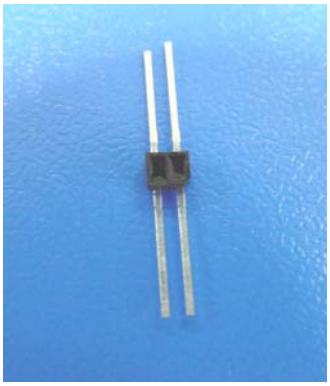
Technical Data Sheet

OPTO INTERRUPTER ITR

ITR8307

Features

- Fast response time
- High sensitivity
- Cut-Off visible wavelength
- Thin
- Compact
- Pb free



Descriptions

ITR8307 is a light reflection switch which includes a GaAs IR-LED transmitter and a NPN photo-transistor with a high photosensitive receiver for short distance, operating in the infrared range. Both components are mounted side- by- side in a plastic package.

Applications

- Camera
- VCR
- Floppy disk driver
- Cassette type recorder
- Various microcomputer control equipment

Device Selection Guide

Device No.	Chip Material
IR	GaAs
PT	Silicon

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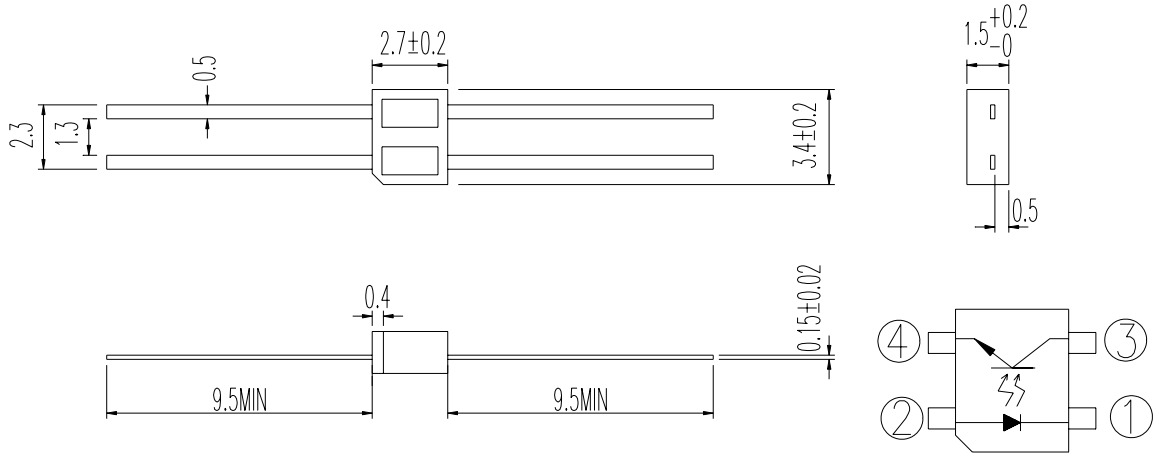
Package Dimensions



Notes: 1.All dimensions are in millimeters
2.Tolerances unless dimensions ±0.25mm

Absolute Maximum Ratings (Ta=25℃)

Parameter		Symbol	Ratings	Unit
Input	Power Dissipation at(or below) 25℃ 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	50	mA
	Collector-Emitter Voltage	B V_{CEO}	30	V
	Emitter-Collector Voltage	B V_{ECO}	5	V
Operating Temperature		Topr	-25~+85	℃
Storage Temperature		Tstg	-30~+90	℃
Lead Soldering Temperature (*2)		Tsol	260	℃

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

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Electro-Optical Characteristics (Ta=25℃)

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Parameter		Symbol	Min.	Typ.	Max.	Unit	Conditions
Input	Forward Voltage	V_F	---	1.2	1.6	V	I_F=20mA
	Reverse Current	I_R	---	---	10	μA	V_R=5V
	Peak Wavelength	λ_P	---	940	---	nm	---
Output	Dark Current	I_{CEO}	---	---	100	nA	V_{CE}=10V
	C-E Saturation Voltage	V_{CE}(sat)	---	---	0.4	V	I_C=2mA ,Ee=1mW/cm^2
Transfer Characteristics	Collector Current	I_C(ON)	0.1	-	---	mA	V_{CE}=5V, I_F=20mA
	Leakage Current	I_{CEOD}	---	---	1	μA	V_{CE}=5V I_F=20mA
	Rise time	t_r	---	20	---	μsec	V_{CE}=2V I_C=100 μA R_L=1KΩ
	Fall time	t_f	---	20	---	μsec	

