

GP2S09/GP2S24/ GP2S26/GP2S27

Subminiature Photointerrupter

■ Features

1. Compact and thin
GP2S09: Compact DIP long lead type
GP2S24: Compact DIP type
GP2S26: Flat lead type
GP2S27: Mini-flat package type

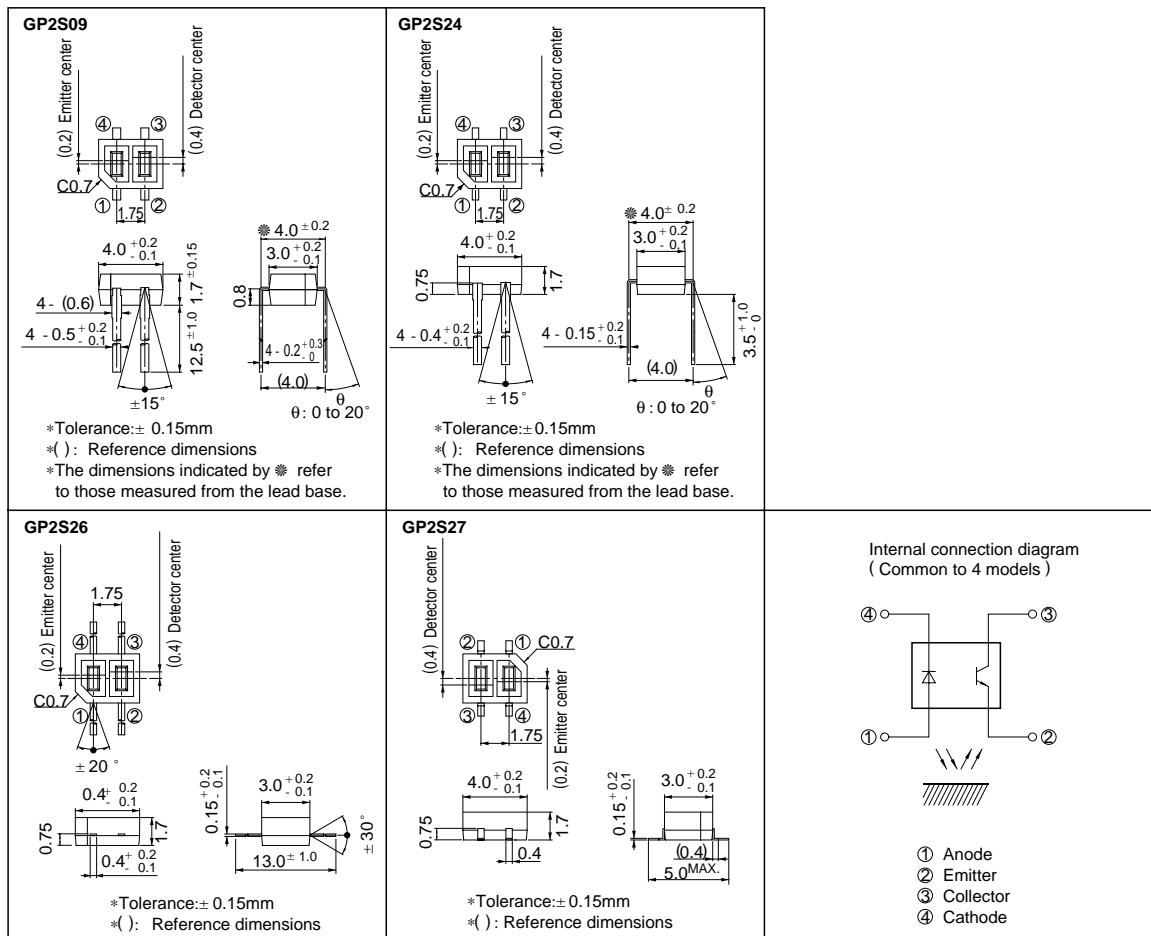
■ Applications

1. Cassette tape recorders, VCRs
2. Floppy disk drives
3. Various microcomputerized control equipment

2. Optimum detection distance: 0.6 to 0.8mm
3. Visible light cut-off type

■ Outline Dimensions

(Unit : mm)



Absolute Maximum Ratings

(Ta = 25°C)

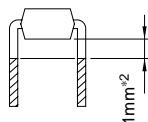
Parameter		Symbol	Rating	Unit
Input	Forward current	I _F	50	mA
	Reverse voltage	V _R	6	V
	Power dissipation	P	75	mW
Output	Collector-emitter voltage	V _{CEO}	35	V
	Emitter-collector voltage	V _{ECO}	6	V
	Collector current	I _C	20	mA
	Collector power dissipation	P _C	75	mW
Total power dissipation		P _{tot}	100	mW
Operating temperature		T _{opr}	- 20 to + 85	°C
Storage temperature		T _{stg}	- 40 to + 100	°C
*1Soldering temperature		T _{sol}	260	°C

*1 Within 5 seconds (Soldering areas for each model are shown below)

GP2S09, GP2S24

Soldering area:

The hatched area more than 1mm*2 away from the lower edge of package as shown in the figure below.

