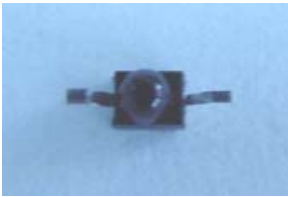


1.9mm Round Subminiature “Z-Bend” Lead Phototransistor PT91-21B/TR10



Features

- Fast response time
- High photo sensitivity
- Small junction capacitance
- Compatible with infrared and vapor phase reflow solder process.
- 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

- PT91-21B/TR10 is a phototransistor in miniature SMD package which is molded in black plastic with spherical top view lens. The device is spectrally matched to infrared emitting diode.

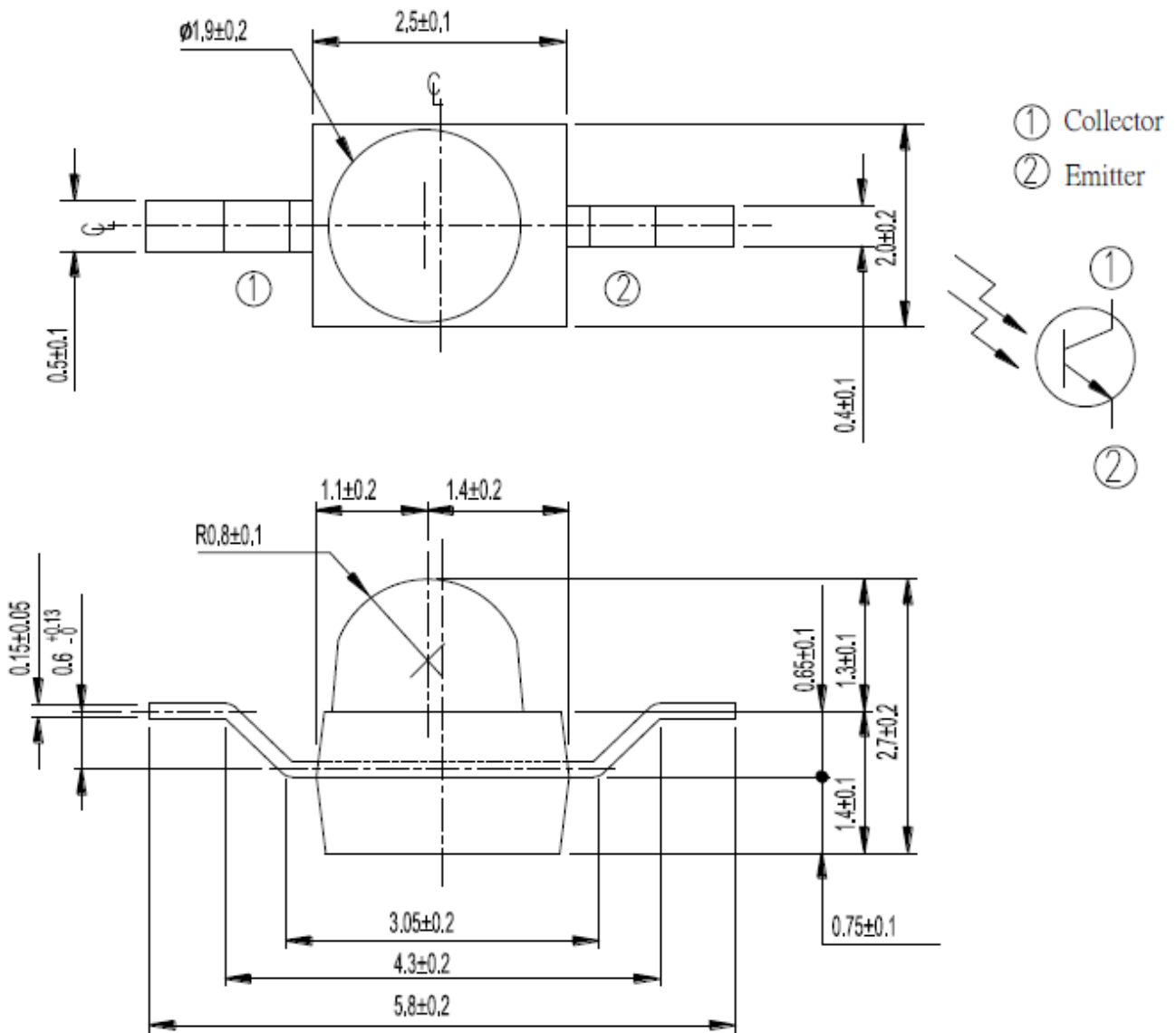
Applications

- Miniature switch
- Counters and sorter
- Position sensor
- Infrared applied system

