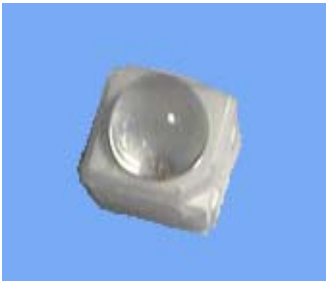


### SMD ■ Top View LEDs with Lens 67-21B/R7C-AKNB-MS



#### Features

- P-LCC-2 package.
- Colored diffused resin.
- Wide viewing angle 60°.
- Inner reflector and white package.
- Soldering methods: IR reflow soldering.
- Compliance with EU REACH

#### Description

• The 67-21B series is available in soft orange, green, blue and yellow. Due to the package design, the LED has wide viewing angle and optimized light coupling by inter reflector. This feature makes the ideal for light pipe application. The low current requirement makes this device ideal for portable equipment or any other application where power is at a premium.

#### Applications

- Indicator and backlight for audio and video equipment.
- Indicator and backlight in office and family equipment.
- Flat backlight for LCD's, switches and symbols.
- Light pipe application.
- General use.

**Device Selection Guide**

Chip Materials	Emitted Color	Resin Color
AlGaInP	Brilliant Red	Diffused

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

Parameter	Symbol	Rating	Unit
Reverse Voltage	$V_R$	5	V
Forward Current	$I_F$	50	mA
Peak Forward Current (Duty 1/10 @1KHz)	$I_{FP}$	100	mA
Power Dissipation	$P_d$	120	mW
Operating Temperature	$T_{opr}$	-40 ~ +85	°C
Storage Temperature	$T_{stg}$	-40 ~ +100	°C
ESD (Classification acc. AEC Q101)	$ESD_{HBM}$	2000	V
Soldering Temperature	$T_{sol}$	Reflow Soldering : 260 °C for 10 sec. Hand Soldering : 350 °C for 3 sec.	

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Luminous Intensity	$I_v$	1125	-----	2850	mcd	$I_F=20\text{mA}$
Viewing Angle	$2\theta_{1/2}$	-----	60	-----	deg	$I_F=20\text{mA}$
Peak Wavelength	$\lambda_p$	-----	632	-----	nm	$I_F=20\text{mA}$
Dominant Wavelength	$\lambda_d$	619	-----	628	nm	$I_F=20\text{mA}$
Spectrum Radiation Bandwidth	$\Delta\lambda$	-----	20	-----	nm	$I_F=20\text{mA}$
Forward Voltage	$V_F$	1.8	-----	2.6	V	$I_F=20\text{mA}$
Reverse Current	$I_R$	-----	-----	10	$\mu\text{A}$	$V_R=5\text{V}$

## Note:

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

**Bin Range of Luminous Intensity**

Bin Code	Min.	Max.	Unit	Condition
K	1125	1425	mcd	$I_F = 20\text{mA}$
L	1425	1800		
M	1800	2250		
N	2250	2850		

Note. Tolerance of Luminous Intensity:  $\pm 10\%$

**Bin Range of Dominant Wavelength**

Bin Code	Min.	Max.	Unit	Condition
1	619	622	nm	$I_F = 20\text{mA}$
2	622	625		
3	625	628		

