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

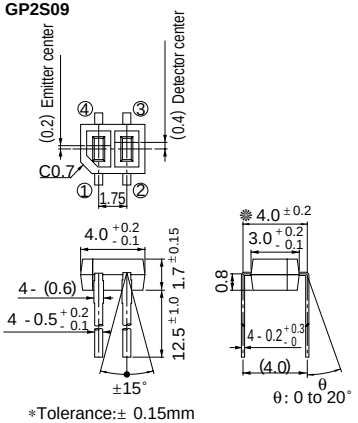
■ Applications

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

■ Outline Dimensions

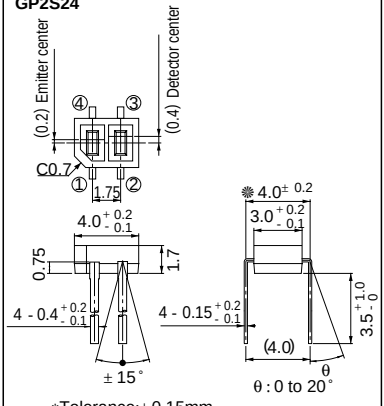
(Unit: mm)

GP2S09



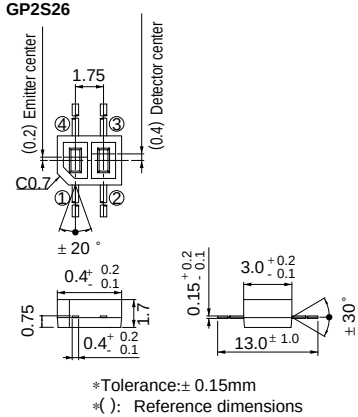
∗Tolerance: ± 0.15mm
∗( ): Reference dimensions
∗The dimensions indicated by ❋ refer to those measured from the lead base.

GP2S24



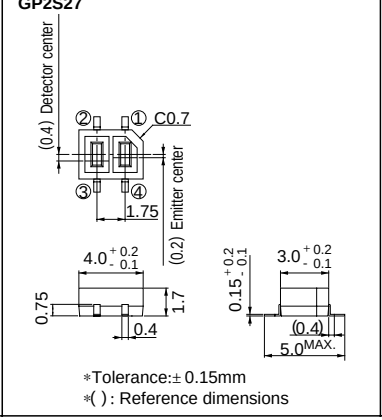
∗Tolerance: ± 0.15mm
∗( ): Reference dimensions
∗The dimensions indicated by ❋ refer to those measured from the lead base.

GP2S26



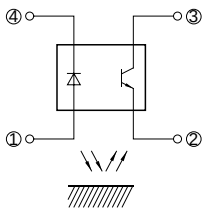
∗Tolerance: ± 0.15mm
∗( ): Reference dimensions

GP2S27



∗Tolerance: ± 0.15mm
∗( ): Reference dimensions

Internal connection diagram
(Common to 4 models)



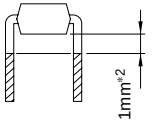
① Anode
② Emitter
③ Collector
④ Cathode

■ 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 dissiipation	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

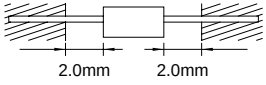
*1 Within 5 seconds (Soldering areas for each model are shown below)

GP2S09, GP2S24
Soldering area:
The hatched area more than 1mm*2 away from the lower edge of package as shown in the figure below.

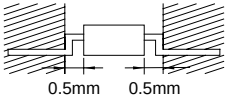


*2 **GP2S09**: 4mm

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	t_r	V_{CE} = 2V, I_C = 100μA	-	20	100	μs
		Fall time	t_f	R_L = 1kΩ, d = 1mm	-	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

