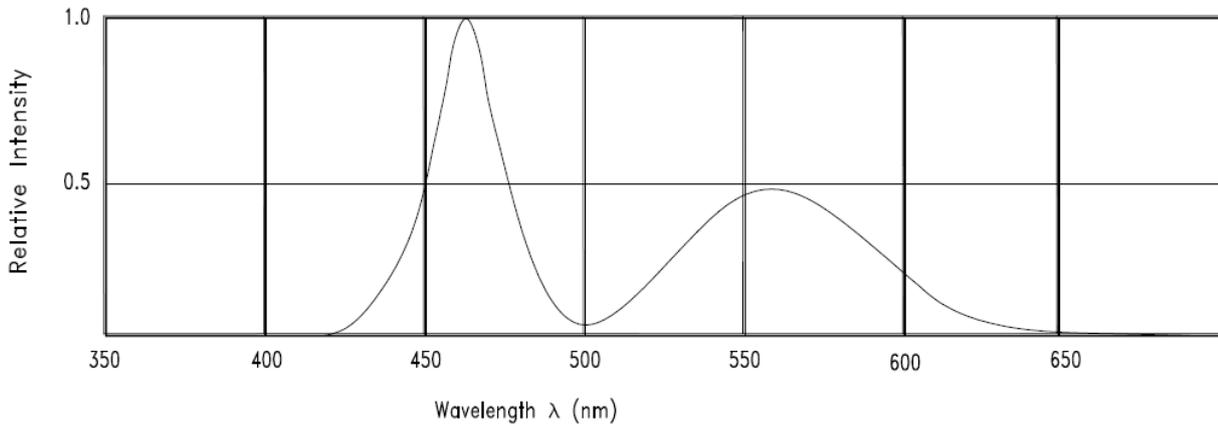


Fig.1 Relative Intensity vs. Wavelength

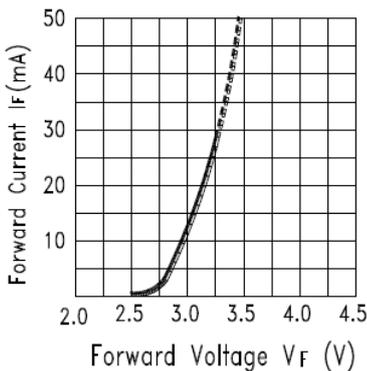


Fig.2 Forward Current vs. Forward Voltage

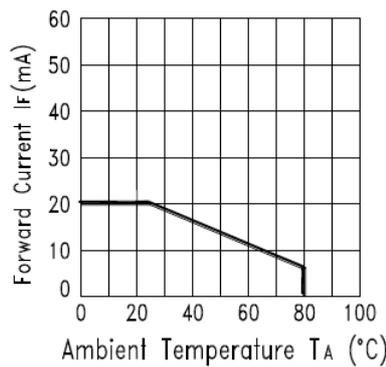


Fig.3 Forward Current Derating Curve

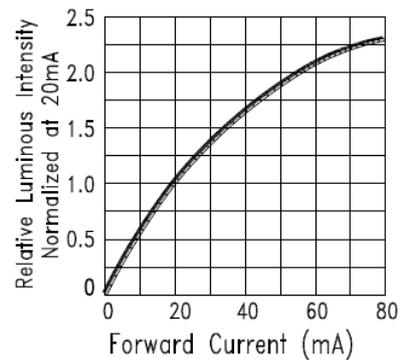


Fig.4 Relative Luminous Intensity vs. Forward Current

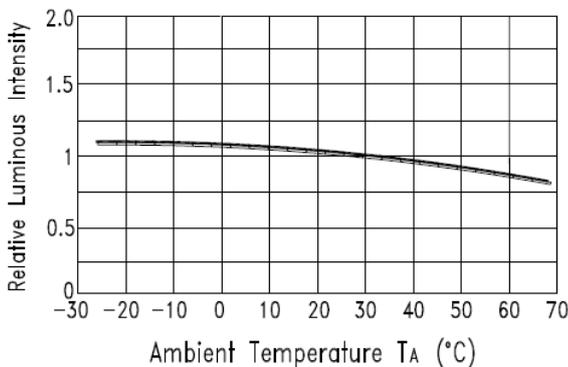


Fig.5 Luminous Intensity vs. Ambient Temperature

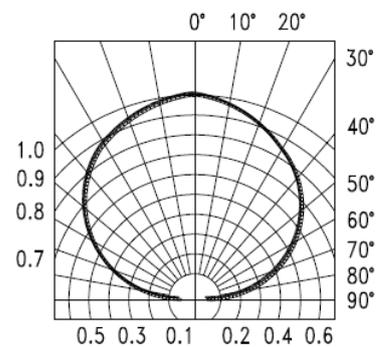
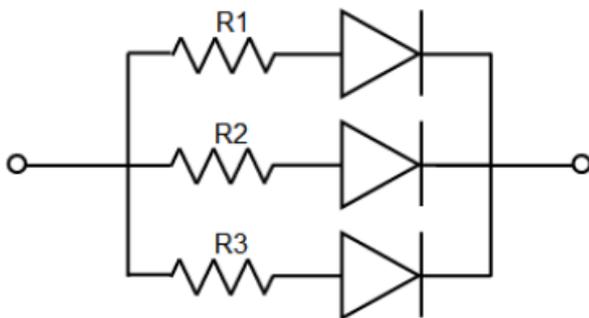


Fig.6 Spatial Distribution

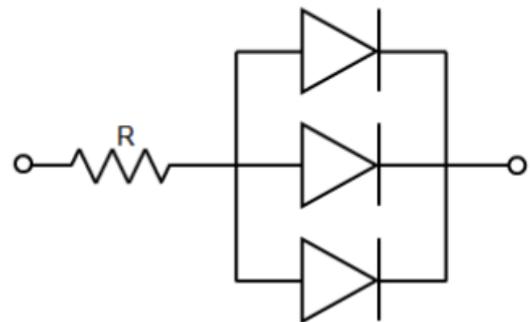
## 7. Cautions

### Application

1. A LED is a current-operated device. The slight shift of voltage will cause big change of current, which will damage LEDs. Customer should use resistors in series for the Over-Current-Proof.
2. In order to ensure intensity uniformity on multiple LEDs connected in parallel in an application, it is recommended to use individual resistor separately, as shown in Circuit A below. The brightness of each LED shown in Circuit B might appear difference due to the differences in the I-V characteristics of those LEDs.



**Circuit model A**



**Circuit model B**

3. High temperature may reduce LEDs' intensity and other performances, so keeping it away from heat source to get good performance is necessary.

### Storage

1. Before opening original package, it is recommended to store them in the following environment:

Temperature: 5°C~30°C

Humidity: 85%RH max.

2. After opening original package, the storage ambient for the LEDs should be in 5~30°C temperature and 60% or less relative humidity.
3. In order to avoid moisture absorption, it is recommended that the LEDs that out of the original package should be stored in a sealed container with appropriate desiccant, or in desiccators with nitrogen ambient.
4. The LEDs should be used within 168hrs (7 days) after opening the package. Once been mounted, soldering should be quick.
5. If the moisture absorbent material (silica gel) has faded away or the LEDs stored out of original package for more than 168hrs (7 days), baking treatment should be performed using the conditions: 60°C at least 24 hours.



