

RPI-441C1

Photointerrupter, Small type



Absolute maximum ratings (Ta=25°C)

| Parameter | Symbol | Limits | Unit | |
|---------------------------|-----------------------------|------------------|------|----|
| Input (LED) | Forward current | I _F | 50 | mA |
| | Reverse voltage | V _R | 5 | V |
| | Power dissipation | P _D | 80 | mW |
| Output (photo-transistor) | Collector-emitter voltage | V _{CEO} | 30 | V |
| | Emitter-collector voltage | V _{ECC} | 4.5 | V |
| | Collector current | I _C | 30 | mA |
| | Collector power dissipation | P _C | 80 | mW |
| Operating temperature | T _{opr} | -25 to +85 | °C | |
| Storage temperature | T _{stg} | -30 to +85 | °C | |

Applications

Optical control equipment
Facsimiles
Printers

Features

- 1) Compact with a 4mm gap.
- 2) High precision position detection (slit width of 0.5mm).
- 3) Minimal influence from stray light.
- 4) Low collector-emitter voltage.

Electrical and optical characteristics (Ta=25°C)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions | |
|--------------------------------|--------------------------------------|----------------------|------|------|------|------------|--|
| Input characteristics | Forward voltage | V _F | - | 1.3 | 1.6 | V | I _F =50mA |
| | Reverse current | I _R | - | - | 10 | μA | V _R =5V |
| Output characteristics | Dark current | I _{CEO} | - | - | 0.5 | μA | V _{CE} =10V |
| | Peak sensitivity wavelength | λ _P | - | 800 | - | nm | - |
| Transfer characteristics | Collector current | I _C | 0.2 | 1.0 | - | mA | V _{CE} =5V, I _F =20mA |
| | Collector-emitter saturation voltage | V _{CE(sat)} | - | - | 0.4 | V | I _F =20mA, I _C =0.1mA |
| Infrared light emitter | Response time | tr+tf | - | 10 | - | μs | V _{CC} =5V, I _F =20mA, R _L =100Ω |
| | Cut-off frequency | f _c | - | 1 | - | MHz | I _F =50mA * Non-coherent Infrared light emitting diode used. |
| Photo transistor | Peak light emitting wavelength | λ _P | - | 950 | - | nm | - |
| | Response time | tr+tf | - | 10 | - | μs | V _{CC} =5V, I _C =1mA, R _L =100Ω * This product is not designed to be protected against electromagnetic wave. |
| Maximum sensitivity wavelength | λ _P | - | 800 | - | nm | - | |

Electrical and optical characteristics curves

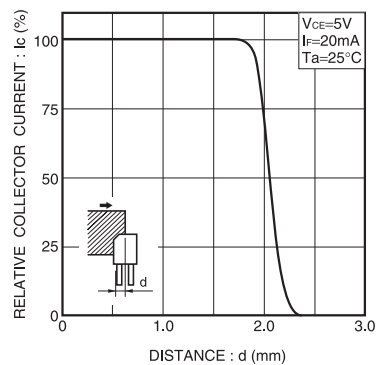


Fig.1 Relative output current vs. distance (I)

