



## Data Sheet

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Customer:

Part No:

Sample No:

Description:

Item No:

_____
CL-SP1615RGB-02
_____
1615 SMD Full Color
_____
_____

Customer			
Check	Inspection	Approval	Date

## Features

- 1.6\*1.5 \*0.6mm package
- . Top view
- . Compatible with infrared and vapor phase reflow solder process.
- . Wide viewing angle
- . Pb-free
- . RoHS compliant

## Description

- . The Ciellight 1615 SMD LED is much smaller than lead frame type components,thus enable smaller board size, higher packing density,reduced storage space and finally smaller equipment to be obtained.
- . Besides,lightweight makes them ideal for miniature applications etc.

## Applications

- . General lighting
- . Decorative and Entertainment Lighting
- . Indicators
- . Automotive Telecommunication
- . Switch lights

## Device Selection Guide

	<b>Chip Material</b>	<b>Emitted Color</b>	<b>Resin Color</b>
R6	AlGaInP	Brilliant Red	
GH	InGaN	Green	Water Claer
B1	InGaN	Blue	

**Absolute Maximum Ratings (Ta=25°C)**

Parameter	Blue	Green	Red	Units
Power dissipation	75	75	50	mW
DC Forward Current	24	24	24	mA
Peak Forward Current [1]	135	135	80	mA
Reverse Voltage	5	5	5	V
Operating/Storage Temperature	-40°C To +85°C			

Note:

1/10 Duty Cycle, 0.1ms Pulse Width.

**Electro-Optical Characteristics (Ta=25°C)**

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition	
Reverse Current	$I_R$	---	---	10	$\mu A$	$V_R=5V$	
Viewing Angle	$2\theta_{1/2}$	---	120	---	deg	$I_F=20mA$	
Forward Voltage	$V_F$	R6	1.8	---	2.2	V	$I_F=20mA$
		GH	2.8	---	3.2		
		B1	2.8	---	3.2		
Luminous Intensity	$I_v$	R6	100	---	200	mcd	$I_F=20mA$
		GH	400	---	600		
		B1	200	---	300		
Doninant Wavelength	$\lambda_d$	R6	615	---	630	nm	$I_F=20mA$
		GH	515	---	530		
		B1	455	---	470		

**Notes:**

1. Tolerance of Luminous Intensity  $\pm 10\%$ .
2. Tolerance of Forward Voltage :  $\pm 0.1V$ .
3. Tolerance of Dominant Wavelength:  $\pm 1nm$

