

### Technical Data Sheet Opto Interrupter EAITRBA6

#### Features

- Fast response time
- High analytic
- High sensitivity
- Cut-off visible wavelength  $\lambda_P=940\text{nm}$
- Pb Free
- This product itself will remain within RoHS compliant version.

#### Description

The **EAITRBA6** consist of an infrared emitting diode and an NPN silicon phototransistor, encased side-by-side on converging optical axis in a black thermoplastic housing. The phototransistor receives radiation from the IR only . This is the normal situation. But when an reflecting object close to ITR , phototransistor receives the reflecting radiation .For additional component information, please refer to IR234C/L110 and PT234-6B.

#### Applications

- Mouse Copier
- Switch Scanner
- Floppy disk driver
- Non-contact Switching
- For Direct Board

## Device Selection Guide

| Device No. | Chip Material | LENS COLOR  |
|------------|---------------|-------------|
| IR         | GaAlAs        | Water Clear |
| PT         | Silicon       | Black       |

## Absolute Maximum Ratings (Ta=25°C)

| Parameter                                                           |                                                             | Symbol             | Ratings | Unit |
|---------------------------------------------------------------------|-------------------------------------------------------------|--------------------|---------|------|
| Input                                                               | Power Dissipation at(or below) 25°C Free Air Temperature    | Pd                 | 75      | mW   |
|                                                                     | Reverse Voltage                                             | V <sub>R</sub>     | 5       | V    |
|                                                                     | Forward Current                                             | I <sub>F</sub>     | 50      | mA   |
|                                                                     | Peak Forward Current (*1) Pulse width ≤100μs, Duty cycle=1% | I <sub>FP</sub>    | 1       | A    |
| Output                                                              | Collector Power Dissipation                                 | P <sub>C</sub>     | 75      | mW   |
|                                                                     | Collector Current                                           | I <sub>C</sub>     | 20      | mA   |
|                                                                     | Collector-Emitter Voltage                                   | B V <sub>CEO</sub> | 30      | V    |
|                                                                     | Emitter-Collector Voltage                                   | B V <sub>ECO</sub> | 5       | V    |
| Operating Temperature                                               |                                                             | Topr               | -25~+85 | °C   |
| Storage Temperature                                                 |                                                             | Tstg               | -40~+85 | °C   |
| Lead Soldering Temperature (*2) (1/16 inch form body for 5 seconds) |                                                             | Tsol               | 260     | °C   |

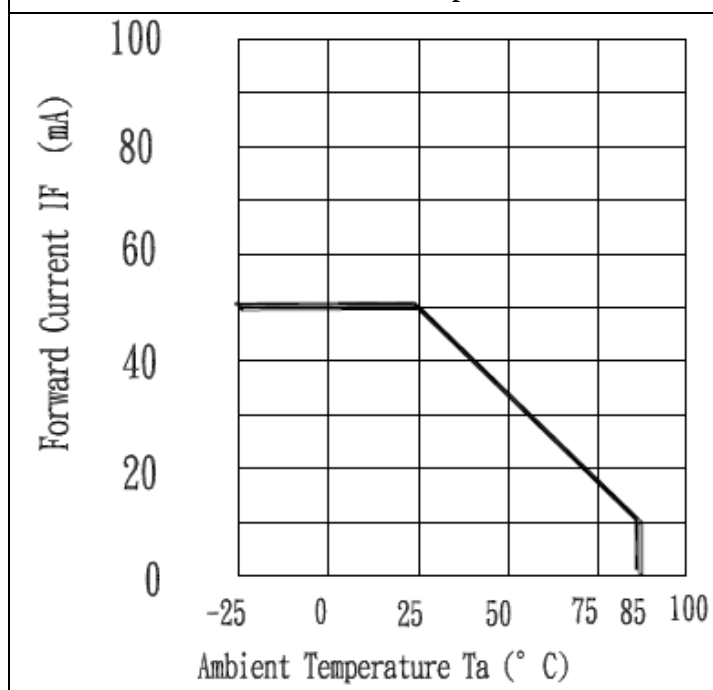
**Notes:** (\* 1)  $t_w=100 \mu\text{sec.}$ ,  $T=10 \text{ msec.}$  (\* 2)  $t=5 \text{ Sec}$

