

GP1S41 Photointerrupter with Spring Lever Type Actuator

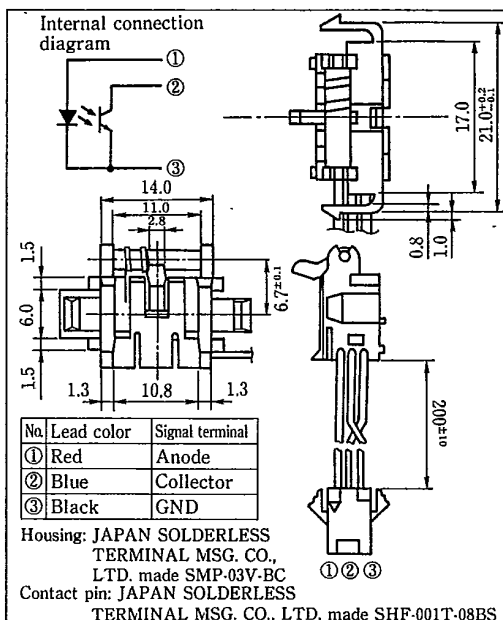
■ Features

1. With spring recoil type actuator
2. Connector terminal type

■ Applications

1. Paper detection for copiers, facsimiles

■ Outline Dimensions (Unit : mm)



■ 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 ~ +75 | °C |
| | Storage temperature | T_{STG} | -30 ~ +85 | °C |

*1 Pulse width $\leq 100\mu s$, Duty ratio=0.01

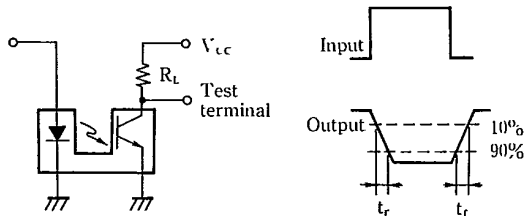
Electro-optical Characteristics

(Ta=25°C)

| 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 | μA |
| Output | Collector dark current | I_{CEO} $V_{CE}=20\text{V}$ | — | 1 | 100 | nA |
| *2 Transfer characteristics | Collector current | I_C $V_{CE}=5\text{V}$, $I_F=20\text{mA}$ | 0.5 | — | 10 | mA |
| | Collector-emitter saturation voltage | V_{CEO} (sat) | — | — | 0.4 | V |
| | Response time (Rise) | t_r $V_{CE}=2\text{V}$, $I_C=2\text{mA}$ | — | 3 | 15 | μs |
| | Response time (Fall) | t_f $R_L=100\Omega$ | — | 4 | 20 | μs |

*2 Measurement shall be made of the angle at which the actuator lever transmits the light going through light detector/emitter slit any more.

Test Circuit for Response Time



Mechanical Characteristics

| Parameter | Conditions | MIN. | TYP. | MAX. | Unit |
|-------------------------|--|---------|------|------|---------|
| Lever rotational torque | With the actuator lever horizontal (Initial condition) | — | — | 2 | gf · cm |
| Lever life | | 100,000 | — | — | Times |

