

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

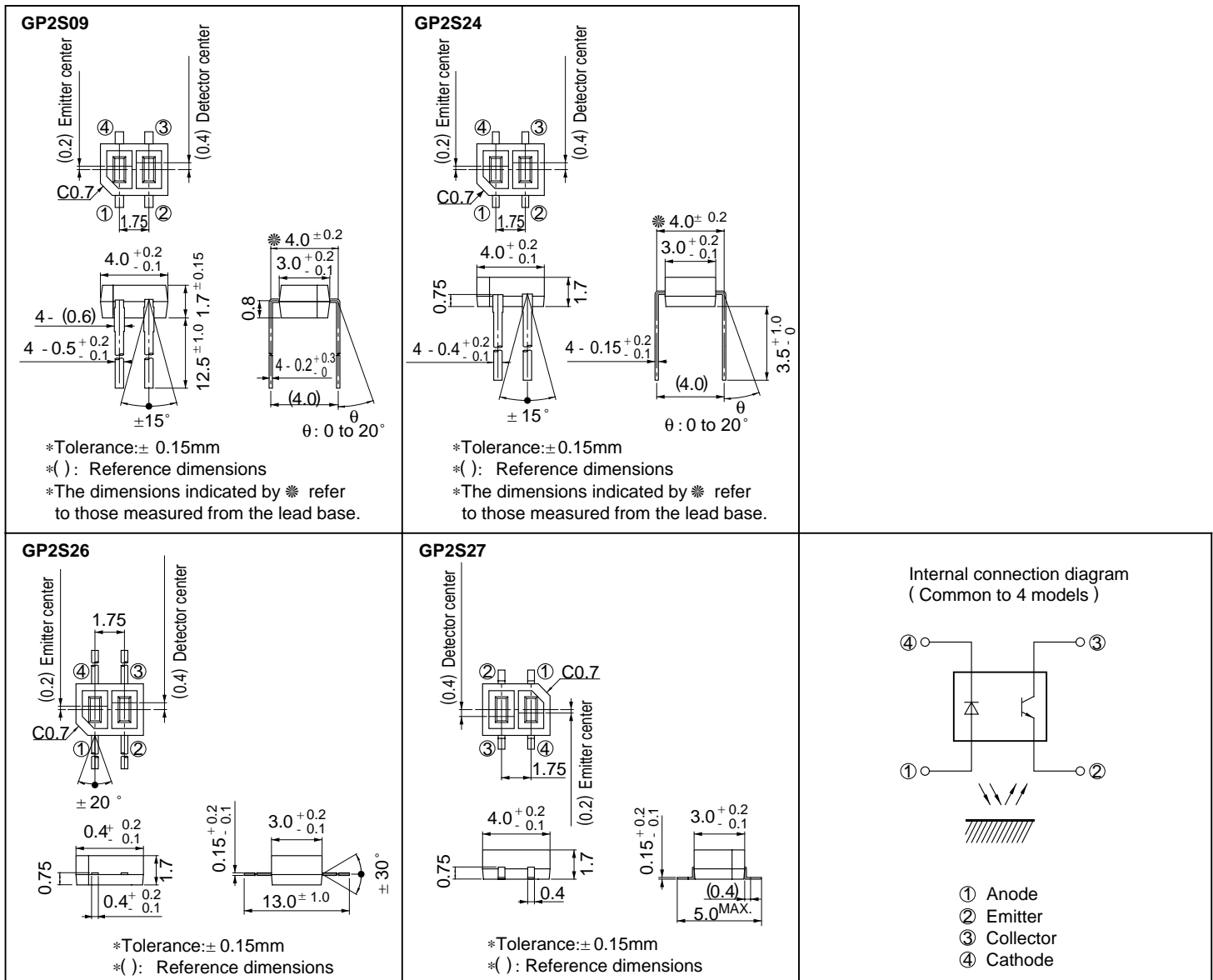
GP2S27: Mini-flat package type

2. Optimum detection distance: 0.6 to 0.8mm

3. Visible light cut-off type

■ Outline Dimensions

(Unit : mm)



Absolute Maximum Ratings

(Ta = 25°C)

