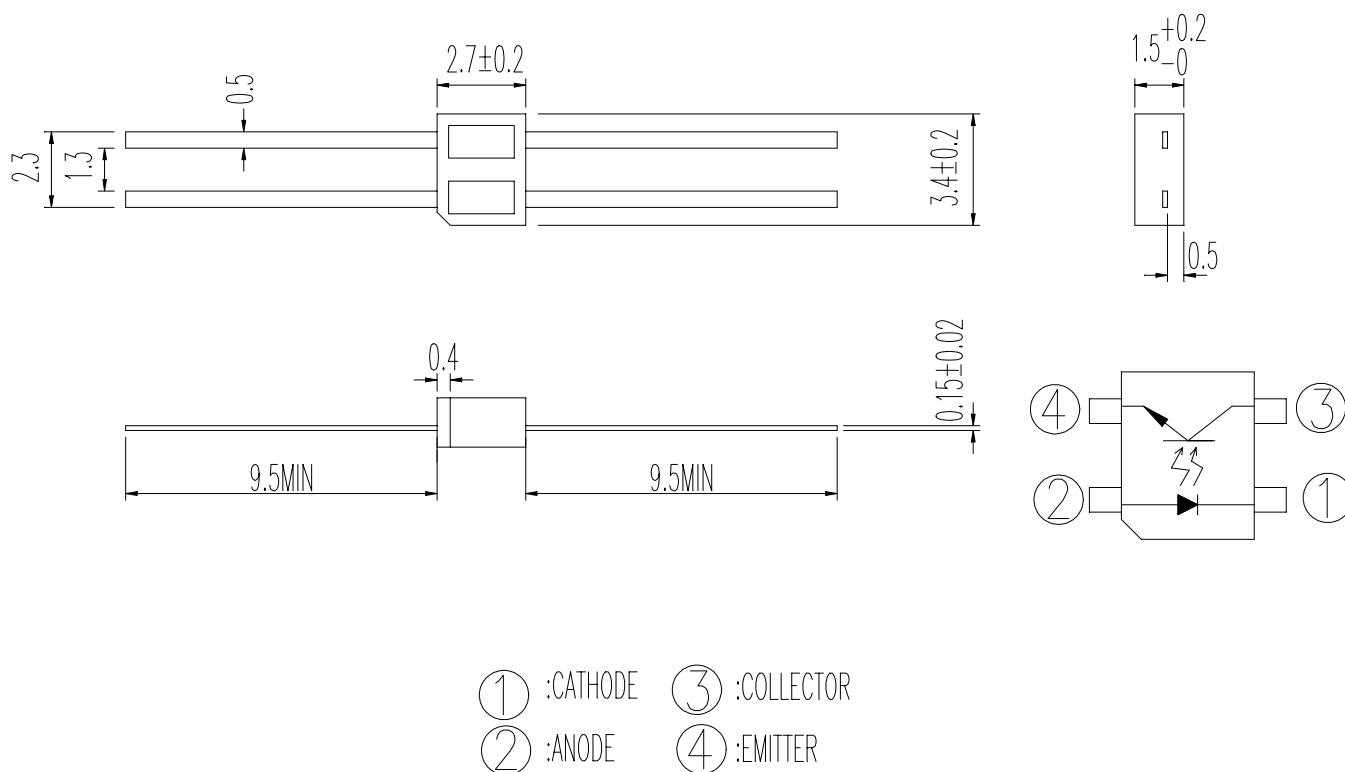


■ Package Dimensions :



| DESIGNER | CHECKER | APPROVED |
|----------|---------|----------|
|          |         |          |

Office: NO 25, Lane 76, Chung Yang Rd., Sec.3  
Tucheng, Taipei 236, Taiwan, R.O.C.  
TEL: 886-2-2267-2000, 2267-9936 (22 Lines)  
FAX: 886-2-2267-6189

**©Notes :**

1. All dimensions are in millimeters.
2. General Tolerance:  $\pm 0.15\text{mm}$ .
3. Lead spacing is measured where the lead emerge from the package.
4. Above specification may be changed without notice. EVERLIGHT will reserve authority on material change for above specification.
5. 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.
6. 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.

