

### ITR20002

#### Features

- Cut-off visible wavelength  $\lambda_p=840\text{nm}$
- Fast response time
- High sensitivity
- Pb free
- High analytic

#### Description

The **ITR20002** 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 object is in between, phototransistor could not receive the radiation.

#### Applications

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

## Device Selection Guide

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

## Absolute Maximum Ratings (Ta=25°C)

| Parameter                                                              |                                                                 | Symbol             | Ratings | Unit |
|------------------------------------------------------------------------|-----------------------------------------------------------------|--------------------|---------|------|
| Input                                                                  | Power Dissipation at(or below) 25°C Free Air Temperature        | Pd                 | 100     | mW   |
|                                                                        | Reverse Voltage                                                 | V <sub>R</sub>     | 5       | V    |
|                                                                        | Forward Current                                                 | I <sub>F</sub>     | 60      | mA   |
|                                                                        | Peak Forward Current (*1)<br>Pulse width ≤100 μs, Duty cycle=1% | I <sub>FP</sub>    | 1       | A    |
| Output                                                                 | Collector Power Dissipation                                     | P <sub>C</sub>     | 80      | mW   |
|                                                                        | Collector Current                                               | I <sub>C</sub>     | 20      | mA   |
|                                                                        | Collector-Emitter Voltage                                       | B V <sub>CEO</sub> | 35      | V    |
|                                                                        | Emitter-Collector Voltage                                       | B V <sub>ECO</sub> | 6       | V    |
| Operating Temperature                                                  |                                                                 | Topr               | -25~+85 | °C   |
| Storage Temperature                                                    |                                                                 | Tstg               | -40~+85 | °C   |
| Lead Soldering Temperature (*2)<br>(1/16 inch form body for 5 seconds) |                                                                 | Tsol               | 260     | °C   |

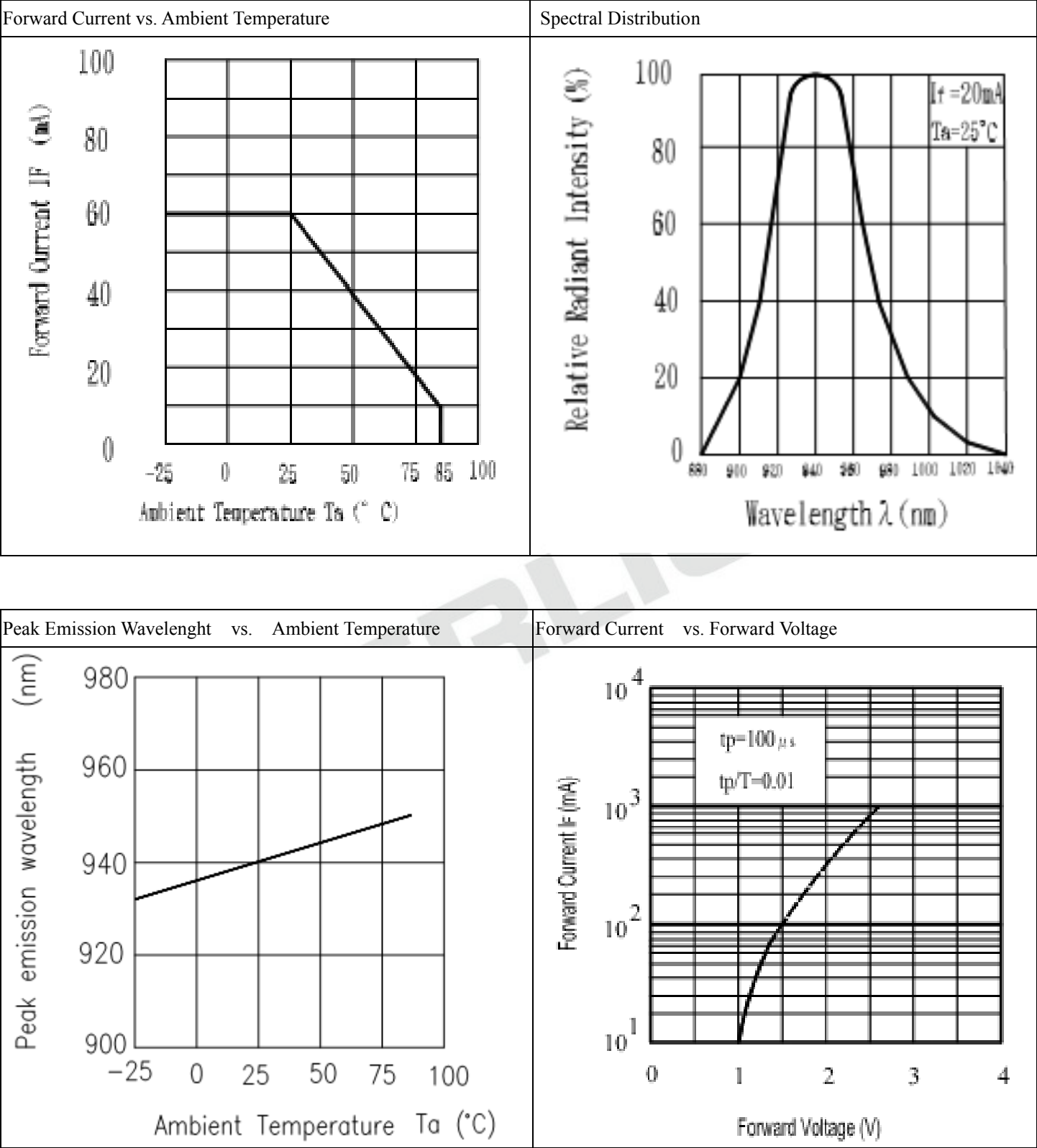
(\*1) tw=100 μsec., T=10 msec.

