Technical Data Sheet

Opto Interrupter

ITR20001/T



Features

- Fast response time
- High analytic
- High sensitivity
- Cut-off visible wavelength λ_P=940nm
- Pb Free
- This product itself will remain within RoHS compliant version.

Descriptions

The **ITR20001/T** consist of an infrared emitting diode and an NPN silicon phototransistor, encased side-by-side on converging optical axis in a black thermoplastic housing. The phototransistor receives radiation from the IR only . This is the normal situation. But when an reflecting object close to ITR , phototransistor receives the reflecting radiation .For additional component information, please refer to IR2424-3C and PT2424-6B.

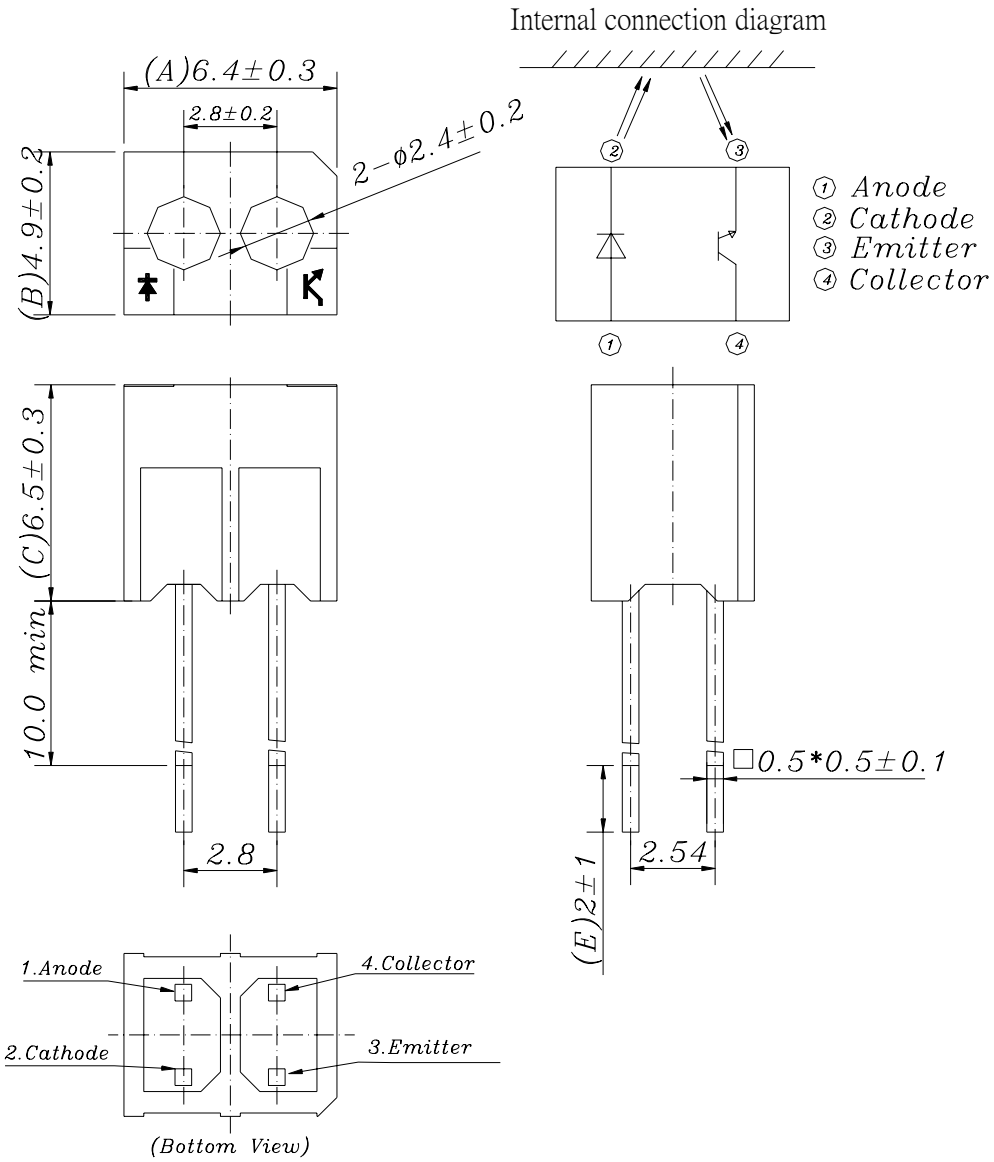
Applications

- Mouse Copier
- Switch Scanner
- Floppy disk driver
- Non-contact Switching
- For Direct Board

Device Selection Guide

Device No.	Chip Material	LENS COLOR
IR2424-3C	GaAlAs	Water Clear
PT2424-6B	Silicon	Black

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) 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) (1/16 inch form body for 5 seconds)		Tsol	260	℃

