

# DATA SHEET

PART NO.: L-C150WDT-SH3-U1

REV: A/1

CUSTOMER'S APPROVAL : \_\_\_\_\_

DCC : \_\_\_\_\_

# SURFACE MOUNT DEVICE LED

Part No. : L-C150WDT-SH3-U1

REV: A/1

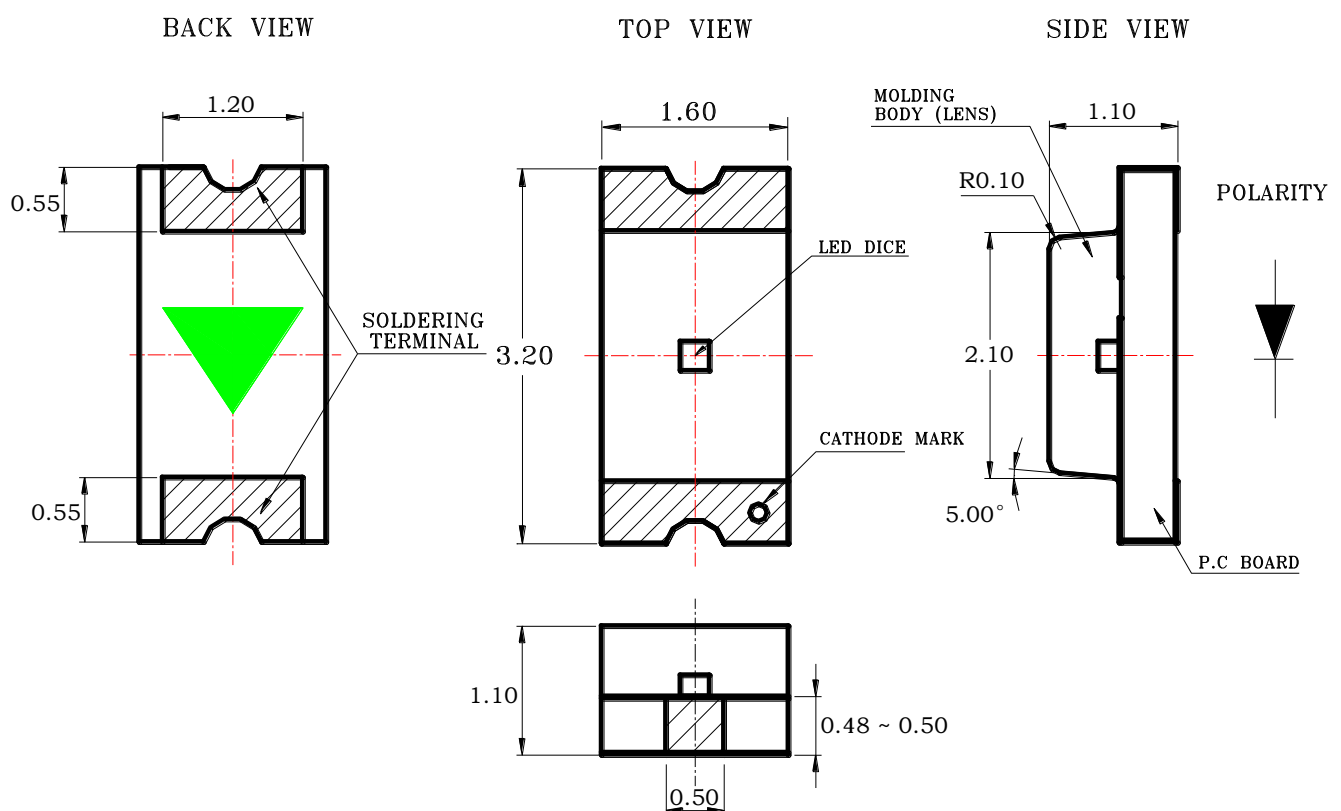
## ● Features

- \* Wide view angle, White color SMD chip LED .
- \* Compatible with automatic Pick & Place equipment.
- \* Compatible with Reflow soldering and Wave soldering processes.
- \* EIA STD package.(ANSI/EIA-481-B-2001)
- \* I.C. compatible, low current application
- \* Pb free product and acceptable lead-free process!.
- \* Meet RoHS Green Product.
- \* Moisture sensitivity level: 3 .

## ● Application

- \* LCD back light
- \* Switch back lights
- \* Illuminations.