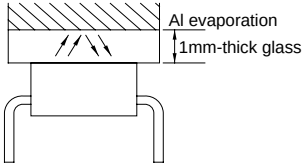


Fig. 1 Forward Current vs. Ambient Temperature

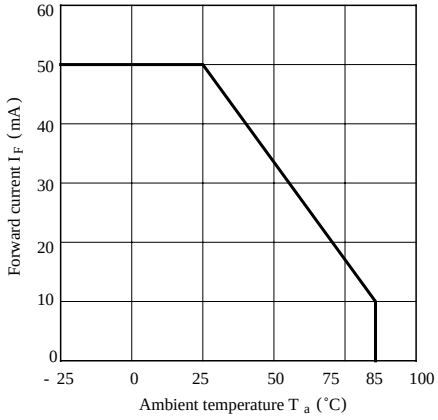


Fig. 2 Power Dissipation vs. Ambient Temperature

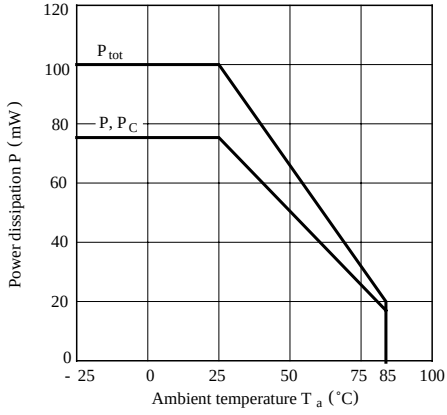


Fig. 3 Forward Current vs. Forward Voltage

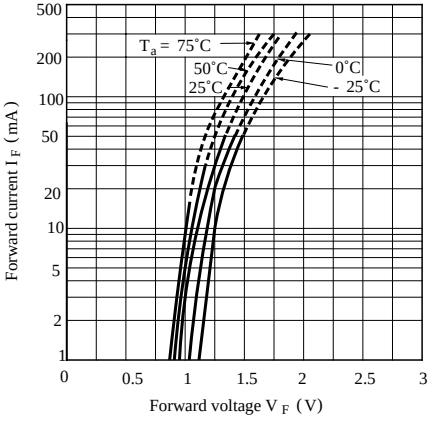


Fig. 4 Collector Current vs. Forward Current

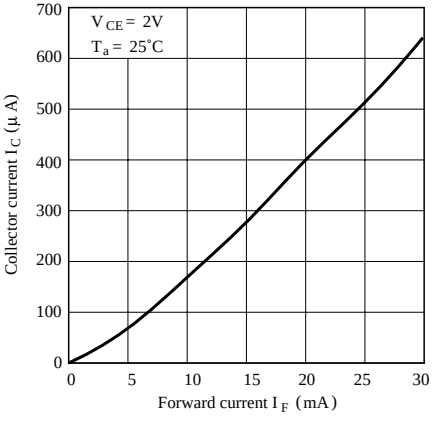


Fig. 5 Collector Current vs. Collector-Emitter Voltage

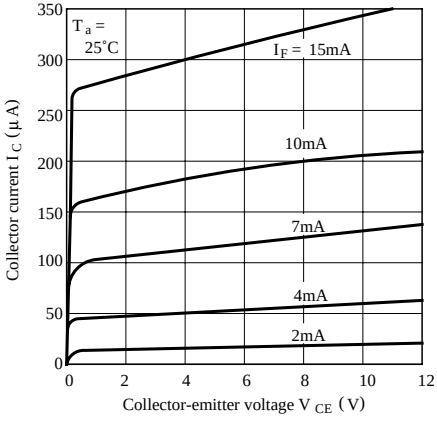


Fig. 6 Relatlve Collector Current vs. Ambient Temperature

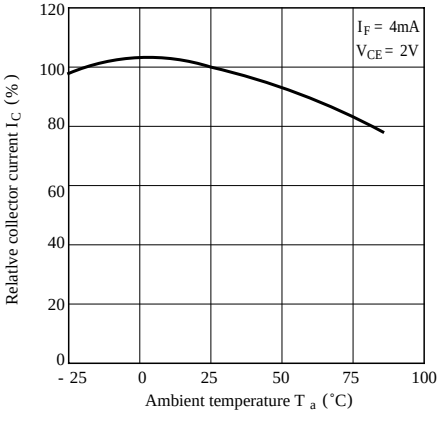


