EVERLIGHT ELECTRONICS CO.,LTD.

Technical Data Sheet

1.9mm Round Subminiature Lead LEDs

91-21USRC/S530-XX/XXX



Features

- Package in 12mm tape on 7" diameter reels.
- Compatible with automatic placement equipment.
- EIA Std. package.
- Mono-color type.
- Pb-free
- The product itself will remain within RoHS compliant version.

Descriptions

- The 91-21 SMD taping is much smaller than leaded components . Thus enable smaller board size. Higher packing density. Reduced storage space and finally smaller equipment to be obtained.
- Besides, light weight makes them ideal for miniature applications.
- Furthermore by automation assembly machines the accuracy is anticipated.

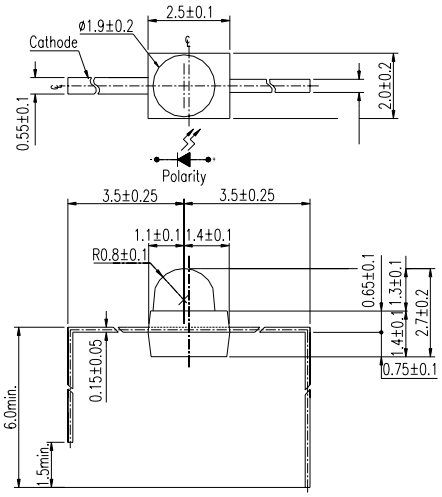
Applications

- Small indicator for indoor applications.
- Flat backlight for LCD, switches and symbols.
- Indicator and backlight in office equipment.
- Indicator and backlight for battery driven equipment.
- Indicator and backlight for audio and video equipment.
- Automotive : backlighting in dashboards and switches.
- Telecommunication：indicator and backlighting in telephone and fax.

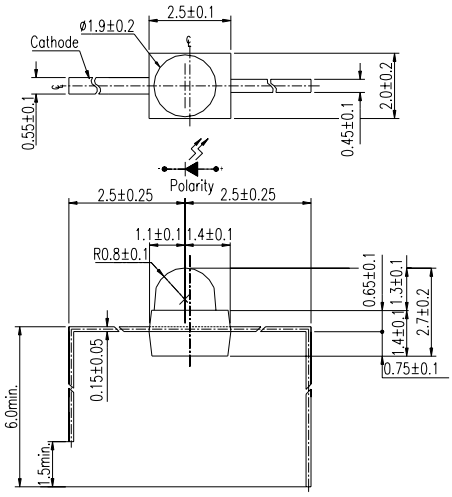
Device Selection Guide

Part No.	Chip		Lens Color
	Material	Emitted Color	
91-21USRC/S530-XX/XX	AlGaInP	Dark-Red	Water Clear

