

Chip Phototransistor with Right Angle Lens

PT12-21B/TR8



Features

- Fast response time
- High photo sensitivity
- Small junction capacitance
- Package in 8mm tape in “7” diameter reel
- 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

- PT12-21B/TR8 is a phototransistor in miniature SMD package which is molded in a black epoxy with spherical top view lens
The device is spectrally matched to infrared emitting diode.

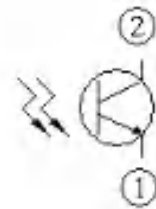
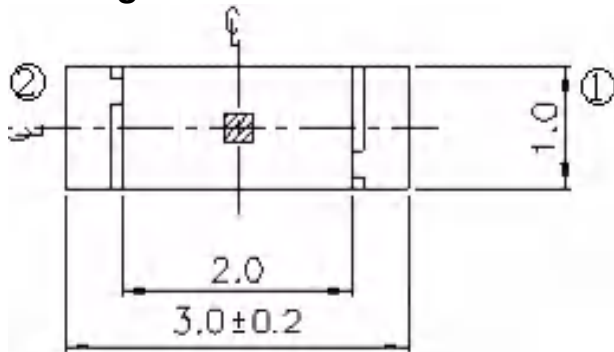
Applications

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

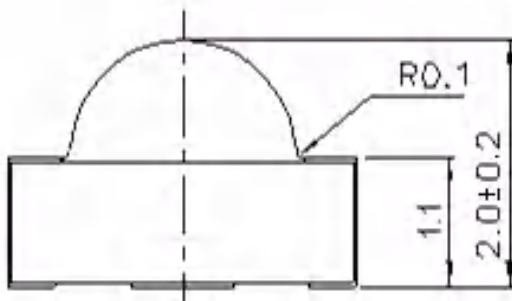
Device Selection Guide

Part Category	Chip Material	Lens Color
PT	Silicon	Black

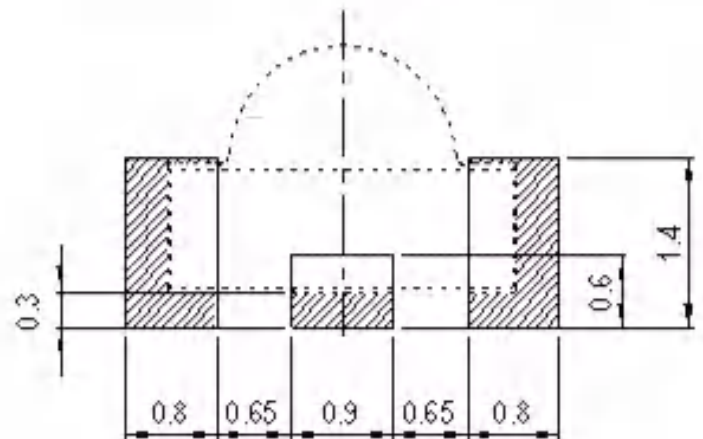
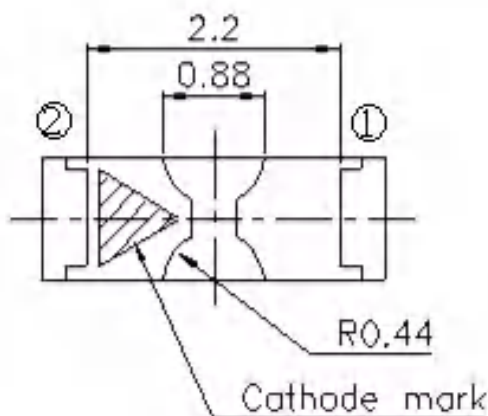
Package Dimensions



② Collector
① Emitter



For reflow soldering (propose)



- 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
Collector-Emitter Voltage	V _{ceo}	30	V
Emitter-Collector-Voltage	V _{eco}	5	V
Collector Current	I _c	50	mA
Operating Temperature	T _{opr}	-25 ~ +85	°C
Storage Temperature	T _{stg}	-40 ~ +85	°C
Soldering Temperature	T _{sol}	260	°C
Power Dissipation at (or below) 25°C Free Air Temperature	P _c	75	mW

Notes: *1: Soldering time ≤ 5 seconds.

