

# GP1S50/GP1S51V GP1S52V/GP1S54

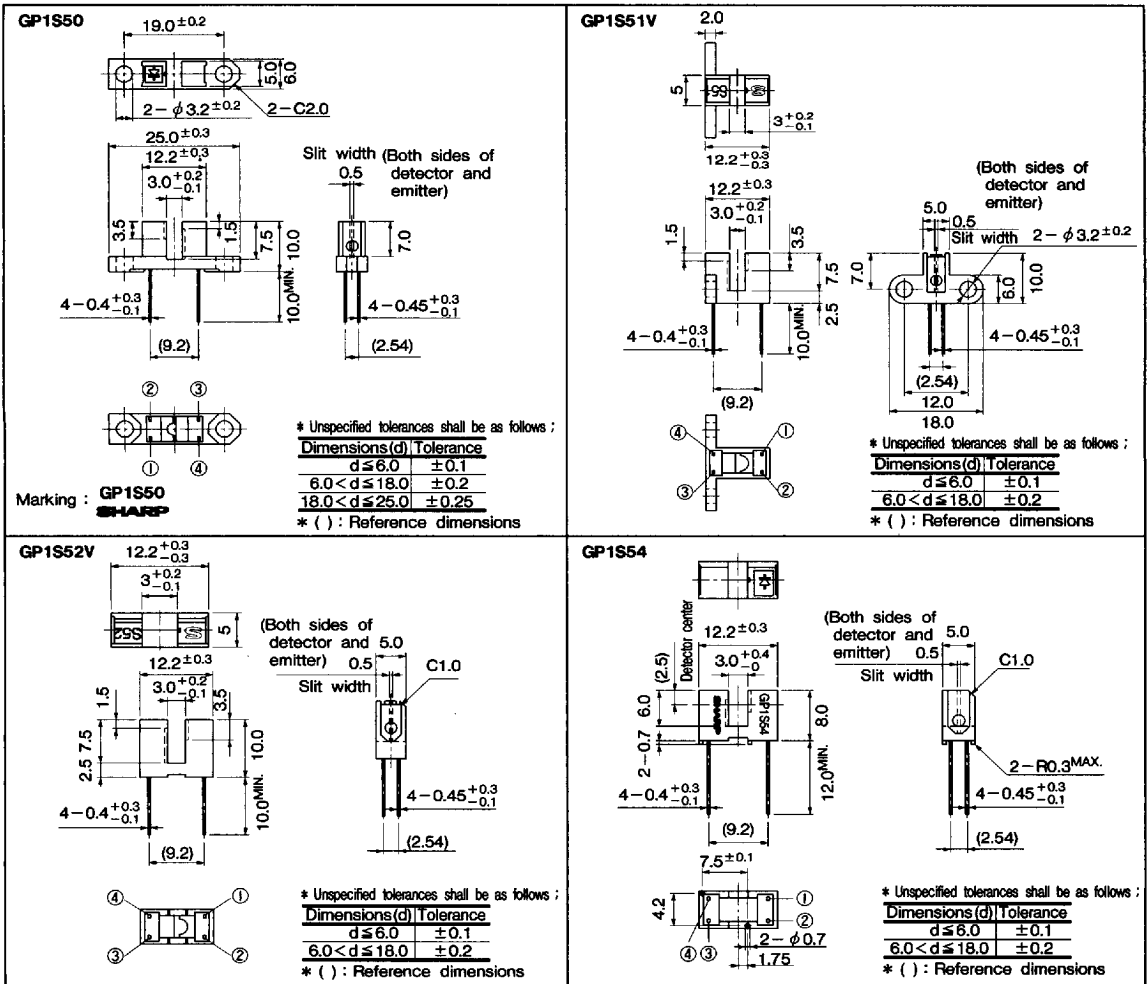
## General Purpose Photointerrupter

### ■ Features

1. High sensing accuracy (Slit width : 0.5mm)
2. Both-sides mounting type : **GP1S50** (Case height : 10mm)  
Either-side mounting type : **GP1S51V** (Case height : 10mm)  
PWB direct mounting type : **GP1S52V** (Case height : 10mm)  
PWB direct mounting type : **GP1S54** (Case height : 8mm)

