

# GP1S53 Compact Photointerrupter

## Features

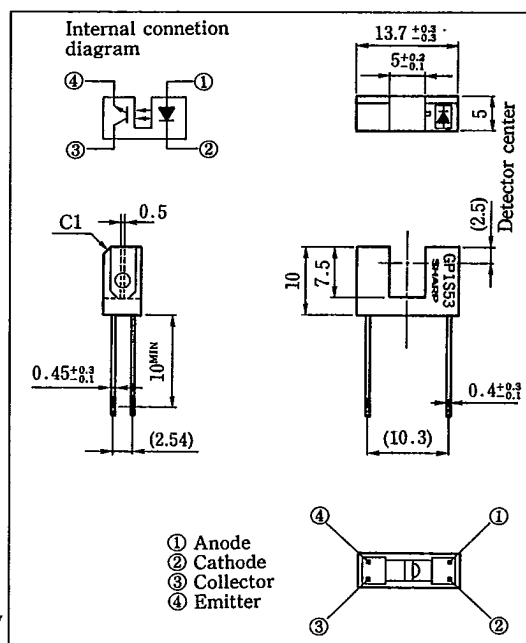
1. Compact type
2. High sensing accuracy (Slit width: 0.5mm)
3. PWB mounting type

## Applications

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

## Outline Dimensions

(Unit : mm)



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## Absolute Maximum Rating

(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 ~ +85  | °C   |
|        | Storage temperature         | $T_{stg}$ | -40 ~ +100 | °C   |
|        | *2 Soldering temperature    | $T_{sol}$ | 260        | °C   |

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

\*2 For 5 seconds

SHARP

(Ta=25°C)

## ■ Electro-optical Characteristics

| Parameter                |                                      | Symbol        | Conditions                             | MIN. | TYP.      | MAX.      | Unit          |
|--------------------------|--------------------------------------|---------------|----------------------------------------|------|-----------|-----------|---------------|
| Input                    | Forward voltage                      | $V_F$         | $I_F=20\text{mA}$                      | —    | 1.25      | 1.4       | V             |
|                          | Peak forward voltage                 | $V_{FM}$      | $I_{FM}=0.5\text{A}$                   | —    | 3         | 4         | V             |
|                          | Reverse current                      | $I_R$         | $V_R=3\text{V}$                        | —    | —         | 10        | $\mu\text{A}$ |
| Output                   | Collector dark current               | $I_{CEO}$     | $V_{CE}=20\text{V}$                    | —    | $10^{-9}$ | $10^{-7}$ | A             |
|                          | Current transfer ratio               | CTR           | $I_F=20\text{mA}$ , $V_{CE}=5\text{V}$ | 2.5  | —         | 75        | %             |
| Transfer characteristics | Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_F=40\text{mA}$ , $I_C=0.2\text{mA}$ | —    | —         | 0.4       | V             |
|                          | Response time (Rise)                 | $t_r$         | $V_{CE}=2\text{V}$ , $I_C=2\text{mA}$  | —    | 3         | 15        | $\mu\text{s}$ |
|                          | Response time (Fall)                 | $t_f$         | $R_L=100\Omega$                        | —    | 4         | 20        | $\mu\text{s}$ |

