

# Technical Data Sheet

## 1.8mm Round Subminiature Infrared LED

### HIR42-21C/L290/TR8

#### Features

- Compatible with infrared and vapor phase reflow solder process.
- Low forward voltage
- Good spectral matching to Si photodetector
- Pb free
- The product itself will remain within RoHS compliant version.



#### Descriptions

- HIR42-21C/L290/TR8 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

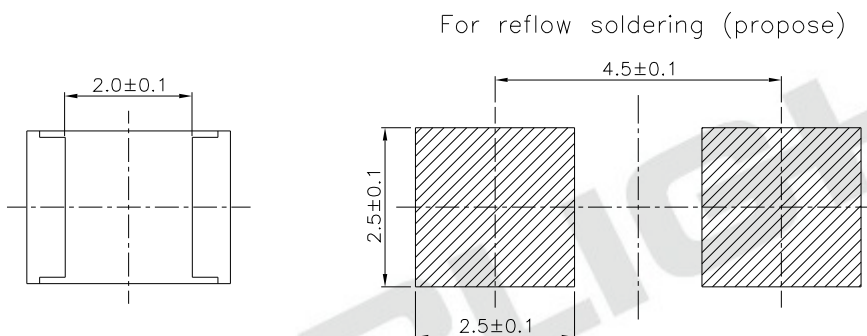
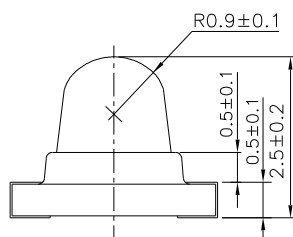
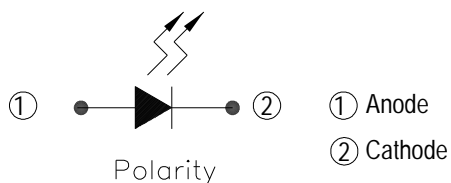
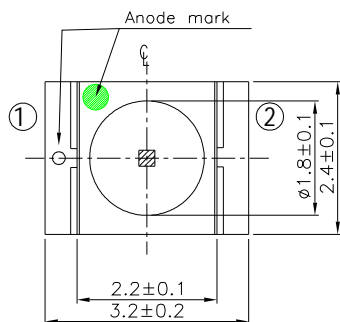
- PCB mounted infrared sensor
- Infrared emitting for miniature light barrier
- Floppy disk drive
- Optoelectronic switch
- Smoke detector

#### Device Selection Guide

LED Part No.	Chip	Lens Color
	Material	
HIR42-21C/L290/TR8	GaAlAs	Water clear

**HIR42-21C/L290/TR8**

**Package Dimensions**



- Notes:** 1.All dimensions are in millimeters  
2.Tolerances unless dimensions ±0.1mm

**HIR42-21C/L290/TR8**

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

Parameter	Symbol	Rating	Unit
Continuous Forward Current	I <sub>F</sub>	100	mA
Peak Forward Current *1	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 ~ +100	°C
Soldering Temperature *2	T <sub>sol</sub>	260	°C
Junction temperature	T <sub>j</sub>	115	°C
Thermal resistance junction (ambient mounted on PC-board pads size 16mm <sup>2</sup> each)	R <sub>thJA</sub>	400	°C/W
Thermal resistance junction (Soldering point, mounted on metal block)	R <sub>thJS</sub>	300	°C/W
Power Dissipation at(or below) 25 Free Air Temperature	P <sub>d</sub>	200	mW

**Notes:** \*1:I<sub>FP</sub> Conditions--Pulse Width 100 μs and Duty 1%.

\*2:Soldering time 5 seconds.

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

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Radiant Intensity	I <sub>e</sub>	I <sub>F</sub> =20mA	7.0	14.0	--	mW/sr
		I <sub>FP</sub> =150mA , Pulse Width 470μs ,Duty 1%	50	100	--	
Peak Wavelength	λ <sub>p</sub>	I <sub>F</sub> =20mA	--	850	--	nm
Spectral Bandwidth	Δλ	I <sub>F</sub> =20mA	--	30	--	nm
Forward Voltage	V <sub>F</sub>	I <sub>F</sub> =20mA	1.2	1.4	1.7	V
		I <sub>FP</sub> =150mA , Pulse Width 470μs ,Duty 1%	1.4	1.75	2.0	
Reverse Current	I <sub>R</sub>	V <sub>R</sub> =5V	--	--	10	uA
View Angle	2 1/2	I <sub>F</sub> =20mA	--	35	--	Deg