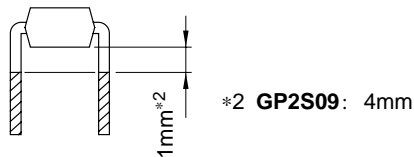
Parameter		Symbol	Rating	Unit
Input	Forward current	I_F	50	mA
	Reverse voltage	V_R	6	V
	Power dissipation	P	75	mW
Output	Collector-emitter voltage	V_{CEO}	35	V
	Emitter-collector voltage	V_{ECO}	6	V
	Collector current	I_C	20	mA
	Collector power dissipation	P_C	75	mW
Total power dissipation		P_{tot}	100	mW
Operating temperature		T_{opr}	- 20 to + 85	°C
Storage temperature		T_{stg}	- 40 to + 100	°C
*1 Soldering temperature		T_{sol}	260	°C

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

GP2S09, GP2S24

Soldering area:

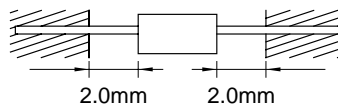
The hatched area more than 1mm*2 away from the lower edge of package as shown in the figure below.



GP2S26

Soldering area:

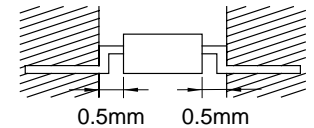
The hatched area more than 2.0mm away from the both edges of package as shown in the figure below.



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	$I_F = 20\text{mA}$	-	1.2	1.4	V	
	Reverse current	I_R	$V_R = 6\text{V}$	-	-	10	μA	
Output	Collector dark current	I_{CEO}	$V_{CE} = 20\text{V}$	-	10^{-9}	10^{-7}	A	
Transfer characteristics	*3 Collector current		I_C	$I_F = 4\text{mA}, V_{CE} = 2\text{V}$	20	45	120	μA
	Response time	Rise time	t_r	$V_{CE} = 2\text{V}, I_C = 100\mu\text{A}$ $R_L = 1\text{k}\Omega, d = 1\text{mm}$	-	20	100	μs
		Fall time	t_f		-	20	100	μs
	*4 Leak current		I_{LEAK}	$I_F = 4\text{mA}, V_{CE} = 2\text{V}$	-	-	0.1	μA

