# WRP161504-CTC2

# Dual Wavelength SMD Type Emitter

## Features

- Top view 1615 package
- Viewing Angle = $\pm 65^0$
- Compatible with infrared and vapor phase reflow solder process
- High reliability
- RoHS compliance

## Description

The WRP161504-CTC2 is a double LED housed in a miniature SMD package. The device has a Red and White LED.

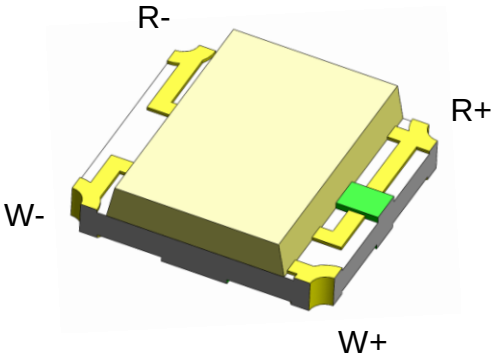
Static electricity and surge damage the LEDs.

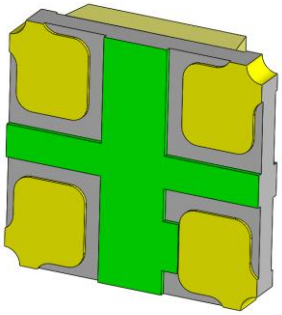
It is recommended to use a wrist band or anti-electrostatic glove when handling the LEDs.

## Applications

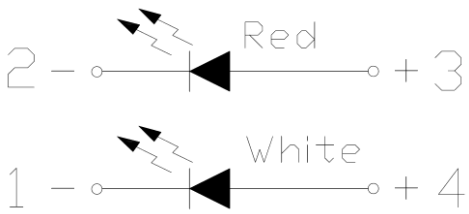
- Optical indicator.
- Switch and Symbol Display.

## Package Outline



## Schematic



## Absolute Maximum Rating at 25$^0$C

| *Symbol* | *Parameters* | | *Ratings* | *Units* | *Notes* |
|---|---|---|---|---|---|
| $I_F$ | Continuous Forward Current | W | 25 | mA | |
| | | R | 25 | | |
| $I_{FP}$ | Peak Forward Current | W | 60 | mA | 1 |
| | | R | 60 | | |
| $V_R$ | Reverse Voltage | | 5 | V | |
| $T_{opr}$ | Operating Temperature | | -40 ~ +85 | $^0$C | |
| $T_{stg}$ | Storage Temperature | | -40 ~ +100 | $^0$C | |
| $T_{sol}$ | Soldering Temperature | | 260 | $^0$C | 2 |
| $P_D$ | Power Dissipation at(or below) 25℃ Free Air Temperature | W | 95 | mW | |
| | | R | 60 | | |

## Electro-Optical Characteristics *TA = 25°C (unless otherwise specified)*

### Optical Characteristics (White)

| *Symbol* | *Parameters* | *Test Conditions* | *Min* | *Typ* | *Max* | *Units* | *Notes* |
|---|---|---|---|---|---|---|---|
| Iv | Luminous Intensity | $I_F$=5mA | 180 | - | 360 | mcd | 3 |
| θ1/2 | Angle of Half Intensity | $I_F$=5mA | - | ±65 | - | deg | |

### Electrical Characteristics

| *Symbol* | *Parameters* | *Test Conditions* | *Min* | *Typ* | *Max* | *Units* | *Notes* |
|---|---|---|---|---|---|---|---|
| $V_F$ | Forward Voltage | $I_F$=5mA | 2.6 | - | 3.2 | V | |
| $I_R$ | Reverse Current | $V_R$=5V | - | - | 1 | μA | |

## Optical Characteristics (Red)

| *Symbol* | *Parameters* | *Test Conditions* | *Min* | *Typ* | *Max* | *Units* | *Notes* |
|---|---|---|---|---|---|---|---|
| Iv | Luminous Intensity | $I_F$=5mA | 36 | - | 90 | mcd | 3 |
| λd | Dominant Wavelength | $I_F$=5mA | - | 621 | - | nm | |
| θ1/2 | Angle of Half Intensity | $I_F$=5mA | - | ±65 | - | deg | |