### ■ Outline Dimensions

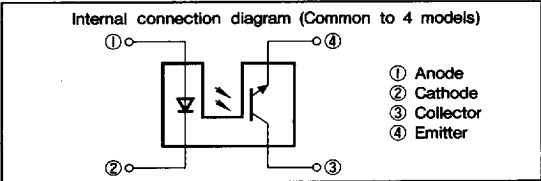
(Unit : mm)



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"In the absence of confirmation by device specification sheets, SHARP takes no responsibility for any defects that occur in equipment using any of SHARP's devices, shown in catalogs, data books, etc. Contact SHARP in order to obtain the latest version of the device specification sheets before using any SHARP's device."

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■ Absolute Maximum Ratings (Ta=25°C)

Parameter		Symbol	Rating	Unit
Input	Forward current	IF	50	mA
	*1 Peak forward current	IFM	1	A
	Reverse voltage	VR	6	V
	Power dissipation	P	75	mW
Output	Collector-emitter voltage	VCEO	35	V
	Emitter-collector voltage	VECO	6	V
	Collector current	IC	20	mA
	Collector power dissipation	PC	75	mW
Operating temperature		Topr	-25 to +85	°C
Storage temperature		Tstg	-40 to +100	°C
*2 Soldering temperature		Tsol	260	°C

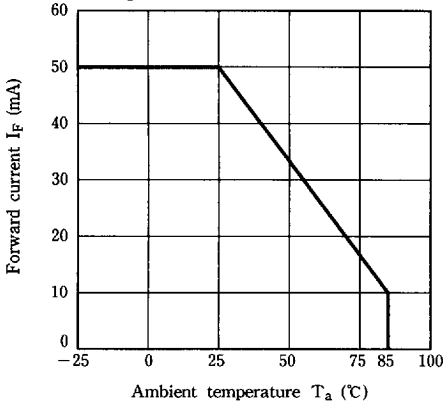
\*1 Pulse width ≤ 100 μs, Duty ratio = 0.01

\*2 For 5 seconds

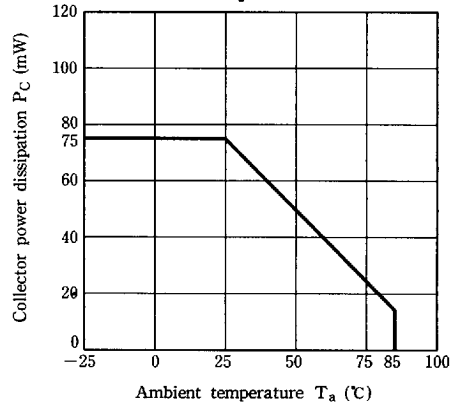
■ Electro-optical Characteristics (Ta=25°C)

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input	Forward voltage	VF	IF=20mA	—	1.25	1.4	V
				—	1.2	1.4	
	Peak forward voltage	VFM	IFM=0.5A	—	3	4	V
	Reverse current	IR	VR=3V	—	—	10 <sup>-5</sup>	μA
Output	Collector dark current	ICEO	VCE=20V	—	1	100	nA
Transfer characteristics	Current transfer ratio	CTR	IF=20mA, VCE=5V	2.5	—	25	%
	Collector-emitter saturation voltage	VCE(SAT)	IF=40mA, IC=0.5mA	—	—	0.4	V
	Response time	tr	VCE=2V, IC=2mA	—	3	15	μs
		tf	RL=100Ω	—	4	20	μs

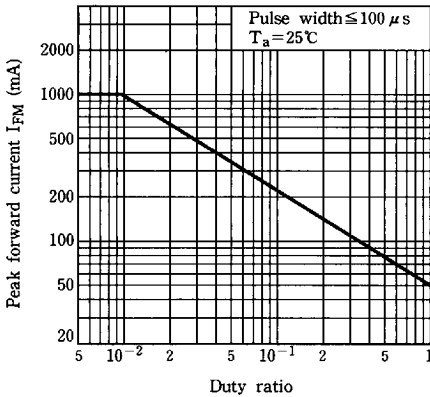
**Fig. 1 Forward Current vs. Ambient Temperature**



