Interrupter

MODEL NO : ITR20001/T

■ Features :

- Fast response time
- High analytic
- Cut-off visible wavelength λp=840nm
- High sensitivity

■ Description :

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 could not receive radiation from the IRED. 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 :

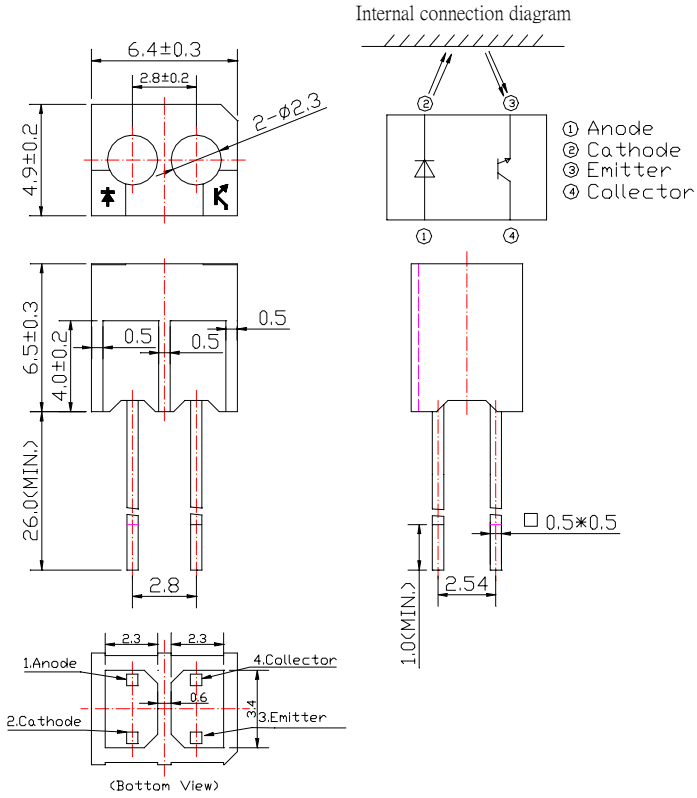
- Copier
- Switch Scanner
- Non-contact Switching
- For Direct PC Board

PART NO.	CHIP MATERIAL	LENS COLOR
IR	GaAlAs	Water clear
PT	Silicon	Black

Interrupter

MODEL NO : ITR20001/T

Package Dimension :



Notes :

1.All dimensions are in millimeter.

2.General tolerance: ± 0.3mm

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.

Interrupter

MODEL NO : ITR20001/T

■ Absolute Maximum Ratings at T_A = 25℃

Parameter		Symbol	Rating	Unit
Input	Power Dissipation	P_D	100	mW
	Reverse Voltage	V_R	5	V
	Forward Current	I_F	50	mA
	Peak Forward Current(*1)	I_{FP}	1	A
Output	Collect Power Dissipation	Pc	75	mW
	Collect Current	Ic	20	mA
	Collector-Emitter Voltage	V_{CE}	30	V
	Emitter-Collector Voltage	V_{EC}	5	V
Operating Temperature		Topr	-25~+85	℃
Storage Temperature		Tstg	-40~+85	℃
Soldering Temperature(*2)		Tsol	260	℃

(*1) Pause width= 100 μ s,Duty Cycle=1% (*2) t=5 secs

■ Electronic Optical Characteristics at T_A = 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	1.85		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	2 θ 1/2	-	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)		$I_{C(ON)}$	0.04	-	1.6	mA	V_{CE}=5V,I_F=20mA
		$I_{C(OFF)}$	-	-	2	μ A	
Response Time	Rise Time	t_R	-	25	-	μ s	V_{CE}=5V,I_C=100 μ A ,R_L=100Ω
	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.

