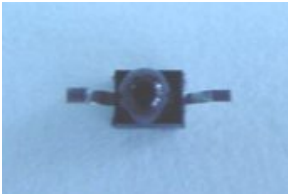


1.9mm Round Subminiature “Gull Wing” Lead Phototransistor PT91-21B/L369/TR10(GH)

Preliminary



This is a preliminary specification intended for design purposes and subject to change without prior notice.

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.

Descriptions

- PT91-21B/L369/TR10(GH) 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.

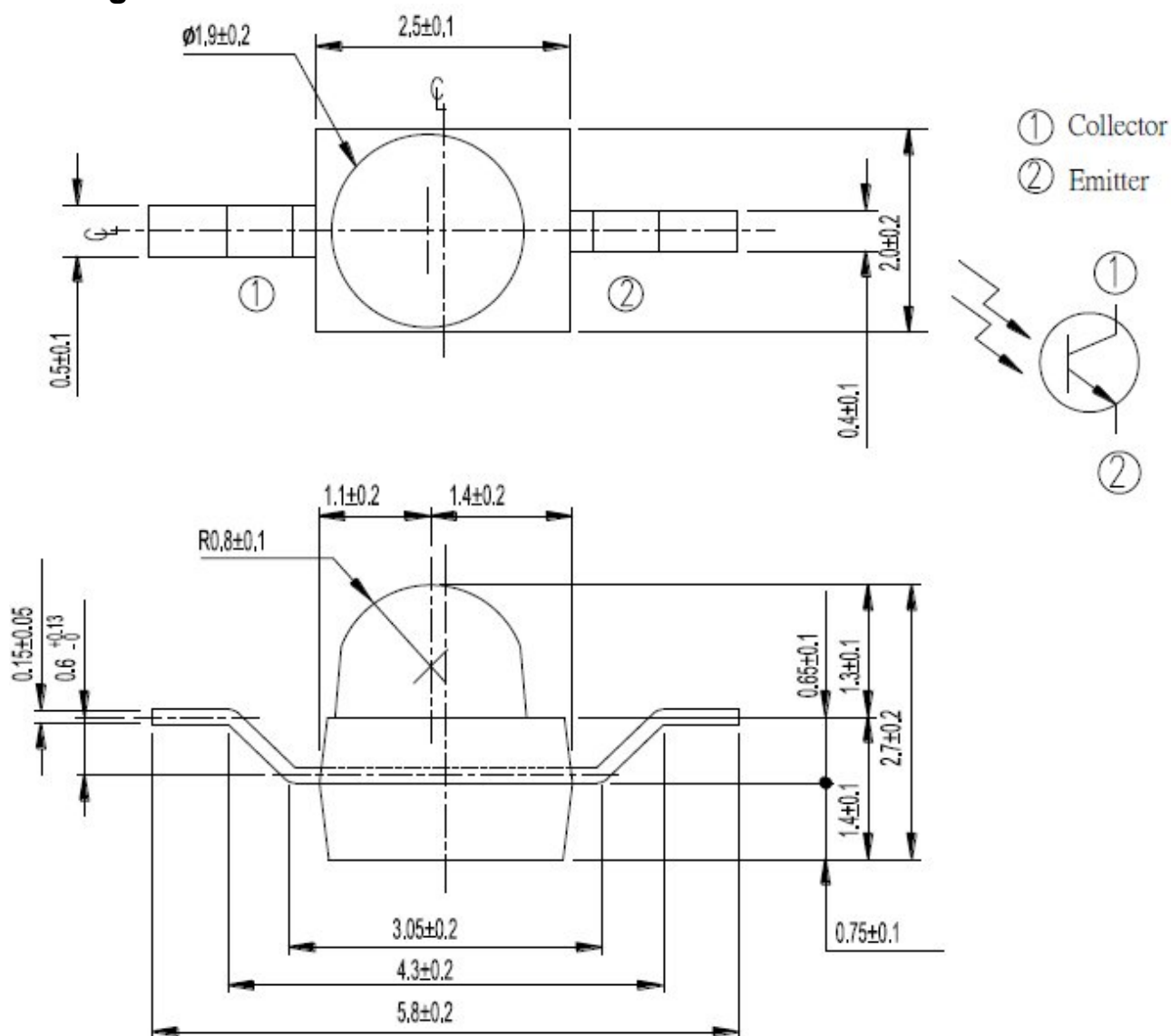
Applications

- 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)

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.