Rank

Conditions：I_F=20mA V_{CE}=5V

Unit: μA

Bin number	Min	Max
B	300	600
C	500	800

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Typical Electrical/Optical/Characteristics Curves for IR

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Fig.1 Forward Current vs. Ambient Temperature

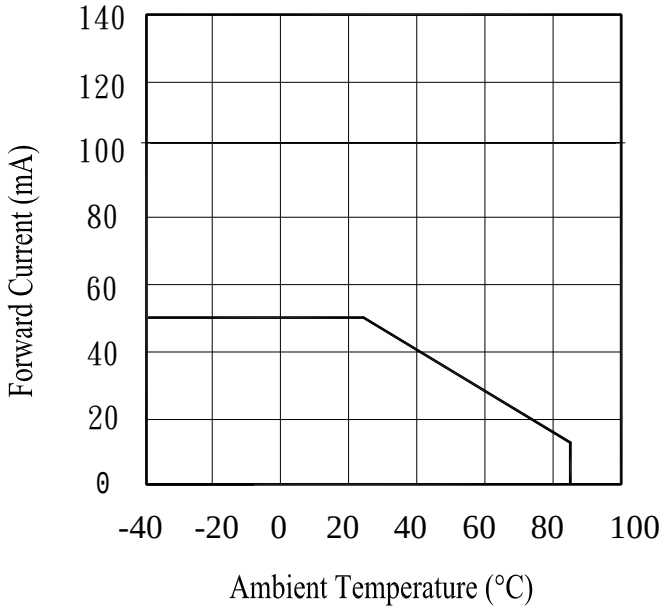


Fig.2 Spectral Distribution

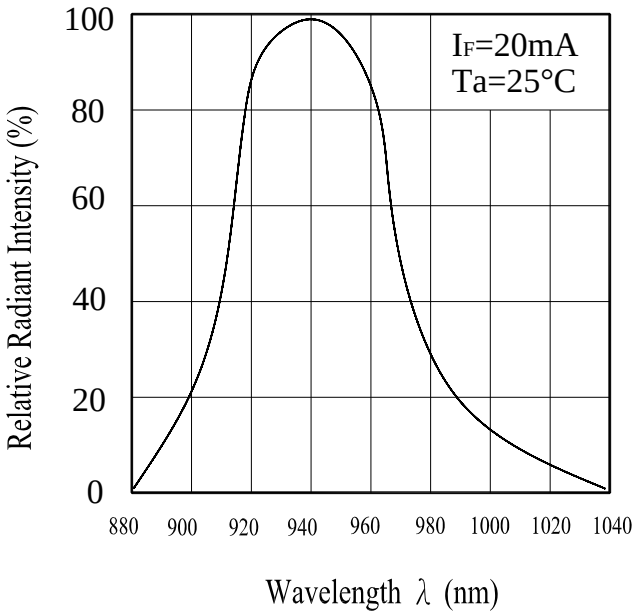