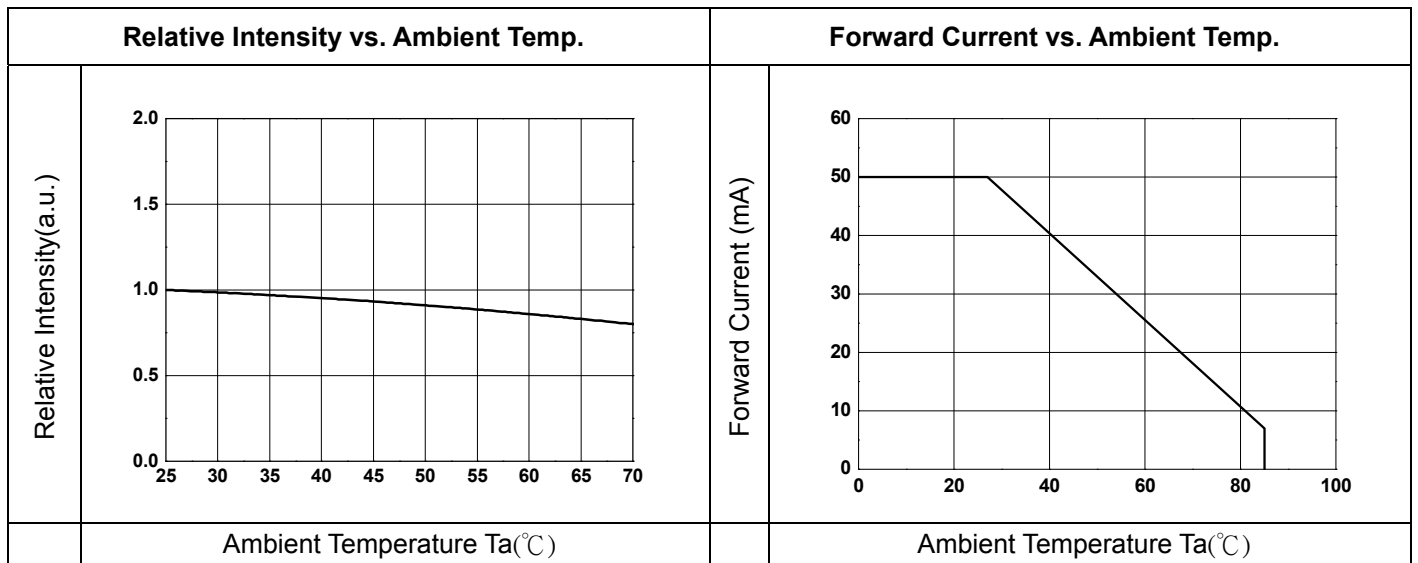
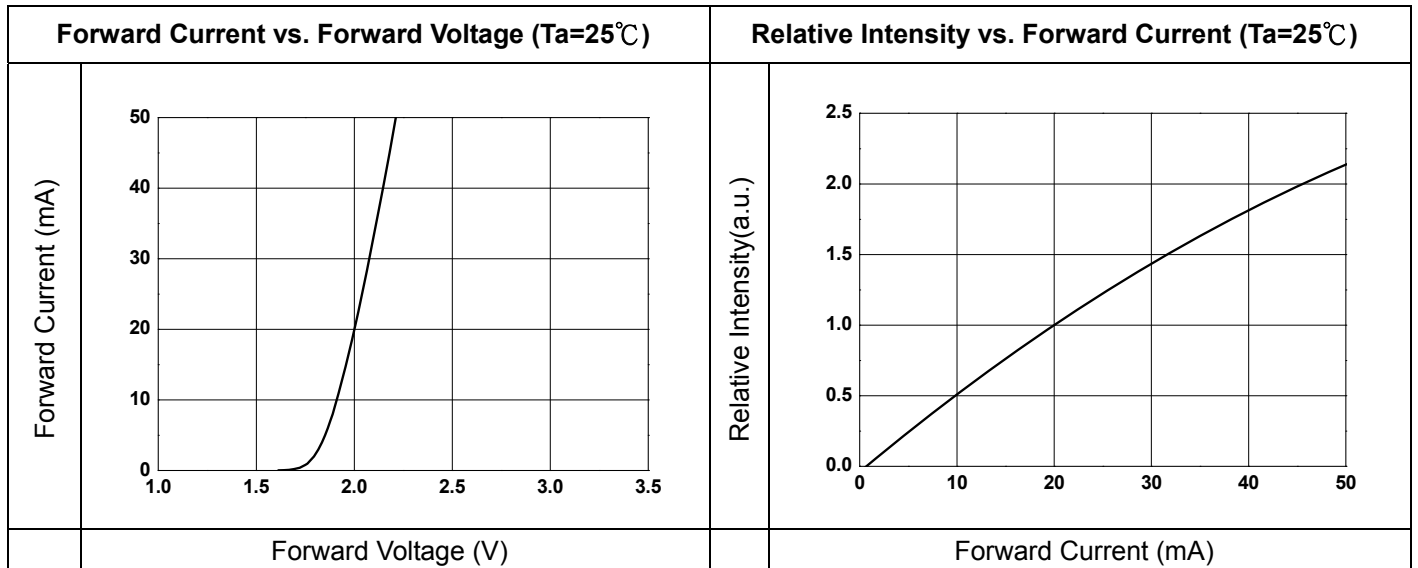
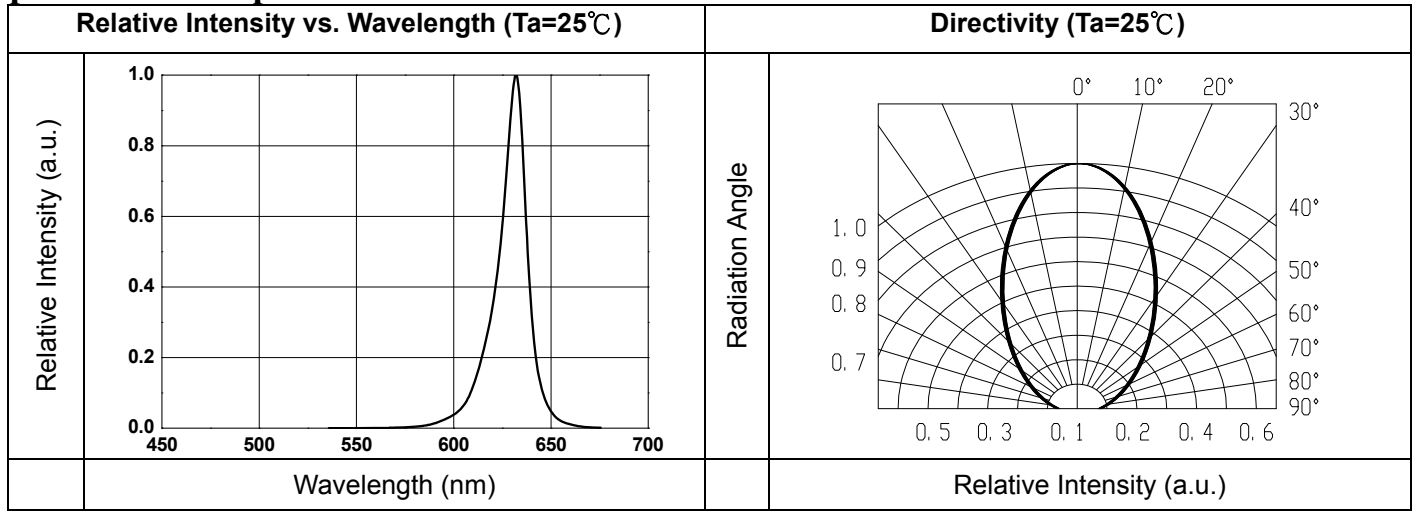
Note. Tolerance of Dominant Wavelength:  $\pm 1\text{nm}$