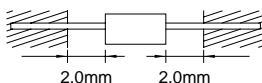


*2 GP2S09: 4mm

GP2S26

Soldering area:

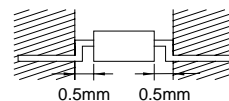
The hatched area more than 2.0mm away from the both edges of package as shown in the figure below.



GP2S27

Soldering area

The hatched area more than 0.5mm away from the both edges of package as shown in the figure below.



Electro-optical Characteristics

(Ta = 25°C)

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input	Forward voltage	V _F	I _F = 20mA	-	1.2	1.4	V
	Reverse current	I _R	V _R = 6V	-	-	10	μA
Output	Collector dark current	I _{CEO}	V _{CE} = 20V	-	10 ⁻⁹	10 ⁻⁷	A
Transfer characteristics	*3Collector current	I _C	I _F = 4mA, V _{CE} = 2V	20	45	120	μA
	Response time	Rise time	V _{CE} = 2V, I _C = 100 μA R _L = 1kΩ, d = 1mm	-	20	100	μs
		Fall time		-	20	100	μs
	*4Leak current	I _{LEAK}	I _F = 4mA, V _{CE} = 2V	-	-	0.1	μA

*3 The condition and arrangement of the reflective object are shown below.

*4 Without reflective object

The ranking of collector current shall be classified into the following 6 ranks.

(GP2S09, GP2S24, GP2S26, GP2S27)

Rank	Collector-current I _C (μA)
*5A	20 to 42
B	34 to 71
C	58 to 120
A or B	20 to 71
B or C	34 to 120
A, B or C	20 to 120

*5 GP2S24 and GP2S26 and GP2S27 don't have A rank.