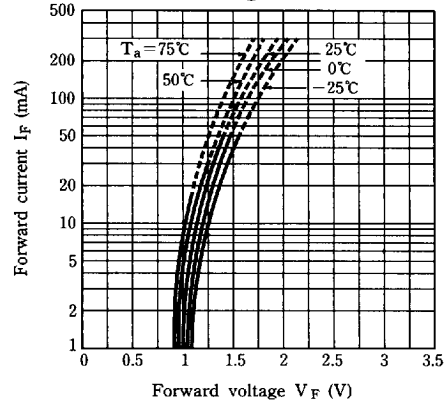
**Fig. 2 Collector Power Dissipation vs. Ambient Temperature**



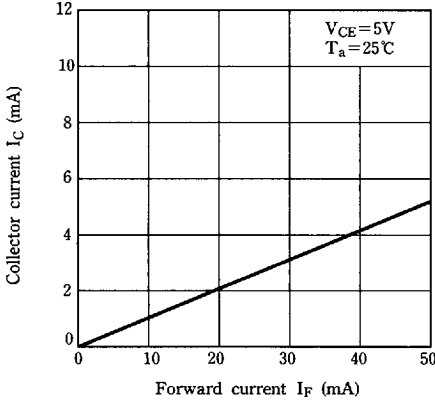
**Fig. 3 Peak Forward Current vs. Duty Ratio**



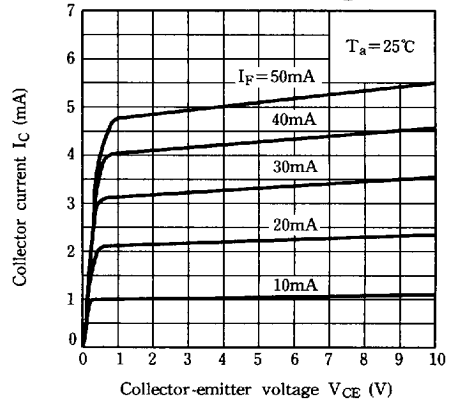
**Fig. 4 Forward Current vs. Forward Voltage**