**Bin Range of Forward Voltage**

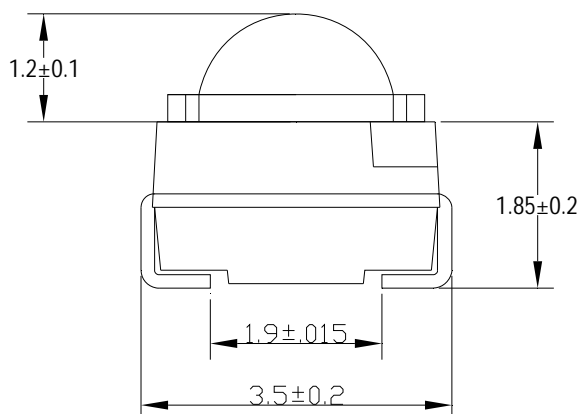
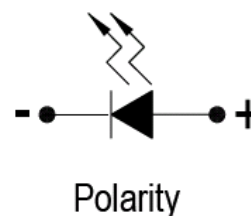
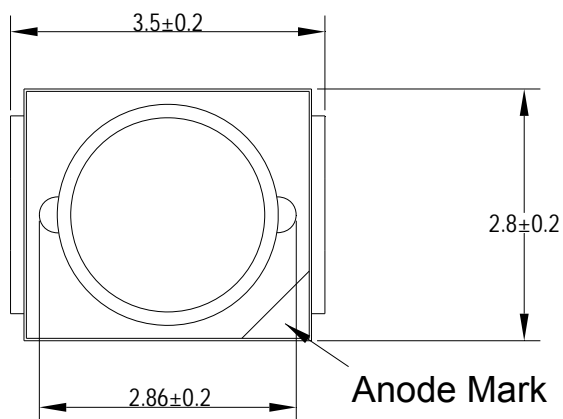
Bin Code	Min.	Max.	Unit	Condition
1	1.8	2.0	V	$I_F = 20\text{mA}$
2	2.0	2.2		
3	2.2	2.4		
4	2.4	2.6		

