

## 1.9mm Round Subminiature “Z-Bend” Lead Infrared LED IR91-21C/S12/TR10



### 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/S12/TR10 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

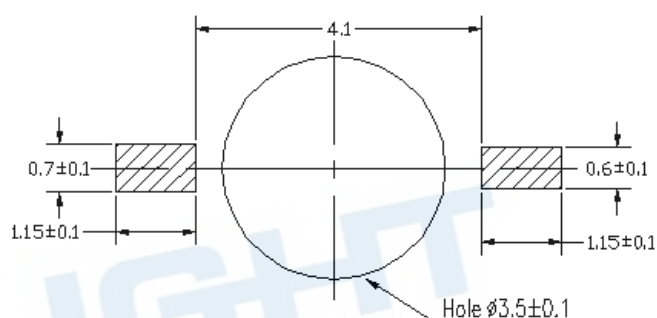
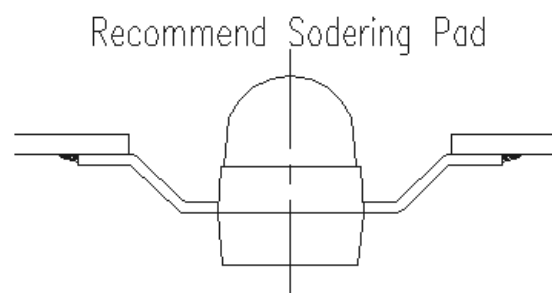
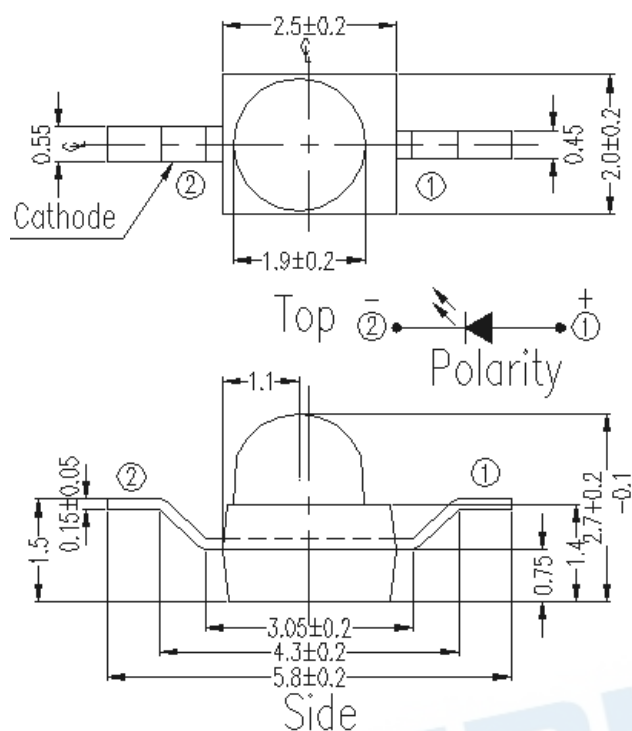
### Applications

- 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  $\pm 0.1\text{mm}$ .

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                                   | $I_F$     | 100       | mA    |
| Reverse Voltage                                              | $V_R$     | 5         | V     |
| Operating Temperature                                        | $T_{opr}$ | -25 ~ +85 | °C    |
| Storage Temperature                                          | $T_{stg}$ | -40 ~ +85 | °C    |
| Soldering Temperature*1                                      | $T_{sol}$ | 260       | °C    |
| Power Dissipation at (or below)<br>25°C Free Air Temperature | $P_d$     | 130       | mW    |
| Peak Forward Current                                         | $I_{Fp}$  | 1.0       | A     |

