



# Technical Data Sheet

## Opto Interrupter

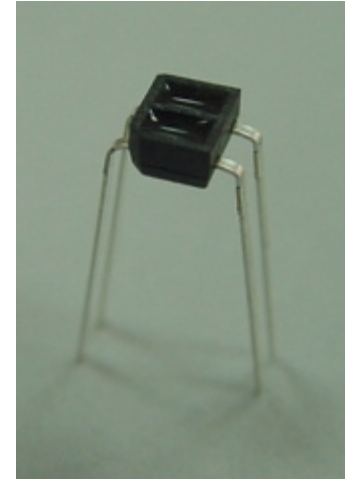
### ITR8307/S17

#### ■ 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

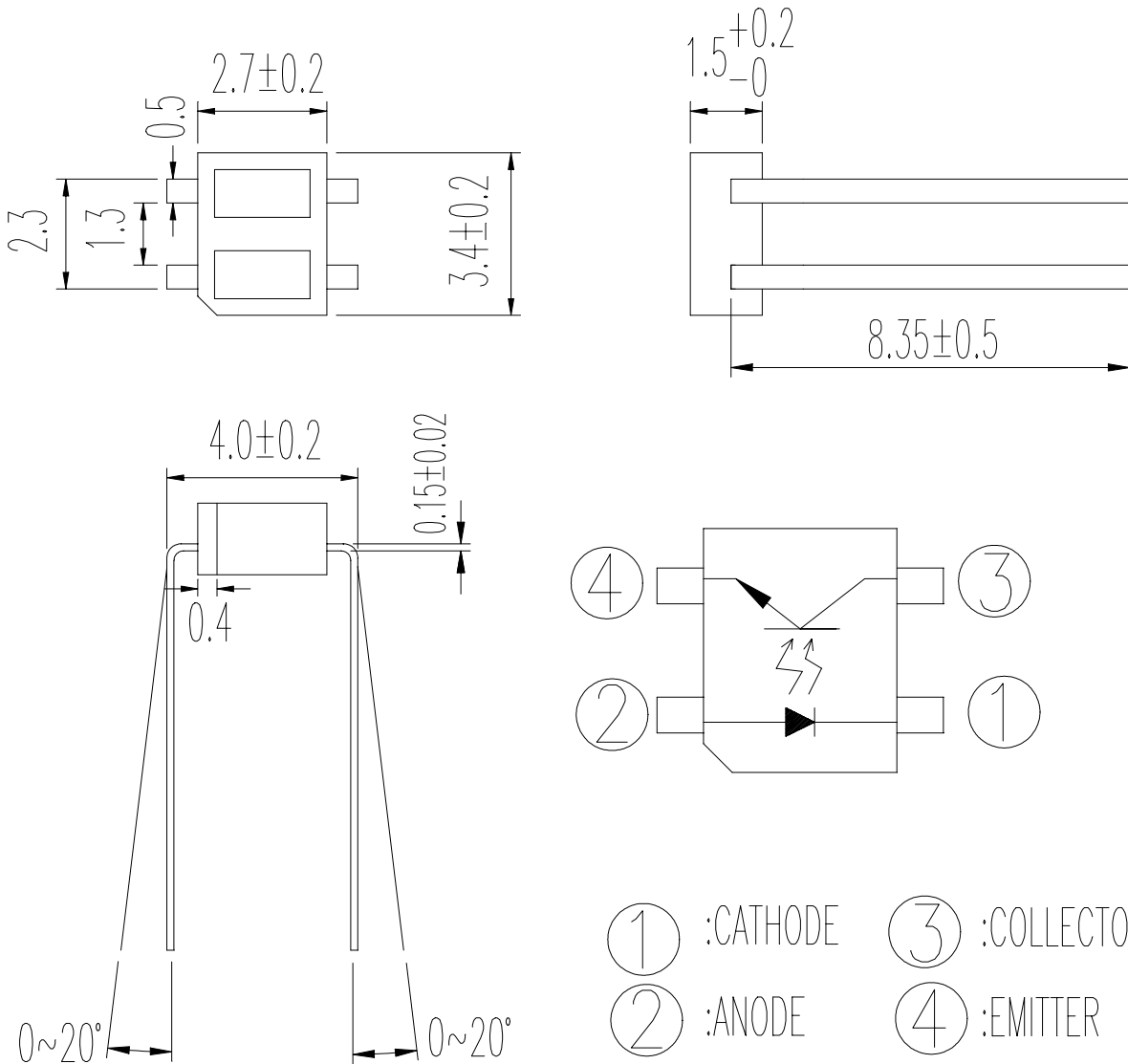
- Camera
- VCR
- Floppy disk driver
- Cassette type recorder
- Various microcomputer control equipment