Note. Tolerance of Forward Voltage:  $\pm 0.1\text{V}$

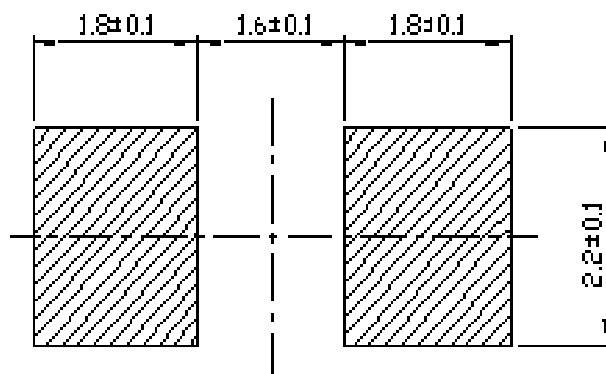
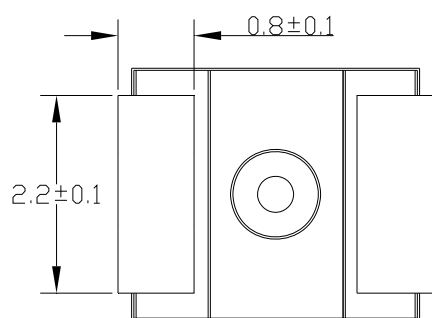
**Typical Electro-Optical Characteristics Curves**



Package Dimension



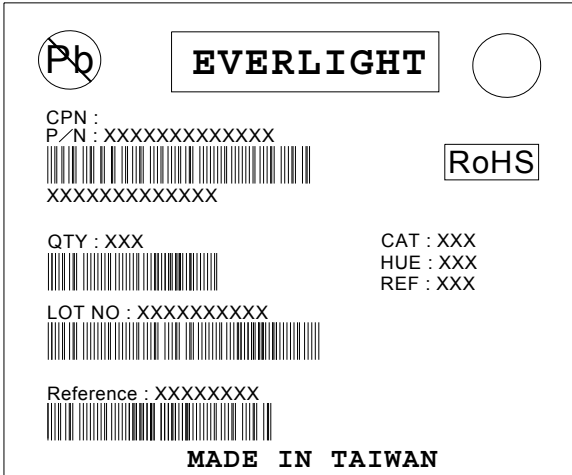
For reflow soldering (propose)



Note: 1.All dimensions are in millimeters  
2.Tolerances Unless Dimension = ±0.1mm

