



TAIWAN TONGJIA OPTOELECTRONICS TECHNOLOGY CO., LTD

GUANGDONG TONGJIA OPTOELECTRONICS TECHNOLOGY CO., LTD

## 承認書

### Specification For Approval

Customer: (客戶)

Description: (產品描述) 533直插红外光遮断器 (光电开关)

Part number: (產品型號) TJ- IEL533F0I4FLC94FR-A5

Date: (日期)

Approved By: (客戶承認)

Prepared By: (我司承認)

| Approval | Check | Design | Sales |
|----------|-------|--------|-------|
|          |       |        |       |

核准

審核

製作

業務

Customer Service Hotline: **400-676-8616**

TEL: 0769-8662 5999      0769-8200 2226

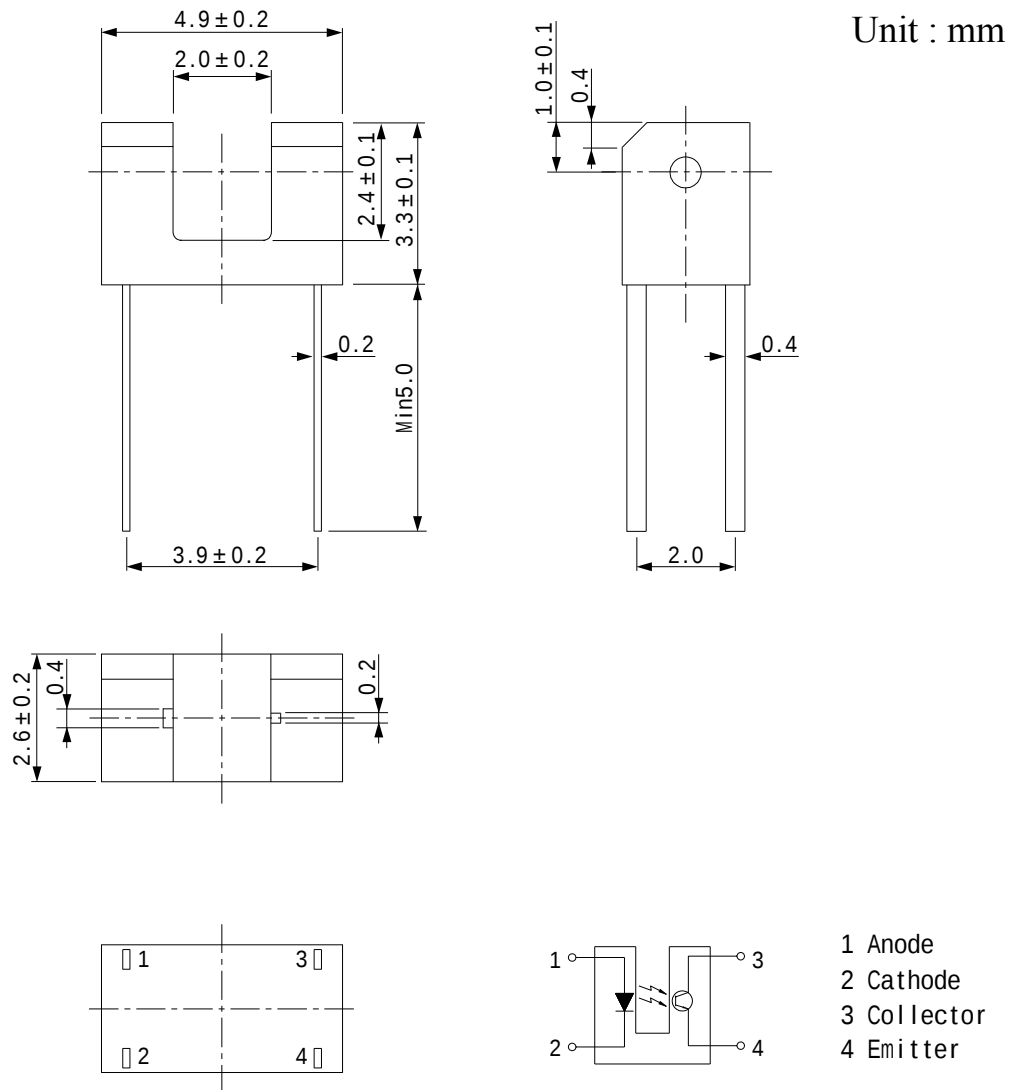
E-MAIL : dg@togialed.com

FAX: 0769-8200 2227

WEB: www.togialed.com

Features :

