

# GP1S24

## Subminiature Photointerrupter

### ■ Features

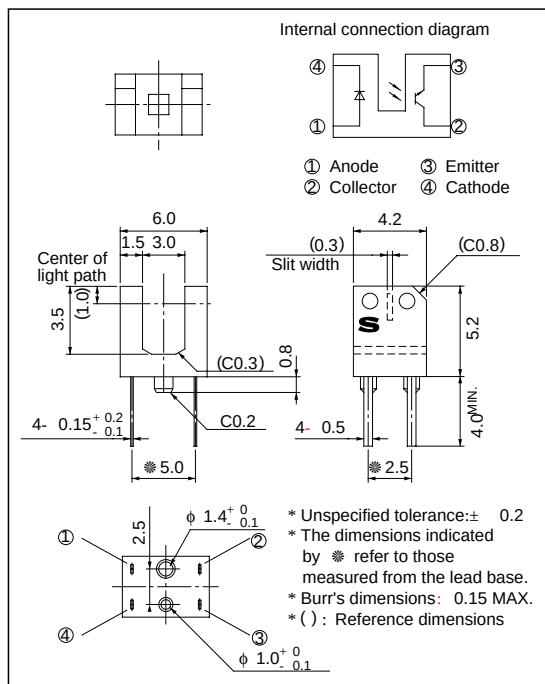
1. Compact package
2. PWB mounting type
3. High sensing accuracy (Silt width : 0.3mm)
4. Gap between light emitter and detector (3mm)
5. With a positioning boss

### ■ Applications

1. Floppy disk drives
2. Laser disc players

### ■ Outline Dimensions

(Unit : mm)

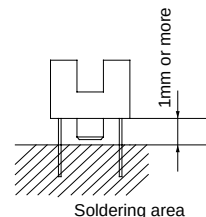


### ■ Absolute Maximum Ratings

(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    |                             | $T_{opr}$ | - 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

(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                      |           | $I_R$                | $V_R = 3\text{V}$                                                  | -    | -    | 10   | $\mu\text{A}$ |
| Output                   | Collector dark current               |           | $I_{CEO}$            | $V_{CE} = 20\text{V}$                                              | -    | -    | 100  | nA            |
| Transfer characteristics | Collector current                    |           | $I_C$                | $V_{CE} = 5\text{V}, I_F = 5\text{mA}$                             | 40   | -    | 400  | $\mu\text{A}$ |
|                          | Collector-emitter saturation voltage |           | $V_{CE(\text{sat})}$ | $I_F = 10\text{mA}, I_C = 40\text{mA}$                             | -    | -    | 0.4  | V             |
|                          | Response time                        | Rise time | $t_r$                | $V_{CE} = 5\text{V}, I_C = 100\text{mA}$<br>$R_L = 1\,000\,\Omega$ | -    | 50   | 150  | $\mu\text{s}$ |
|                          |                                      | Fall time | $t_f$                |                                                                    | -    | 50   | 150  | $\mu\text{s}$ |