**Luminous Intensity Bin Limits**

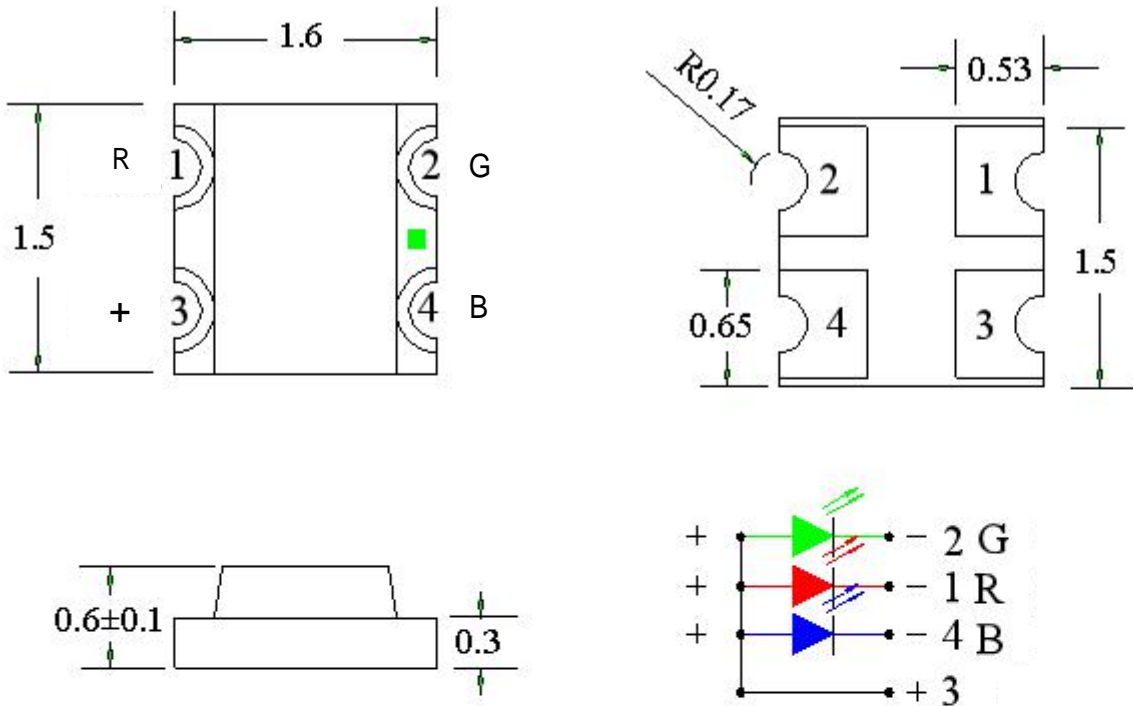
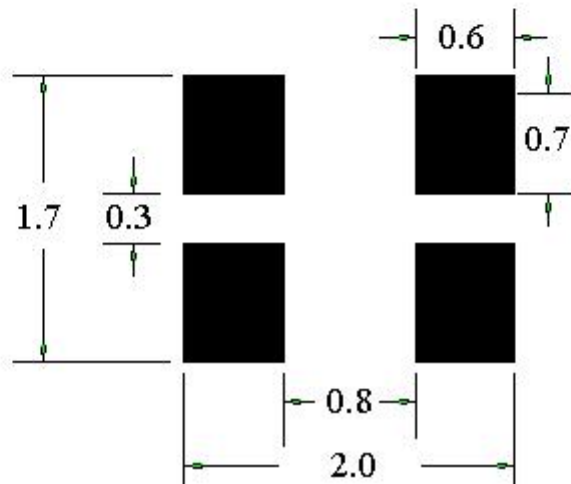
BIN Code	Test Condition @20mA	
	<u>Vfmin(v)</u>	<u>Vfmax (v)</u>
UHR		
1	1.8	2.0
2	2.0	2.2
DLG		
1	2.8	3.0
2	3.0	3.2
DNB		
1	2.8	3.0
2	3.0	3.2

