

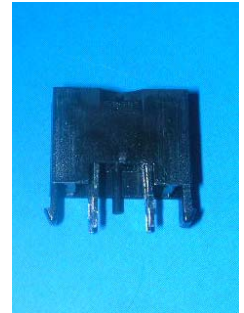
Technical Data Sheet

Opto Interrupter

ITR20002-A

■ 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 **ITR20002-A** 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 IR4204-10 and PT4204-6B/H26.

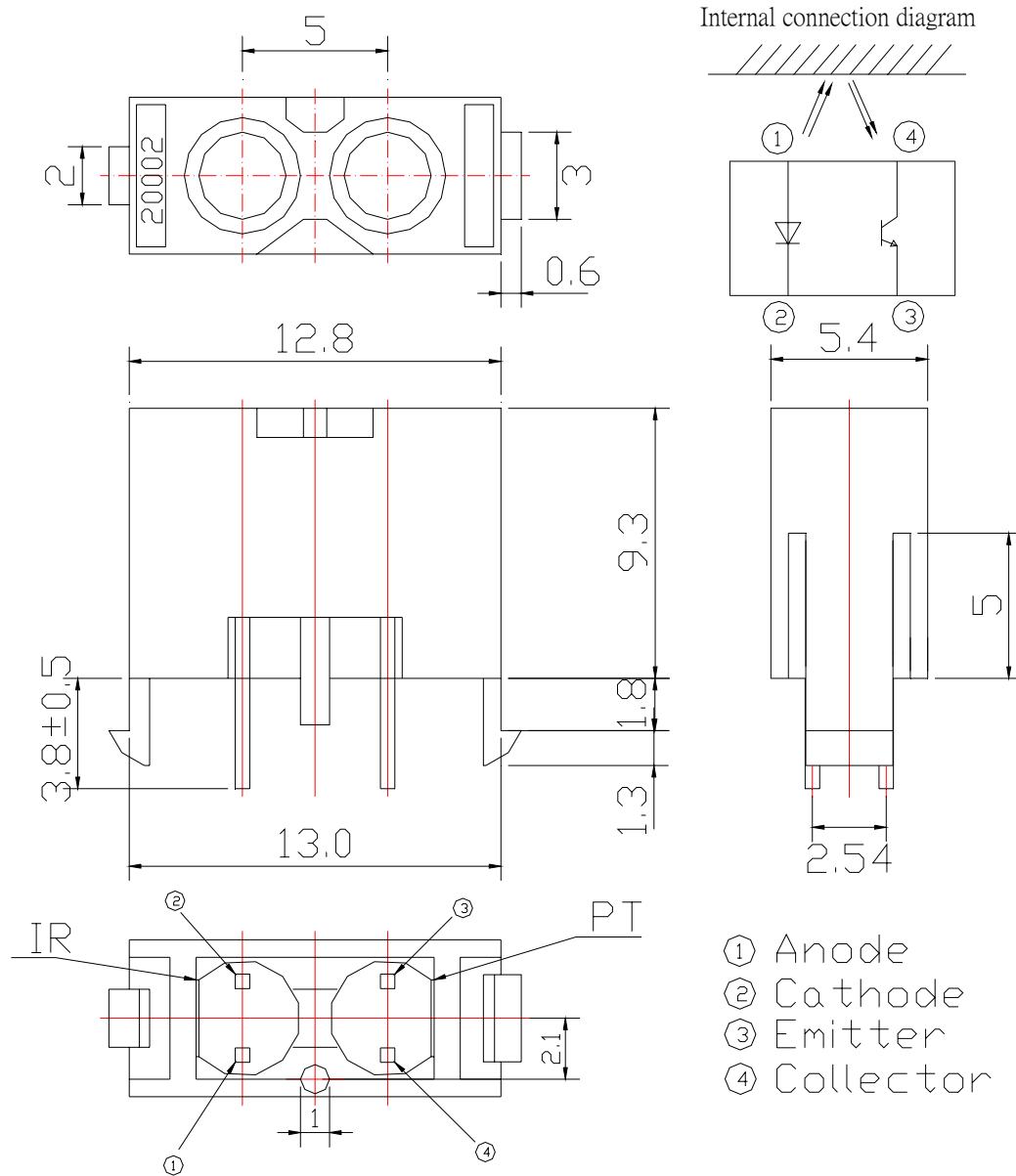
■ Applications

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

■ Device Selection Guide

Device No.	Chip Material	LENS COLOR
IR4204-10	GaAlAs	Blue
PT4204-6B/H26	Silicon	Black

