GP2S04/GP2S06/GP2S07 /GP2S09/GP2S10

Subminiature Photointerrupter

■ Features

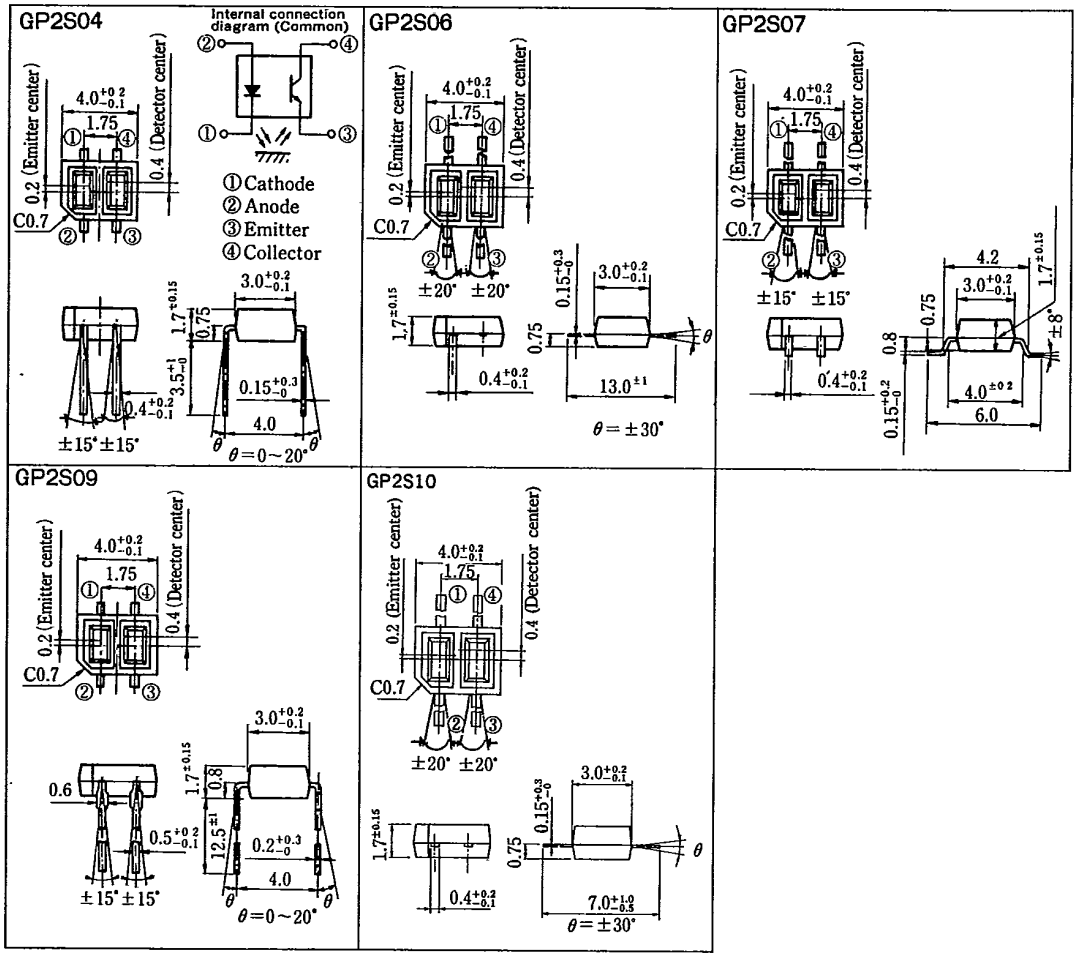
1. Compact and thin
   GP2S04 : Compact DIP type
   GP2S06 : Flat lead type
   GP2S07 : Mini-flat package type
   GP2S09 : Compact DIP, long lead type
   GP2S10 : Short flat lead type
2. Optical detection distance : 0.8~1mm
3. Visible light cut-off type

■ Applications

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

■ Outline Dimensions

(Unit : mm)



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■ 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_D	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}	−25~+85	°C
Storage temperature		T_{stg}	−40~+100	°C
*1Soldering temperature		T_{sol}	260	°C

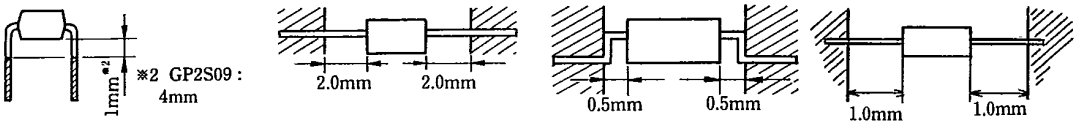
*1 Within 5 seconds (Soldering areas for each model are shown below.)