Fig. 7 Collector Dark Current vs. Ambient Temperature

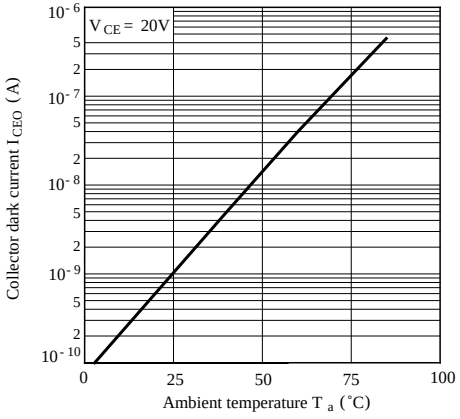


Fig. 8 Response Time vs. Load Resistance (GP2S09)

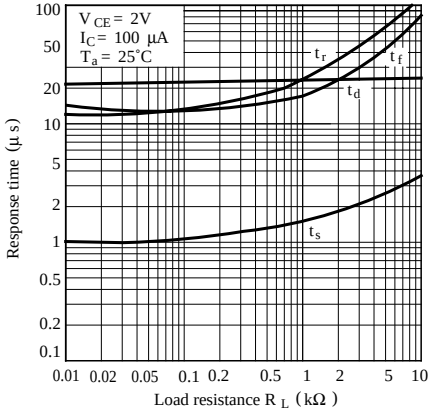
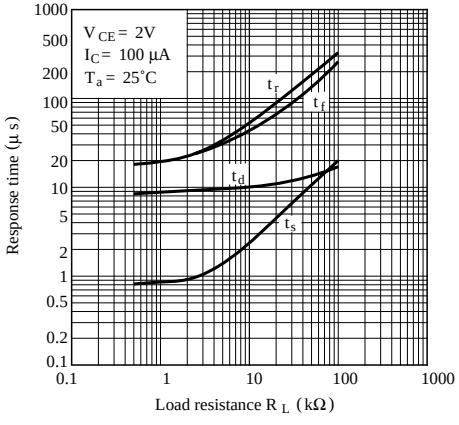


Fig. 9 Response Time vs. Load Resistance (GP2S24/ GP2S26/GP2S27)



Test Circuit for Response Time

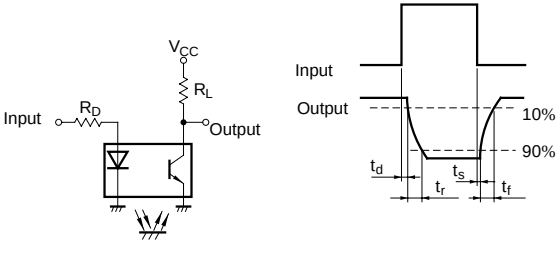


Fig.10 Relative Collector Current vs. Distance between Sensor and Al Evaporation Glass

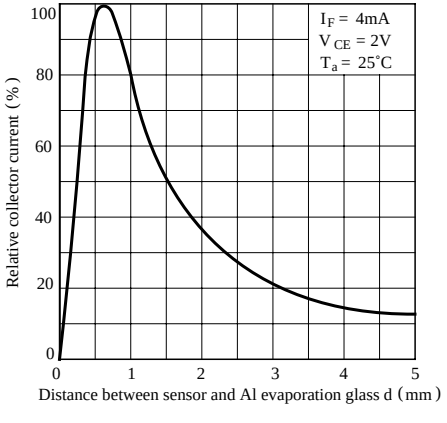


Fig.11 Relative Collector Current vs. Card Moving Distance (1)