**■ Descriptions:**

**EVERLIGHT Photo Interrupter** is a reflective type interrupter so the optimum detection distance: 1mm or less. This type (ITR8307) is a black tint plastic package with top view and no lens , the epoxy package spectrally matched to IR emitter ( $\lambda_p=940\text{nm}$ ), cutting wavelength under  $\lambda=840\text{nm}$

**■ Features:**

- Fast response time
- High sensitivity
- Cutting wavelength  $\lambda=840\text{nm}$
- Thin
- Compact

**■ Applications:**

- Camera
- VCR
- Floppy disk driver
- Cassette type recorder
- Various microcomputer control equipment

## Absolute Maximum Ratings (Ta=25°C)

| Parameter                                                         |                                                             | Symbol             | Ratings | Unit |
|-------------------------------------------------------------------|-------------------------------------------------------------|--------------------|---------|------|
| Input                                                             | Power Dissipation at(or below) 25°C Free Air Temperature    | P <sub>d</sub>     | 75      | mW   |
|                                                                   | Reverse Voltage                                             | V <sub>R</sub>     | 5       | V    |
|                                                                   | Forward Current                                             | I <sub>F</sub>     | 50      | mA   |
|                                                                   | Peak Forward Current<br>Pulse width ≤ 100 μs, Duty cycle=1% | I <sub>FP</sub>    | 1       | A    |
| Output                                                            | Collector Power Dissipation                                 | P <sub>C</sub>     | 100     | mW   |
|                                                                   | Collector Current                                           | I <sub>C</sub>     | 50      | mA   |
|                                                                   | Collector-Emitter Voltage                                   | B V <sub>CEO</sub> | 30      | V    |
|                                                                   | Emitter-Collector Voltage                                   | B V <sub>ECO</sub> | 5       | V    |
| Operating Temperature                                             |                                                             | Topr               | -20~+70 | °C   |
| Storage Temperature                                               |                                                             | Tstg               | -30~+80 | °C   |
| Lead Soldering Temperature<br>(1/16 inch from 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 <sub>F</sub>           | ---  | 1.2  | 1.6  | V    | I <sub>F</sub> =20mA                                                 |
|                 | Reverse Current        | I <sub>R</sub>           | ---  | ---  | 10   | μA   | V <sub>R</sub> =5V                                                   |
|                 | Peak Wavelength        | λ <sub>p</sub>           | ---  | 940  | ---  | nm   | ---                                                                  |
|                 | View Angle             | 2×1/2                    | ---  | 110  | ---  | Deg  | I <sub>F</sub> =20mA                                                 |
| Output          | Dark Current           | I <sub>CEO</sub>         | ---  | ---  | 100  | nA   | V <sub>CE</sub> =10V                                                 |
|                 | C-E Saturation Voltage | V <sub>CE</sub><br>(sat) | ---  | ---  | 0.4  | V    | I <sub>C</sub> =2mA<br>I <sub>B</sub> =0.1mA                         |
| Light Current   |                        | I <sub>C</sub> (ON)      | 0.1  | ---  | ---  | mA   | V <sub>CE</sub> =5V                                                  |
| Leakage Current |                        | I <sub>CEOD</sub>        | ---  | ---  | 1    | μA   | I <sub>F</sub> =20mA                                                 |
| Speed           | Rise time              | t <sub>r</sub>           | ---  | 20   | ---  | μsec | V <sub>CE</sub> =2V<br>I <sub>C</sub> =100 μA<br>R <sub>L</sub> =1KΩ |
|                 | Fall time              | t <sub>f</sub>           | ---  | 20   | ---  | μsec |                                                                      |

