

## Excellent Integrated System Limited

Stocking Distributor

Click to view price, real time Inventory, Delivery & Lifecycle Information:

[Everlight Electronics Co Ltd](#)  
[PT91-21B/TR7](#)

For any questions, you can email us directly:

[sales@integrated-circuit.com](mailto:sales@integrated-circuit.com)



# 1.9mm Round Subminiature “Gull Wing” Lead Phototransistor

## PT91-21B/TR7



### 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.

### Descriptions

- PT91-21B/TR7 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

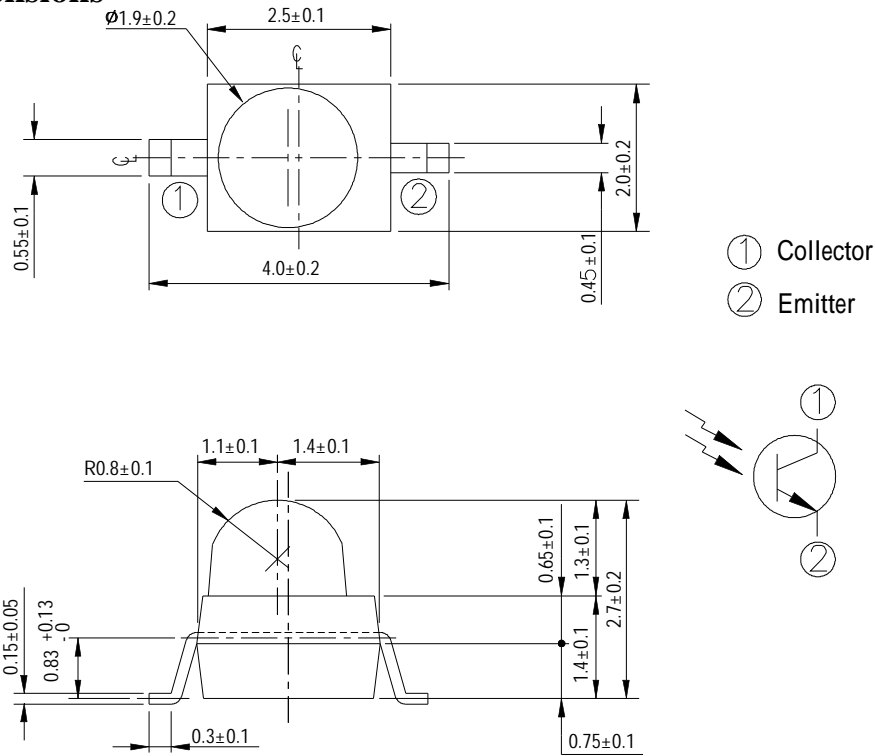
### Device Selection Guide

Part Category	Chip Material	Lens Color
PT	Silicon	Black

**Data Sheet**  
**1.9mm Round Subminiature Gull wing” Lead Phototransistor**  
**PT91-21B/TR7**

**EVERLIGHT**

**Package Dimensions**



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

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

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	
Storage Temperature	$T_{stg}$	-40 ~ +85	
Soldering Temperature *1	$T_{sol}$	260	
Power Dissipation at(or below) 25 Free Air Temperature	$P_d$	75	mW

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

Data Sheet

**EVERLIGHT**

1.9mm Round Subminiature Gull wing” Lead Phototransistor  
 PT91-21B/TR7

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

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Rang Of Spectral Bandwidth	$\lambda_{p0.5}$	---	730	---	1100	nm
Wavelength Of Peak Sensitivity	$\lambda_p$	---	---	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

