# GP1S50/GP1S51V GP1S52V/GP1S54

## General Purpose Photointerrupter

### ■ Features

1. High sensing accuracy (Slilt 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)

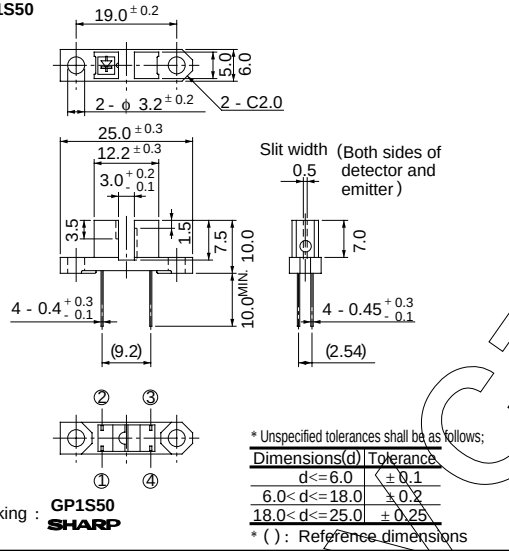
### ■ Applications

1. OA equipment, such as FDDs, printers, facsimiles
2. VCRs

### ■ Outline Dimensions

(Unit : mm)

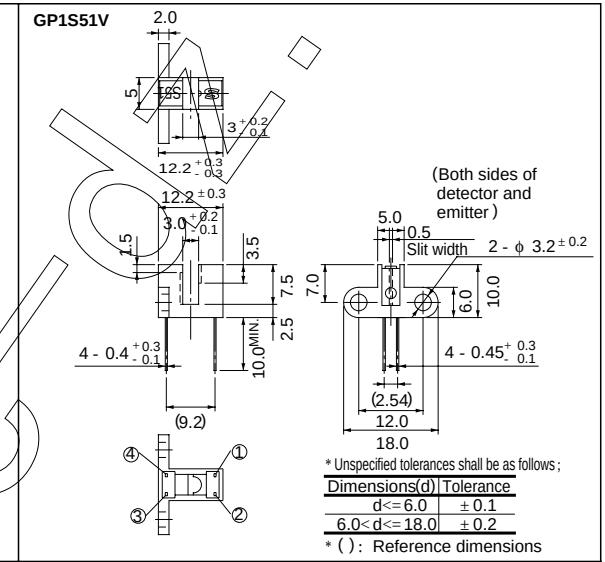
**GP1S50**




| Dimensions(d) | Tolerance |
|---|---|
| d<=6.0 | ± 0.1 |
| 6.0< d<=18.0 | ± 0.2 |
| 18.0< d<=25.0 | ± 0.25 |

* Unspecified tolerances shall be as follows;
* ( ) : Reference dimensions

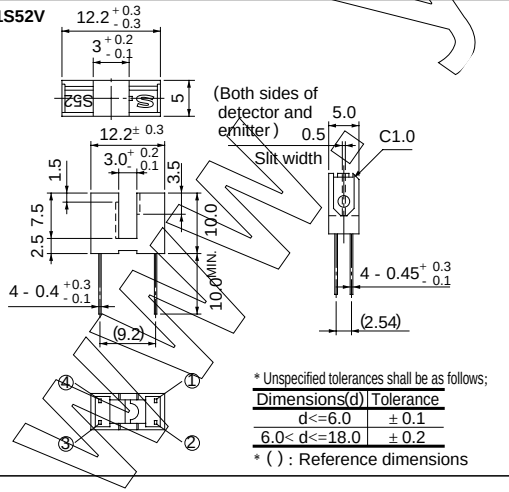
**GP1S51V**




| Dimensions(d) | Tolerance |
|---|---|
| d<= 6.0 | ± 0.1 |
| 6.0< d<= 18.0 | ± 0.2 |