## Electrical Characteristics

| *Symbol* | *Parameters* | *Test Conditions* | *Min* | *Typ* | *Max* | *Units* | *Notes* |
|---|---|---|---|---|---|---|---|
| $V_F$ | Forward Voltage | $I_F$=5mA | 1.6 | - | 2.3 | V | |
| $I_R$ | Reverse Current | $V_R$=5V | - | - | 1 | μA | |

**Notes:**

1. $I_{FP}$ Conditions--Pulse Width≦ 100μs and Duty≦ 10%.
2. Soldering time≦ 10 seconds.
3. Bin Range of Luminous Intensity

| White | | | | |
|---|---|---|---|---|
| Bin Code | Min | Max | Unit | Condition |
| S1 | 180 | 225 | mcd | $I_F$=5mA |
| S2 | 225 | 285 | | |
| T1 | 285 | 360 | | |
| Red | | | | |
| NA | 36 | 57 | mcd | $I_F$=5mA |
| PA | 57 | 90 | | |

Tolerance of: Luminous Intensity ±10%

4. Tolerance of Dominant Wavelength: ±1nm
5. Tolerance of Forward Voltage ±0.1V.

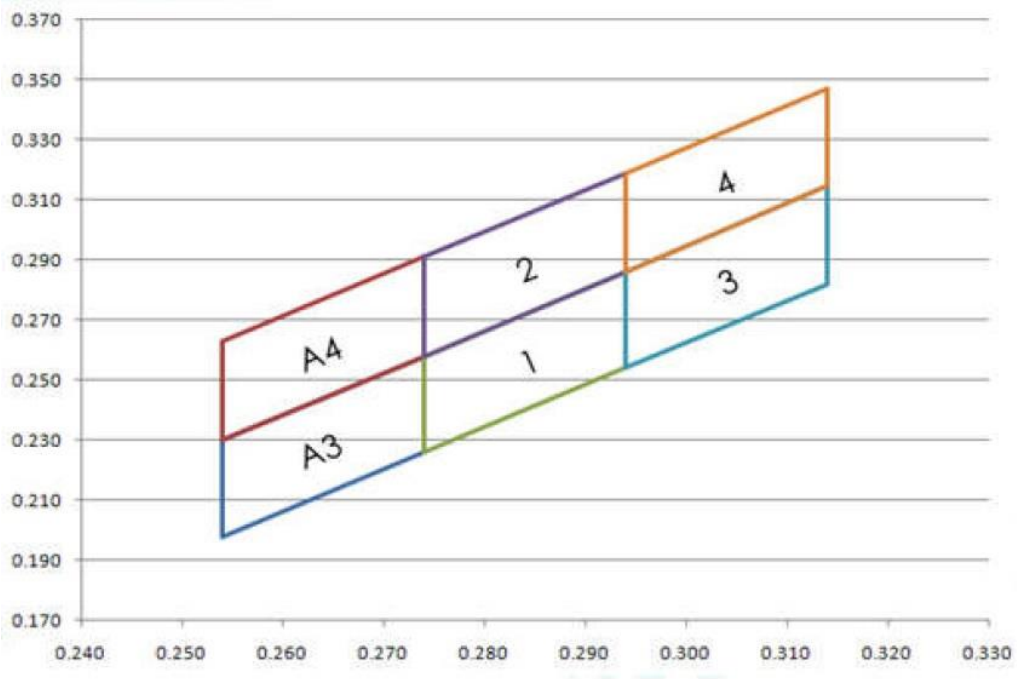
6. Bin Range of Chromaticity Coordinates