## Typical Characteristics For IR

Fig. 1 Forward Current vs. Ambient Temperature

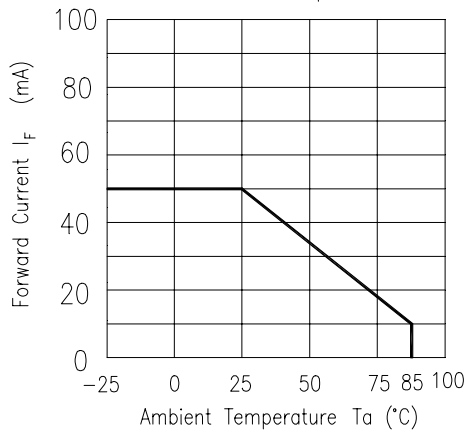


Fig. 2 Spectral Distribution

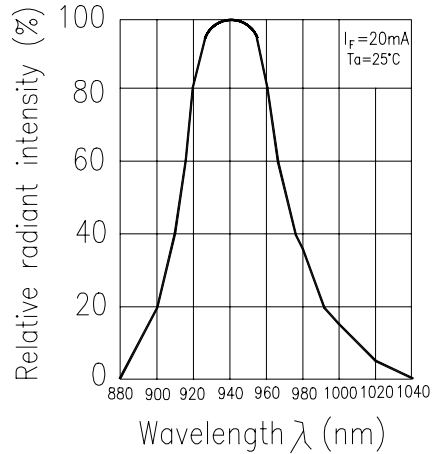


Fig. 3 Peak Emission Wavelength vs. Ambient Temperature

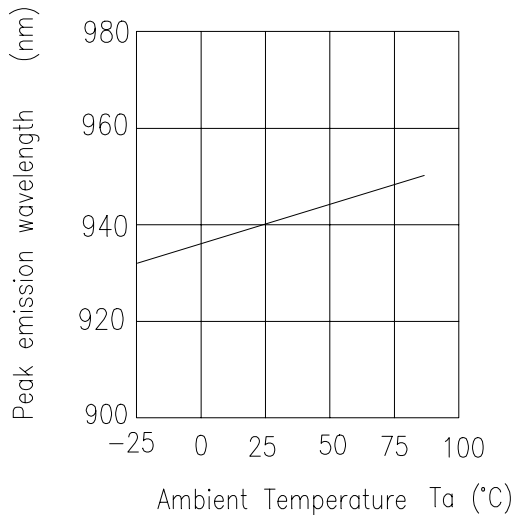


Fig. 4 Forward Current vs. Forward Voltage

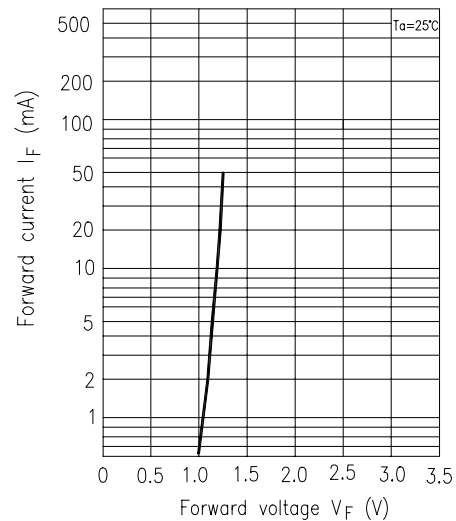


Fig. 5 Forward Voltage vs. Ambient Temperature

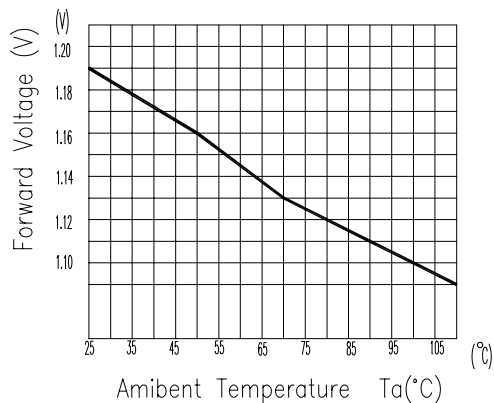
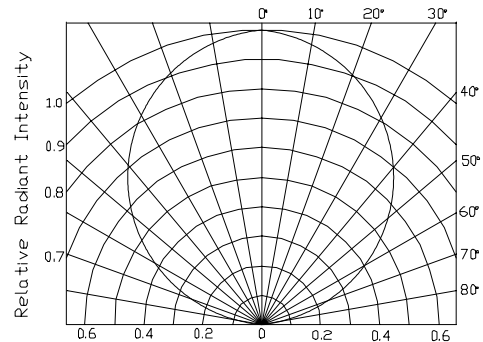


