

T-41-73

# GP2S05/GP2S15

## Subminiature Photointerrupter with Lens

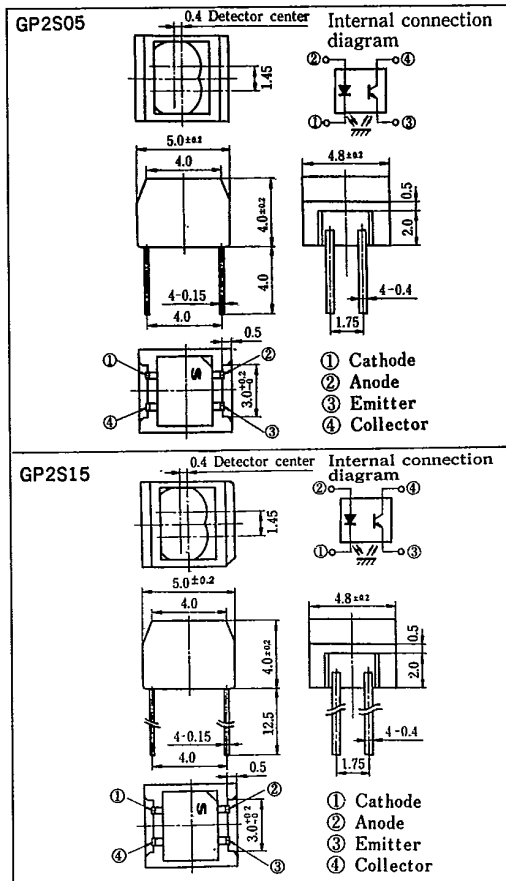
### ■ Features

1. Focal distance : 4mm
2. Easy to install into cartridge due to the snap-in type package
3. Visible light cut-off type
4. Long lead pin : 12.5mm (GP2S15)

### ■ Applications

1. Copiers, printers, facsimiles
2. Cassette decks, video decks
3. Record players

### ■ 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	$T_{opr}$	-25 ~ +75	°C
	Storage temperature	$T_{stg}$	-40 ~ +80	°C
	*1 Soldering temperature	$T_{sol}$	260	°C

\*1 For 5 seconds at the position of 1mm from the bottom face of resin package

SHARP

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Electro-optical Characteristics

(Ta=25°C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit	
Input	Forward voltage	$I_F=20\text{mA}$	—	1.2	1.4	V	
	Reverse current	$V_R=3\text{V}$	—	—	10	$\mu\text{A}$	
Output	Collector dark current	$V_{CE}=20\text{V}$	—	$10^{-9}$	$10^{-7}$	A	
Transfer characteristics	*2 Collector current	$V_{CE}=5\text{V}$ , $I_F=20\text{mA}$	GP 2S05	1.4	—	12	%
			GP 2S15	0.5	—	12	%
	Response time (Rise)	$t_r$	$I_C=100\mu\text{A}$ , $V_{CE}=2\text{V}$	—	20	100	$\mu\text{s}$
	Response time (Fall)	$t_f$	$R_L=1\text{k}\Omega$ , $d=4\text{mm}$	—	20	100	$\mu\text{s}$
*3 Leak current	$I_{LEAK}$	$I_F=20\text{mA}$ , $V_{CE}=5\text{V}$	—	8	40	$\mu\text{A}$	

\*2 The condition and arrangement of the reflective object are shown below.  
 \*3 Without reflective object

