

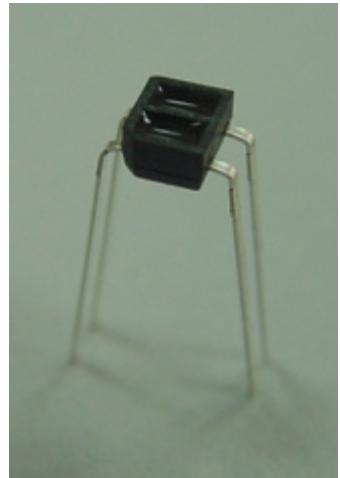
Technical Data Sheet

Opto Interrupter

ITR8307/S17

■ Features

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



■ Descriptions

ITR8307/S17 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.

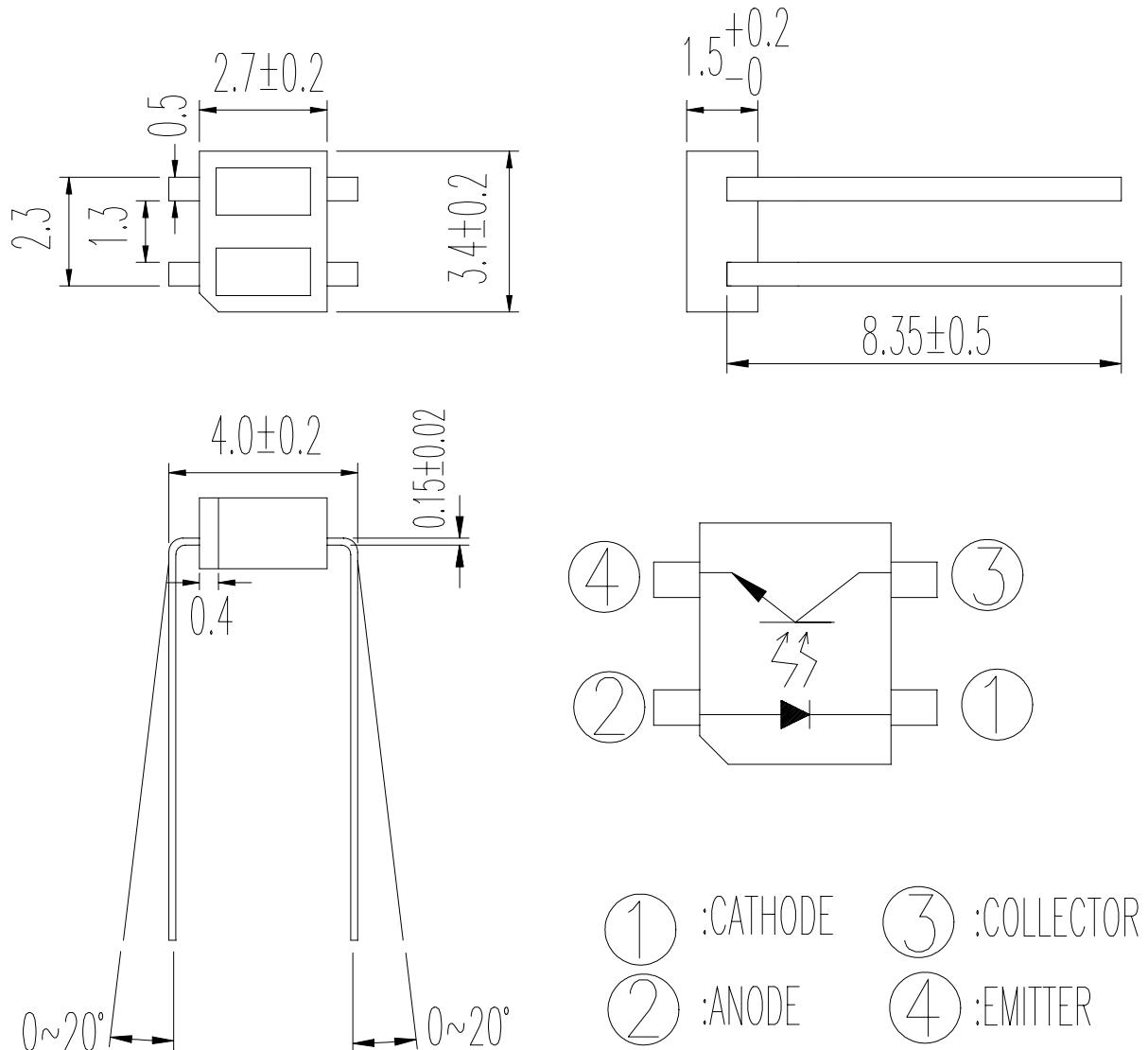
■ Applications

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

■ Device Selection Guide

Device No.	Chip Material
IR	GaAs
PT	Silicon

Device No:DRX-083-103

■ Package Dimensions

Notes:

1. All dimensions are in millimeters
2. Tolerances unless dimensions ± 0.15 mm

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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 $\leq 100 \mu s$, 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	-20~+70	°C
Storage Temperature		Tstg	-30~+80	°C
Lead Soldering Temperature (*2) (1/16 inch form body for 5 seconds)		Tsol	260	°C

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

Electro-Optical Characteristics (Ta=25°C)

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	μ A	V _R =5V
	Peak Wavelength	λ_p	---	940	---	nm	---
	View Angle	201/2	---	110	---	Deg	I _F =20mA
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	Light Current	I _C (ON)	B	180	---	300	μ A
			C	250	---	440	
	Leakage Current	I _{CEOD}	---	---	1	μ A	V _{CE} =5V I _F =10mA
	Rise time	t _r	---	20	---	μ sec	V _{CE} =2V I _C =100 μ A R _L =1K Ω
	Fall time	t _f	---	20	---	μ sec	

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■ Typical Electrical/Optical/Characteristics Curves for IR

Fig. 1 Forward Current vs. Ambient Temperature

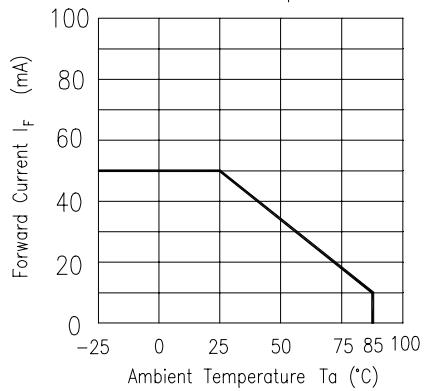


Fig. 3 Peak Emission Wavelength vs. Ambient Temperature

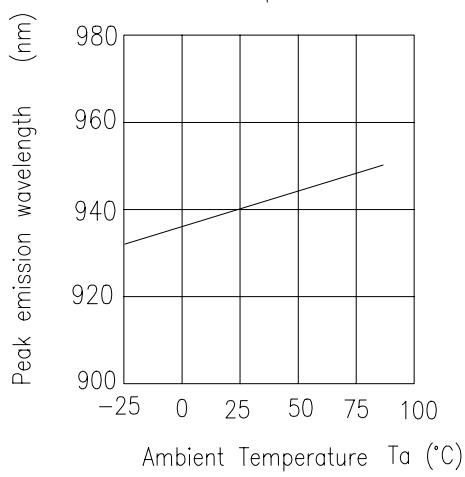


Fig. 5 Forward Voltage vs. Ambient Temperature

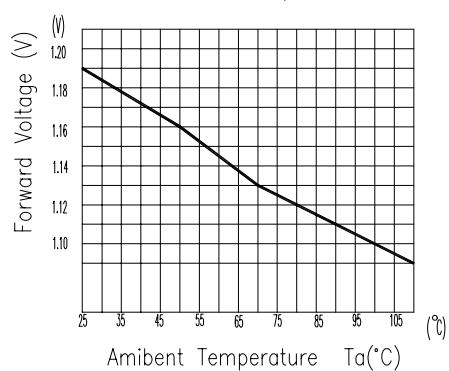


Fig. 2 Spectral Distribution

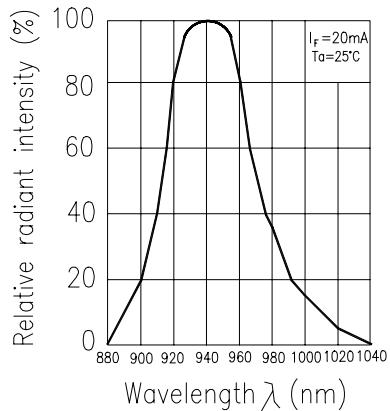


Fig. 4 Forward Current vs. Forward Voltage

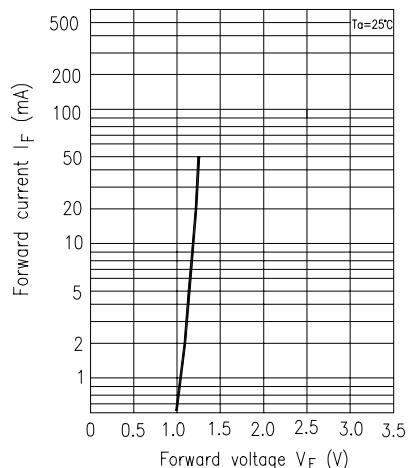
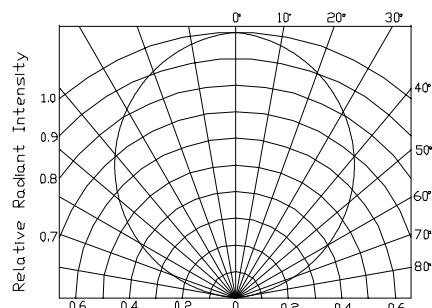