## ● PACKAGE OUTLINE DIMENSIONS



### Notes:

1. All dimensions are in millimeters.
2. Tolerance is  $\pm 0.1\text{mm}$  (.004") unless otherwise noted.

# SURFACE MOUNT DEVICE LED

Part No. : L-C150WDT-SH3-U1

REV: A/1

## ● CHIP MATERIALS

- \* Dice Material : InGaN
- \* Light Color : White
- \* Lens Color : Light Yellow Diffused.

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

| Symbol           | Parameter                                                    | Rating     | Unit |
|------------------|--------------------------------------------------------------|------------|------|
| P <sub>D</sub>   | Power Dissipation                                            | 80         | mW   |
| I <sub>PF</sub>  | Peak Forward Current<br>(1/10 Duty Cycle, 0.1ms Pulse Width) | 80         | mA   |
| I <sub>F</sub>   | Continuous Forward Current                                   | 20         | mA   |
| V <sub>R</sub>   | Reverse Voltage                                              | 5          | V    |
| ESD              | Electrostatic Discharge Threshold(HBM) <sup>Note A</sup>     | 2000       | V    |
| T <sub>opr</sub> | Operating Temperature Range                                  | -40 ~ + 85 | °C   |
| T <sub>stg</sub> | Storage Temperature Range                                    | -40 ~ + 85 | °C   |

Note A :

HBM : Human Body Model. Seller gives no other assurances regarding the ability of to withstand ESD.

## ● Electro-Optical Characteristics(Ta=25°C)

| Parameter          | Symbol  | Min. | Typ.  | Max. | Unit | Test Condition |
|--------------------|---------|------|-------|------|------|----------------|
| Luminous Intensity | IV      | 710  | 1000  | 1400 | mcd  | IF=20mA        |
| Viewing Angle      | 2 θ 1/2 |      | 130   |      | Deg  | Note 2         |
| CIE Chromaticity   | X       |      | 0.275 |      |      | IF=20mA        |
| CIE Chromaticity   | Y       |      | 0.268 |      |      |                |
| Forward Voltage    | VF      | 2.65 | 2.95  | 3.25 | V    | IF = 20mA      |
| Reverse Current    | IR      |      |       | 50   | μ A  | VR = 5V        |

# SURFACE MOUNT DEVICE LED

Part No. : L-C150WDT-SH3-U1

REV: A/1

## ● Bin Code List

| Luminous Intensity(IV), Unit:mcd@20mA |      |      |
|---------------------------------------|------|------|
| Bin Code                              | Min  | Max  |
| V1                                    | 710  | 900  |
| V2                                    | 900  | 1120 |
| W1                                    | 1120 | 1400 |
|                                       |      |      |

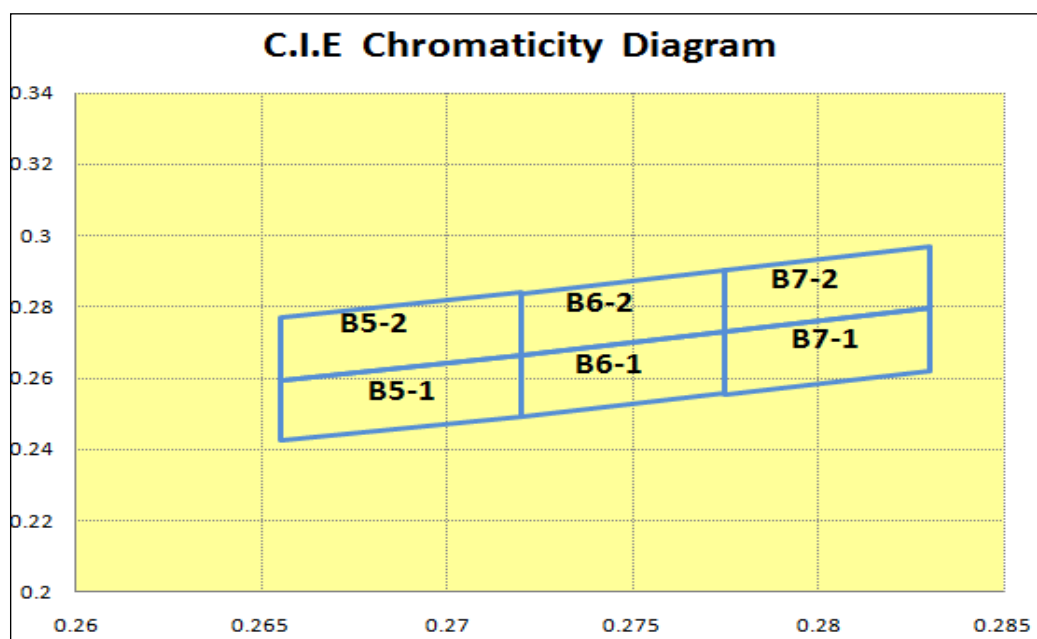
Tolerance of each bin are  $\pm 15\%$

| Forward Voltage(VF), Unit:V@20mA |      |      |
|----------------------------------|------|------|
| Bin Code                         | Min  | Max  |
| K7                               | 2.65 | 2.80 |
| K8                               | 2.80 | 2.95 |
| K9                               | 2.95 | 3.10 |
| K10                              | 3.10 | 3.25 |

