EVERLIGHT ELECTRONICS CO., LTD.

DATA SHEET

MODEL NO : ITR9909

DATE : APR, 17, 2000

DEPARTMENT : R&D 2

REVISION : 1.0

RECEIVED			
■ MASS PRODUCTION			
☐ PRELIMINARY			
☐ CUSTOMER DESIGN			
DEVICE NUMBER : DRX-909-104			
PAGE :8			
CUSTOMER	DESIGNER	CHECKER	APPROVER

REV	DESCRIPTION	RELEASE DATE

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FAX : 886-2-2267-6189

http://www.everlight.com

Reflective Interrupter

MODEL NO : ITR9909

■ Features :

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

■ Description :

The **ITR9909** 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 IRED only. This is the normal situation. But when an object is in between, phototransistor could not receives the radiation. For additional component information, please refer to **IR1254-R8** and **PT1254-6B**.

■ Applications :

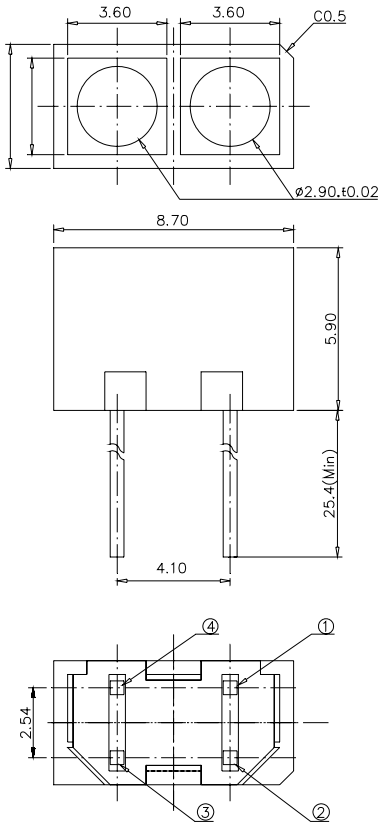
- Mouse Copier
- Switch Scanner
- Non-contact Switching
- For Direct PC Board

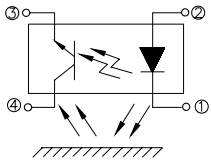
PART NO.	CHIP MATERIAL	LENS COLOR
IR	GaAlAs	Blue
PT	Silicon	Black

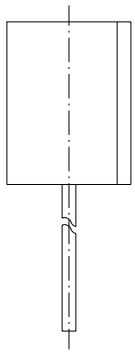
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Package Dimension :







①: Cathode
②: Anode
③: Emitter
④: Collector

Notes :

1.All dimensions are in millimeter.

2.General tolerance: ±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.

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■ 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 μs,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 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}=20V,Ee=0mW/cm^2
	C-E Saturation Voltage	$V_{CE(sat)}$	-	-	0.4	V	I_C=2mA, Ee=1mW/cm^2
Collect Current		$I_{C(ON)}$	0.2	-	-	mA	V_{CE}=5V,I_F=20mA
Leakage Current		I_{CEO}	-	-	1	μA	
Response Time	Rise Time	t_R	-	15	-	μs	V_{CE}=5V,I_C=1mA,R_L=1KΩ
	Fall Time	t_F	-	15	-	μs	

Reflective Interrupter

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■ Typical Electrical/Optical/Characteristics Curves For IR