**Dominant Wavelength BIN Limits**

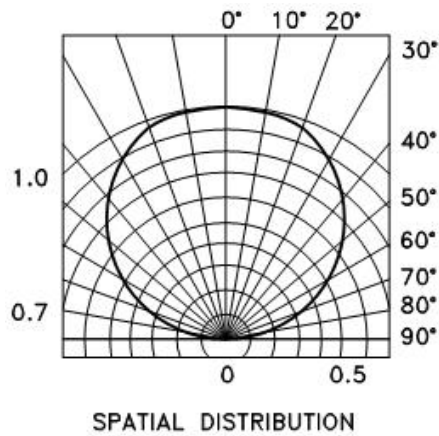
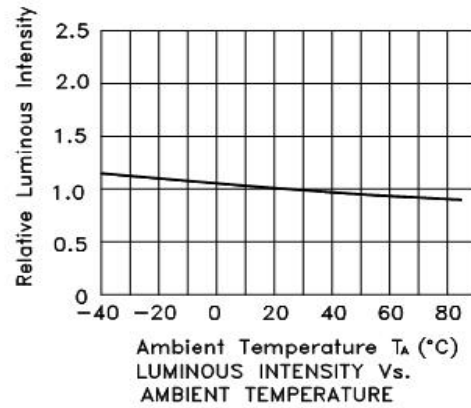
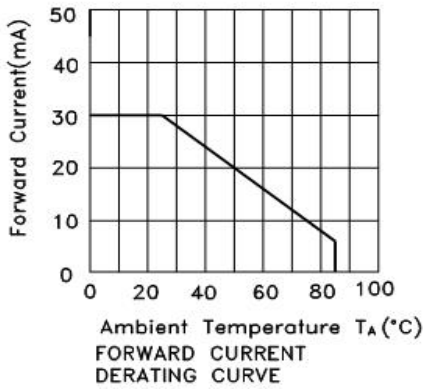
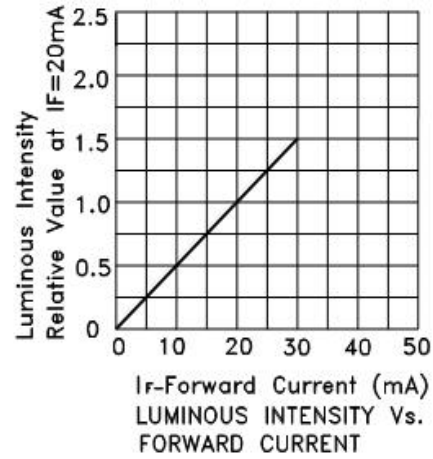
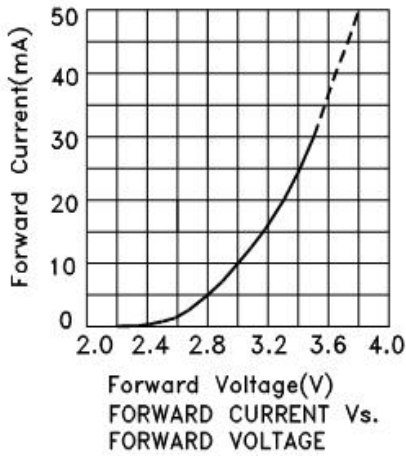
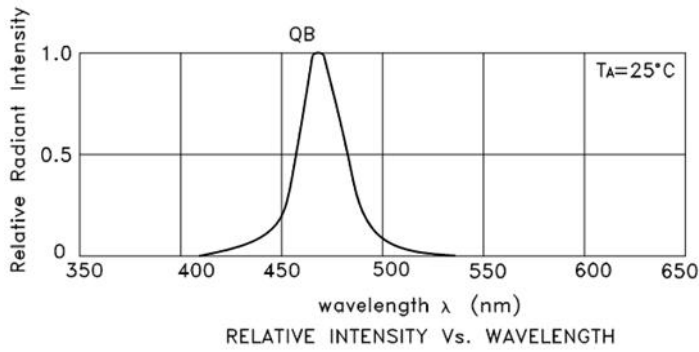
BIN Code	Test condition: @20mA	
	<u><math>\lambda_{dmin}</math> (nm)</u>	<u><math>\lambda_{dmax}</math> (nm)</u>
UHR		
1	615	620
2	620	625
3	625	630
DLG		
1	515	520
2	520	525
3	525	530
DNB		
1	455	460
2	460	465
3	465	470

