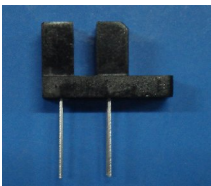


### Opto Interrupter ITR8104



#### Features

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

#### Description

- The **ITR8104** 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 receives the radiation.

#### Applications

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

## Device Selection Guide

| Chip Materials | Lens Color  |
|----------------|-------------|
| GaAlAs         | Water clear |
| 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                 | 75      | mW   |
|                                                                        | Reverse Voltage                                               | V <sub>R</sub>     | 5       | V    |
|                                                                        | Forward Current                                               | I <sub>F</sub>     | 50      | mA   |
|                                                                        | Peak Forward Current (*1)<br>Pulse width 100µs, Duty cycle=1% | I <sub>FP</sub>    | 1       | A    |
| Output                                                                 | Collector Power Dissipation                                   | Pd                 | 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                                                  |                                                               | T <sub>opr</sub>   | -40~+85 |      |
| Storage Temperature                                                    |                                                               | T <sub>stg</sub>   | -40~+85 |      |
| Lead Soldering Temperature (*2)<br>(1/16 inch form body for 5 seconds) |                                                               | T <sub>sol</sub>   | 260     |      |

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

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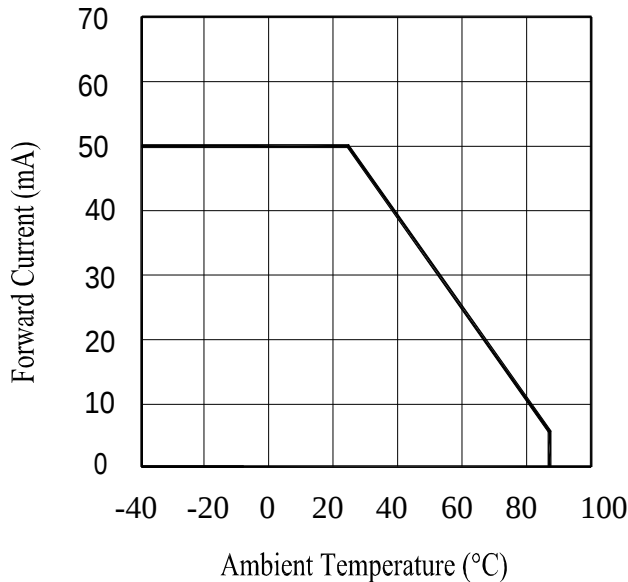
Electro-Optical Characteristics (Ta=25 °C)

| Parameter                |                        | Symbol               | Min. | Typ. | Max. | Unit            | Conditions                                                      |
|--------------------------|------------------------|----------------------|------|------|------|-----------------|-----------------------------------------------------------------|
| Input                    | Forward Voltage        | $V_F$                | ---  | 1.2  | 1.6  | 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       | ---  | 60   | ---  | Deg             | $I_F=20\text{mA}$                                               |
| Output                   | Dark C urrent          | $I_{CEO}$            | ---  | ---  | 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               | $I_C=2\text{mA}$<br>$E_e=1\text{mW/cm}^2$                       |
| Transfer Characteristics | Collect Current        | $I_C(\text{ON})$     | 0.5  | ---  | ---  | mA              | $V_{CE}=5\text{V}$<br>$I_F=20\text{mA}$                         |
|                          |                        | $I_C(\text{OFF})$    | ---  | ---  | 20   | $\mu\text{A}$   | $V_{CE}=5\text{V}$<br>$I_F=0\text{mA}$                          |
|                          | Rise time              | $t_r$                | ---  | 20   | ---  | $\mu\text{sec}$ | $V_{CE}=5\text{V}$<br>$I_C=1\text{mA}$<br>$R_L=1\text{K}\Omega$ |
|                          | Fall time              | $t_f$                | ---  | 20   | ---  | $\mu\text{sec}$ |                                                                 |

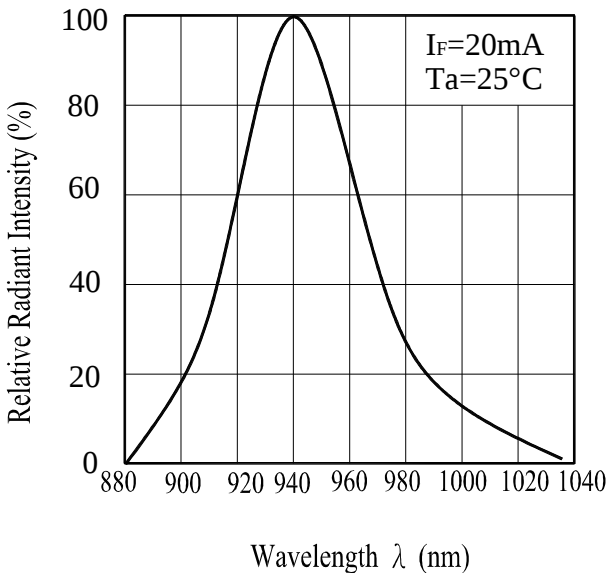
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Typical Electrical/Optical/Characteristics Curves for IR