| Bin Code | CIE_x | CIE_y | Bin Code | CIE_x | CIE_y |
|---|---|---|---|---|---|
| A3 | 0.254 | 0.230 | A4 | 0.254 | 0.198 |
| | 0.254 | 0.263 | | 0.254 | 0.230 |
| | 0.274 | 0.291 | | 0.274 | 0.258 |
| | 0.274 | 0.258 | | 0.274 | 0.226 |
| 1 | 0.274 | 0.226 | 2 | 0.274 | 0.258 |
| | 0.274 | 0.258 | | 0.274 | 0.291 |
| | 0.294 | 0.286 | | 0.294 | 0.319 |
| | 0.294 | 0.254 | | 0.294 | 0.286 |
| 3 | 0.294 | 0.254 | 4 | 0.294 | 0.286 |
| | 0.294 | 0.286 | | 0.294 | 0.319 |
| | 0.314 | 0.315 | | 0.314 | 0.347 |
| | 0.314 | 0.282 | | 0.314 | 0.315 |

The value is based on driving current by 5mA

Tolerance of Chromaticity Coordinates ±0.01

## The C.I.E. 1931 Chromaticity Diagram



## Typical Characteristic Curves

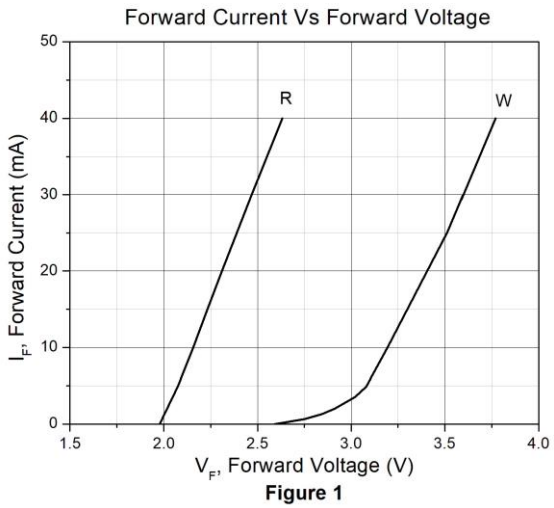


**Figure 1**

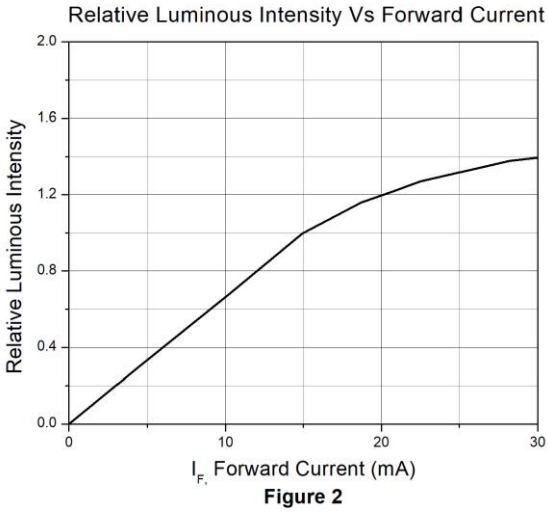


**Figure 2**

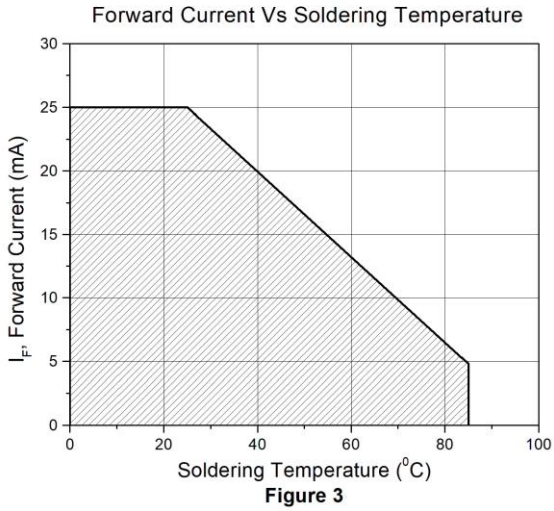