Tolerance of each bin are  $\pm 0.1\text{V}$

| Color Rank (CIE chromaticity X , Y) @ 20mA |        |        |        |        |           |        |        |        |        |
|--------------------------------------------|--------|--------|--------|--------|-----------|--------|--------|--------|--------|
| Rank B5-1                                  |        |        |        |        | Rank B5-2 |        |        |        |        |
| X                                          | 0.2655 | 0.2655 | 0.272  | 0.272  | X         | 0.2655 | 0.2655 | 0.272  | 0.272  |
| Y                                          | 0.2425 | 0.2595 | 0.2665 | 0.249  | Y         | 0.2595 | 0.277  | 0.284  | 0.2665 |
| Rank B6-1                                  |        |        |        |        | Rank B6-2 |        |        |        |        |
| X                                          | 0.272  | 0.2775 | 0.2775 | 0.272  | X         | 0.272  | 0.2775 | 0.2775 | 0.272  |
| Y                                          | 0.249  | 0.2555 | 0.273  | 0.2665 | Y         | 0.284  | 0.2905 | 0.273  | 0.2665 |
| Rank B7-1                                  |        |        |        |        | Rank B7-2 |        |        |        |        |
| X                                          | 0.2775 | 0.283  | 0.283  | 0.2775 | X         | 0.2775 | 0.283  | 0.283  | 0.2775 |
| Y                                          | 0.2555 | 0.262  | 0.2795 | 0.273  | Y         | 0.273  | 0.2795 | 0.297  | 0.2905 |

\* Measurement of Color coordinates :  $\pm 0.02$



# SURFACE MOUNT DEVICE LED

Part No. : L-C150WDT-SH3-U1

REV: A/1

## Notes:

1. Luminous intensity is measured with a light sensor and filter combination that approximates the CIE eye-response curve.
2.  $\theta_{1/2}$  is the off-axis angle at which the luminous intensity is half the axial luminous intensity.
3. Caution in ESD :  
Static Electricity and surge damages the LED. It is recommended use a wrist band or anti-electrostatic glove when handling the LED. All devices, equipment and machinery must be properly grounded.
4. Major standard testing equipment by “Instrument System” Model : CAS140B Compact Array Spectrometer and “KEITHLEY” Source Meter Model : 2400.

