# Technical Data Sheet

# Opto Interrupter

**ITR8307/F43**

## Features

- Fast response time
- High sensitivity
- Cut-Off visible wavelength
- Thin
- Compact
- Pb free
- This product itself will remain within RoHS compliant version.

## Descriptions

ITR8307/F43 is a light reflection switch which includes a GaAs IR-LED transmitter and a NPN photo-transistor with a high sensitive receiver for short distance, operating in the infrared range. Both components are mounted side- by- side in a plastic package.

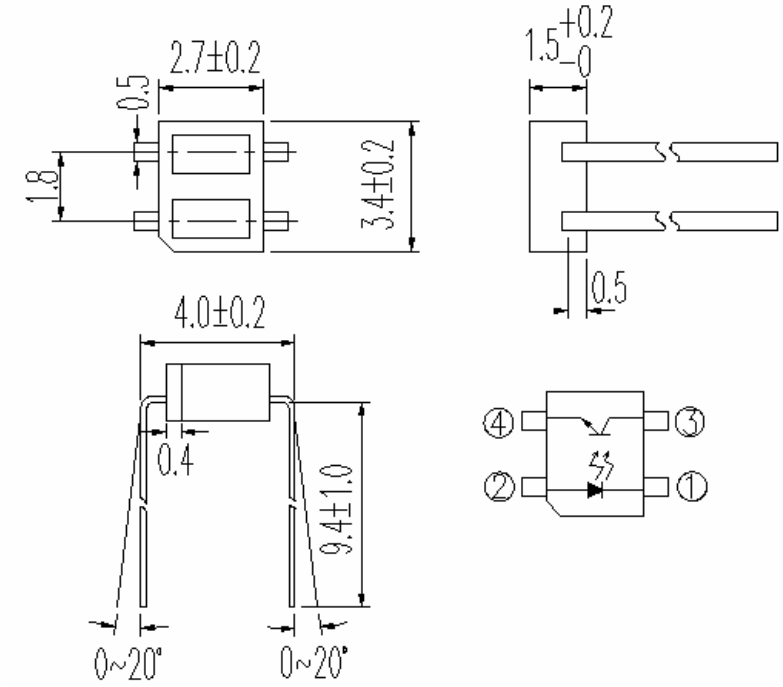
## Applications

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

## Device Selection Guide

| Device No. | Chip Material |
|---|---|
| IR | GaAs |
| PT | Silicon |

## Package Dimensions




## Absolute Maximum Ratings (Ta=25℃)

| Parameter | | Symbol | Ratings | Unit |
|---|---|---|---|---|
| Input | Power Dissipation at(or below) 25℃ Free Air Temperature | Pd | 75 | mW |
| | Reverse Voltage | $V_R$ | 5 | V |
| | Forward Current | $I_F$ | 50 | mA |
| | Peak Forward Current (*1) | $I_{FP}$ | 1 | A |
| Output | Collector Power Dissipation | $P_C$ | 100 | mW |
| | Collector Current | $I_C$ | 50 | mA |
| | Collector-Emitter Voltage | B $V_{CEO}$ | 30 | V |
| | Emitter-Collector Voltage | B $V_{ECO}$ | 5 | V |
| Operating Temperature | | Topr | -25~+85 | ℃ |
| Storage Temperature | | Tstg | -30~+90 | ℃ |
| Lead Soldering Temperature (*2) | | Tsol | 260 | ℃ |

(＊1) tw=100 μ sec. , T=10 msec. (＊2) t=5 Sec

## ■Electro-Optical Characteristics (Ta=25℃)

| Parameter | | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|---|---|---|---|---|---|---|---|
| Input | Forward Voltage | $V_F$ | -- | 1.2 | 1.6 | V | $I_F$ =20mA |
| | Reverse Current | $I_R$ | -- | -- | 10 | μA | $V_R$=6V |
| | Peak Wavelength | λP | -- | 940 | -- | nm | $I_F$ =20mA |
| Output | Dark Current | $I_{CEO}$ | -- | -- | 1 | μA | VCE=10 V, $I_F$=0 mA |
| Transfer Characteristics | Collector Current | $I_{C(ON)}$ | 0.1 | -- | -- | mA | $V_{CE}$=5V, $I_F$=20mA |
| | Leakage Current | $I_{LEAK}$ | -- | -- | 1 | μA | $V_{CE}$=2V, $I_F$ =4mA |
| | Rise time | tr | -- | 20 | -- | μs | $V_{CE}$=2V $I_C$=10mA $R_L$=100Ω, d=1mm |
| | Fall time | tf | -- | 20 | -- | μs | |