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

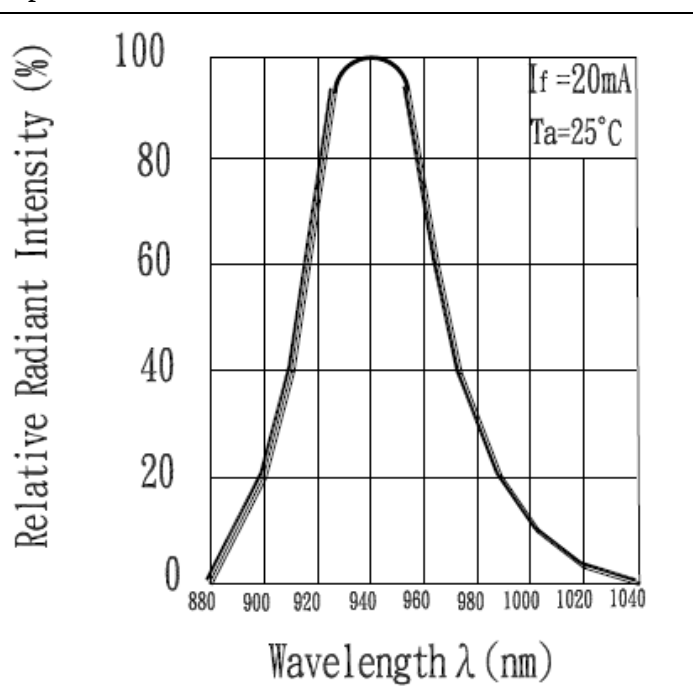
| Parameter              |                        | Symbol               | Min. | Typ. | Max. | Unit | Condition                                                        |
|------------------------|------------------------|----------------------|------|------|------|------|------------------------------------------------------------------|
| Input                  | Forward Voltage        | V <sub>F1</sub>      | -    | 1.2  | 1.5  | V    | I <sub>F</sub> =20mA                                             |
|                        |                        | V <sub>F2</sub>      | -    | 1.4  | 1.8  |      | I <sub>F</sub> =100mA, tp=100μs, tp/T=0.01                       |
|                        |                        | V <sub>F3</sub>      | -    | 2.6  | 4.0  |      | I <sub>F</sub> =1A, tp=100μs, tp/T=0.01                          |
|                        | Reverse Current        | I <sub>R</sub>       | -    | -    | 10   | μA   | V <sub>R</sub> =5V                                               |
|                        | Peak Wavelength        | λ <sub>p</sub>       | -    | 940  | -    | nm   | I <sub>F</sub> =20mA                                             |
|                        | View Angle             | 2θ1/2                | -    | 35   | -    | Deg  | I <sub>F</sub> =20mA                                             |
| Output                 | Dark Current           | I <sub>CEO</sub>     | -    | -    | 100  | nA   | V <sub>CE</sub> =5V, Ee=0mW/cm <sup>2</sup>                      |
|                        | C-E Saturation Voltage | V <sub>CE(sat)</sub> | -    | -    | 0.4  | V    | I <sub>C</sub> =0.04mA, I <sub>F</sub> =40mA                     |
| Collector Current(* 3) |                        | I <sub>C(ON)</sub>   | 20   | -    | 110  | μA   | V <sub>CE</sub> =3V, I <sub>F</sub> =35mA                        |
| Response Time          | Rise Time              | t <sub>R</sub>       | -    | 15   | -    | μs   | V <sub>CE</sub> =5V, I <sub>C</sub> =100μA, R <sub>L</sub> =100Ω |
|                        | Fall Time              | t <sub>F</sub>       | -    | 15   | -    | μs   |                                                                  |