Fig.3 Peak Emission Wavelength Ambient Temperature

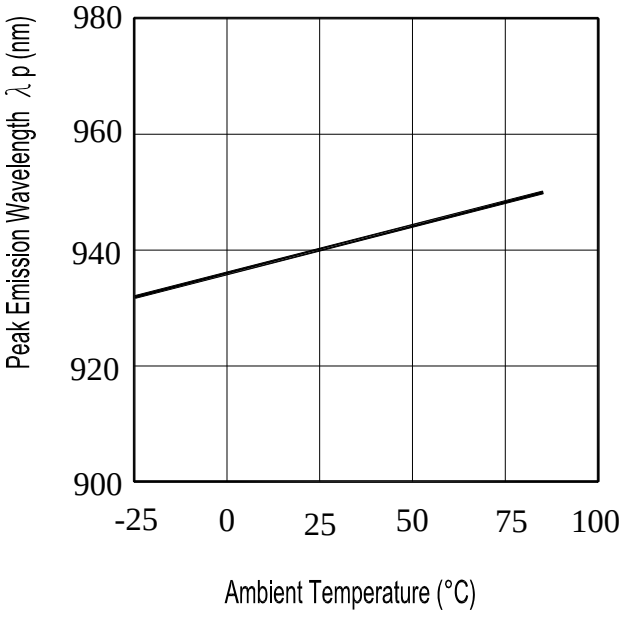


Fig.4 Forward Current vs. Forward Voltage

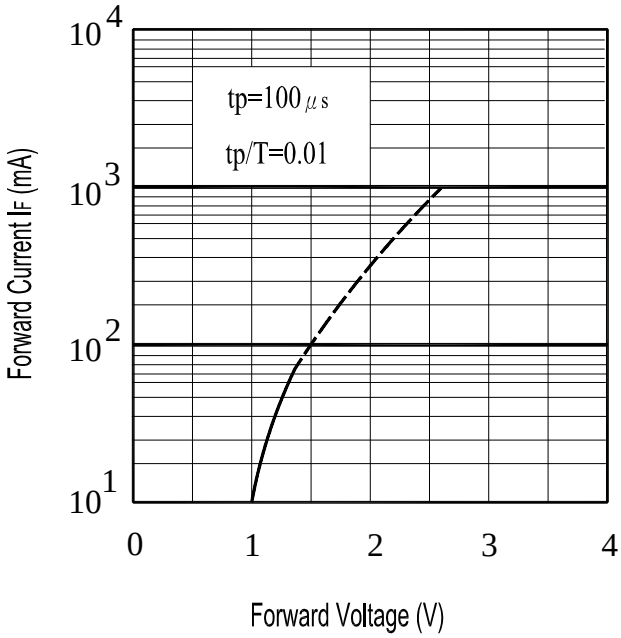


Fig.5 Relative Intensity vs. Forward Current

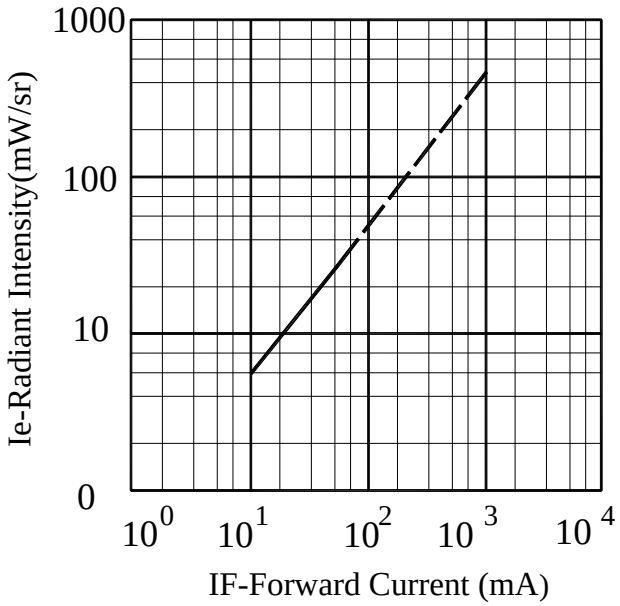


Fig.6 Relative Radiant Intensity vs. Angular Displacement

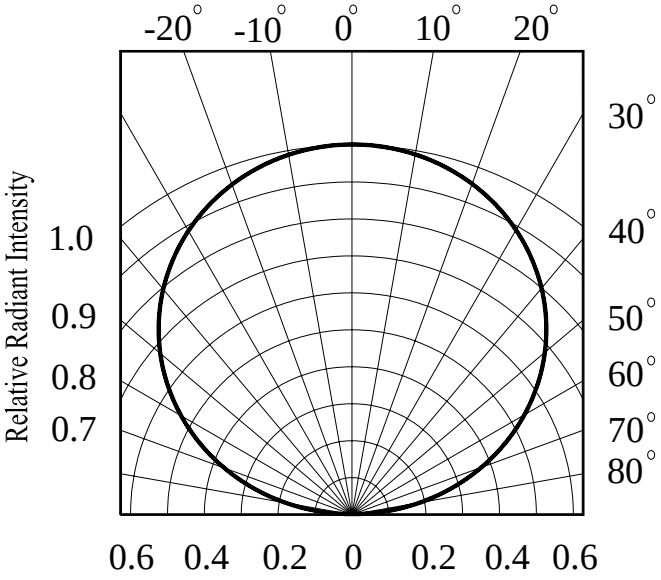


Fig.7 Relative Intensity vs. Ambient Temperature(°C)