Electro-Optical Characteristics (Ta=25°C)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Units
Range 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 =100μA E _e =0mW/cm ²	30	---	---	V
Emitter-Collector Breakdown Voltage	BV _{eco}	I _c =100μA 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	0.30	---	---	mA

Typical Electro-Optical Characteristics Curves

Fig.1 Spectral Sensitivity

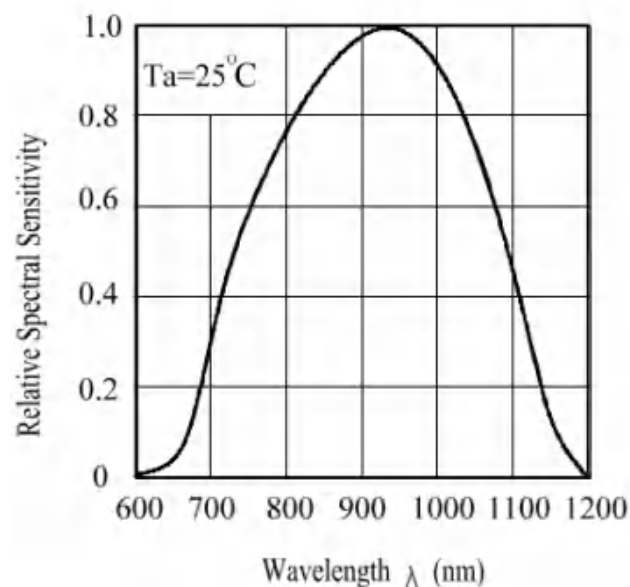


Fig.4 Collector Current vs. Irradiance

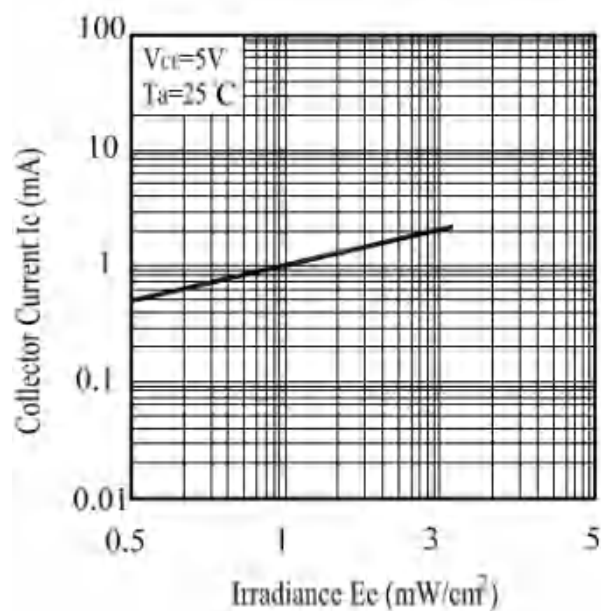
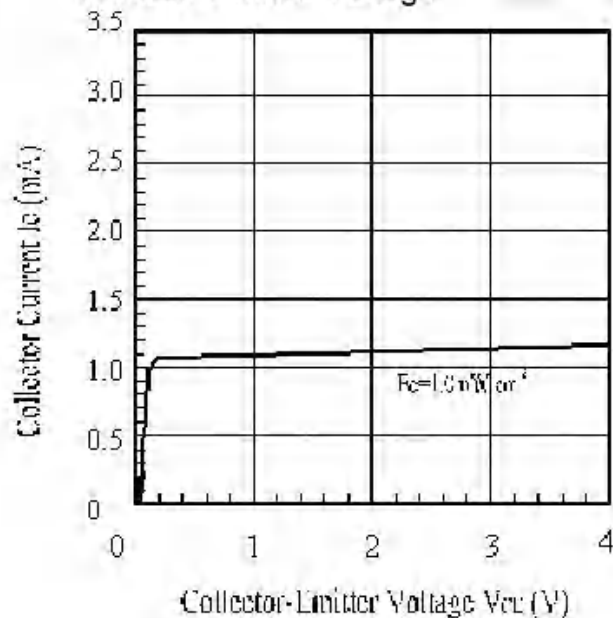


Fig.6 Collector Current vs. Collector-Emitter Voltage



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 10°C~30°C and 90%RH or less.

2.3 The Phototransistor 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 Phototransistor remain, it should be stored in moisture proof packages.

