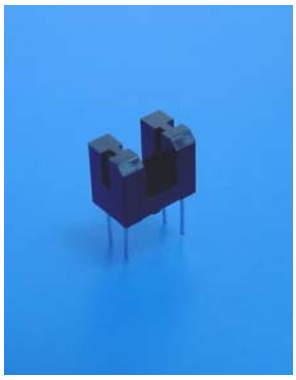
EVERLIGHT ELECTRONICS CO., LTD.

Technical Data Sheet
OPTO INTERRUPTER ITR

ITR20403

Features



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

Descriptions

The **ITR20403** 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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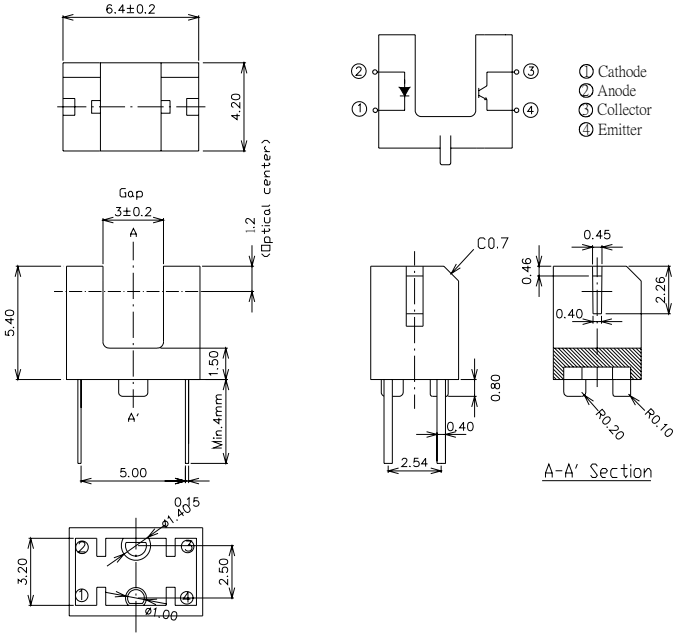
Package Dimensions



Notes: 1.All dimensions are in millimeters
2.Tolerances unless dimensions ±0.2mm

■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) 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	B V_{CEO}	30	V
	Emitter-Collector Voltage	B V_{ECO}	5	V
Operating Temperature		Topr	-25~+85	℃
Storage Temperature		Tstg	-40~+85	℃
Lead Soldering Temperature (*2)		Tsol	260	℃

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

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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=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 ,Ee=1mW/cm^2
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 R_L=1KΩ
	Fall time	t_f	---	15	---	μsec	

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Typical Electrical/Optical/Characteristics Curves for IR