## ● Typical Electro-Optical Characteristics Curves

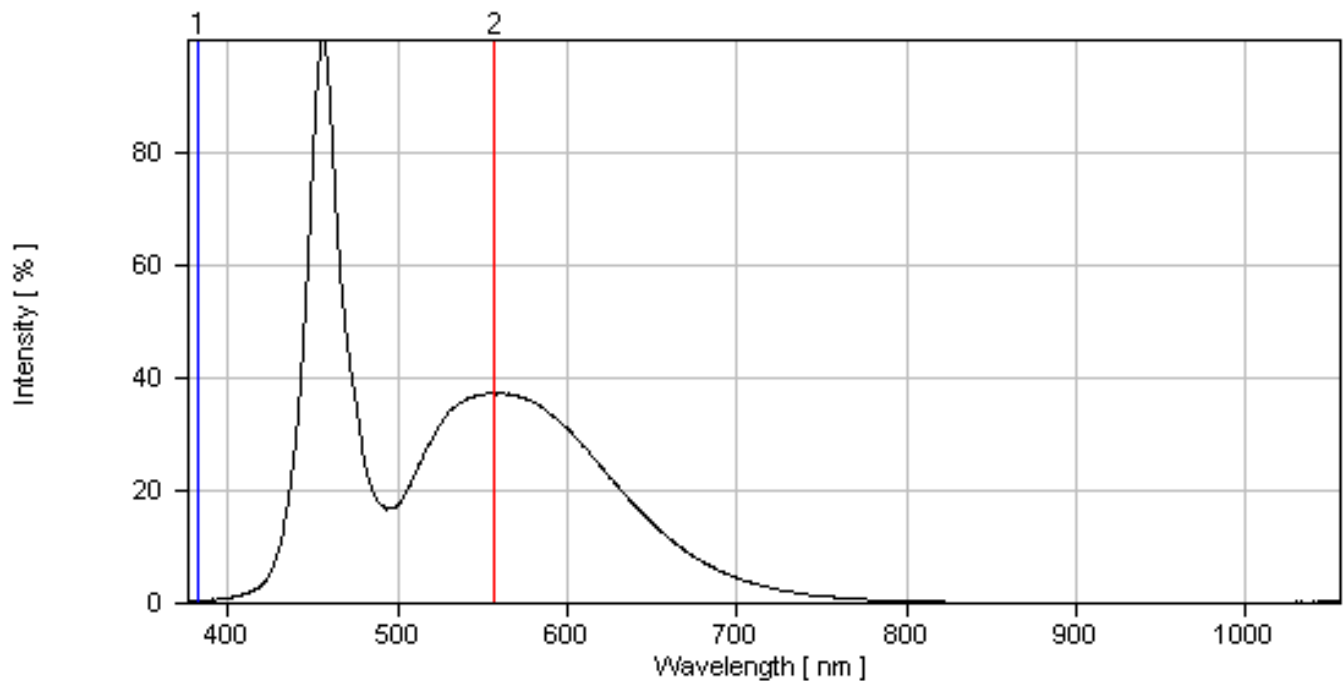


Fig.1 Relative Intensity vs. Wavelength

# SURFACE MOUNT DEVICE LED

Part No. : L-C150WDT-SH3-U1

REV: A/1

## ● Typical Electro-Optical Characteristics Curves

(25°C Ambient Temperature Unless Otherwise Noted)