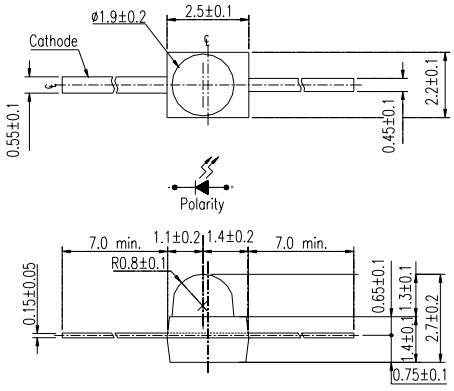
Package Outline Dimensions



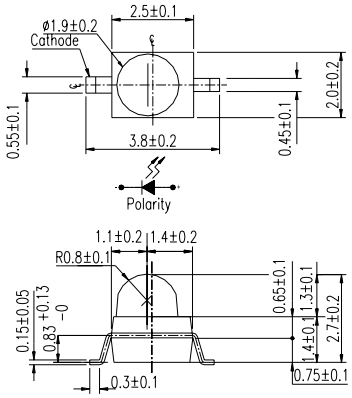
91-21/F1



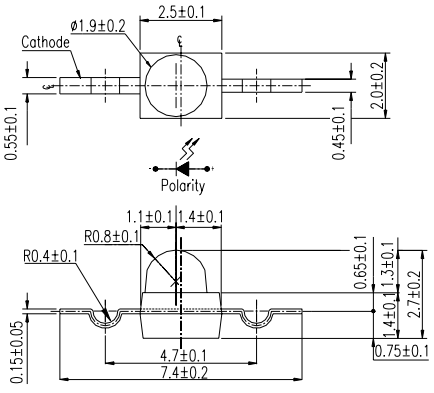
91-21/F2



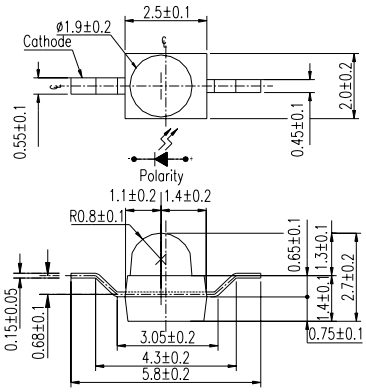
91-21



91-21F7/TR7



91-21F9/TR9



91-21F10/TR10

Note:Unit=mm

Note: Tolerances Unless Dimension is ±0.1mm , Unit = mm

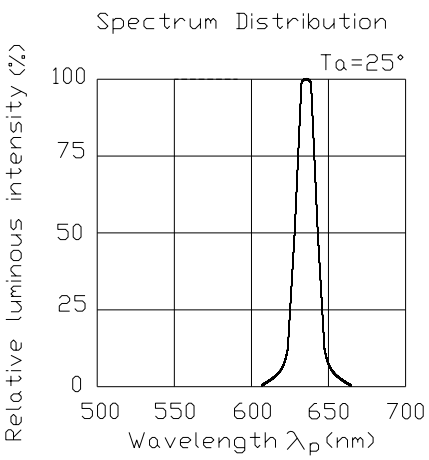
Absolute Maximum Ratings (Ta=25℃)

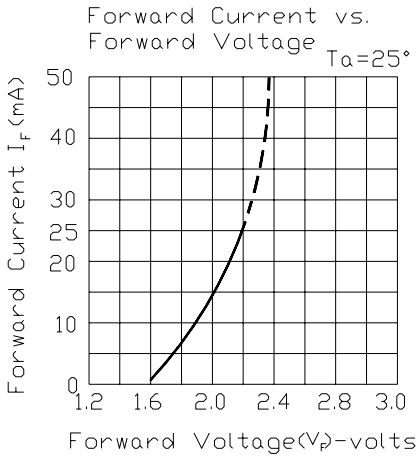
Parameter	Symbol	Rating	Unit
Reverse Voltage	V_R	5	V
Forward Current	I_F	25	mA
Operating Temperature	Topr	-40 ~ +85	℃
Storage Temperature	Tstg	-40 ~ +100	℃
Electrostatic Discharge	ESD	2000	V
Power Dissipation	Pd	60	mW
Peak Forward Current (Duty 1/10 @ 1KHz)	I_{FP}	60	mA
Soldering Temperature	Tsol	Reflow Soldering : 260 ℃ for 10 sec. Hand Soldering : 350 ℃ for 3 sec.	

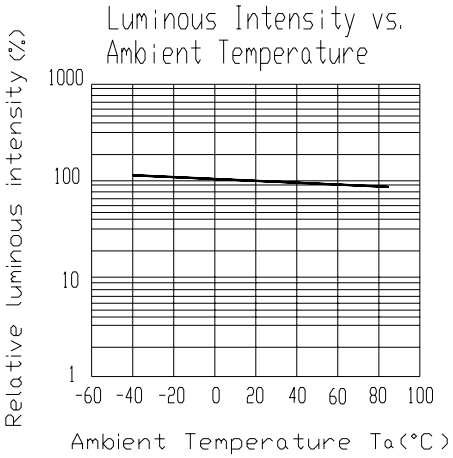
Electro-Optical Characteristics (Ta=25℃)