## Typical Electrical/Optical/Characteristics Curves for IR

Fig. 1 Forward Current vs. Ambient Temperature

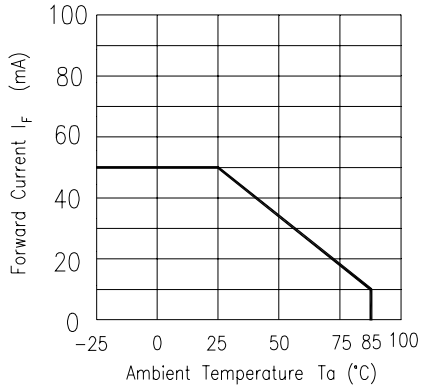



Fig. 2 Spectral Distribution

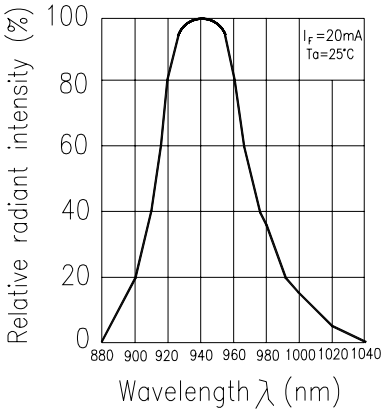



Fig. 3 Peak Emission Wavelength vs. Ambient Temperature

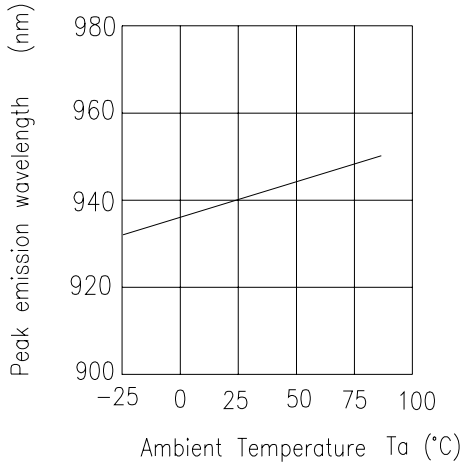



Fig. 4 Forward Current vs. Forward Voltage

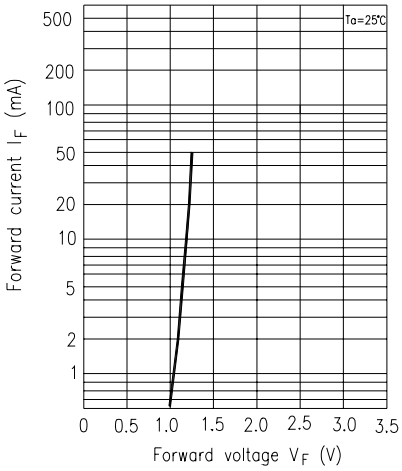



Fig. 5 Forward Voltage vs. Ambient Temperature

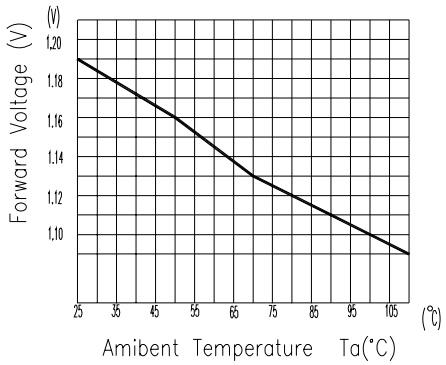
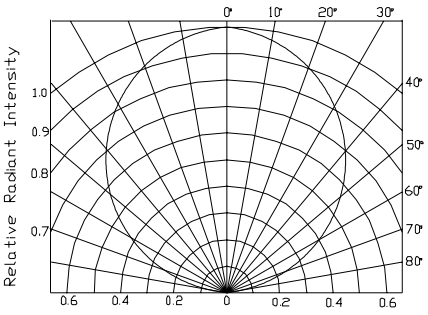