**Typical Electro-Optical Characteristics Curves**

Fig.1 Forward Current vs. Ambient Temperature

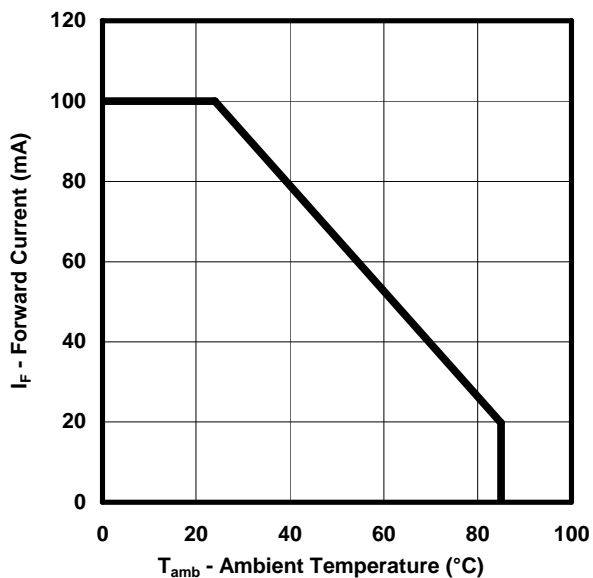


Fig.2 Spectral Distribution

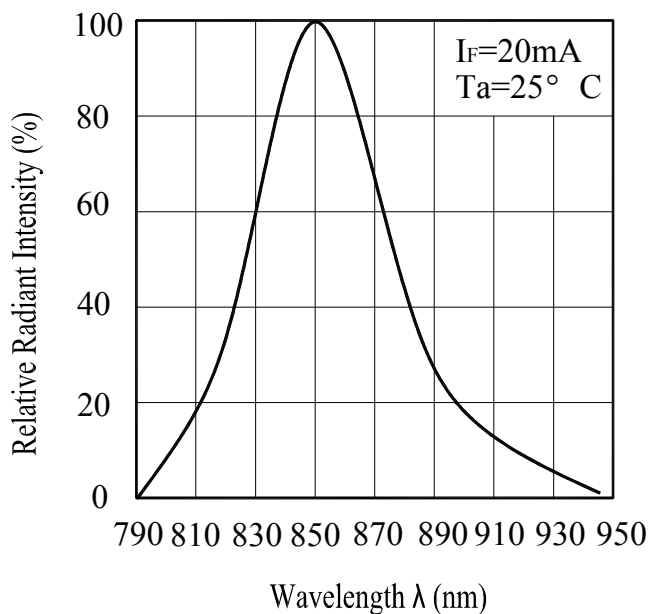


Fig.3 Peak Emission Wavelength vs. Ambient Temperature

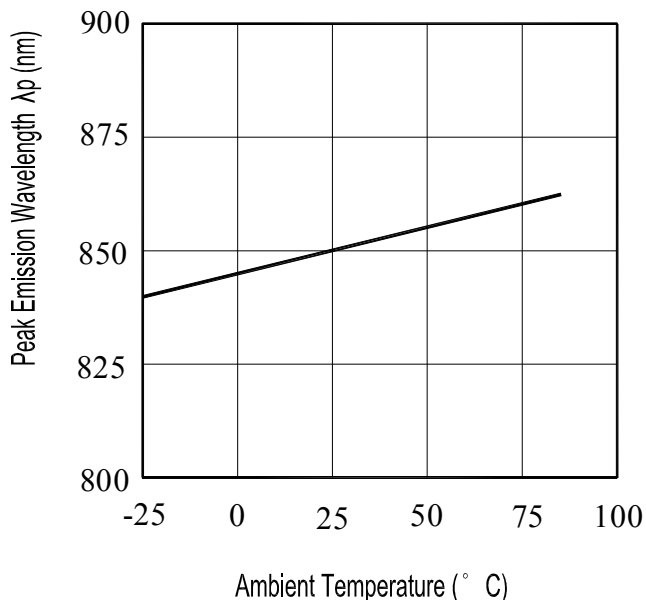
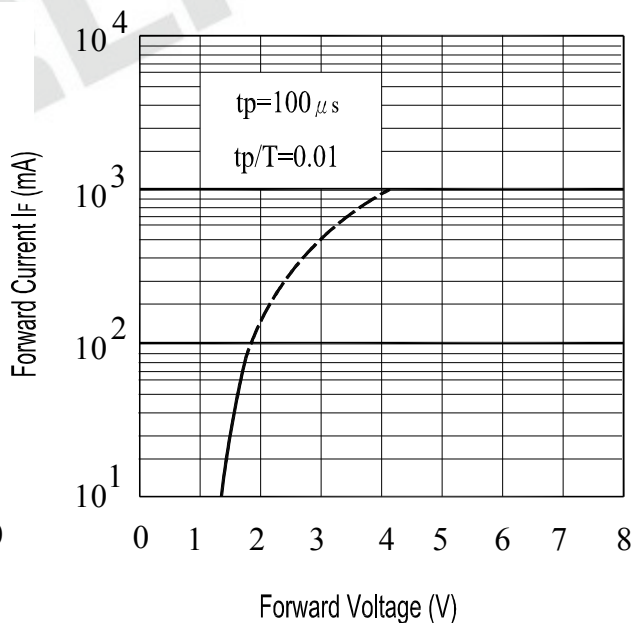


