



EVERLIGHT ELECTRONICS CO., LTD.

# DATA SHEET

MODEL NO : PT534-6B

DATE : DEC, 24, 2001

DEPARTMENT : Engineering

REVISION : 1

|                                                     |          |         |          |
|-----------------------------------------------------|----------|---------|----------|
| <b>RECEIVED</b>                                     |          |         |          |
| <input checked="" type="checkbox"/> MASS PRODUCTION |          |         |          |
| <input type="checkbox"/> PRELIMINARY                |          |         |          |
| <input type="checkbox"/> CUSTOMER DESIGN            |          |         |          |
| DEVICE NUMBER : CDPT-053-001                        |          |         |          |
| PAGE :7                                             |          |         |          |
| CUSTOMER                                            | DESIGNER | CHECKER | APPROVER |
|                                                     |          |         |          |

|     |             |              |
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|     |             |              |
|     |             |              |
| REV | DESCRIPTION | RELEASE DATE |

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<http://www.everlight.com>



## 5mm Phototransistor,T-1 3/4

MODEL NO : PT534-6B

### ■ Features :

- Fast response time
- High photo sensitivity

### ■ Description :

PT534-6B is a high speed and high sensitive silicon NPN epitaxial planar phototransistor in a standard  $\phi 5$  mm package. The package is an IR filter, spectrally match to infrared emitter diode .

### ■ Applications :

- Optoelectronic switch
- VCRs ,Video camera
- Floppy disk drive
- Infrared applied system

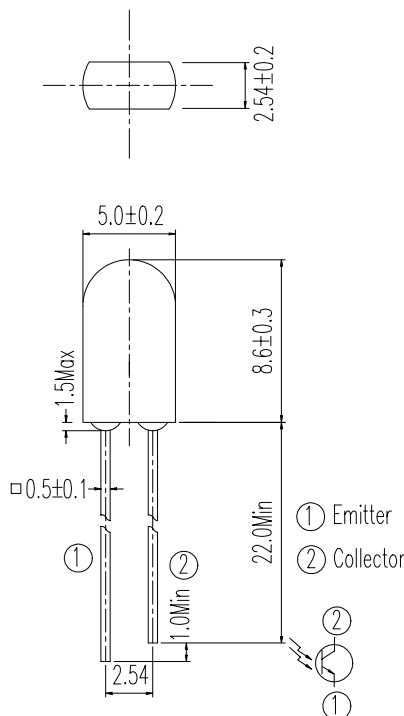
| PART NO. | CHIP     | LENS COLOR |
|----------|----------|------------|
|          | MATERIAL |            |
| PT       | Silicon  | Black      |



## 5mm Phototransistor,T-1 3/4

MODEL NO :                     PT534-6B                    

### ■ Package Dimensions :



### ■ Notes :

- 1.All dimensions are in millimeter.
- 2.Protruded resin under flange 1.5 mm Max.
- 3.Lead spacing is measured where the lead emerge from the package.
- 4.Lens color : Black.
- 5.Above specification may be changed without notice. EVERLIGHT will reserve authority on material change for above specification.
- 6.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.
- 7.When using this product , please observe the absolute maximum ratings and the instructions for use 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.



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## 5mm Phototransistor,T-1 3/4

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### ■ Absolute Maximum Ratings at T<sub>A</sub> = 25°C

| Parameter                                                   | Symbol           | Rating    | Unit | Notice                                    |
|-------------------------------------------------------------|------------------|-----------|------|-------------------------------------------|
| Collector-Emitter Voltage                                   | V <sub>CEO</sub> | 30        | V    |                                           |
| Emitter-Collector- Voltage                                  | V <sub>ECO</sub> | 5         | V    |                                           |
| Collector Current                                           | I <sub>C</sub>   | 20        | mA   |                                           |
| Operating Temperature                                       | Topr             | -25 ~ +85 | °C   |                                           |
| Storage Temperature                                         | Tstg             | -40 ~ +85 | °C   |                                           |
| Soldering Temperature                                       | Tsol             | 260       | °C   | 4mm from mold body<br>less than 5 seconds |
| Power Dissipation at(or below)<br>25°C Free Air Temperature | Pc               | 75        | mW   |                                           |