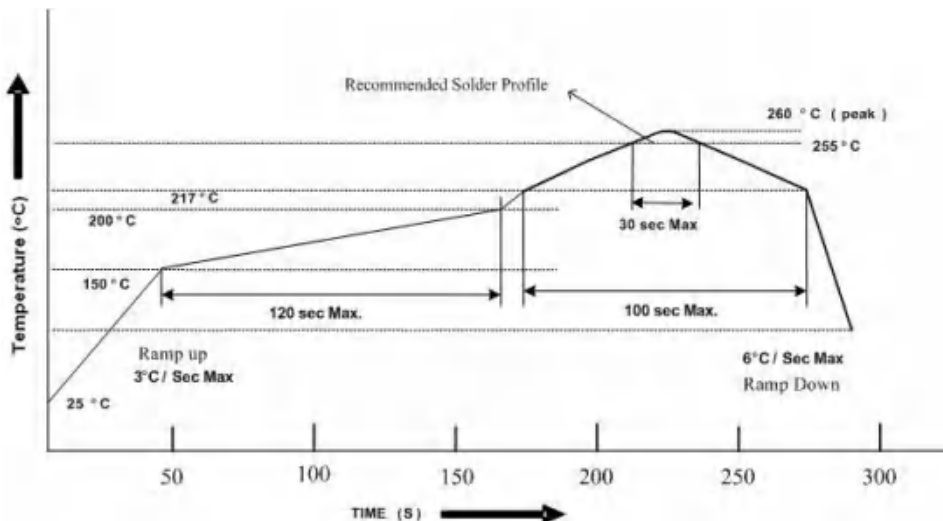
2.5 If the moisture absorbent material (desiccant material) has faded or unopened bag has exceeded the shelf life or devices (out of bag) have exceeded the floor life, baking treatment is required.

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 Phototransistor during heating.

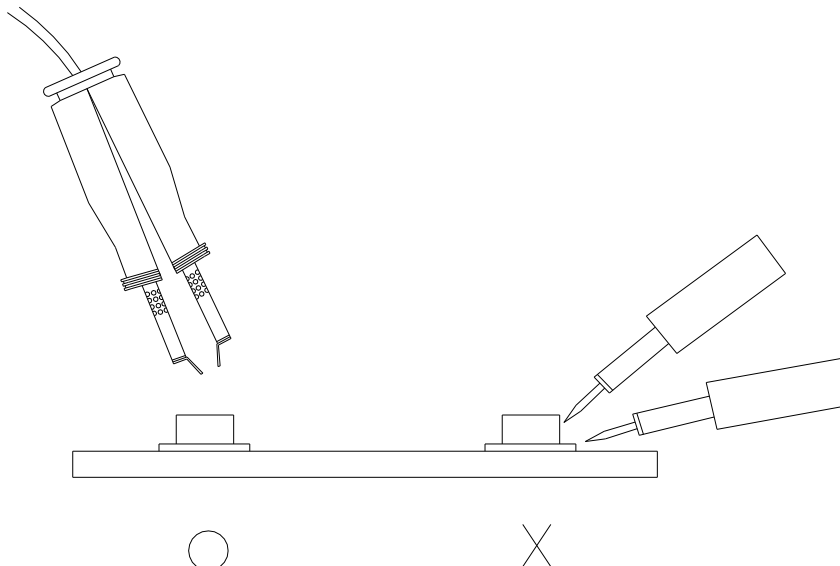
3.4 After soldering, do not warp the circuit board.