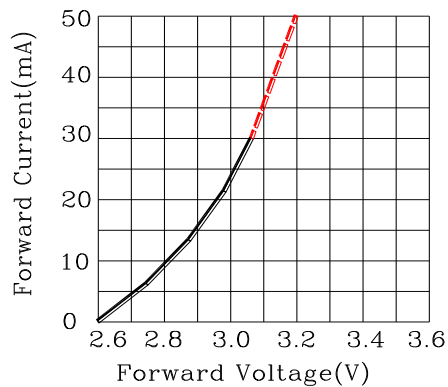


Fig.1 Forward Current vs. Forward Voltage

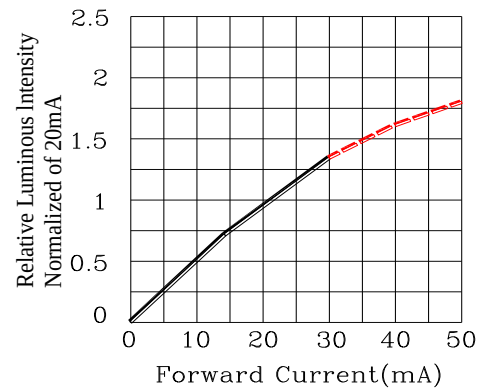


Fig.2 Relative Luminous Intensity vs. Forward Current

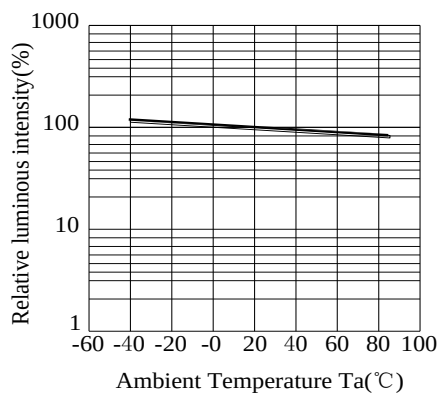


Fig.3 Luminous Intensity vs. Ambient Temperature

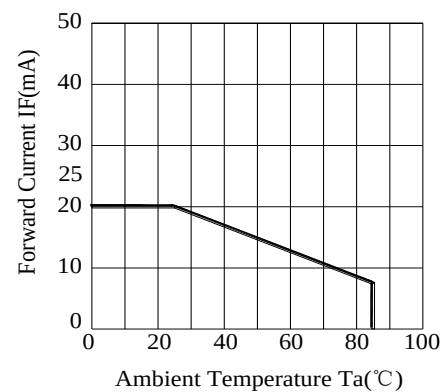


Fig.4 Forward Current Derating Curve

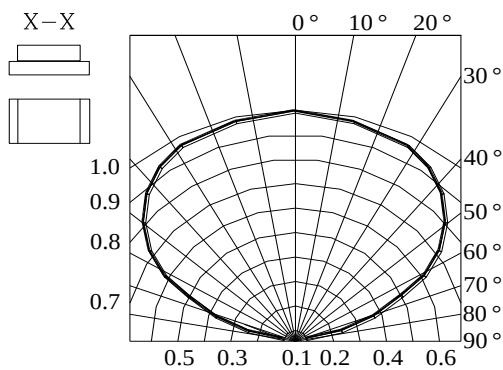


Fig.5 Relative Intensity vs. Angle

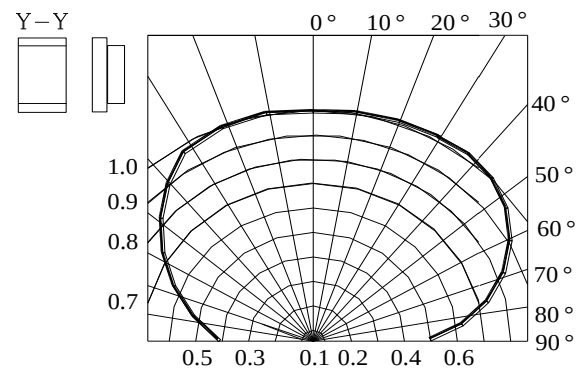


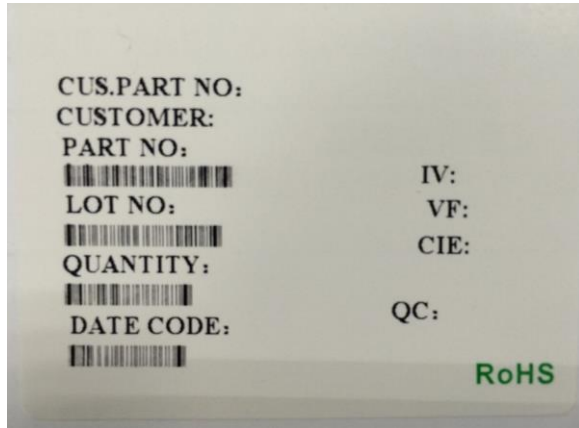
Fig.6 Relative Intensity vs. Angle

# SURFACE MOUNT DEVICE LED

Part No. : L-C150WDT-SH3-U1

REV: A/1

## ● Label Explanation



ITEM CODE:PARRA LIGHT

PART NO: L-C150WDT-SH3-U1

IV --- Luminous Intensity Code

|         |    |   |   |    |    |      |
|---------|----|---|---|----|----|------|
| LOT NO: | EM | S | L | 12 | 09 | 0110 |
|         | A  | B | C | D  | E  | F    |

A---EM: Emos Code

B---S:SMD

L---Local

D---Year

E---Month

F---SPEC.

PACKING QUANTITY OF BAG :

3000pcs for 150、170、110、155、115 series

4000pcs for 191 series

5000pcs for 192 series

|            |      |    |    |
|------------|------|----|----|
| DATE CODE: | 2012 | 09 | 10 |
|            | G    | H  | I  |

G--- Year

H--- Month

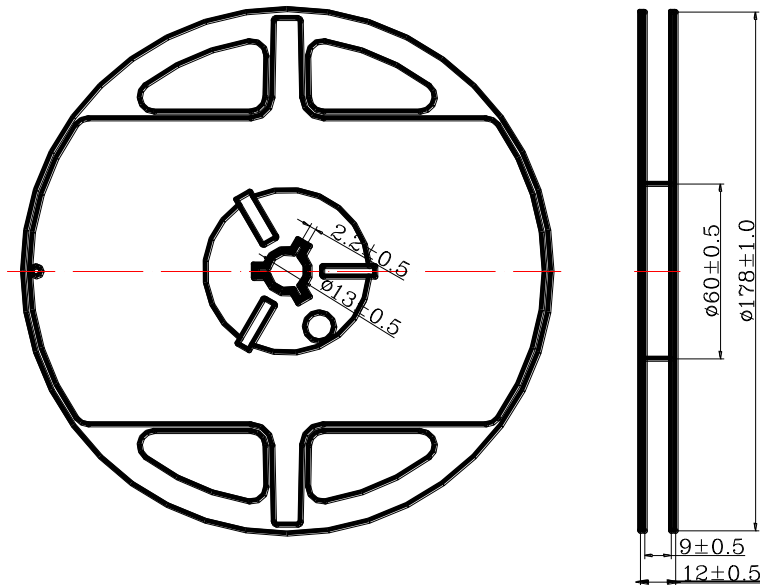
I --- Day

# SURFACE MOUNT DEVICE LED

Part No. : L-C150WDT-SH3-U1

REV: A/1

## ● Reel Dimensions



Notes:

1. Taping Quantity : 3000pcs, (Minimum packing quantity will be 500 pcs for remainders)
2. The tolerances unless mentioned is  $\pm 0.1$ mm, Angle  $\pm 0.5^\circ$  , Unit : mm.

