

# 1.9mm Round Subminiature “Gull Wing” Lead Infrared LED IR91-21C/TR9



## Features

- Small double-end package
- High reliability
- Low forward voltage
- Good spectral matching to Si photodetector
- Pb free
- The product itself will remain within RoHS compliant version
- Compliance with EU REACH
- Compliance Halogen Free .(Br <900 ppm ,Cl <900 ppm , Br+Cl < 1500 ppm).

## Descriptions

- IR91-21C/TR9 is an infrared emitting diode in miniature SMD package which is molded in a water clear plastic with spherical top view lens
- The device is spectrally matched with silicon photodiode and phototransistor

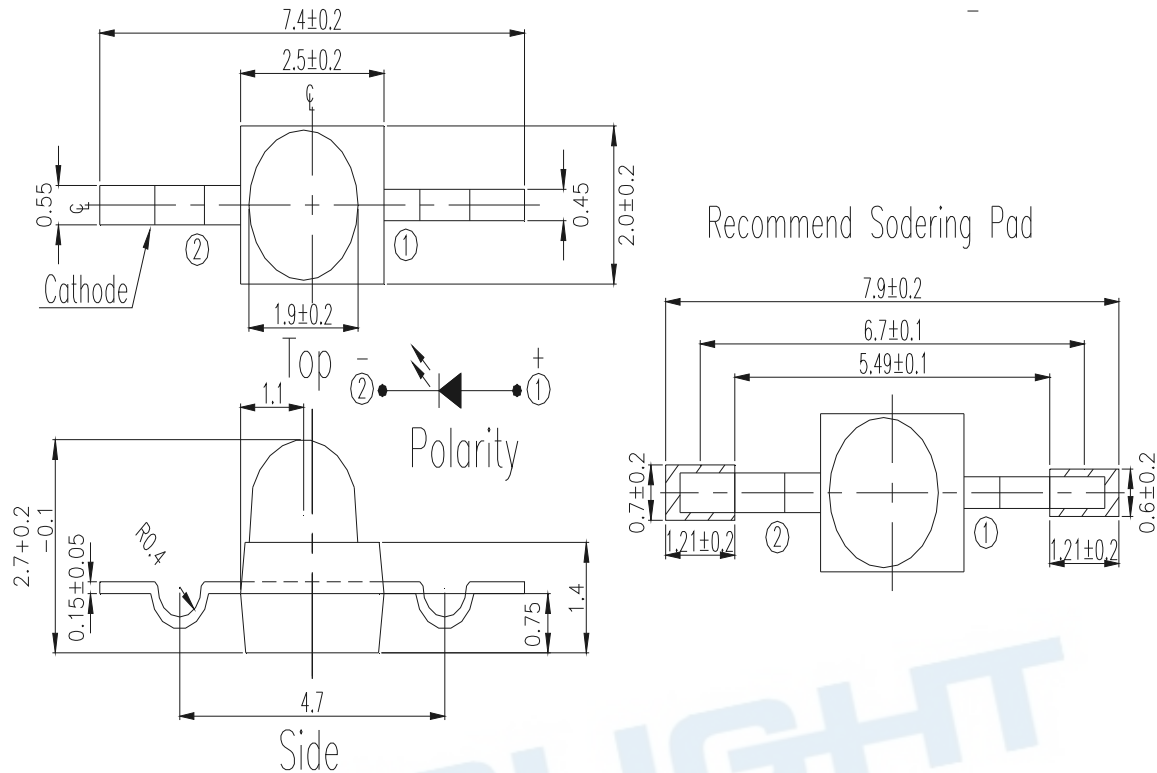
## Applications

- PCB mounted infrared sensor
- Infrared emitting for miniature light barrier
- Floppy disk drive
- Optoelectronic switch
- Smoke detector

## Device Selection Guide

Part Category	Chip Material	Lens Color
IR	GaAlAs	Water Clear

## Package Dimensions



- Notes:**
- 1.All dimensions are in millimeters
  - 2.Tolerances unless dimensions  $\pm 0.1$ mm
  - 3.Suggested pad dimension is just for reference only  
Please modify the pad dimension based on individual need