#### ■ 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 ± 0.15mm

**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 <sub>R</sub>	5	V
	Forward Current	I <sub>F</sub>	50	mA
	Peak Forward Current (*1) Pulse width ≤ 100 μs, Duty cycle=1%	I <sub>FP</sub>	1	A
Output	Collector Power Dissipation	P <sub>C</sub>	75	mW
	Collector Current	I <sub>C</sub>	50	mA
	Collector-Emitter Voltage	B V <sub>CEO</sub>	30	V
	Emitter-Collector Voltage	B V <sub>ECO</sub>	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)  $t_w=100 \mu \text{ sec.}$ ,  $T=10 \text{ msec.}$  (\* 2)  $t=5 \text{ Sec}$

**Electro-Optical Characteristics (Ta=25°C)**

Parameter		Symbol	Min.	Typ.	Max.	Unit	Conditions	
Input	Forward Voltage	V <sub>F</sub>	---	1.2	1.6	V	I <sub>F</sub> =20mA	
	Reverse Current	I <sub>R</sub>	---	---	10	μA	V <sub>R</sub> =5V	
	Peak Wavelength	λ <sub>p</sub>	---	940	---	nm	---	
	View Angle	2θ <sub>1/2</sub>	---	110	---	Deg	I <sub>F</sub> =20mA	
Output	Dark Current	I <sub>CEO</sub>	---	---	100	nA	V <sub>CE</sub> =10V	
	C-E Saturation Voltage	V <sub>CE(sat)</sub>	---	---	0.4	V	I <sub>C</sub> =2mA ,Ee=1mW/cm <sup>2</sup>	
Transfer Characteristics	Light Current	I <sub>C(ON)</sub>	B	180	---	300	μA	V <sub>CE</sub> =5V I <sub>F</sub> =10mA
			C	250	---	440		
	Leakage Current	I <sub>CEOD</sub>	---	---	1	μA		
	Rise time	t <sub>r</sub>	---	20	---	μsec	V <sub>CE</sub> =2V	
	Fall time	t <sub>f</sub>	---	20	---	μsec	I <sub>C</sub> =100 μA R <sub>L</sub> =1KΩ	