Device Selection Guide

| Part Category | Chip Material | Lens Color |
|---------------|---------------|------------|
| PT | Silicon | Black |

Package Dimensions



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

Absolute Maximum Ratings (Ta=25°C)

| Parameter | Symbol | Rating | Units |
|---|-----------|-----------|-------|
| Collector-Emitter Voltage | V_{CEO} | 30 | V |
| Emitter-Collector-Voltage | V_{ECO} | 5 | V |
| Collector Current | I_C | 20 | mA |
| 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) 25°C Free Air Temperature | P_d | 75 | mW |

Notes: *1: Soldering time \leq 5 seconds.

Electro-Optical Characteristics (Ta=25°C)

| Parameter | Symbol | Condition | Min | Typ | Max | Unit |
|--------------------------------------|-----------------|----------------------------------|-----|-----|------|------|
| Rang Of Spectral Bandwidth | $\lambda_{0.5}$ | --- | 730 | --- | 1100 | nm |
| Wavelength Of Peak Sensitivity | λ_p | --- | --- | 940 | --- | nm |
| Collector-Emitter Breakdown Voltage | BV_{CEO} | $I_C=100\mu A$ $E_e=0mW/cm^2$ | 30 | --- | --- | V |
| Emitter-Collector Breakdown Voltage | BV_{ECO} | $I_E=10\mu A$ $E_e=0mW/cm^2$ | 5 | --- | --- | V |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C=2mA$ $E_e=1mW/cm^2$ | --- | --- | 0.4 | V |
| Collector Dark Current | I_{CEO} | $V_{CE}=20V$ $E_e=0mW/cm^2$ | --- | --- | 100 | nA |
| On State Collector Current | $I_{C(ON)}$ | $V_{CE}=5V$ $E_e=1mW/cm^2$ | 1.0 | 3.0 | --- | mA |