Fig.1 Forward Current vs. Ambient Temperature

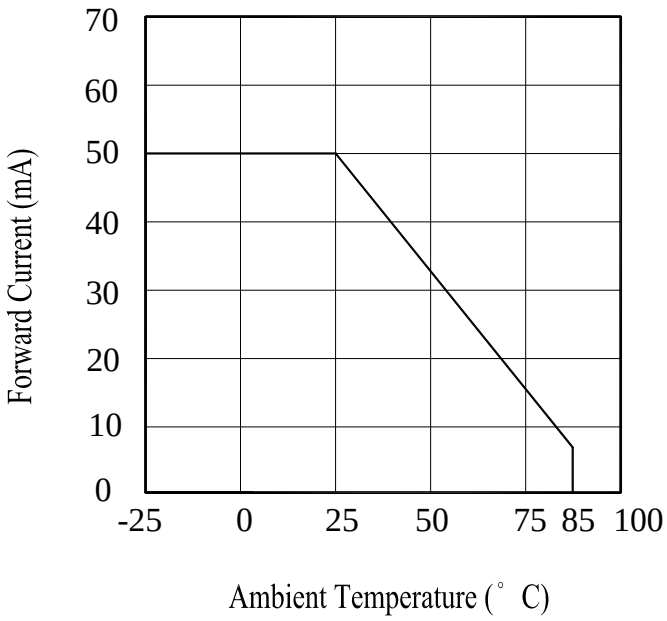


Fig.2 Spectral Distribution

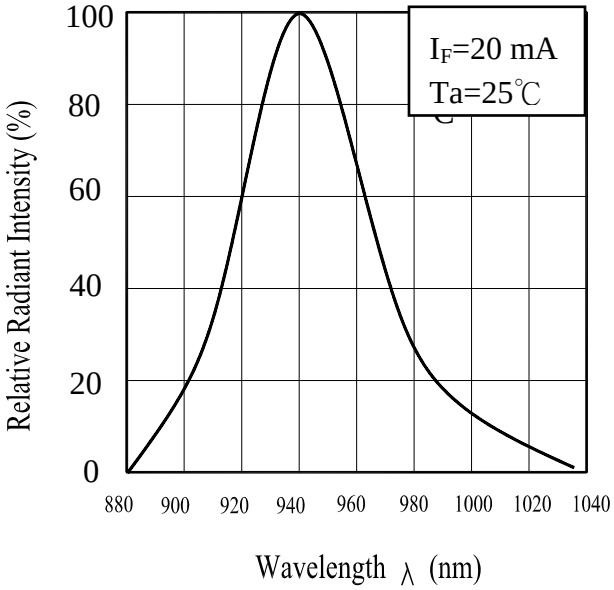


Fig.3 Peak Emission Wavelength Ambient Temperature

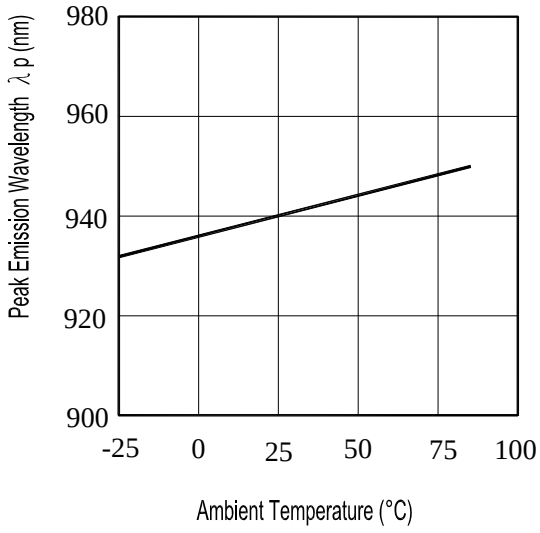
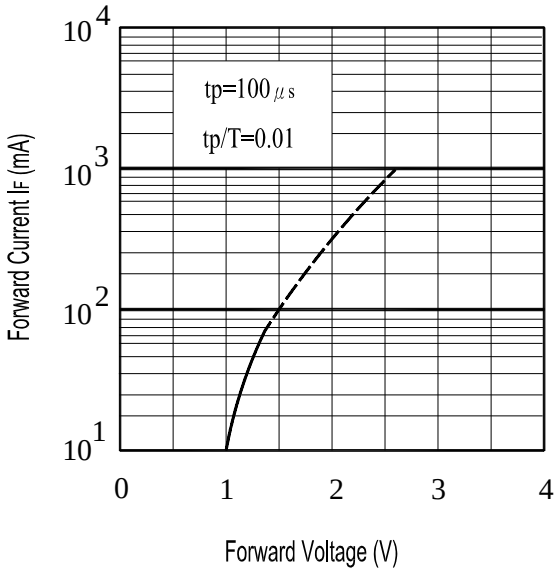


Fig.4 Forward Current vs. Forward Voltage



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. Fig.5 Forward Voltage vs.
Ambient Temperature(˚C)