Fig. 6 Relative Radiant Intensity vs. Angular Displacement



## Typical Electrical/Optical/Characteristics Curves for PT

Fig.1 Collector Power Dissipation vs. Ambient Temperature

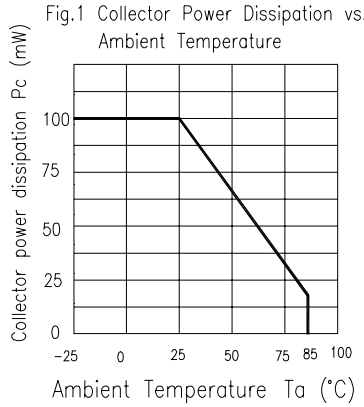



Fig.2 Collector Dark Current vs. Ambient Temperature

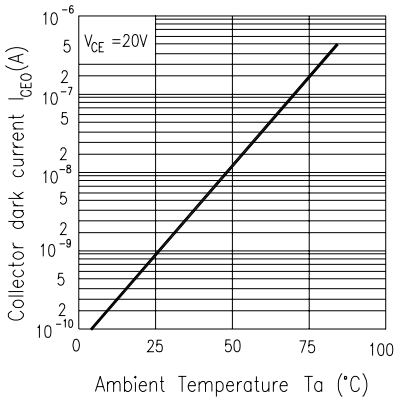



Fig. 3 Relative Collector Current vs. Ambient Temperature

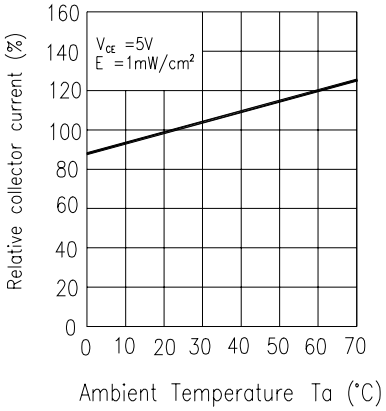



Fig.4 Collector Current vs. Irradiance

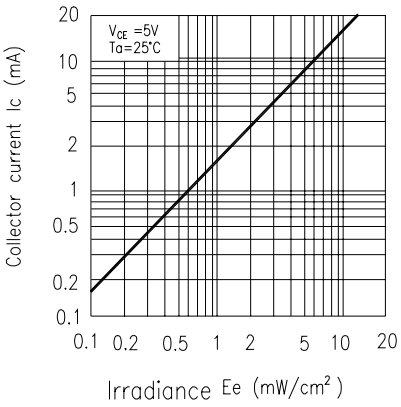



Fig.5 Spectral Sensitivity

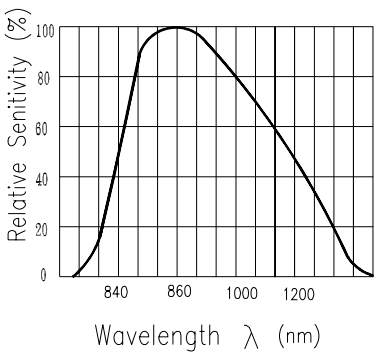
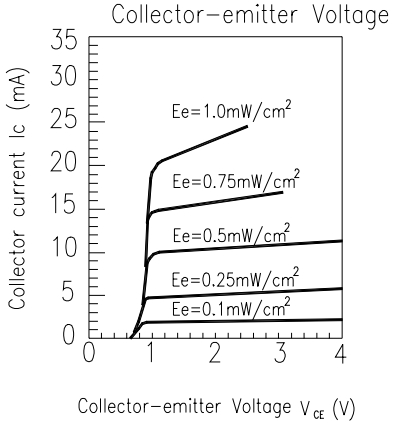
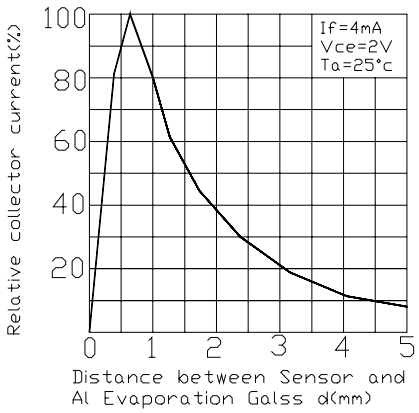



Fig.6 Collector Current vs. Collector-emitter Voltage



## Typical Electrical/Optical/Characteristics Curves for ITR

Fig.1 Relative Collector Current vs. Distance between Sensor and Al Evaporation Galss



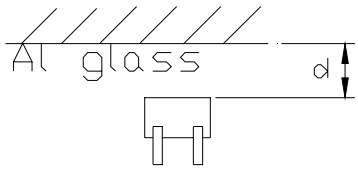
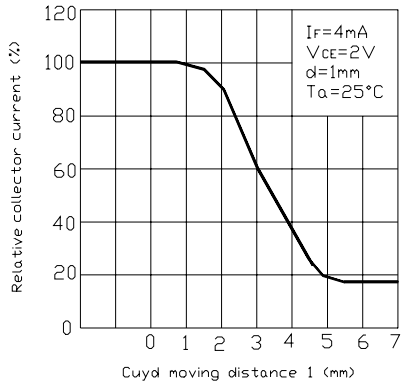




Fig.2 Relative Collector Current vs. Card Moving Distance (1)