# Typical Electrical/Optical/Characteristics Curves for IR

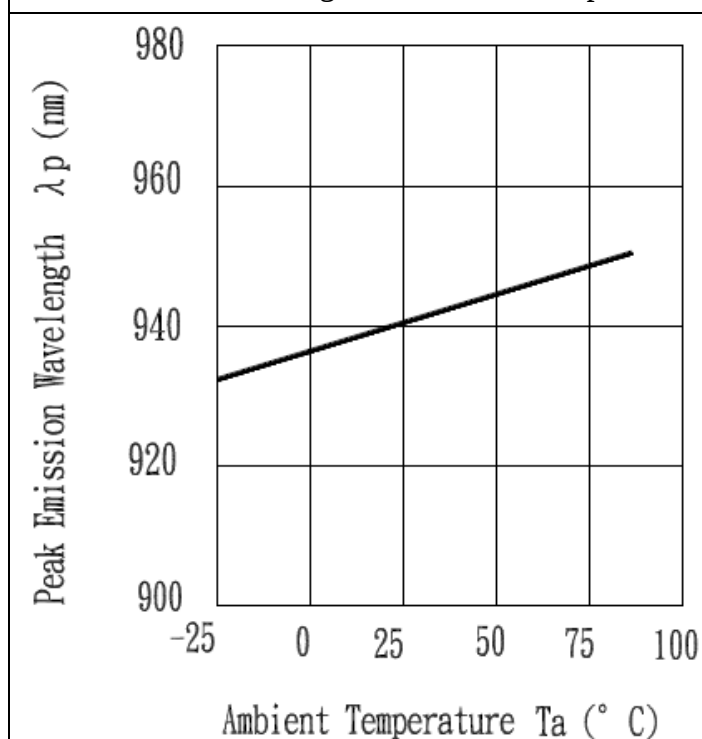
Forward Current vs. Ambient Temperature



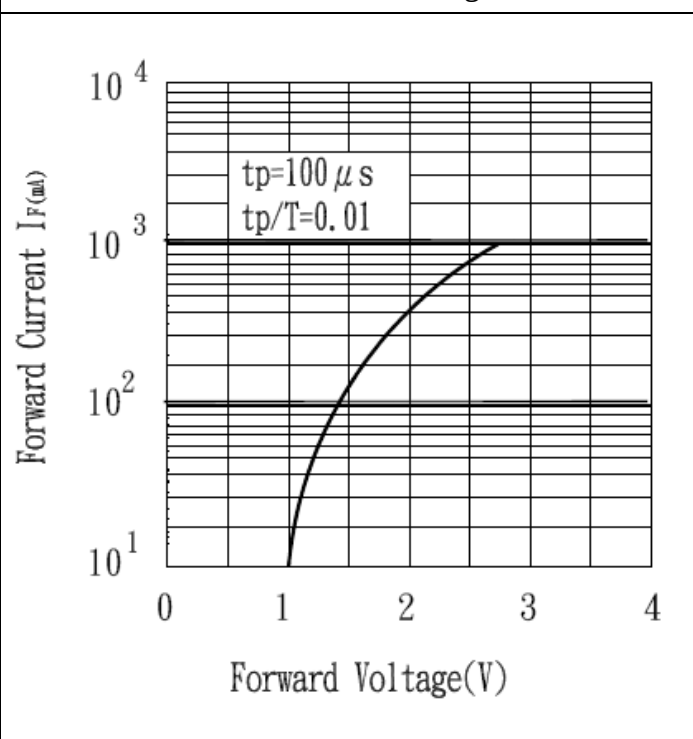
Spectral Distribution



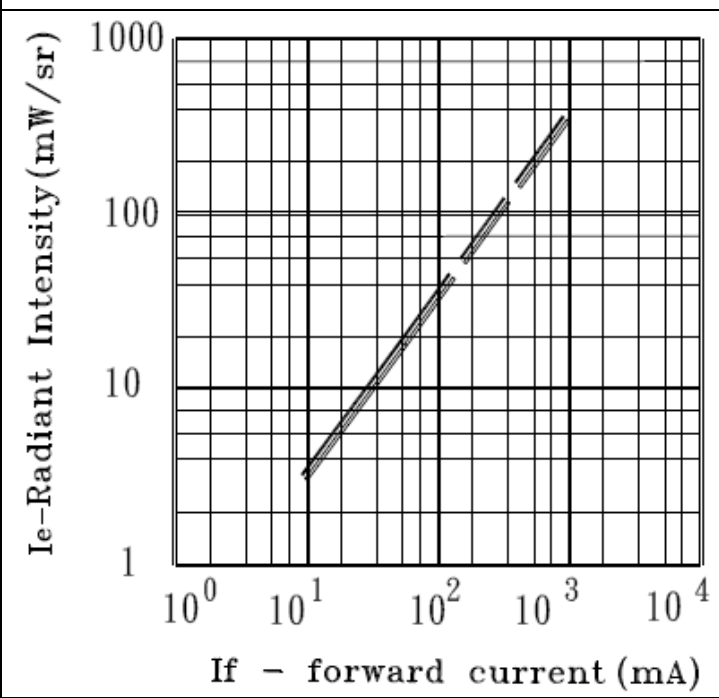
Peak Emission Wavelength vs. Ambient Temperature