Fig. 1 Forward Current vs. Ambient Temperature

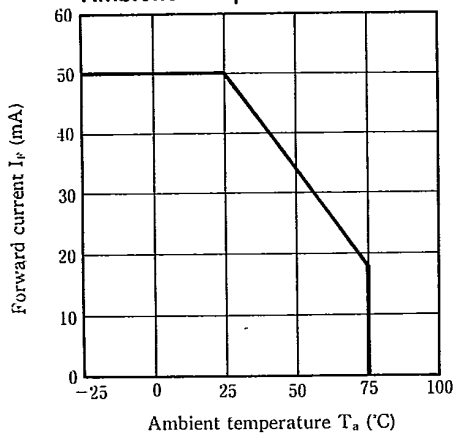


Fig. 2 Collector Power Dissipation vs. Ambient Temperature

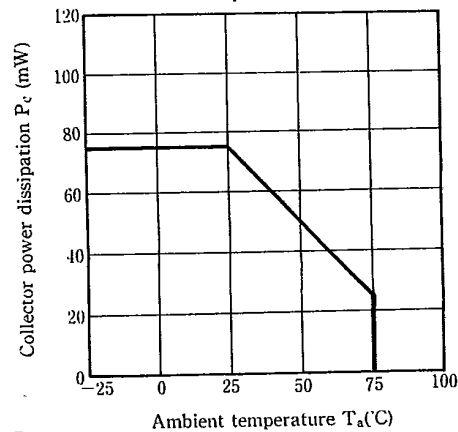


Fig. 3 Peak Forward Current vs. Duty Ratio

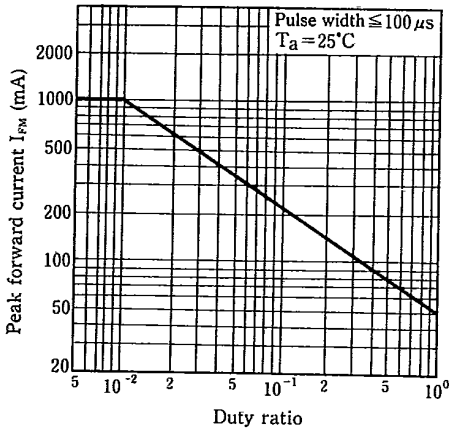


Fig. 4 Forward Current vs. Forward Voltage

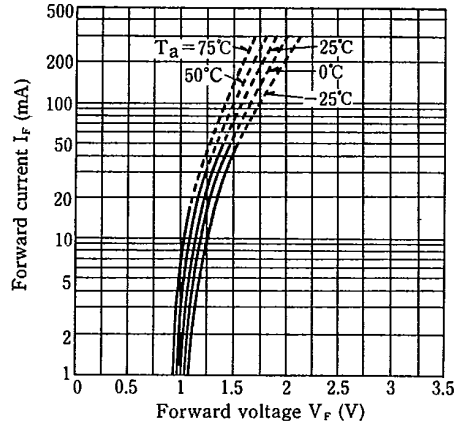


Fig. 5 Collector Current vs. Forward Current

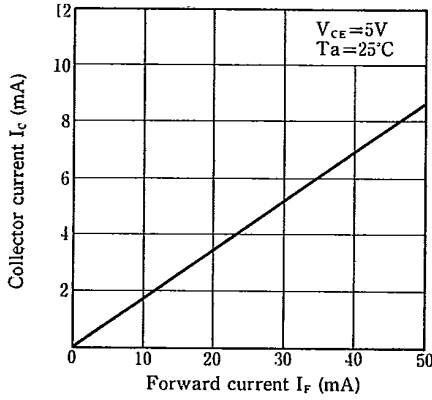


Fig. 6 Collector Current vs. Collector-emitter Voltage

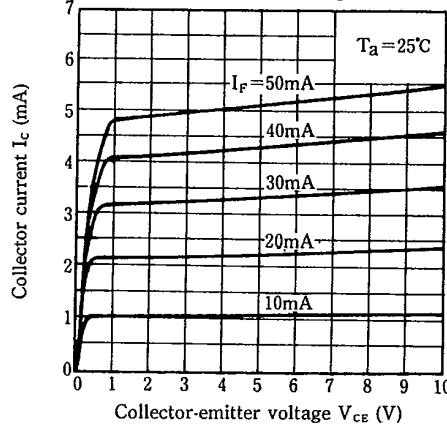


Fig. 7 Collector Current vs. Ambient Temperature