**Notes:** \*1: Soldering time  $\leq$  5 second

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

| Parameter          | Symbol          | Condition                                                      | Min. | Typ. | Max. | Units   |
|--------------------|-----------------|----------------------------------------------------------------|------|------|------|---------|
| Radiant Intensity  | $I_e$           | $I_F=20mA$                                                     | 3.0  | 5.0  |      | mW/sr   |
| Peak Wavelength    | $\lambda_p$     |                                                                | --   | 940  | --   | nm      |
| Spectral Bandwidth | $\Delta\lambda$ |                                                                | --   | 45   | --   | nm      |
| View Angle         | 2 $\theta$ 1/2  |                                                                | --   | 25   | --   | Deg     |
| Reverse Current    | $I_R$           | $V_R=5V$                                                       | --   | --   | 10   | $\mu A$ |
| Forward Voltage    | $V_F$           | $I_F=20mA$                                                     | --   | 1.2  | 1.5  | V       |
|                    |                 | $I_F=1A$<br>Pulse Width $\leq$ 100 $\mu s$ ,<br>Duty $\leq$ 1% | --   | 2.6  | 4.0  |         |

## Typical Electro-Optical Characteristics Curves

Fig.1 Forward Current vs. Ambient Temperature

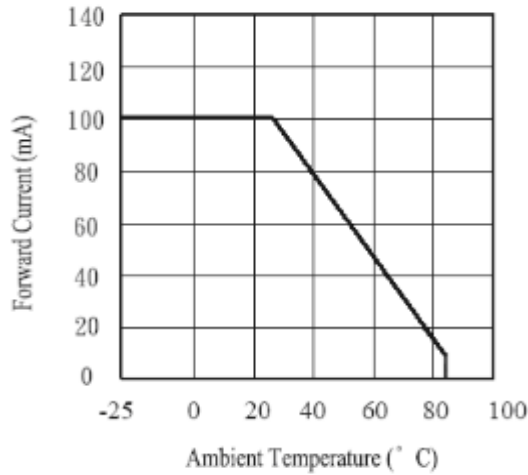


Fig.2 Spectral Distribution

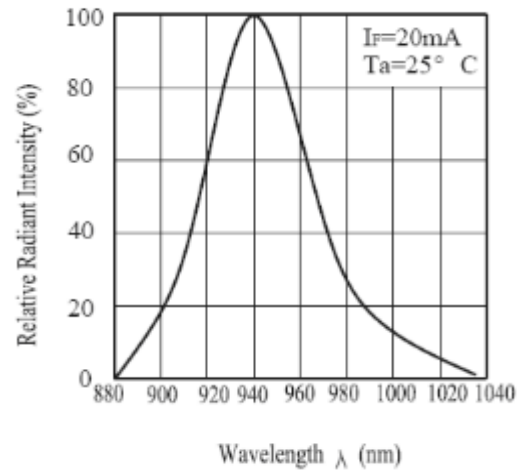


Fig.3 Peak Emission Wavelength vs. Ambient Temperature

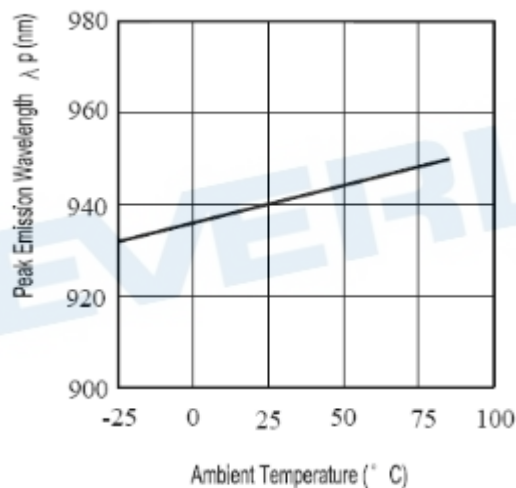


Fig.4 Forward Current vs. Forward Voltage

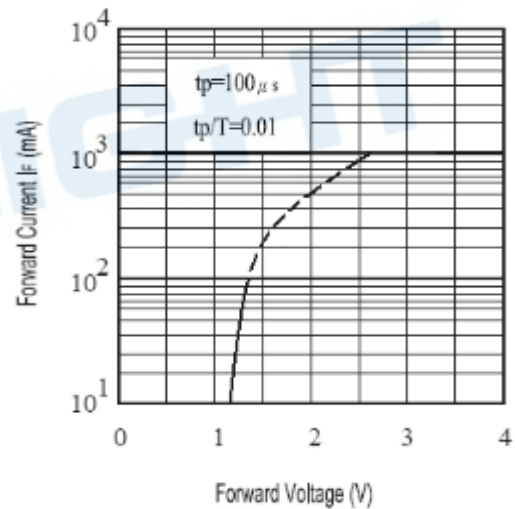


Fig.5 Radiant Intensity vs. Forward Current

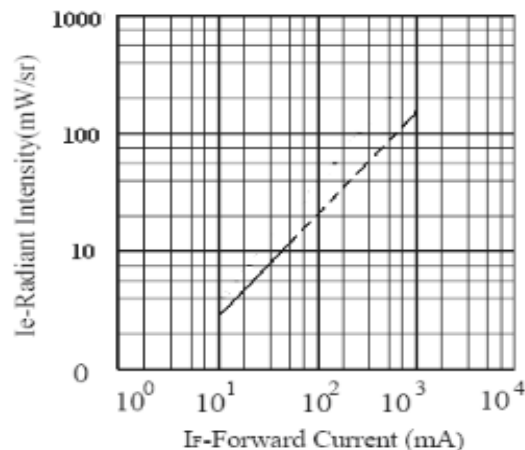
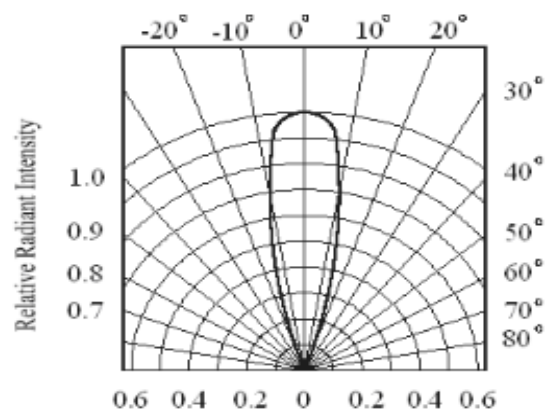


Fig.6 Relative Radiant Intensity vs. Angular Displacement



## 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

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 10°C~30°C and 90%RH or less.

2.3 The LEDs suggested be used within one year.

2.4 After opening the package, the devices must be stored at 10°C~30°C and  $\leq 60\%RH$ , and used within 168 hours (floor life). If unused LEDs remain, it should be stored in moisture proof packages.

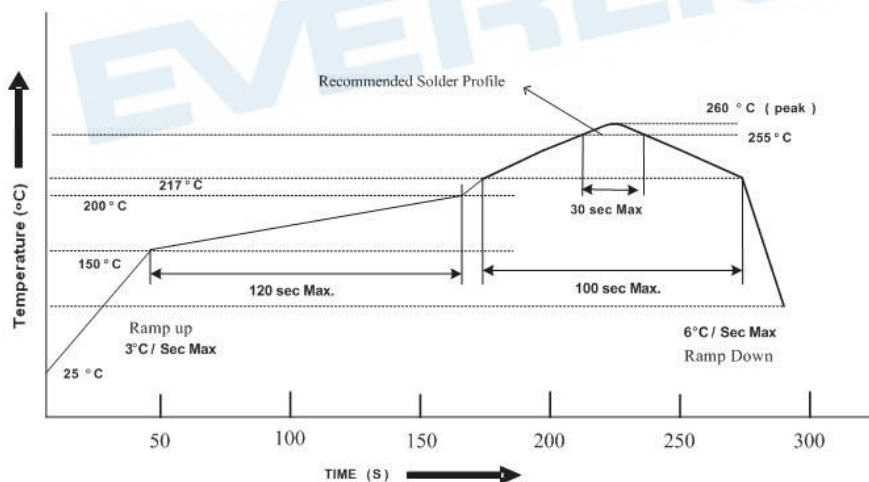
2.5 If the moisture absorbent material (desiccant material) has faded or unopened bag has exceeded the shelf life or devices (out of bag) have exceeded the floor life, baking treatment is required.