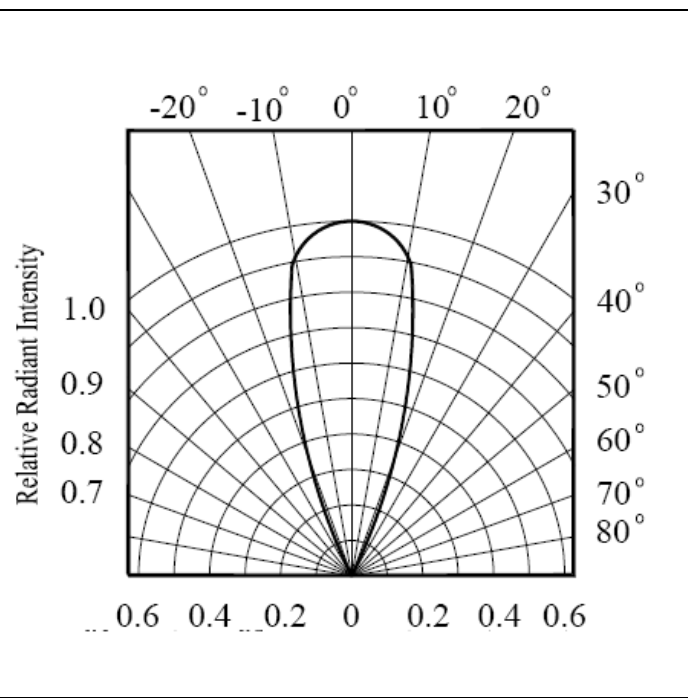
Forward Current vs. Forward Voltage



Relative Intensity vs. Forward Current

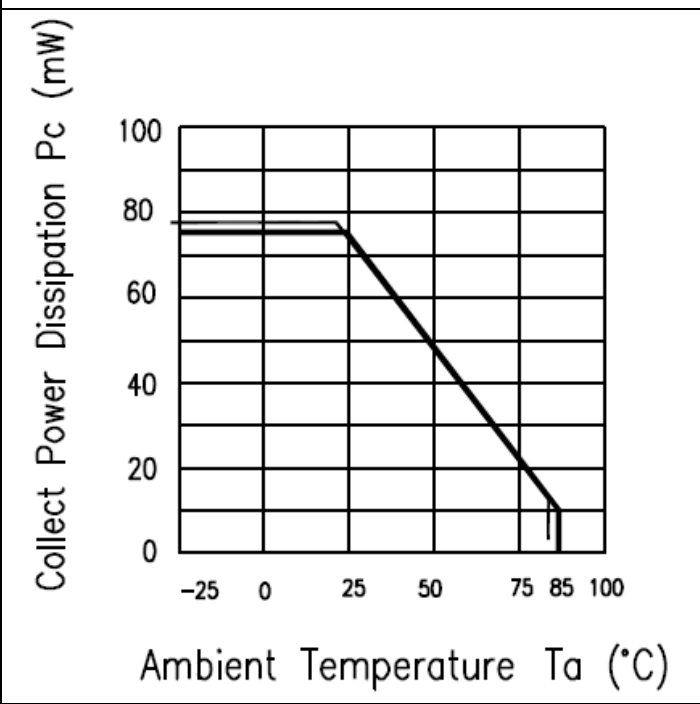


Relative Radiant Intensity