- \* Low power consumption
- \* Small efficiency.
- \* Versatile mounting on p.c board or panel.
- \* I.C compatible/ low current requirement.
- \* Package Dimensions:



Note:

- 1: All dimensions are in millimeters (inches).
- 2: Tolerance is  $\pm 0.25\text{mm}$  ( $.010''$ ) unless otherwise noted.
- 3: Specifications are subject to change without notices.
- 4: This specification is for reference only for one year

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

| Parameter                                          |                                                          | Symbol            | Ratings | Units |
|----------------------------------------------------|----------------------------------------------------------|-------------------|---------|-------|
| Input                                              | Power Dissipation at(or below) 25°C Free Air Temperature | Pd                | 75      | mW    |
|                                                    | Reverse Voltage                                          | V <sub>R</sub>    | 5       | V     |
|                                                    | Continuous Forward Current                               | I <sub>F</sub>    | 50      | mA    |
| Output                                             | Power Dissipation at(or below) 25°C Free Air Temperature | Pd                | 75      | mW    |
|                                                    | Collector Current                                        | I <sub>C</sub>    | 20      | mA    |
|                                                    | Collector-Emitter Voltage                                | BV <sub>CEO</sub> | 35      | V     |
|                                                    | Emitter-Collector Voltage                                | BV <sub>ECO</sub> | 5       | V     |
| Operating Temperature                              |                                                          | T <sub>opr</sub>  | -25~+80 | °C    |
| Storage Temperature                                |                                                          | T <sub>stg</sub>  | -30~+85 | °C    |
| Lead Soldering Temperature*1(3mm from the package) |                                                          | T <sub>sol</sub>  | 260     | °C    |

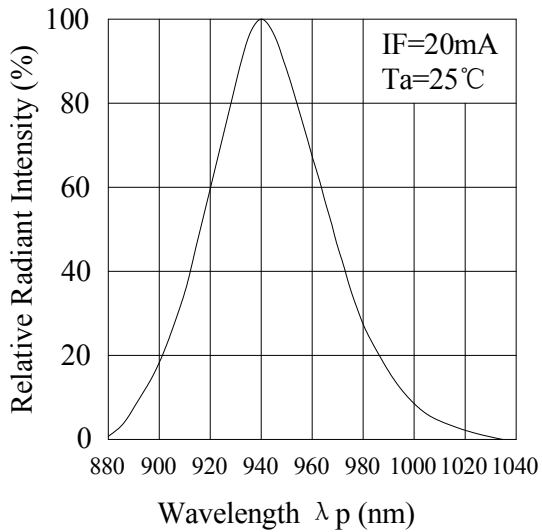
Notes: \*1. Soldering time 5 sec.