**Figure 3**

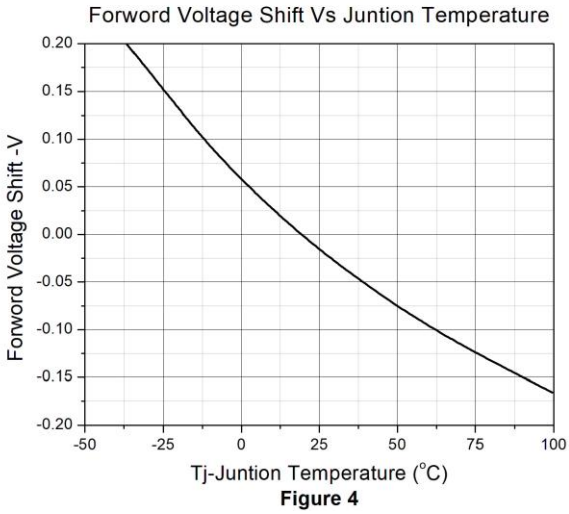


**Figure 4**

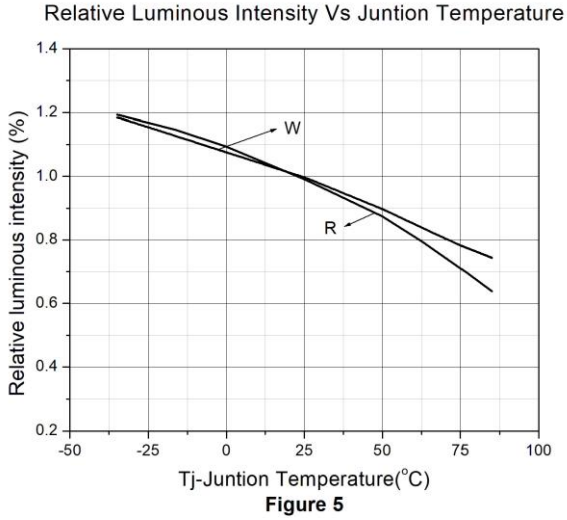


**Figure 5**

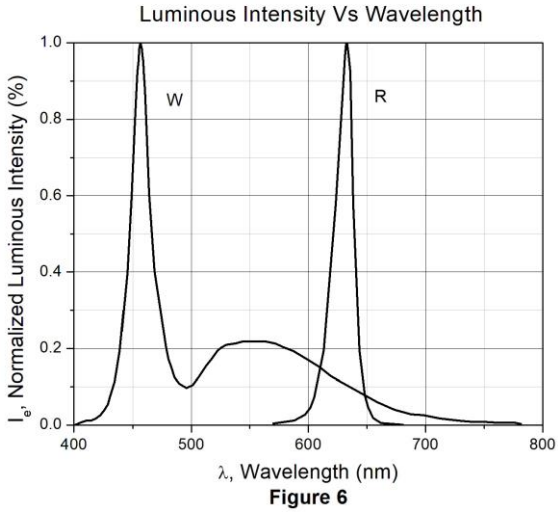


**Figure 6**

## Typical Characteristic Curves

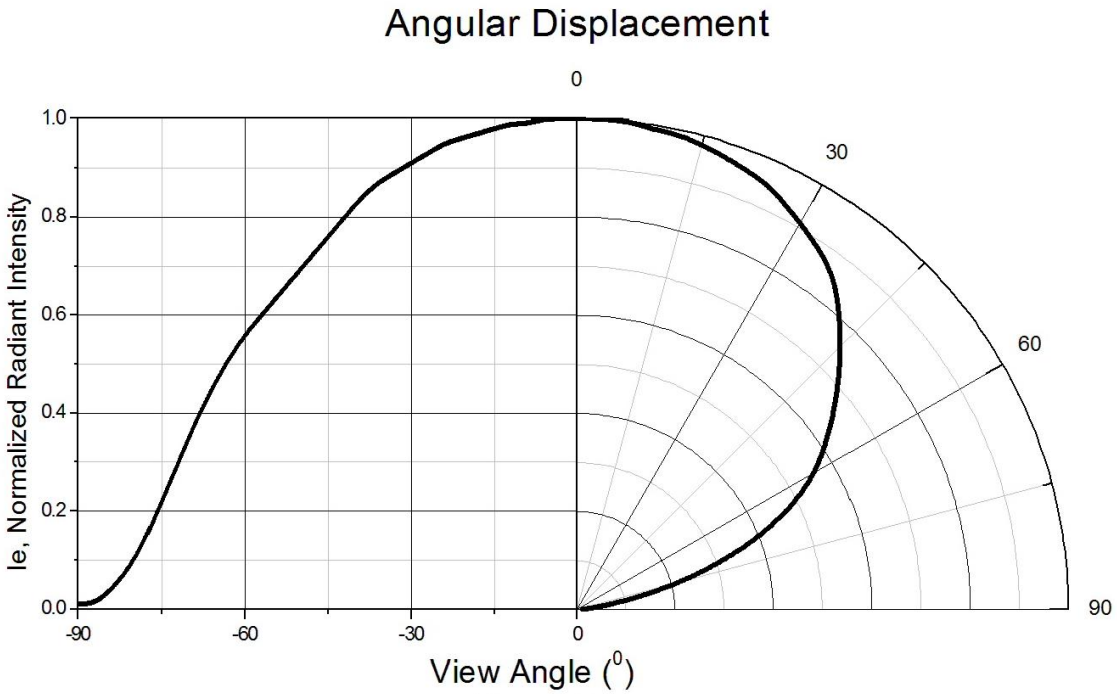
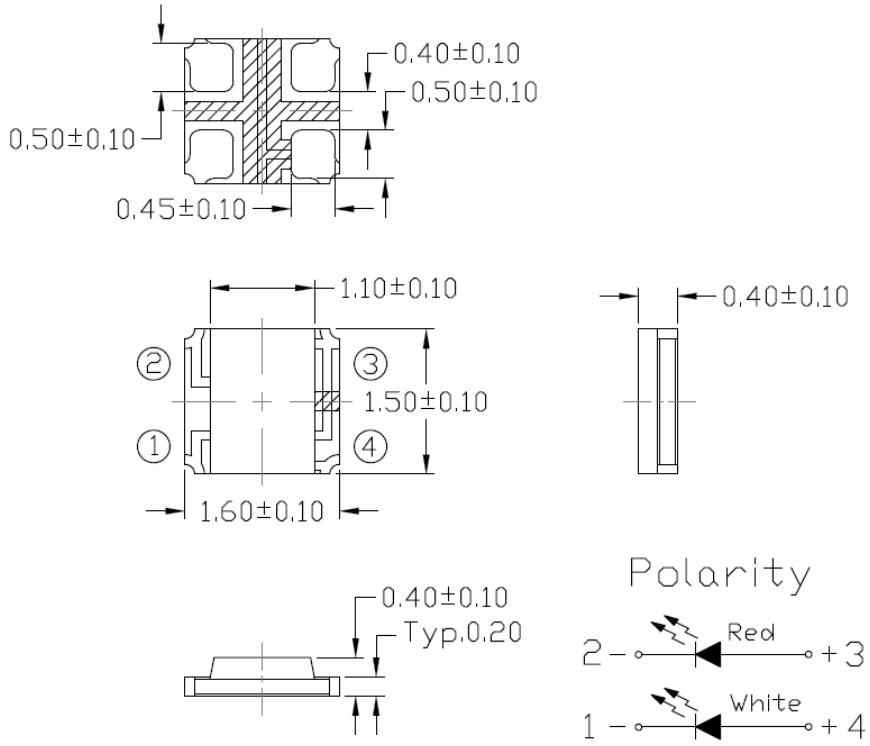


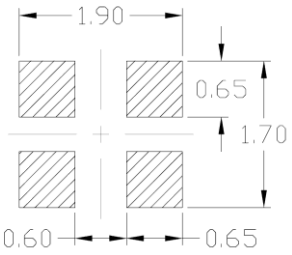

**Figure 7**

## Package Dimension *All dimensions are in mm, unless otherwise stated*




Note: Tolerance unless mentioned is ±0.1mm.