Test Condition and Arrangement for Collector Current

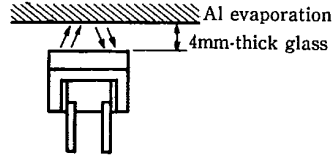


Fig. 1 Forward Current vs. Ambient Temperature

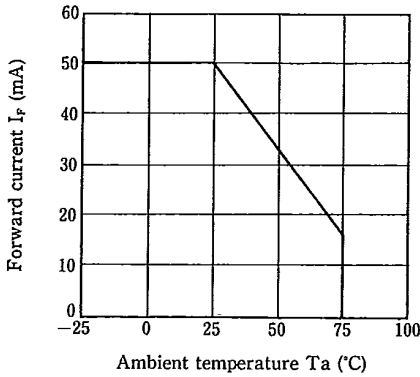


Fig. 2 Power Dissipation vs. Ambient Temperature

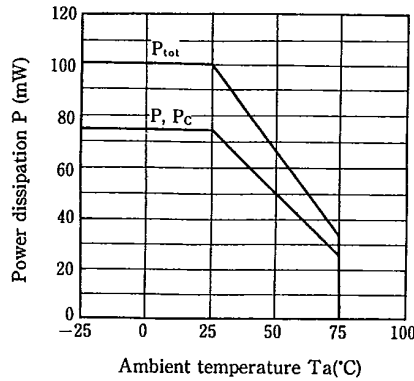


Fig. 3 Peak Forward Current vs. Duty Ratio

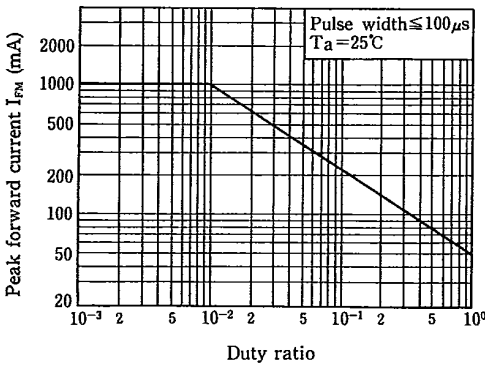
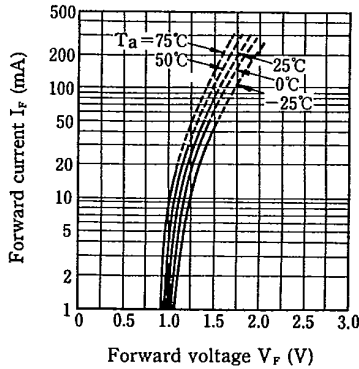
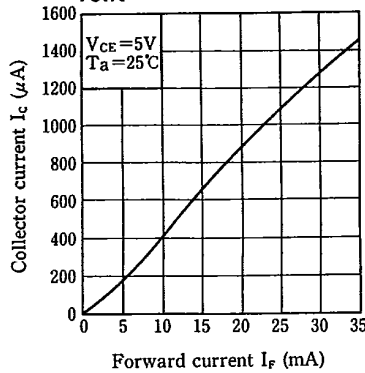


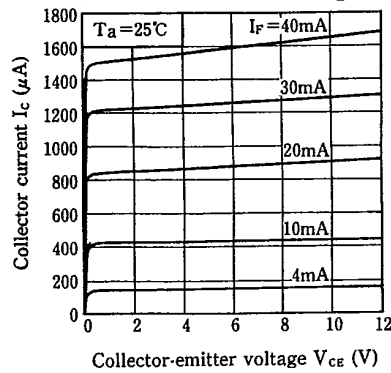
Fig. 4 Forward Current vs. Forward Voltage



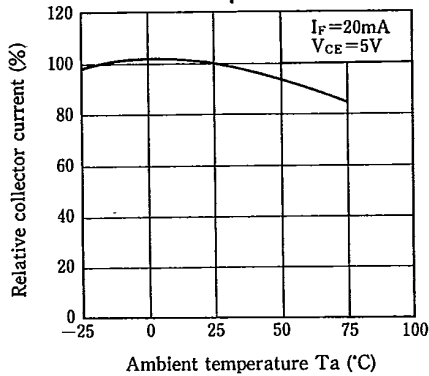
**Fig. 5 Collector Current vs. Forward Current**



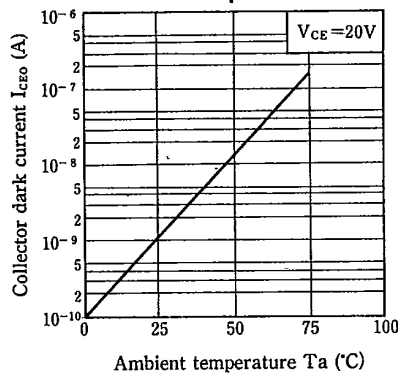
**Fig. 6 Collector Current vs. Collector-emitter Voltage**



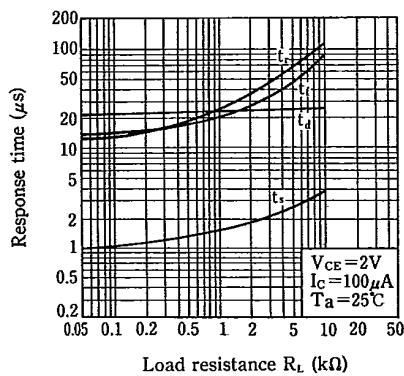
**Fig. 7 Relative Collector Current vs. Ambient Temperature**



