



EVERLIGHT ELECTRONICS CO., LTD.

DATA SHEET

MODEL NO : ITR9904

DATE : Dec, 7, 2000

DEPARTMENT : R&D 2

REVISION : 1.1

RECEIVED			
☒ MASS PRODUCTION			
☐ PRELIMINARY			
☐ CUSTOMER DESIGN			
DEVICE NUMBER : DRX-904-101			
PAGE :7			
CUSTOMER	DESIGNER	CHECKER	APPROVER

1.1	Modify the foot distance between IR/PT	Dec,7,2000
REV	DESCRIPTION	RELEASE DATE

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<http://www.everlight.com>



Reflective Interrupter

MODEL NO : ITR9904

■ Features :

- Fast response time
- High analytic
- Cut-off visible wavelength $\lambda_p=980\text{nm}$
- High sensitivity
- **Pb free**

■ Description :

The **ITR9904** consists of an infrared emitting diode and an NPN silicon phototransistor, encased oblique angle (45°) on converging optical axis in a black Thermo-plastic housing. The phototransistor receives radiation from the IRED only, and avoids the noise from ambient light.

■ Applications :

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

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



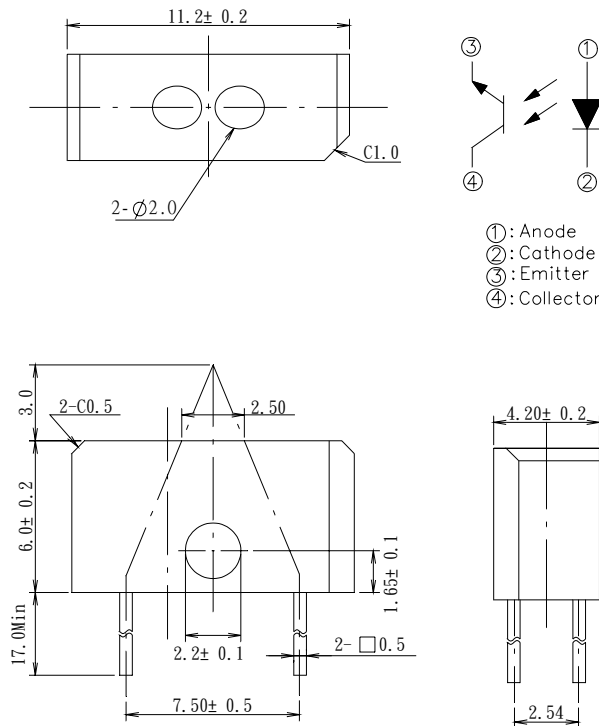
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Reflective Interrupter

MODEL NO : ITR9904

■ Package Dimension :



■ Notes :

- 1.All dimensions are in millimeter.
- 2.General tolerance: $\pm 0.2\text{mm}$
- 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.

**Reflective Interrupter**MODEL NO : ITR9904**■ Absolute Maximum Ratings at T_A = 25°C**

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}	1.0	A
Output	Collect Power Dissipation	P _C	75	mW
	Collect Current	I _C	20	mA
	Collector-Emitter Voltage	V _{CE}	30	V
	Emitter-Collector Voltage	V _{EC}	5	V
Operating Temperature		T _{opr}	-25~+85	°C
Storage Temperature		T _{stg}	-40~+85	°C
Soldering Temperature(*2)		T _{sol}	260	°C

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

■ Electronic Optical Characteristics at T_A = 25°C :

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
		V _{F3}	-	2.6	4.0		I _F =1A
	Reverse Current	I _R	-	-	10	μA	V _R =5V
	Peak Wavelength	λ _P	-	940	-	nm	---
	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 =2mA, I _B =0.1mA
Collect Current		I _{C(ON)A}	100	-	300	μA	V _{CE} =5V, I _F =20mA
		I _{C(ON)B}	200	-	600		
		I _{C(ON)C}	400	-	1200		
Response Time	Rise Time	t _R	-	15	-	μs	V _{CE} =2V, I _C =1mA, R _L =1KΩ
	Fall Time	t _F	-	15	-	μs	



