

# GP1S20 Subminiature Photointerrupter

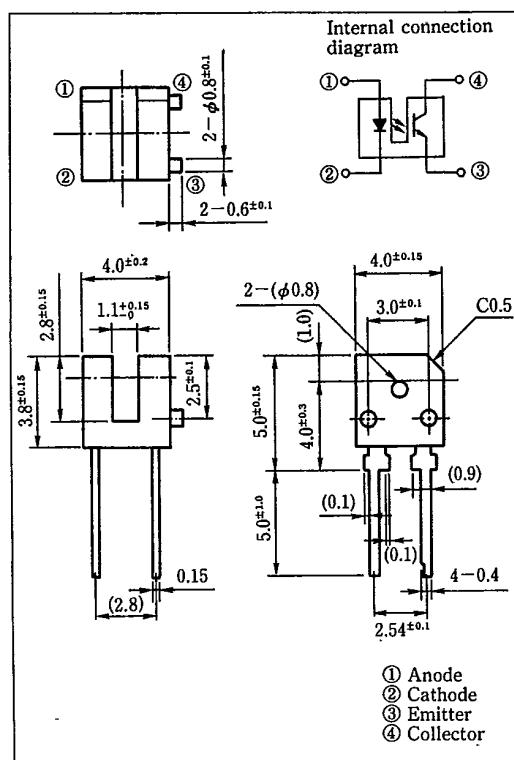
## ■ Features

1. Ultra-compact
2. High sensing accuracy (Slit width : 0.3mm)
3. With positioning boss

## ■ Applications

1. Still cameras
2. Miniprinters
3. Microfloppy disk drives

## ■ Outline Dimensions (Unit : mm)



## ■ Absolute Maximum Ratings

(Ta=25°C)

	Parameter	Symbol	Rating	Unit
Input	Forward current	I <sub>F</sub>	50	mA
	Reverse voltage	V <sub>R</sub>	6	V
	Power dissipation	P	75	mW
Output	Collector-emitter voltage	V <sub>CEO</sub>	35	V
	Emitter-collector voltage	V <sub>ECD</sub>	6	V
	Collector current	I <sub>C</sub>	20	mA
	Collector power dissipation	P <sub>C</sub>	75	mW
	Total power dissipation	P <sub>tot</sub>	100	mW
	Operating temperature	T <sub>opr</sub>	-25 ~ +85	°C
	Storage temperature	T <sub>stg</sub>	-40 ~ +100	°C
	*1 Soldering temperature	T <sub>sot</sub>	260	°C

\*1 For 5 seconds

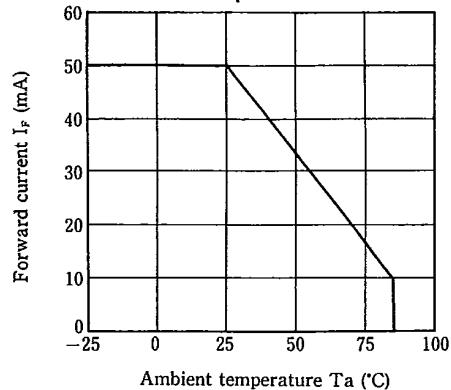
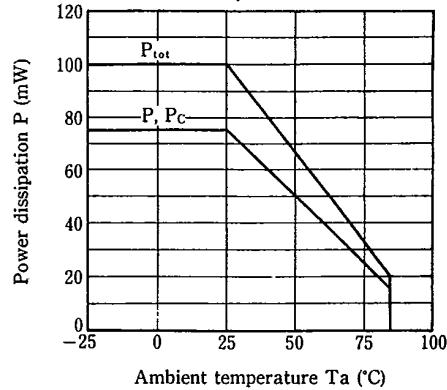
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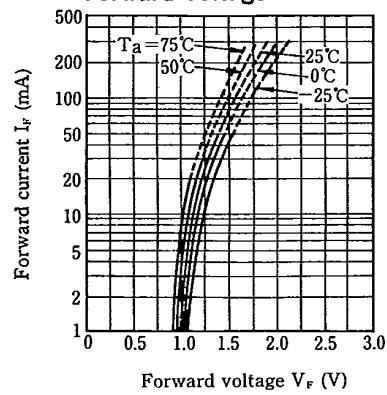
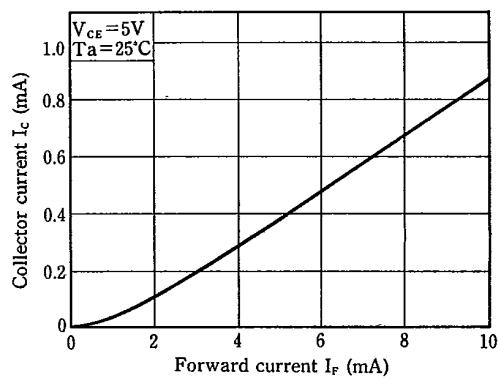
(Ta=25°C)