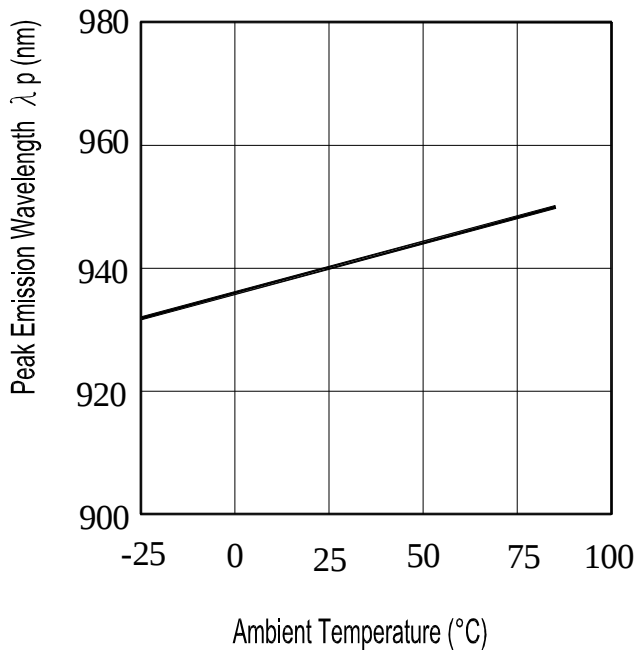
Forward Current vs. Ambient Temperature



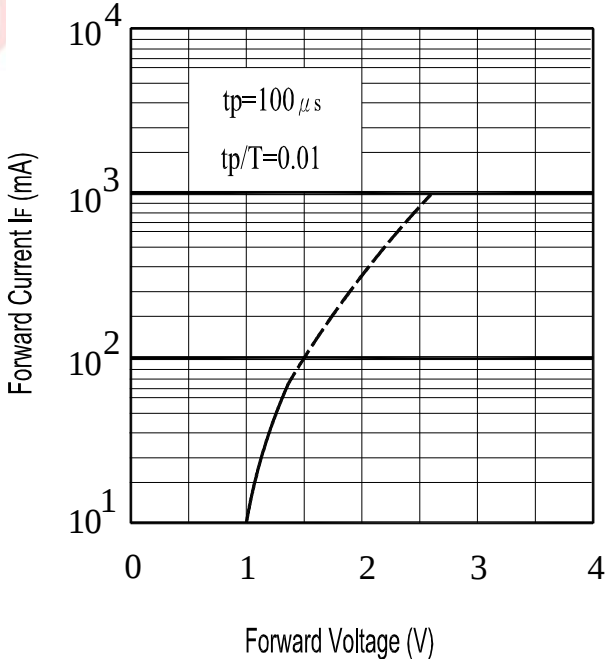
Spectral Sensitivity



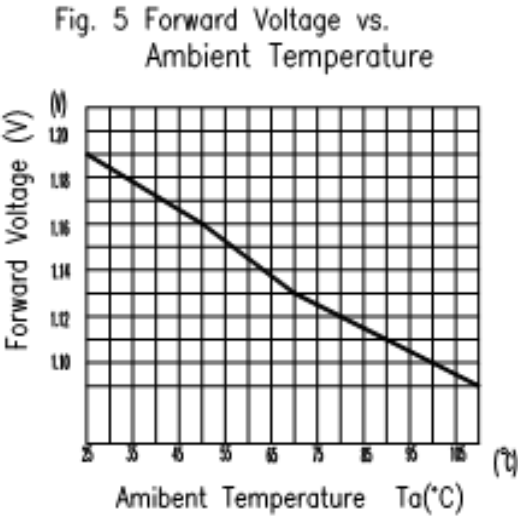
Peak Emission Wavelength vs. Ambient Temperature



