



EVERLIGHT ELECTRONICS CO., LTD.

DATA SHEET

MODEL NO : ITR20006

DATE : 08-29-2005

DEPARTMENT : R&D 2

REVISION : 2

| | | | |
|---|----------|---------|----------|
| RECEIVED | | | |
| <input checked="" type="checkbox"/> MASS PRODUCTION | | | |
| <input type="checkbox"/> PRELIMINARY | | | |
| <input type="checkbox"/> CUSTOMER DESIGN | | | |
| DEVICE NUMBER : DRX-006-109 | | | |
| PAGE :7 | | | |
| CUSTOMER | DESIGNER | CHECKER | APPROVER |
| | | | |

| | | |
|-----|--------------------------|--------------|
| 1.0 | Establish new data sheet | 2000.2.15 |
| | | |
| | | |
| | | |
| | | |
| REV | DESCRIPTION | RELEASE DATE |

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<http://www.everlight.com>



EVERLIGHT ELECTRONICS CO., LTD.

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Photointerrupter

MODEL NO : ITR20006

■ Features :

- Wide gap between lighter and detector (3.8mm)
- High sensing accuracy
- PWB mounting type package
- Pb free
- The product itself will remain within RoHS compliant version.

■ Description :

The ITR20005(Slot Optical switch) is a gallium arsenide infrared emitting diode which is coupled with a silicon photo transistor in a plastic housing. The package system is designed to optimize the mechanical resolution, coupling efficiency, and insulates ambient light. The ITR is useful in the application of interrupting the signal with printer, scanner, copier, or other opaque material, switching the output from an "ON" to "OFF" state.

■ Applications :

- Mouse
- Opto-electronic switches

| PART NO. | CHIP | LENS COLOR |
|----------|--------------|------------|
| | MATERIAL | |
| IR | GaAs ,GaAlAs | CLEAR |
| PT | Silicon | CLEAR |



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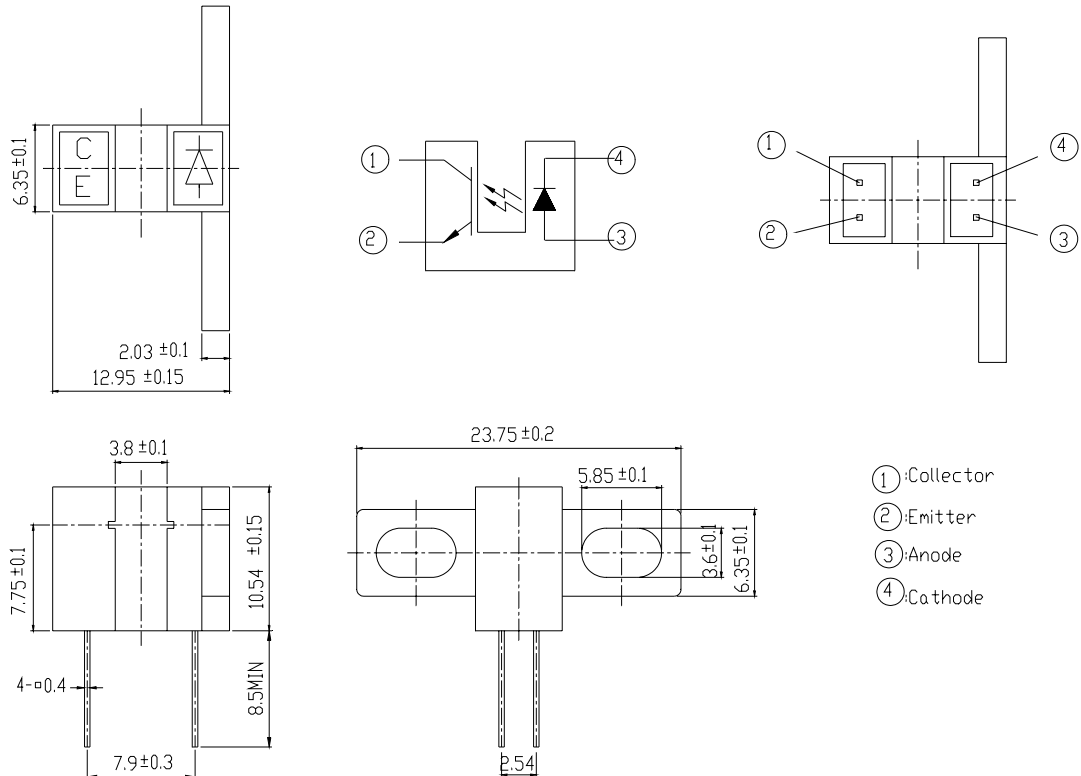
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Photointerrupter

