



Technical Data Sheet OPTO INTERRUPTER ITR

ITR20507

■ Features

- Fast response time
- High sensitivity
- Thin and small package
- Pb free
- The product itself will remain within RoHS compliant version.

■ Descriptions

The **ITR20507** consists of an infrared emitting diode and a silicon phototransistor encased in a black thermo-plastic housing. The advantage of the device is the small package. Phototransistor receives radiation from the IR LED only, and avoids the noise from ambient light.

■ Applications

- Camera
- Copier
- Scanner
- Non-contact Switching

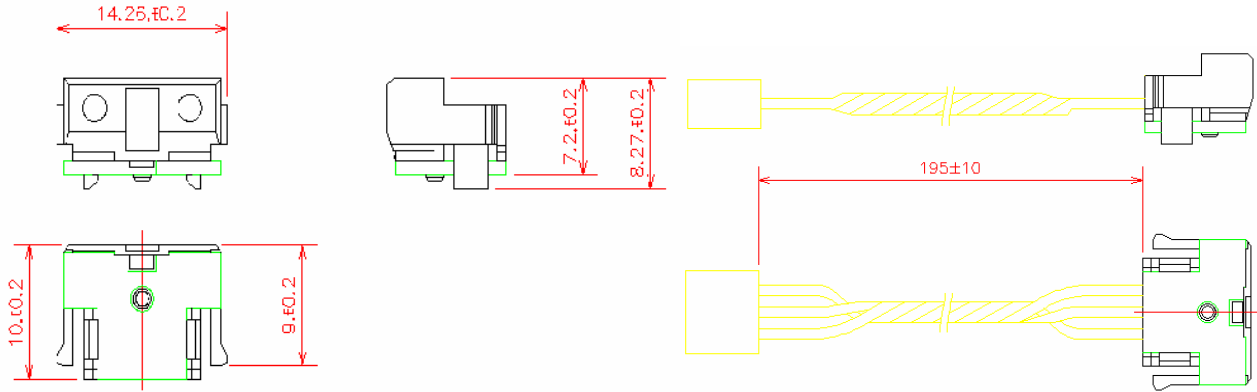
■ Device Selection Guide

Device No.	Chip Material
IR	GaAs
PT	Silicon

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Package Dimensions



- Notes:** 1.All dimensions are in millimeters
2.Tolerances unless dimensions $\pm 0.2\text{mm}$

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 (*1) Pulse width $\leq 100 \mu\text{s}$, Duty cycle=1%	I _{FP}	1	A
Output	Collector Power Dissipation	P _C	75	mW
	Collector Current	I _C	20	mA
	Collector-Emitter Voltage	B V _{CEO}	30	V
	Emitter-Collector Voltage	B V _{ECO}	5	V
Operating Temperature		T _{opr}	-25~+85	°C
Storage Temperature		T _{stg}	-40~+85	°C
Lead Soldering Temperature (*2)		T _{sol}	260	°C

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

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OPTO INTERRUPTER ITR**Electro-Optical Characteristics (Ta=25°C)**

Parameter		Symbol	Min.	Typ.	Max.	Unit	Conditions
Input	Forward Voltage	V_F	---	1.2	1.6	V	$I_F=20mA$
	Reverse Current	I_R	---	---	10	μA	$V_R=5V$
	Peak Wavelength	λ_P	---	940	---	nm	$I_F=20mA$
Output	Dark Current	I_{CEO}	---	1	100	nA	$V_{CE}=10V$
	C-E Saturation Voltage	$V_{CE(sat)}$	---	---	0.4	V	$I_C=2mA$ $E_e=1mW/cm^2$
	Peak Wavelength	λ_P	---	800	---	nm	$I_F=20mA$
Transfer Characteristics	Collector Current	$I_{C(ON)}$	0.2	---	5	mA	$V_{CE}=5V$, $I_F=20mA$
	Leakage Current	I_{CEOD}	---	---	1	μA	$V_{CE}=5V$ $I_F=20mA$
	Rise time	t_r	---	15	---	μsec	$V_{CE}=2V$ $I_C=1mA$
	Fall time	t_f	---	15	---	μsec	$R_L=1K\Omega$

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Typical Electrical/Optical/Characteristics Curves for IR