4.Soldering Iron

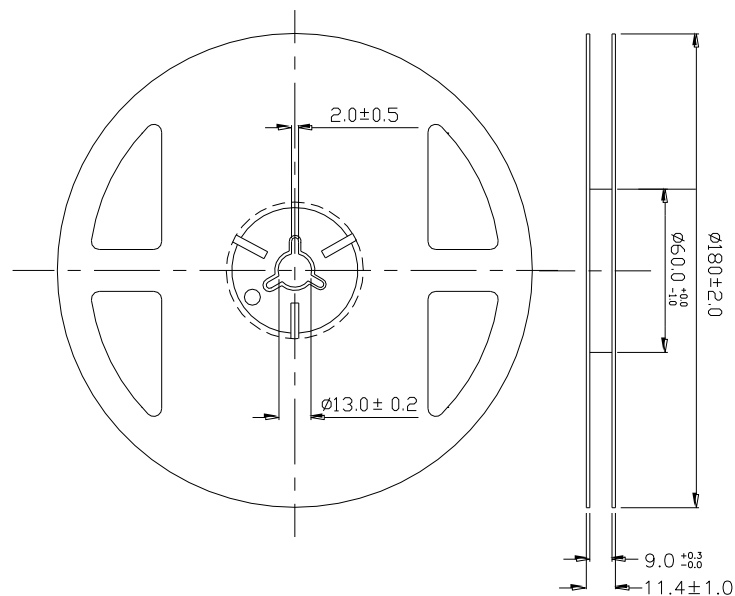
Each terminal is to go to the tip of soldering iron temperature less than 350°C for 3 seconds within once in less than the soldering iron capacity 25W. Leave two seconds and more intervals, and do soldering of each terminal. Be careful because the damage of the product is often started at the time of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

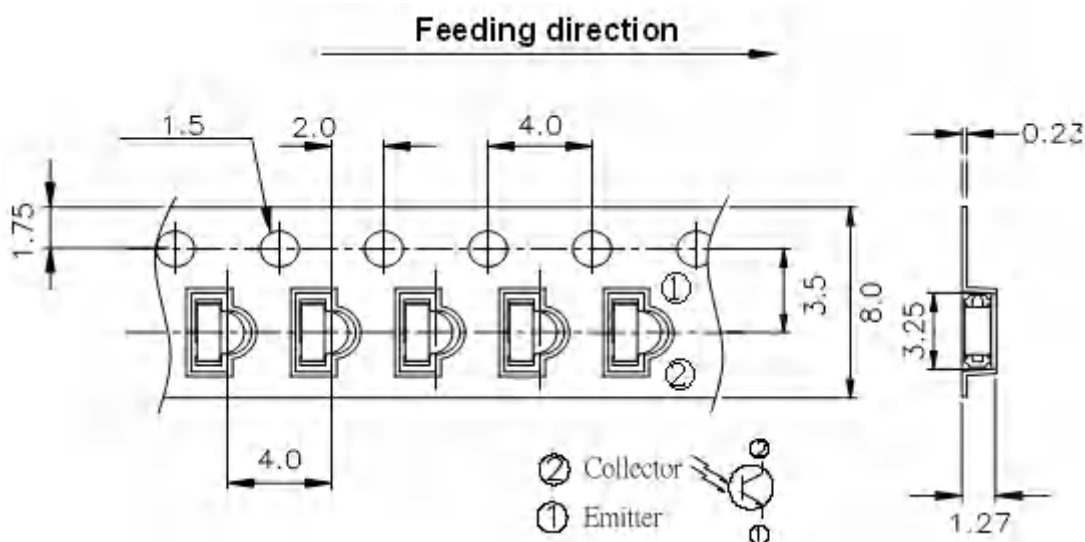


Package Dimensions



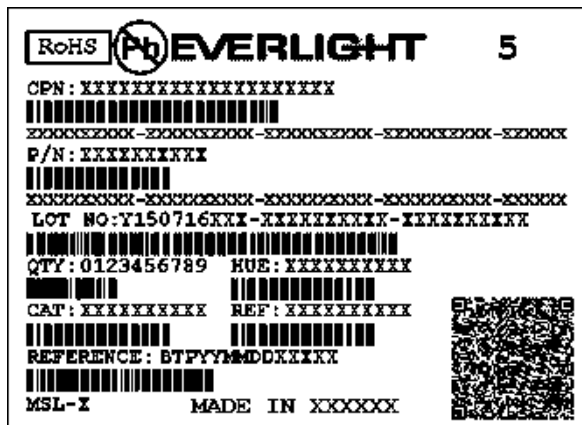
Note: The tolerances unless mentioned are $\pm 0.1\text{mm}$, Unit: mm

Carrier Taping Dimensions: Loaded Quantity 2000PCS/Reel



Note: The tolerances unless mentioned are $\pm 0.1\text{mm}$, Unit: mm

Label Form Specification



CPN: Customer's Production Number

P/N : Production Number

LOT No: Lot Number

QTY: Packing Quantity

HUE: Peak Wavelength

CAT: Ranks

REF: Reference

MSL-X: MSL Level

Made In: Manufacture place

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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>