Device No:DRX-083-103

**Typical Electrical/Optical/Characteristics Curves for IR**

Fig. 1 Forward Current vs. Ambient Temperature

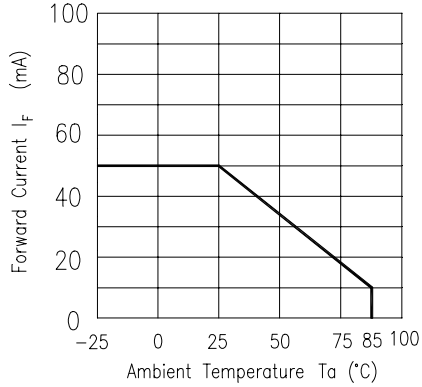


Fig. 2 Spectral Distribution

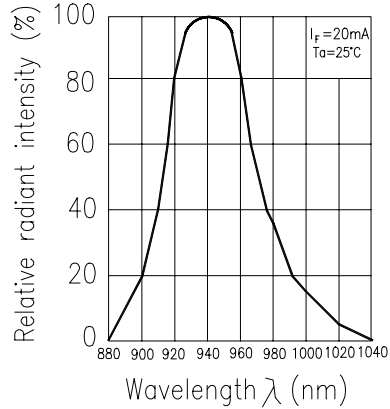


Fig. 3 Peak Emission Wavelength vs. Ambient Temperature

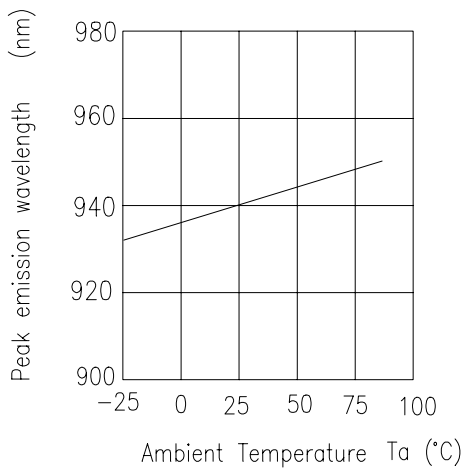


Fig. 4 Forward Current vs. Forward Voltage

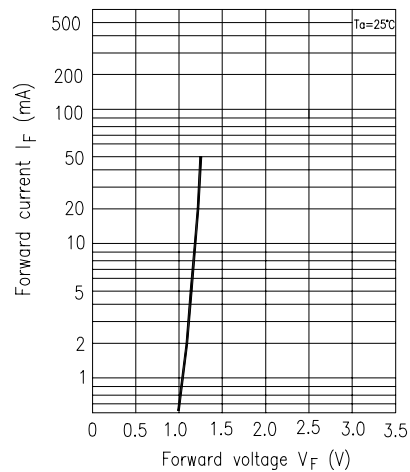


Fig. 5 Forward Voltage vs. Ambient Temperature

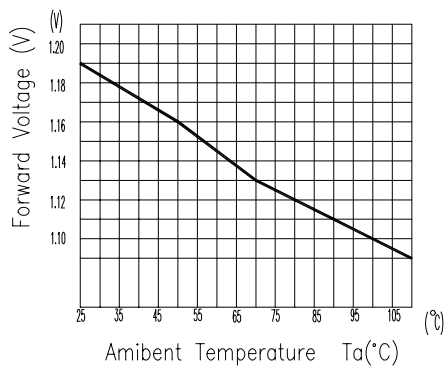
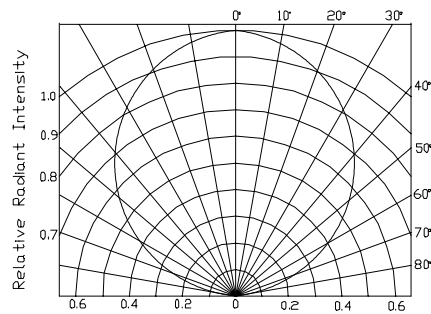