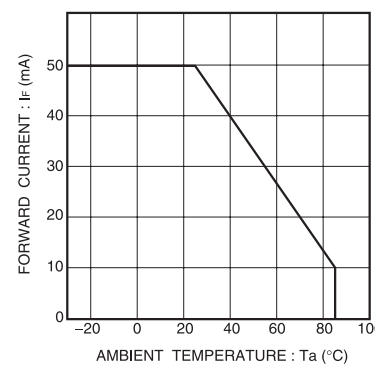


Fig.2 Forward current falloff

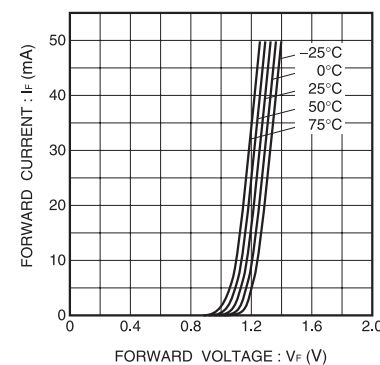


Fig.3 Forward current vs. forward voltage

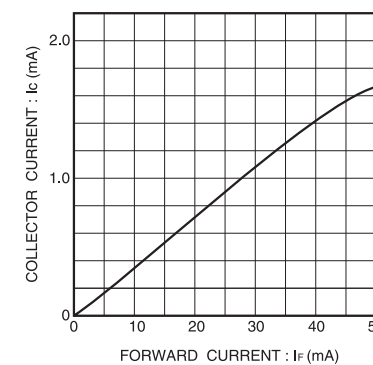


Fig.7 Collector current vs. forward current

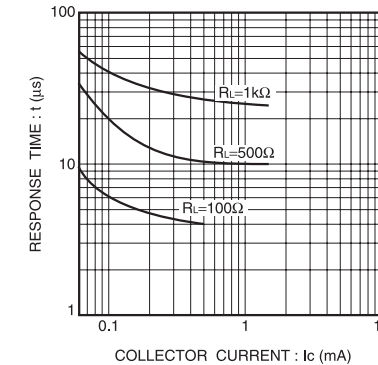


Fig.8 Response time vs. collector current

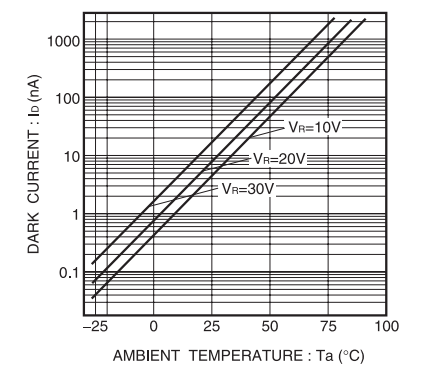


Fig.9 Dark current vs. ambient temperature

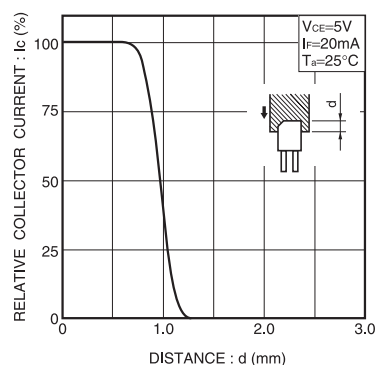


Fig.4 Relative output current vs. distance (II)