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

Parameter	Symbol	Rating	Units
Continuous Forward Current	I <sub>F</sub>	65	mA
Peak Forward Current	I <sub>FP</sub>	1.0	A
Reverse Voltage	V <sub>R</sub>	5	V
Operating Temperature	T <sub>opr</sub>	-40 ~ +85	°C
Storage Temperature	T <sub>stg</sub>	-40 ~ +85	°C
Soldering Temperature*1	T <sub>sol</sub>	260	°C
Power Dissipation at (or below) 25°C Free Air Temperature	P <sub>d</sub>	130	mW

**Notes:** \*1: Conditions—Pulse Width≤100μs and Duty ≤1%.

\*2: Soldering time ≤5 second

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

Parameter	Symbol	Condition	Min.	Typ.	Max.	Units
Radiant Intensity	I <sub>e</sub>	I <sub>F</sub> =20mA	3.0	5.0	--	mW/sr
		I <sub>F</sub> =100mA Pulse Width≤100μs and Duty ≤1%	--	25	--	
Peak Wavelength	λ <sub>p</sub>	I <sub>F</sub> =20mA	--	940	--	nm
Spectral Bandwidth	Δλ	I <sub>F</sub> =20mA	--	45	--	nm
Forward Voltage	V <sub>F</sub>	I <sub>F</sub> =20mA	--	1.2	1.5	V
		I <sub>F</sub> =100mA Pulse Width≤100μs and Duty ≤1%	--	1.4	1.8	
		I <sub>F</sub> =1A	--	2.6	4.0	
View Angle	2θ1/2	I <sub>F</sub> =20mA	--	25	--	deg
Reverse Current	I <sub>R</sub>	V <sub>R</sub> =5V	--	--	10	μA