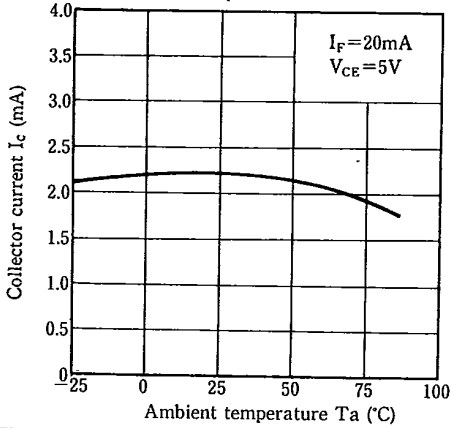
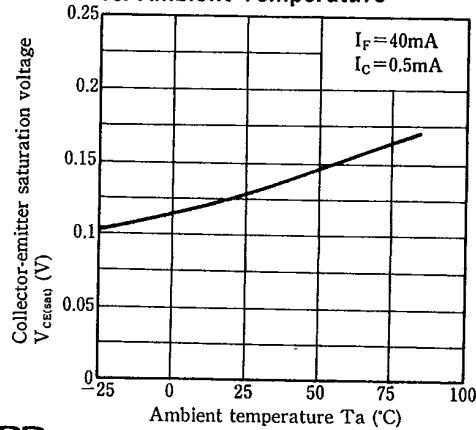


Fig. 8 Collector-emitter Saturation Voltage vs. Ambient Temperature



Photointerrupter

T-41-73

Test Circuit for Response Time

Fig. 9 Response Time vs. Load Resistance

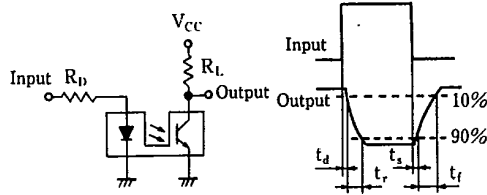
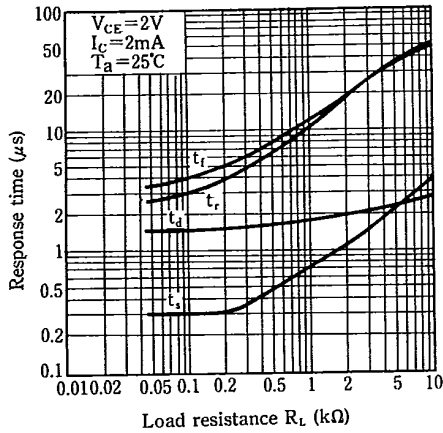


Fig. 10 Frequency Response

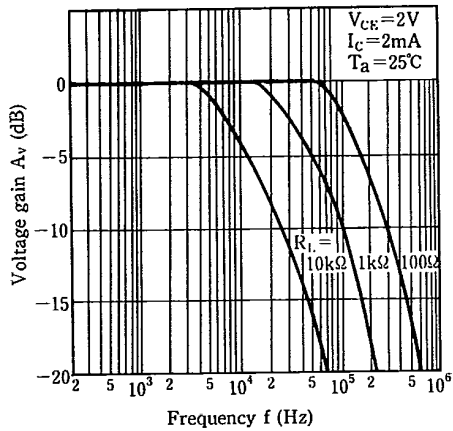


Fig. 11 Collector Dark Current vs. Ambient Temperature

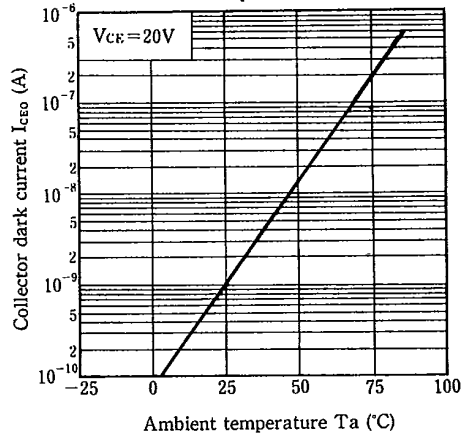
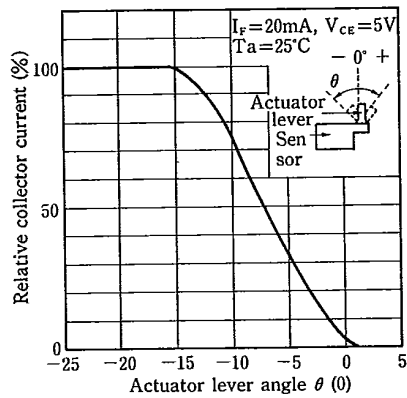


Fig. 12 Relative Collector Current vs. Actuator Lever Angle



SHARP