Test Condition and Arrangement for Collector Current

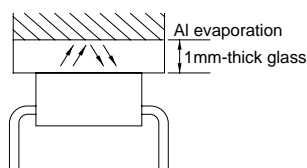


Fig. 1 Forward Current vs. Ambient Temperature

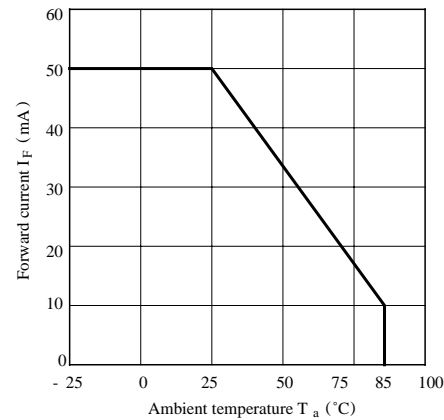


Fig. 2 Power Dissipation vs. Ambient Temperature

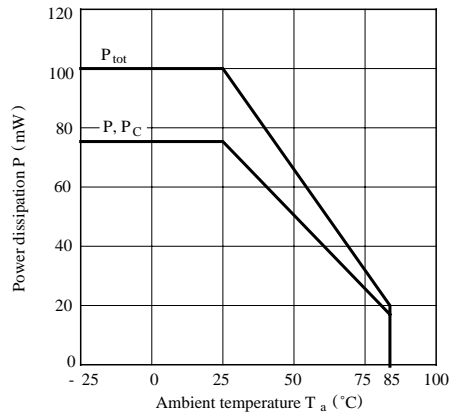


Fig. 3 Forward Current vs. Forward Voltage

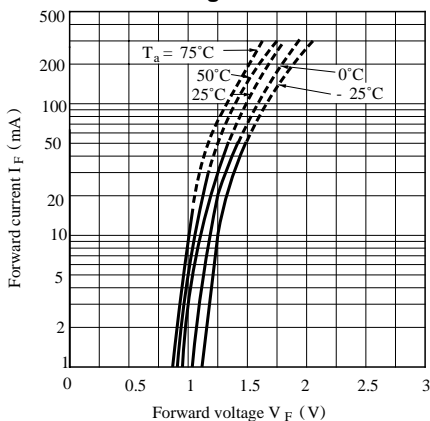


Fig. 4 Collector Current vs. Forward Current

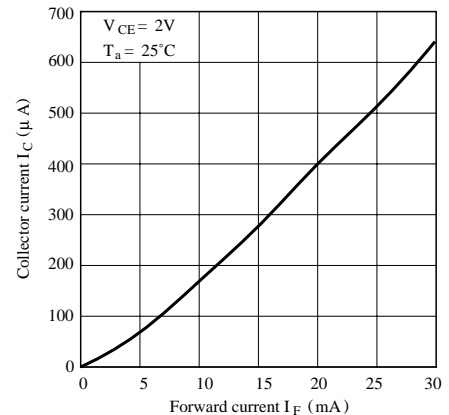


Fig. 5 Collector Current vs. Collector-Emitter Voltage

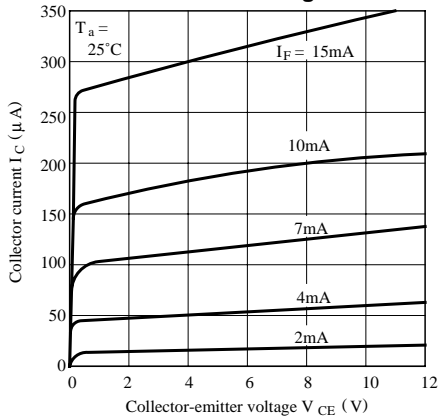


Fig. 6 Relative Collector Current vs. Ambient Temperature

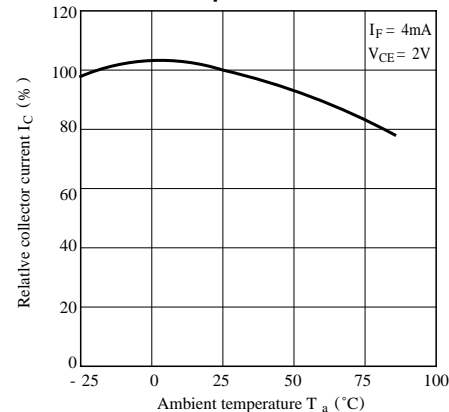


Fig. 7 Collector Dark Current vs. Ambient Temperature

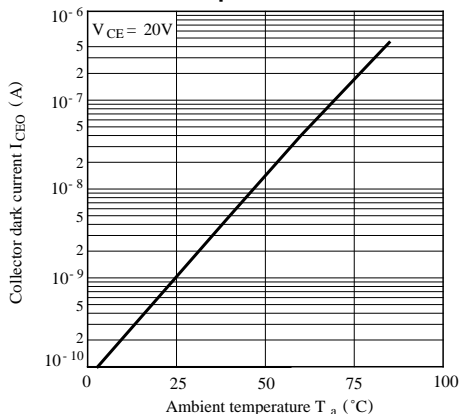


Fig. 8 Response Time vs. Load Resistance (GP2S09)

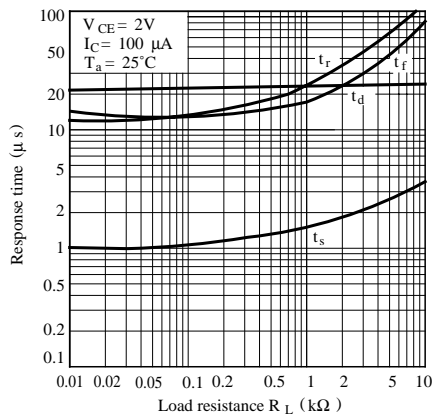


Fig. 9 Response Time vs. Load Resistance (GP2S24/ GP2S26/GP2S27)

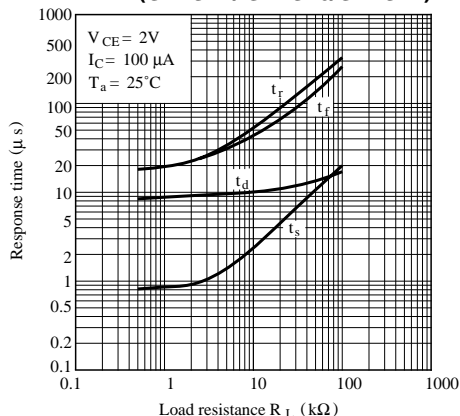


Fig.10 Relative Collector Current vs. Distance between Sensor and Al Evaporation Glass

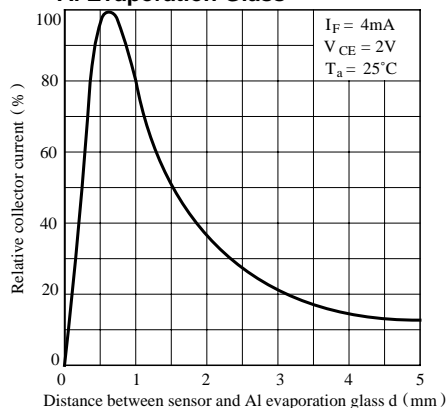
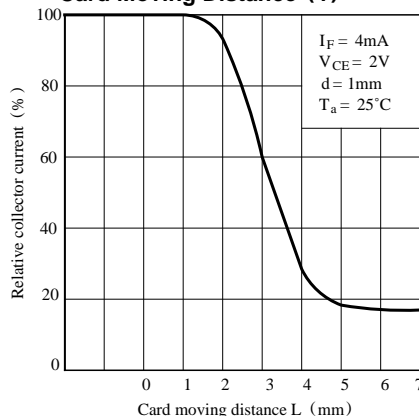