Electro-Optical Characteristics (Ta=25)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Units
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}	$I_E=100\mu A$ $E_e=0mW/cm^2$	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	$I_{C(ON)}$	$V_{CE}=5V$ $E_e=1mW/cm^2$	2.5	4.5	---	mA

Intensity Specifications for Bin Grading

Rank	Test Condition	Min.	Max.	Units
Bin 4	V _{CE} =5V Ee=1mW/cm ²	2.5	5.0	mA
Bin 5		3.0	6.0	
Bin 6		4.5	9.0	
Bin 7		>7.0		

Notes: This bin table is only for reference, not for specific bin shipment.

Typical Electro-Optical Characteristics Curves

Fig.1 Spectral Sensitivity

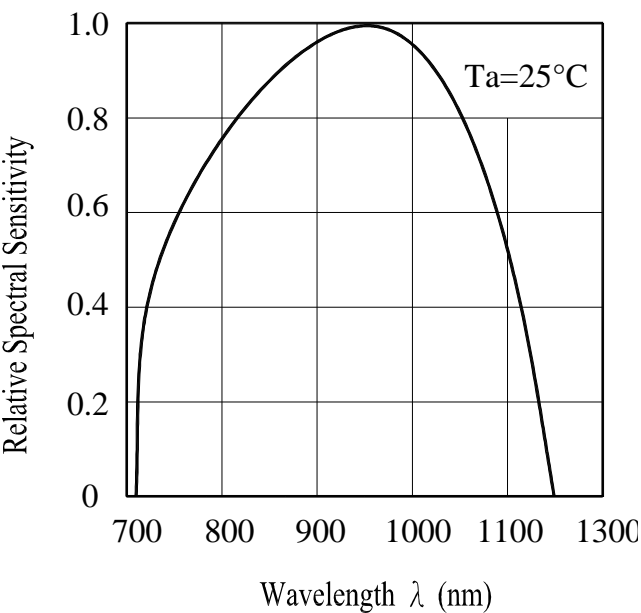


Fig.2 Collector Current vs. Irradiance

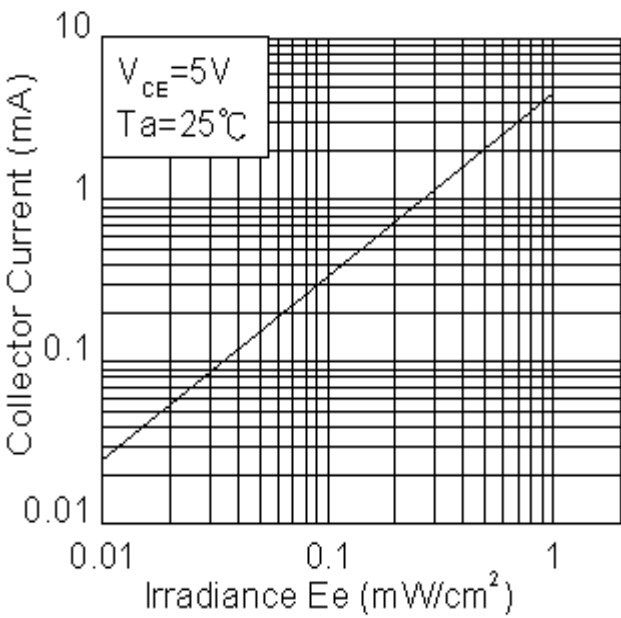
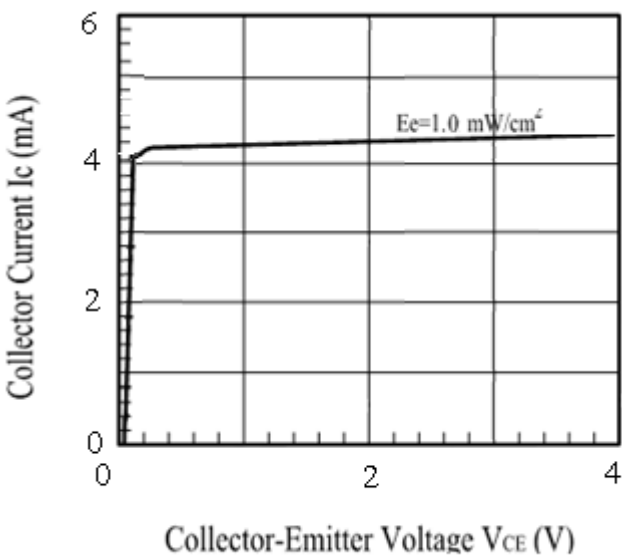


Fig.3 Collector Current vs. Collector Emitter Voltage



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 LEDs should be kept at 10 ~30 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.