Typical Electro-Optical Characteristics Curves

Fig.1 Spectral Sensitivity

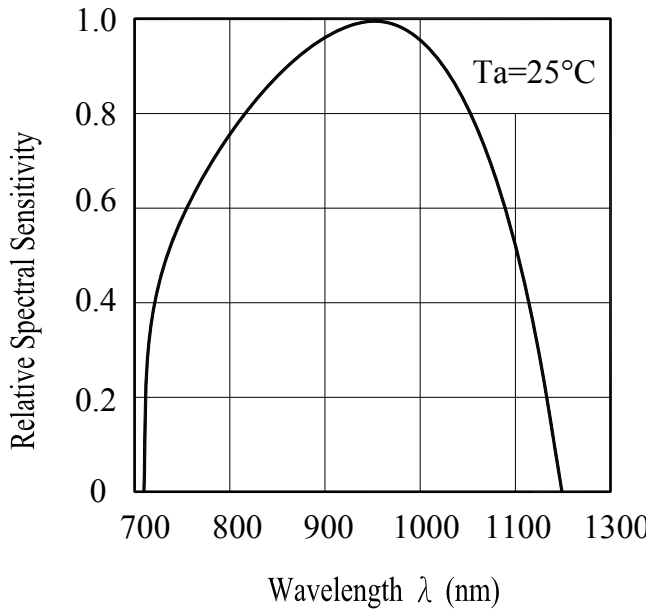


Fig.2 Collector Current vs. Irradiance

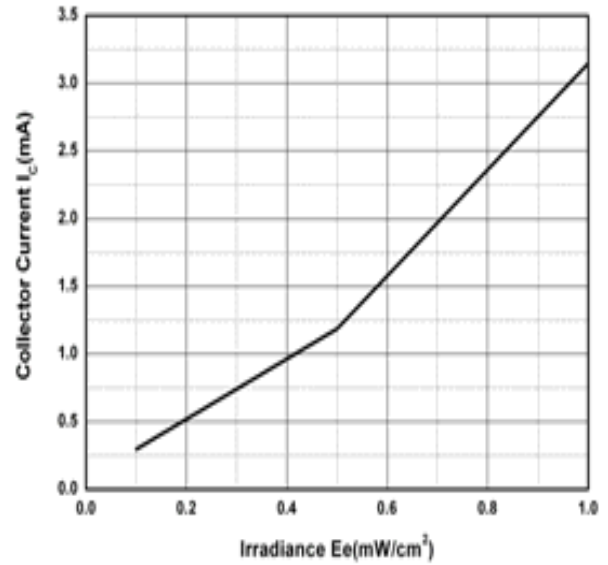
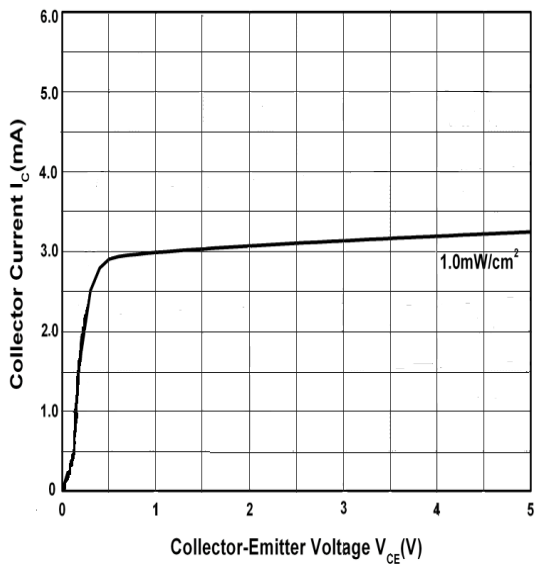


Fig.3 Collector Current vs. Collector-Emitter Voltage



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 Phototransistor should be kept at 30°C or less and 90%RH or less.

2.3 The Phototransistor should be used within a year.

2.4 After opening the package, the Phototransistor should be kept at 30°C or less and 60%RH or less.

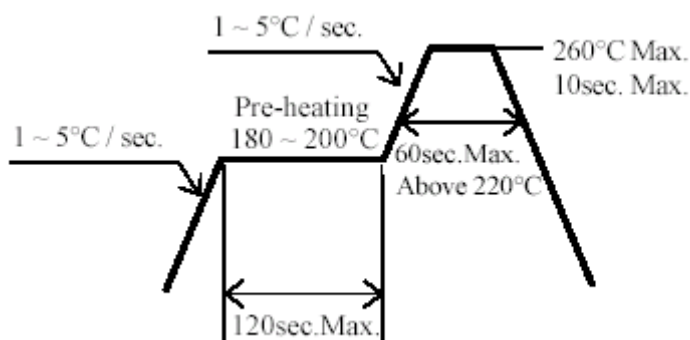
2.5 The Phototransistor should be used within 168 hours (7 days) after opening the package.

2.6 If the moisture absorbent material (silica gel) has faded away or the Phototransistor have exceeded the storage time, baking treatment should be performed using the following conditions.

Baking treatment : $60\pm 5^{\circ}\text{C}$ 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 Phototransistor during heating.

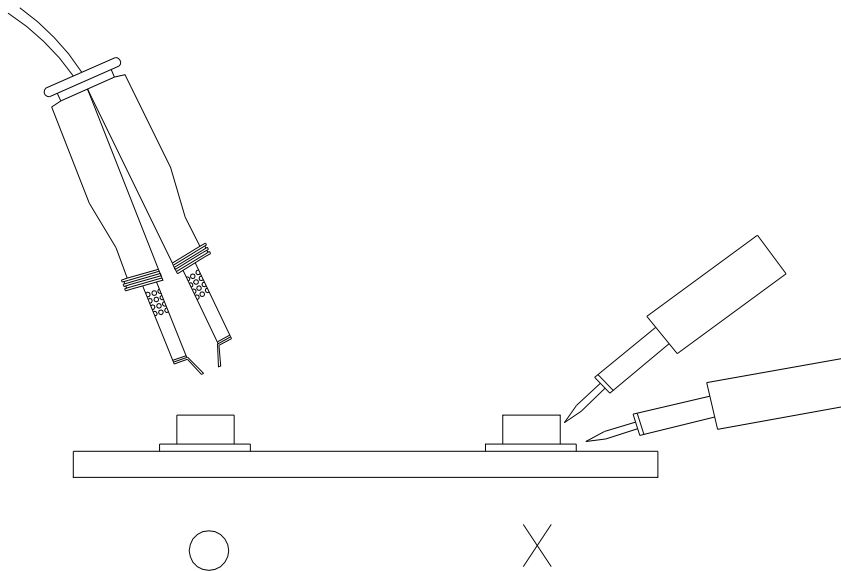
3.4 After soldering, do not warp the circuit board.

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 Phototransistor 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 Phototransistor will or will not be damaged by repairing.



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.
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.