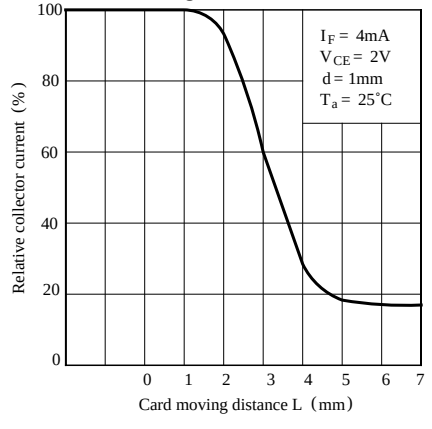
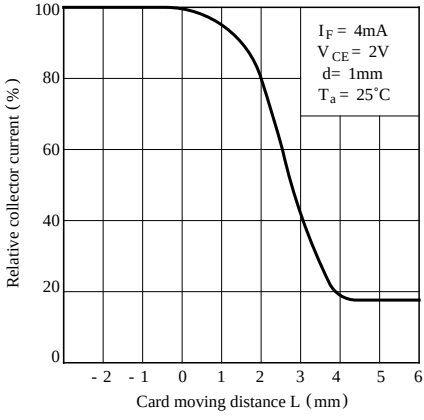


Fig.12 Relative Collector Current vs. Card Moving Distance (2)



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

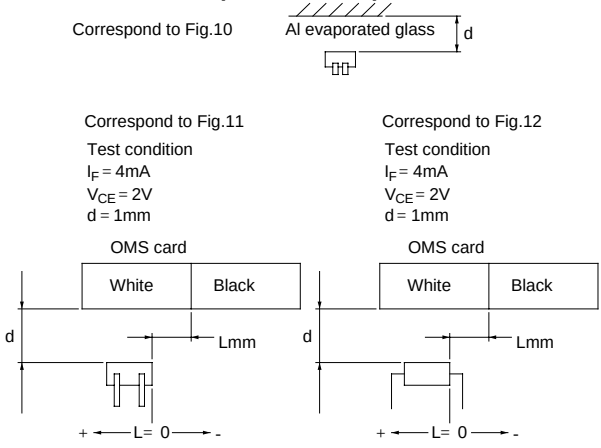


Fig.13-a Frequency Response (GP2S09)

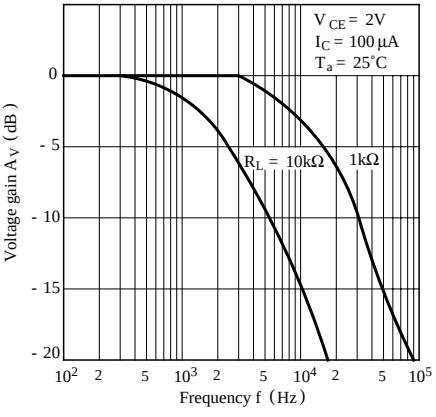


Fig.13-b Frequency Response (GP2S24/ GP2S26/ GP2S27)

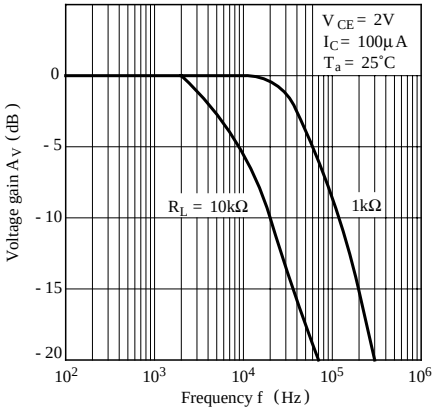
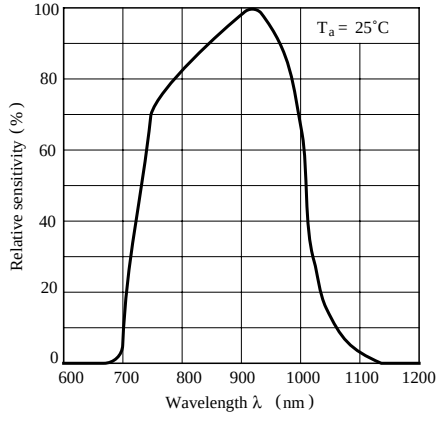


Fig.14 Spectral Sensitivity (Detecting Side)



- Please refer to the chapter " Precautions for Use".