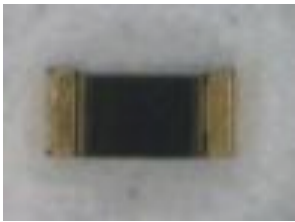


## 0.8mm Height Flat Top Phototransistor

### PT19-21B/L41/TR8



#### Features

- Fast response time
- High photo sensitivity
- Small junction capacitance
- Pb free
- The product itself will remain within RoHS compliant version.
- Compliance with EU REACH
- Compliance Halogen Free.(Br < 900ppm,Cl < 900ppm,Br+Cl < 1500ppm)

#### Descriptions

- PT19-21B/TR8 is a phototransistor in miniature SMD Package which is molded in a black epoxy with flat top view lens.
- The device is Spectrally matched to visible and infrared emitting diode.

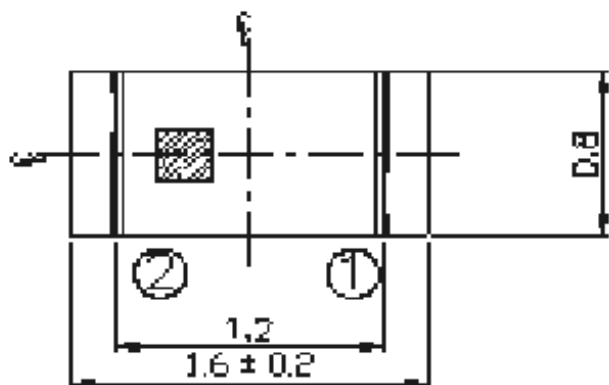
#### Applications

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

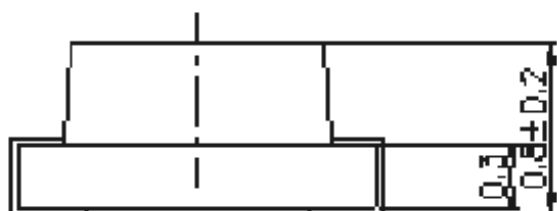
#### Device Selection Guide

Part Category	Chip Material	Lens Color
PT	Silicon	Black

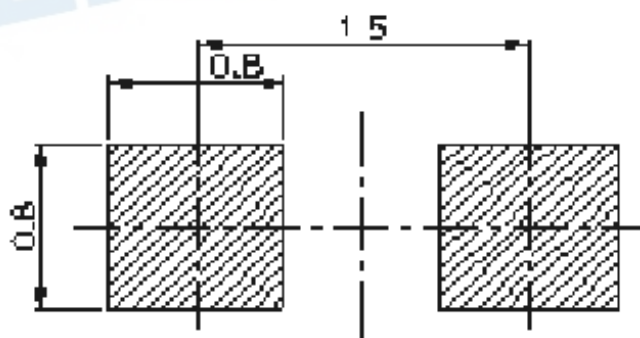
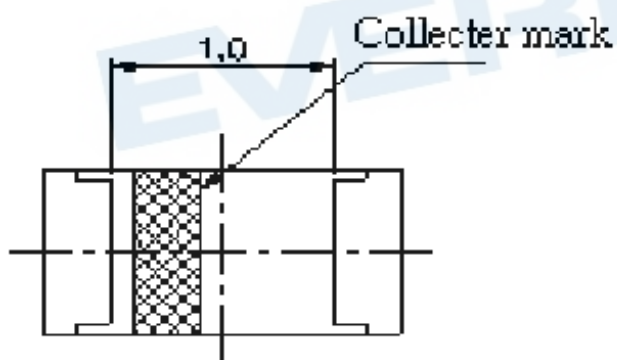
### Package Dimensions



① Emitter  
② Collector



For reflow soldering (Propose)



- Notes:**
1. All dimensions are in millimeters
  2. Tolerances unless dimensions  $\pm 0.1$  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	$I_C$	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	$\lambda_P$	---	---	940	---	nm
Collector-Emitter Breakdown Voltage	$BV_{CEO}$	$I_C=100\mu A$ $E_e=0mW/cm^2$	30	---	---	V
Emitter-Collector Breakdown Voltage	$BV_{ECO}$	$I_E=100\mu A$ $E_e=0mW/cm^2$	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	$I_{C(ON)}$	$V_{CE}=5V$ $E_e=1mW/cm^2$	0.3	0.6	---	mA

**Intensity Specifications for Bin Grading :**

Rank	Test condition	Min	Max	Unit
BIN 2	VCE=5V Ee=1mW/cm <sup>2</sup> λ P=940nm	0.30	0.82	mA
BIN 3		0.70	1.90	
BIN 4		1.14	2.60	
BIN5		1.77	3.61	
BIN6		2.67	5.07	
BIN7		3.54	7.07	
BIN8		>5.00		