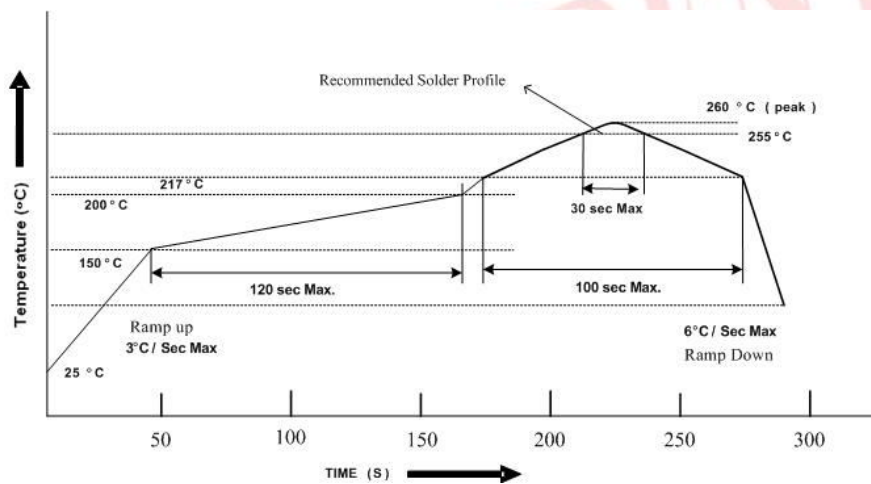
2.5 If the moisture absorbent material (desiccant material) has faded or unopened bag has exceeded the shelf life or devices (out of bag) have exceeded the floor life, baking treatment is required.

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.

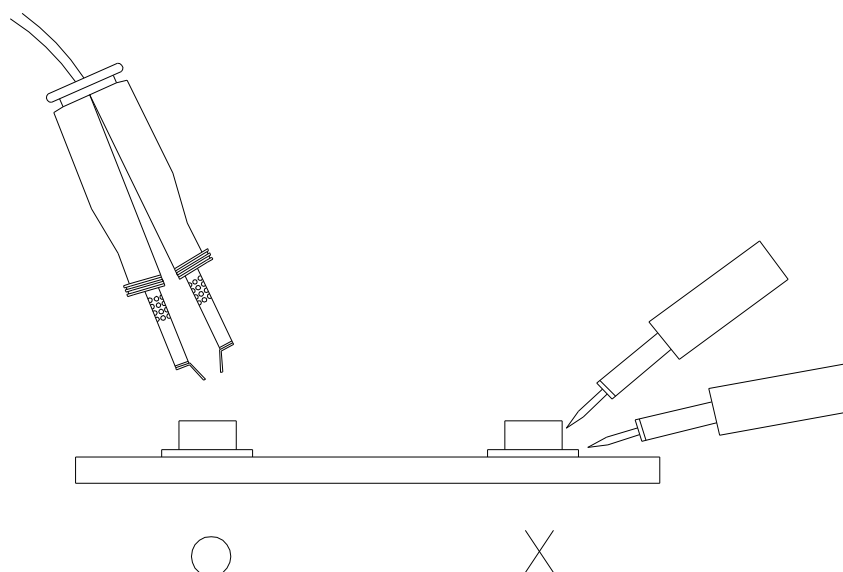
3.4 After soldering, do not warp the circuit board.

4. Soldering Iron

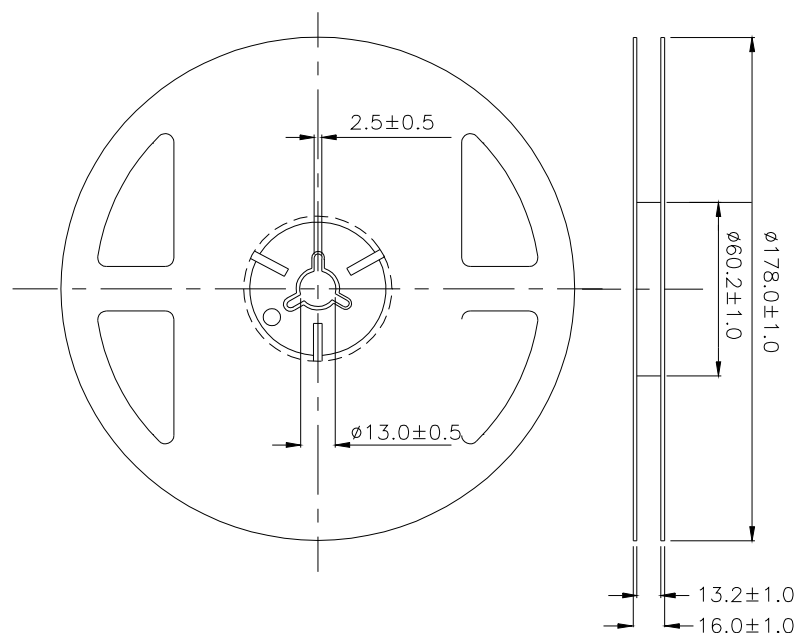
Each terminal is to go to the tip of soldering iron temperature less than 350 for 3 seconds within once in less than the soldering iron capacity 25W. Leave two seconds and more intervals, and do soldering of each terminal. Be careful because the damage of the product is often started at the time of the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