## Typical Electro-Optical Characteristics Curves

Fig.1 Forward Current vs.  
Ambient Temperature

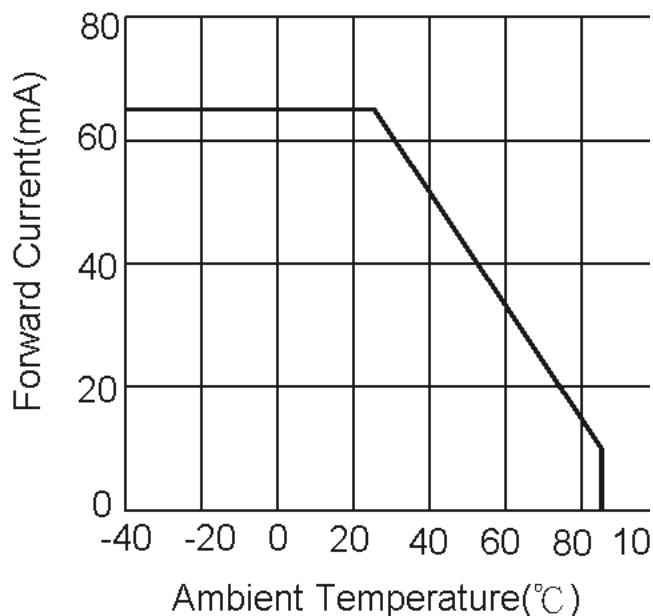


Fig.2 Spectral Distribution

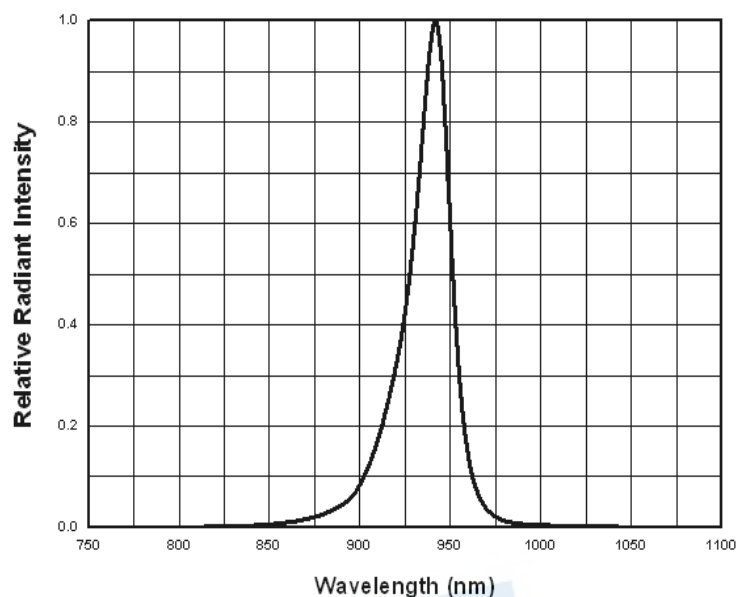


Fig.3 Forward Current vs.  
Forward Voltage

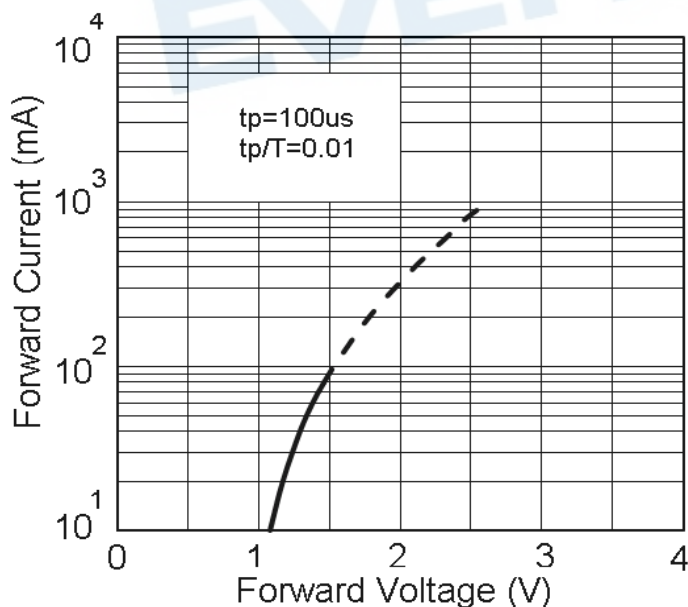
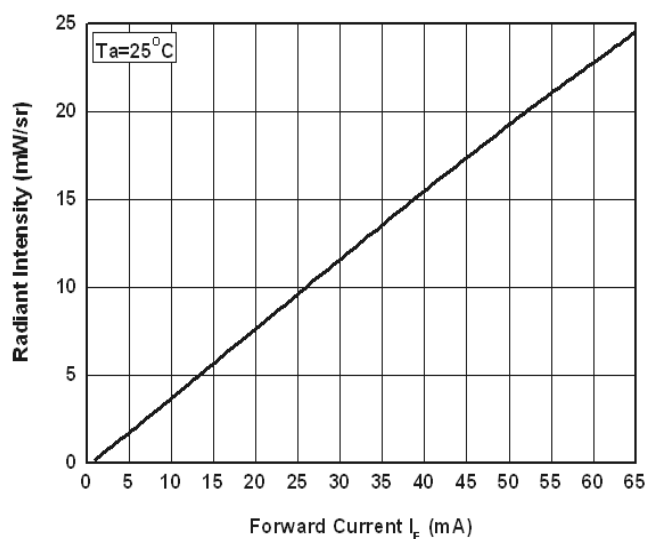
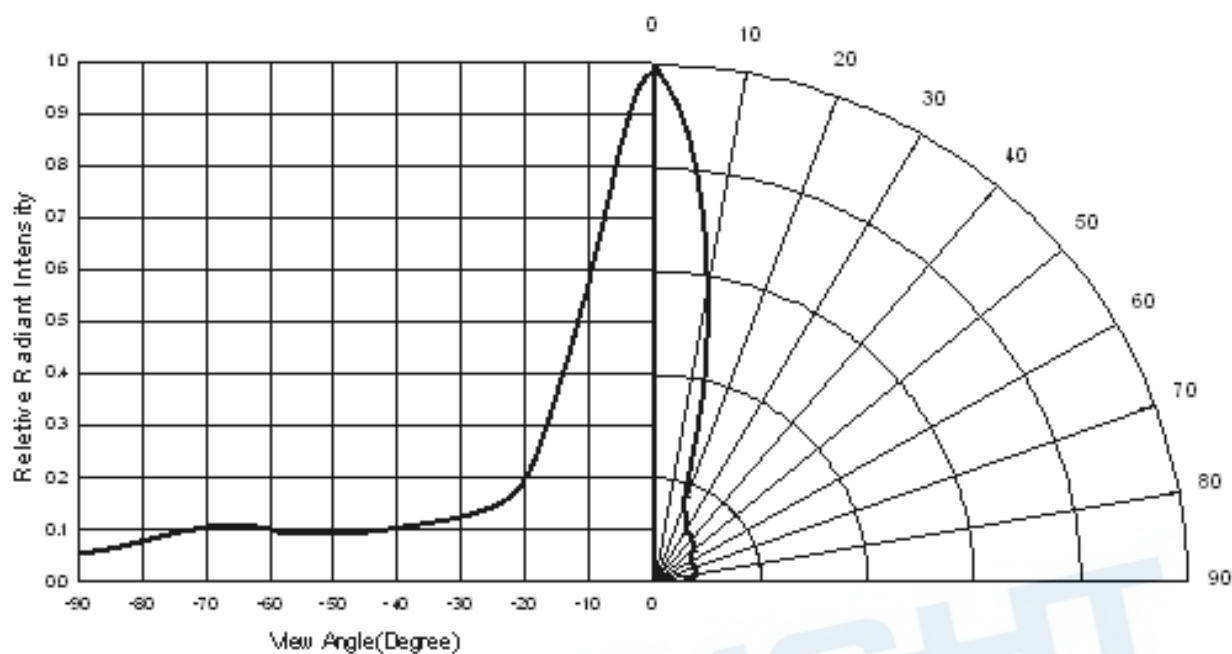