Fig. 1 Forward Current vs. Ambient Temperature

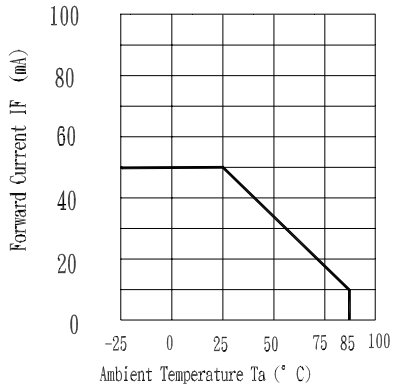


Fig. 2 Spectral Distribution

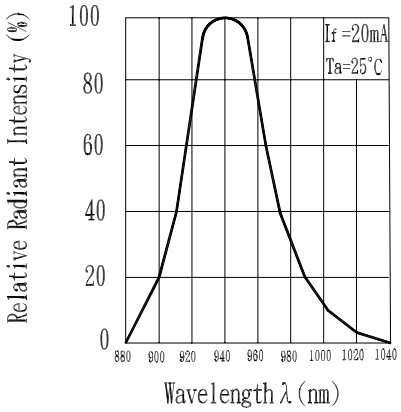


Fig. 3 Peak Emission Wavelength vs. Ambient Temperature

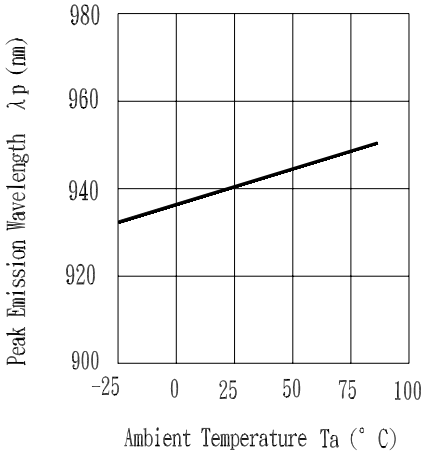


Fig. 4 Forward Current vs. Forward Voltage

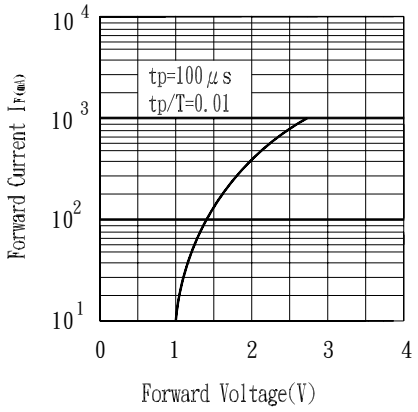


Fig. 5 Relative Intensity vs. Forward Current

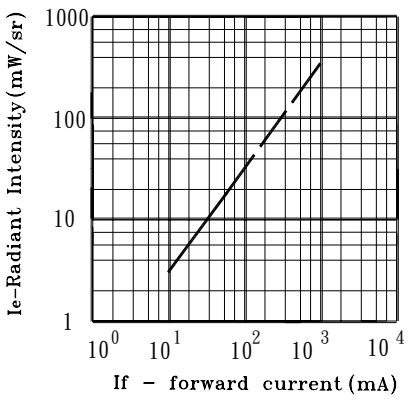
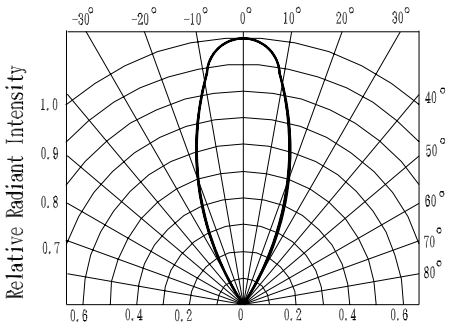


Fig. 6 Relative Radiant Intensity vs. Angular Displacement



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■ Typical Electrical/Optical/Characteristics Curves For PT