Fig. 1 Forward Current vs. Ambient Temperature

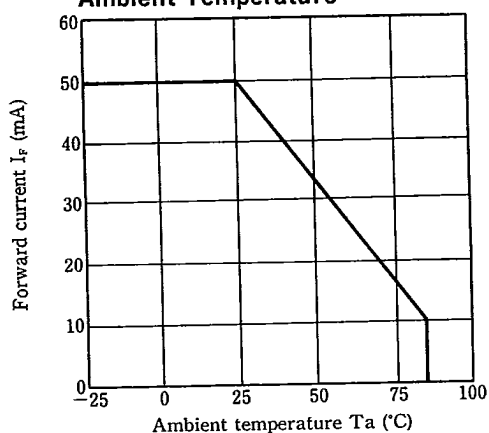


Fig. 2 Collector Power Dissipation vs. Ambient Temperature

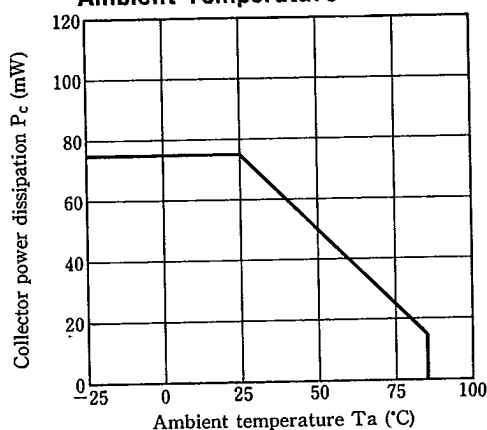


Fig. 3 Peak Forward Current vs. Duty Ratio

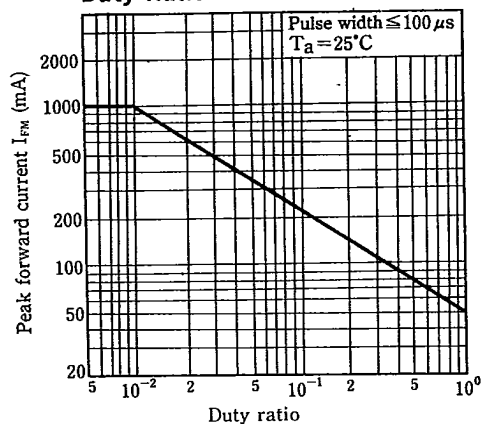
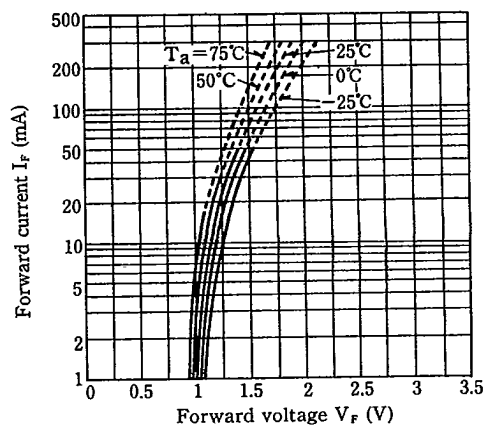


Fig. 4 Forward Current vs. Forward Voltage



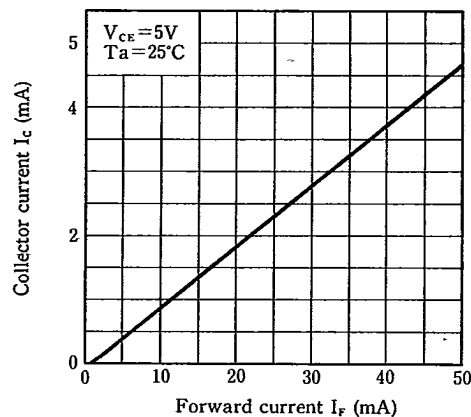
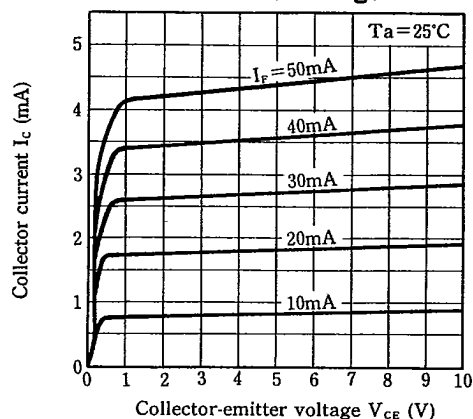
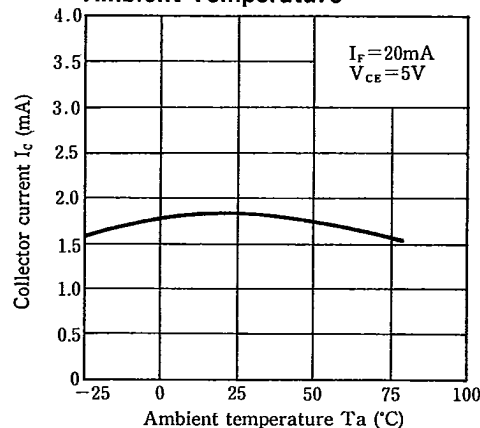
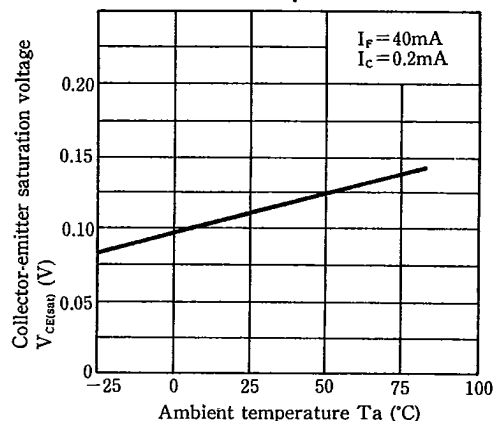
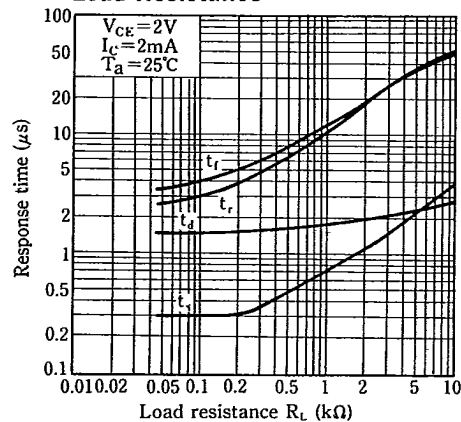
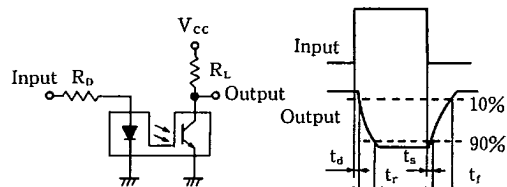
**Fig. 5 Collector Current vs. Forward Current****Fig. 6 Collector Current vs. Collector-emitter Voltage****Fig. 7 Collector Current vs. Ambient Temperature****Fig. 8 Collector-emitter Saturation Voltage vs. Ambient Temperature****Fig. 9 Response Time vs. Load Resistance****Test Circuit for Response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