Fig. 6 Relative Radiant Intensity vs. Angular Displacement



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■ Typical Electrical/Optical/Characteristics Curves for PT

Fig.1 Collector Power Dissipation vs. Ambient Temperature

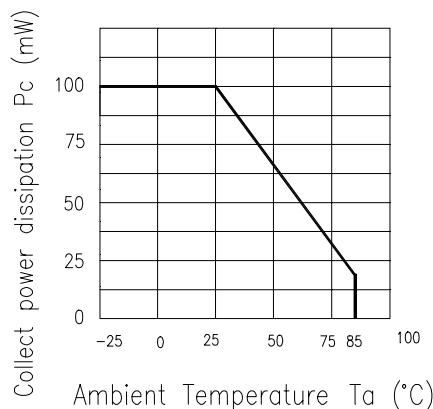


Fig. 3 Relative Collector Current vs. Ambient Temperature

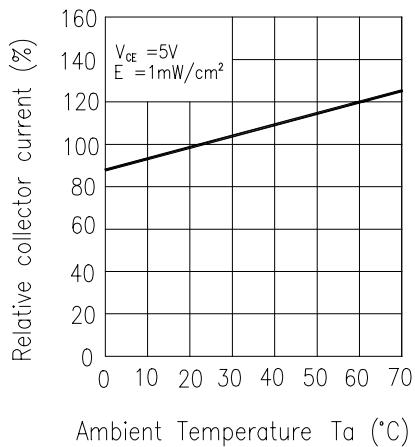


Fig.5 Spectral Sensitivity

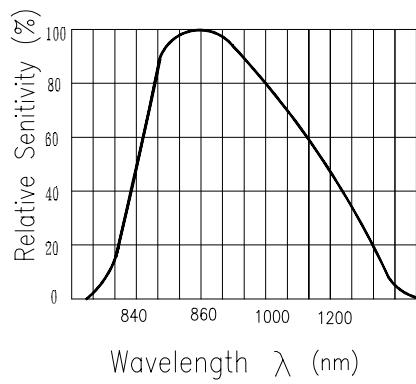


Fig.2 Collector Dark Current vs. Ambient Temperature

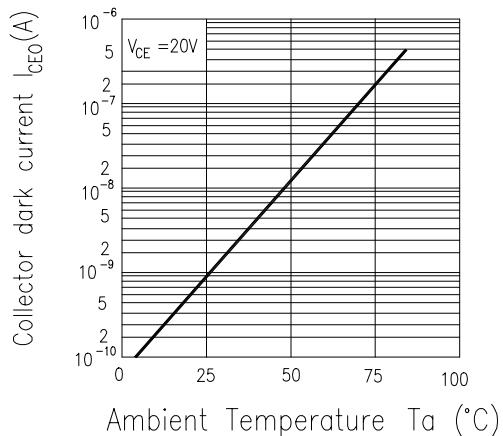


Fig.4 Collector Current vs. Irradiance

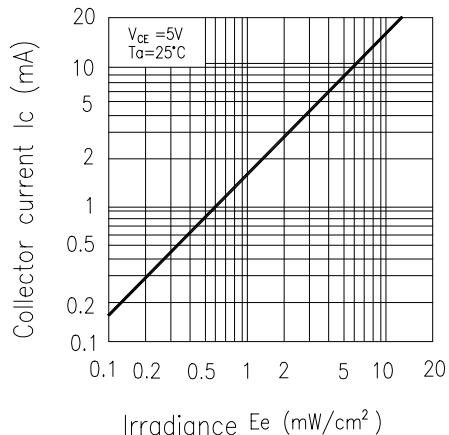
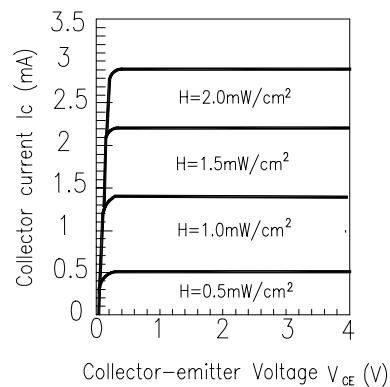