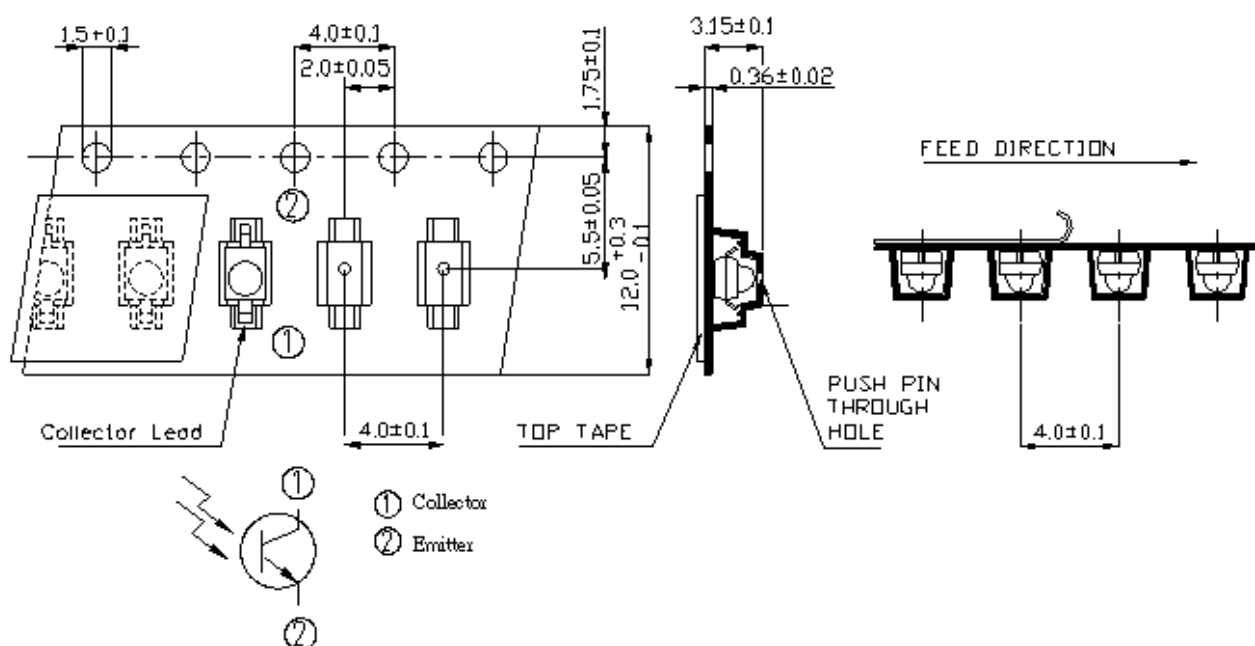


Package Dimensions



Note: The tolerances unless mentioned are ± 0.1 mm, unit: mm.

Carrier Taping Dimensions: (Quantity: 1000PCS/Reel)



Note: The tolerances unless mentioned are ± 0.1 mm, unit: mm.

Label Form Specification

The diagram shows a rectangular label with the following elements:

- Top left: A circular logo with a stylized 'P' and 'b'.
- Top center: The EVERLIGHT logo in a rectangular box.
- Top right: A small empty circle.
- Below the circular logo: CPN: followed by a barcode and the text XXXXXXXXXXXXXXXX.
- Below the CPN barcode: P/N: followed by a barcode and the text XXXXXXXXXXXXXXXX.
- Below the P/N barcode: QTY: XXX followed by a barcode.
- Below the QTY barcode: LOT NO: XXXXXXXXXXXXXXXX followed by a barcode.
- Below the LOT NO barcode: Reference: XXXXXXXXXXXXXXXX followed by a barcode.
- Below the CPN text: CAT: XXX, HUE: XXX, REF: XXX.
- Below the QTY text: CAT: XXX, HUE: XXX, REF: XXX.
- Below the LOT NO text: CAT: XXX, HUE: XXX, REF: XXX.
- Below the Reference text: CAT: XXX, HUE: XXX, REF: XXX.
- Bottom right: A rectangular box containing the text RoHS.

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.

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