* Unspecified tolerances shall be as follows;
* ( ) : Reference dimensions

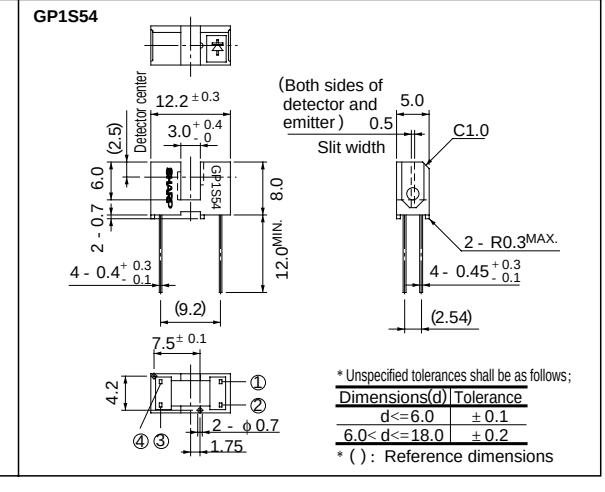
**GP1S52V**




| Dimensions(d) | Tolerance |
|---|---|
| d<=6.0 | ± 0.1 |
| 6.0< d<=18.0 | ± 0.2 |

* Unspecified tolerances shall be as follows;
* ( ) : Reference dimensions

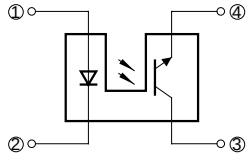
**GP1S54**




| Dimensions(d) | Tolerance |
|---|---|
| d<=6.0 | ± 0.1 |
| 6.0< d<=18.0 | ± 0.2 |

* Unspecified tolerances shall be as follows;
* ( ) : Reference dimensions

Internal connection diagram (Common to 4 models )




① Anode
② Cathode
③ Collector
④ Emitter

## ■ Absolute Maximum Ratings (Ta = 25˚C)

| Parameter | | Symbol | Rating | Unit |
|---|---|---|---|---|
| Input | Forward current | $I_F$ | 50 | mA |
| | *1 Peak forward current | $I_{FM}$ | 1 | A |
| | 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 |
| Operating temperature | | $T_{opr}$ | - 25 to + 85 | ˚C |
| Storage temperature | | $T_{stg}$ | - 40 to + 100 | ˚C |
| *2 Soldering temperature | | $T_{sol}$ | 260 | ˚C |

*1 Pulse width<=100μ s, Duty ratio= 0.01
*2 For 5 seconds

## ■ Electro-optical Characteristics (Ta = 25˚C)

| Parameter | | | Symbol | Conditions | MIN. | TYP. | MAX. | Unit |
|---|---|---|---|---|---|---|---|---|
| Input | Forward voltage | GP1S50/ GP1S51V/ GP1S52V | $V_F$ | $I_F$ = 20mA | - | 1.25 | 1.4 | V |
| | | **GP1S54** | | | - | 1.2 | 1.4 | |
| | Peak forward voltage | | $V_{FM}$ | $I_{FM}$ = 0.5A | - | 3 | 4 | V |
| | Reverse current | | $I_R$ | $V_R$ = 3V | - | - | 10 | μ A |
| Output | Collector dark current | | $I_{CEO}$ | $V_{CE}$ = 20V | - | 1 | 100 | nA |
| Transfer charac-teristics | Collector Current | | Ic | $I_F$ = 20mA, $V_{CE}$ = 5V | 0.5 | - | 5 | mA |
| | Collector-emitter saturation voltage | | $V_{CE(sat)}$ | $I_F$ = 40mA, $I_C$ = 0.5mA | - | - | 0.4 | V |
| | Response time | Rise time | $t_R$ | $V_{CE}$ = 2V, $I_{CE}$ = 2mA | - | 3 | 15 | μ s |
| | | Fall time | $t_F$ | $R_L$ = 100 Ω | - | 4 | 20 | μ s |