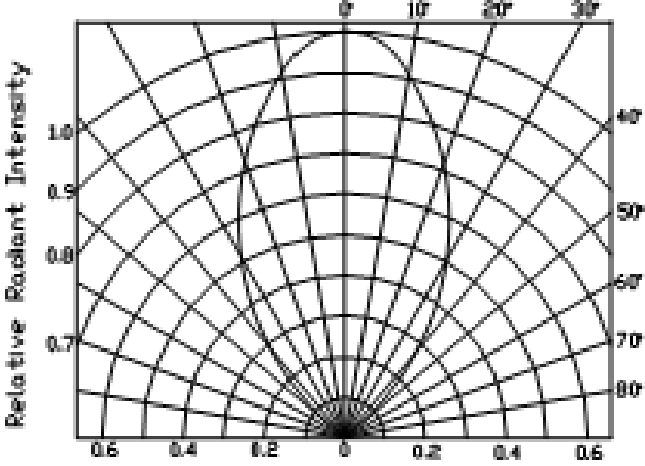
Forward Current vs. Forward Voltage



Forward Voltage vs. Ambient Temperature

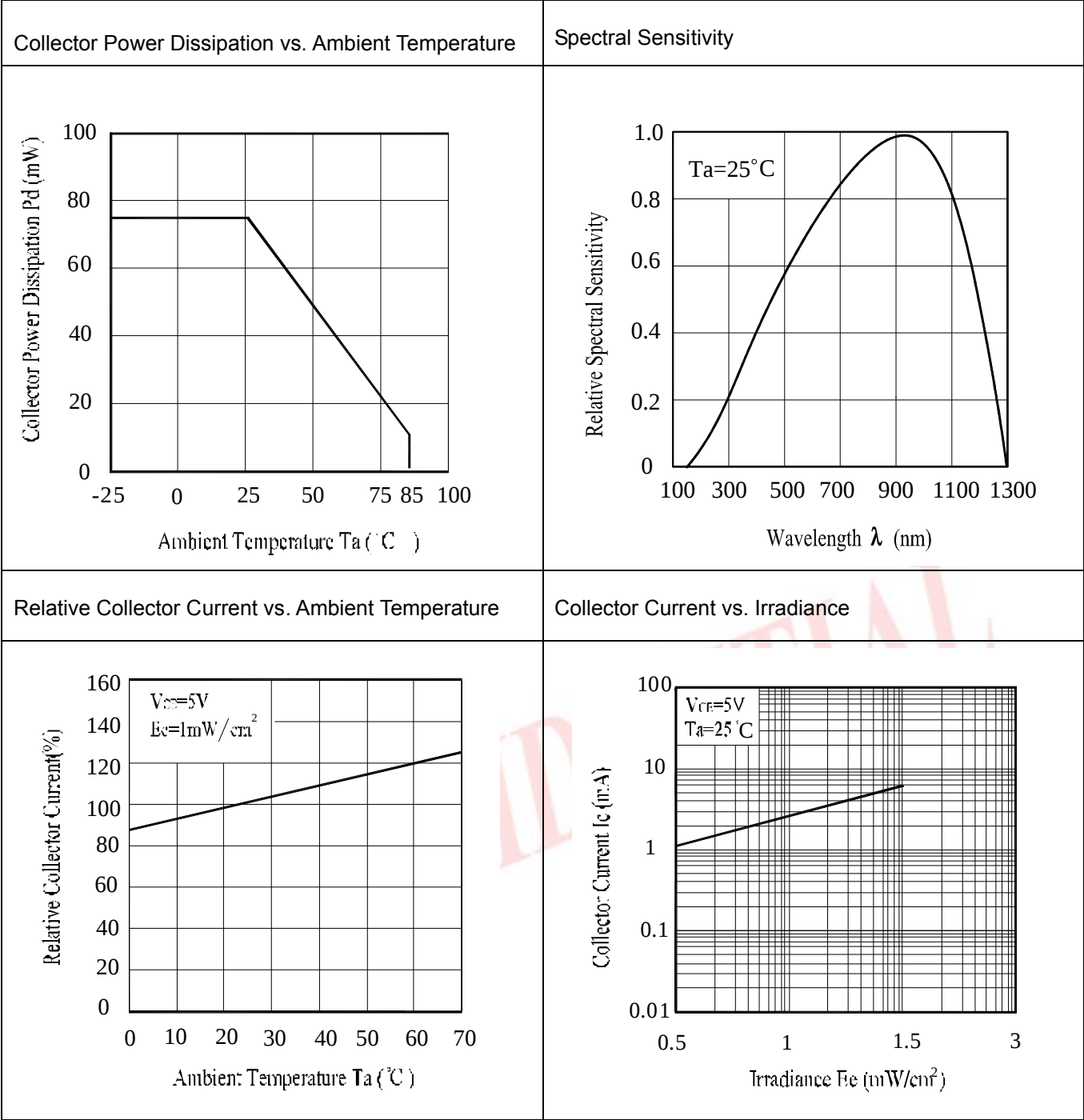


Relative Radiant Intensity vs. Angular Displacement