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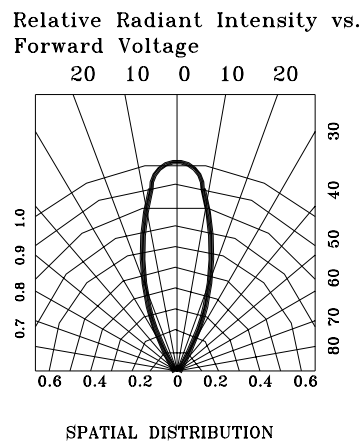
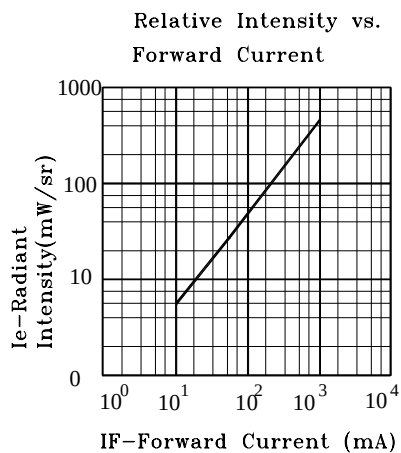
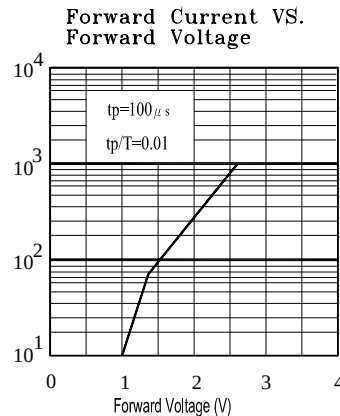
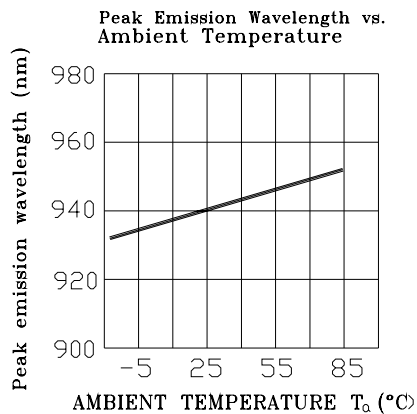
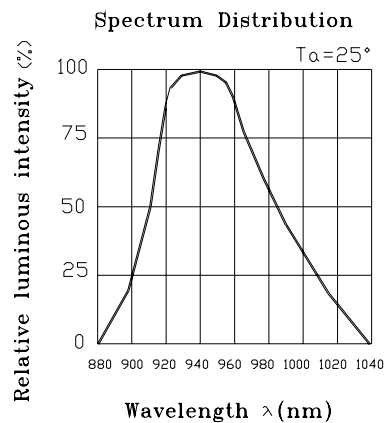
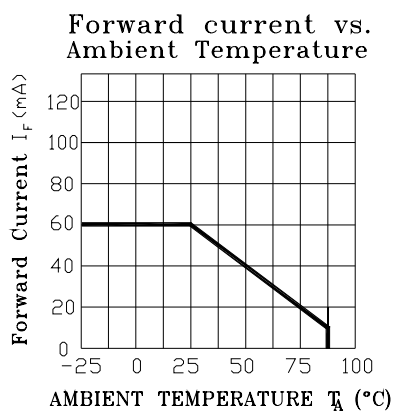
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Reflective Interrupter

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■ Typical Electrical/Optical/Characteristics Curves For IR





Reflective Interrupter

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Typical Electrical/Optical/Characteristics Curves For PT