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

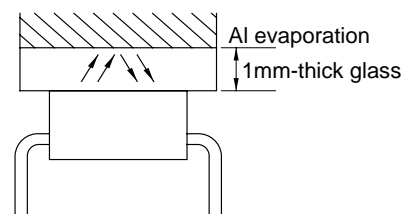
*4 Without reflective object

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

Test Condition and Arrangement for Collector Current



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

Fig. 1 Forward Current vs. Ambient Temperature

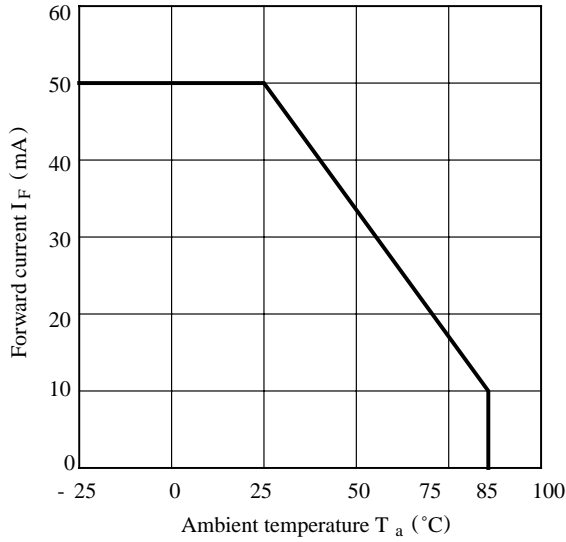


Fig. 2 Power Dissipation vs. Ambient Temperature

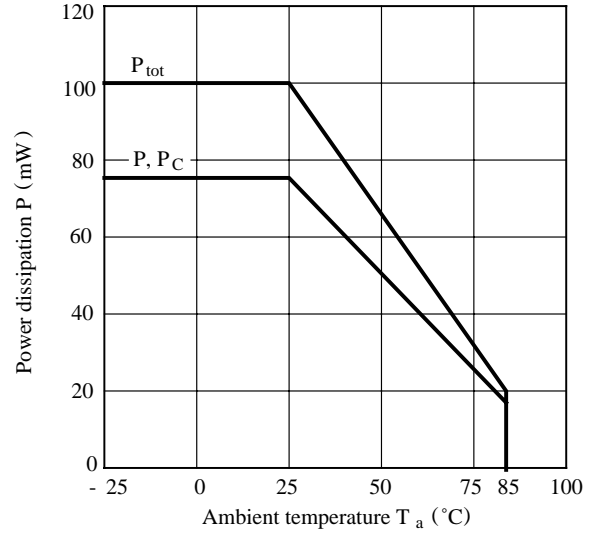


Fig. 3 Forward Current vs. Forward Voltage

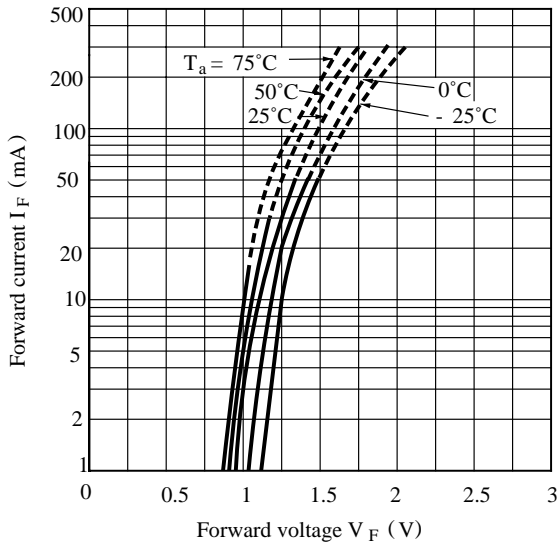