Fig. 10 Frequency Response

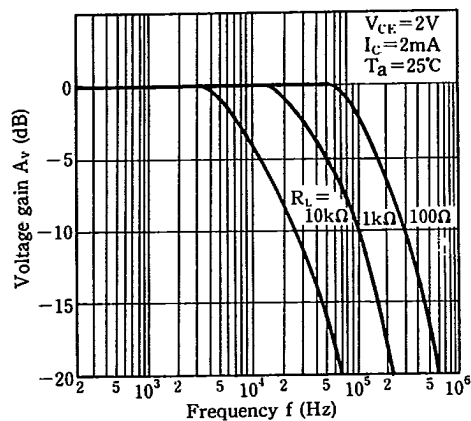


Fig. 11 Collector Dark Current vs. Ambient Temperature

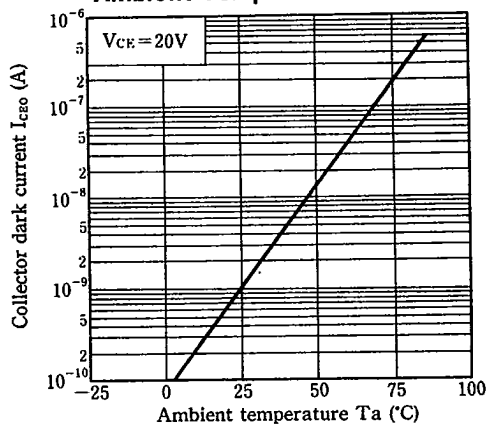


Fig. 12 Relative Collector Current vs. Shield Distance (1)

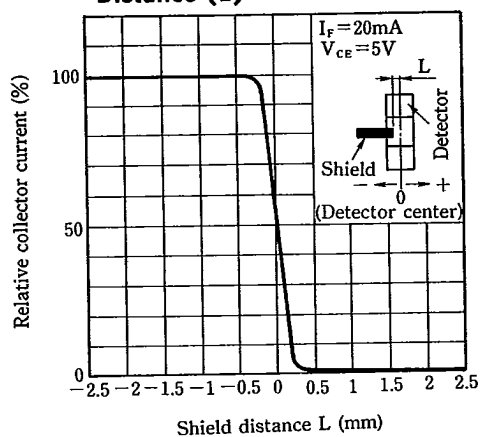


Fig. 13 Relative collector Current vs. Shield Distance (2)