GP2S04, GP2S09
Soldering area
The hatched area more than 1mm*2 away from the lower edge of package as shown in the figure below.

GP2S06
Soldering area
The hatched area more than 2.0mm away from the both edges of package as shown in the figure below.

GP2S07
Soldering area
The hatched area more than 0.5mm away from the both edges of package as shown in the figure below.

GP2S10
Soldering area
The hatched area more than 1.0mm away from the both edges. of package as shown in the figure below.



■ Electro-optical Characteristics (Ta=25°C)

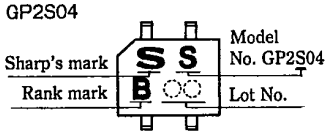
Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input	Forward voltage	V_F	I_F=20mA	—	1.2	1.4	V
	Reverse current	I_R	V_R=6V	—	—	10	μA
Output	Collector dark current	I_{CEO}	V_{CE}=20V	—	1×10^{-9}	1×10^{-7}	A
Transfer characteristics	*3Collector current	I_C	I_F=4mA, V_{CE}=2V	20	45	120	μA
	Response time (Rise)	t_r	V_{CE}=2V, I_C=100μA	—	20	100	μs
	Response time (Fall)	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 in the right drawing.
*4 Without reflective object

The ranking of collector current shall be classified into the following 6 ranks.
(GP2S04, GP2S06, GP2S07, GP2S09)

Rank	I_C (μA)	Rank mark
A	20~42	A
B	34~71	B
C	58~120	C
A or B	20~71	A or B
B or C	34~120	B or C
A, B or C	20~120	A, B or C