**Forward Voltage Bin Limits**

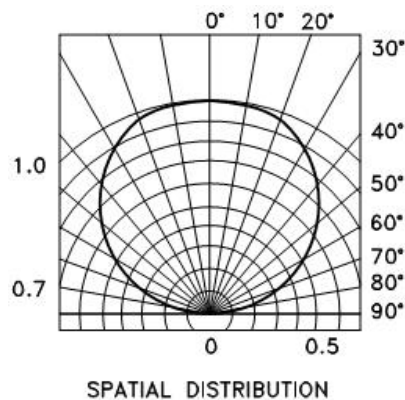
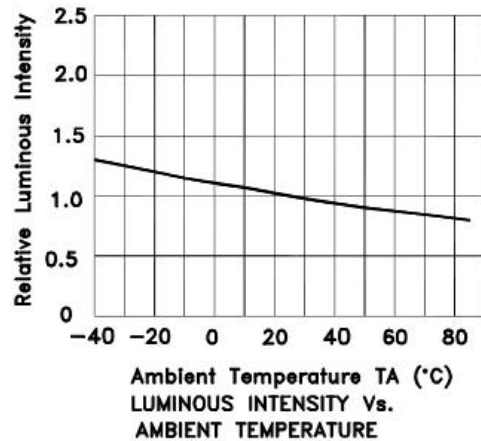
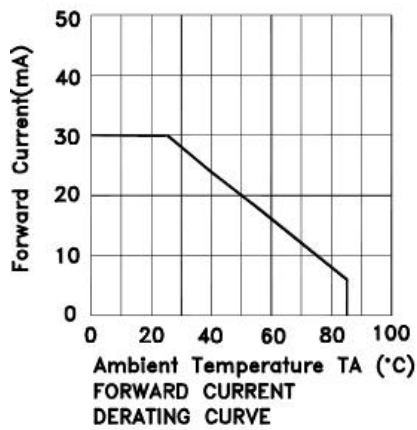
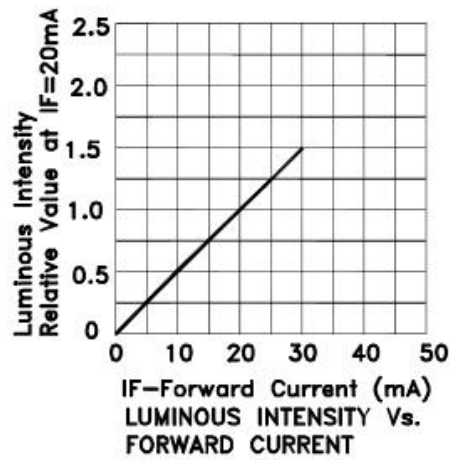
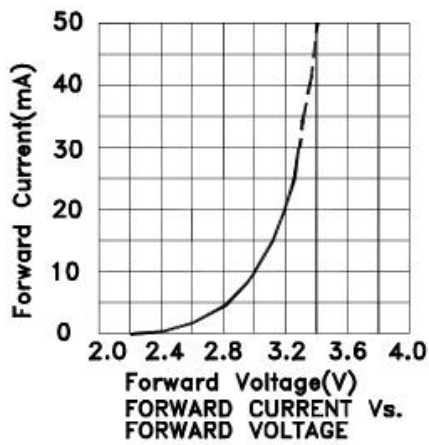
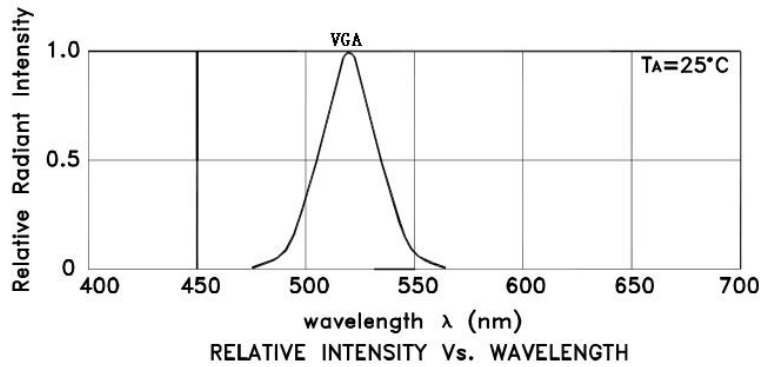
BIN Code	Test condition: @20mA	
	<u>IVmin(mcd)</u>	<u>IVmax (mcd)</u>
UHR		
R1	100	200
DLG		
G1	400	600
DNB		
B1	200	300