Interrupter

MODEL NO : ITR20001/T

■ Typical Electrical/Optical/Characteristics Curves For IR

Fig. 1 Forward Current vs. Ambient Temperature

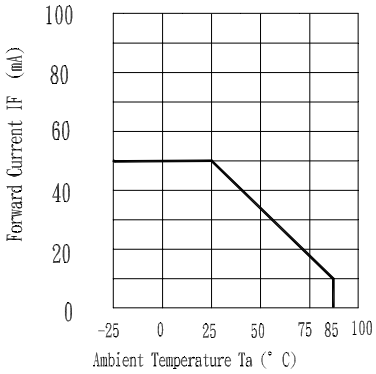


Fig. 2 Spectral Distribution

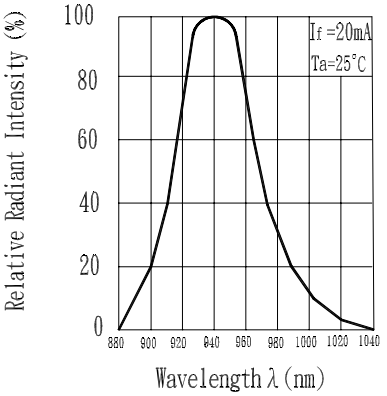


Fig. 3 Peak Emission Wavelength vs. Ambient Temperature

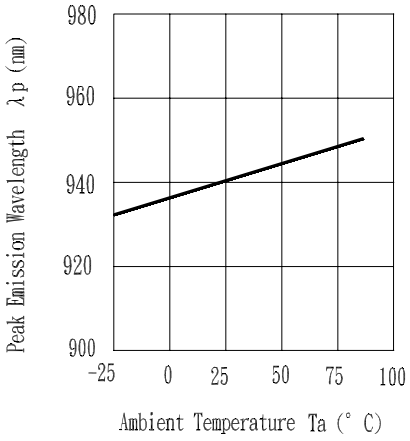


Fig. 4 Forward Current vs. Forward Voltage

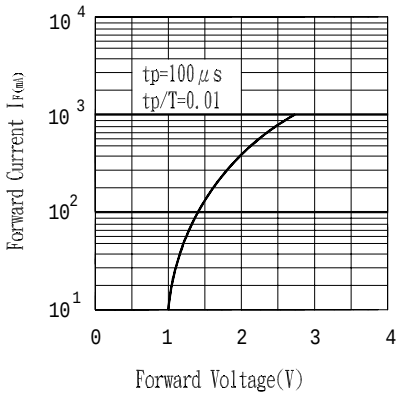


Fig. 5 Relative Intensity vs. Forward Current

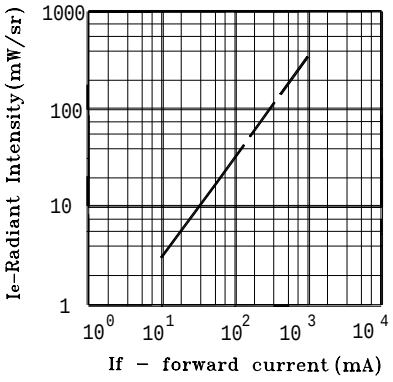
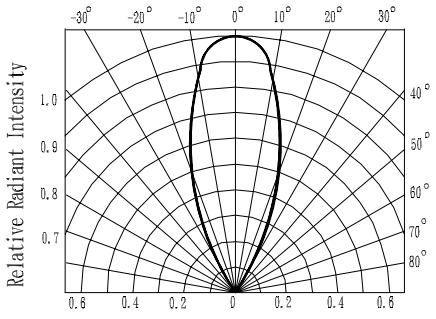