Marking example
GP2S04



Test Conditon and Arrangement for Collector Current

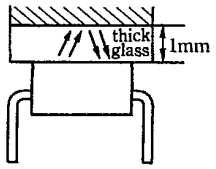


Fig. 1 Forward Current vs. Ambient Temperature

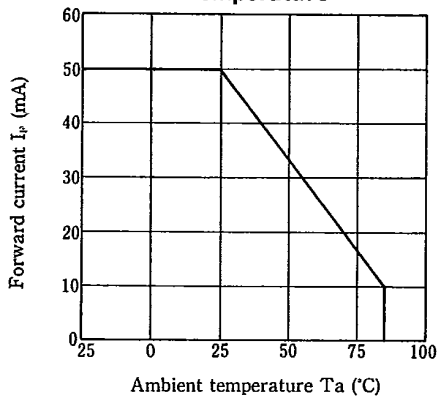


Fig. 2 Power Dissipation vs. Ambient Temperature

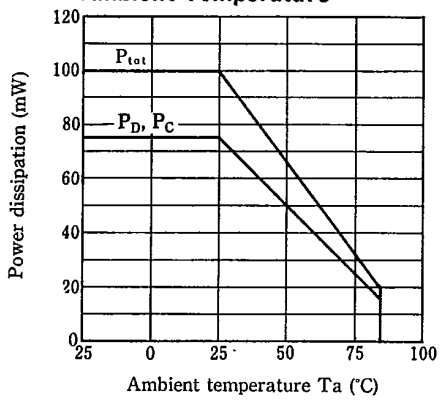


Fig. 3 Forward Current vs. Forward Voltage

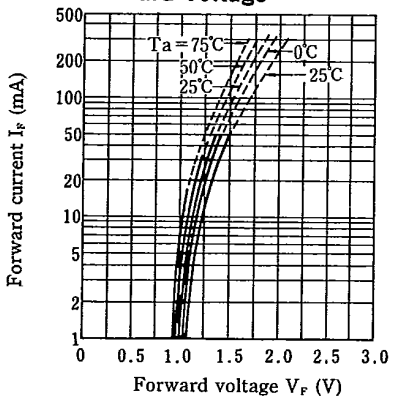


Fig. 4 Collector Current vs. Forward Voltage

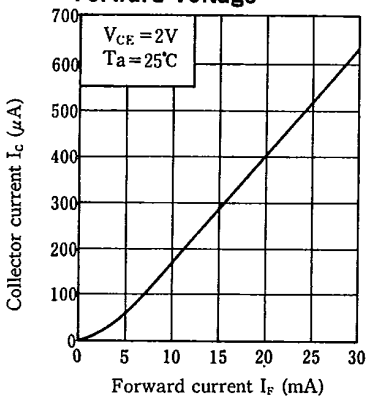


Fig. 5 Collector Current vs. Collector-emitter Voltage

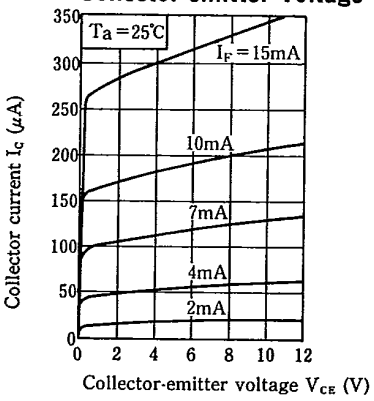


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Fig. 6 Relative Collector Current vs. Ambient Temperature

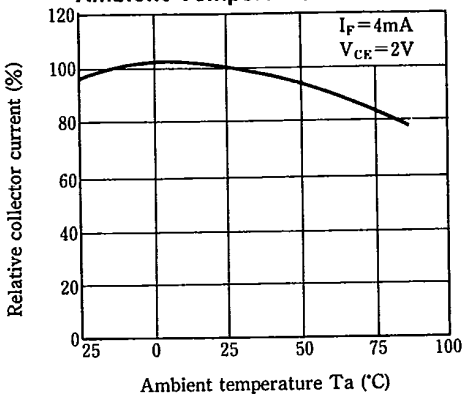


Fig. 7 Collector Dark Current vs. Ambient Temperature

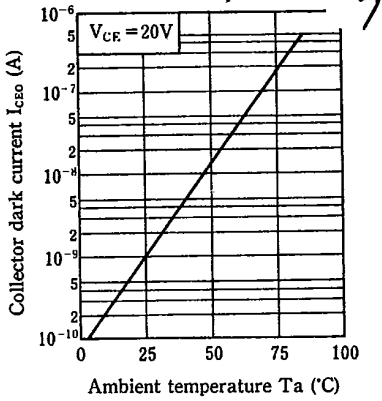
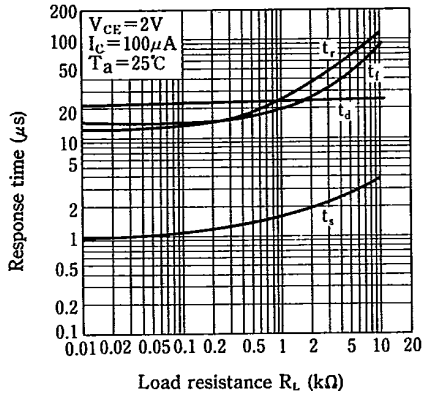


Fig. 8 Response Time vs. Load Resistance



Test Circuit for Response Time

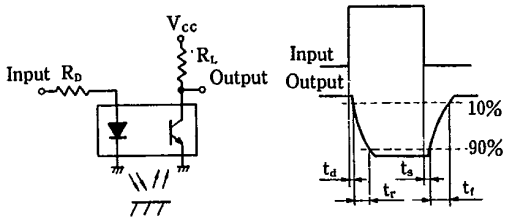


Fig. 9 Relative Collector Current vs. Distance between GP2S04 and Card

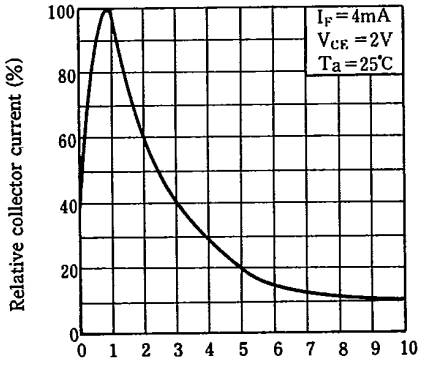


Fig. 10 Relative Collector Current vs. Card Moving Distance (1)