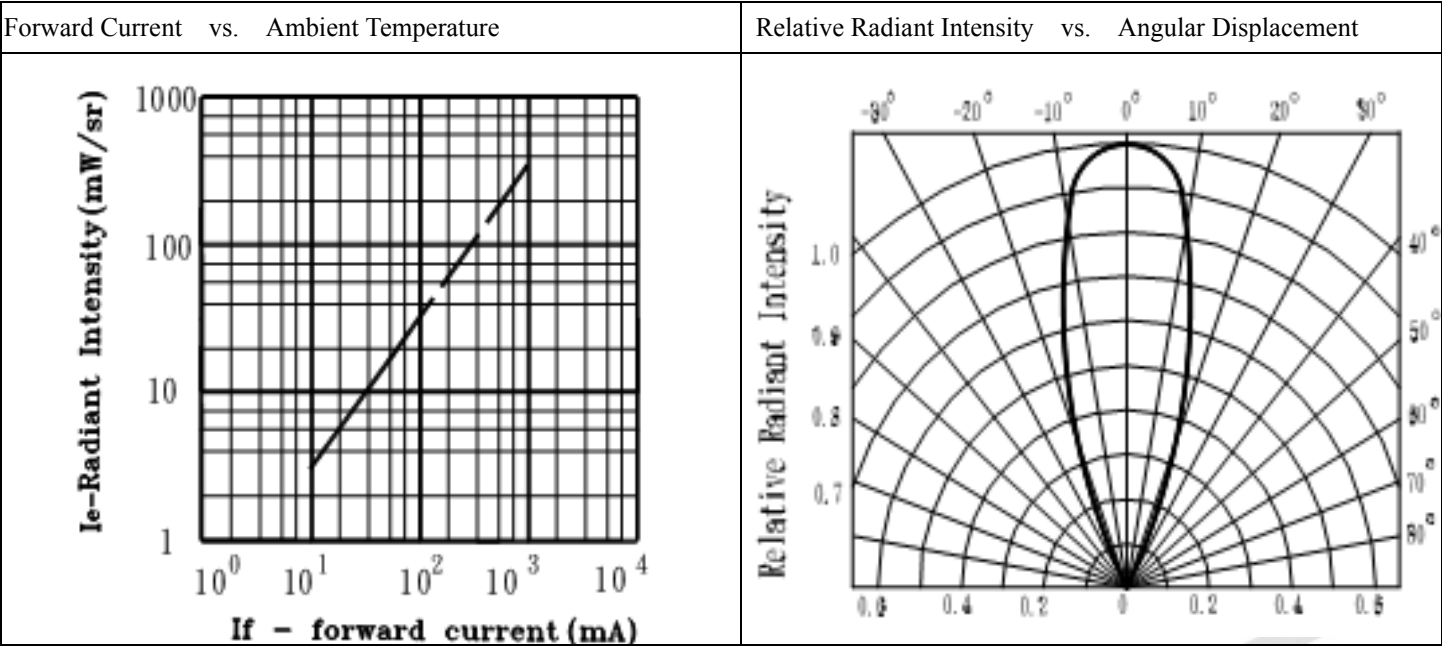
(\*2) t=5 Sec

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

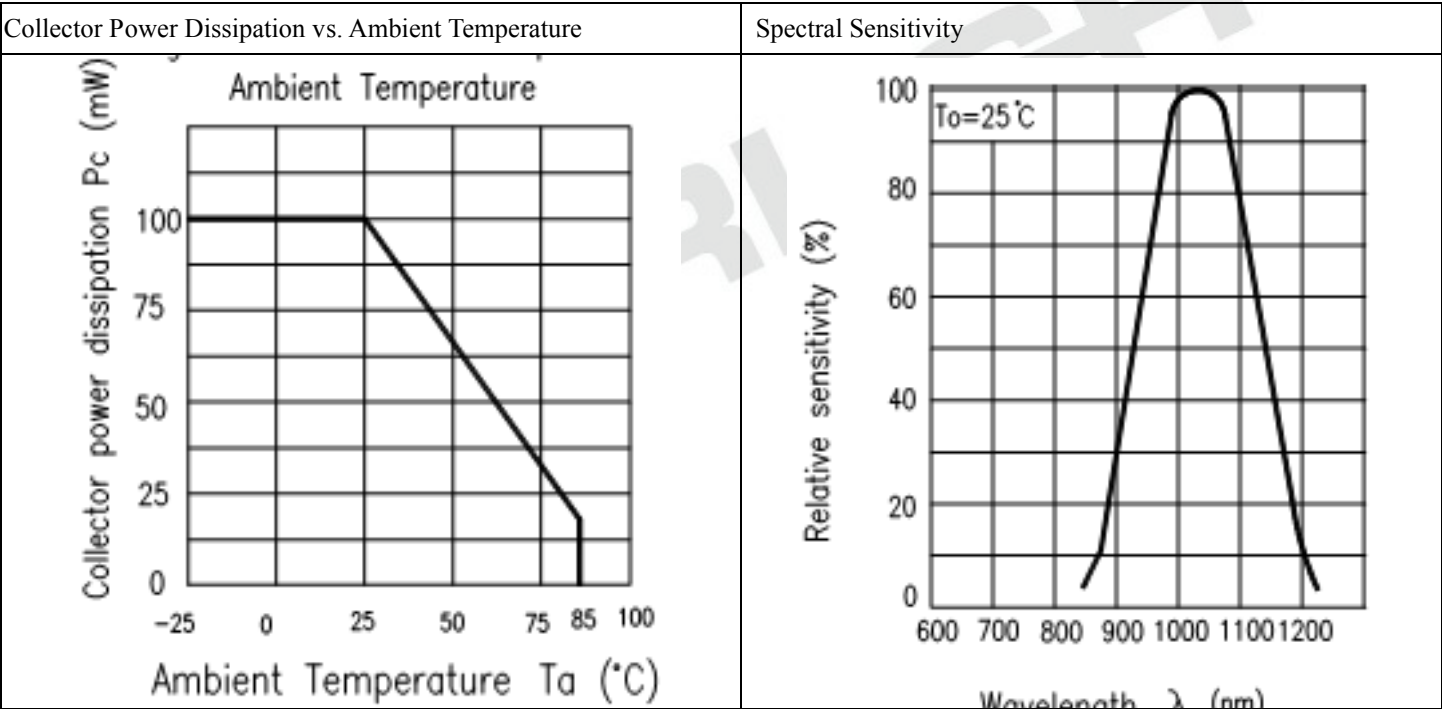
| Parameter                |                        | Symbol               | Min. | Typ. | Max. | Unit            | Conditions                                                    |
|--------------------------|------------------------|----------------------|------|------|------|-----------------|---------------------------------------------------------------|
| Input                    | Forward Voltage        | $V_F$                | ---  | 1.2  | 1.5  | V               | $I_F=20\text{mA}$                                             |
|                          | Reverse Current        | $I_R$                | ---  | ---  | 10   | $\mu\text{A}$   | $V_R=5\text{V}$                                               |
|                          | Peak Wavelength        | $\lambda_p$          | ---  | 940  | ---  | nm              | $I_F=20\text{mA}$                                             |
|                          | View Angle             | 2 $\theta$ 1/2       | ---  | 30   | ---  | Deg             | $I_F=20\text{mA}$                                             |
| Output                   | Dark Current           | $I_{CEO}$            | ---  | ---  | 100  | nA              | $V_{CE}=20\text{V}, E_e=0\text{mW/cm}^2$                      |
|                          | C-E Saturation Voltage | $V_{CE}(\text{sat})$ | ---  | ---  | 0.4  | V               | $I_C=0.04\text{mA}$<br>$I_F=40\text{mA}$                      |
| Transfer Characteristics | Collect Current        | $I_C(\text{ON})$     | 0.04 | ---  | 0.9  | mA              | $V_{CE}=5\text{V}$ $I_F=20\text{mA}$                          |
|                          | Rise time              | $t_r$                | ---  | 20   | ---  | $\mu\text{sec}$ | $V_{CE}=2\text{V}$<br>$I_C=100\mu\text{A}$<br>$R_L=100\Omega$ |
|                          | Fall time              | $t_f$                | ---  | 25   | ---  | $\mu\text{sec}$ |                                                               |

