



Technical Data Sheet

Opto Interrupter

ITR20001/T24

Features

- Fast response time
- High analytic
- High sensitivity
- Cut-off visible wavelength $\lambda_p=940\text{nm}$
- Pb Free
- This product itself will remain within RoHS compliant version.



Descriptions

The **ITR20001/T24** 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.

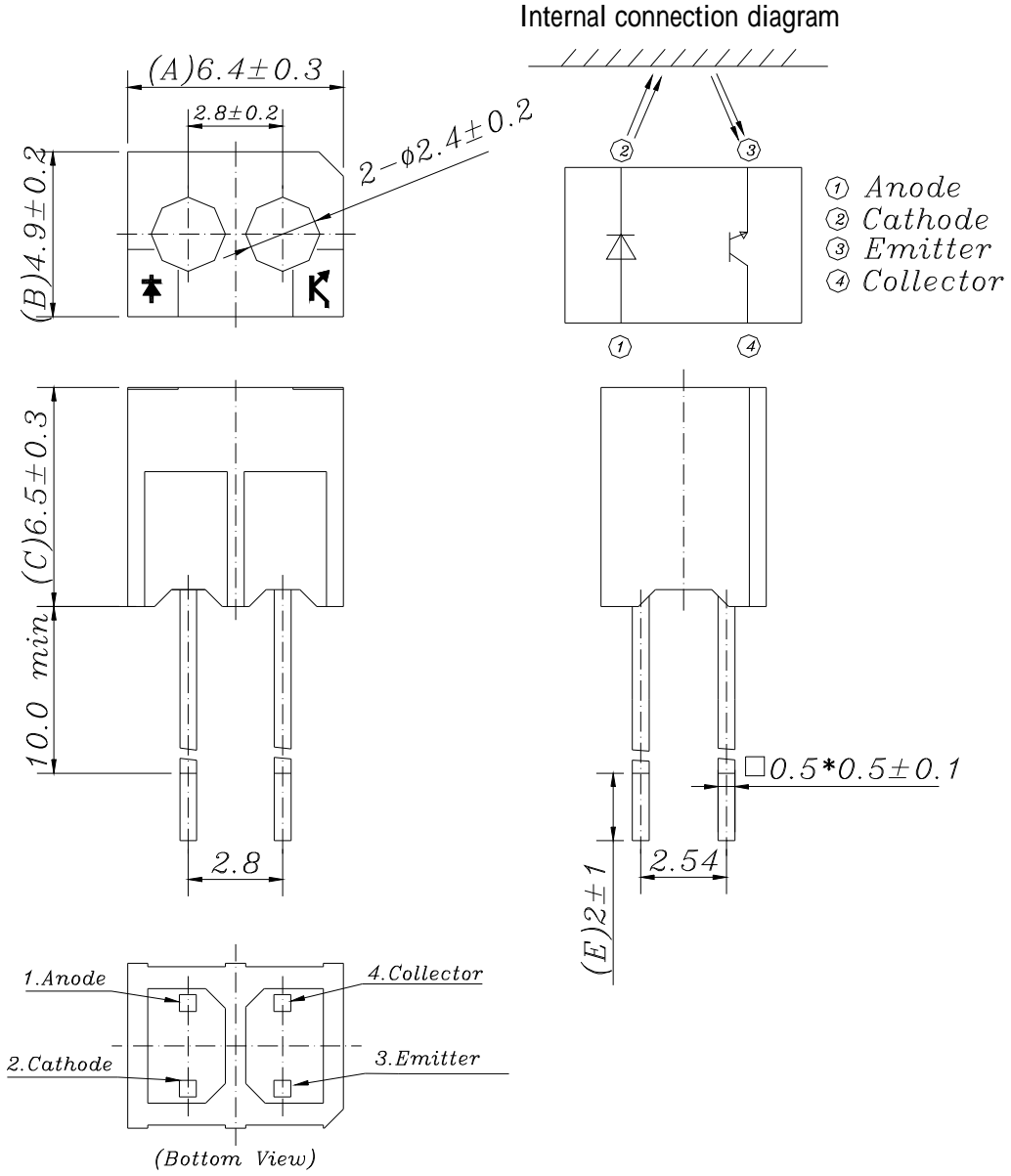
Applications

- 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 °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 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		T _{opr}	-25~+85	
Storage Temperature		T _{stg}	-40~+85	
Lead Soldering Temperature (*2) (1/16 inch form body for 5 seconds)		T _{sol}	260	