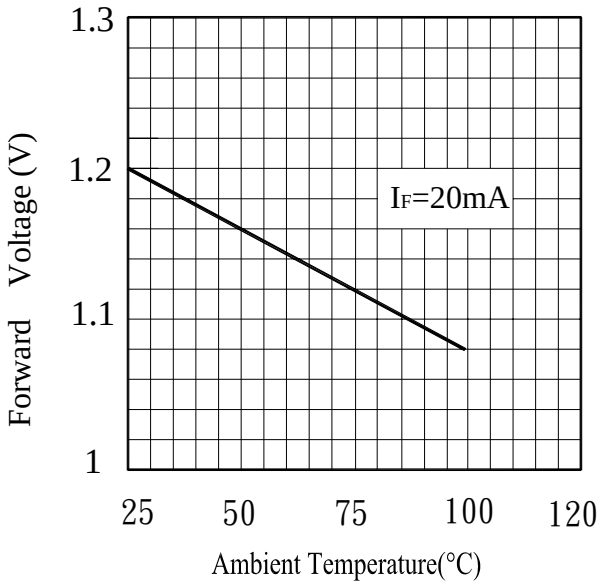
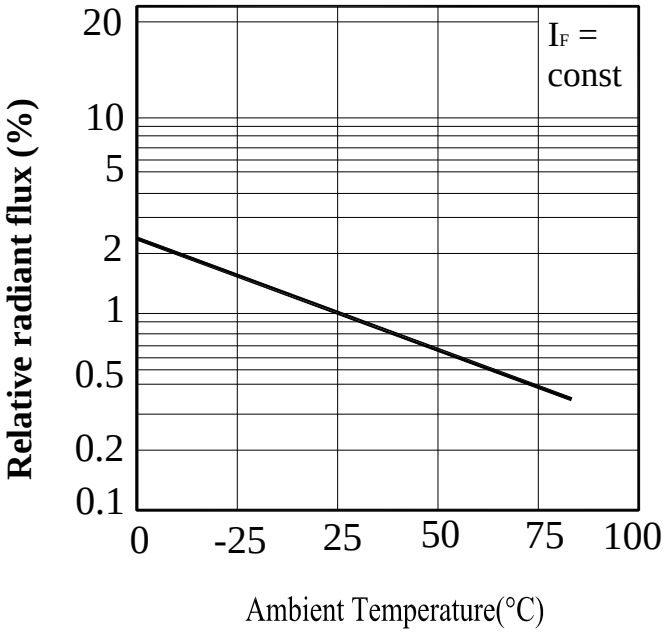


Fig.6 Relative Radiant Flux vs.
Ambient Temperature(˚C)