Fig. 4 Collector Current vs. Forward Current

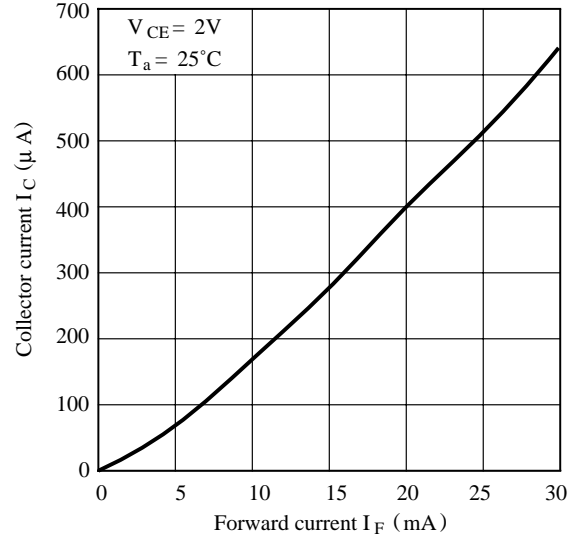


Fig. 5 Collector Current vs. Collector-Emitter Voltage

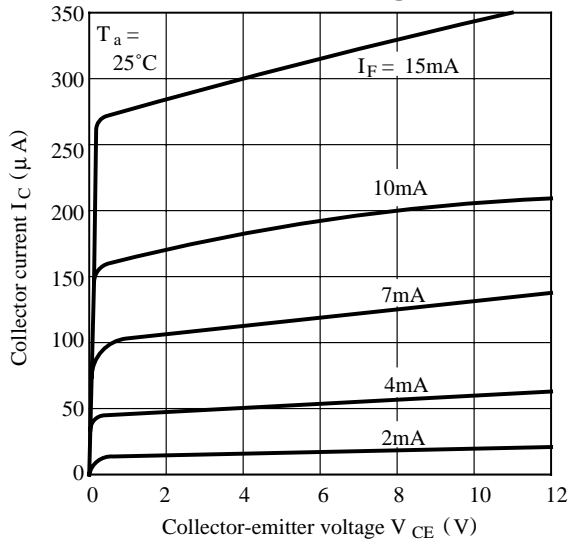


Fig. 6 Relative Collector Current vs. Ambient Temperature

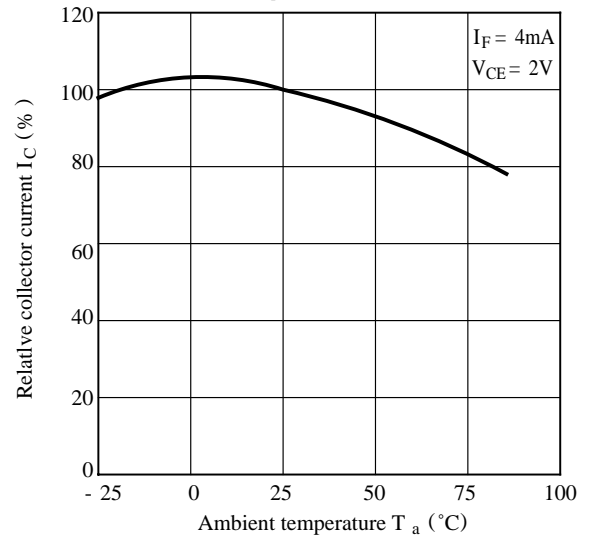


Fig. 7 Collector Dark Current vs. Ambient Temperature

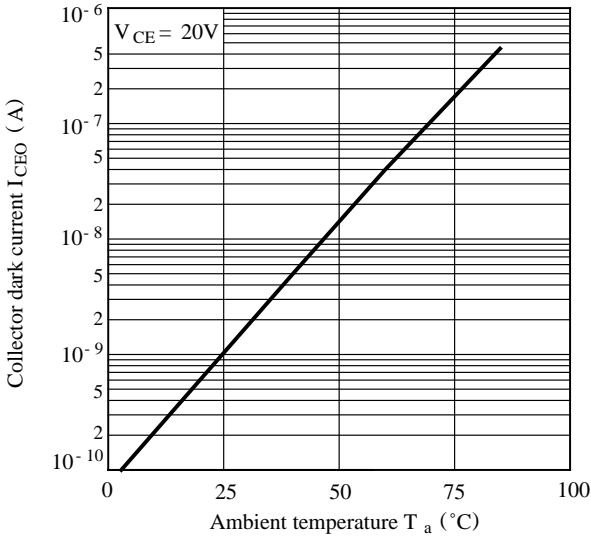


Fig. 8 Response Time vs. Load Resistance (GP2S09)

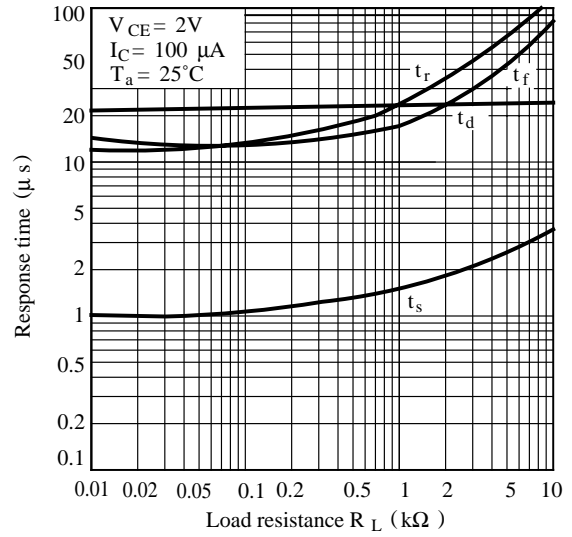
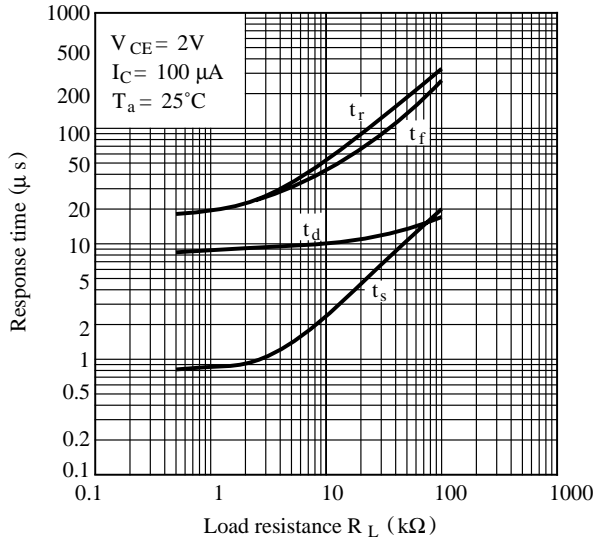


Fig. 9 Response Time vs. Load Resistance (GP2S24/ GP2S26/GP2S27)