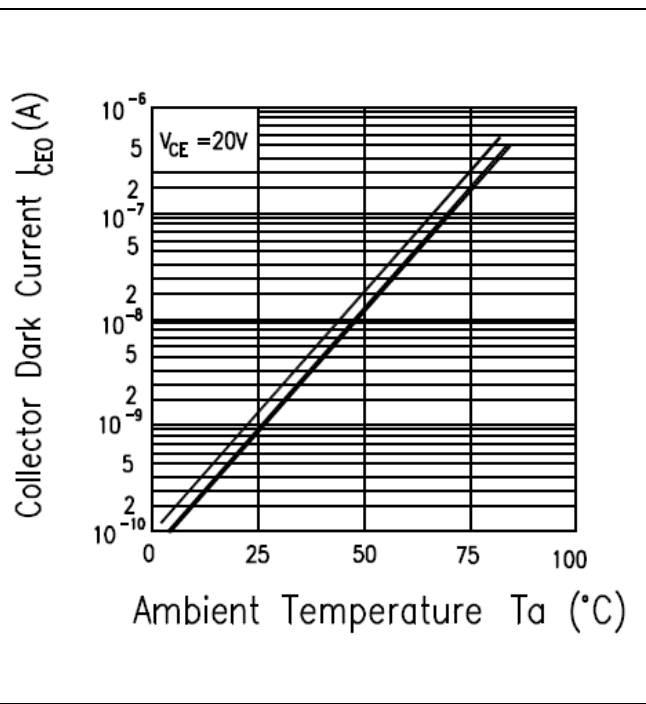


Typical Electro/Optical/Characteristics Curves for PT

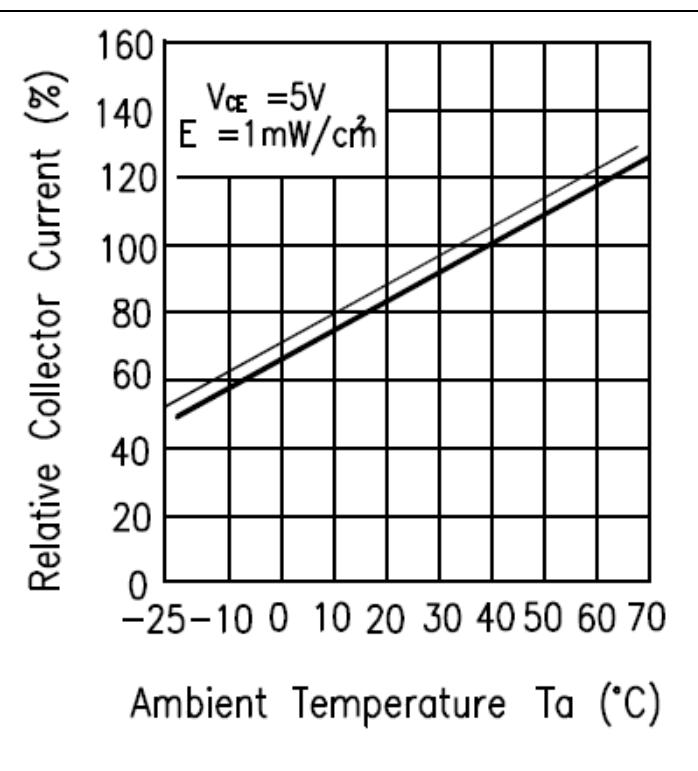
Collector Power Dissipation vs. Ambient Temperature



