# GP2S40

## Long Focal Distance, Subminiature Photointerrupter

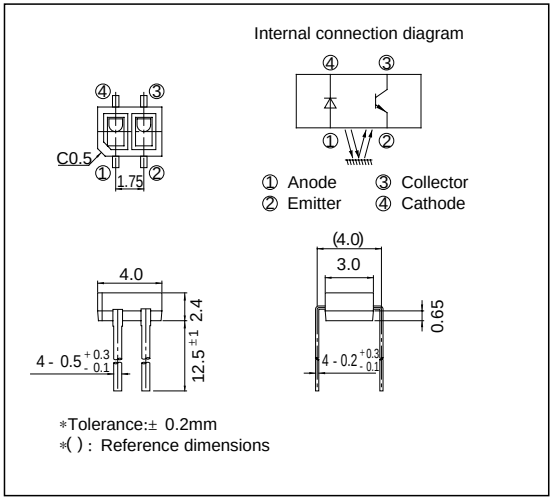
### ■ Features

1. Ultra compact DIP package
   (Volume: 1/3 of **GP2S05**)
2. Long focal distance type
   (focal distance: 3mm)
3. Effective detection distance: 1.5 to 6.5mm

### ■ Applications

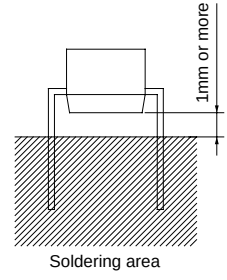
1. Copiers
2. Facsimiles
3. Printers

### ■ 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 | $P_D$ | 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 |
| *1Soldering temperature | | $T_{sol}$ | 260 | ˚C |




*1 For 5 seconds

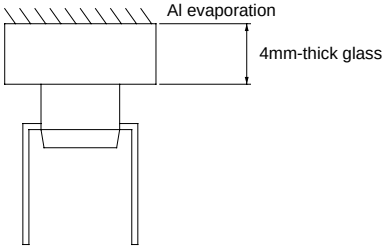
## ■ Electro-optical Characteristics

(Ta = 25°C)

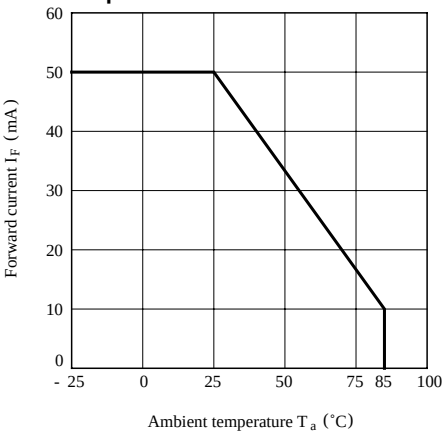
| Parameter | | | Symbol | Condition | MIN. | TYP. | MAX. | Unit |
|---|---|---|---|---|---|---|---|---|
| Input | Forward voltage | | $V_F$ | $I_F$ = 20mA | - | 1.2 | 1.4 | V |
| | Reverse current | | $I_R$ | $V_R$ = 3V | - | - | 10 | μA |
| Output | Collector dark current | | $I_{CEO}$ | $V_{CE}$ = 20V | - | 1 | 100 | nA |
| Transfer characteristics | Collector current | | $I_C$ | $V_{CE}$ = 5V, $I_F$ = 20mA | 0.5 | - | 3.0 | mA |
| | *2Leak current | | $I_{LEAK}$ | $V_{CE}$ = 5V, $I_F$ = 20mA | - | - | 500 | nA |
| | *3Response time | Rise time | $t_r$ | $V_{CE}$ = 2V, $I_C$ = 100μA | - | 50 | 150 | μs |
| | | Fall time | $t_f$ | $R_L$ = 1 000Ω, d = 4mm | - | 50 | 150 | μs |

*2 No reflective object
*3 "d" is glass thickness of reflective mirror.