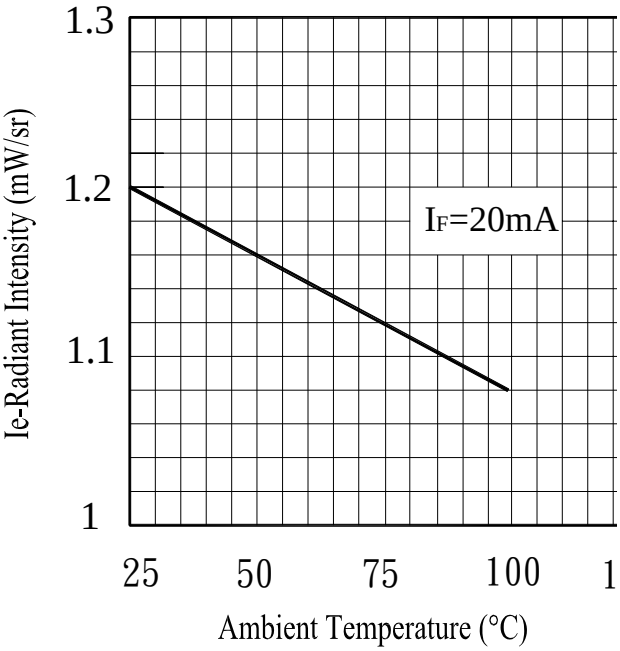
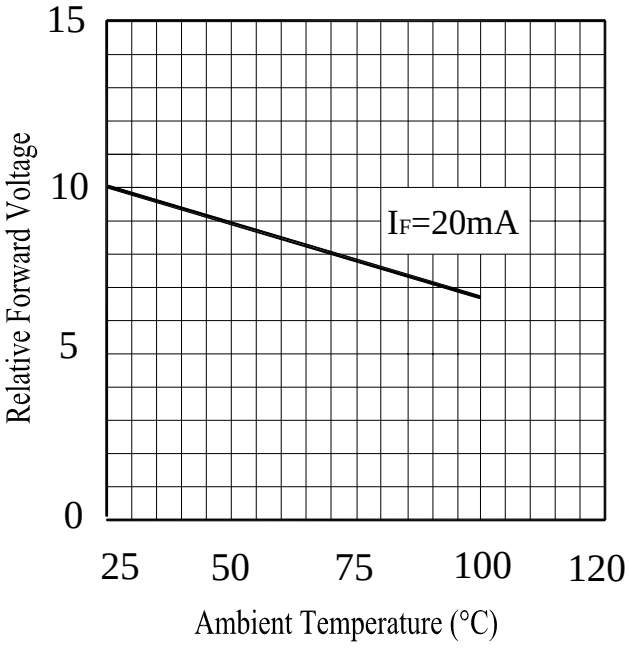


Fig.8 Forward Current vs. Ambient Temperature(°C)



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Typical Electrical/Optical/Characteristics Curves for PT

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Fig.1 Collector Power Dissipation vs. Ambient Temperature

