

# GP1S21/GP1S22

## Subminiature Photointerrupter

### ■ Features

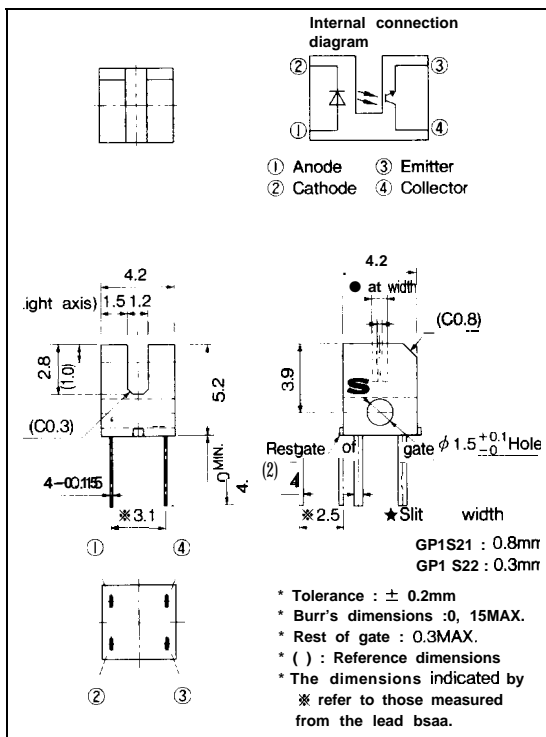
1. Ultra-compact
2. PWB mounting type package
3. High sensing accuracy  
Slit width ; GP1S21 : 0.8mm  
( GP1S22 : 0.3mm )

### ■ Applications

1. Cameras
2. Floppy disk drives

### ■ Outline Dimensions

(Unit : mm)



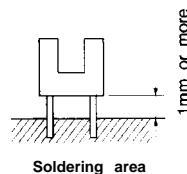
Photointerrupters

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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	$P$	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 to +85	°C
Storage temperature		$T_{stg}$	-40 to +100	'c
*1 Soldering temperature		$T_{sol}$	260	°C



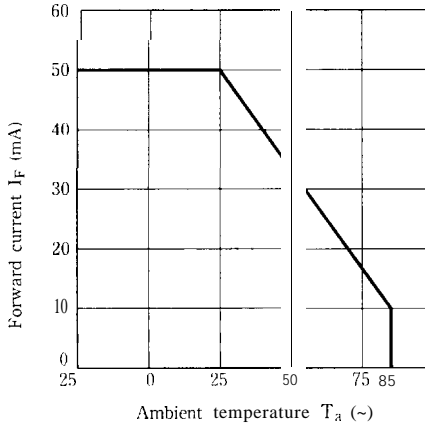
\*1 For 5 seconds

■ **Electro-optical Characteristics**

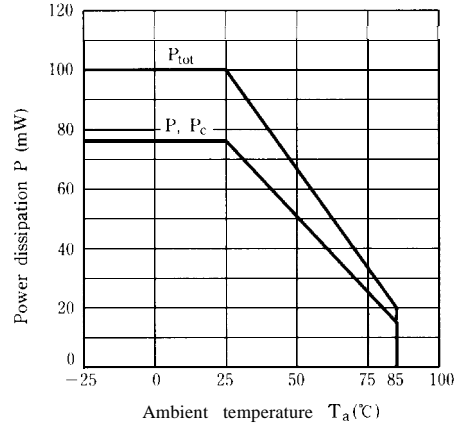
( $T_a = 25^\circ\text{C}$ )

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input	Forward voltage	$V_F$	$I_F = 20\text{mA}$		1.2	1.4	v
	Reverse current	$I_R$	$V_R = 3\text{V}$	-	-	10	$\mu\text{A}$
output	Collector dark current	$I_{CEO}$	$V_{CE} = 20\text{V}$		-	$1 \times 10^{-7}$	A
Transfer characteristics	Current transfer ratio	CTR	$V_{CE} = 5\text{V}, I_F = 1.5\text{mA}$	1.8		17.3	%
			$V_{CE} = 5\text{V}, I_F = 5\text{mA}$	2.0	-	26	%
	Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_F = 3\text{mA}, I_C = 27\mu\text{A}$	-	-	0.4	v
			$I_F = 10\text{mA}, I_C = 50\mu\text{A}$	-	-	0.4	v
	Response time	Rise time	$t_r$	$I_C = 0.1\text{mA}, V_{CE} = 5\text{V}, R_L = 1\text{k}\Omega$	-	50	150
Fall time		$t_f$	-		50	150	$\mu\text{s}$