2.6 If baking is required, refer to IPC/JEDEC J-STD-033 for bake procedure or recommend the following conditions:

96 hours at 60°C  $\pm$  5°C and < 5 % RH (reeled/tubed/loose units)

### 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.

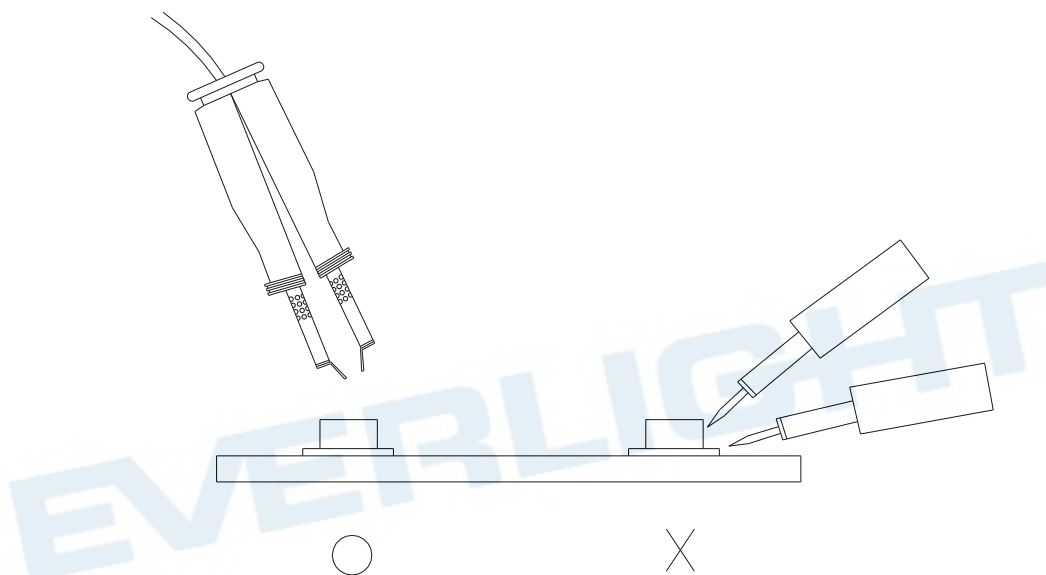
3.4 After soldering, do not warp the circuit board.