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

Electro-Optical Characteristics (Ta=25℃)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Condition
Input	Forward Voltage	V_{F1}	-	1.2	1.5	V	I_F=20mA
		V_{F2}	-	1.4	1.8		I_F=100mA,tp=100 μs,tp/T=0.01
		V_{F3}	-	2.6	4.0		I_F=1A,tp=100 μs,tp/T=0.01
	Reverse Current	I_R	-	-	10	μA	V_R=5V
	Peak Wavelength	λ_P	-	940	-	nm	I_F=20mA
	View Angle	2θ1/2	-	35	-	Deg	I_F=20mA
Output	Dark Current	I_{CEO}	-	-	100	nA	V_{CE}=5V,Ee=0mW/cm^2
	C-E Saturation Voltage	$V_{CE(sat)}$	-	-	0.4	V	I_C=0.04mA, I_F=40mA
Collector Current(＊3)		$I_{C(ON)}$	200	-	-	μA	V_{CE}=5V,I_F=20mA
		$I_{C(OFF)}$	-	-	2	μA	
Response Time	Rise Time	t_R	-	25	-	μs	V_{CE}=5V,I_C=100 μA ,R_L=100Ω
	Fall Time	t_F	-	25	-	μs	

(＊3) $I_{C(on)}$ at the testing condition—-with reflector in 5mm away,

$I_{C(off)}$at the testing condition—-without reflector and external light less than 10 Lux at the module surface.

Typical Electrical/Optical/Characteristics Curves for IR

Fig. 1 Forward Current vs. Ambient Temperature

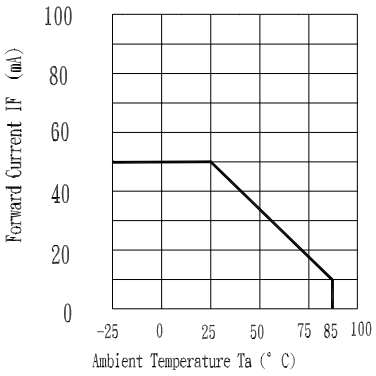


Fig. 2 Spectral Distribution

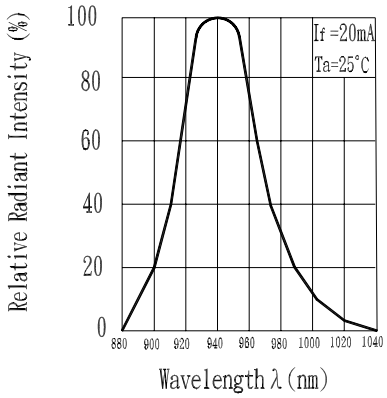


Fig. 3 Peak Emission Wavelength vs. Ambient Temperature

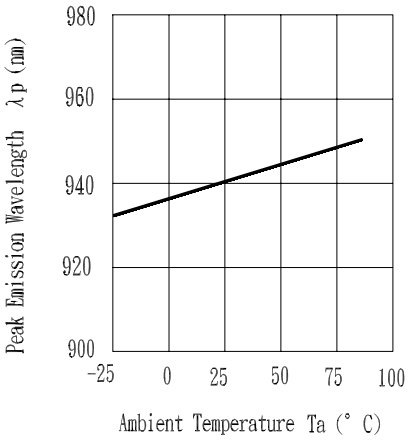


Fig. 4 Forward Current vs. Forward Voltage

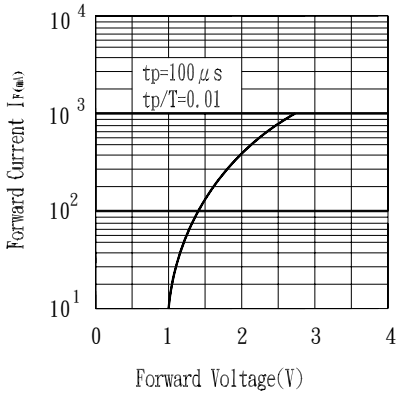


Fig. 5 Relative Intensity vs. Forward Current

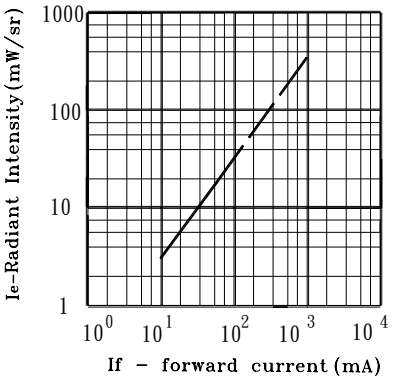
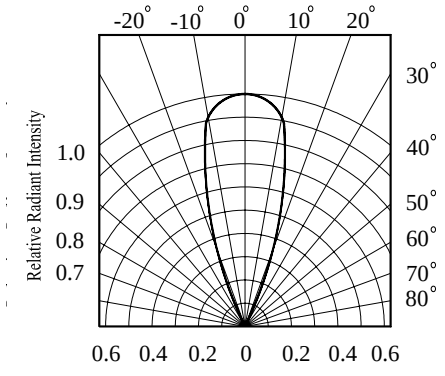