Typical Electrical/Optical/Characteristics Curves for IR

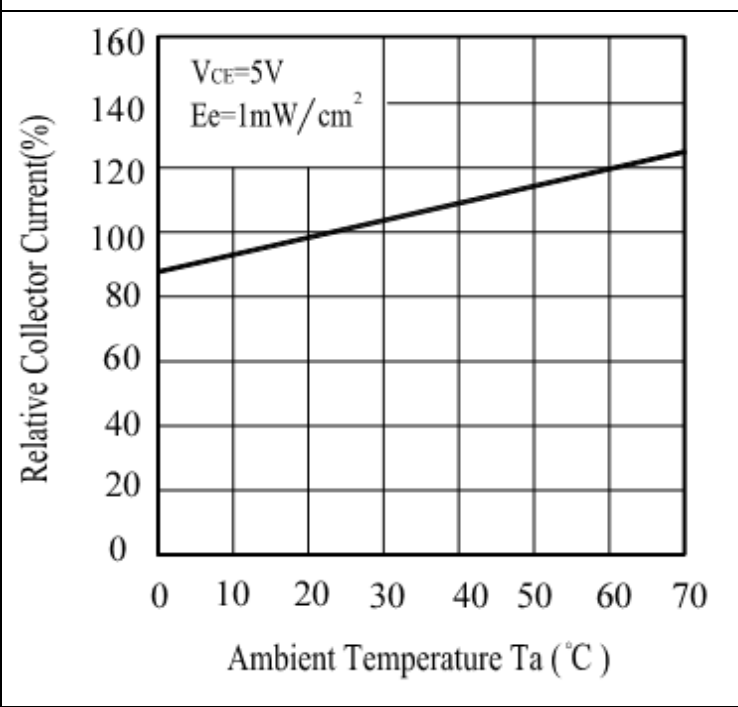




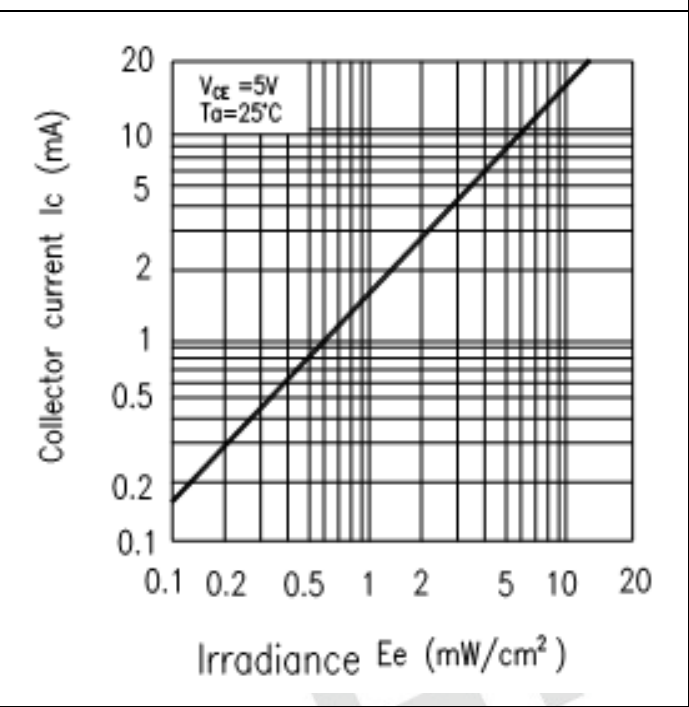
Typical Electro/Optical/Characteristics Curves for PT