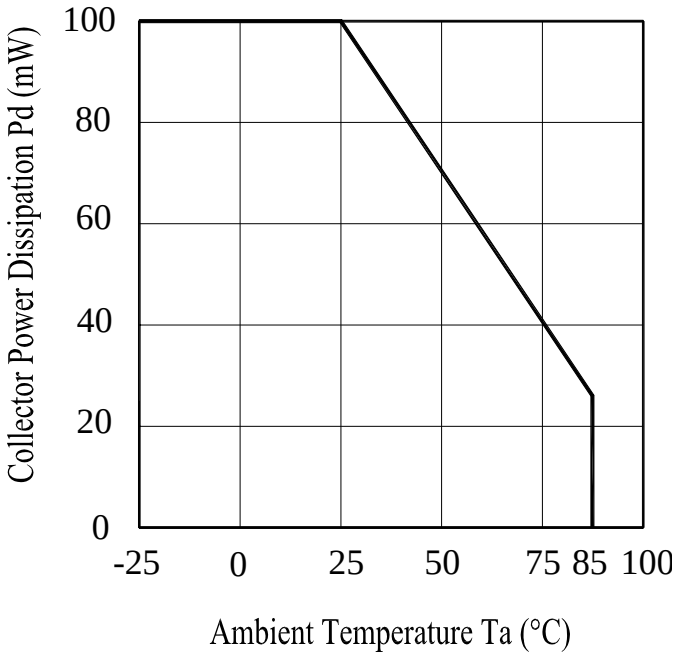


Fig.2 Collector Dark Current vs Ambient. Temperature

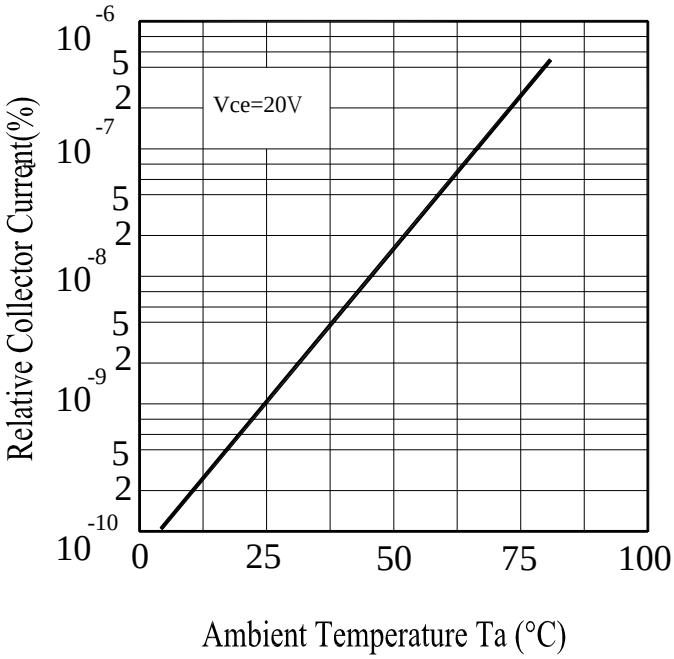


Fig.3 Relative Collector Current vs Ambient Temperature