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

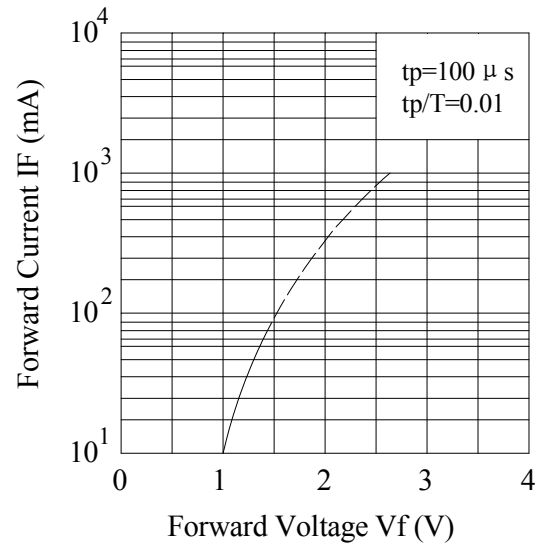
| Parameter                |                                      | Conditions                                                  | Symbol               | Min. | Typ. | Max. | Unit |
|--------------------------|--------------------------------------|-------------------------------------------------------------|----------------------|------|------|------|------|
| Input                    | Forward Voltage                      | I <sub>F</sub> =20mA                                        | V <sub>F</sub>       | ---  | 1.2  | 1.6  | V    |
|                          | Reverse Current                      | V <sub>R</sub> =5V                                          | I <sub>R</sub>       | ---  | ---  | 10   | μA   |
|                          | Peak Wavelength                      | I <sub>F</sub> =20mA                                        | λ <sub>P</sub>       | ---  | 940  | ---  | nm   |
| Output                   | Collector Dark Current               | V <sub>CE</sub> =20V<br>E <sub>e</sub> =0mW/cm <sup>2</sup> | I <sub>CEO</sub>     | ---  | ---  | 100  | nA   |
|                          | Collector-Emitter Saturation Voltage | I <sub>C</sub> =2mA<br>E <sub>e</sub> =1mW/cm <sup>2</sup>  | V <sub>CE(sat)</sub> | ---  | ---  | 0.4  | V    |
| Transfer Characteristics | On State Collector Current           | V <sub>CE</sub> =5V<br>I <sub>F</sub> =20mA                 | I <sub>C(on)</sub>   | 0.25 | ---  | ---  | mA   |
|                          | Rise time                            | V <sub>CE</sub> =5V<br>I <sub>C</sub> =1mA                  | t <sub>r</sub>       | ---  | 15   | ---  | μs   |
|                          | Fall time                            | R <sub>L</sub> =1KΩ                                         | t <sub>f</sub>       | ---  | 15   | ---  | μs   |