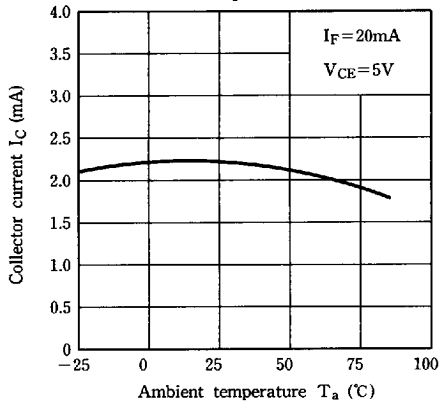
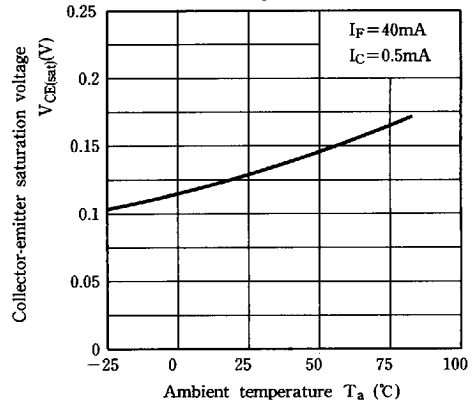
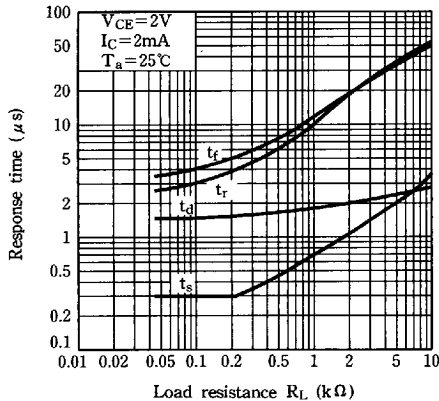
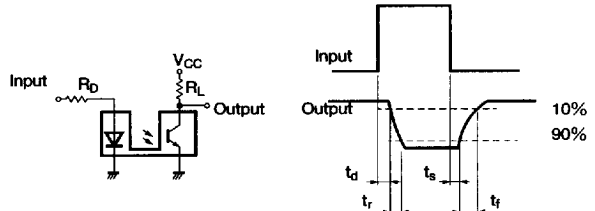
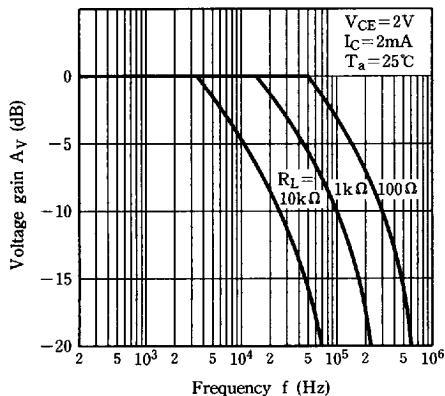
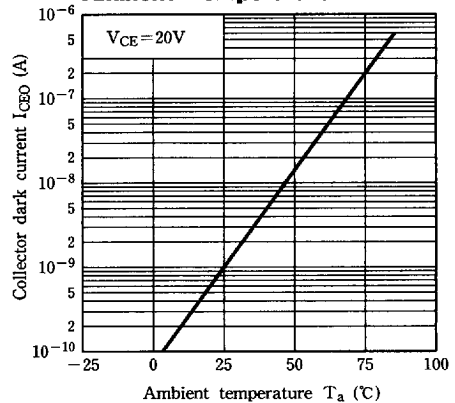


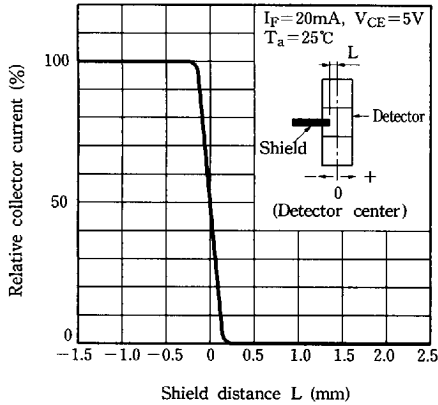
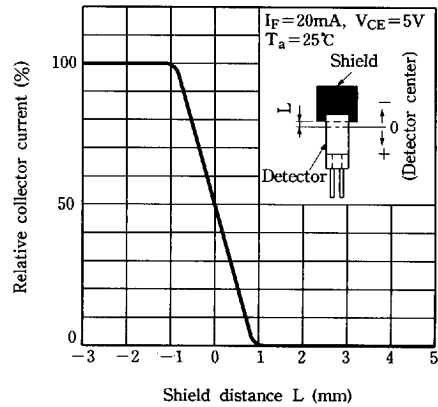
**Fig. 5 Collector Current vs. Forward Current**



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



**Fig. 7 Collector Current vs. Ambient Temperature****Fig. 8 Collector-emitter Saturation Voltage vs. Ambient Temperature****Fig. 9 Response Time vs. Load Resistance****Test Circuit for Response Time****Fig.10 Frequency Response****Fig.11 Collector Dark Current vs. Ambient Temperature**

**Fig.12 Relative Collector Current vs. Shield Distance (1)****Fig.13 Relative Collector Current vs. Shield Distance (2)****■ Precautions for Use**

- (1) In case of cleaning, use only the following type of cleaning solvent.  
Ethyl alcohol, methyl alcohol, Isopropyl alcohol
- (2) Please refer to the chapter "Precautions for Use." (Page 78 to 93).