Fig. 1 Forward Current vs. Ambient Temperature

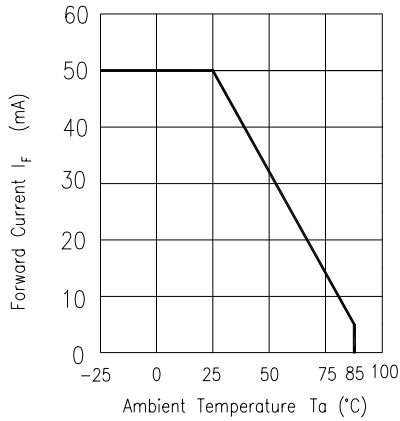


Fig. 2 Spectral Distribution

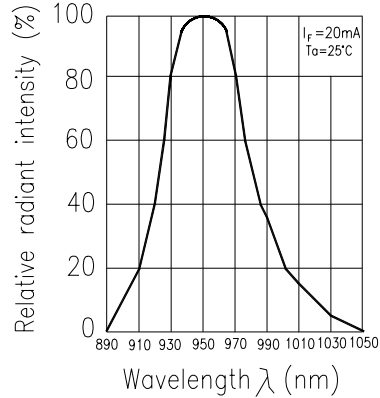


Fig. 3 Peak Emission Wavelength vs. Ambient Temperature

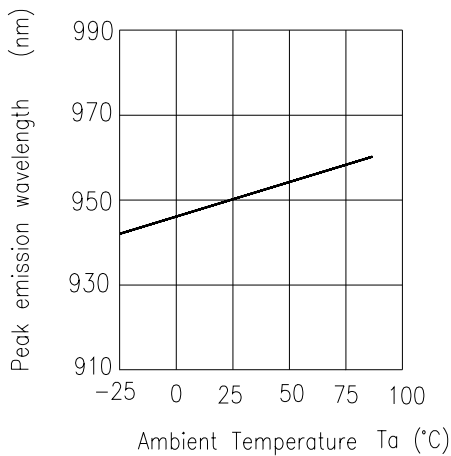


Fig. 4 Forward Current vs. Forward Voltage

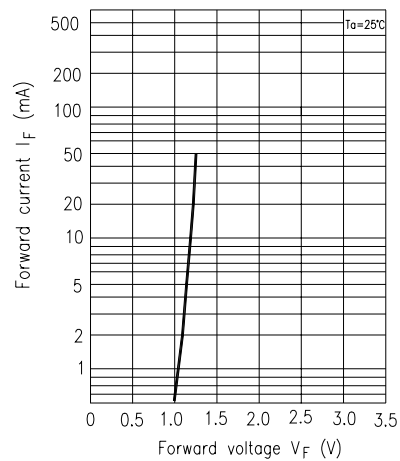


Fig. 5 Forward Voltage vs. Ambient Temperature

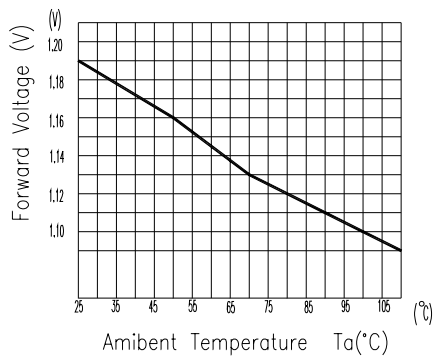
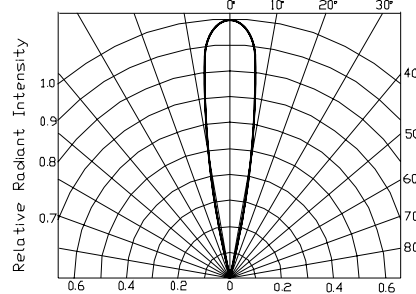