### ■ Electronic Optical Characteristics :

| Parameter                               | Symbol               | Min. | Typ.       | Max. | Unit    | Condition                                                                   |
|-----------------------------------------|----------------------|------|------------|------|---------|-----------------------------------------------------------------------------|
| Collector-Emitter<br>Breakdown Voltage  | BV <sub>CEO</sub>    | 30   | ----       | ---- | V       | I <sub>C</sub> =100 $\mu$ A<br>Ee=0mW/cm <sup>2</sup>                       |
| Emitter-Collector<br>Breakdown Voltage  | BV <sub>ECO</sub>    | 5    | ----       | ---- | V       | I <sub>E</sub> =100 $\mu$ A<br>Ee=0mW/cm <sup>2</sup>                       |
| Collector-Emitter<br>Saturation Voltage | V <sub>CE(sat)</sub> | ---- | ----       | 0.4  | V       | I <sub>C</sub> =2mA<br>Ee=1mW/cm <sup>2</sup>                               |
| Rise Time                               | t <sub>r</sub>       | ---- | 15         | ---- | $\mu$ S | V <sub>CE</sub> =5V<br>I <sub>C</sub> =1mA<br>R <sub>L</sub> =1000 $\Omega$ |
| Fall Time                               | t <sub>f</sub>       | ---- | 15         | ---- |         |                                                                             |
| Collector Dark<br>Current               | I <sub>CEO</sub>     | ---- | ----       | 100  | nA      | V <sub>CE</sub> =20V<br>Ee=0mW/cm <sup>2</sup>                              |
| On State Collector<br>Current           | I <sub>C(on)</sub>   | 0.7  | 1.2        | ---- | mA      | V <sub>CE</sub> =5V<br>Ee=1mW/cm <sup>2</sup>                               |
| Wavelength of<br>Peak Sensitivity       | $\lambda_p$          | ---- | 980        | ---- | nm      | ----                                                                        |
| Rang of Spectral<br>Bandwidth           | $\lambda_{0.5}$      | ---- | 800---1200 | ---- | nm      | ----                                                                        |



## 5mm Phototransistor,T-1 3/4

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### ■ Typical Electrical/Optical/Characteristics Curves