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### Typical Electro-Optical Characteristics Curves

Fig.1 Spectral Sensitivity

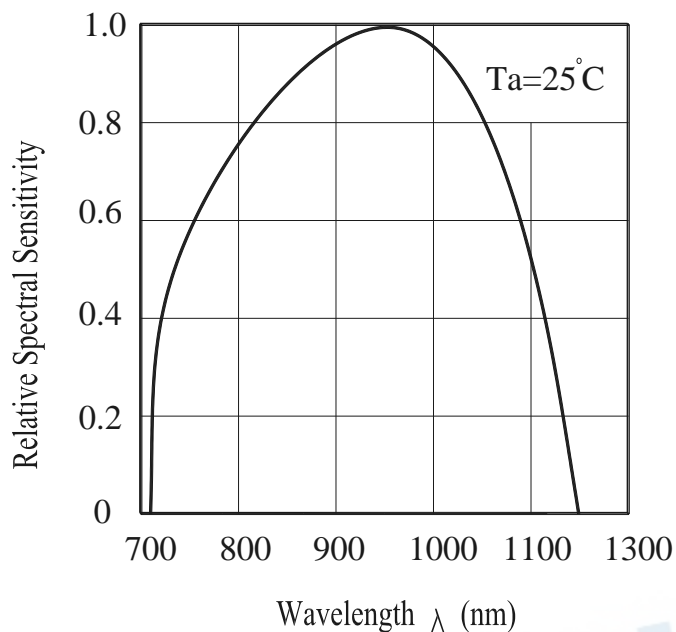


Fig.2 Collector Current vs irradiance

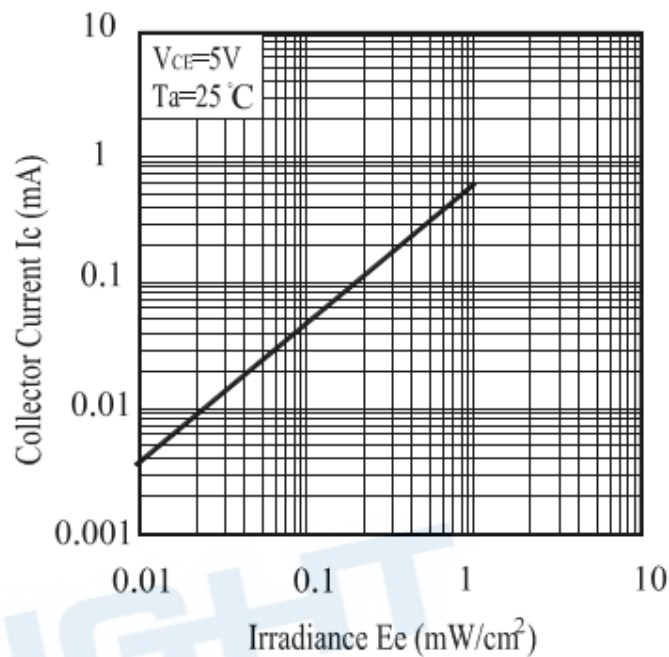
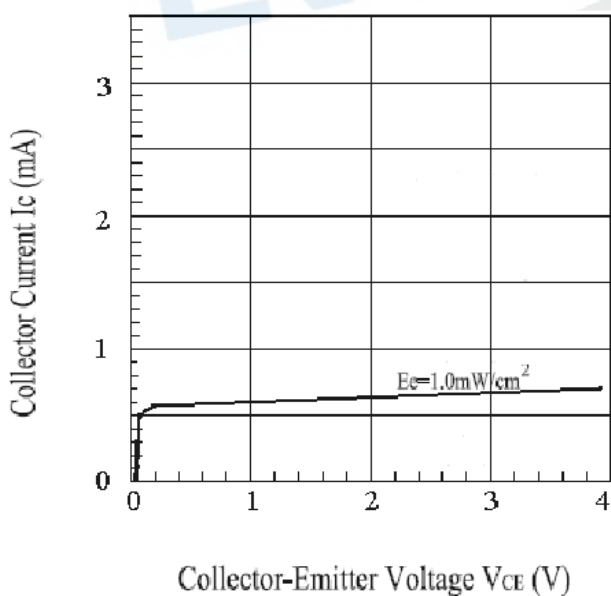