**Package Dimensions**

**Recommended Solder Pad**


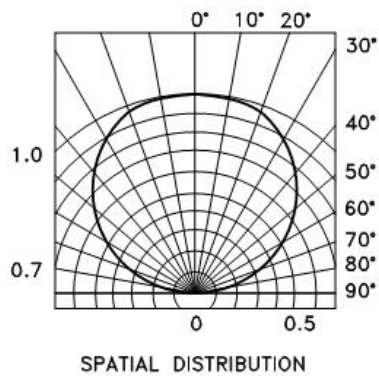
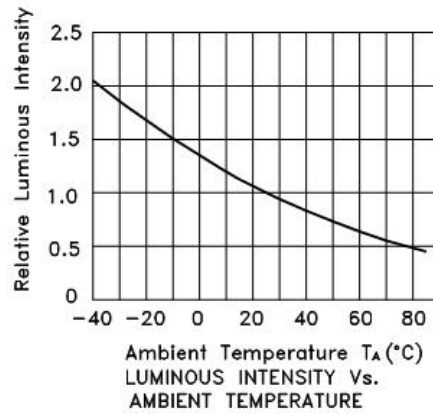
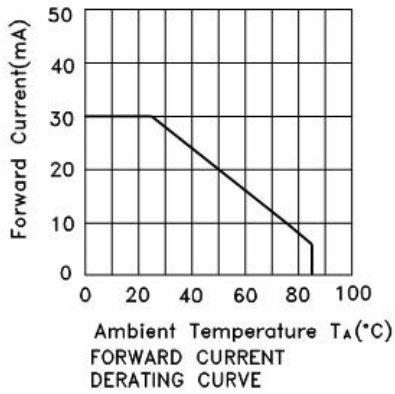
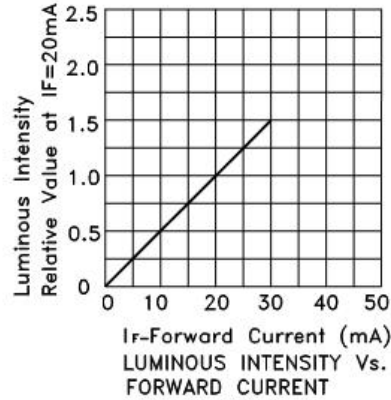
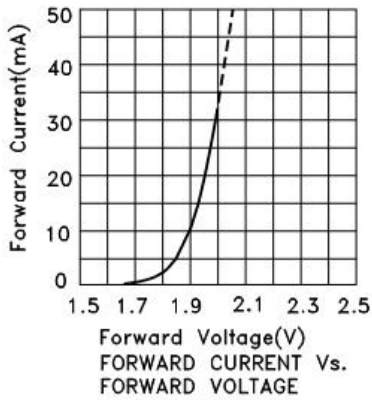
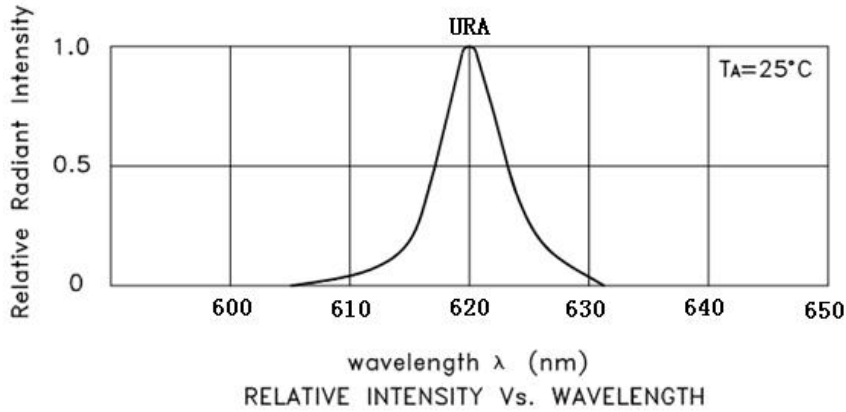
**Note:** Tolerance unless mentioned is  $\pm 0.1$  mm, Unit = mm.