Fig.1 Collector Power Dissipation vs. Ambient Temperature

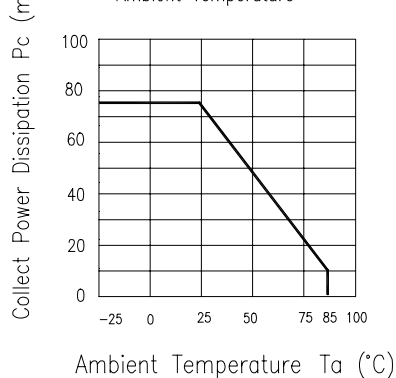


Fig.2 Collector Dark Current vs. Ambient Temperature

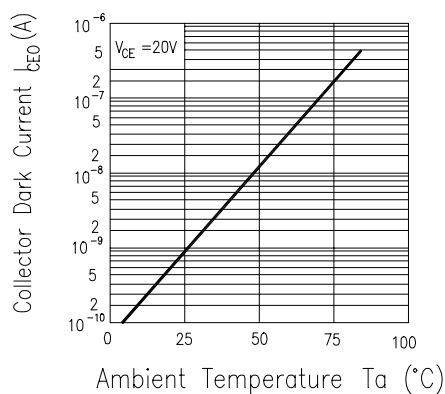


Fig. 3 Relative Collector Current vs. Ambient Temperature

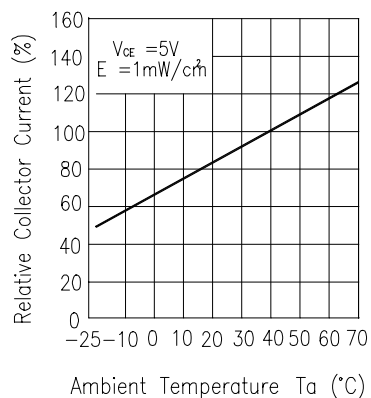


Fig.4 Collector Current vs. Irradiance

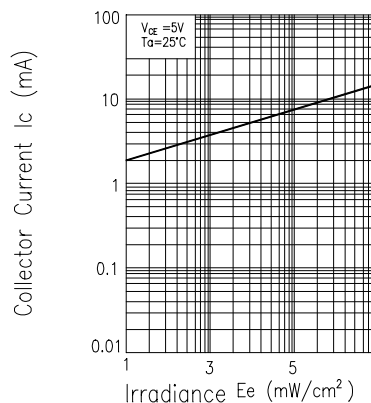


Fig.5 Spectral Sensitivity

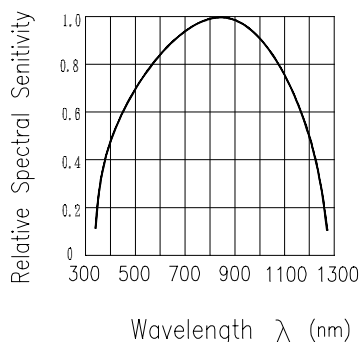
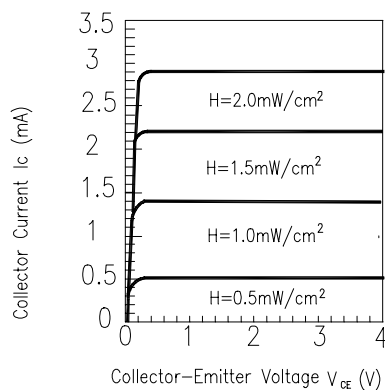


Fig.6 Collector Current vs. Collector-Emitter Voltage





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### ■ Reliability Test Item And Condition

The reliability of products shall be satisfied with items listed below.

Confidence level:90%

LTPD:10%

| NO. | Item                             | Test Conditions                                                                                                                                                                                                                       | Test Hours/<br>Cycles | Sample Size | Failure Judgement Criteria                                        | Ac/Re |
|-----|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-------------|-------------------------------------------------------------------|-------|
| 1   | Solder Heat                      | TEMP : 260℃ ± 5 ℃                                                                                                                                                                                                                     | 5 secs                | 22 pcs      | $I_{c(on)} \leq L \times 0.8$<br><br>L :Lower specification limit | 0/1   |
| 2   | Temperature Cycle                | H : +85℃      30 mins<br><br>5 mins<br><br>L : -55℃      30 mins | 50 cycles             | 22 pcs      |                                                                   | 0/1   |
| 3   | Thermal Shock                    | H : +100℃    5 mins<br><br>10 secs<br><br>L : -10℃      5 mins  | 50 cycles             | 22 pcs      |                                                                   | 0/1   |
| 4   | High Temperature Storage         | TEMP. : +100℃                                                                                                                                                                                                                         | 1000 hrs              | 22 pcs      |                                                                   | 0/1   |
| 5   | Low Temperature Storage          | TEMP. : -55℃                                                                                                                                                                                                                          | 1000 hrs              | 22 pcs      |                                                                   | 0/1   |
| 6   | DC Operating Life                | V <sub>CE</sub> =5V                                                                                                                                                                                                                   | 1000 hrs              | 22 pcs      |                                                                   | 0/1   |
| 7   | High Temperature / High Humidity | 85℃ / 85% R.H.                                                                                                                                                                                                                        | 1000 hrs              | 22 pcs      |                                                                   | 0/1   |



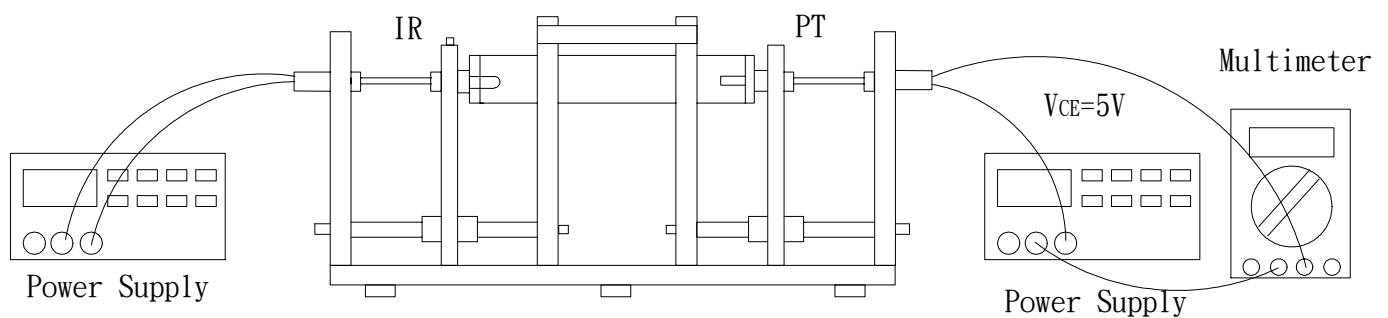
## 5mm Phototransistor, T-1 3/4

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### Test Method For On State Collector Current :