Fig.3 Collector Current vs Collector-Emitter Voltage



## 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 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.

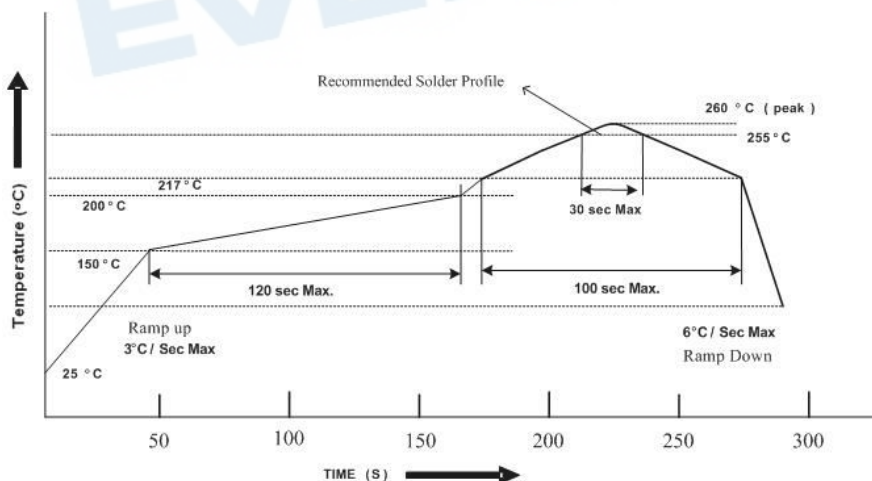
2.5 If the moisture absorbent material (desiccant material) has faded or unopened bag has exceeded the shelf life or devices (out of bag) have exceeded the floor life, baking treatment is required.

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 Lead 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.

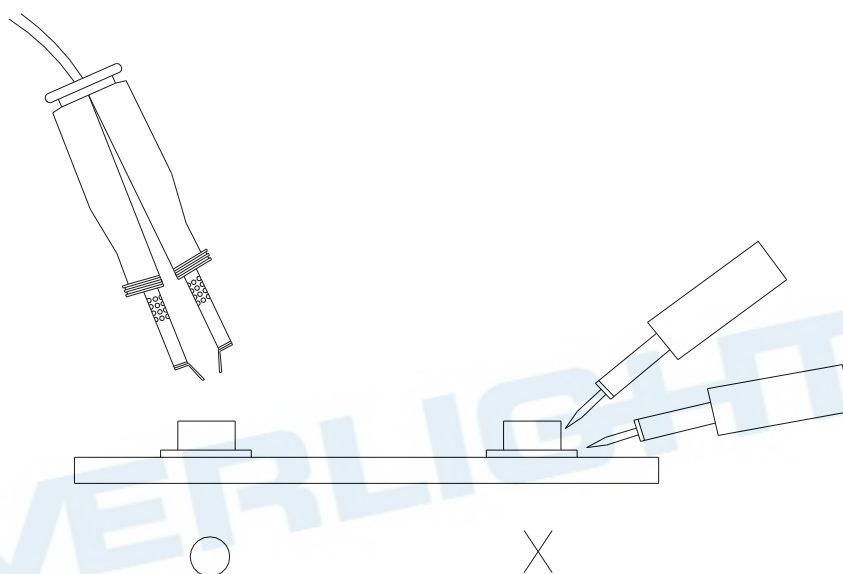
3.4 After soldering, do not warp the circuit board.

#### 4.Soldering Iron

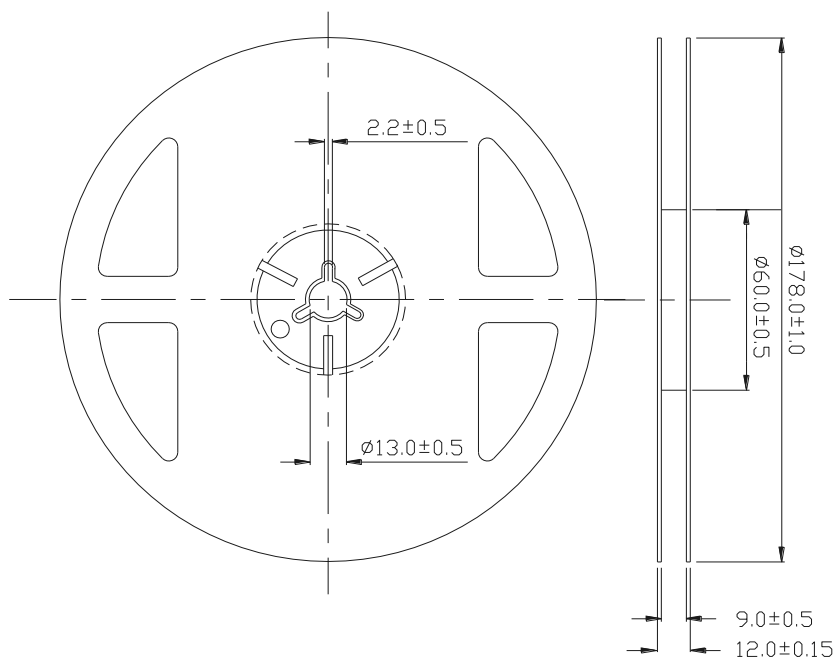
Each terminal is to go to the tip of soldering iron temperature less than 350°C for 3 seconds within once in less than the soldering iron capacity 25W. Leave two seconds and more intervals, and do soldering of each terminal. Be careful because the damage of the product is often started at the time of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