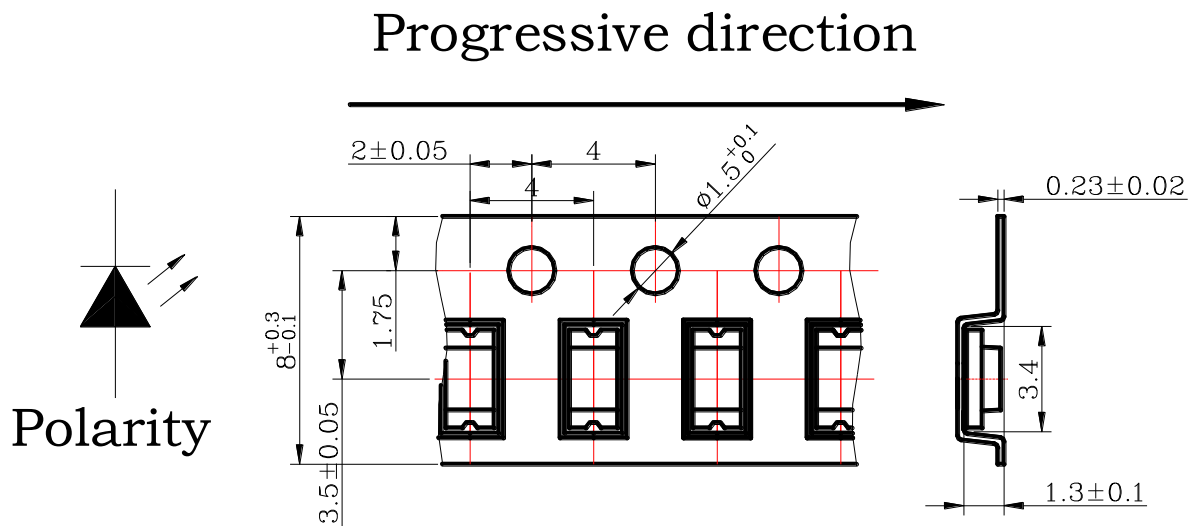


# SURFACE MOUNT DEVICE LED

Part No. : L-C150WDT-SH3-U1

REV: A/1

## ● Package Dimensions Of Tape And Reel



Notes: All dimensions are in millimeters.

## SURFACE MOUNT DEVICE LED

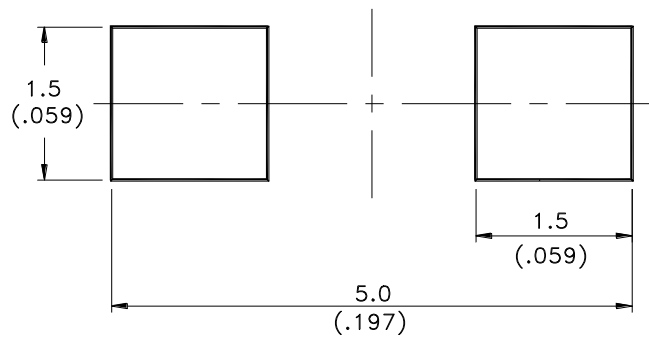
Part No. : L-C150WDT-SH3-U1

REV: A/1

### ● Cleaning

- \* If cleaning is required , use the following solutions for less than 1 minute and less than 40°C.
- \* Appropriate chemicals: Ethyl alcohol and isopropyl alcohol.
- \* Effect of ultrasonic cleaning on the LED resin body differs depending on such factors as the oscillator output, size of PCB and LED mounting method. The use of ultrasonic cleaning should be enforced at proper output after confirming there is no problem.