## Recommended Soldering Mask *All dimensions are in mm, unless otherwise stated*

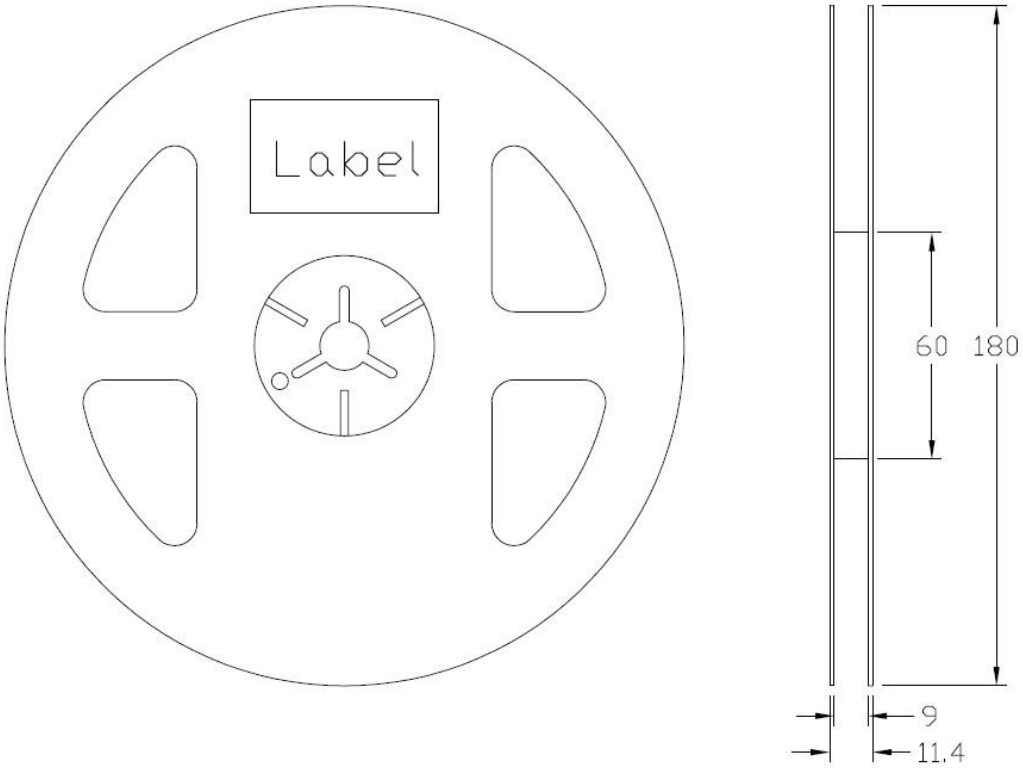



Note: Tolerance unless mentioned is ±0.1mm.

