# GP2S22

## Subminiature Photointerrupter

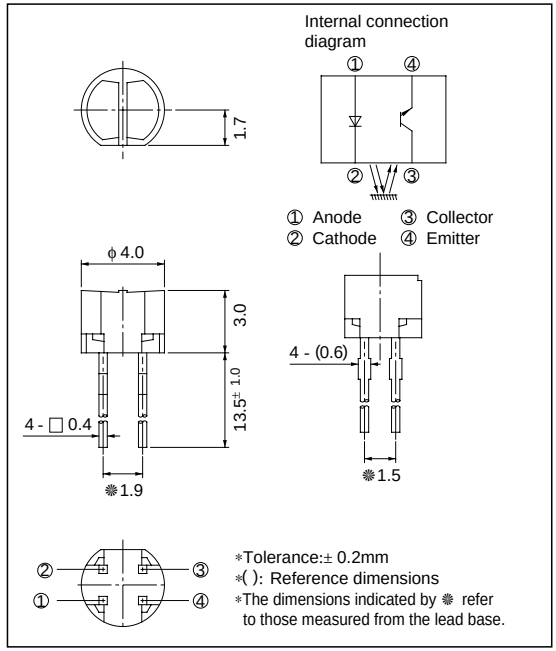
### ■ Features

1. ϕ 4mm compact resin mold type
2. Focal distanse: 0.6mm
3. Visible light cut-off type

### ■ Applications

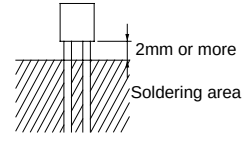
1. Audio equipment
2. VCRs

### ■ 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 3 seconds by manual soldering

## ■ Electro-optical Characteristics

(Ta = 25˚C)

| Parameter | | | Symbol | Conditions | MIN. | TYP. | MAX. | Unit |
|---|---|---|---|---|---|---|---|---|
| Input | Forward voltage | | $V_F$ | $I_F$ = 20mA | - | 1.2 | 1.4 | V |
| | Reverse current | | $I_R$ | $V_R$ = 6V | - | - | 10 | μA |
| Output | Collector dark current | | $I_{CEO}$ | $V_{CE}$ = 20V, $I_F$ = 0 | - | $10^{-9}$ | $10^{-7}$ | A |
| Transfer characteristics | *2Collector current | | $I_C$ | $V_{CE}$ = 2V, $I_F$ = 4mA | 20 | - | 125 | μA |
| | Response time | Rise time | $t_r$ | $V_{CE}$ = 2V, $I_C$ = 100μA | - | 20 | 100 | μs |
| | | Fall time | $t_f$ | $R_L$ = 1kΩ, d = 1mm | - | 20 | 100 | μs |
| | *3Leak current | | $I_{LEAK}$ | $V_{CE}$ = 2V, $I_F$ = 4mA | - | - | 0.1 | μA |

*2 The condition and arrangement of the reflective object are shown in the following drawing.
*3 Without reflective object

The ranking of collector current shall be classified into the following 6 ranks.

| Rank | $I_C$ (μA) |
|---|---|
| A | 58 to 125 |
| B | 34 to 71 |
| C | 20 to 42 |
| A or B | 34 to 125 |
| B or C | 20 to 71 |
| A, B or C | 20 to 125 |