Fig.4 Forward Current vs. Forward Voltage



**Typical Electro-Optical Characteristics Curves**

Fig.5 Radiant Intensity vs.  
Forward Current

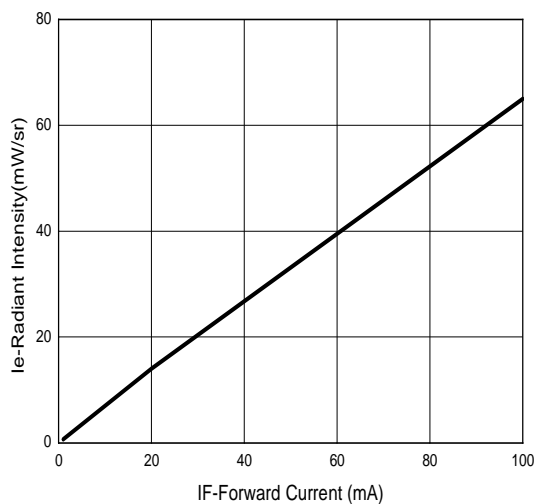
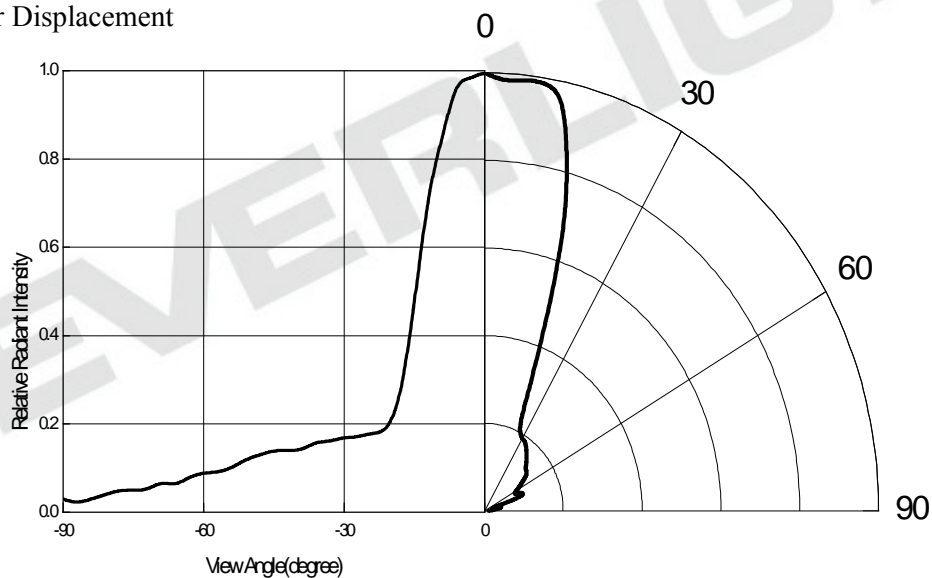


Fig.6 Relative Radiant Intensity vs.  
Angular Displacement



## 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(This part is compliant to JEDEC Level 3.)

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.

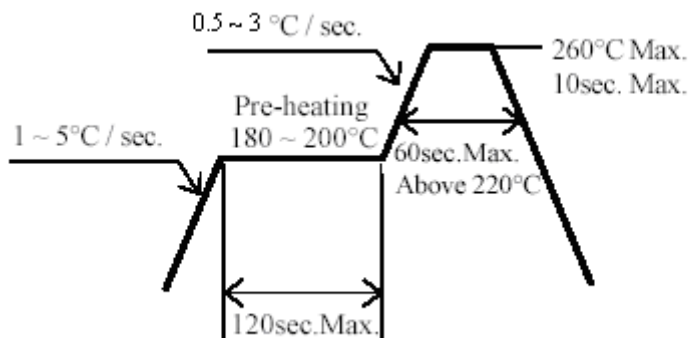
2.5 The LEDs should be used within 168 hours (7 days) after opening the package.