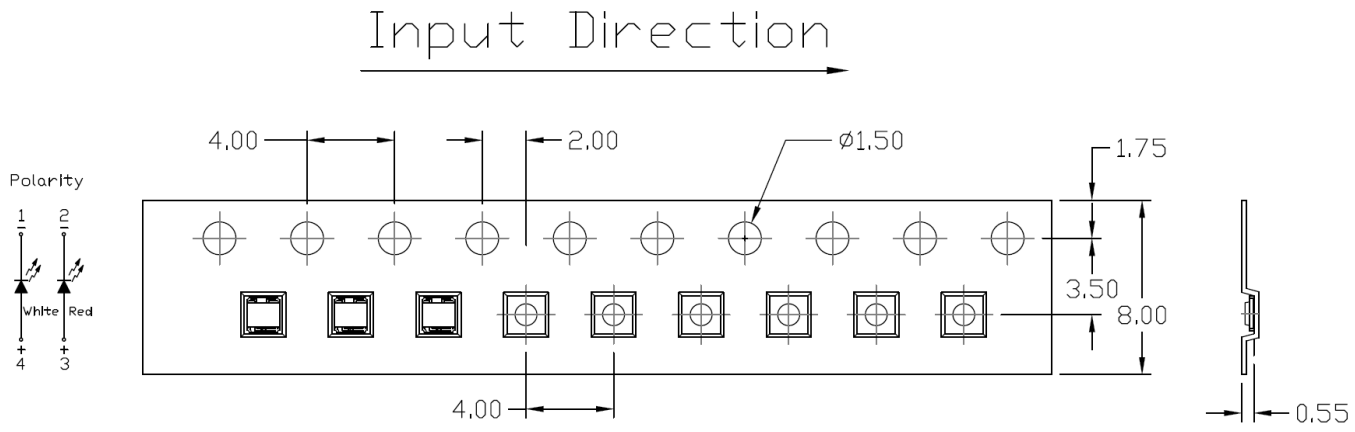
## Ordering Information

| *Part Number* | *Description* | *Quantity* |
|---|---|---|
| WRP161504-CTC2 | Tape & Reel | 2000 pcs |

## Reel Dimension *All dimensions are in mm, unless otherwise stated*

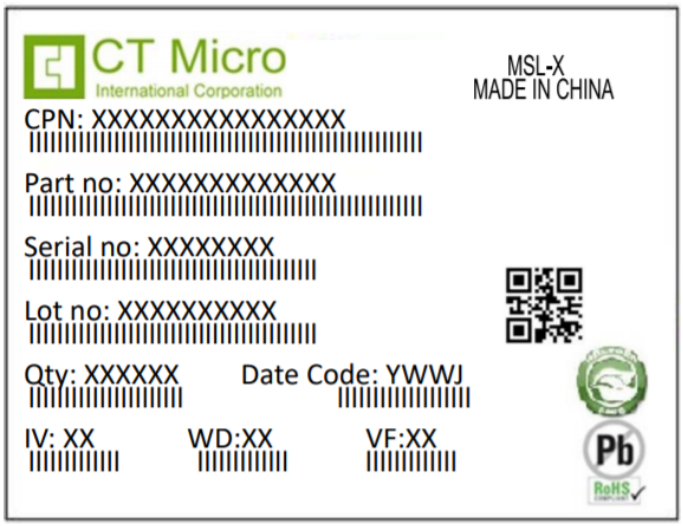



## Tape Dimension *All dimensions are in mm, unless otherwise stated*




Note: Tolerance unless mentioned is ±0.1mm.