Test Circuit for Response Time

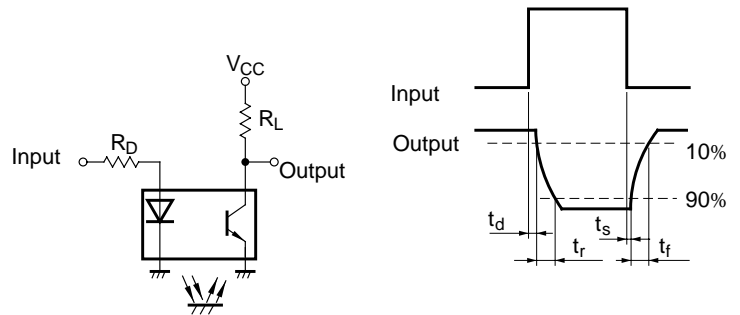


Fig.10 Relative Collector Current vs. Distance between Sensor and Al Evaporation Glass

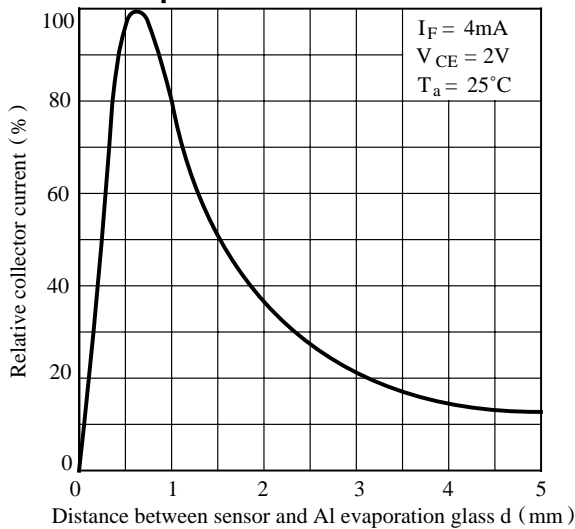


Fig.11 Relative Collector Current vs. Card Moving Distance (1)

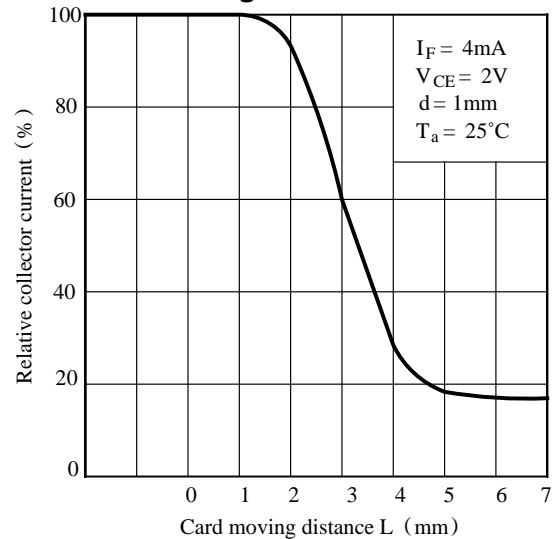
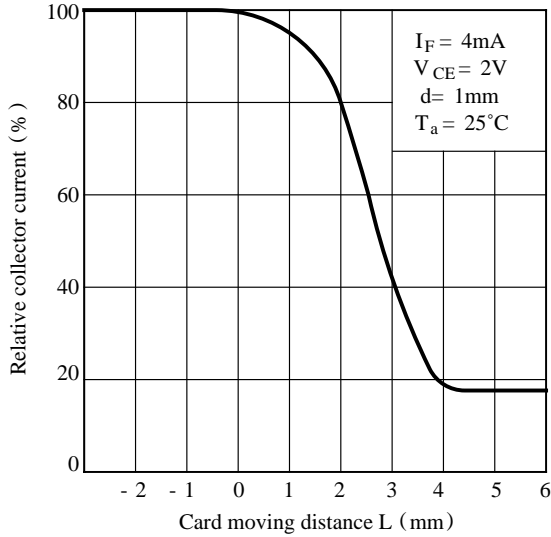


Fig.12 Relative Collector Current vs. Card Moving Distance (2)