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 :  $60\pm 5$  , 48hours.

### 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.

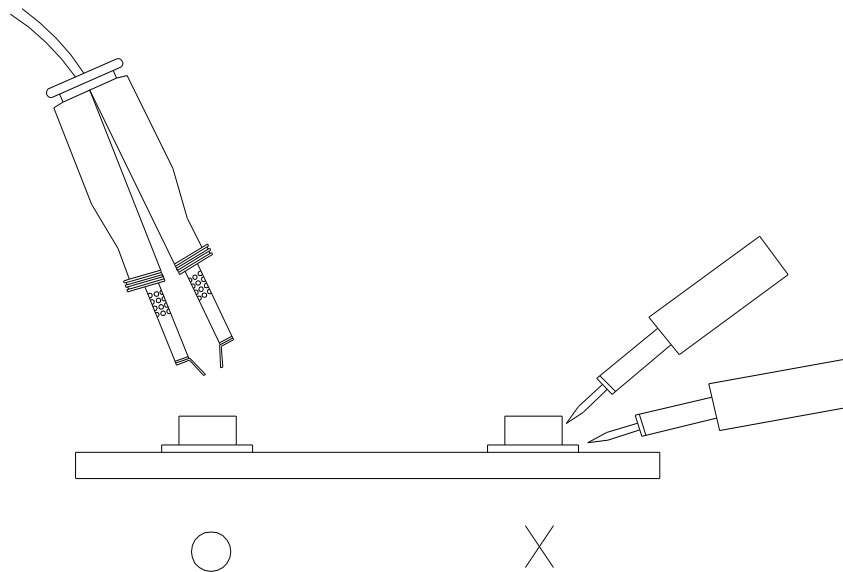
3.4 After soldering, do not warp the circuit board.

### 4.Soldering Iron

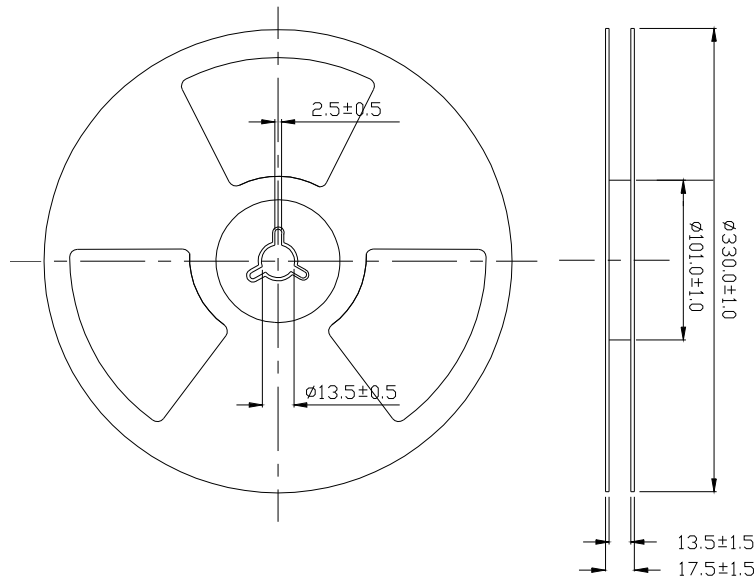
Each terminal is to go to the tip of soldering iron temperature less than 350 for 3 seconds within once in less than the soldering iron capacity 25W. Leave two seconds and more intervals, and do soldering of each terminal. Be careful because the damage of the product is often started at the time of the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