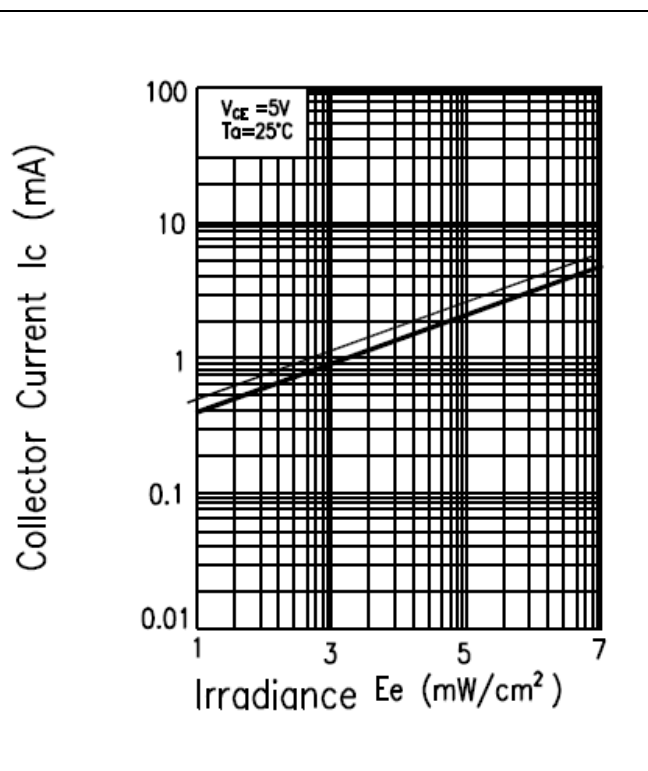
Collector Dark Current vs. Ambient Temperature



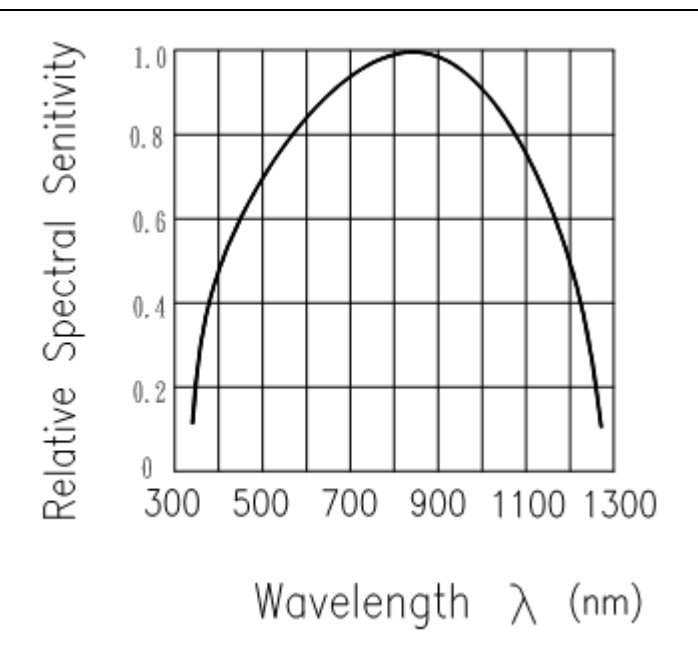
Relative Collector Current vs. Ambient Temperature