**Test Condition and Arrangement for Collector Current**

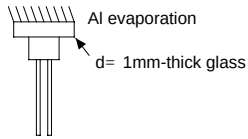



**Fig. 1 Forward Current vs. Ambient Temperature**

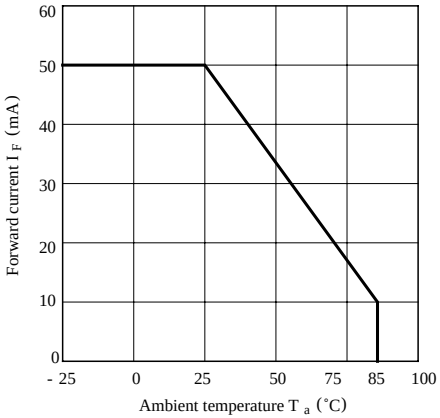



**Fig. 2 Power Dissipation vs. Ambient Temperature**

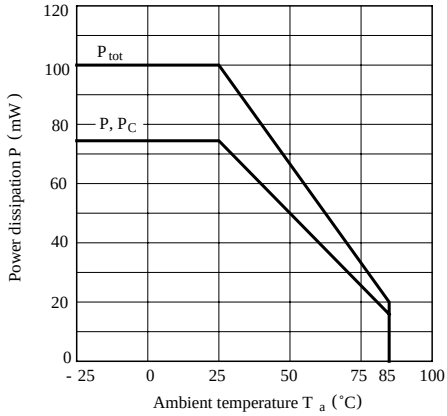


**Fig.3 Forward Current vs. Forward Voltage**

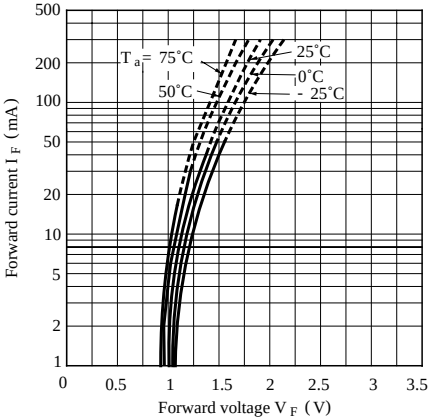



**Fig.4 Collector Current vs. Forward Current**

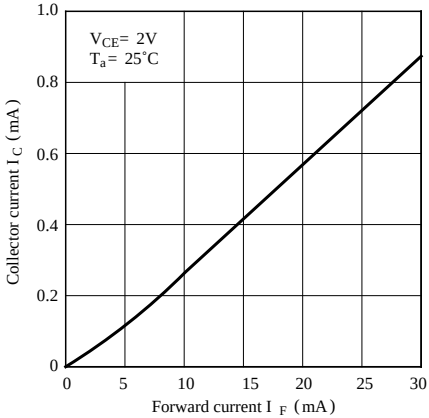



**Fig. 5 Collector Current vs. Collector-emitter Voltage**

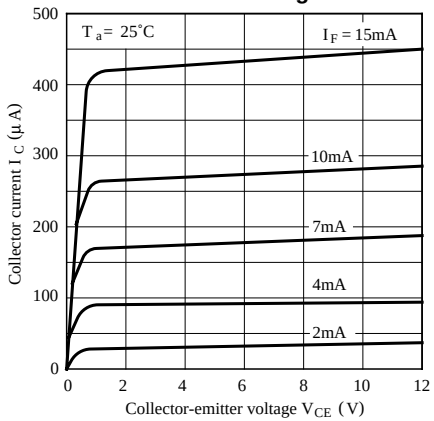



**Fig. 6 Collector Current vs. Ambient Temperature**

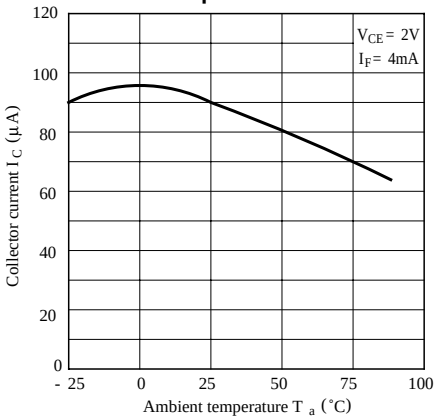



**Fig. 7 Collector Dark Current vs. Ambient Temperature**

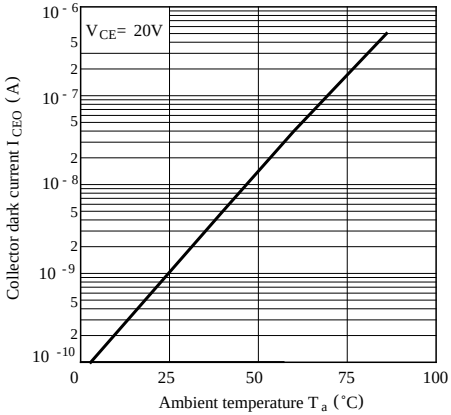
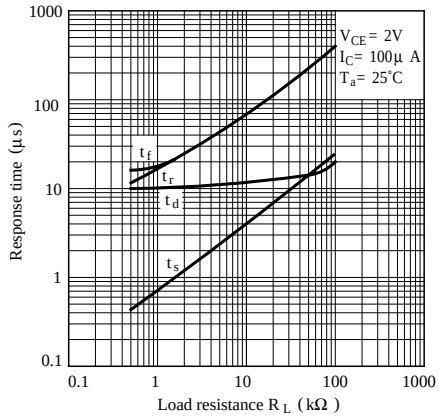
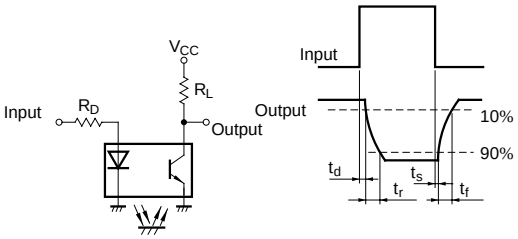


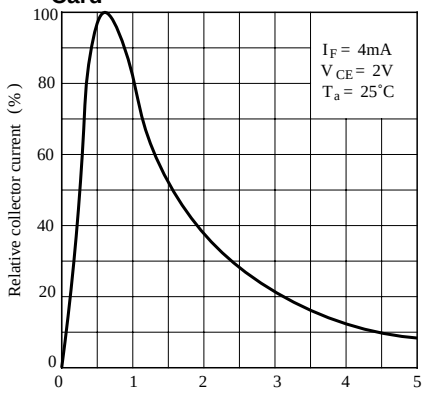

**Fig. 8 Response Time vs. Load Resistance**



### Test Circuit for Response Time

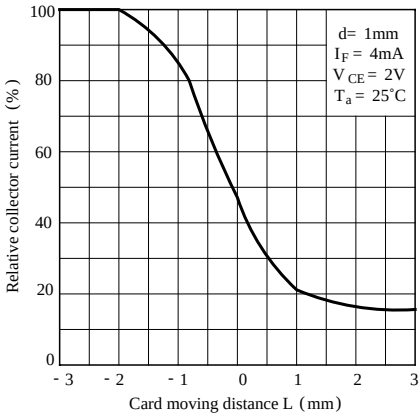



### Fig. 9 Relative Collector Current vs. Distance between GP2S22 and Card

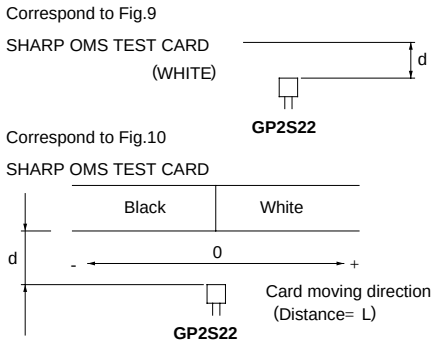



Distance between **GP2S22** and test card d (mm)

### Fig.10 Relative Collector Current vs. Card Moving Distance




### Distance Characteristics Test Condition




## ■ Precautions for Use

(1) Perform soldering manually

(2) Please refrain from soldering under preheating and refrain from soldering by reflow.

(3) As for other general cautions, refer to the chapter "Precautions for Use".

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