### 5.Repairing

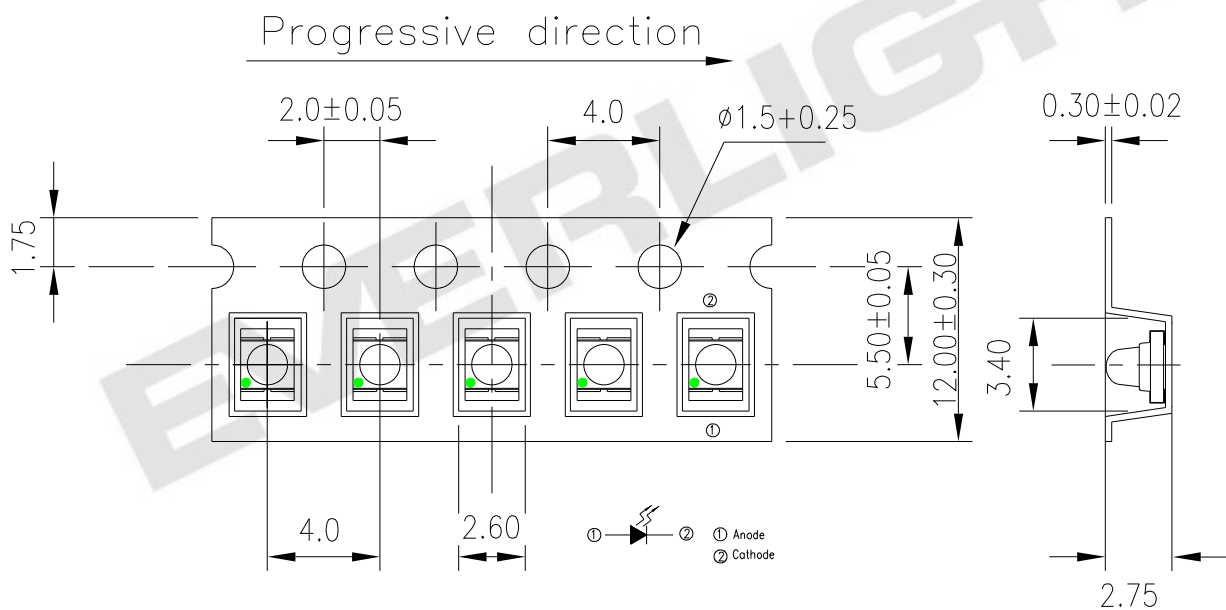
Repair should not be done after the LEDs have been soldered. When repairing is unavoidable, a double-head soldering iron should be used (as below figure). It should be confirmed beforehand whether the characteristics of the LEDs will or will not be damaged by repairing.



**Package Dimensions**



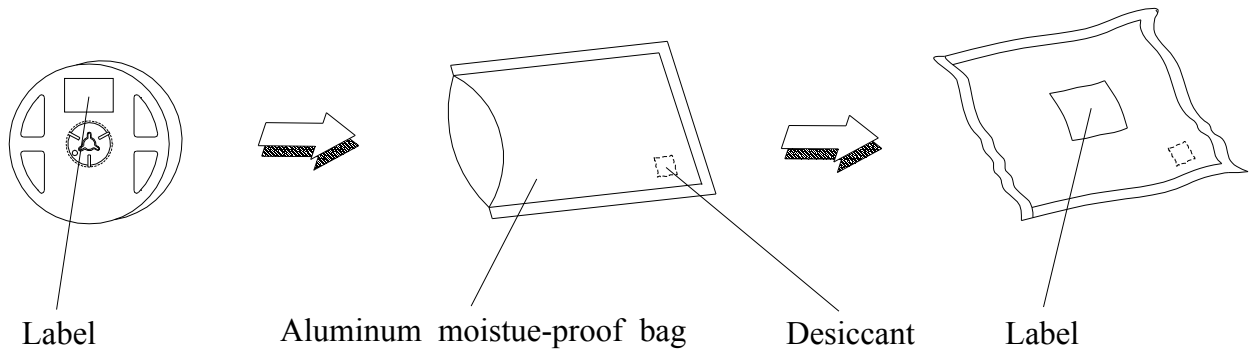
**Carrier Tape Dimensions : (Quantity: 2500pcs/reel)**



**Unit: mm**



### Packing Procedure



### Label Form Specification

	<b>EVERLIGHT</b>	
CPN : P/N : XXXXXXXXXXXXX XXXXXXXXXXXXXX		<b>RoHS</b>
QTY : XXX 	CAT : XXX HUE : XXX REF : XXX	
LOT NO : XXXXXXXXXXXX 		
Reference : XXXXXXXX 		

CPN: Customer's Production Number  
P/N : Production Number  
QTY: Packing Quantity  
CAT: Ranks  
HUE: Peak Wavelength  
REF: Reference  
LOT No: Lot Number  
MADE IN TAIWAN: Production Place

### Notes

1. Above specification may be changed without notice. EVERLIGHT will reserve authority on material change for above specification.
2. 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 use of the product which does not comply with the absolute maximum ratings and the instructions included in these specification sheets.
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