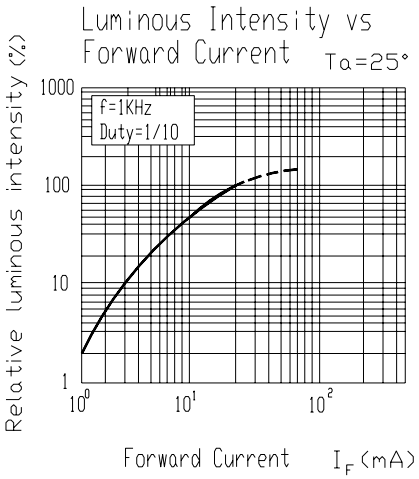
Parameter	**Symbol**	**Chip Rank**	**Min.**	**Typ.**	**Max.**	**Unit**	**Condition**
Luminous Intensity	I_V	A2	160	338	----	mcd	I_F=20mA
		A3	287	458	----		
		A4	344	578	----		
		A5	458	745	----		
		A6	573	917	----		
Viewing Angle	2 θ 1/2	----	----	25	----	deg	
Peak Wavelength	λ p	----	----	639	----	nm	
Dominant Wavelength	λ d	----	----	631	----	nm	
Spectrum Radiation Bandwidth	$\triangle\lambda$	----	----	20	----	nm	
Forward Voltage	V_F	----	----	2.0	2.4	V	
Reverse Current	I_R	----	----	----	10	μA	V_R=5V

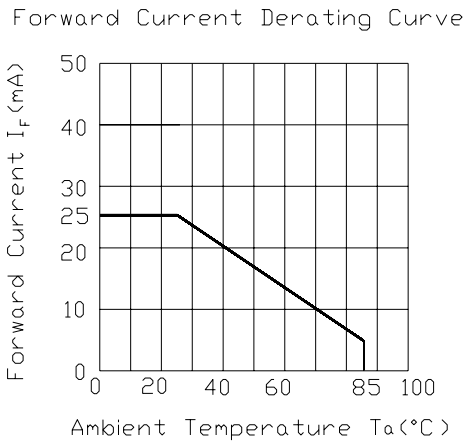
Typical Electro-Optical Characteristics Curves