Fig. 1 Forward Current vs. Ambient Temperature

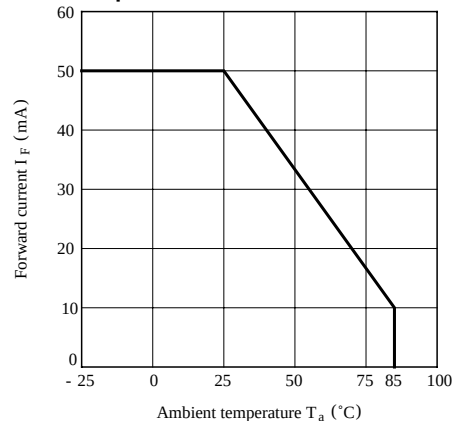


Fig. 2 Power Dissipation vs. Ambient Temperature

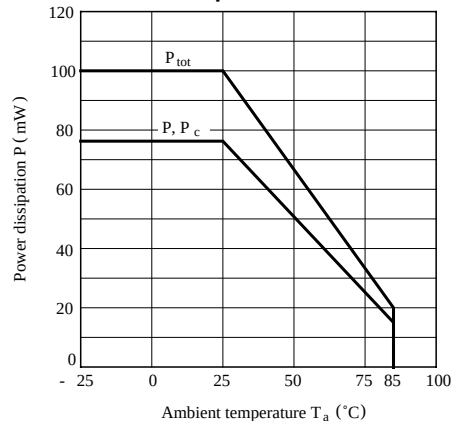


Fig. 3 Forward Current vs. Forward Voltage

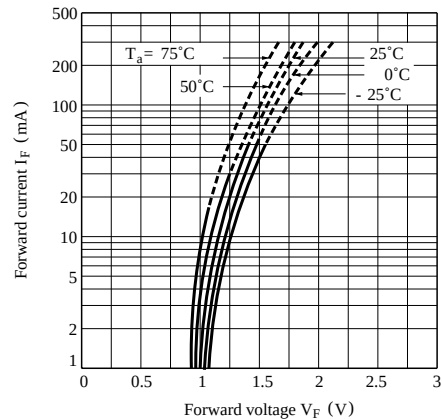


Fig. 4 Collector Current vs. Forward Current

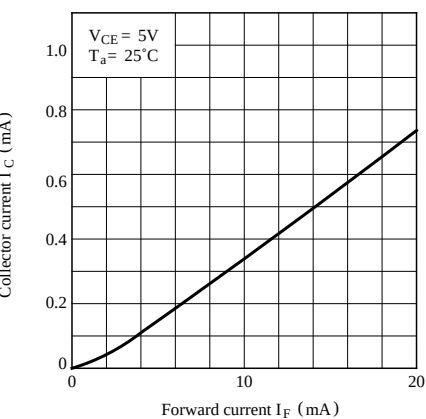


**Fig. 5 Collector Current vs. Collector-emitter Voltage**

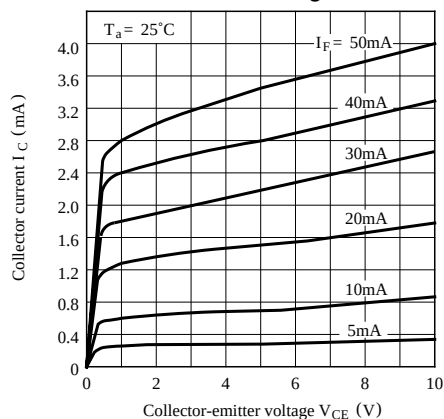


**Fig. 6 Collector Current vs. Ambient Temperature**

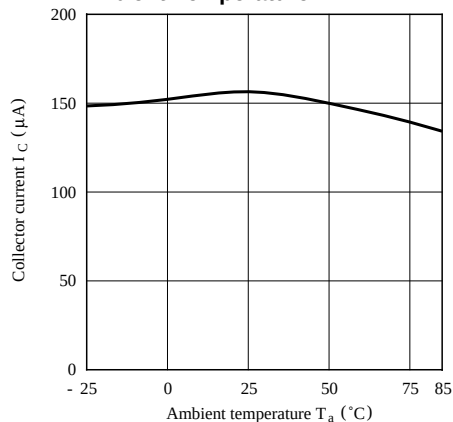


**Fig. 7 Collector-emitter Saturation Voltage vs. Ambient Temperature**

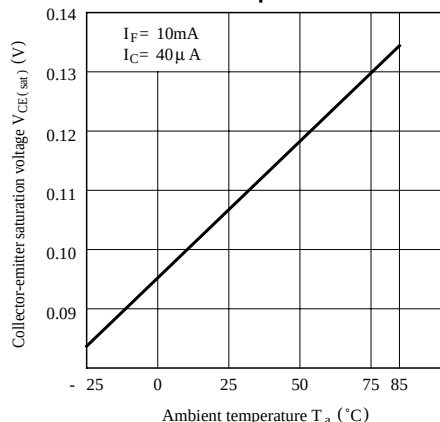


**Fig. 8 Collector Dark Current vs. Ambient Temperature**

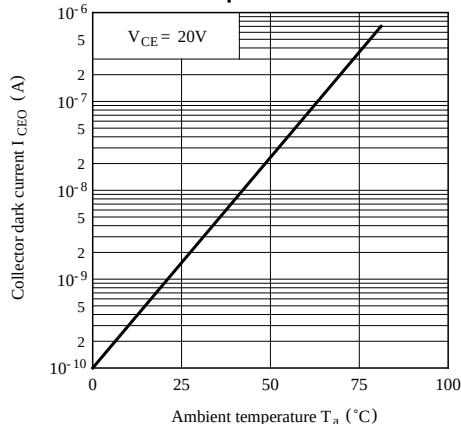
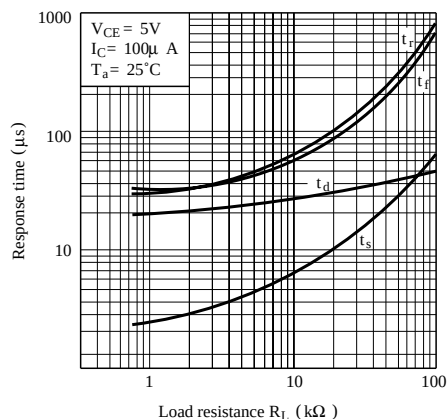


**Fig. 9 Response Time vs. Load Resistance**



**Test Circuit for Response Time**

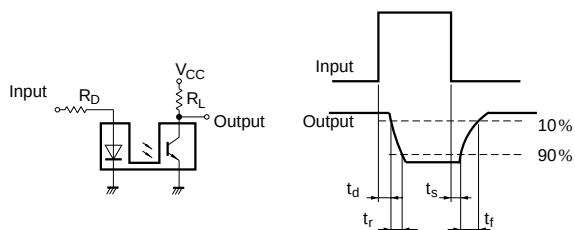


Fig.10 Relative Collector Current vs. Shield Distance (1)

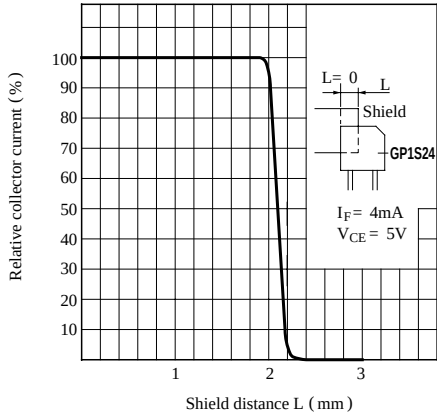
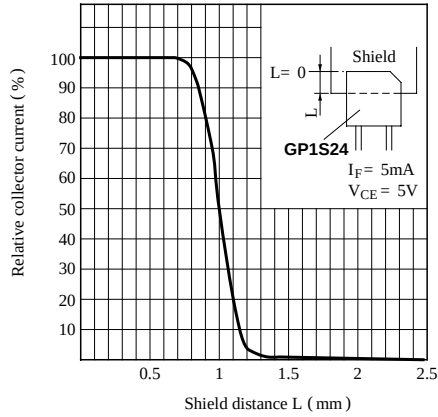


Fig.11 Relative Collector Current vs. Shield Distance (2)



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