## Label Form Specification




CPN : Customer Part Number

Part no: CTM Production Number

Serial no: Production Number

Lot no: Lot number

Q'ty: Packing Quantity

Date Code: Manufacture Date

IV : Bin Code of Luminous Intensity

WD : Bin Code of Dominant Wavelength

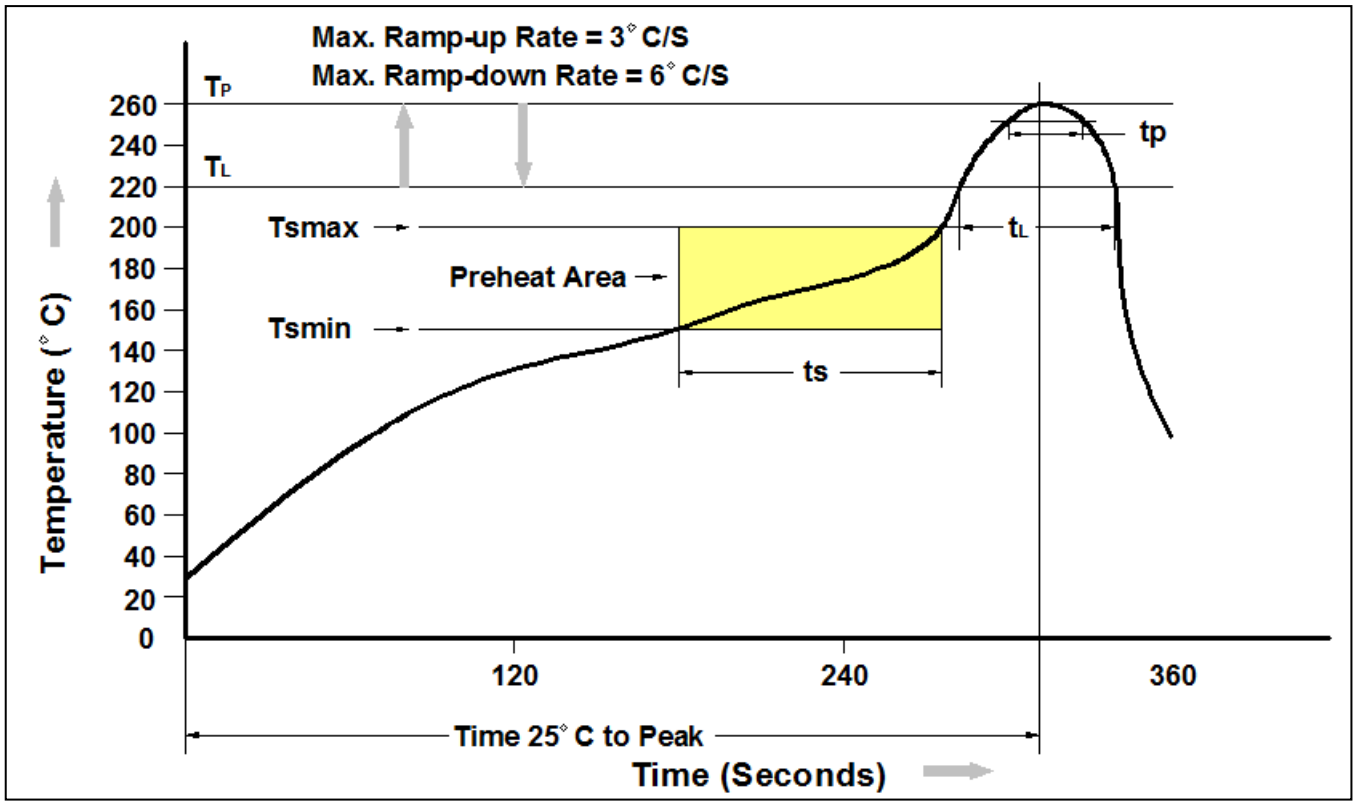
VF : Bin Code of Forward Voltage

MADE IN CHINA: Production Place

## Storage Condition

1. Do not open moisture proof bag before the products are ready to use.
2. The moisture barrier bag should be stored at 30°C and 90%R.H. max. before opening. Shelf life of non-opened bag is 12 months after the bag sealing date.
3. After opening the moisture barrier bag floor life is 1 year at 30°C/60%RH. max. Unused LEDs should be resealed into moisture barrier bag. (Refer to J-STD-020 Standard)
4. If the moisture absorbent material has faded away or the LEDs have exceeded the storage time, baking treatment should be performed using the J-STD-033 Standard conditions.

## Reflow Profile




| Profile Feature | Pb-Free Assembly Profile |
|---|---|
| Temperature Min. (Tsmin) | 150°C |
| Temperature Max. (Tsmax) | 200°C |
| Time (ts) from (Tsmin to Tsmax) | 60-120 seconds |
| Ramp-up Rate ($t_L$ to $t_P$) | 3°C/second max. |
| Liquidous Temperature ($T_L$) | 217°C |
| Time ($t_L$) Maintained Above ($T_L$) | 60 – 150 seconds |
| Peak Body Package Temperature | 260°C +0°C / -5°C |
| Time ($t_P$) within 5°C of 260°C | 30 seconds |
| Ramp-down Rate ($T_P$ to $T_L$) | 6°C/second max |
| Time 25°C to Peak Temperature | 8 minutes max. |

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