MODEL NO : ITR20006

Package Dimension :



Notes :

- 1.All dimensions are in millimeter.
- 2.General tolerance: ± 0.1 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. EVERIGHT 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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■ 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 _R | 5 | V |
| | Forward Current | I _F | 50 | mA |
| | Peak Forward Current Pulse width ≤ 100 μs, Duty cycle=1% | I _{FP} | 1 | A |
| Output | Collector Power Dissipation | P _C | 75 | mW |
| | Collector Current | I _C | 20 | mA |
| | Collector-Emitter Voltage | V _{CEO} | 30 | V |
| | Emitter-Collector Voltage | V _{ECO} | 5 | V |
| Operating Temperature | | Topr | -25~+85 | °C |
| Storage Temperature | | Tstg | -40~+85 | °C |
| Lead Soldering Temperature (1/16 inch from body for 5 seconds) | | Tsol | 260 | °C |

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

| Parameter | | Symbol | Min. | Typ. | Max. | Unit | Condition |
|-------------------------|------------------------|----------------------|------|------|------|------|--|
| Input | Forward Voltage | V _F | - | 1.2 | 1.6 | V | I _F =20mA |
| | Reverse Current | I _R | - | - | 10 | μA | V _R =5V |
| | Peak Wavelength | λ _P | - | 940 | - | nm | I _F =20mA |
| | View Angle | 2□1/2 | - | 60 | - | Deg | I _F =20mA |
| Output | Collector Dark Current | I _{CEO} | - | - | 100 | nA | V _{CE} =10V Ee=0mW/cm ² |
| Transfer Characteristic | C-E Saturation Voltage | V _{CE(sat)} | - | - | 0.4 | V | I _C =2mA Ee=1mW/cm ² |
| | Collector Current | I _{C(ON)} | 0.5 | - | - | mA | V _{CE} =5V I _F =20mA |
| | Rise time | t _r | - | 20 | - | μsec | V _{CE} =5V |
| | Fall time | t _f | - | 20 | - | μsec | I _C =1mA R _L =1KΩ |



Photointerrupter

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Typical Electrical/Optical/Characteristics Curves For IR