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

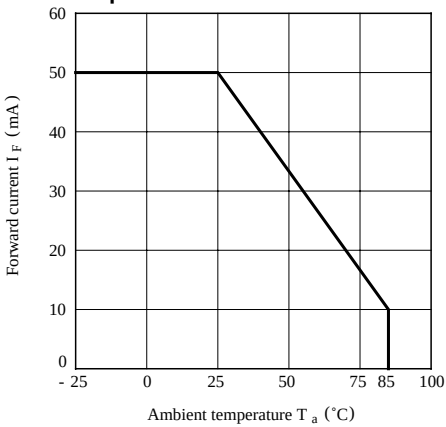



**Fig. 2 Collector Power Dissipation vs. Ambient Temperature**

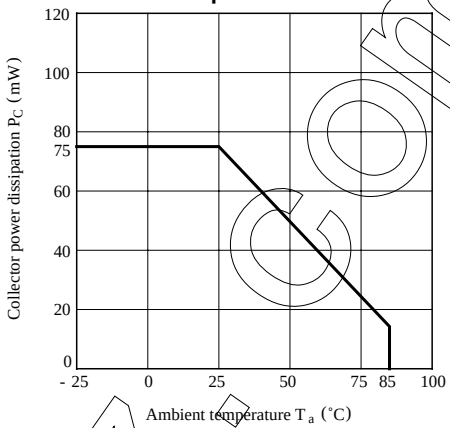



**Fig. 3 Peak Forward Current vs. Duty Ratio**

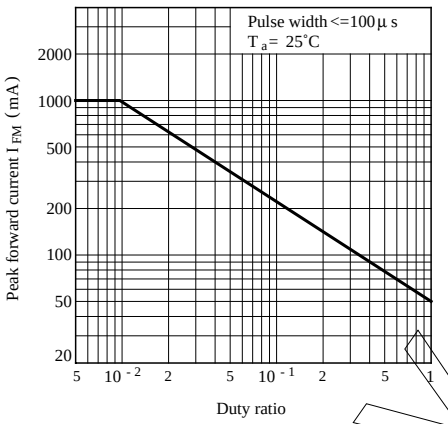



**Fig. 4 Forward Current vs. Forward Voltage**

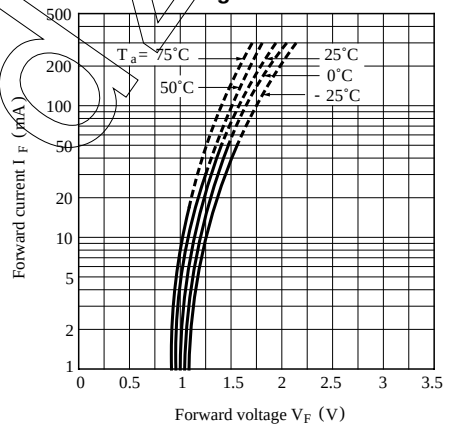



**Fig. 5 Collector Current vs. Forward Current**

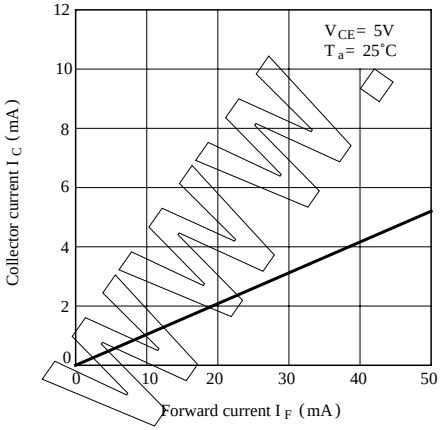



**Fig. 6 Collector Current vs. Collector-emitter Voltage**

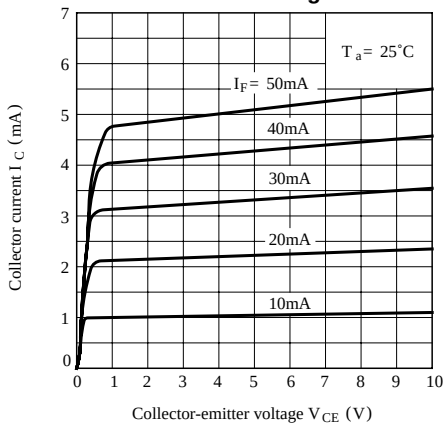


**Fig. 7 Collector Current vs. Ambient Temperature**

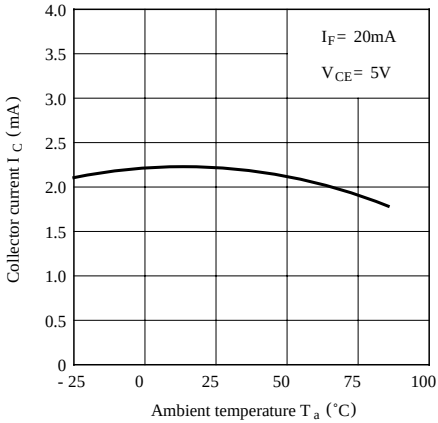