### Test Arrangement of Collector Current




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




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

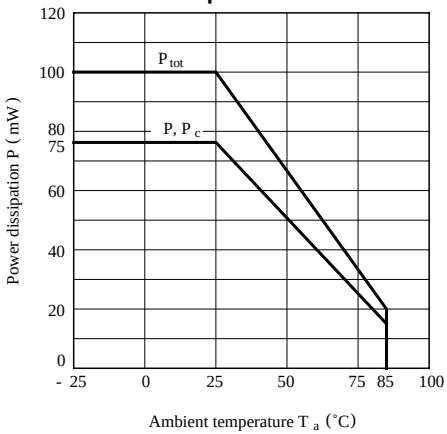


**Fig. 3 Forward Current vs. Forward Voltage**

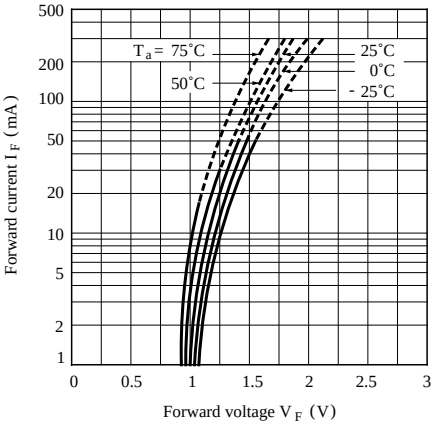



**Fig. 4 Collector Current vs. Forward Current**

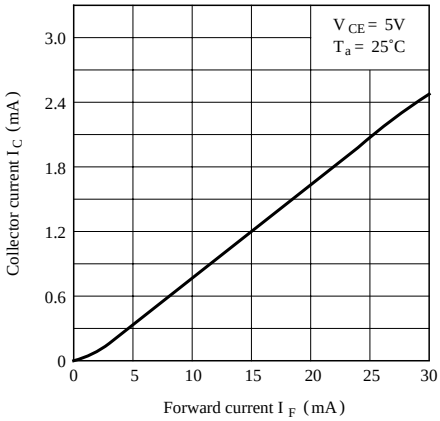



**Fig. 5 Collector Current vs. Collector-emitter Voltage**

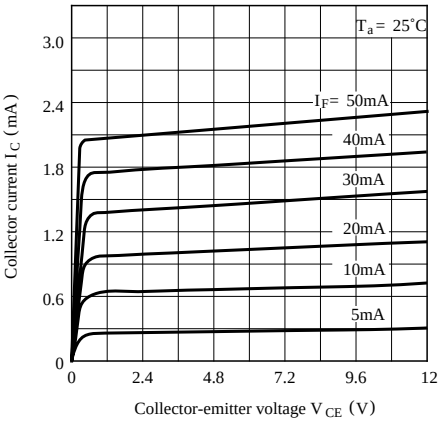



**Fig. 6 Relative Collector Current vs. Ambient Temperature**

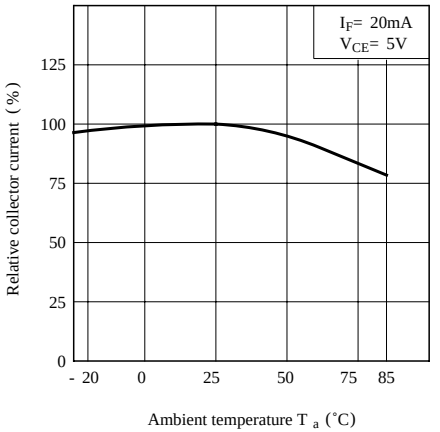