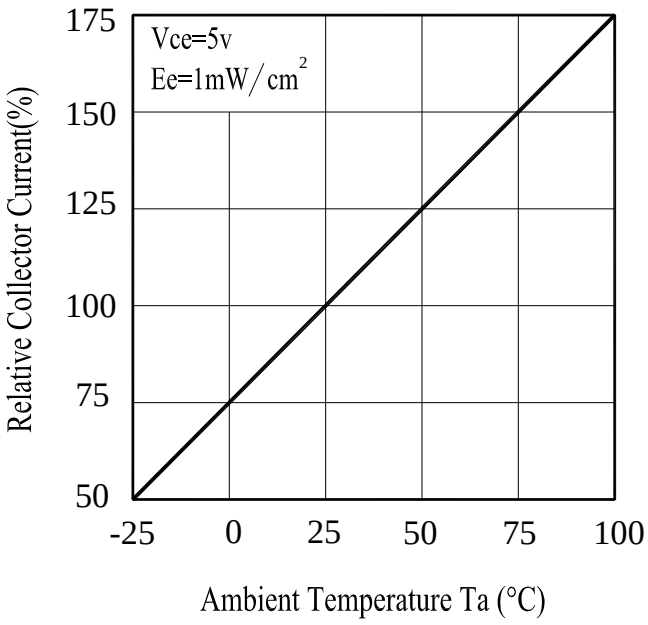


Fig.4 Collector Current vs.Irradiance

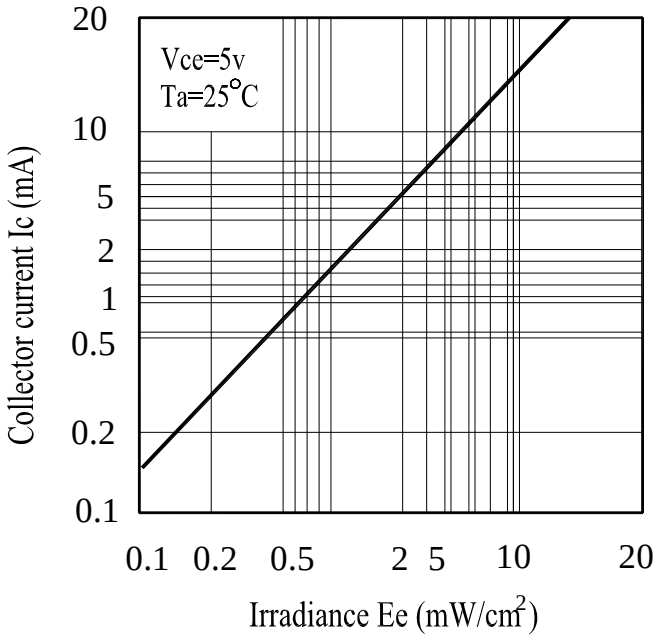


Fig.5 Spectral Sensitivity

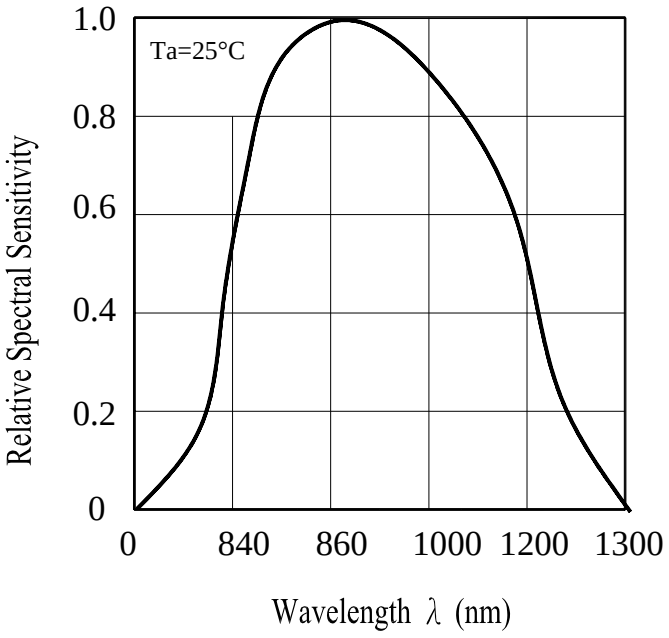
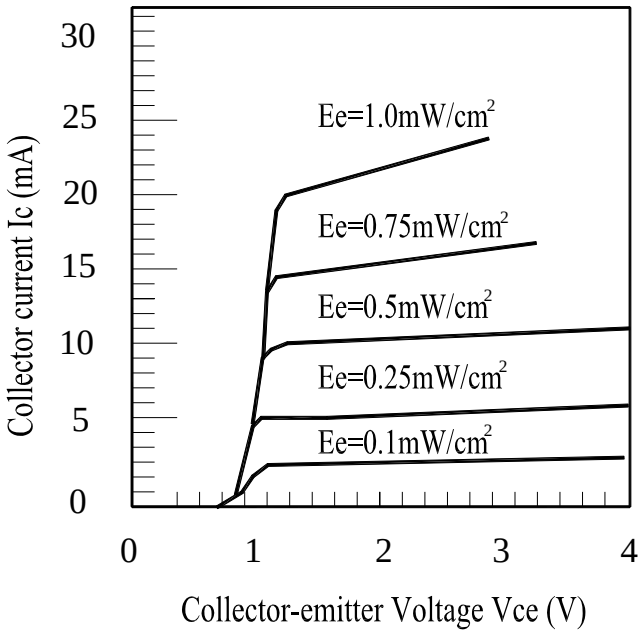