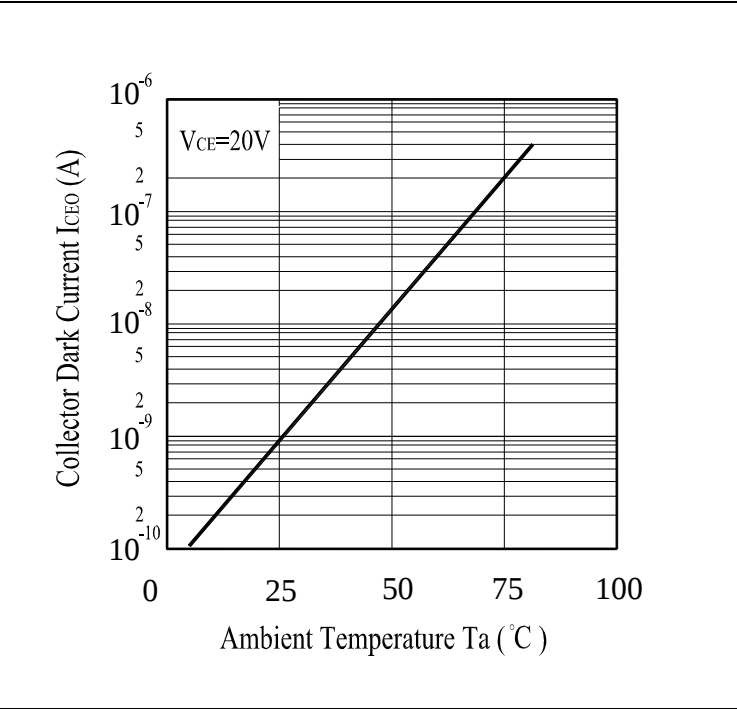


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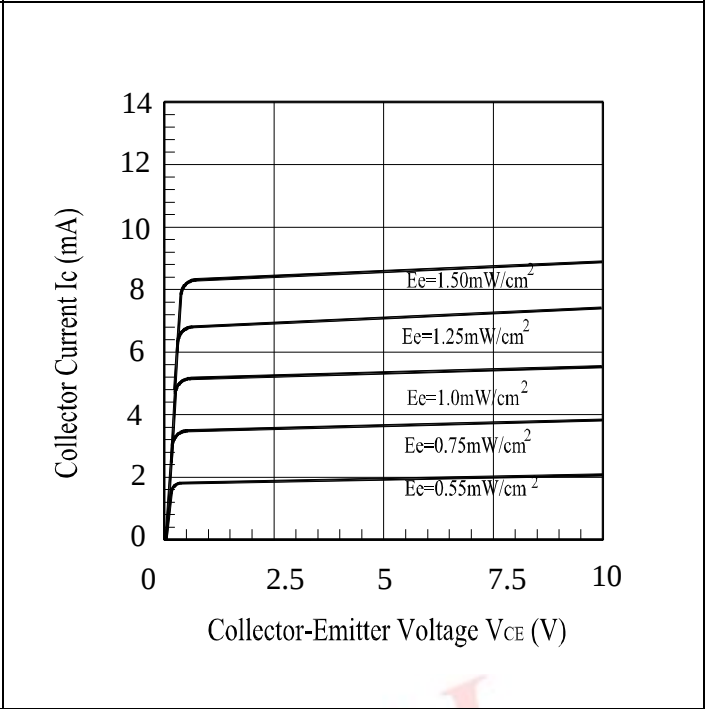
Typical Electrical/Optical/Characteristics Curves for PT