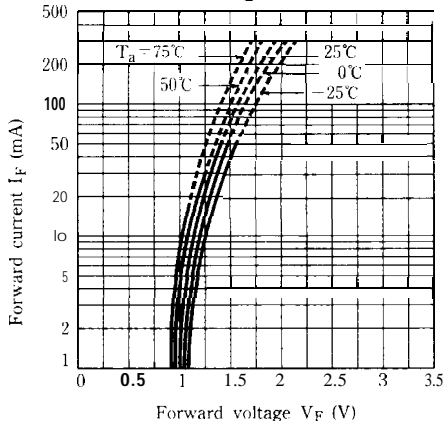
**Fig. 1 Forward Current vs. Ambient Temperature**



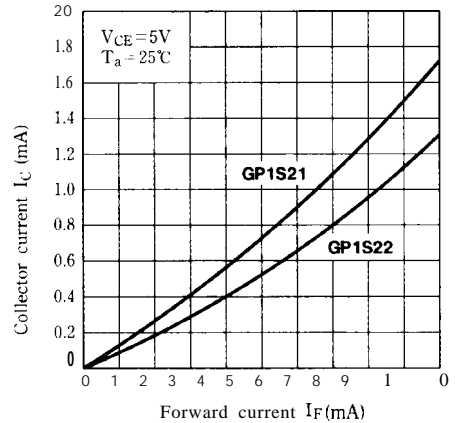
**Fig. 2 Power Dissipation vs. Ambient Temperature**



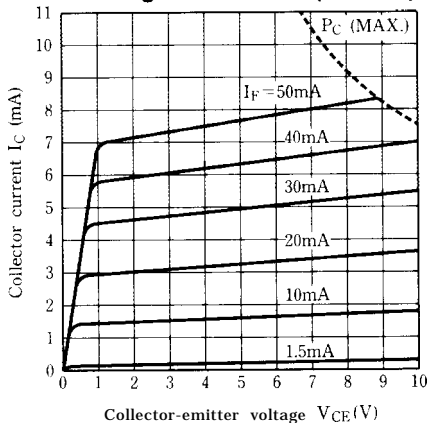
**Fig. 3 Forward Current vs. Forward Voltage**



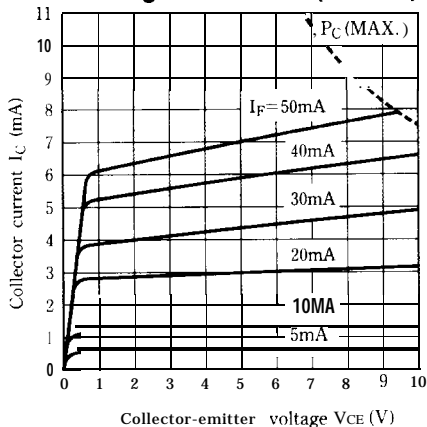
**Fig. 4 Collector Current vs. Forward Current**



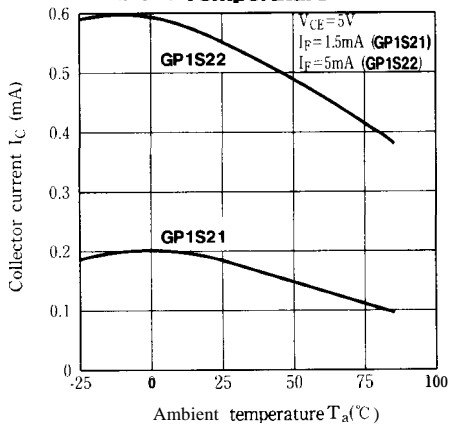
**Fig. 5-a Collector Current vs. Collector-emitter Voltage (GP1S21)**



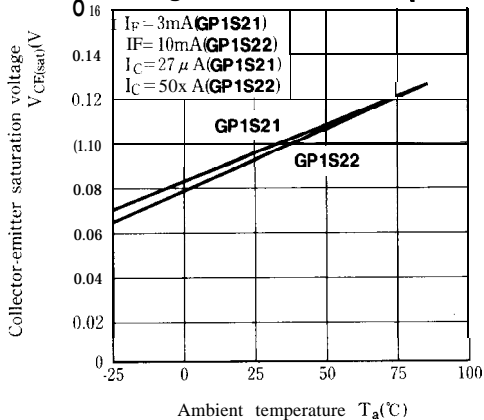
**Fig. 5-b Collector Current vs. Collector-emitter Voltage (GP1S22)**