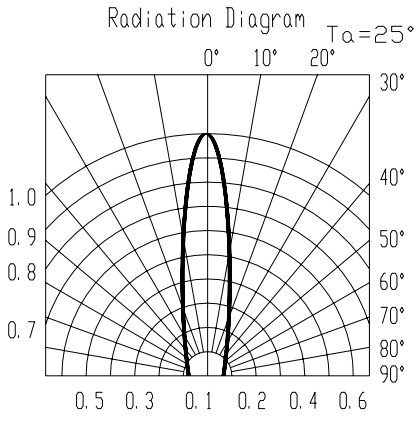












91-21USRC/S530-XX/XXX

Label explanation

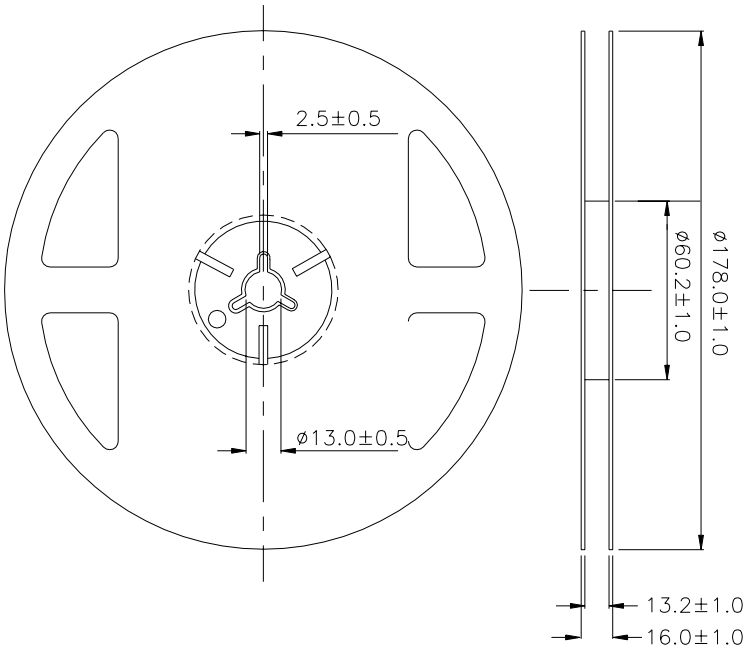
CAT: Luminous Intensity Rank

HUE: Dom. Wavelength Rank

REF: Forward Voltage Rank

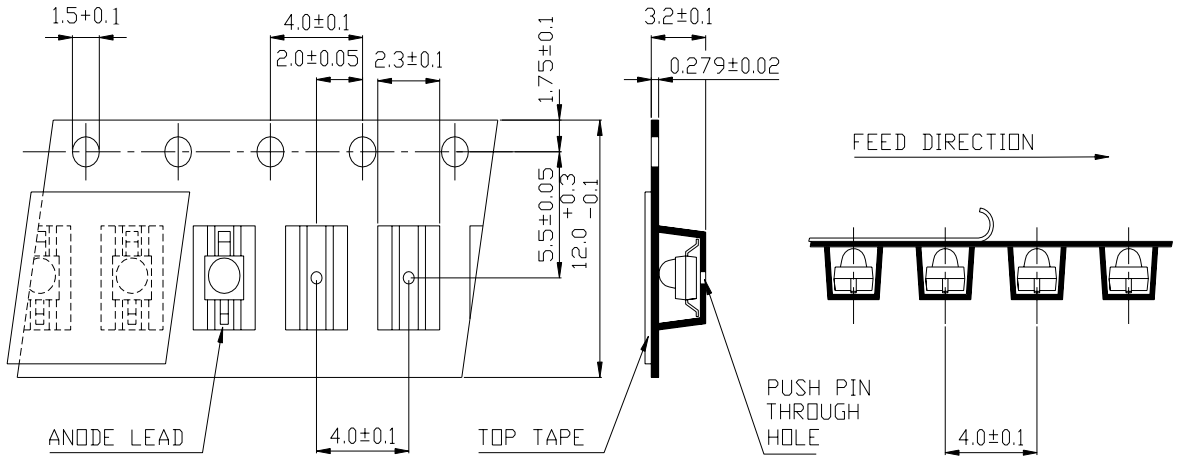


Reel & Carrier Tape Dimensions

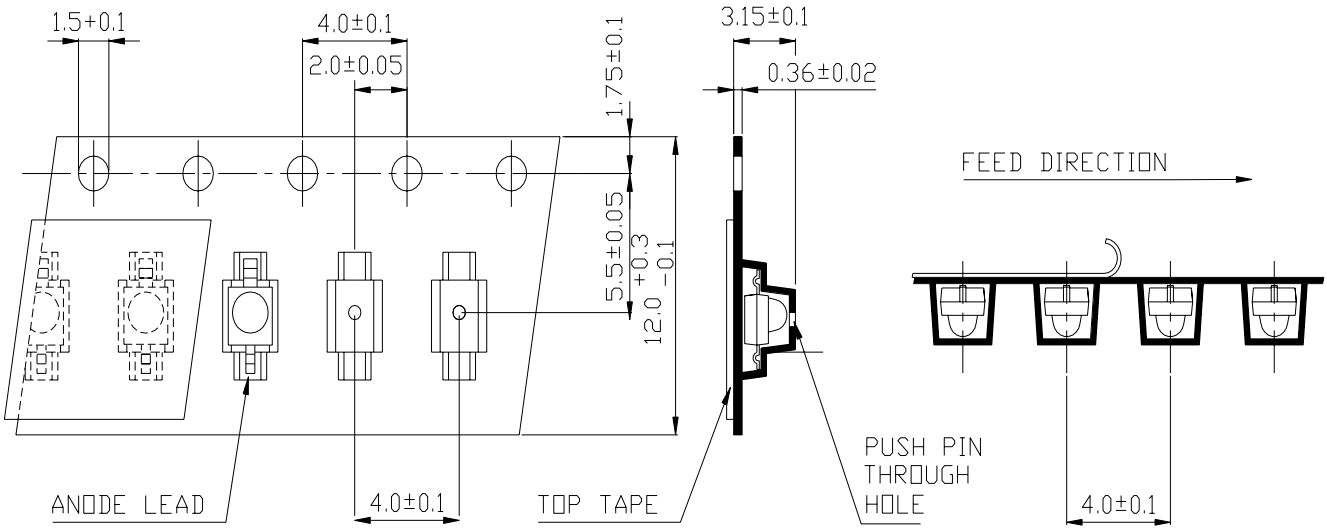


Note: Tolerances Unless Dimension is ±0.1mm , Unit = mm

Loaded quantity per reel 1000 PCS/reel

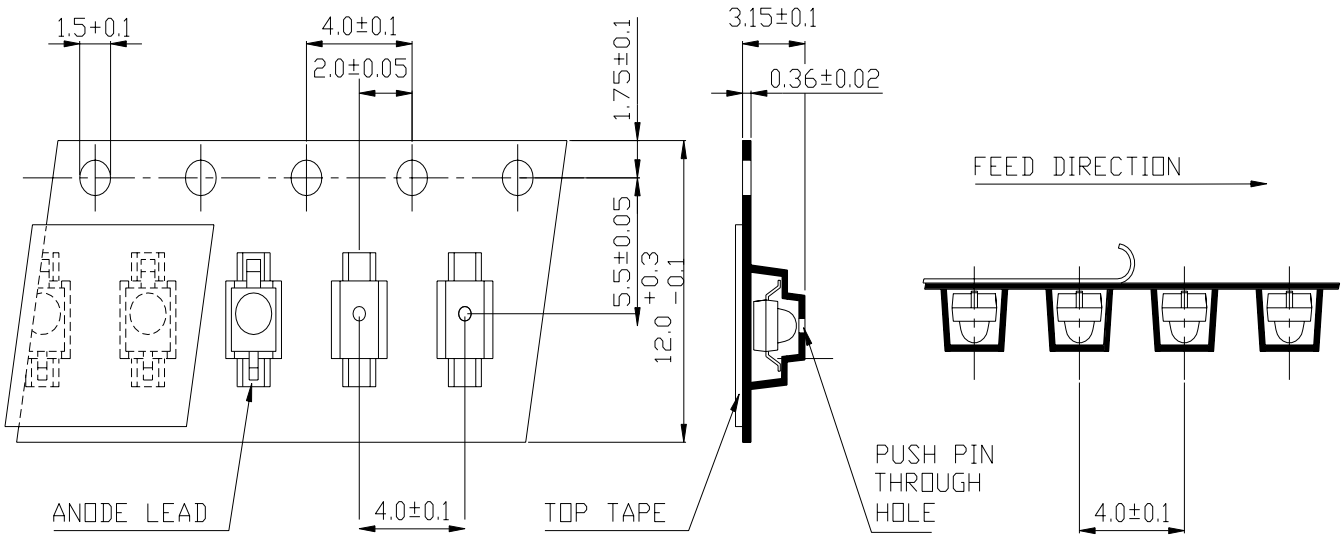


TR7



TR9

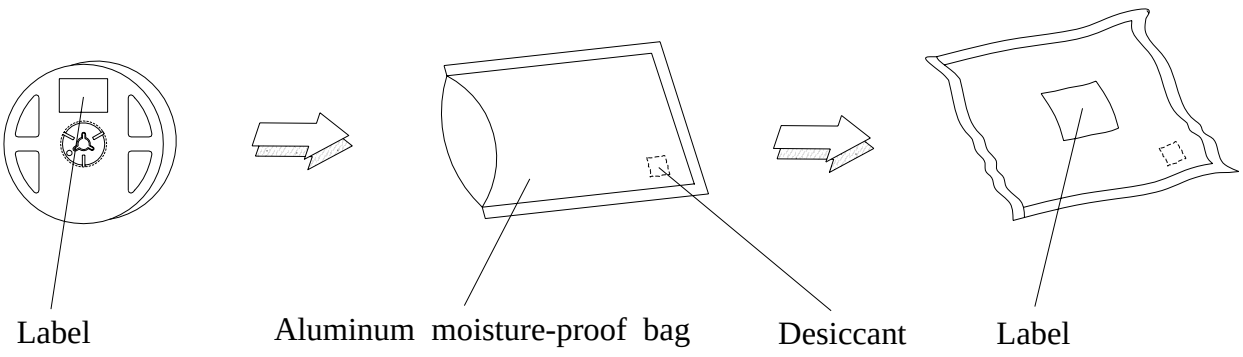
Loaded quantity per reel 1000 PCS/reel



TR10

Note: Tolerances Unless Dimension is ±0.1mm , Unit = mm