Collector Dark Current vs. Ambient Temperature

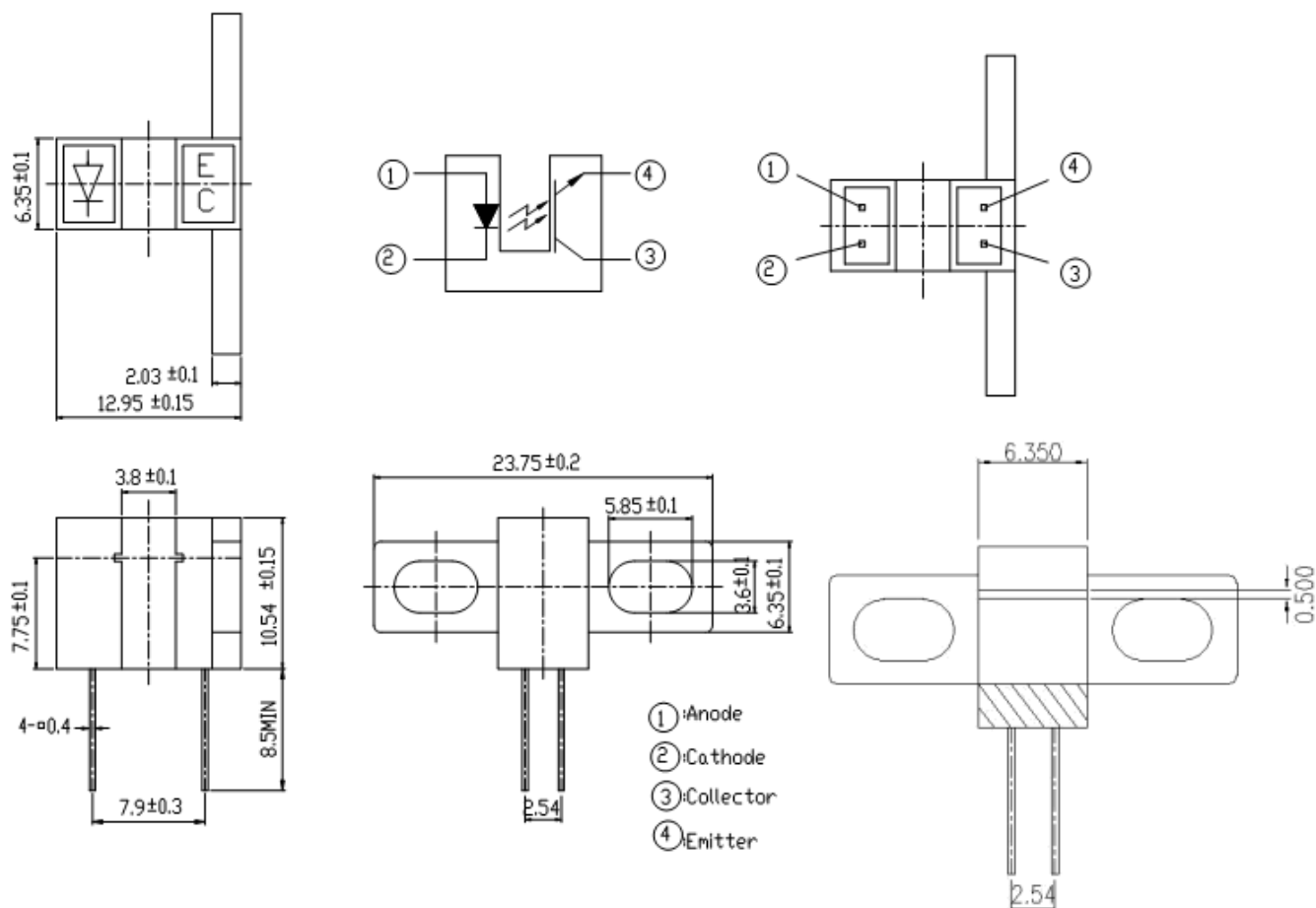


Collector Current vs. Collector-Emitter Voltage



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## Package Dimension



Note: Tolerances unless dimensions  $\pm 0.25\text{mm}$

### Packing Quantity Specification

- 1.27PCS/1Tube, 100 Tubes/1Box
- 2. 4Boxes/1Carton

### Label Form Specification

The diagram shows a rectangular label form with the following elements:

- Top left: A circle containing 'Pb' (Pb-free symbol).
- Top center: A rectangle containing the word 'EVERLIGHT'.
- Top right: A circle containing 'X' (Month indicator).
- Below 'Pb': The text 'CPN:' followed by 'P/N:'.
- Below 'P/N:': A barcode.
- Below the barcode: The text 'ITR8104'.
- Below 'ITR8104': The text 'QTY:' followed by a barcode.
- Below the 'QTY' barcode: The text 'LOT NO:' followed by a barcode.
- Below the 'LOT NO' barcode: The text 'Reference' followed by a barcode.
- Below 'QTY:': The text 'CAT:', 'HUE:', and 'REF:' stacked vertically.
- Below 'REF:': A small rectangle 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 will reserve authority on material change for above specification.
2. When using this product, please observe the absolute maximum ratings and the instruction 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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