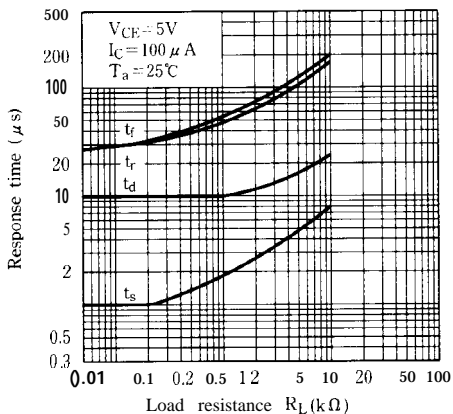
**Fig. 6 Collector current vs. Ambient Temperature**



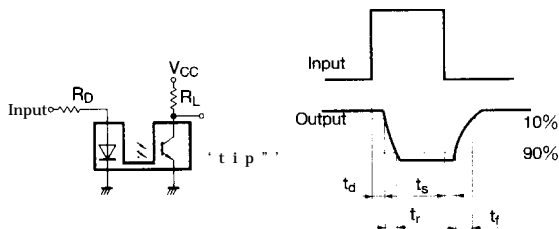
**Fig. 7 Collector-emitter Saturation voltage vs. Ambient Temperature**



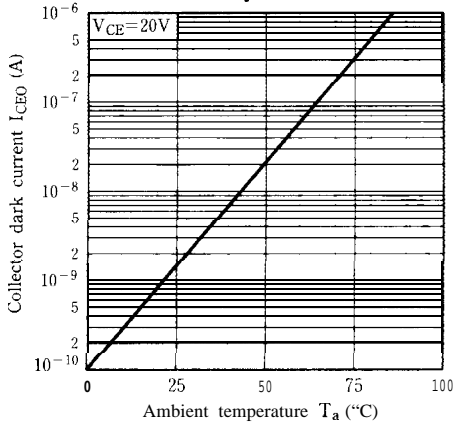
**Fig. 8 Response Time vs. Load Resistance**



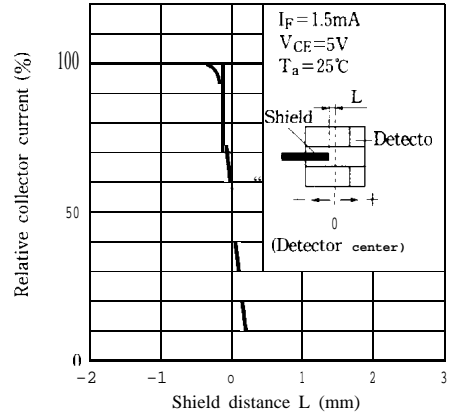
**Test Circuit for Response Time**



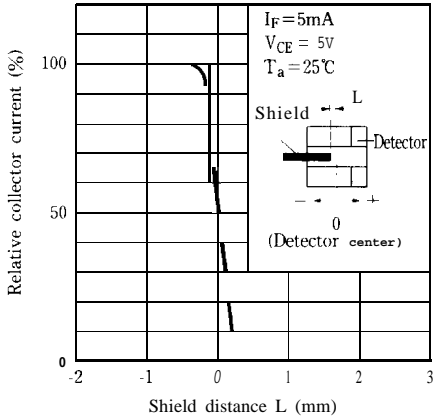
**Fig. 9 Collector Dark Current vs. Ambient Temperature**



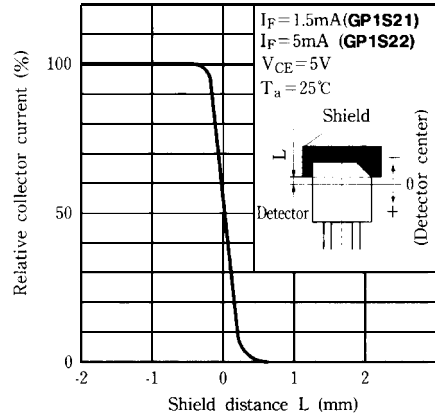
**Fig. 10-a Relative Collector Current vs. Shield Distance (1) (GP1S21)**



**Fig.10-b Relative Collector Current vs. Shield Distance (1) (GP1S22)**



**Fig.11 Relative Collector Current vs. Shield Distance (2)**



● Please refer to the chapter “Precautions for Use” (Page 78 to 93).