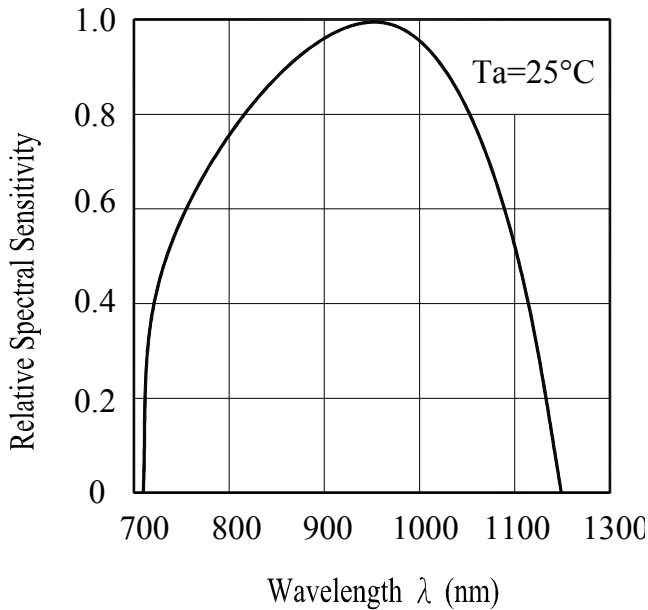


Fig.2 Collector Current vs. Irradiance

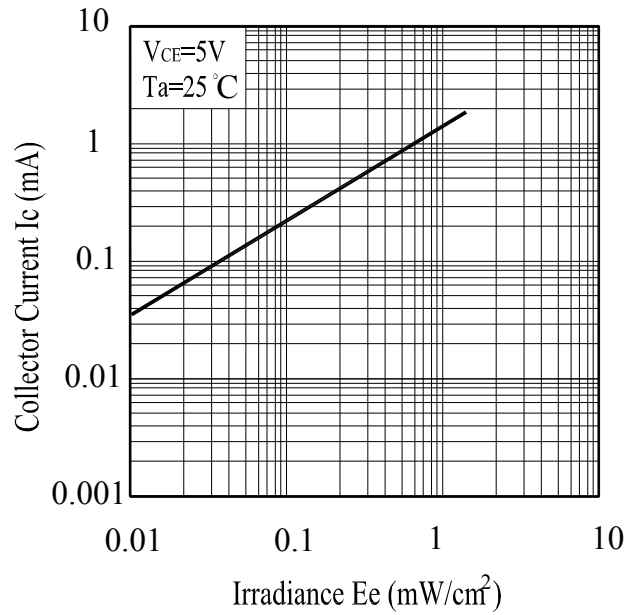
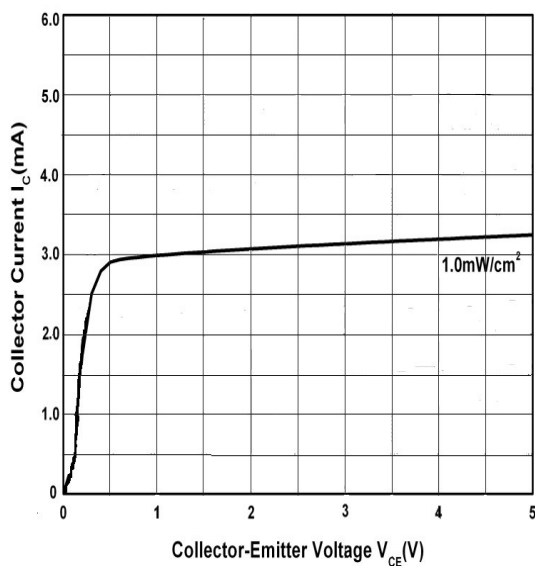


Fig.3 Collector Current vs. Collector-Emitter Voltage



## 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 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 or less and 70%RH or less.

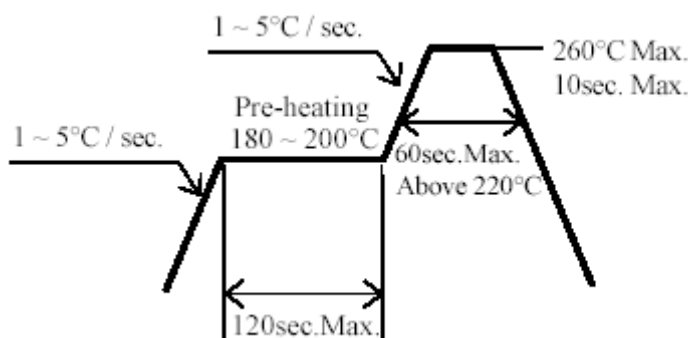
2.5 The Phototransistor should be used within 168 hours (7 days) after opening the package.

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 :  $60\pm 5$  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.

**Data Sheet**  
**1.9mm Round Subminiature Gull wing” Lead Phototransistor**  
**PT91-21B/TR7**

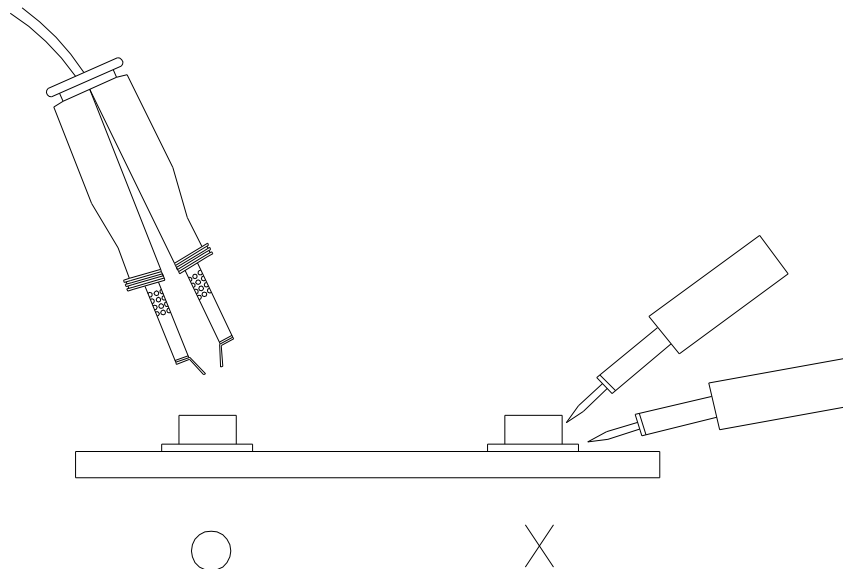
**EVERLIGHT**

**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 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.







**Data Sheet**

**EVERLIGHT**

**1.9mm Round Subminiature Gull wing” Lead Phototransistor  
 PT91-21B/TR7**

**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

**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.
3. These specification sheets include materials protected under copyright of EVERLIGHT corporation. Please don’t reproduce or cause anyone to reproduce them without EVERLIGHT’s consent.

**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>