Fig. 6 Relative Radiant Intensity vs. Angular Displacement



Interrupter

MODEL NO : ITR20001/T

■ Typical Electrical/Optical/Characteristics Curves For PT

Fig.1 Collector Power Dissipation vs. Ambient Temperature

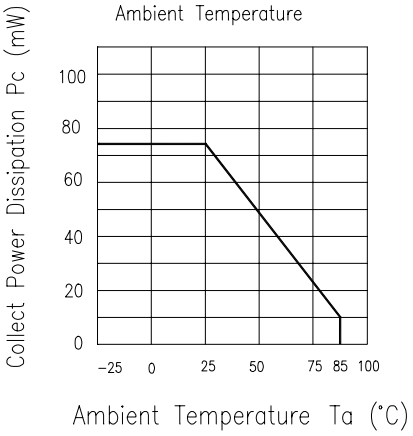


Fig.2 Collector Dark Current vs. Ambient Temperature

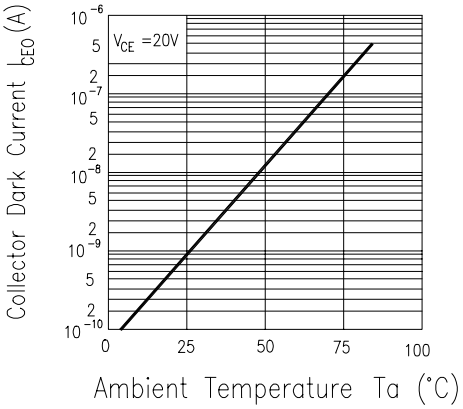


Fig. 3 Relative Collector Current vs. Ambient Temperature

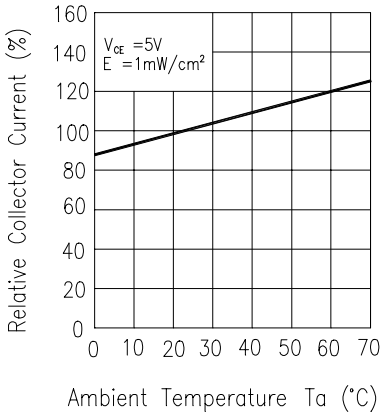


Fig.4 Collector Current vs. Irradiance

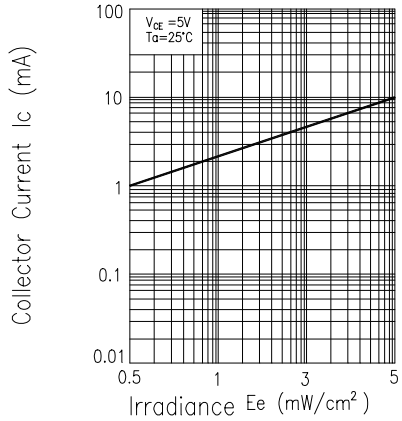
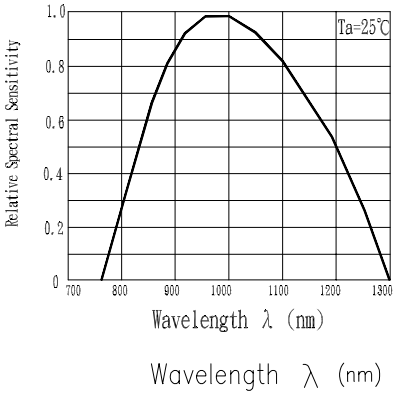
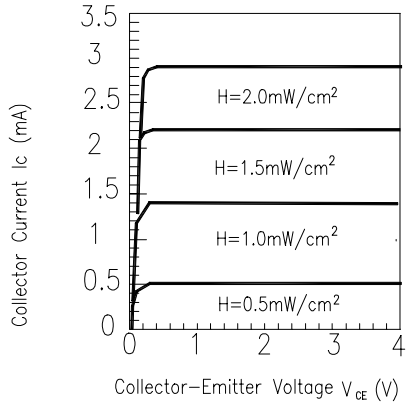


Fig.5 Spectral Sensitivity



Wavelength λ (nm)

Fig.6 Collector Current vs. Collector-Emitter Voltage

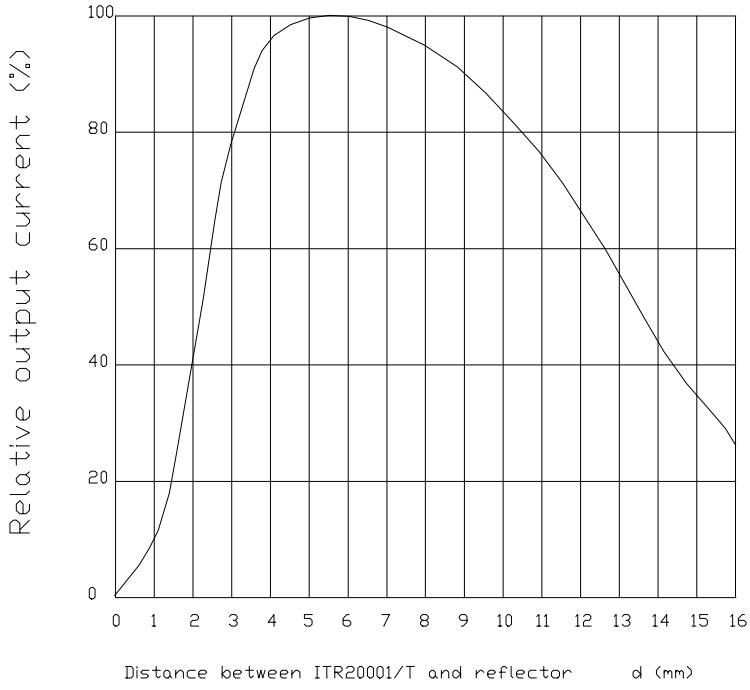


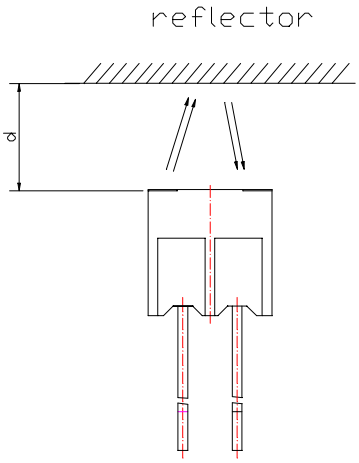
Interrupter

MODEL NO : ITR20001/T

■Typical Electrical/Optical/Characteristics Curves For ITR

Relative output current vs. detecting distance





Interrupter

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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/ Cycle	Sample Size	Failure Judgement Criteria	Ac/Re
1	**Solder Heat**	TEMP : 260℃ ± 5 ℃	5 secs	22 pcs	$I_{c(on)} \leqq L \times 0.8$ L :Lower specification limit	0/1
2	**Temperature Cycle**	H : +85℃ 30 mins 5 mins L : -55℃ 30 mins	50 cycles	22 pcs		0/1
3	**Thermal Shock**	H : +100℃ 5 mins 10 secs L : -10℃ 30 mins	50 cycles	22 pcs		0/1
4	**High Temperature Storage**	TEMP. : +100℃	1000 hrs	22 pcs		0/1
5	**Low Temperature Storage**	TEMP. : -55℃	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