## Typical Electrical/Optical/Characteristics Curves for IR

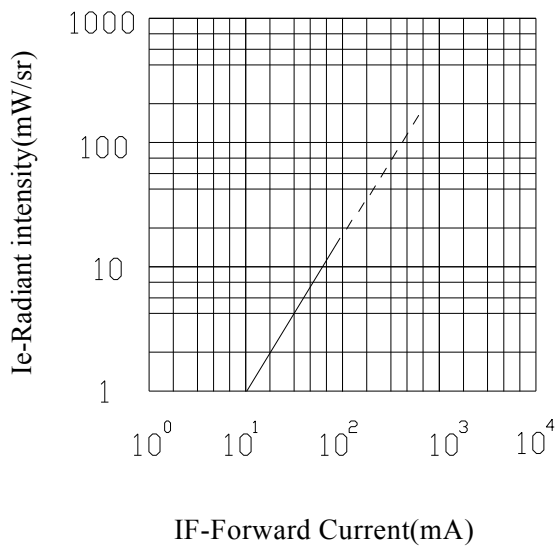
Spectral Distribution



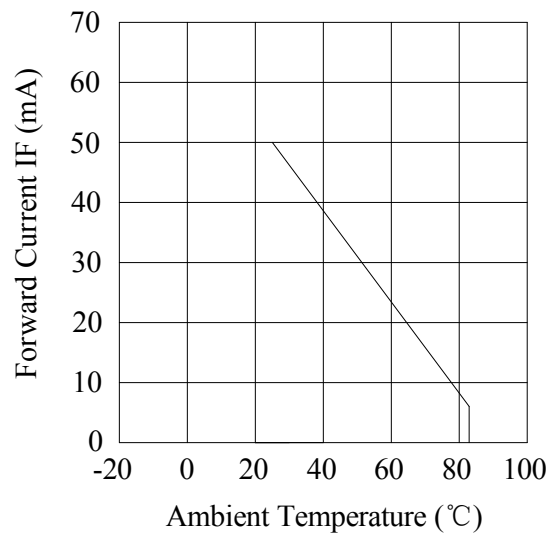
Forward Current & Forward Voltage



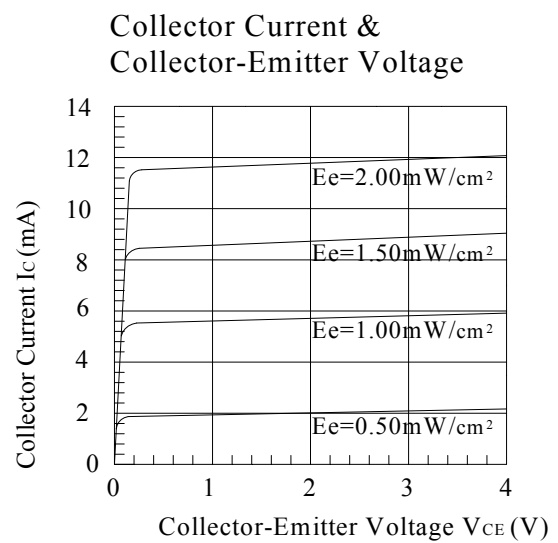
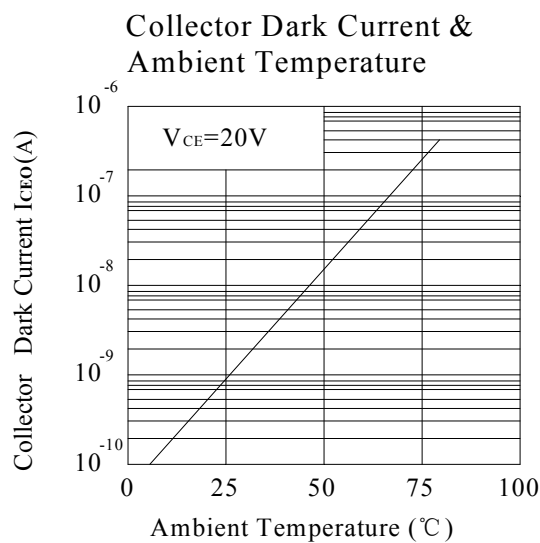
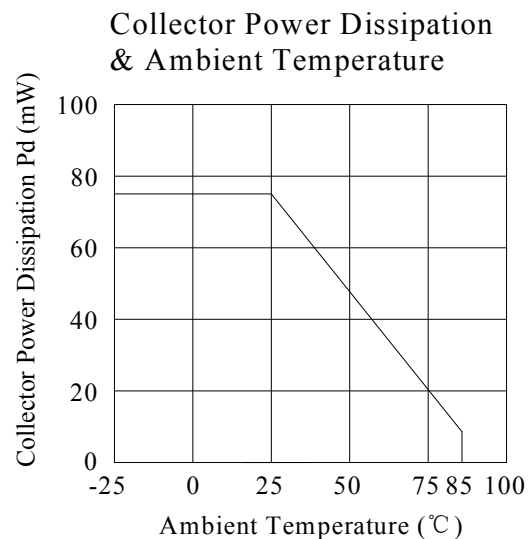
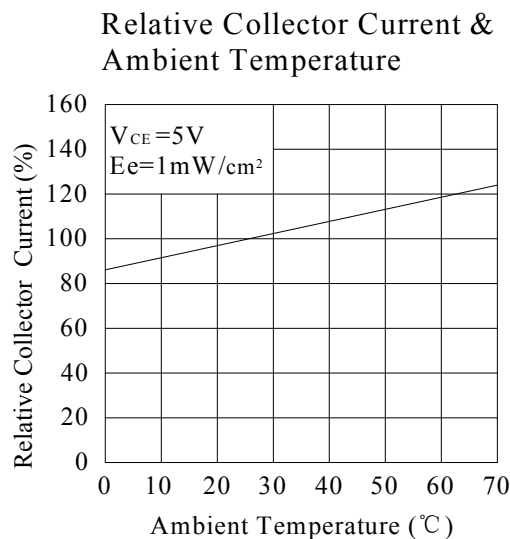
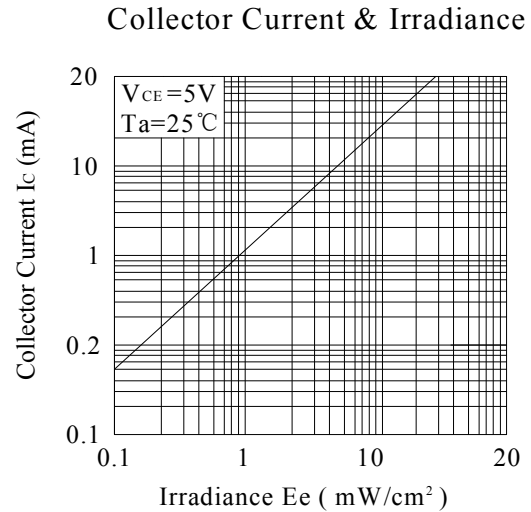
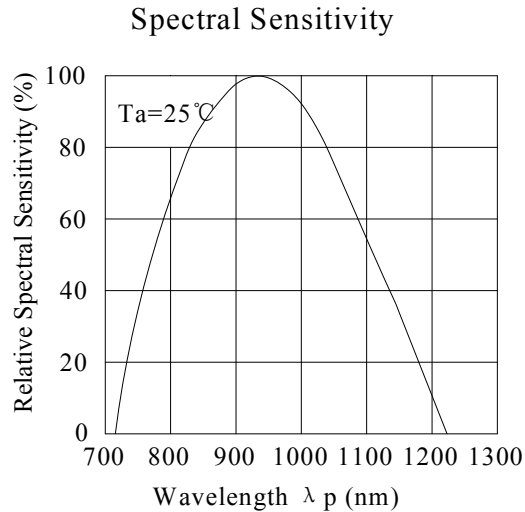
Relative Intensity & Forward Current