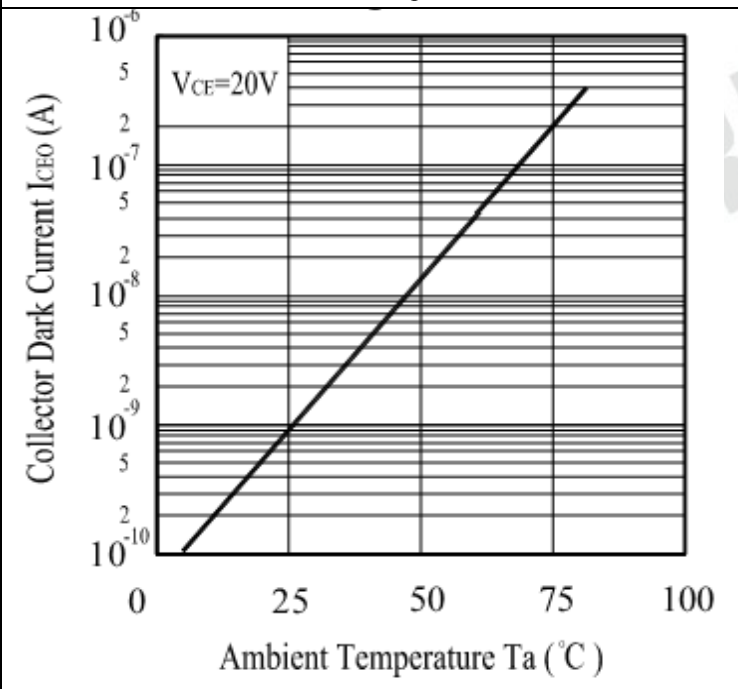
Relative Collector Current vs Ambient Temperature