Fig. 6 Relative Radiant Intensity vs. Angular Displacement



## Typical Characteristics

Fig.1 Collector Power Dissipation vs. Ambient Temperature

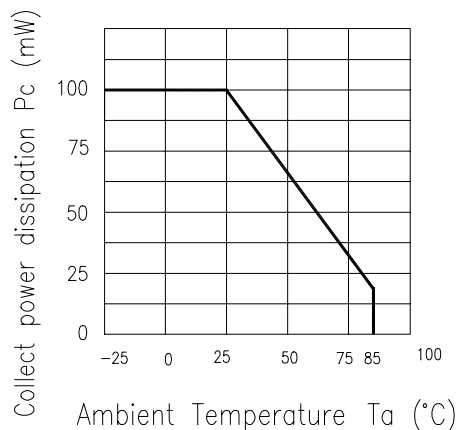


Fig.2 Collector Dark Current vs. Ambient Temperature

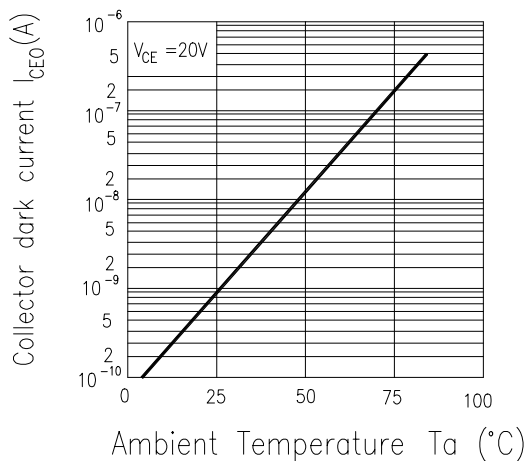


Fig. 3 Relative Collector Current vs. Ambient Temperature

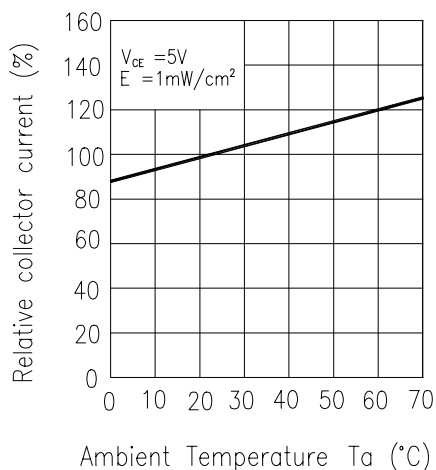


Fig.4 Collector Current vs. Irradiance

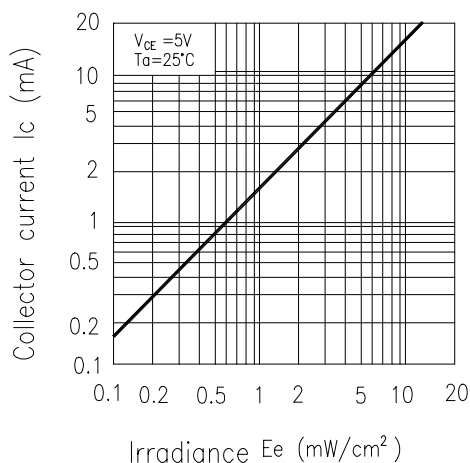


Fig.5 Spectral Sensitivity

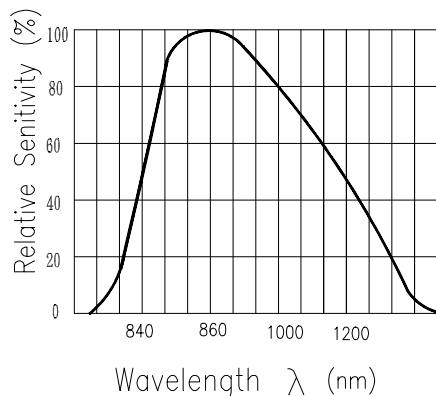
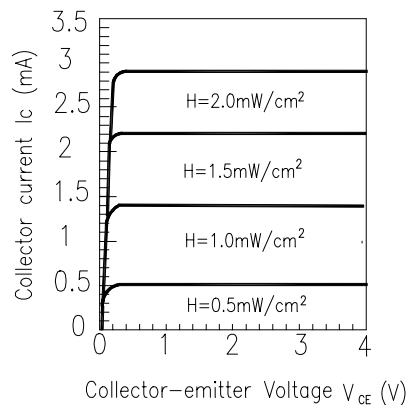


Fig.6 Collector Current vs. Collector-emitter Voltage



## Typical Characteristics For ITR

Fig.7 Relative Collector Current vs. Distance between Sensor and Al Evaporation Galss

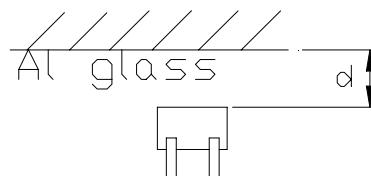
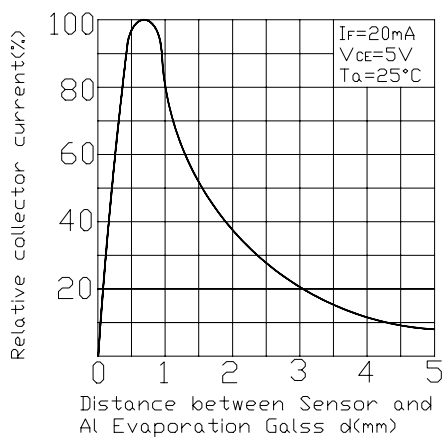