### ● Suggest Soldering Pad Dimensions



Direction of PWB camber

and go to reflow furnace

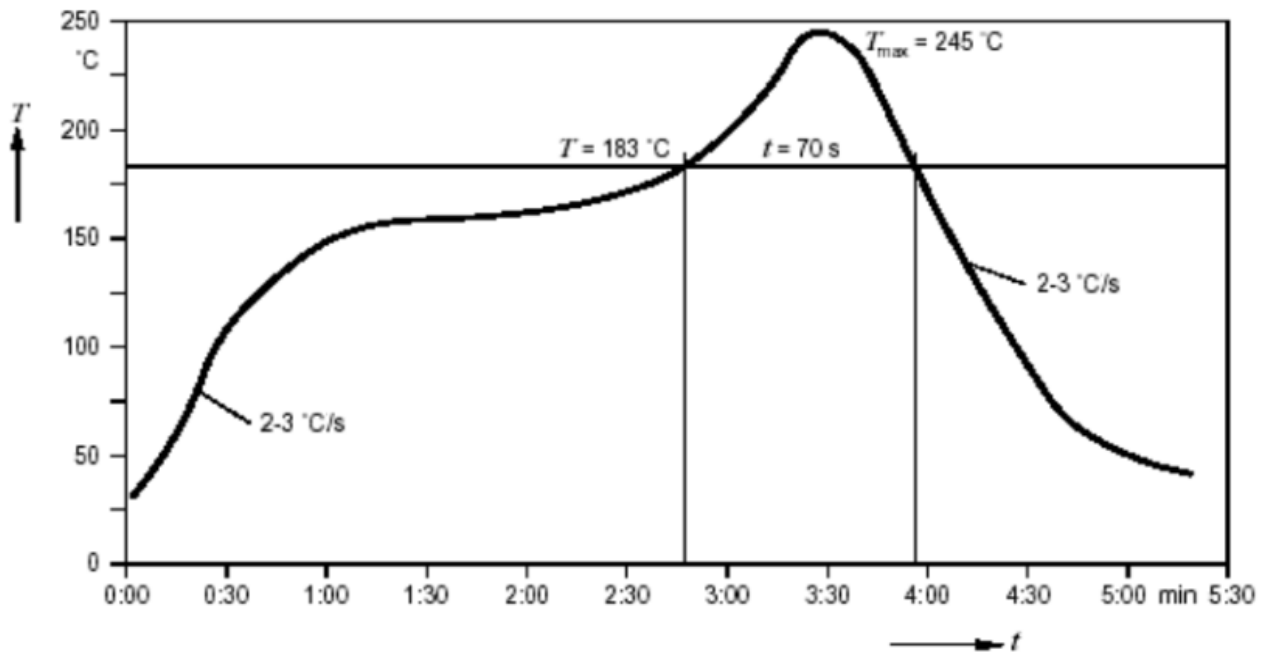
Notes : Suggest stencil print screen thickness are 0.10mm maximum.