Fig.4 Radiant Intensity vs.  
Forward Current



## Typical Electro-Optical Characteristics Curves

Fig.5 Relative Radiant Intensity vs.  
Angular Displacement



## 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.

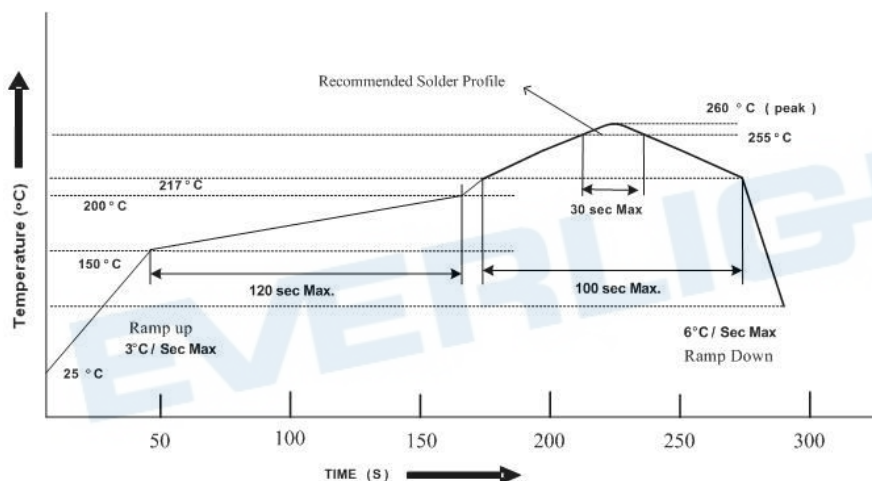
2.2 After opening the package: The LEDs should be kept at 30°C or less and 60%RH or less.

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

2.4 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 :  $60\pm5^{\circ}\text{C}$  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.