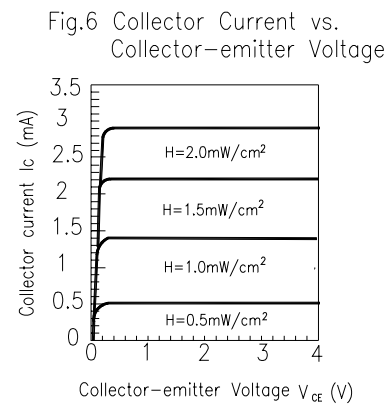
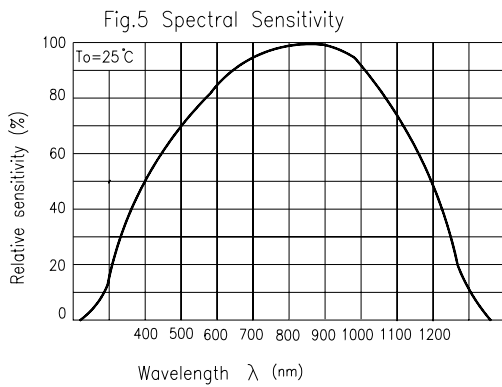
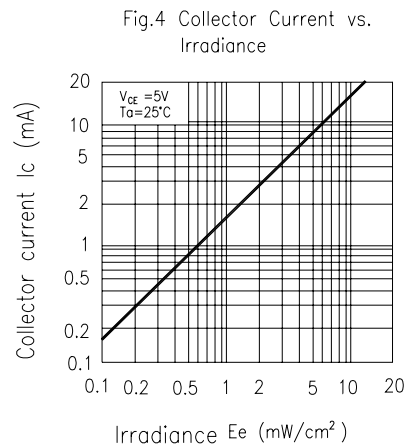
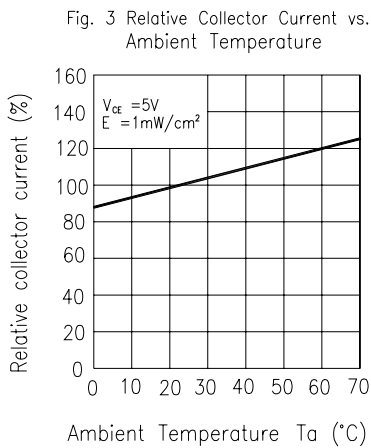
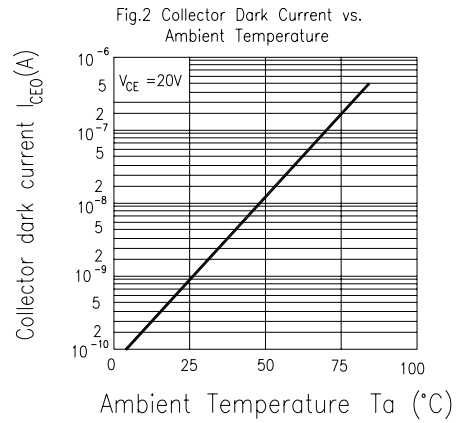
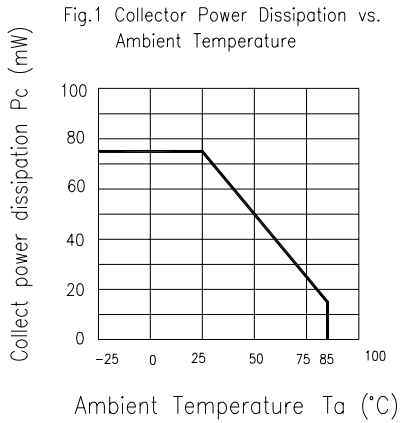
Fig. 6 Relative Radiant Intensity vs. Angular Displacement



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Typical Electrical/Optical/Characteristics Curves for PT





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ITR20507**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/ Cycles	Sample Sizes	Failure Judgment Criteria	Ac/Re
1	Solder Resistance	Ta = 260 ±3°C	10 ± 1 sec	22pcs	$I_R \geq U \times 2$ $E_e \leq L \times 0.8$ $V_F \geq U \times 1.2$ U : Upper Specification Limit L : Lower Specification Limit	0/1
2	Temperature Cycle	H : +100°C 15mins ↑ 5mins ↓ L : -40°C 15mins	50Cycles	22pcs		0/1
3	Thermal Shock	H : +100°C 5mins ↑ 10secs ↓ L : -10°C 5mins	50Cycles	22pcs		0/1
4	High Temperature Storage	TEMP. : +100°C	1000hrs	22pcs		0/1
5	Low Temperature Storage	TEMP. : -40°C	1000hrs	22pcs		0/1
6	DC Operating Life	V _{CE} =5V	1000hrs	22pcs		0/1
7	High Temperature/ High Humidity	85°C / 85% R.H	1000hrs	22pcs		0/1

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Packing Quantity Specification

200 pcs/1bag , 6 bags/1box , 10 boxes/1carton

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

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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