Typical Electrical/Optical/Characteristics Curves for PT

Fig.1 Collector Power Dissipation vs. Ambient Temperature

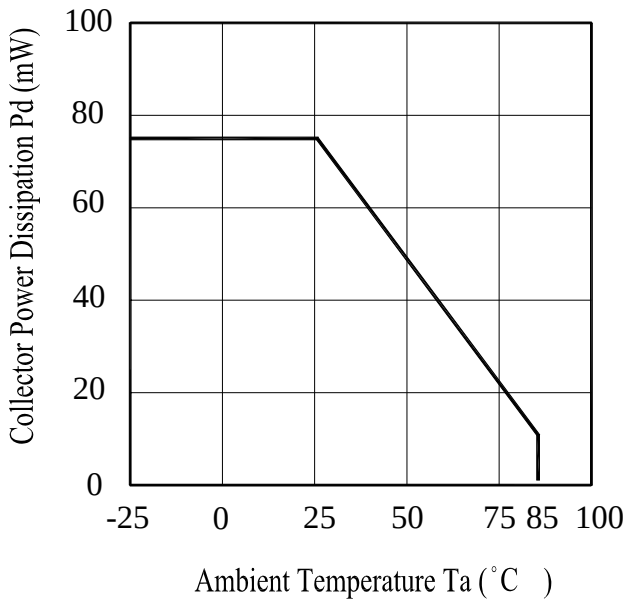


Fig.2 Spectral Sensitivity

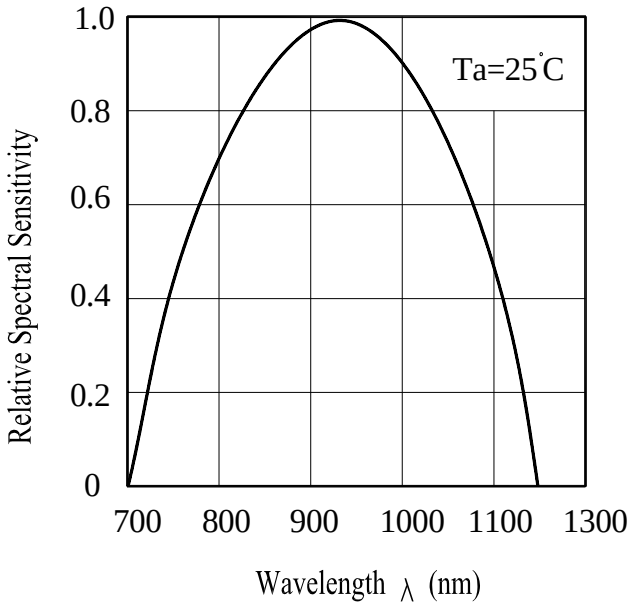


Fig.3. Collector Dark Current vs. Ambient Temperature

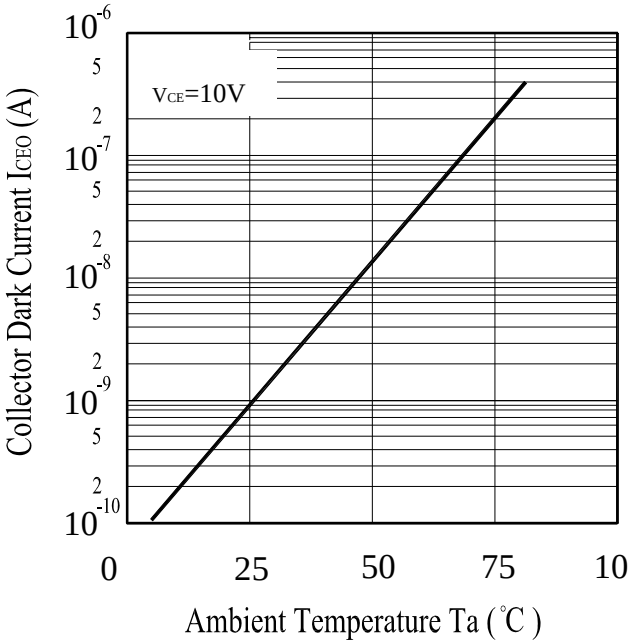
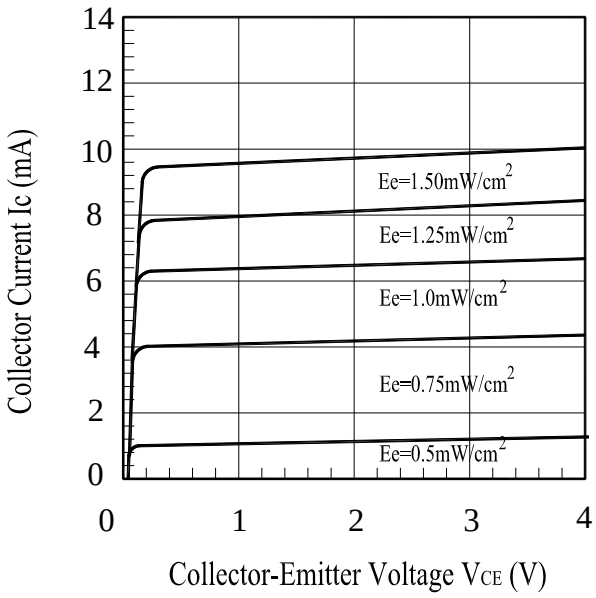


Fig.4 Collector Current vs. Collector-Emitter Voltage



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