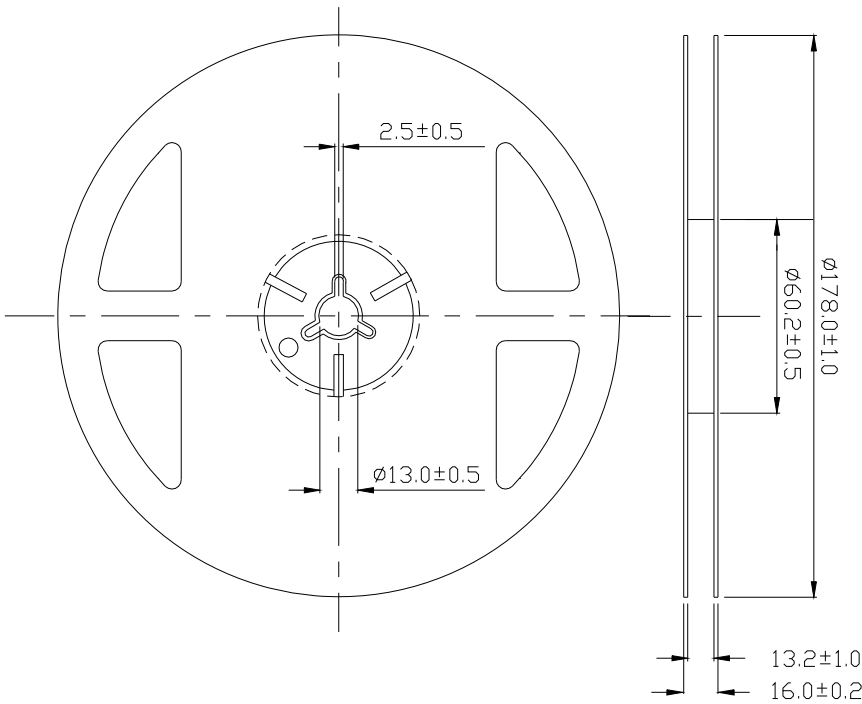
## Moisture Resistant Packing Materials

### Label Explanation

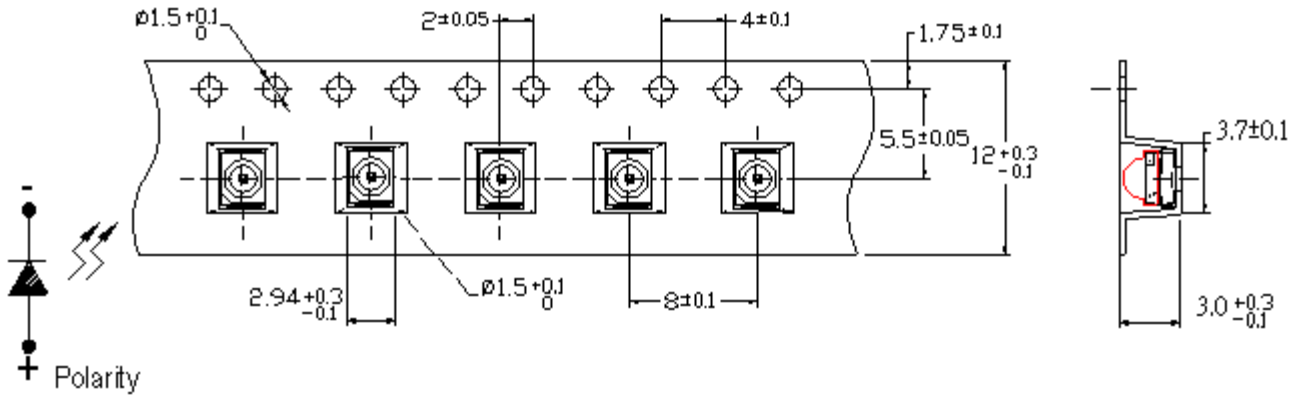


- CPN: Customer's Product Number
- P/N: Product Number
- QTY: Packing Quantity
- CAT: Luminous Intensity Rank
- HUE: Dom. Wavelength Rank
- REF: Forward Voltage Rank
- LOT No: Lot Number

### Reel Dimensions



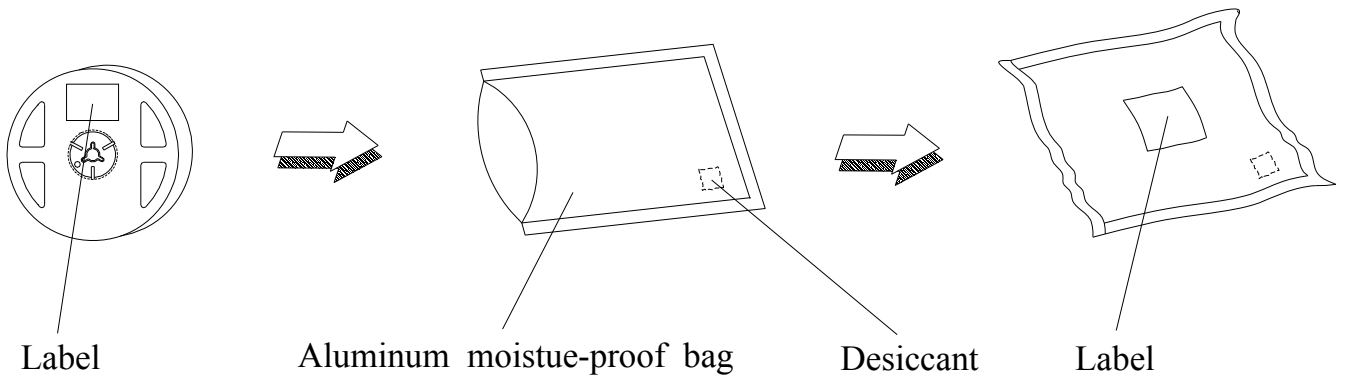
**Carrier Tape Dimensions:**



**Note:**

- 1. The tolerances unless mentioned is :  $\pm 0.1$ mm, Unit = mm
- 2. Minimum packing amount is 250/500 pcs per reel