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

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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 μ s, tp/T=0.01
		V _{F3}	-	2.6	4.0		I _F =1A, tp=100 μ s, tp/T=0.01
	reverse Current	I _R	-	-	10	μ A	V _R =5V
	Peak Wavelength	λ _P	-	940	-	nm	I _F =20mA
	View Angle	2θ	-	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) L}	400	-	900	μ A	V _{CE} =2V, I _F =10mA
		I _{C(ON) K}	800	-	1800	μ A	
		I _{C(ON) J}	1600	-	3600	μ A	
		I _{C(OFF)}	-	-	2	μ A	
Response Time	Rise Time	t _R	-	25	-	μ s	V _{CE} =5V, I _C =100 μ A , R _L =100
	Fall Time	t _F	-	25	-	μ s	

(* 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

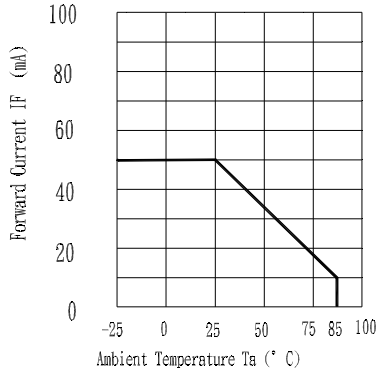


Fig. 2 Spectral Distribution

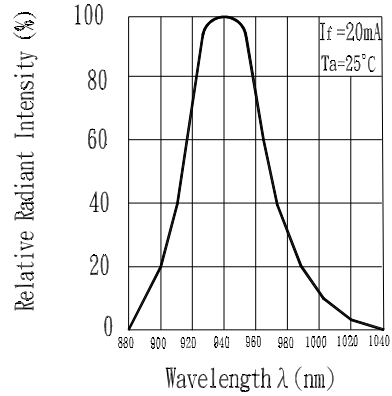


Fig. 3 Peak Emission Wavelength vs. Ambient Temperature

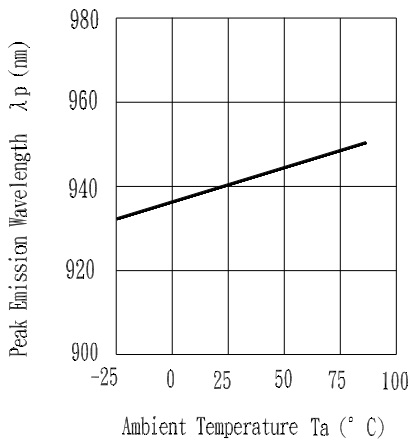


Fig. 4 Forward Current vs. Forward Voltage

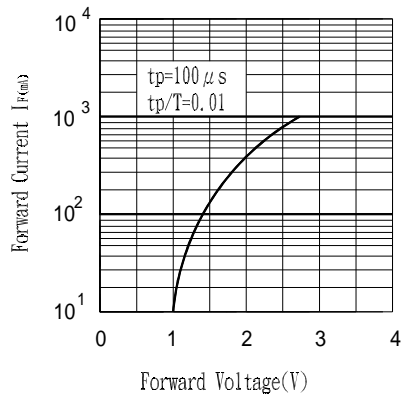


Fig. 5 Relative Intensity vs. Forward Current

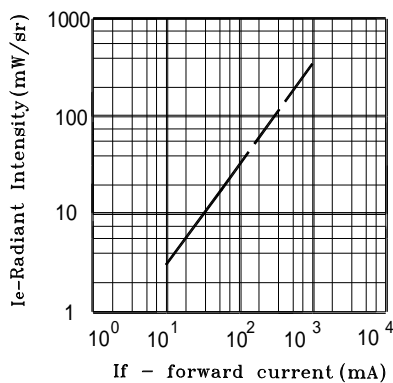
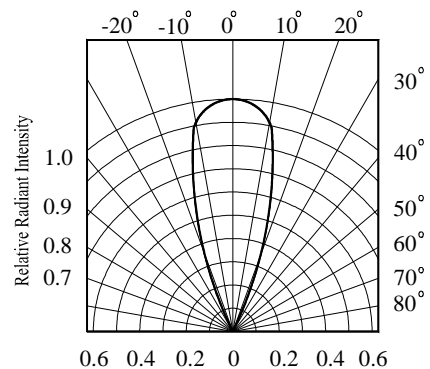