Moisture Resistant Packaging



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℃±5℃ Min. 5 sec.	6 Min.	22 Pcs.	0/1
2	Temperature Cycle	H : +100℃ 15 min. ∫ 5 min. L : -40℃ 15 min.	300 Cycles	22 Pcs.	0/1
3	Thermal Shock	H : +100℃ 5 min. ∫ 10 sec. L : -10℃ 5 min.	300 Cycles	22 Pcs.	0/1
4	High Temperature Storage	Temp. : 100℃	1000 Hrs.	22 Pcs.	0/1
5	Low Temperature Storage	Temp. : -40℃	1000 Hrs.	22 Pcs.	0/1
6	DC Operating Life	I_F = 20 mA	1000 Hrs.	22 Pcs.	0/1
7	High Temperature / High Humidity	85℃/ 85% RH	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 30℃ or less and 90%RH or less.

   2.3 The LEDs should be used within a year.

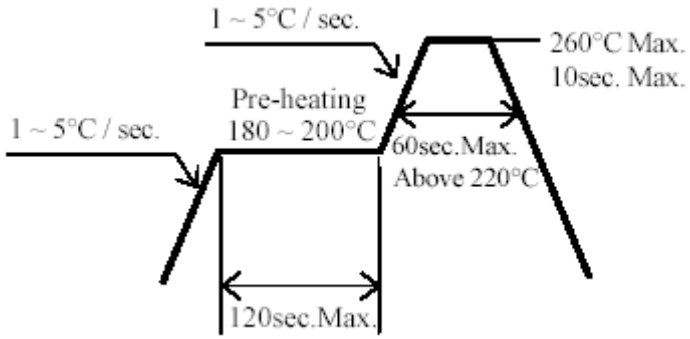
   2.4 After opening the package, the LEDs should be kept at 30℃ or less and 60%RH or less.

   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 conditions.
   Baking treatment : 60±5℃ for 24 hours.

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.

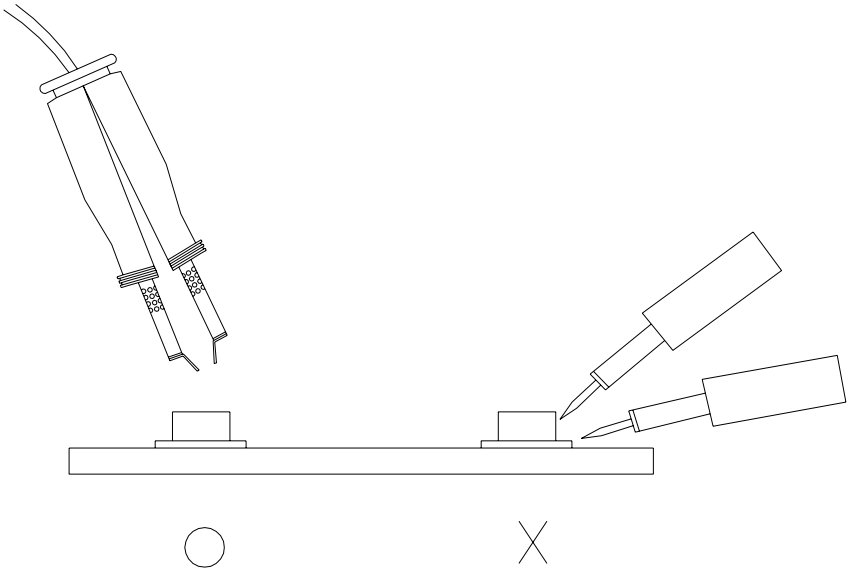
   3.4 After soldering, do not warp the circuit board.

4.Soldering Iron

Each terminal is to go to the tip of soldering iron temperature less than 350℃ 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.



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