#### 4. Soldering Iron

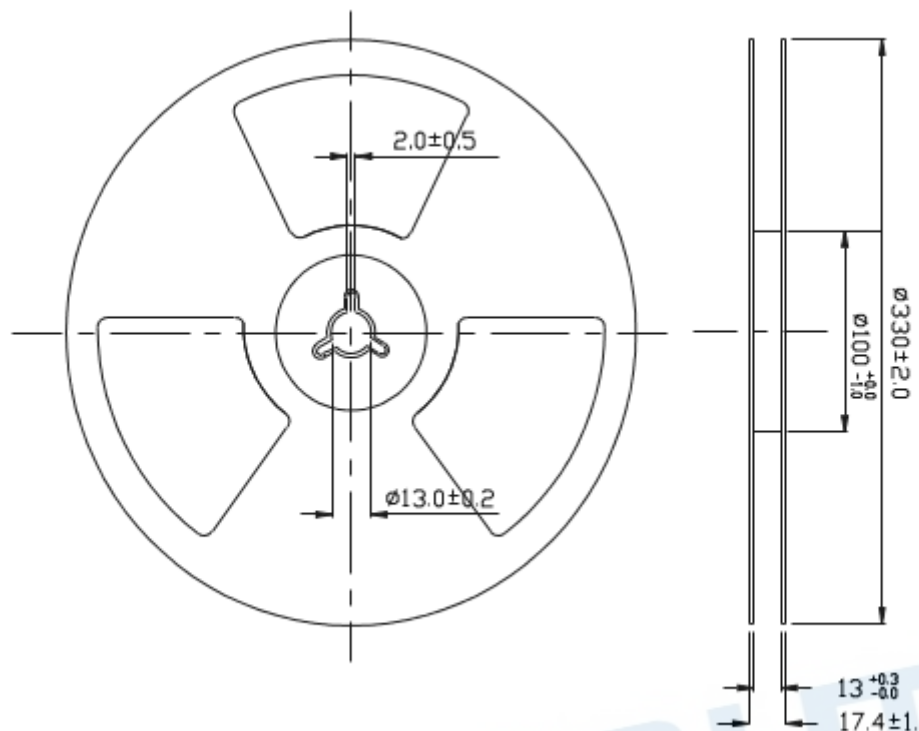
Each terminal is to go to the tip of soldering iron temperature less than 350°C for 3 seconds within once in less than the soldering iron capacity 25W. Leave two seconds and more intervals, and do soldering of each terminal. Be careful because the damage of the product is often started at the time of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

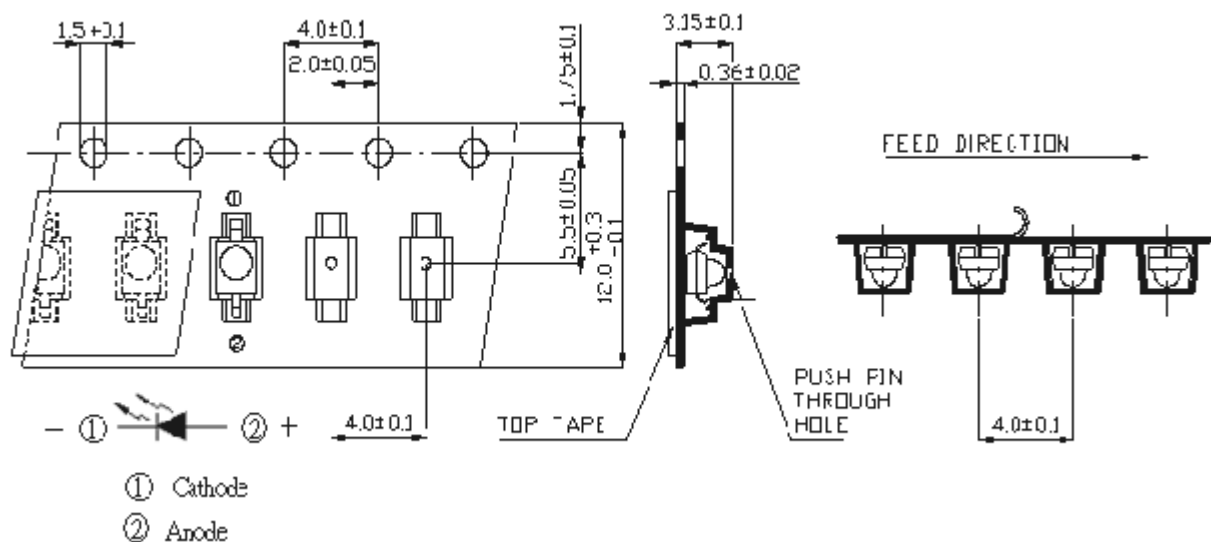


## Package Dimensions



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

## Carrier Tape Dimensions:(Quantity: 5000pcs/reel)



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

## Label Form Specification



CPN: Customer's Production Number

P/N : Production Number

QTY: Packing Quantity

CAT: Ranks

HUE: Peak Wavelength

REF: Reference

LOT No: Lot Number

## DISCLAIMER

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.
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