Fig. 1 Forward Current vs. Ambient Temperature

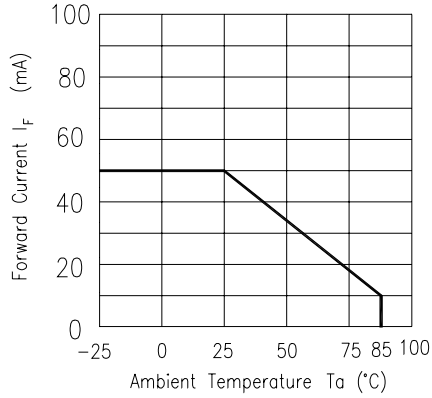


Fig. 2 Spectral Distribution

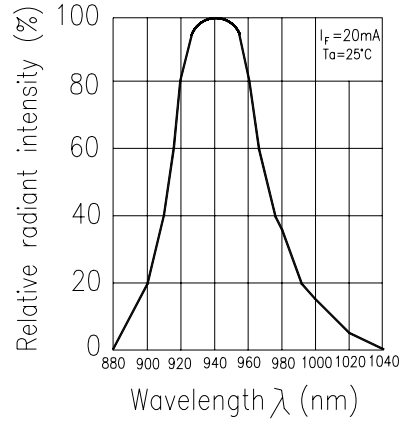


Fig. 3 Peak Emission Wavelength vs. Ambient Temperature

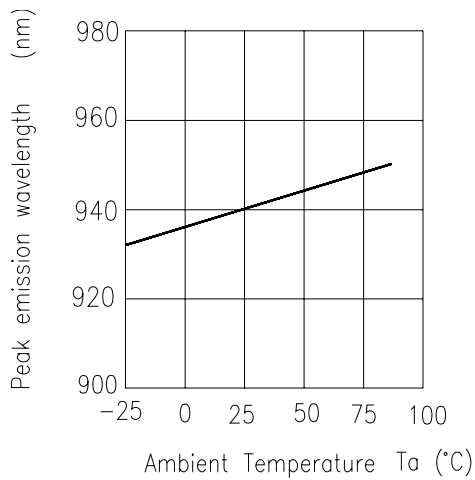


Fig. 4 Forward Current vs. Forward Voltage

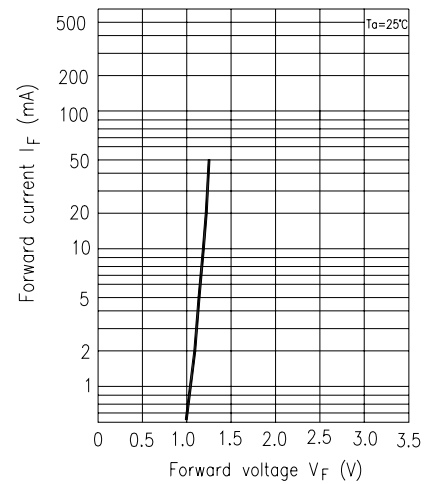


Fig. 5 Forward Voltage vs. Ambient Temperature

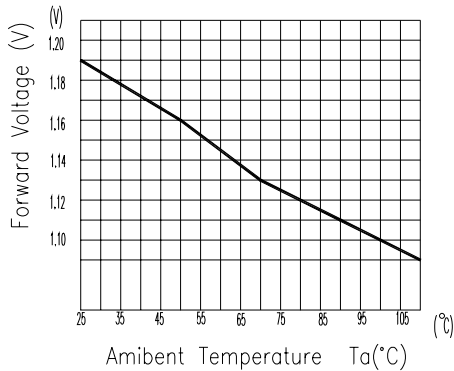
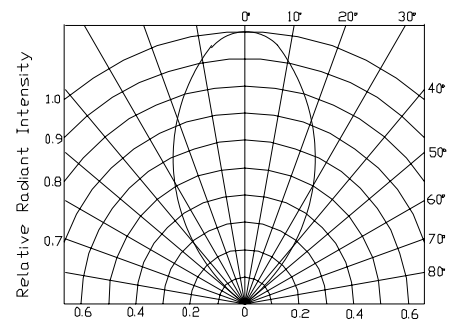