Package Dimensions



1.All dimensions are in millimeters

2.Tolerances unless dimensions $\pm 0.3\text{mm}$

3.Lead spacing is measured where the lead emerge from the package

ITR20002-A

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

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

Electro-Optical Characteristics (Ta=25°C)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Condition
Input	Forward Voltage	V _F	-	1.2	1.5	V	I _F =20mA
	Reverse Current	I _R	-	-	10	μA	V _R =5V
	Peak Wavelength	λ _P	-	940	-	nm	I _F =20mA
	View Angle	2θ 1/2	-	35	-	Deg	I _F =20mA
Output	Dark Current	I _{CEO}	-	-	100	nA	V _{CE} =20V, 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)}	150	-	-	μA	V _{CE} =5V, I _F =20mA
		I _{C(OFF)}	-	-	30		
Response Time	Rise Time	t _R	-	15	-	μs	V _{CE} =5V, I _C =100 μA , R _L =100Ω
	Fall Time	t _F	-	15	-	μs	

(*3) I_{C(on)} at the testing condition—with reflector in 6mm 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

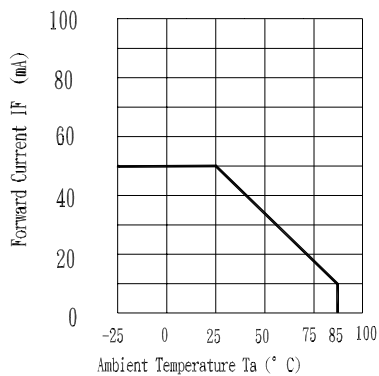


Fig. 2 Spectral Distribution

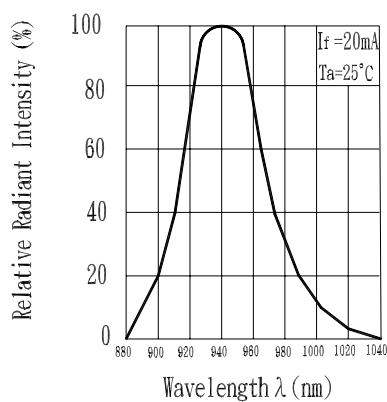


Fig. 3 Peak Emission Wavelength vs. Ambient Temperature

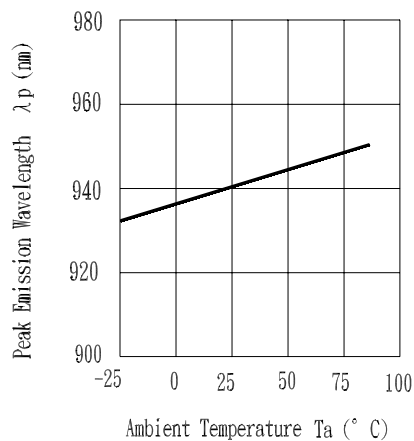


Fig. 4 Forward Current vs. Forward Voltage

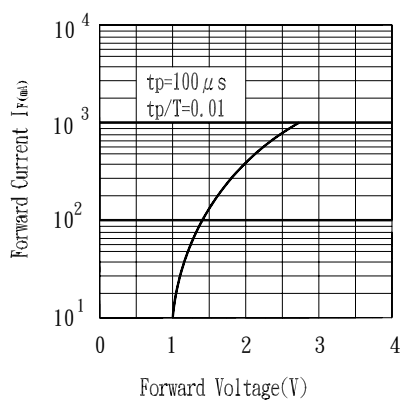


Fig. 5 Relative Intensity vs. Forward Current

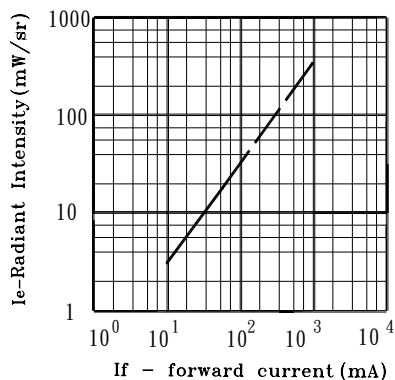
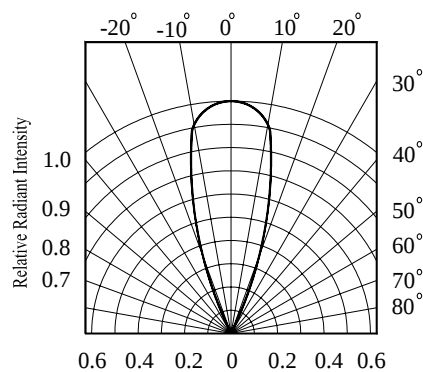