**Blue**


Green



Red





**Label Form Specification**

CPN: Customer's Production Number

P/N : Production Number

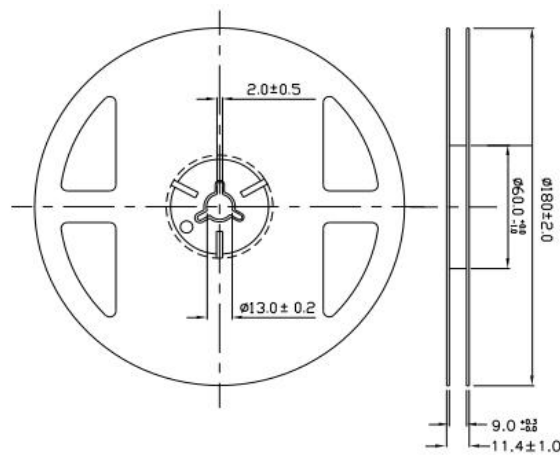
QTY: Packing Quantity

CAT: Ranks

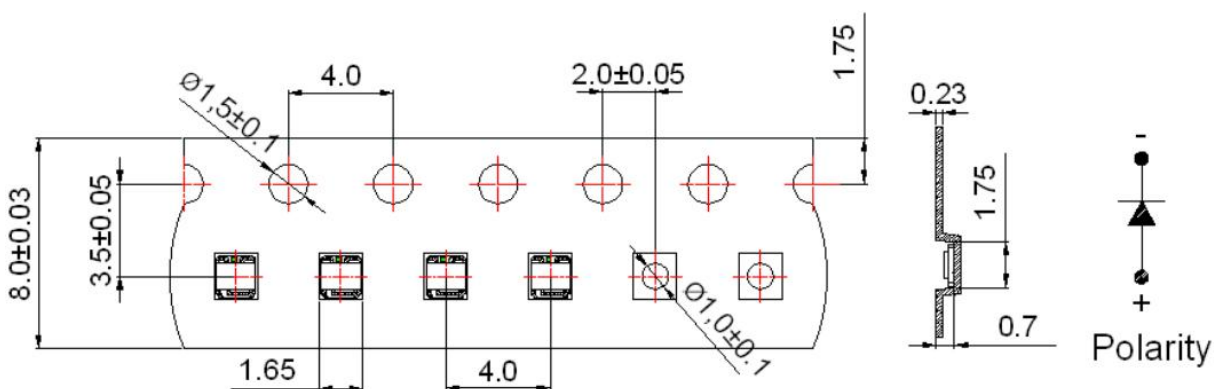
HUE: Peak Wavelength

REF: Reference

LOT No: Lot Number

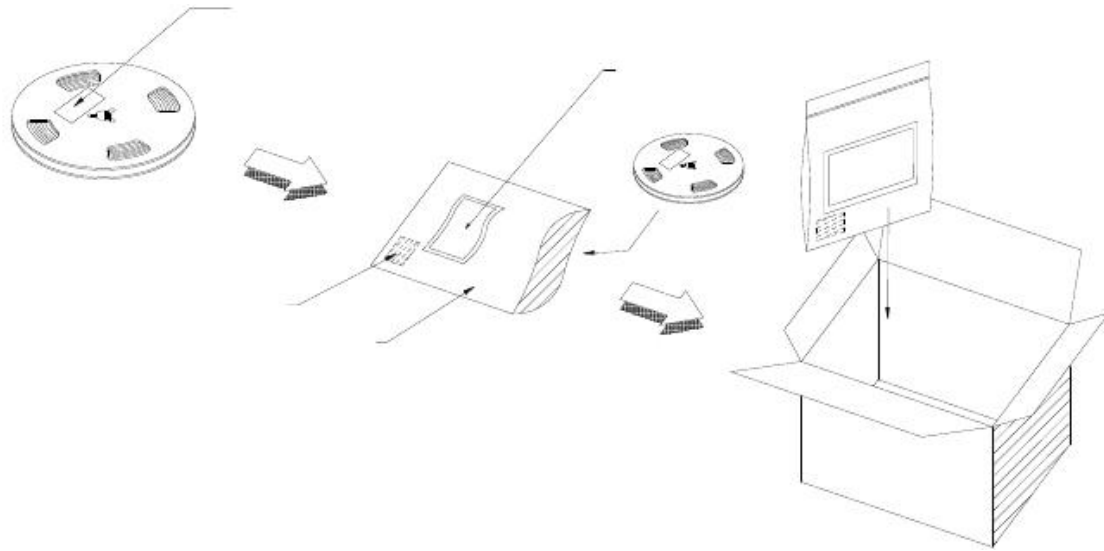
**Reel Dimensions**


**Note:** The tolerances unless mentioned is  $\pm 0.1$ mm ,Unit = mm

**Carrier Tape Dimensions:(Quantity: 4000pcs/reel)**

**Note:**

1. Tolerance unless mentioned is  $\pm 0.1$ mm, Unit = mm.
2. Minimum packing amount is 1000/2000 pcs per reel.

**Moisture Resistant Packing Process**



### Reliability Test Items and Conditions

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

Confidence level : 90%

LTPD : 10%

No.	Items	Test Condition	Test Hours/Cycles	Sample Size	Ac/Re
1	Reflow Soldering	Temp. : 260°C/10sec.	6 Min	22 PCS	0/1
2	Thermal Shock	H : +100°C 5min ∫ 10 sec L : -10°C 5min	300 Cycles	22 PCS	0/1
3	Temperature Cycle	H : +100°C 15min ∫ 5 min L : -40°C 15min	300 Cycles	22 PCS	0/1
4	High Temperature/Humidity Reverse Bias	Ta=85°C,85%RH	1000 Hrs.	22 PCS	0/1
5	Low Temperature Storage	Ta=-40°C	1000 Hrs.	22 PCS	0/1
6	High Temperature Storage	Ta=100°C	1000 Hrs.	22 PCS	0/1
7	DC Operation Life	Ta=25°C IF = 20 mA	1000 Hrs.	22 PCS	0/1

### Precautions For Use

#### 1. Over-current-proof

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