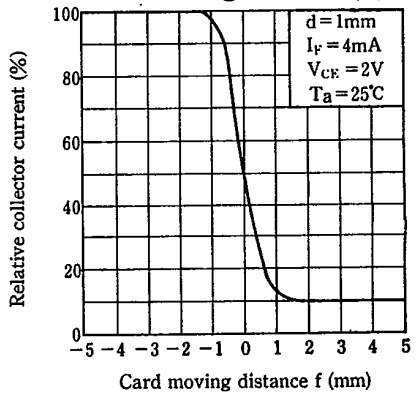
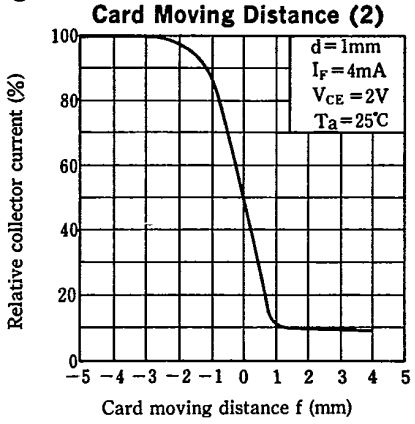


Fig. 11 Relative Collector Current vs. Card Moving Distance (2)



Test Condition for Distance & Detecting Position Characterittics

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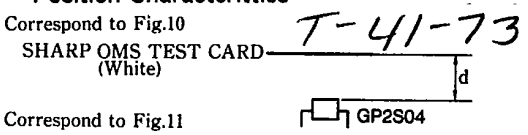
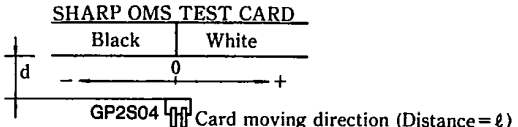
Correspond to Fig.10



Correspond to Fig.11



Correspond to Fig.12

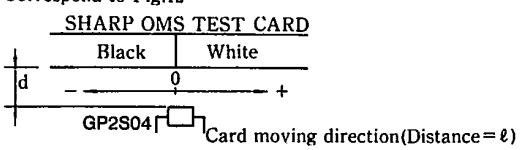


Fig. 12 Frequency Response

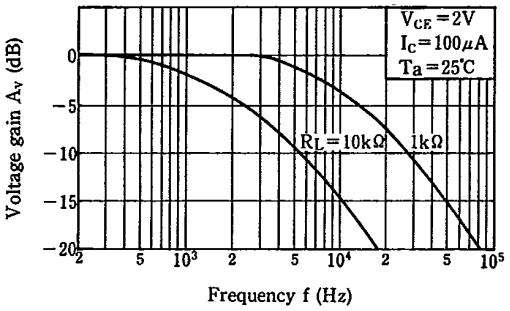
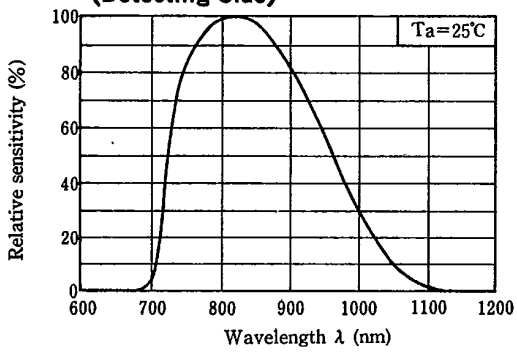


Fig. 13 Spectral Sensitivity (Detecting Side)



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