Condition :  $E_e=1\text{mW/cm}^2$  ,  $V_{CE}=5\text{V}$ Test Item : Collector Current [ $I_{C(on)}$ ]

Unit : mA





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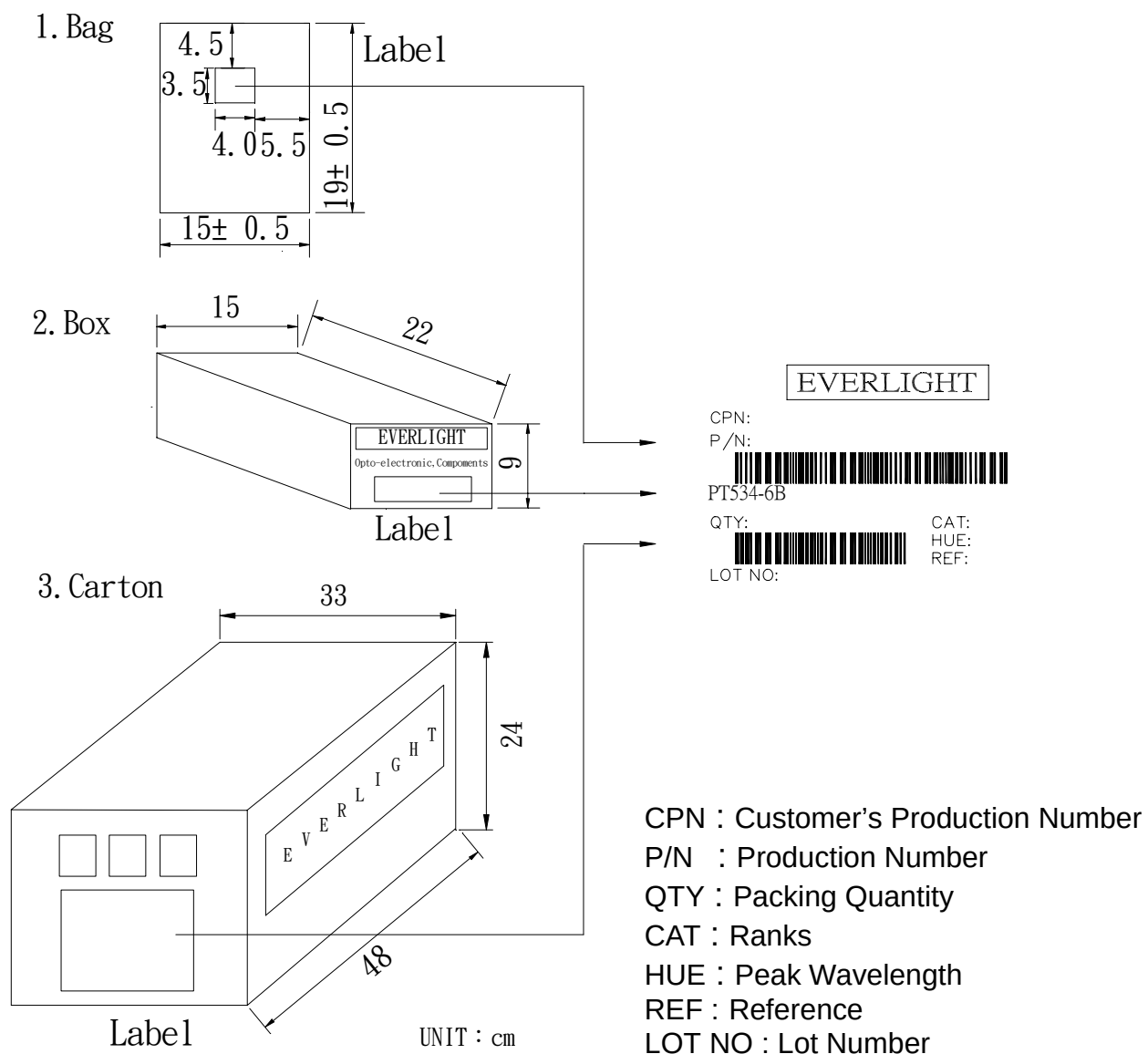
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## 5mm Phototransistor,T-1 3/4

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### ■ Packing Specifications



### ■ Packing Quantity Specification

1. 500 Pcs/1Bag , 6 Bags/1Box
2. 10 Boxes/1Carton