# SURFACE MOUNT DEVICE LED

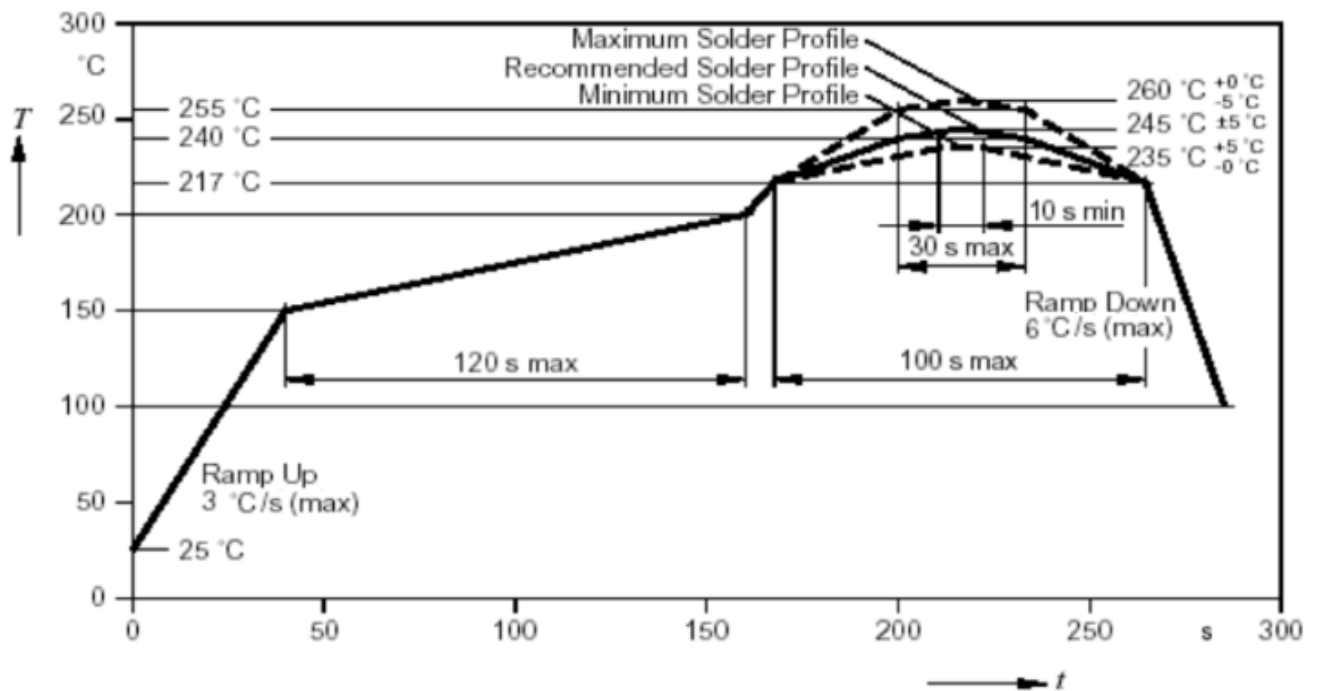
Part No. : L-C150WDT-SH3-U1

REV: A/1

- Suggest Sn/Pb IR Reflow Soldering Profile Condition:



- Suggest Pb-Free IR Reflow Soldering Profile Condition:



# SURFACE MOUNT DEVICE LED

Part No. : L-C150WDT-SH3-U1

REV: A/1

## ● CAUTIONS

### 1.Application Limitation :

The LED's described here are intended to be used for ordinary electronic equipment(such as office equipment, communication equipment and household application).Consult PARA's sales in advance for information on application in which exceptional quality and reliability are required, particularly when the failure or malfunction of the LED's may directly jeopardize life or health (such as airplanes, automobiles, traffic control equipment, life support system and safety devices).

### 2.Storage :

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

Before opening the package: The LEDs should be kept at 30℃ or less and 90%RH or less.

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 conditions.

Baking treatment: 60±5℃ for 24 hours

### 3.Soldering

Do not apply any stress to the lead frame during soldering while the LED is at high temperature.

Recommended soldering condition.

Reflow Soldering :

Pre-heat 120~150 ℃, 120sec. MAX., Peak temperature : 240 ℃ Max. Soldering time : 10 sec Max.

Soldering Iron : (Not recommended)

Temperature 300 ℃ Max., Soldering time : 3 sec. Max.(one time only), power dissipation of iron : 20W Max. use SN60 solder of solder with silver content and don't to touch LED lens when soldering.

Wave soldering :

Pre-heat 100 ℃ Max, Pre-heat time 60 sec. Max, Solder wave 260 ℃ Max, Soldering time 5 sec. Max. performed consecutively cooling process is required between 1<sup>st</sup> and 2<sup>nd</sup> soldering processes.

## SURFACE MOUNT DEVICE LED

Part No. : L-C150WDT-SH3-U1

REV: A/1

### 4. Lead-Free Soldering

For Reflow Soldering :

- 1、 Pre-Heat Temp: 150-180°C,120sec.Max.
- 2、 Soldering Temp: Temperature Of Soldering Pot Over 230°C,40sec.Max.
- 3、 Peak Temperature: 260°C , 5sec.
- 4、 Reflow Repetition: 2 Times Max.
- 5、 Suggest Solder Paste Formula : 93.3 Sn/3.1 Ag/3.1 Bi/0.5 Cu

For Soldering Iron (Not Recommended) :

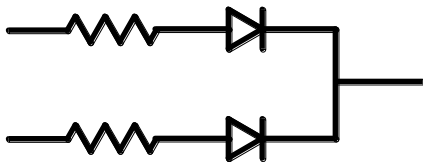
- 1、 Iron Tip Temp: 350°C Max.
- 2、 Soldering Iron: 30w Max.
- 3、 Soldering Time: 3 Sec. Max. One Time.

For Dip Soldering :

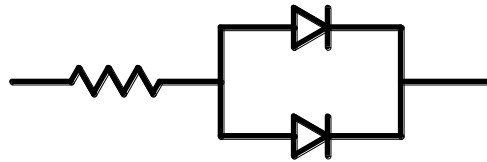
- 1、 Pre-Heat Temp: 150°C Max. 120 Sec. Max.
- 2、 Bath Temp: 265°C Max.
- 3、 Dip Time: 5 Sec. Max.

### 5. Drive Method

Circuit model A



Circuit model B



(A)Recommended circuit.

(B)The difference of brightness between LED`s could be found due to the Vf-If characteristics of LED.