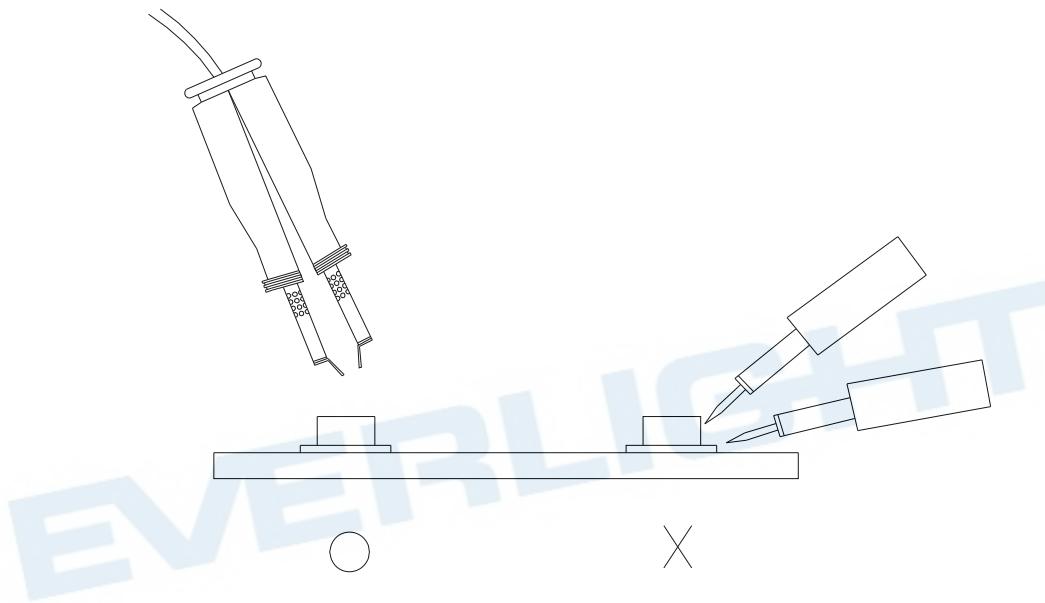
3.4 After soldering, do not warp the circuit board.

#### 4. Soldering Iron

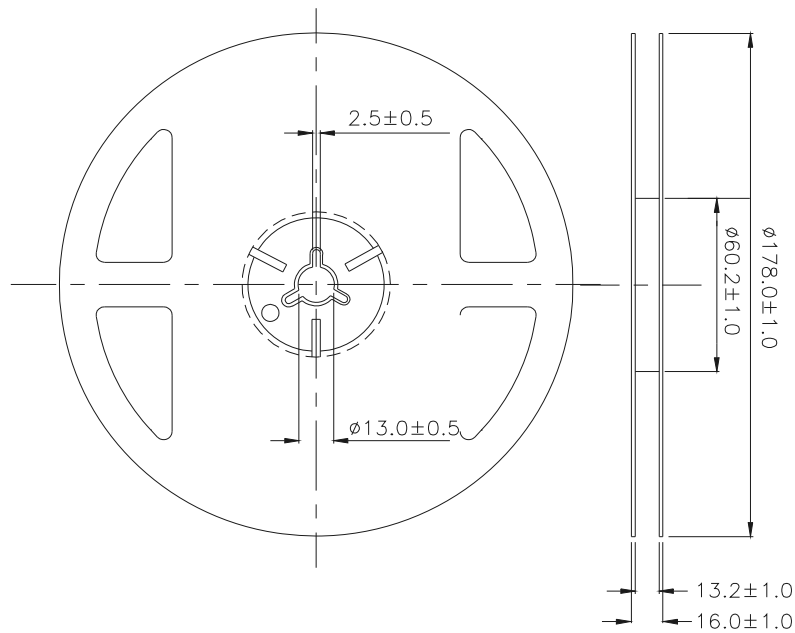
Each terminal is to go to the tip of soldering iron temperature less than 350°C for 3 seconds within once in less than the soldering iron capacity 25W. Leave two seconds and more intervals, and do soldering of each terminal. Be careful because the damage of the product is often started at the time of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