Fig.6 Collector Current vs Collector Current Ic (mA) **ITR8307**



Typical Electrical/Optical/Characteristics Curves for ITR

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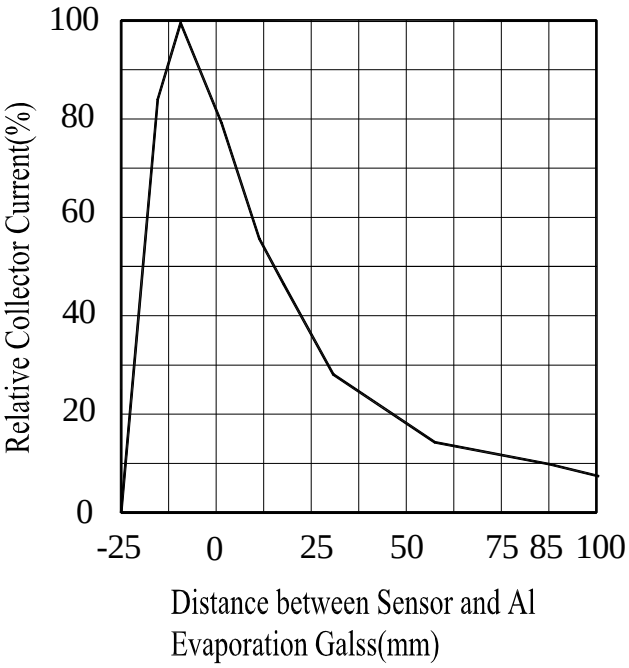
Fig.1 Relative Collector Current vs. Distance .
Between Sensor and Al Evaporationt



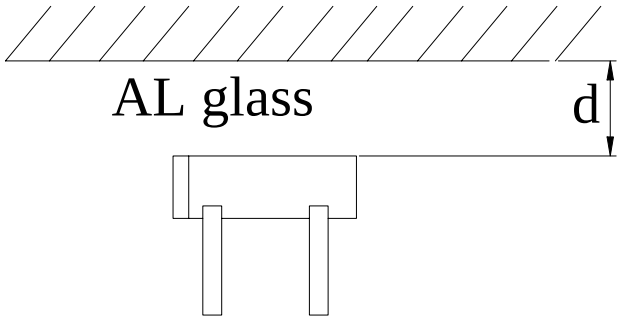
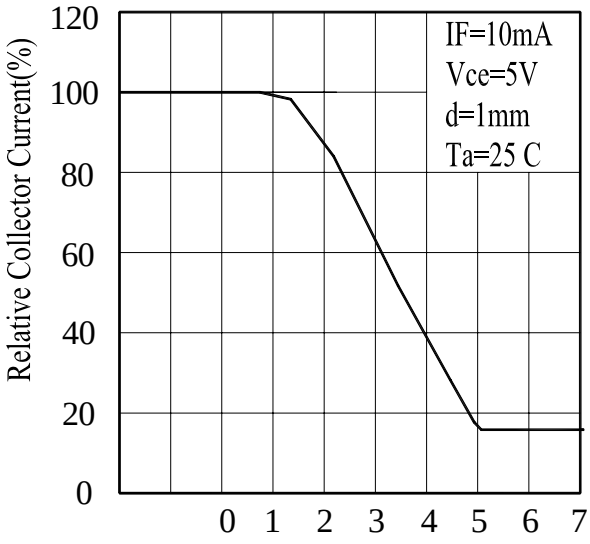


Fig.2 Relative Collector Current vs.
Card moving Distance d(mm)