Fig. 6 Relative Radiant Intensity vs. Angular Displacement



Typical Electrical/Optical/Characteristics Curves for PT

Fig.1 Collector Power Dissipation vs. Ambient Temperature

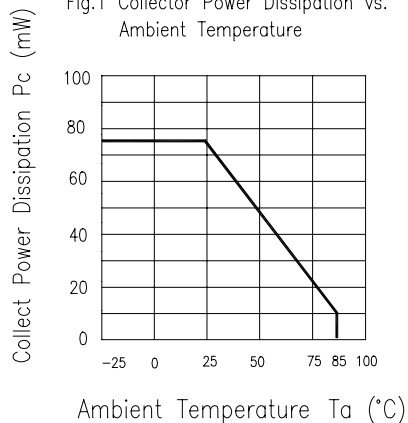


Fig.2 Collector Dark Current vs. Ambient Temperature

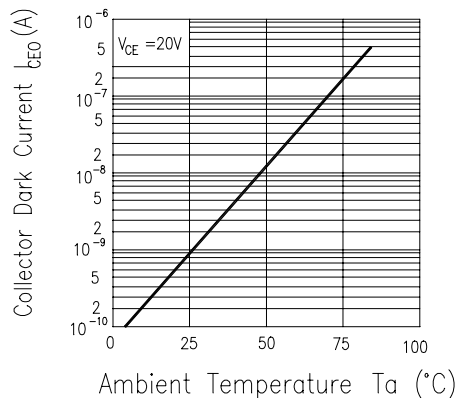


Fig. 3 Relative Collector Current vs. Ambient Temperature

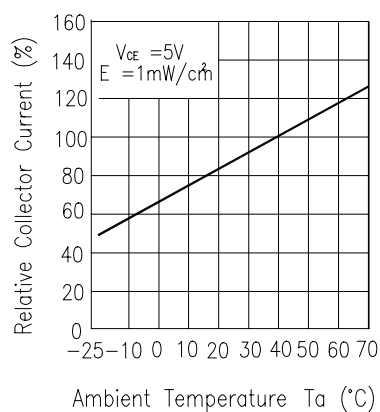


Fig.4 Collector Current vs. Irradiance

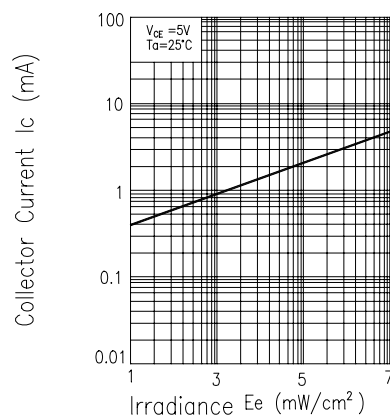


Fig.5 Spectral Sensitivity

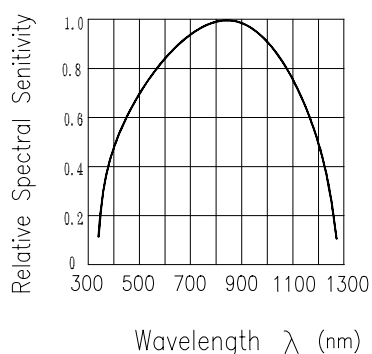
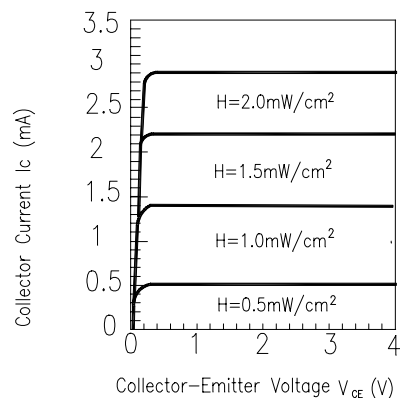


Fig.6 Collector Current vs. Collector-Emitter Voltage



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°C ± 5 °C	5 sec	22 PCs	$I_{c(on)} \leq L \times 0.8$ L :Lower specification limit	0/1
2	Temperature Cycle	H : +100°C 15 mins ↕ 5 min L : -40°C 15 min	300 cycle	22 PCs		0/1
3	Thermal Shock	H : +100°C 5 min ↕ 10 sec L : -10°C 5 min	300 cycle	22 PCs		0/1
4	High Temperature Storage	TEMP. : +100°C	1000 hrs	22 PCs		0/1
5	Low Temperature Storage	TEMP. : -40°C	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°C / 85% R.H.	1000 hrs	22 PCs		0/1



ITR20002-A

Packing Quantity Specification

- 1.150PCS/1Bag, 5Bag/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. Above specification may be changed without notice. EVERLIGHT will reserve authority on material change for above specification
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