Fig.8 Relative Collector Current vs. Card Moving Distance (1)

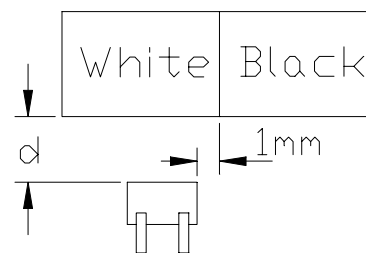
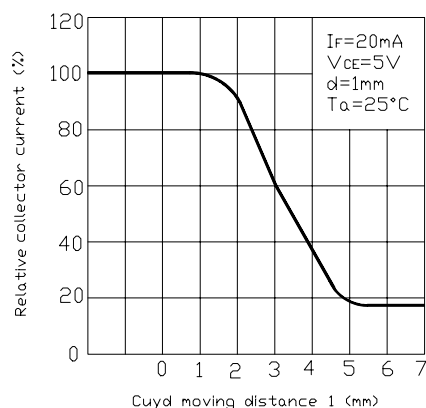
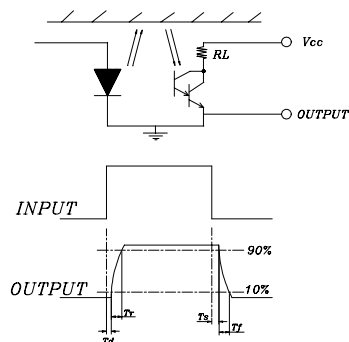
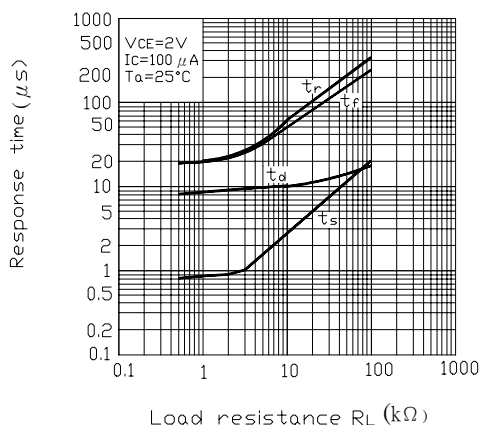


Fig.9 Response Time vs. Load Resistance (GP2S24/GP2S26/GP2S27)



### ■ Reliability test item and condition

The reliability of products shall be satisfied with item listed below:

Confidence level :90%

LTPD:10%

| Parameter                | Purpose & Condition                                                                                                                                                                                                                                                                                                                                                                                                                                         | Failure Judgement Criteria                                                                                                                                  | Samples(n)<br>Defective(c) |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| Temperature Cycle        | Evaluates product's ability to withstand exposure to high temperature, low temperature, and temperature variation between two limit temperature. Standard test Condition:<br>$\begin{array}{cccc} 85^{\circ}\text{C} & \sim & 25^{\circ}\text{C} & \sim & -55^{\circ}\text{C} & \sim & 25^{\circ}\text{C} \\ \downarrow & & \downarrow & & \downarrow & & \downarrow \\ 30\text{min} & & 5\text{min} & & 30\text{min} & & 5\text{min} \end{array}$ 50 cycle | $I_R \geq U \times 2$<br>$I_{c(on)} \leq L \times 0.8$<br>$V_F \geq U \times 1.2$<br><br>U : Upper specification limit<br><br>L : Lower specification limit | n =22 , c=0                |
| Thermal Shock            | Evaluates product's ability to withstand rapid temperature change Standard test Condition:<br>$\begin{array}{ccc} 85^{\circ}\text{C} & \sim & -55^{\circ}\text{C} \\ 5\text{min (10 sec)} & & 5\text{min} \end{array}$ 50cycle                                                                                                                                                                                                                              |                                                                                                                                                             | n =22 , c=0                |
| High Temperature Storage | Evaluates product's ability to withstand prolonged storage at high temperature Standard test Condition:<br>Temperature : 100 °C<br>Time : 1000hrs                                                                                                                                                                                                                                                                                                           |                                                                                                                                                             | n =22 , c=0                |
| Low Temperature Storage  | Evaluates product's ability to withstand prolonged storage at low temperature Standard test Condition:<br>Temperature : -55 °C<br>Time : 1000hrs                                                                                                                                                                                                                                                                                                            |                                                                                                                                                             | n =22 , c=0                |