Fig. 6 Relative Radiant Intensity vs. Angular Displacement



Device No:DRX-083-103

**Typical Electrical/Optical/Characteristics Curves for PT**

Fig.1 Collector Power Dissipation vs. Ambient Temperature

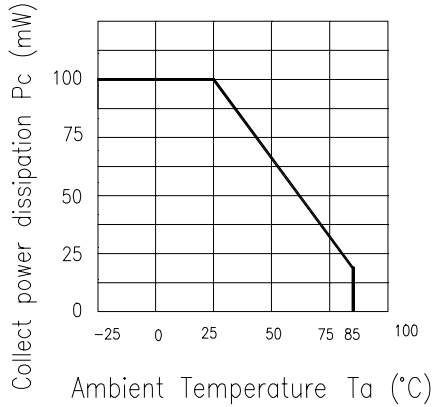


Fig.2 Collector Dark Current vs. Ambient Temperature

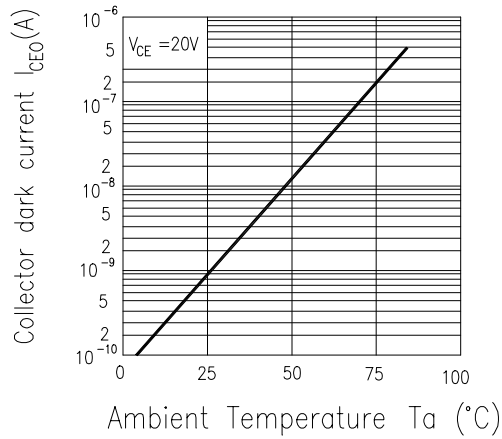


Fig. 3 Relative Collector Current vs. Ambient Temperature

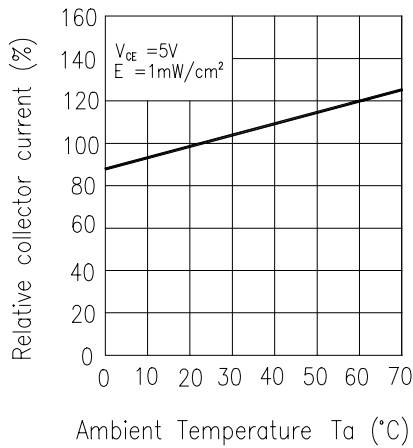


Fig.4 Collector Current vs. Irradiance

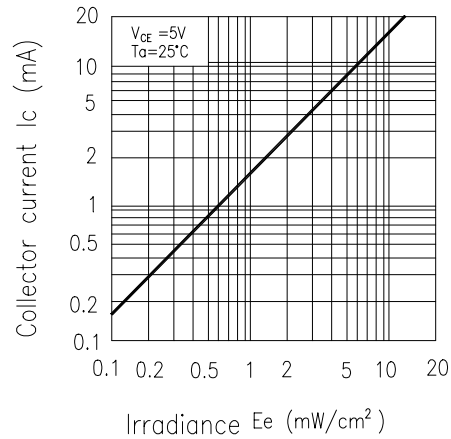


Fig.5 Spectral Sensitivity

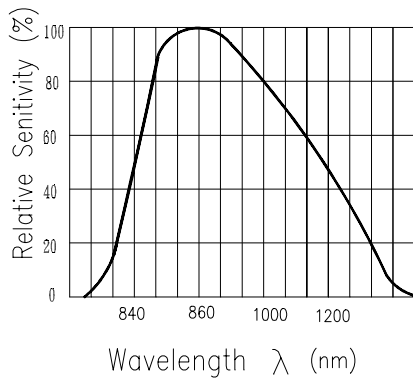
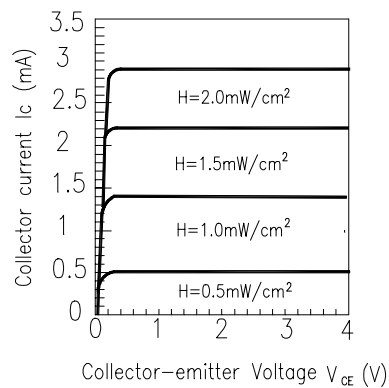


Fig.6 Collector Current vs. Collector-emitter Voltage



**Typical Electrical/Optical/Characteristics Curves For ITR**

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

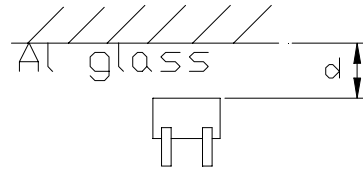
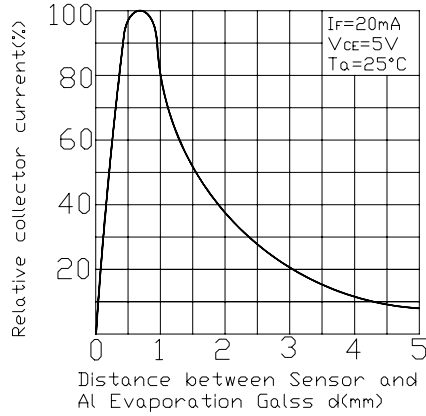