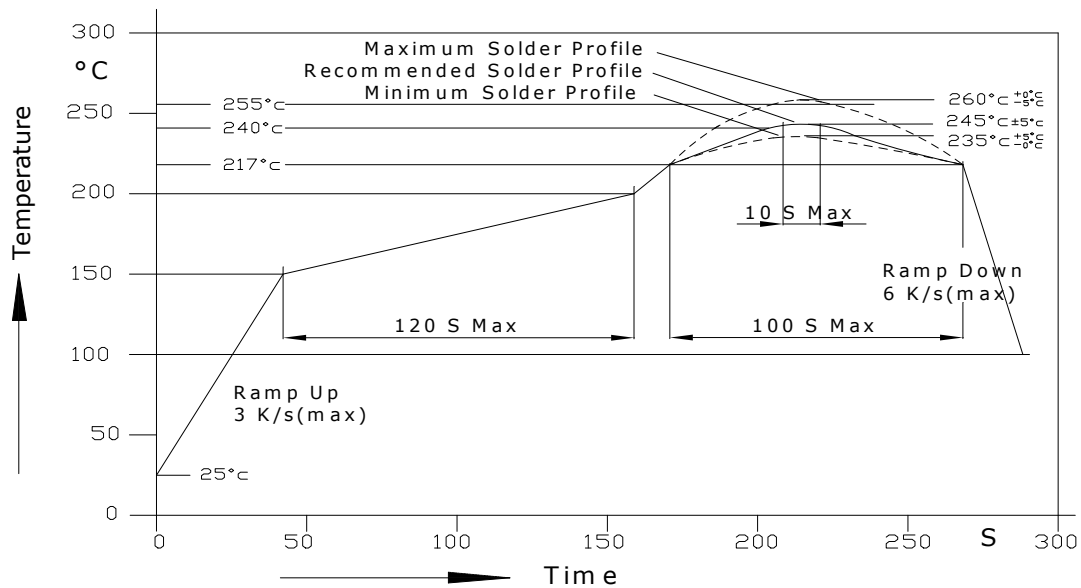
Forward Current & Ambient Temperature



## Typical Electrical/Optical/Characteristics Curves for PT



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.
- 3.5. Recommended soldering conditions:

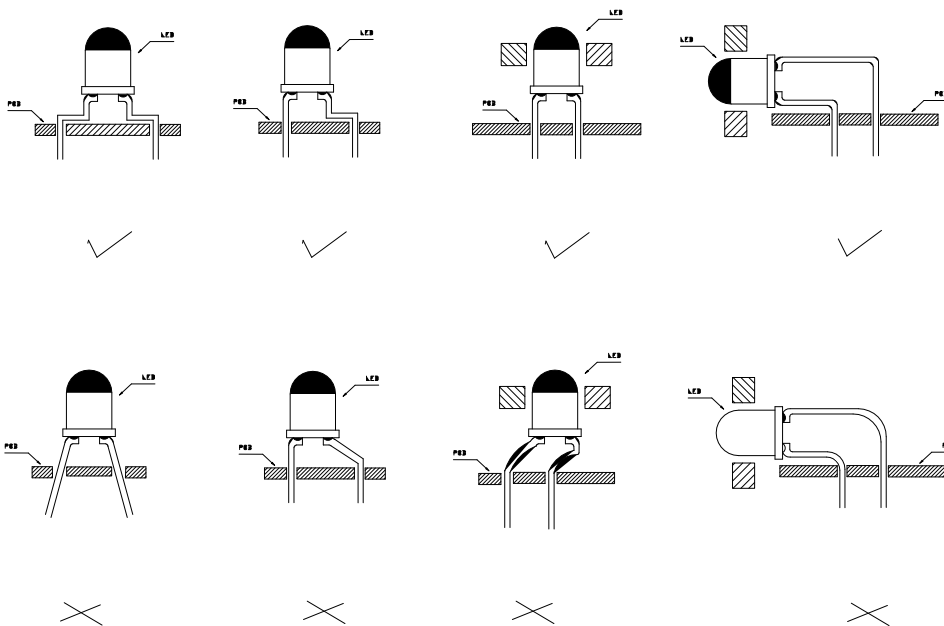
| Reflow soldering |                              | Soldering iron |                 |
|------------------|------------------------------|----------------|-----------------|
| Pre-heat         | 150~200°C                    | Temperature    | 300°C Max.      |
| Pre-heat time    | 120 sec. Max.                | Soldering time | 3 sec. Max.     |
| Peak temperature | 260°C Max.                   |                | (one time only) |
| Soldering time   | 10 sec. Max.(Max. two times) |                |                 |

- 3.6. Because different board designs use different number and types of devices, solder pastes, reflow ovens, and circuit boards, no single temperature profile works for all possible combinations.

However, you can successfully mount your packages to the PCB by following the proper guidelines and PCB-specific characterization.

## Supporter shaping :

Shaping of the supporter must be conducted before welding. While shaping, the bending position of the supporter must at least be located at 3mm from the bottom of the encapsulating resin. Also, avoid multiple bending on the same position. Please choose the appropriate apparatus to fixate the supporter in order to avoid exerting extra pressure on resin. Using the jointing section of the pin and resin as fulcrum is strictly prohibited since the pressure mounted would directly damage the internal illuminating structure and thus cause irreversible defection of the product. Due to the same reason, the interval between the welding hole on the PCB board should be strictly matched with the pin interval of the product when assembling the product.



✓ correct mounting methods

✗ Incorrect mounting methods

## **ESD protective**

### 1 Electrostatic generation

1; Friction: in the daily life. Any two different material object contact after the separation, can produce a static electric , Static electricity and the most common method ,Is triboelectrification 。The insulation material, the better ,More letEasy triboelectrification 。In addition , Any two different material object contact after separation , Can also produce electrostatic 。

2. Induction: in view of the conductive material is concerned, because the surface of the electronic can free flow, such as placed it in electric fieldbecauseGay repellent ,Opposites attract ,Are negative ions will transfer , In its surface can produce charge 。

3. Transmission: in view of the conductive material is concerned, because the surface of the electronic can free flow , If charged object contact, will be charge transfer.

### 4. The harm of static electricity LED :

.1 For the moment's electric field or the heat generated by the current , Make LED localinjury , For the performance of the leakage current increase quickly , Can stillwork , But the brightness is reduced (white light will change color), life is damaged 。

5 Because the electric field or current failure LED insulating layer , Make device can't work (destroyed) , Performance for die lamp 。

### 6; Electrostatic protection and elimination measures :

- a. For the whole process (production, testing, packaging, etc.)All LED directly contact member must do it well Prevent and Eliminate electrostatic measures, basically have: workshop laid anti-static floor and well grounded 。
- b. Table for esd workstation, the production of the good earth
- c. Operator wear anti-static clothing, with wrist strap, gloves or foot ring 。
- d. Application of ion fan, welding solder iron well grounding measures 。
- e. The package antistatic material