Fig.1 Collector Power Dissipation vs. Ambient Temperature

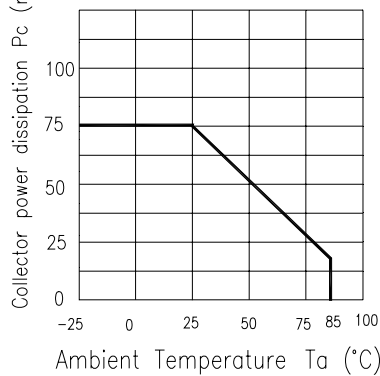


Fig.2 Collector Dark Current vs. Ambient Temperature

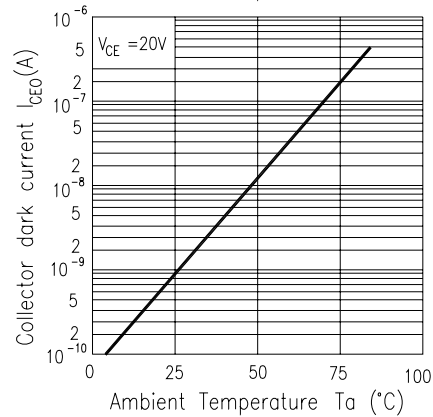


Fig. 3 Relative Collector Current vs. Ambient Temperature

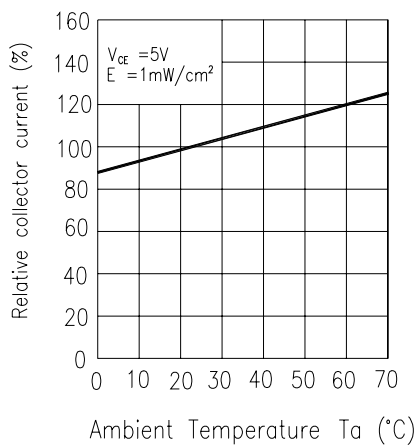


Fig.4 Collector Current vs. Irradiance

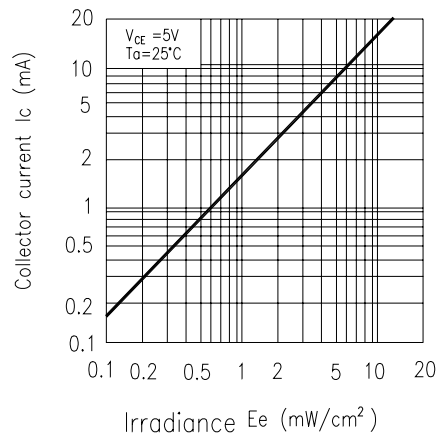


Fig.5 Spectral Sensitivity

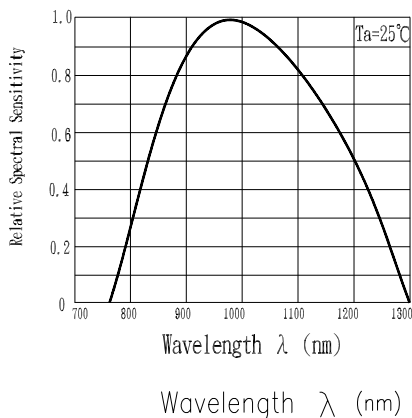
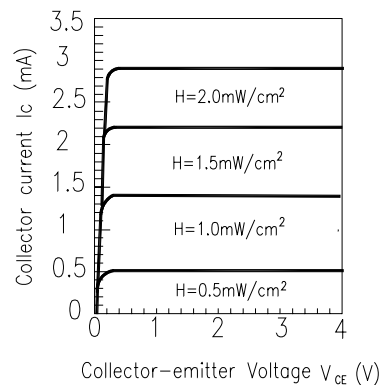


Fig.6 Collector Current vs. Collector-emitter Voltage





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Photointerrupter

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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°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 : +85°C 30 min ↑ 5 min ↓ L : -55°C 30 min	50 cycle	22 PCs		0/1
3	Thermal Shock	H : +100°C 5 min ↑ 10 sec ↓ L : -10°C 30 min	50 cycle	22 PCs		0/1
4	High Temperature Storage	TEMP. : +100°C	1000 hrs	22 PCs		0/1
5	Low Temperature Storage	TEMP. : -55°C	1000 hrs	22 PCs		0/1
6	DC Operating Life	V _{CE} =5V	1000 hrs	22 PCs		0/1
7	High Temperature / High Humidity	85°C / 85% R.H.	1000 hrs	22 PCs		0/1



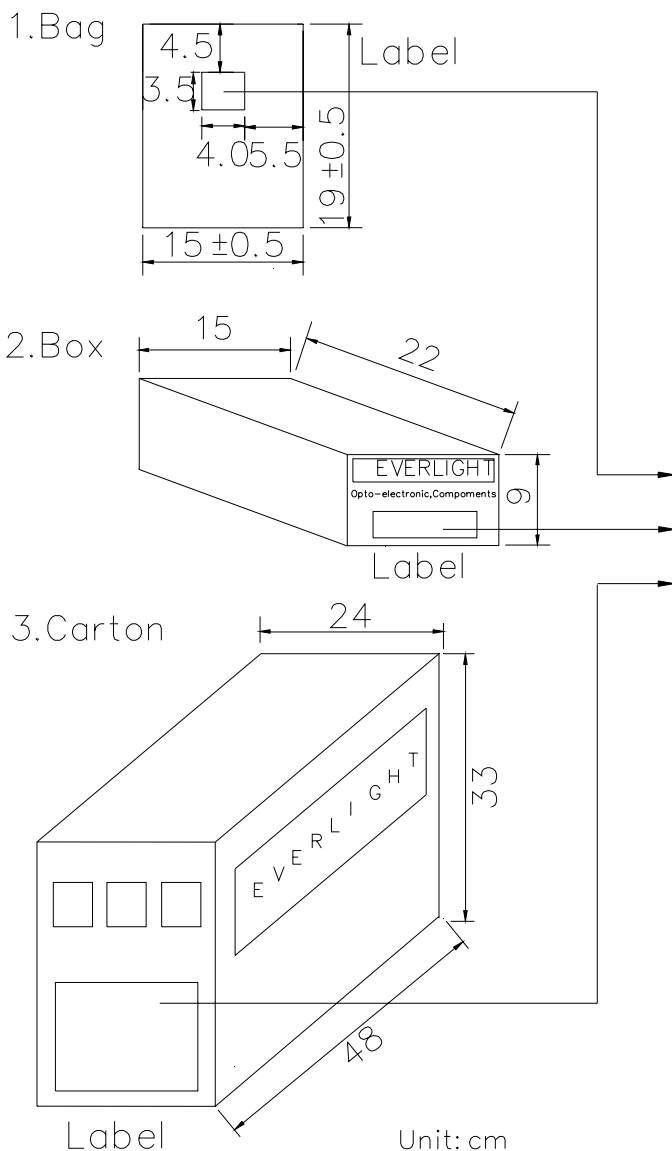
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■ Packing Specifications



EVERLIGHT

CPN:

P/N:

ITR9904

QTY:

LOT NO:

CAT:

HUE:

REF:

MADE IN TAIWAN

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

■ Packing Quantity Specification

1.200Pcs/1Bag

2.6Bags/1Box

3.10Boxes/1Carton