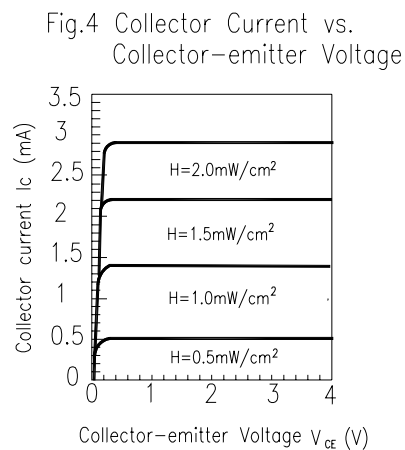
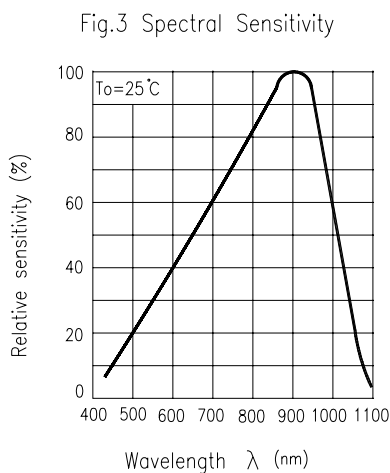
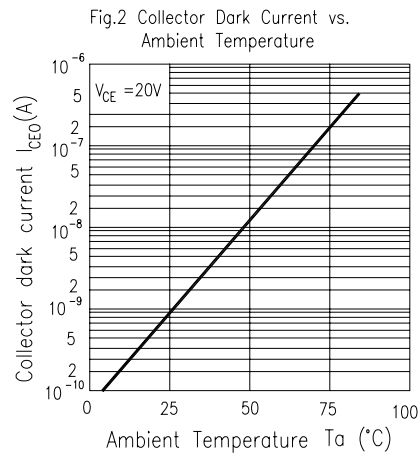
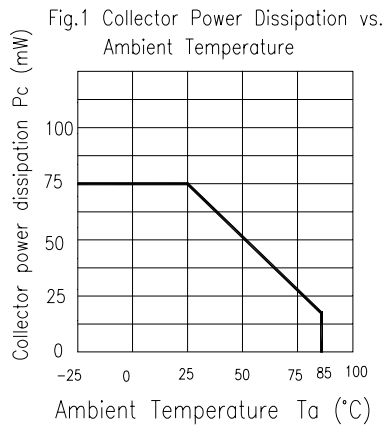
Fig. 6 Relative Radiant Intensity vs. Angular Displacement



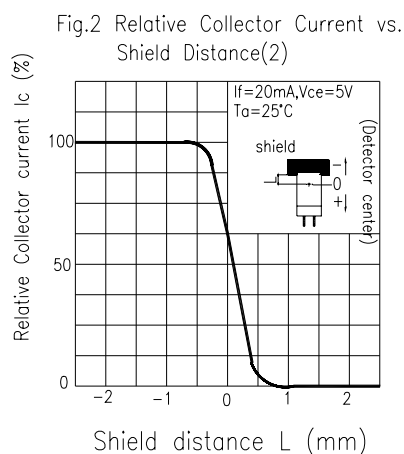
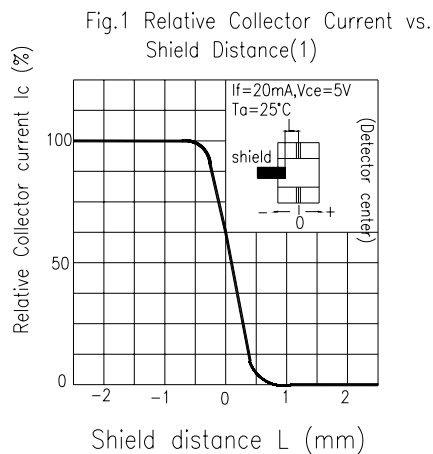
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■ Typical Electrical/Optical/Characteristics Curves For PT



■ Typical Electrical/Optical/Characteristics Curves For ITR





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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/ Cycle | Sample Size | Failure Judgement Criteria | Ac/Re |
|-----|----------------------------------|--|----------------------|-------------|---|-------|
| 1 | Solder Heat | TEMP : 260°C ± 5 °C | 5 sec | 22 PCs | $I_{c(on)} \leq L \times 0.8$ L :Lower specification limit | 0/1 |
| 2 | Temperature Cycle | H : +85°C 30 min ↑ 5 min ↓ L : -55°C 30 min | 50 cycle | 22 PCs | | 0/1 |
| 3 | Thermal Shock | H : +100°C 5 min ↑ 10 sec ↓ L : -10°C 30 min | 50 cycle | 22 PCs | | 0/1 |
| 4 | High Temperature Storage | TEMP. : +100°C | 1000 hrs | 22 PCs | | 0/1 |
| 5 | Low Temperature Storage | TEMP. : -55°C | 1000 hrs | 22 PCs | | 0/1 |
| 6 | DC Operating Life | $V_{CE}=5V$ | 1000 hrs | 22 PCs | | 0/1 |
| 7 | High Temperature / High Humidity | 85°C / 85% R.H. | 1000 hrs | 22 PCs | | 0/1 |