## ■ Electro-optical Characteristics

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input	Forward voltage	V <sub>F</sub>	I <sub>F</sub> =20mA	—	1.2	1.4	V
	Reverse current	I <sub>R</sub>	V <sub>F</sub> =3V	—	—	10	μA
Output	Collector dark current	I <sub>CEO</sub>	V <sub>CE</sub> =20V	—	—	10 <sup>-7</sup>	A
Transfer characteristics	Current transfer ratio	CTR	I <sub>F</sub> =1.5mA, V <sub>CE</sub> =5V	1.6	—	16	%
	Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	I <sub>F</sub> =3mA, I <sub>C</sub> =15μA	—	0.07	0.4	V
	Response time (Rise)	t <sub>r</sub>	I <sub>C</sub> =0.1mA, V <sub>CE</sub> =5V, R <sub>L</sub> =1kΩ	—	50	150	μs
	Response time (Fall)	t <sub>f</sub>		—	50	150	μs

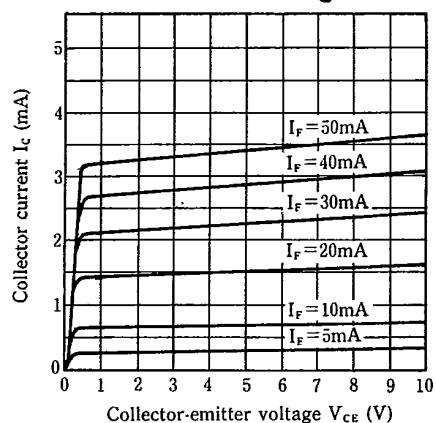
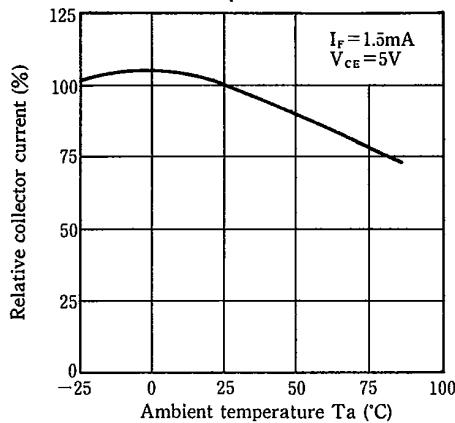
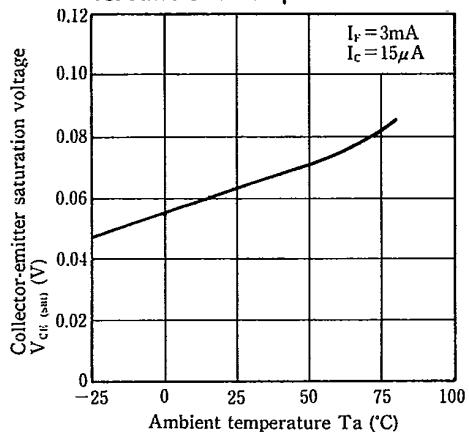
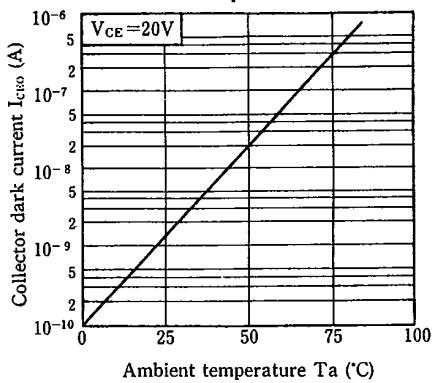
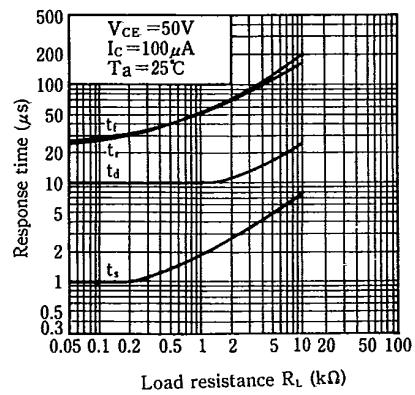
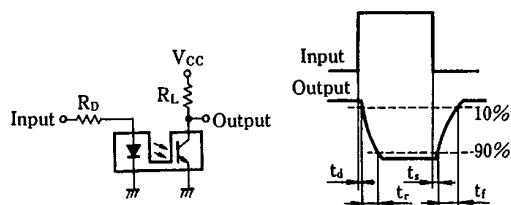
**Fig. 1 Forward Current vs. Ambient Temperature****Fig. 2 Power Dissipation vs. Ambient Temperature**