Fig. 6 Relative Radiant Intensity vs. Angular Displacement



Typical Electrical/Optical/Characteristics Curves for PT

Fig.1 Collector Power Dissipation vs. Ambient Temperature

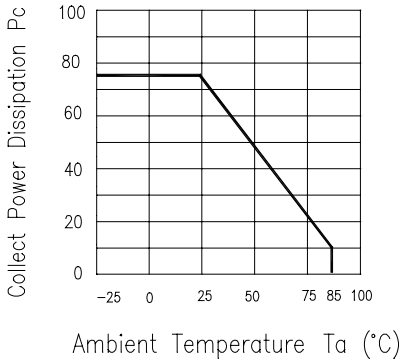


Fig.2 Collector Dark Current vs. Ambient Temperature

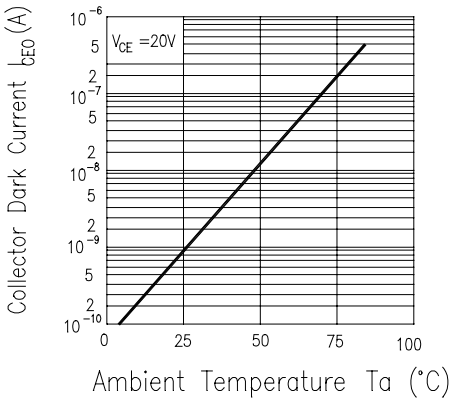


Fig. 3 Relative Collector Current vs. Ambient Temperature

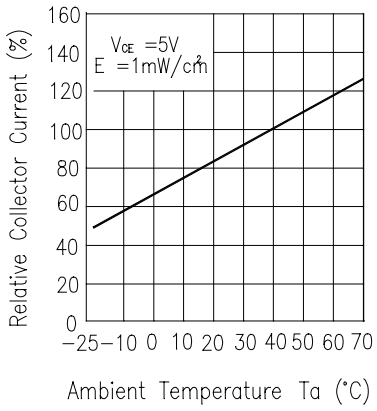


Fig.4 Collector Current vs. Irradiance

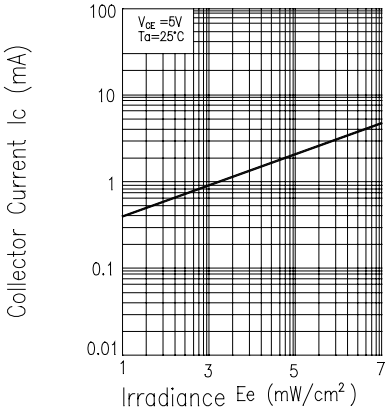


Fig.5 Spectral Sensitivity

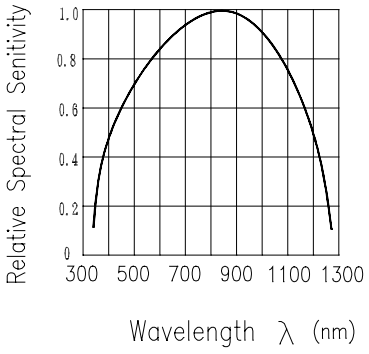
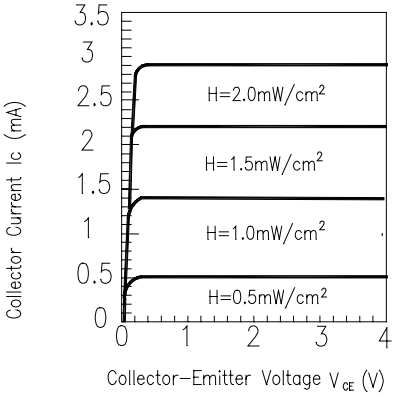


Fig.6 Collector Current vs. Collector-Emitter Voltage



Reliability Test Item And Condition

The reliability of products shall be satisfied with items listed below.
Confidence level：90%
LTPD：10%

NO.	Item	Test Condition	Test Hours/ Cycle	Sample Size	Failure Judgement Criteria	Ac/Re
1	Solder Heat	TEMP : 260℃ ± 5 ℃	10 sec	22 PCs		0/1
2	Temperature Cycle	H : +100℃ 15 mins 5 min L : -40℃ 15 min	300 cycle	22 PCs	Ic(on)≦Lx0.8	0/1
3	Thermal Shock	H : +100℃ 5 min 10 sec L : -10℃ 5 min	300 cycle	22 PCs	L :Lower specification limit	0/1
4	High Temperature Storage	TEMP. : +100℃	1000 hrs	22 PCs		0/1
5	Low Temperature Storage	TEMP. : -40℃	1000 hrs	22 PCs		0/1
6	DC Operating Life	V_{CE}=5V I_F=20mA	1000 hrs	22 PCs		0/1
7	High Temperature / High Humidity	85℃ / 85% R.H.	1000 hrs	22 PCs		0/1

Packing Quantity Specification

1.200PCS/1Bag, 6Bag/1Box

2. 10Boxes/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

Notes

1.All dimensions are in millimeters

2.Tolerances unless dimensions ±0.2mm

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.

EVERLIGHT ELECTRONICS CO., LTD.
Office: No 25, Lane 76, Sec 3, Chung Yang Rd,
Tucheng, Taipei 236, Taiwan, R.O.C
Tel: 886-2-2267-2000, 2267-9936
Fax: 886-2267-6244, 2267-6189, 2267-6306
http:\\www.everlight.com