Fig. 6 Relative Radiant Intensity vs. Angular Displacement



Typical Electrical/Optical/Characteristics Curves for PT

Fig.1 Collector Power Dissipation vs. Ambient Temperature

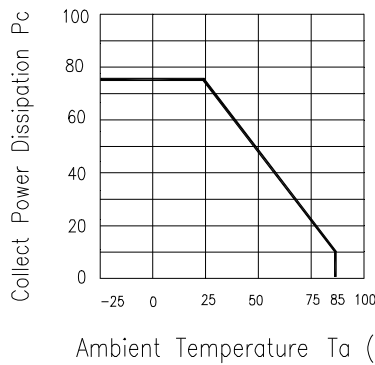


Fig. 3 Relative Collector Current vs. Ambient Temperature

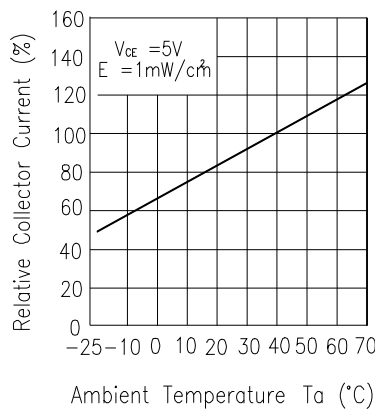


Fig.5 Spectral Sensitivity

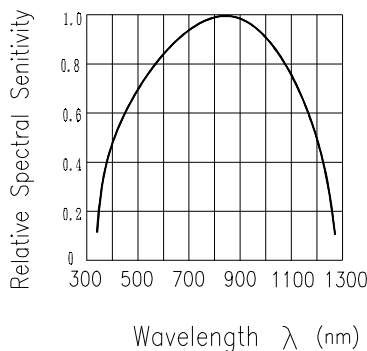


Fig.2 Collector Dark Current vs. Ambient Temperature

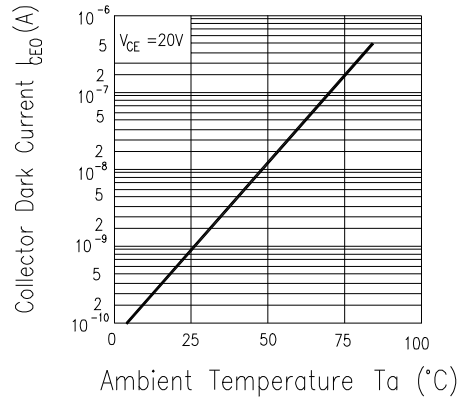


Fig.4 Collector Current vs. Irradiance

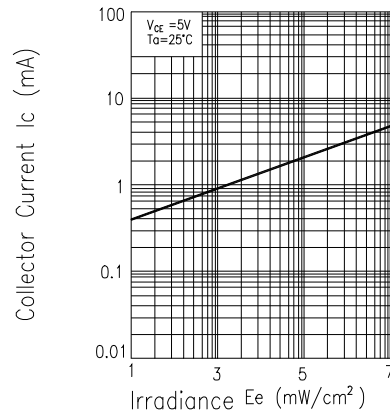
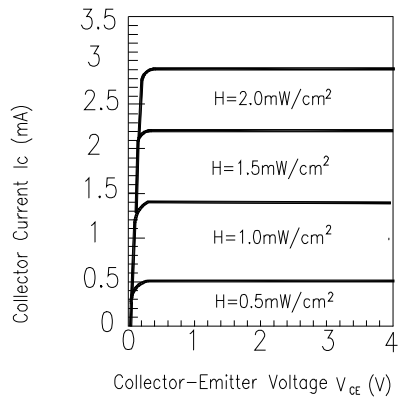


Fig.6 Collector Current vs. Collector-Emitter Voltage



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	5 sec	22 PCs	lc(on) Lx0.8 L :Lower specification limit	0/1	
2	Temperature Cycle	H : +100 ↕ L : -40	15 mins 5 min 15 min	50 cycle		22 PCs	0/1
3	Thermal Shock	H : +100 ↕ L : -10	5 min 10 sec 5 min	50 cycle		22 PCs	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	



ITR20001/T24

Packing Quantity Specification

- 1.200PCS/1Bag, 6Bag/1Box
- 2. 10Boxes/1Carton

Label Form Specification

EVERLIGHT

CPN:
P/N:

ITR20001/T24
QTY:  CAT:
HUE:
REF:
LOT NO: 

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 $\pm 0.2\text{mm}$
- 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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