Fig.8 Relative Collector Current vs. Card Moving Distance (1)

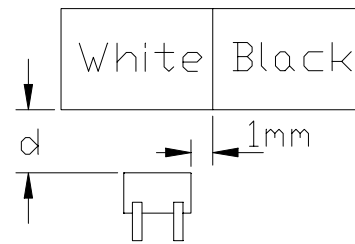
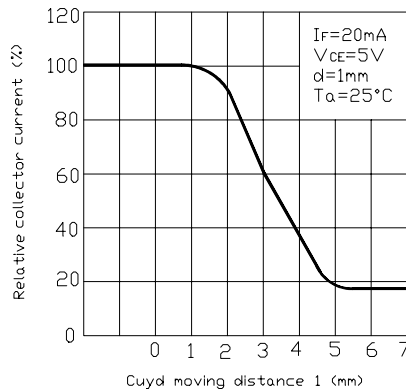
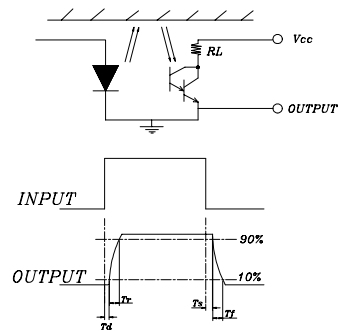
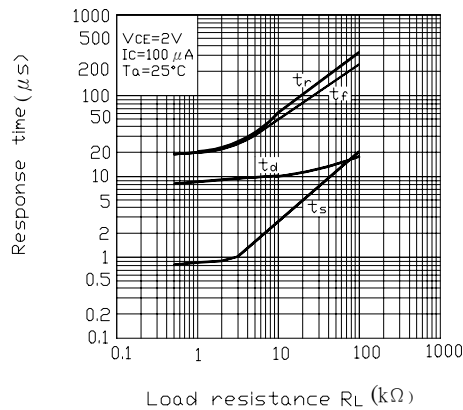


Fig.9 Response Time vs. Load Resistance (GP2S24/GP2S26/GP2S27)

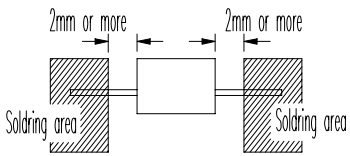


**Reliability Test Item And Condition**

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	<b>Solderability</b> 	TEMP : 230°C ± 5 °C	5 sec	22 PCs	More than 90% of lead to be covered by soldering	0/1
2	<b>Temperature Cycle</b>	H : +85°C    30 mins ↑ ↓ 5 min ↓ ↑ L : -55°C    30 min	50 cycle	22 PCs	$I_R \geq U \times 2$ $E_e \leq L \times 0.8$ $V_F \geq U \times 1.2$	0/1
3	<b>Thermal Shock</b>	H : +100°C    5 min ↑ ↓ 10 sec ↓ ↑ L : -10°C    5 min	50 cycle	22 PCs	U :Upper specification limit L :Lower specification limit	0/1
4	<b>High Temperature Storage</b>	TEMP. : +100°C	1000 hrs	22 PCs		0/1
5	<b>Low Temperature Storage</b>	TEMP. : -55°C	1000 hrs	22 PCs		0/1
6	<b>DC Operating Life</b>	$V_{CE}=5V$ $I_F=20mA$	1000 hrs	22 PCs		0/1
7	<b>High Temperature / High Humidity</b>	85°C / 85% R.H.	1000 hrs	22 PCs		0/1

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Device No:DRX-083-103