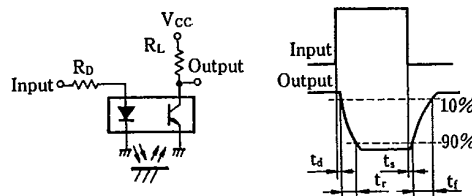
**Fig. 8 Collector Dark Current vs. Ambient Temperature**



**Fig. 9 Response Time vs. Load Resistance**

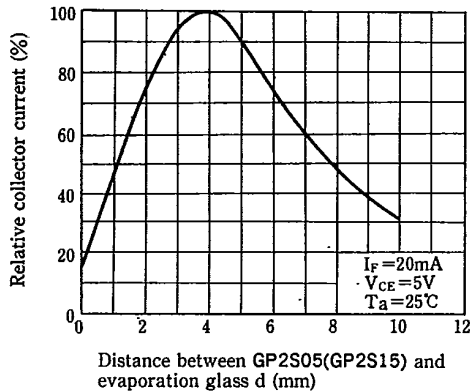


**Test Circuit for Response Time**

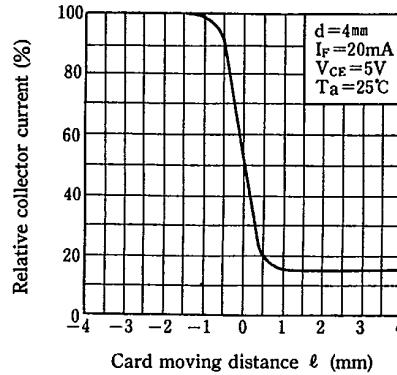


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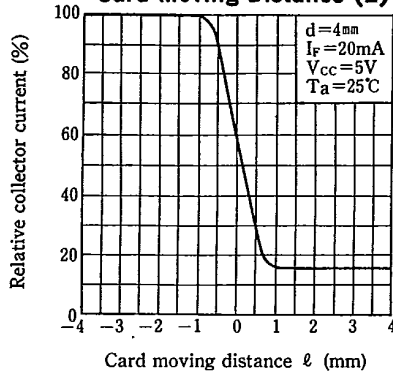
**Fig.10** Relative Collector Current vs. Distance between GP2S05 (GP2S15) and Evaporation Glass



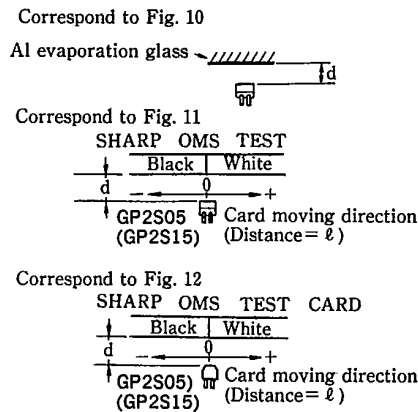
**Fig. 11** Relative Collector Current vs. Card Moving Distance (1)



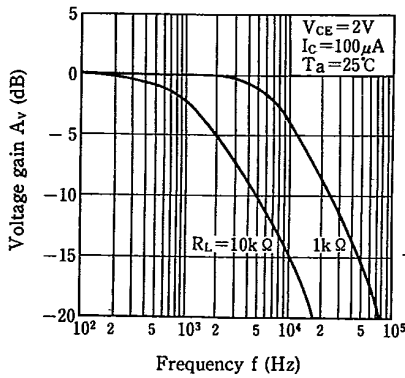
**Fig. 12** Relative Collector Current vs. Card Moving Distance (2)



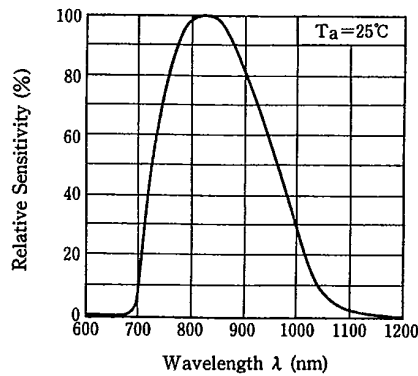
Distance Characteristic Test Condition



**Fig. 13** Frequency Response



**Fig. 14** Spectral Sensitivity (Detecting Side)



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