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

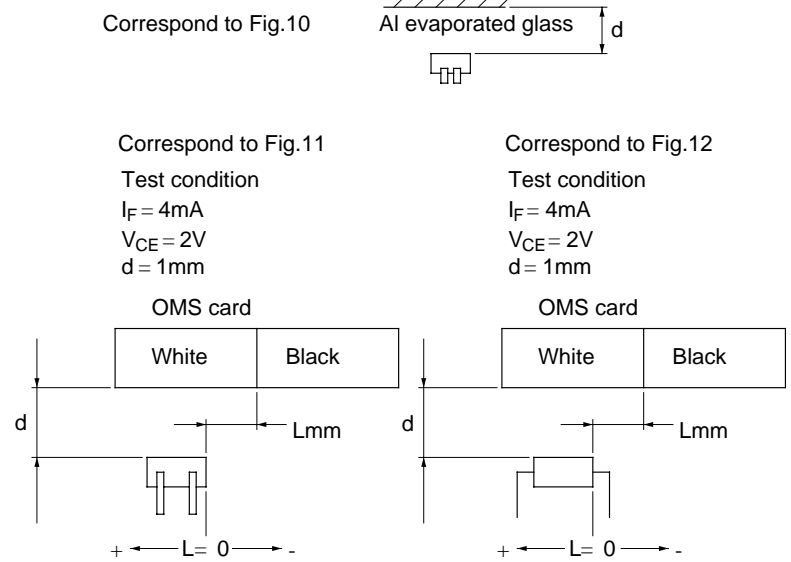


Fig.13-a Frequency Response (GP2S09)

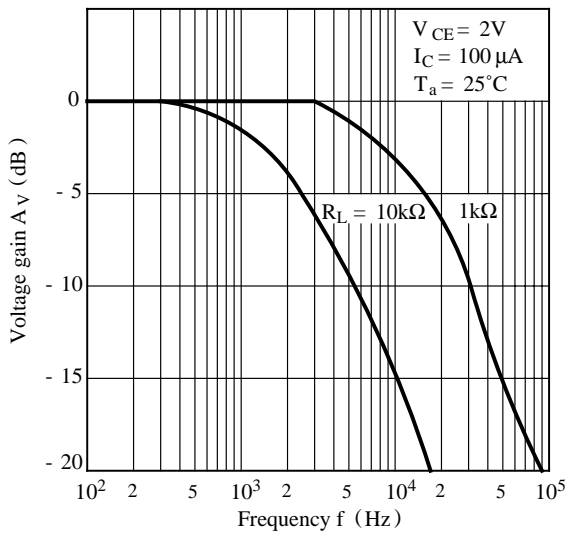


Fig.13-b Frequency Response (GP2S24/ GP2S26/ GP2S27)

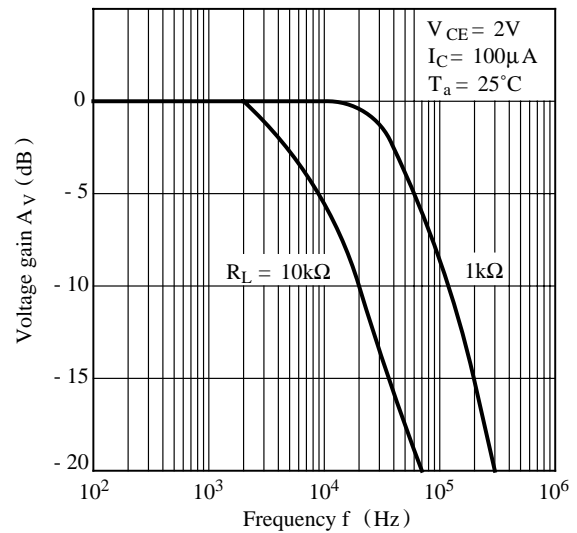
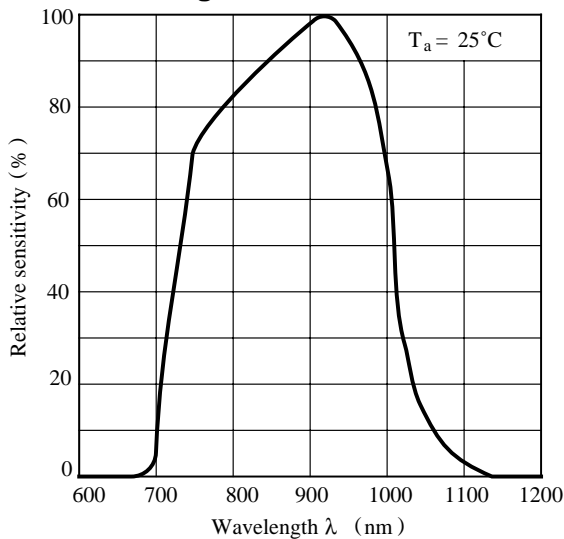


Fig.14 Spectral Sensitivity (Detecting Side)



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

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