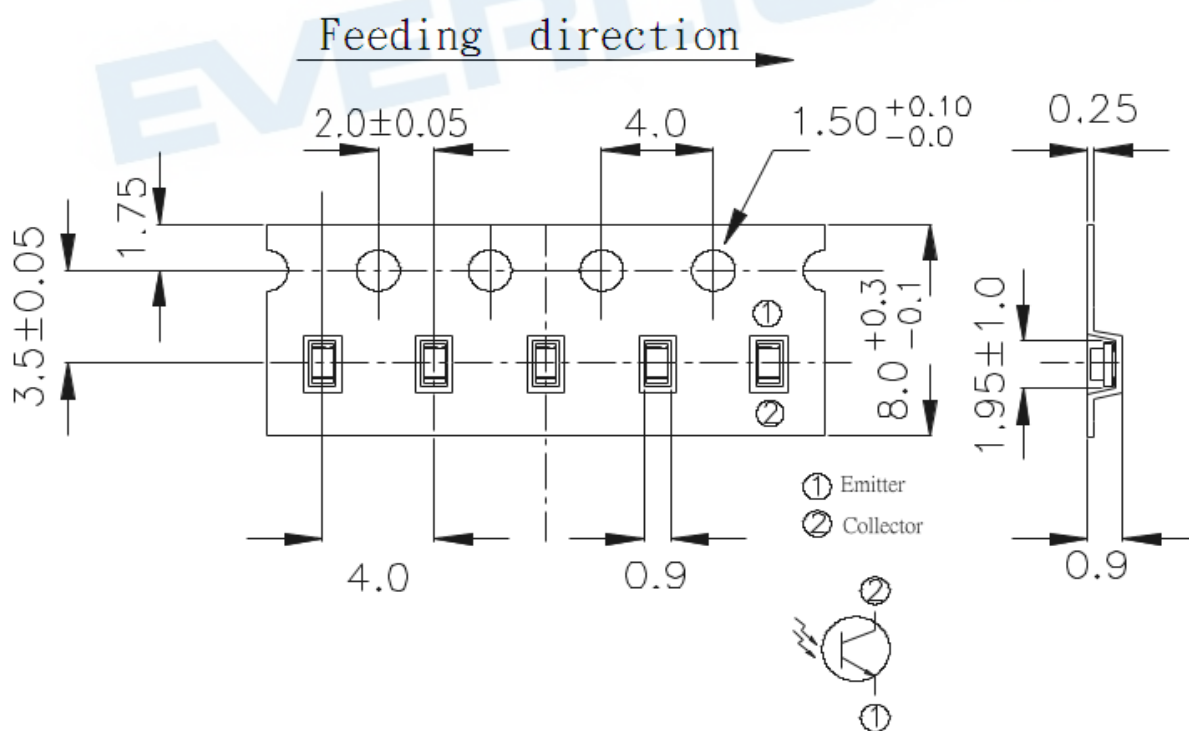


Package Dimensions



**Note:** The tolerances unless mentioned are  $\pm 0.1$  mm, Unit: mm

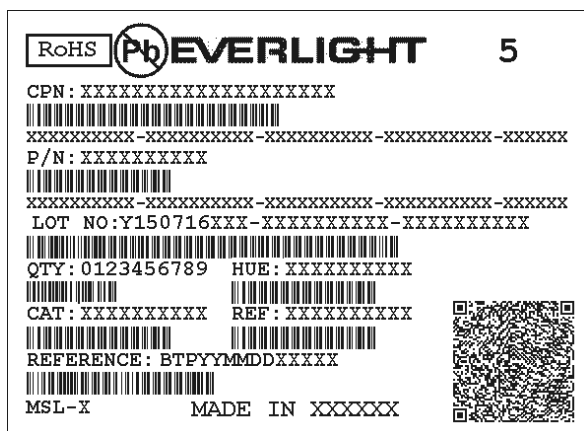
Carrier Tape Dimensions: (Loaded Quantity: 3000pcs/Reel)



**Note:** The tolerances unless mentioned are  $\pm 0.1$ , unit=mm



### Label Form Specification



P/N : Production Number  
LOT No: Lot Number  
QTY: Packing Quantity  
HUE: Peak Wavelength  
CAT: Ranks  
REF: Reference  
MSL-X: MSL Level  
Made In: MSanufacture place

### 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.
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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>