#### 2. Storage

2.1 Do not open moisture proof bag before the products are ready to use.

2.2 Before opening the package, the LEDs should be kept at 40°C or less and 90%RH or less.

2.3 The LEDs should be used within a year.

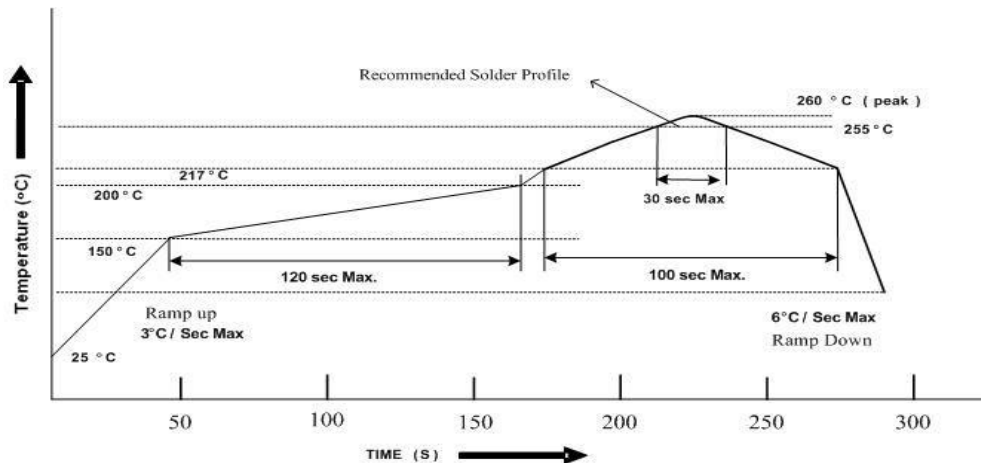
2.4 After opening the package, the LEDs should be kept at 30°C or less and 60%RH or less.

2.5 The LEDs should be used within 168 hours (7 days) after opening the package

2.6 If the moisture absorbent material (silica gel) has faded away or the LEDs have exceeded the storage time, baking treatment should be performed using the following J-STD-33 Standard.

### 3. Soldering Condition

#### 3.1 Pb-free solder temperature profile



3.2 Reflow soldering should not be done more than two times.

3.3 When soldering, do not put stress on the LEDs during heating.

3.4 After soldering, do not warp the circuit board.

### 4. Soldering Iron

Each terminal is to go to the tip of soldering iron temperature less than 350°C for 3 seconds within once in less than the soldering iron capacity 25W. Leave two seconds and more intervals, and do soldering of each terminal. Be careful because the damage of the product is often started at the time of the hand solder.

### 5. Repairing

Repair 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 beforehand whether the characteristics of the LEDs will or will not be damaged by repairing.