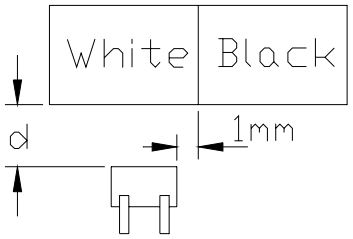
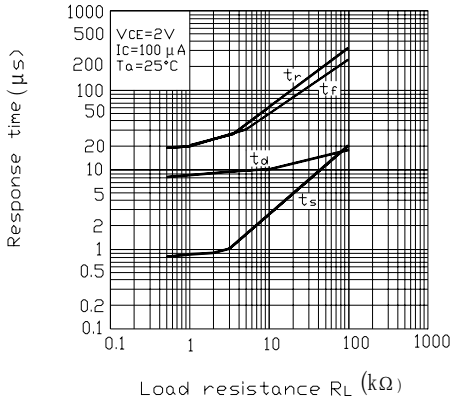
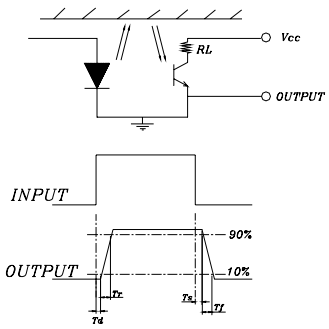




Fig.3 Response Time vs. Load Resistance



## ■Reliability Test Item And Condition

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

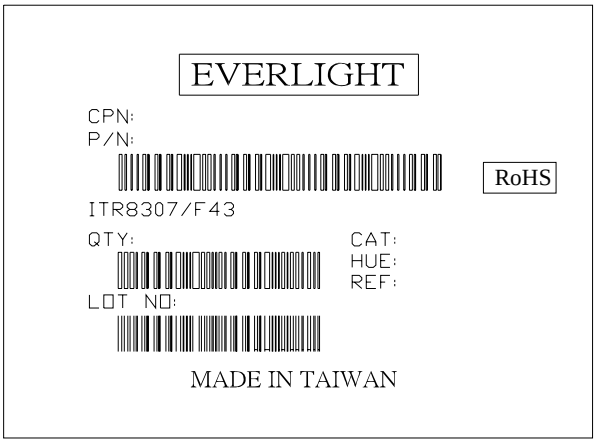
Confidence level：90%　LTPD：10%

| No. | 項目 Item | 測試條件 Test condition | Test Hours/cycle | Sample | Ac/Re |
|---|---|---|---|---|---|
| 1 | 銲錫耐熱 Solder Heat | Temp. 260℃±5℃ | 10secs | 76PCS | 0/1 |
| 2 | 溫度循環<br>Temp. cycle | H:100℃ 15mins<br>↕ 5mins<br>L:-40℃ 15mins | 300Cycle | 76PCS | 0/1 |
| 3 | 冷熱衝擊<br>Thermal shock | H:100℃ 5mins<br>↕ 10secs<br>L:-10℃ 5mins | 300Cycle | 76PCS | 0/1 |
| 4 | 高溫保存<br>High temp. storage | Temp.:100℃ | 1000hrs | 76PCS | 0/1 |
| 5 | 低溫保存<br>Low temp. storage | Temp.:-40℃ | 1000hrs | 76PCS | 0/1 |
| 6 | 壽命試驗<br>Dc operating life | Temp.:25℃<br>$I_F$=20mA and $V_{CE}$=5V | 1000hrs | 76PCS | 0/1 |
| 7 | 高溫高濕<br>High temp./High humidity | 85℃/85%R.H | 1000hrs | 76PCS | 0/1 |
| 8 | 高溫點亮<br>High temp. Burn-in | Temp.:85℃<br>$I_F$=20mA and $V_{CE}$=5V | 1000hrs | 76PCS | 0/1 |
| 9 | 低溫點亮<br>Low temp. Burn-in | Temp.:-40℃<br>$I_F$=20mA and $V_{CE}$=5V | 1000hrs | 76PCS | 0/1 |

## Packing Quantity Specification

1. 160 Pcs/ Per Tube
2. 18 Tubes / Inner Carton
3. 12 Inner Cartons / Outside Carton

## Label Form Specification




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

## ■Recommended Method of Storage

The following are general recommendations for moisture sensitive level (MSL) 4 storage and use：

- ○ Shelf life in sealed bag: 12 months at < 40 °C and < 90% relative humidity (RH)
- ○ After bag is opened, devices that will be subjected to reflow solder or other high temperature process must：
  a) Mounted within 72 hours of factory conditions < 30 °C/60%RH, or
  b) b) Stored at <20% RH
- ○ Devices require bake, before mounting, if：
  Humidity Indicator Card is > 20% when read at 23 ± 5 °C
- ○ If baking is required, devices may be baked：
  a) 192 hours at 40℃,and <5% RH(dry air/nitrogen) or
  b) 96 hours at 60℃,and <5% RH for all device containers
  c) 24 hours at 125 °C

## 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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