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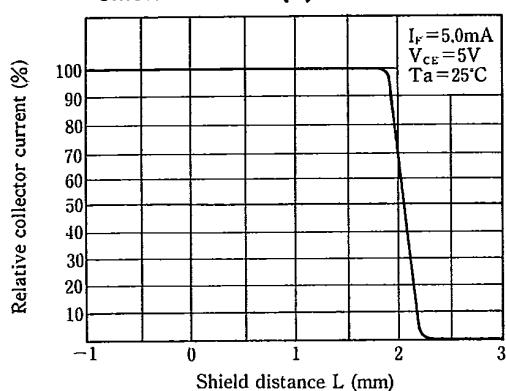
**Fig. 3 Forward Current vs. Forward Voltage****Fig. 4 Collector Current vs. Forward Current**

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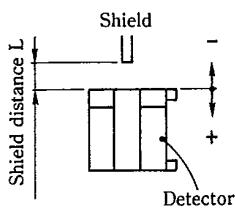
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**Fig. 5 Collector Current vs. Collector-emitter Voltage****Fig. 6 Relative Collector Current vs. Ambient Temperature****Fig. 7 Collector-emitter Saturation Voltage vs. Ambient Temperature****Fig. 8 Collector Dark Current vs. Ambient Temperature****Fig. 9 Response Time vs. Load Resistance****Test Circuit for Response Time**

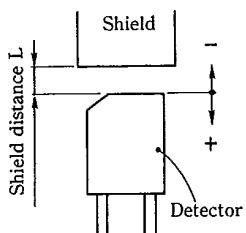
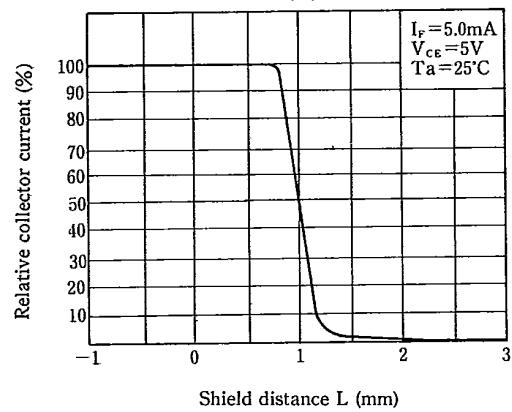
**Fig. 10 Relative Collector Current vs.  
Shield Distance (1)**



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



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