**Fig. 7 Collector Dark Current vs. Ambient Temperature**

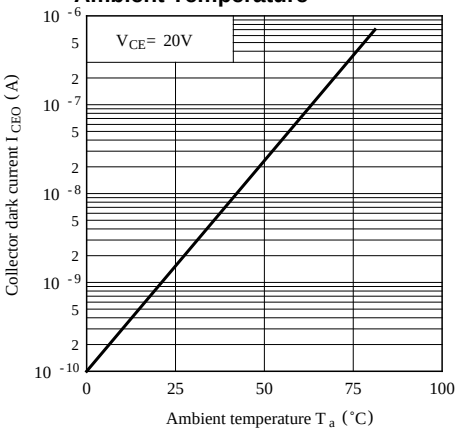
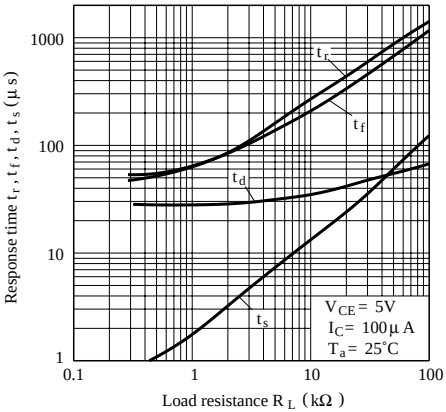


**Fig. 8 Response Time vs. Load Resistance**




**Test Circuit for Response Time**

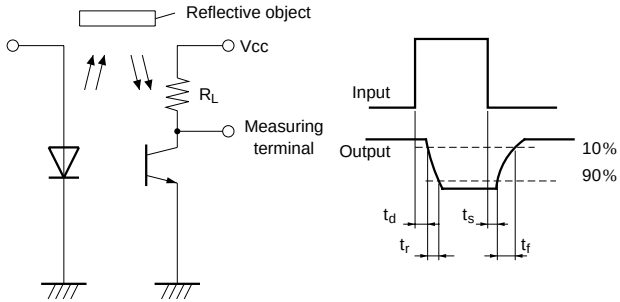



**Fig. 9 Relative Collector Current vs. Sensor moving Distance (1)**

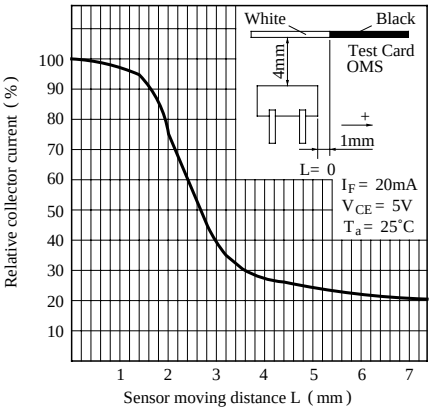



**Fig.10 Relative Collector Current vs. Sensor moving Distance (2)**

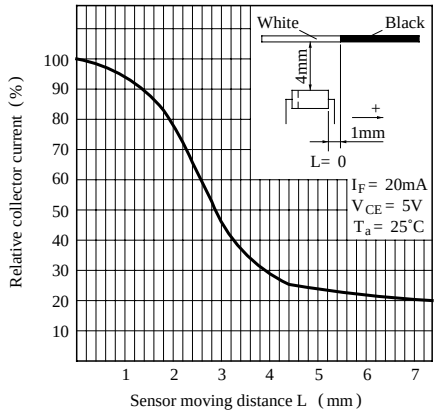
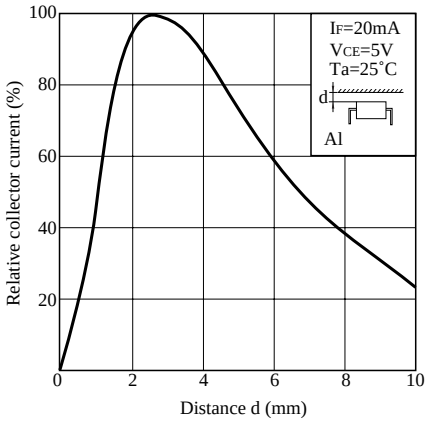



**Fig. 11 Relative Collector Current vs. Distance**




- Please refer to the chapter "Precautions for Use".