**Moisture Resistant Packing Process**



Note: Tolerances unless mentioned  $\pm 0.1$ mm. Unit = mm



## Precautions for Use

### 1. Over-current-proof

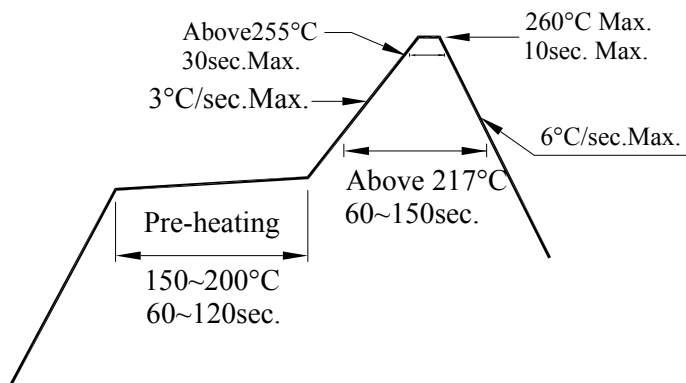
- Customer must apply resistors for protection, otherwise slight voltage shift will cause big current change ( Burn out will happen ).

### 2. Storage

- Do not open moisture proof bag before the products are ready to use.
- Before opening the package: The LEDs should be kept at 30°C or less and 90%RH or less.
- After opening the package: The LED's floor life is 168Hrs under 30°C or less and 60% RH or less. If unused LEDs remain, it should be stored in moisture proof packages.
- 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°C for 24 hours.

### 3. Soldering Condition

- Pb-free solder temperature profile



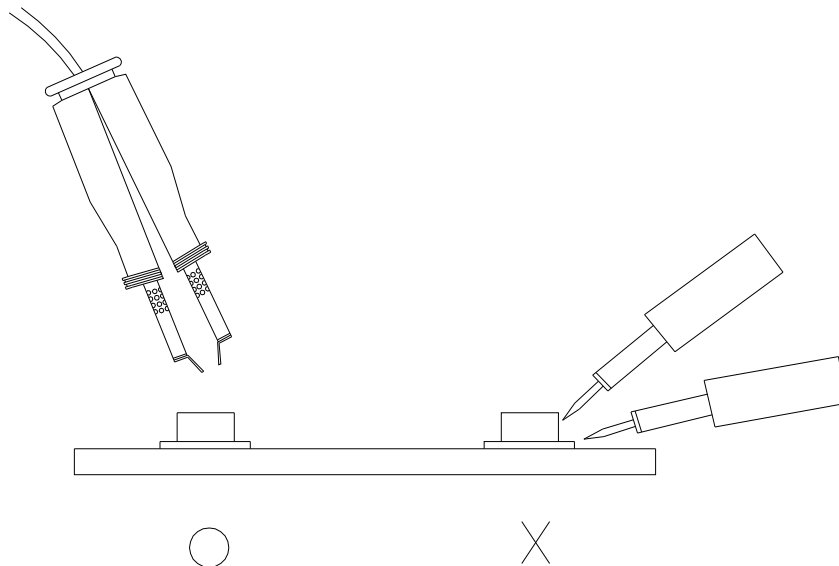
- Reflow soldering should not be done more than two times.
- When soldering, do not put stress on the LEDs during heating.
- After soldering, do not warp the circuit board.

### 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.



## 6. ESD (Electrostatic Discharge)

- The products are sensitive to static electricity or surge voltage. ESD can damage a die and its reliability. When handling the products, the following measures against electrostatic discharge are strongly recommended:

Eliminating the charge

Grounded wrist strap, ESD footwear, clothes, and floors

Grounded workstation equipment and tools

ESD table/shelf mat made of conductive materials

- Proper grounding is required for all devices, equipment, and machinery used in product assembly. Surge protection should be considered when designing of commercial products.
- If tools or equipment contain insulating materials such as glass or plastic, the following measures against electrostatic discharge are strongly recommended:
  - Dissipating static charge with conductive materials
  - Preventing charge generation with moisture
  - Neutralizing the charge with ionizers.

## 7. Directions for use

- The LEDs should be operated with forward bias. The driving circuit must be designed so that the LEDs are not subjected to forward or reverse voltage while it is off. If reverse voltage is continuously applied to the LEDs, it may cause migration resulting in LED damage.