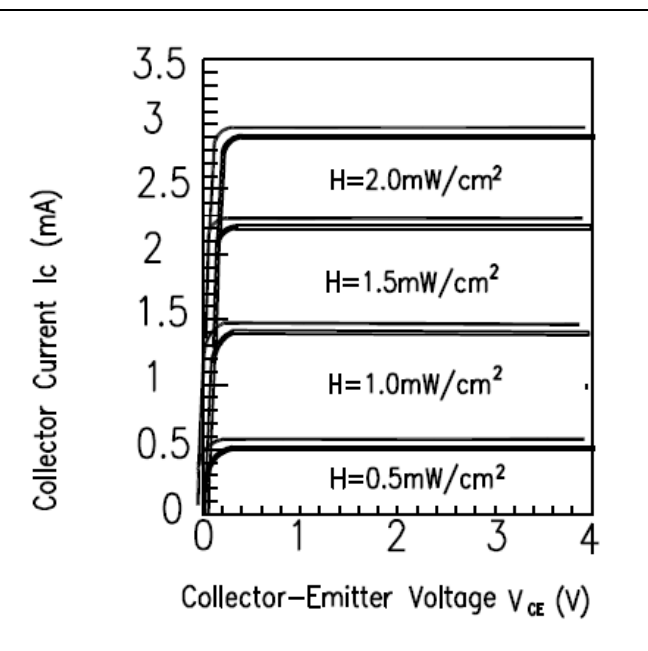
Collector Current vs. Irradiance



Spectral Sensitivity



Collector Current vs. Collector-emitter Voltage



**Reliability Test Item And Condition**

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

Confidence level : 90%

LTPD : 10%

| NO. | Item                             | Test Condition                                                                                                                                                                                                                 | Test Hours/<br>Cycle | Sample Size | Failure Judgement Criteria                                         | Ac/Re |
|-----|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|-------------|--------------------------------------------------------------------|-------|
| 1   | Solder Heat                      | TEMP : 260°C ± 5 °C                                                                                                                                                                                                            | 10 sec               | 22 PCs      | $I_{c(on)} \leq L \times 0.8$<br><br>L : Lower specification limit | 0/1   |
| 2   | Temperature Cycle                | H : +100°C    15 mins<br> 5 min<br>L : -40°C    15 min<br>   | 300 cycle            | 22 PCs      |                                                                    | 0/1   |
| 3   | Thermal Shock                    | H : +100°C    5 min<br> 10 sec<br>L : -10°C    5 min<br> | 300 cycle            | 22 PCs      |                                                                    | 0/1   |
| 4   | High Temperature Storage         | TEMP. : +100°C                                                                                                                                                                                                                 | 1000 hrs             | 22 PCs      |                                                                    | 0/1   |
| 5   | Low Temperature Storage          | TEMP. : -40°C                                                                                                                                                                                                                  | 1000 hrs             | 22 PCs      |                                                                    | 0/1   |
| 6   | DC Operating Life                | V <sub>CE</sub> =5V<br>I <sub>F</sub> =20mA                                                                                                                                                                                    | 1000 hrs             | 22 PCs      |                                                                    | 0/1   |
| 7   | High Temperature / High Humidity | 85°C / 85% R.H.                                                                                                                                                                                                                | 1000 hrs             | 22 PCs      |                                                                    | 0/1   |



### Packing Quantity Specification

- 1.100PCS/1Bag, 5Bag/1Box
2. 10Boxes/1Carton

### Label Form Specification

The diagram shows a rectangular label with the following elements:

- Top Left:** A circular logo with the letters "Pb" inside.
- Top Center:** A rectangular box containing the text "EVERLIGHT AMERICA".
- Top Right:** An empty circular space.
- Below "Pb" logo:** The text "CPN: XXXXXXXXXXXX" followed by "P/N: XXXXXXXXXXXX".
- Below P/N:** A barcode.
- Below Barcode:** The text "XXXXXXXXXXXXXXXXXXXXX".
- Below XXXXXXXX:** The text "QTY: XXXX" followed by "CAT: XXX".
- Below QTY:** A barcode.
- Below Barcode:** The text "LOT NO: XXXXXXXXXXXXXXXXXXXXX".
- Below LOT NO:** A barcode.
- Below LOT NO Barcode:** The text "REFERENCE: XXXXXXXXXXXX".
- Below REFERENCE:** A barcode.
- Bottom Center:** The text "MADE IN TAIWAN".
- Right Side:** A small rectangular box containing the text "RoHS".

- CPN: Customer's Product Number
- P/N: Product Number
- QTY: Packing Quantity
- CAT: Luminous Intensity Rank
- HUE: Dom. Wavelength Rank
- REF: Forward Voltage Rank
- LOT No: Lot Number
- X: Month
- Reference: Identify Label Number

### Notes

1. Above specification may be changed without notice. EVERLIGHT Americas 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 Americas 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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