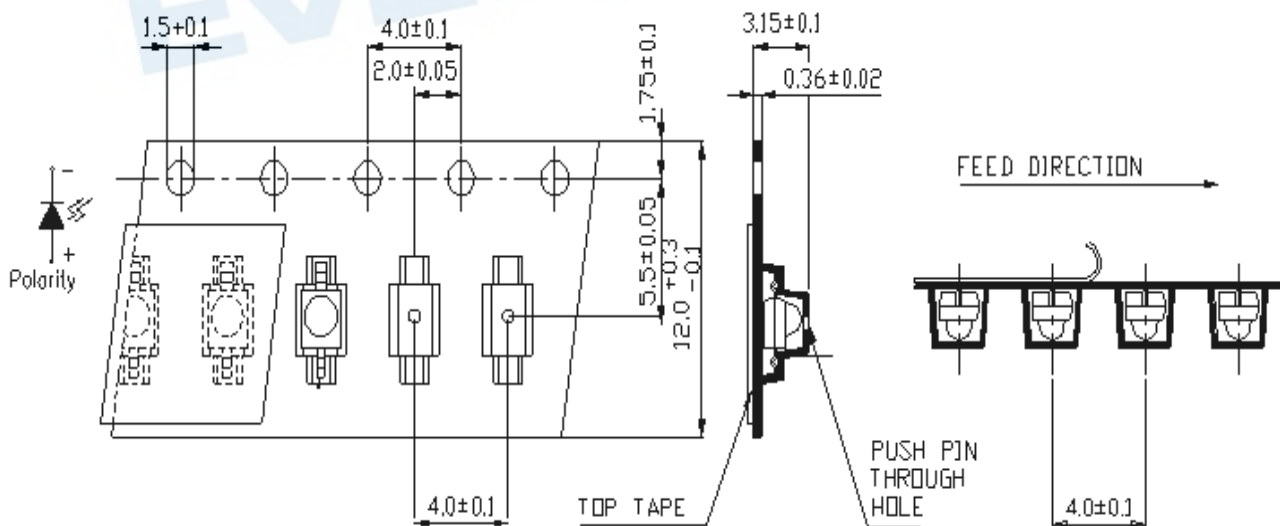


## Package Dimensions



**Note:** The tolerances unless mentioned are  $\pm 0.1$  mm, Unit: mm.








## Carrier Tape Dimensions: (Quantity: 1000pcs/reel)



**Note:** The tolerances unless mentioned are  $\pm 0.1$  mm, Unit: mm.



## Label Form Specification

RoHS		EVERLIGHT	5
CPN: XXXXXXXXXXXXXXXXXXXX			
			
XXXXXXXXXX-XXXXXXXXXX-XXXXXXXXXX-XXXXXXXXXX-XXXXXX			
P/N: XXXXXXXXXXXX			
			
XXXXXXXXXX-XXXXXXXXXX-XXXXXXXXXX-XXXXXXXXXX-XXXXXX			
LOT NO: Y150716XXX-XXXXXXXXXX-XXXXXXXXXX			
			
QTY: 0123456789 HUE: XXXXXXXXXXXX			
			
CAT: XXXXXXXXXXXX REF: XXXXXXXXXXXX			
			
REFERENCE: BTPYYMDDXXXXX			
			
MSL-X MADE IN XXXXXX			
			

CPN: Customer's Product Number

P/N : Production Number

LOT No: Lot Number

QTY: Packing Quantity

HUE: Peak Wavelength

CAT: Ranks

REF: Reference

MSL-X: MSL Level

Made In: Manufacture place

## Notes

1. EVERLIGHT reserves the right(s) on the adjustment of product material mix for the specification.
2. The product meets EVERLIGHT published specification for a period of twelve (12) months from date of shipment.
3. The graphs shown in this datasheet are representing typical data only and do not show guaranteed values.
4. When using this product, please observe the absolute maximum ratings and the instructions for using outlined in these specification sheets. EVERLIGHT assumes no responsibility for any damage resulting from the use of the product which does not comply with the absolute maximum ratings and the instructions included in these specification sheets.
5. These specification sheets include materials protected under copyright of EVERLIGHT. Reproduction in any form is prohibited without obtaining EVERLIGHT's prior consent.
6. This product is not intended to be used for military, aircraft, automotive, medical, life sustaining or life saving applications or any other application which can result in human injury or death. Please contact authorized Everlight sales agent for special application request.

**EVERLIGHT ELECTRONICS CO., LTD.**  
Office: No. 6-8, Zhonghua Rd., Shulin Dist.,  
New Taipei City 23860, Taiwan

Tel: 886-2-2685-6688  
Fax: 886-2685-2699 , 6897  
<http://www.everlight.com>