Fig.6 Collector Current vs. Collector-emitter Voltage



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■ Typical Electrical/Optical/Characteristics Curves For ITR

Fig.7 Relative Collector Current vs.
Distance between Sensor and
Al Evaporation Glass

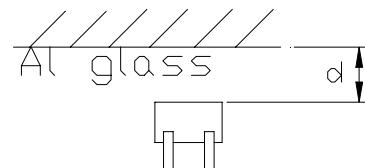
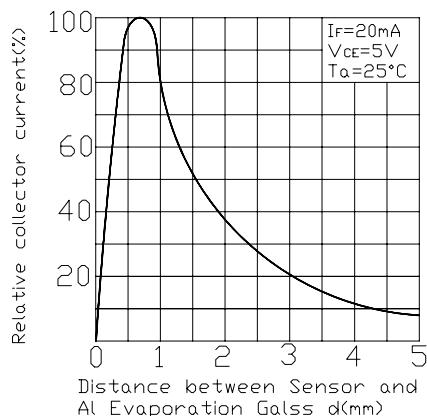


Fig.8 Relative Collector Current vs.
Card Moving Distance (1)

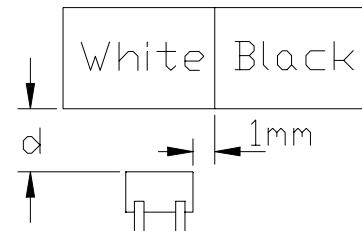
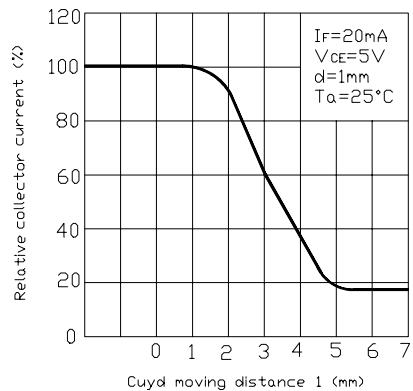
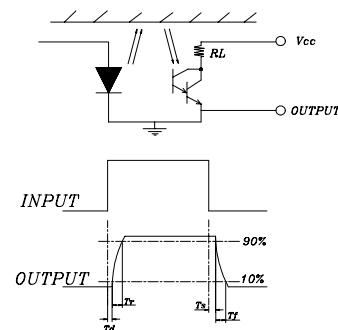
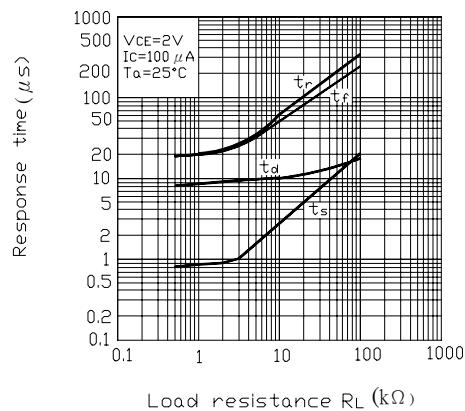


Fig.9 Response Time vs. Load Resistance
(GP2S24/GP2S26/GP2S27)



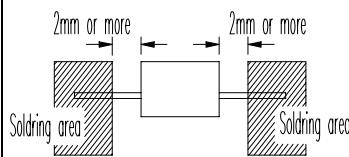
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■ Reliability Test Item And Condition

The reliability of products shall be satisfied with items listed below.

Confidence level : 90%

LTPD : 10%

NO.	Item	Test Condition	Test Hours/Cycle	Sample Size	Failure Judgement Criteria	Ac/Re
1	Solderability 	TEMP : 230°C ± 5 °C	5 sec	22 PCs	More than 90% of lead to be covered by soldering	0/1
2	Temperature Cycle	H : +85°C 30 mins L : -55°C 30 min	5 min 50 cycle	22 PCs	$I_R \geq U_x \cdot 2$ $E_e \leq L_x \cdot 0.8$ $V_F \geq U_x \cdot 1.2$	0/1
3	Thermal Shock	H : +100°C 5 min L : -10°C 5 min	10 sec 50 cycle	22 PCs	U :Upper specification limit L :Lower specification limit	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	$V_{CE}=5V$ $I_F=20mA$	1000 hrs	22 PCs		0/1
7	High Temperature / High Humidity	85°C / 85% R.H.	1000 hrs	22 PCs		0/1

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