Fig.11 Relative Collector Current vs. Card Moving Distance (1)



Test Circuit for Response Time

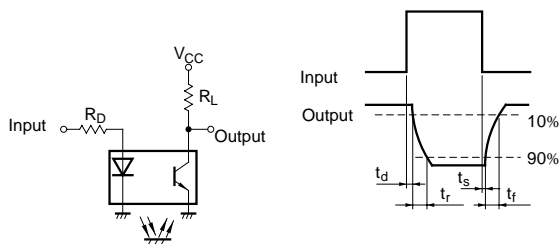


Fig.12 Relative Collector Current vs. Card Moving Distance (2)

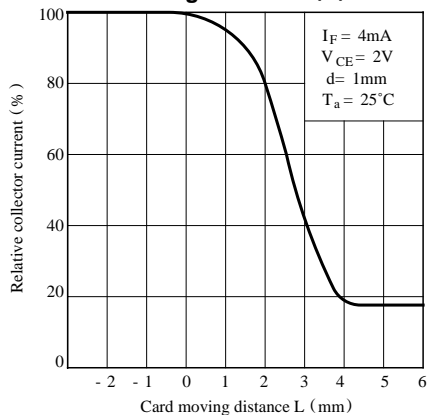


Fig.13-a Frequency Response

(GP2S09)

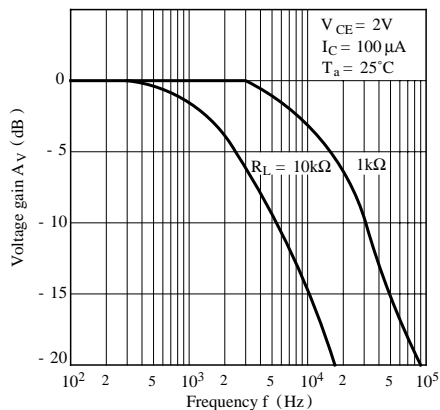
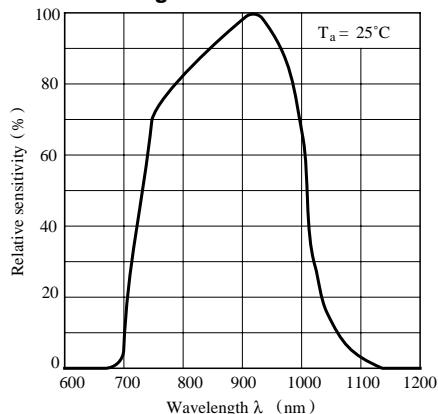
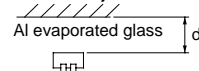


Fig.14 Spectral Sensitivity (Detecting Side)



Test Condition for Distance & Detecting Position Characteristics (EX : GP2S24)

Correspond to Fig.10



Correspond to Fig.11

Test condition
 $I_F = 4\text{mA}$
 $V_{CE} = 2\text{V}$
 $d = 1\text{mm}$

Correspond to Fig.12

Test condition
 $I_F = 4\text{mA}$
 $V_{CE} = 2\text{V}$
 $d = 1\text{mm}$

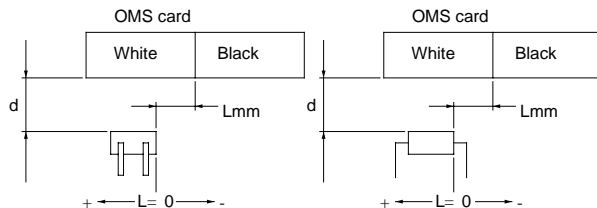
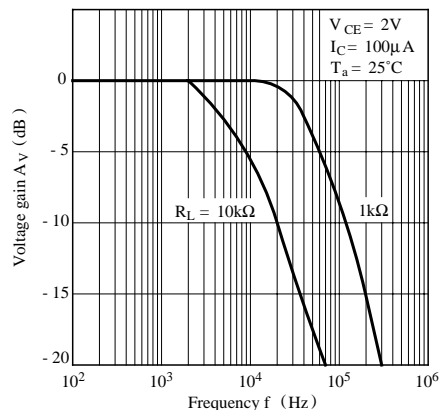


Fig.13-b Frequency Response

(GP2S24/ GP2S26/ GP2S27)



- Please refer to the chapter “Precautions for Use”.

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