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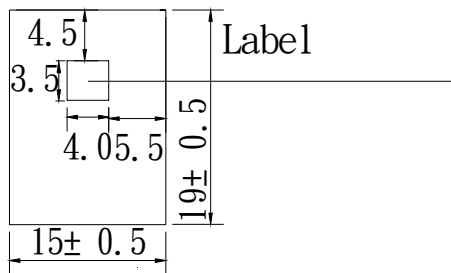
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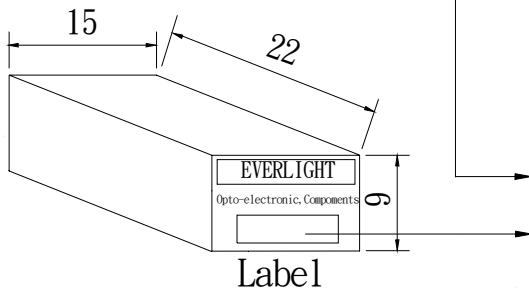
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■ Packing Specifications

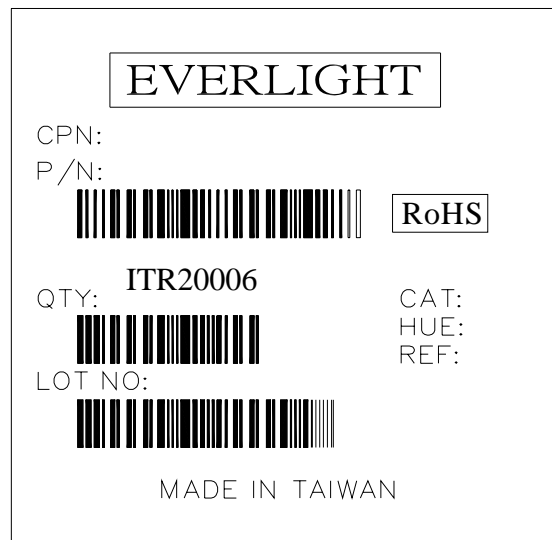
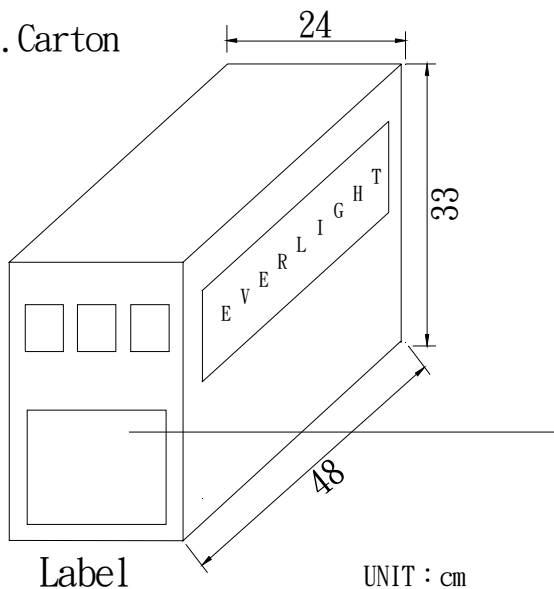
1. Bag



2. Box



3. Carton



CPN : Customer's Production Number
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. 150 Pcs /1Bag , 4 Bags /1Box
2. 10 Boxes /1Carton