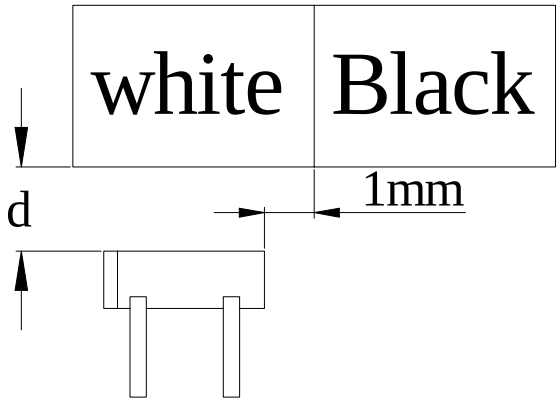


Fig.3 Response Time vs. Load Resistance

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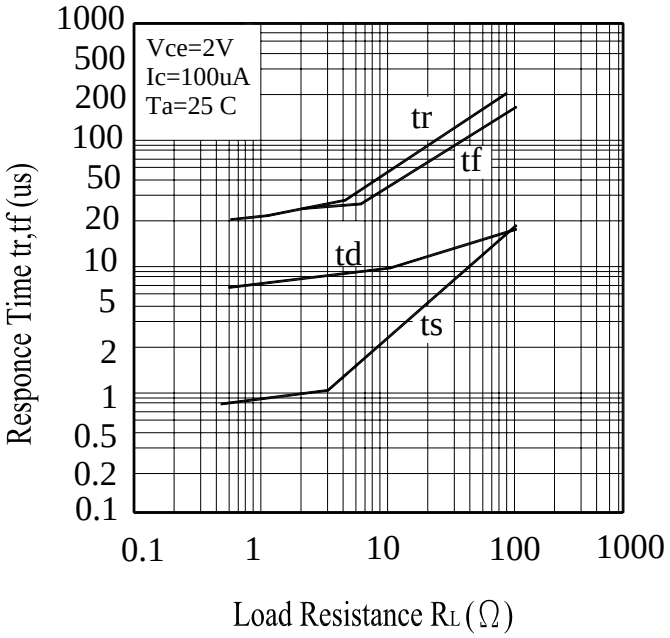

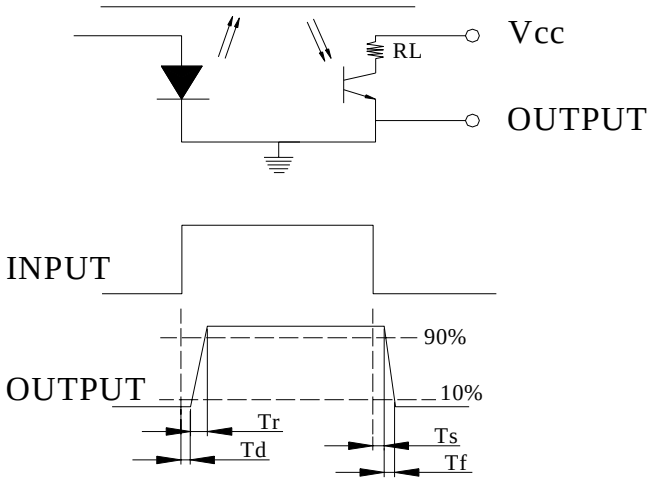

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Reliability Test Item And Condition

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The reliability of products shall be satisfied with items listed below.
Confidence level：90%
LTPD：10%

NO.	Item	Test Conditions	Test Hours/ Cycles	Sample Sizes	Failure Judgement Criteria	Ac/Re
1	Solder Heat	TEMP.：260℃±5℃	10secs	22pcs	$I_R \geqq U \times 2$ $Ee \leqq L \times 0.8$ $V_F \geqq U \times 1.2$ U：Upper Specification Limit L：Lower Specification Limit	0/1
2	Temperature Cycle	H：+85℃ 30mins ↕ 5mins L：-55℃ 30mins	50Cycles	22pcs		0/1
3	Thermal Shock	H：+100℃ 5mins ↕ 10secs L：-10℃ 5mins	50Cycles	22pcs		0/1
4	High Temperature Storage	TEMP.：+100℃	1000hrs	22pcs		0/1
5	Low Temperature Storage	TEMP.：-55℃	1000hrs	22pcs		0/1
6	DC Operating Life	I_F=20mA	1000hrs	22pcs		0/1
7	High Temperature/ High Humidity	85℃ / 85% R.H	1000hrs	22pcs		0/1

Packing Quantity

1. 1000Pcs/1Bag
2. 1Bag/1Carton

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Recommended Method of Storage

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The following are general recommendations for moisture sensitive level (MSL) 4 storage and use:

- Shelf life in sealed bag: 12 months at < 40 °C and < 90% relative humidity (RH)
- After bag is opened, devices that will be subjected to reflow solder or other high temperature process must
  a) Mounted within 72 hours of factory conditions < 30 °C/60%RH, or
  b) Stored at <20% RH
  - Devices require bake, before mounting, if:

  Humidity Indicator Card is > 20% when read at 23 ± 5 °C
- If baking is required, devices may be baked:
  a) 192 hours at 40℃,and <5% RH(dry air/nitrogen) or
  b) 96 hours at 60℃,and <5% RH for all device containers
  c) 24 hours at 125 °C

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