## ESD (Electrostatic Discharge )-Protection

LED (especially the Blue, White and Green product) is an ESD sensitive component, and static electricity or power surge will damage the LED. ESD-damaged LEDs will exhibit abnormal characteristics such as high reverse leakage current, low forward voltage, or “no light-up” at low currents, etc. Some advice as below should be noticed:

1. A conductive wrist strap or anti-electrostatic glove should be worn when handling these LEDs.
2. All devices, equipment, machinery, work tables and storage racks, etc. must be properly grounded.
3. Use anti-static package or boxes to carry and storage LEDs. And ordinary plastic package or boxes is forbidden to use.
4. Use ionizer to neutralize the static charge during handling or operating.
5. All surfaces and objects within 1 ft close to LEDs measure less than 100V.

## Cleaning

Use alcohol-based cleaning solvents such as IPA (isopropyl alcohol) to clean LEDs if necessary.

## Soldering

1. Soldering condition refer to the draft “Soldering Profile Suggested” on page 2.
2. Reflow soldering should not be done more than 2 times.
3. Manual soldering is only suggested on repair and rework. The maximum soldering temperature should not exceed 300°C within 3 sec. And the maximum capacity of soldering iron is 30W in power.
4. During the soldering process, do not touch the lens at high temperature.
5. After soldering, any mechanical force on the lens or any excessive vibration shall not be accepted to apply, also the circuit board shall not be bent as well.

## Others

1. The LEDs described here are intended to be used for ordinary electronic equipment (such as office equipment, communication equipment and household applications).Consult the Sales in advance for the applications in which exceptional reliability is required, particularly when the failure or malfunction of the LEDs may directly jeopardize life or health. (Such as in aviation, transportation, traffic control equipment, medical and life support systems and safety devices).
2. The light output from the high luminous intensity LEDs may cause injury to human eyes when viewed directly.
3. The appearance and specifications of the product may be modified for improvement without prior notice.