**Fig. 8 Collector-emitter Saturation Voltage vs. Ambient Temperature**

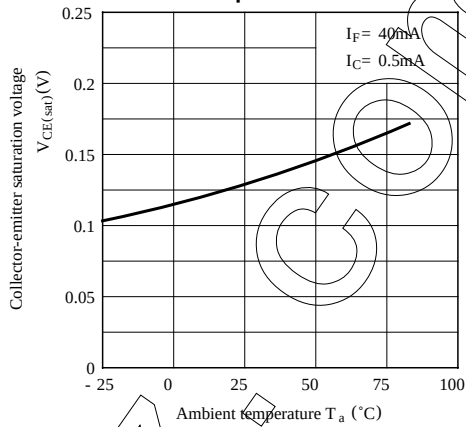
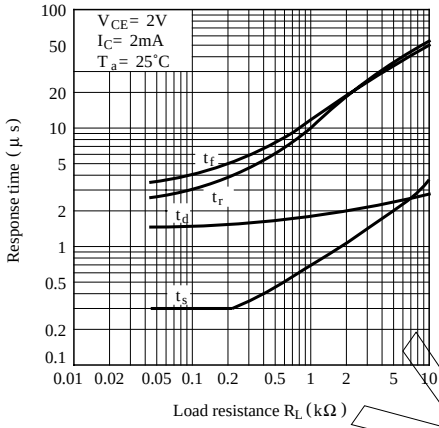



**Fig. 9 Response Time vs. Load Resistance**




**Test Circuit for Response Time**

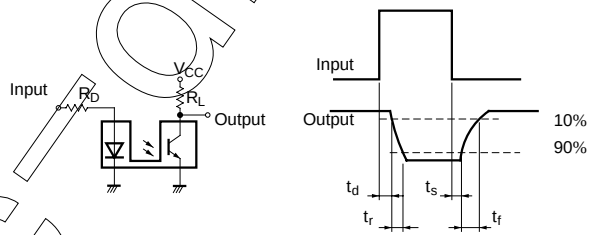



**Fig.10 Frequency Response**

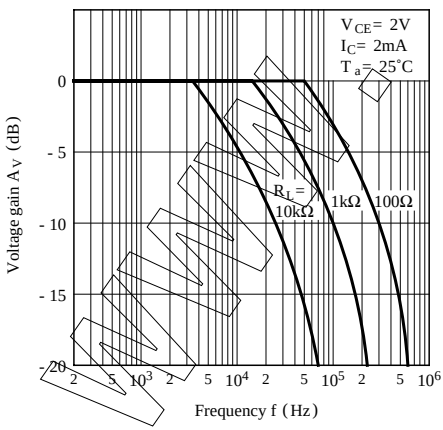



**Fig.11 Collector Dark Current vs. Ambient Temperature**

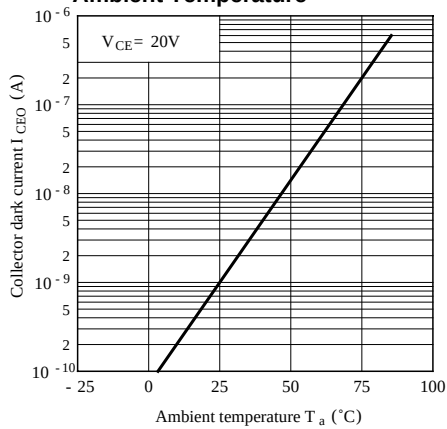


**Fig.12 Relative Collector Current vs. Shield Distance (1)**

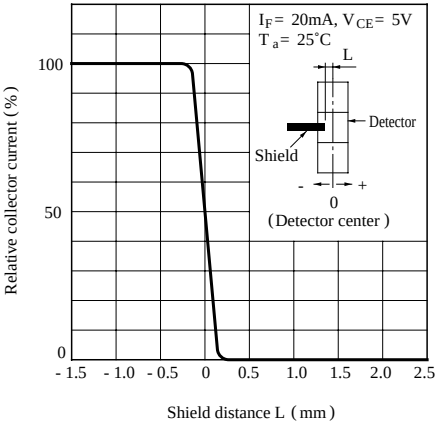
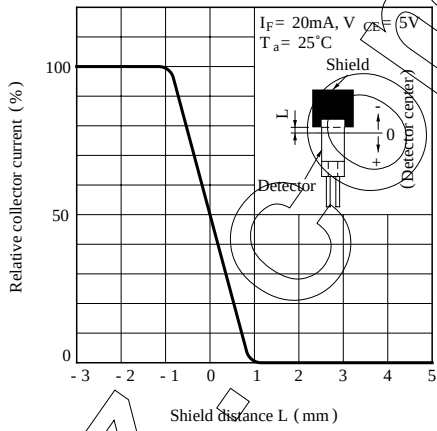



**Fig.13 Relative Collector Current vs. Shield Distance (2)**




## ■ 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".

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