| Parameter                             | Purpose & Condition                                                                                                                                                                        | Failure Judgement Criteria                                                                                             | Samples(n)<br>Defective(c) |
|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|----------------------------|
| Operating Life Test                   | Evaluates product's endurance to prolonged electrical or temperature stresses. Standard test Condition:<br><br>$V_{CE}=5V$<br>$I_F=20mA$<br>Time : 1000hrs                                 | $I_R \geq U \times 2$<br>$I_{c(on)} \leq L \times 0.8$<br>$V_F \geq U \times 1.2$<br><br>U : Upper specification limit | n =22 , c=0                |
| High Temperature<br><br>High Humidity | Evaluates product's ability to withstand prolonged storage at high temperature and high humidity. Standard test Condition:<br>Temperature: 85°C<br>Relative humidity:85%<br>Time : 1000hrs | L : Lower specification limit                                                                                          | n =22 , c=0                |
| Soldering Heat                        | Evaluates product's ability to withstand soldering heat<br>Standard test conditions<br>Solder temperature : 260±5°C<br>Solder time : 5 seconds                                             |                                                                                                                        | n =22 , c=0                |

### Supplements

#### 1.Parts

##### (1) Chip

| Type | Material | Peak Wavelength |
|------|----------|-----------------|
| IR   | GaAs     | 940 nm          |

| Type | Material | Cutting Wavelength |
|------|----------|--------------------|
| PT   | Silicon  | 840 nm             |

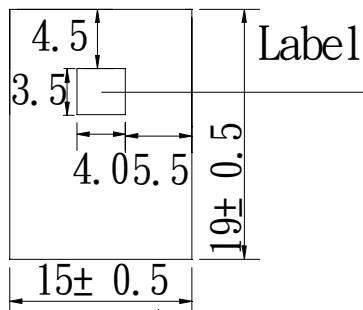
##### (2)Material

| Type     | Lead frame | Wire | Part Package |
|----------|------------|------|--------------|
| Material | Cu         | Gold | Epoxy        |

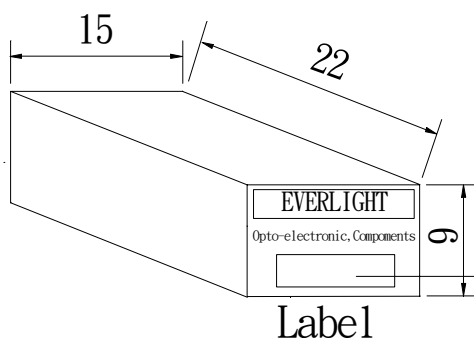


## ■ Packing Specifications

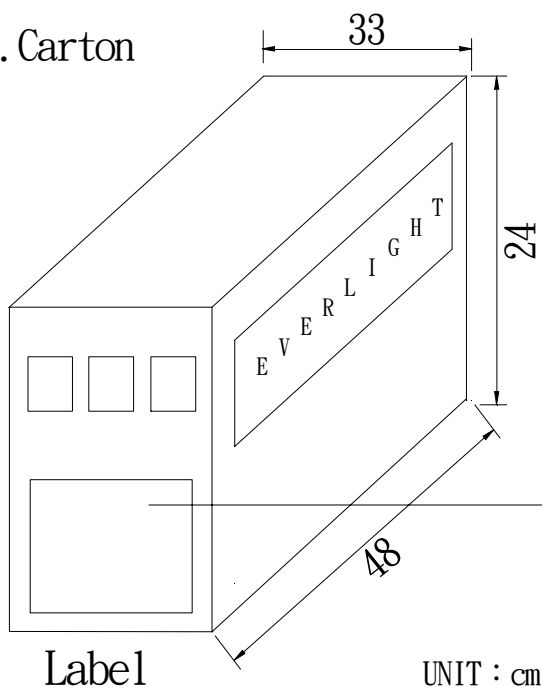
### 1. Bag



### 2. Box



### 3. Carton



UNIT : cm

EVERLIGHT

CPN:

P/N:

ITR8307

QTY: 1000

CAT:

HUE:

REF:

LOT NO:

MADE IN TAIWAN

CPN : Customer's Production

P/N : Production Number

QTY : Packing Quantity

CAT : Ranks

HUE : Peak Wavelength

REF : Reference

LOT NO : Lot Number

MADE IN TAIWAN : Production place

## ■ Packing Quantity Specification

1. 1000Pcs/1Volume , 1Volume/1Bag

2. 10Bags/1Carton