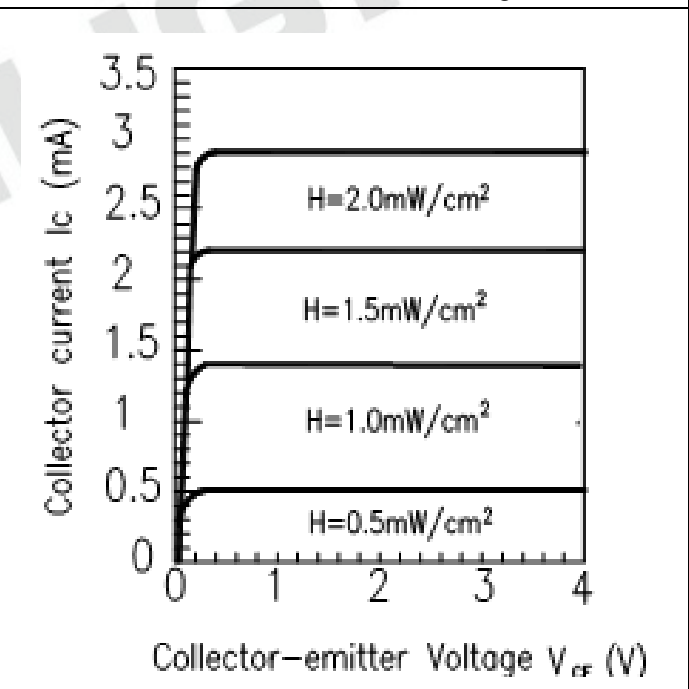
Collector Current vs. Irradiance



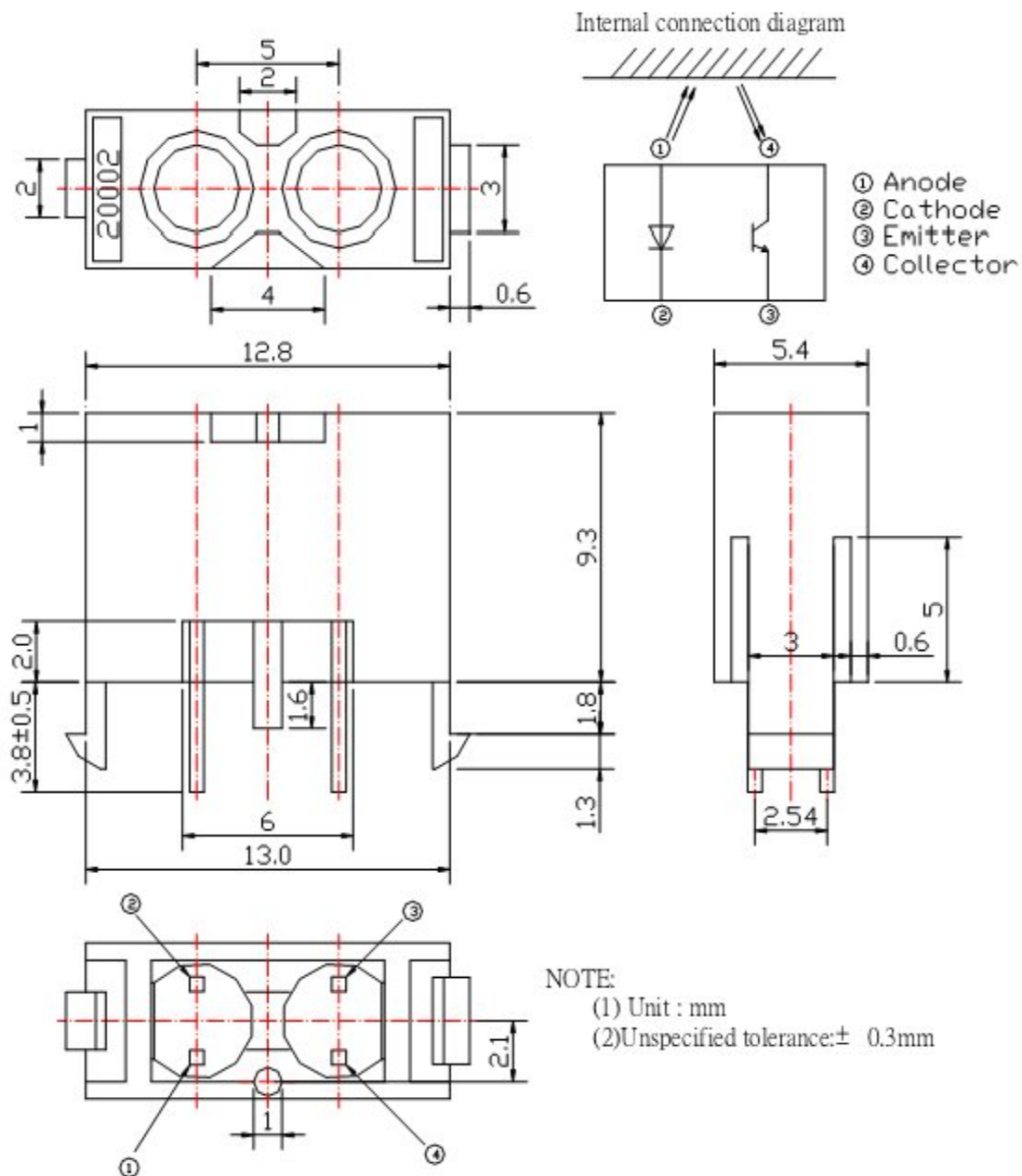
Collector Current vs. Ambient Temperature



Collector Current vs. Collector-emitter Voltage



## Package Dimension



### Packing Quantity Specification

1. 150pcs/1Bag, 5Bags/1Box
2. 10Boxes/1Carton

### Label Form Specification

The diagram shows a rectangular label with the following elements:

- Top left: A circular logo with 'Pb' inside.
- Top center: A rectangular box containing the word 'EVERLIGHT'.
- Top right: A circular logo with the letter 'X' inside.
- Below 'Pb' logo: The text 'CPN:' followed by 'P/N:'.
- Below 'P/N:': A standard 1D barcode.
- Below the first barcode: The text 'ITR20002'.
- Below 'ITR20002': The text 'QTY:'.
- Below 'QTY:': A standard 1D barcode.
- Below the second barcode: The text 'LOT NO:'.
- Below 'LOT NO:': A standard 1D barcode.
- Below the third barcode: The text 'Reference'.
- Below 'Reference': A standard 1D barcode.
- Below 'EVERLIGHT': A rectangular box containing the text 'RoHS'.
- Below 'RoHS': The text 'CAT:' followed by 'HUE:' and 'REF:'.

- 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 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.
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# AMEYA360

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