Fig.1 Collector Power Dissipation vs. Ambient Temperature

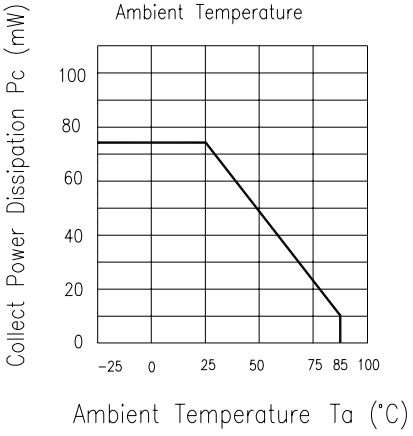


Fig.2 Collector Dark Current vs. Ambient Temperature

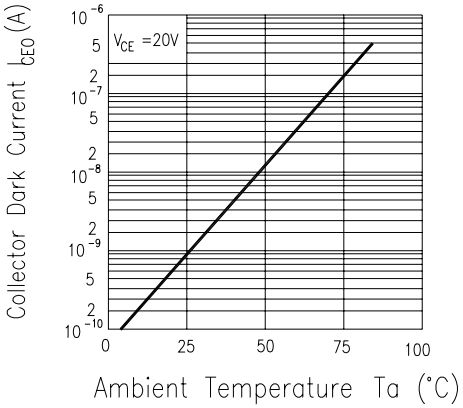


Fig. 3 Relative Collector Current vs. Ambient Temperature

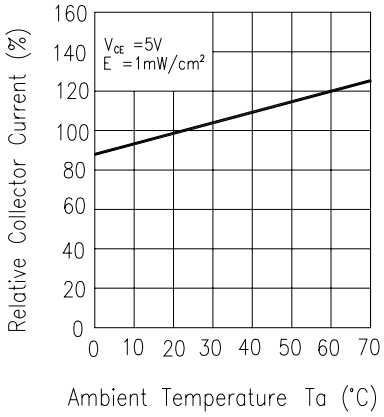


Fig.4 Collector Current vs. Irradiance

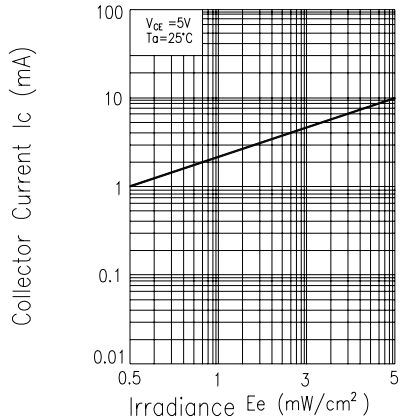
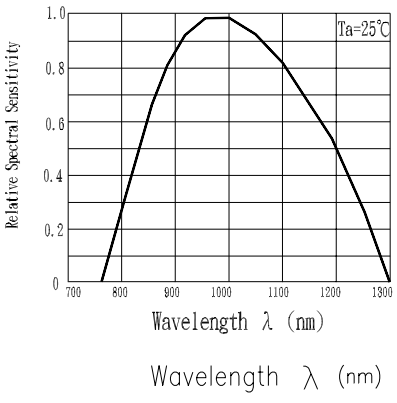
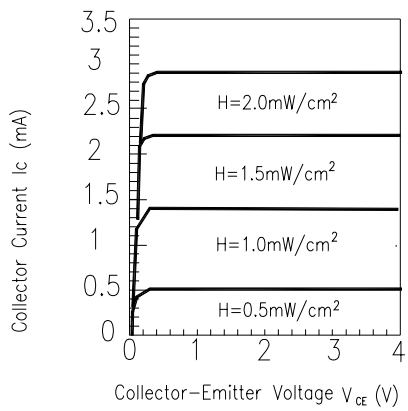


Fig.5 Spectral Sensitivity



Wavelength λ (nm)

Fig.6 Collector Current vs. Collector-Emitter Voltage



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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℃ 5 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

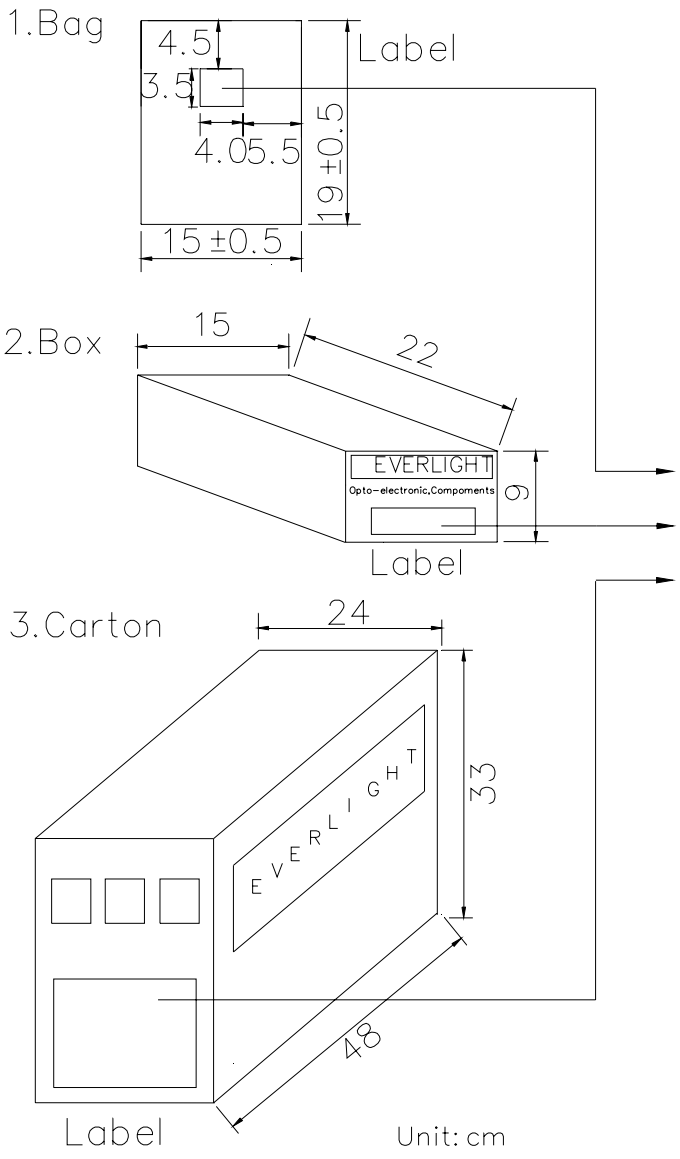
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ECN : PAGE : 7/7

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■ Packing Specifications





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