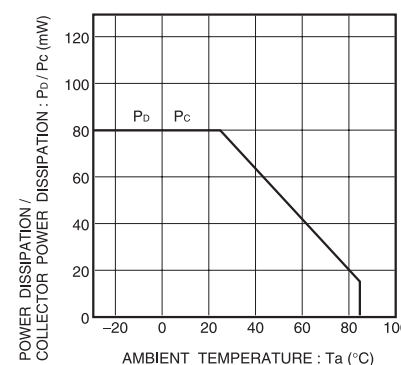


Fig.5 Power dissipation / collector power dissipation vs. ambient temperature

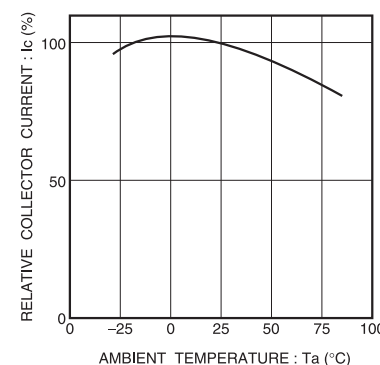


Fig.6 Relative output vs. ambient temperature

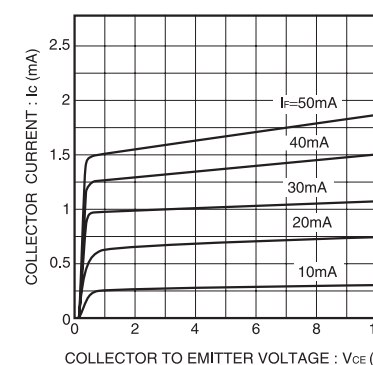


Fig.10 Output characteristics

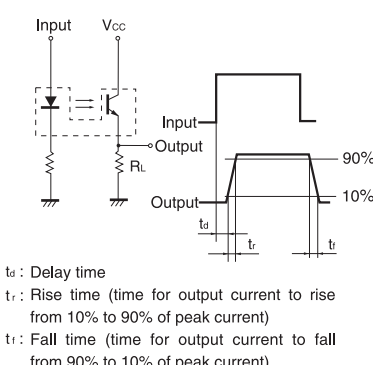
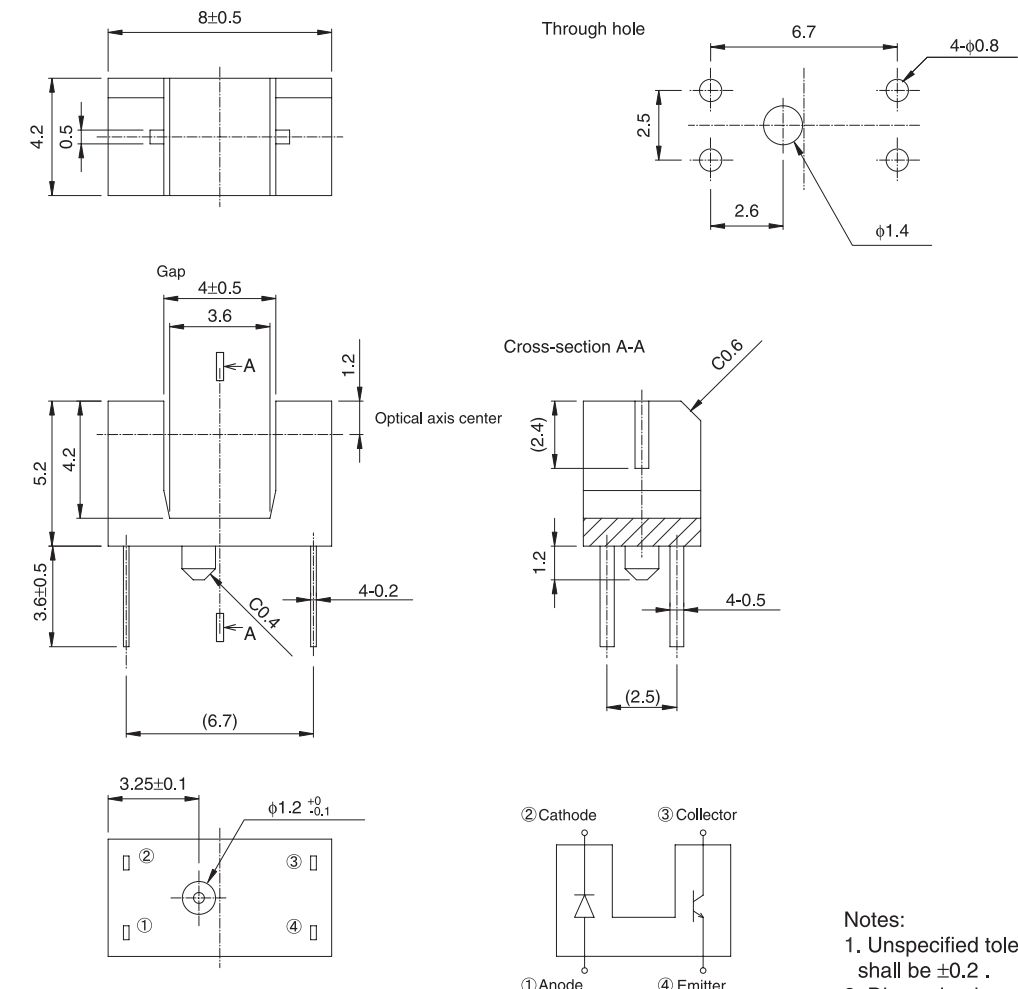


Fig.11 Response time measurement circuit

External dimensions (Unit : mm)



Notes:
1. Unspecified tolerance shall be ±0.2.
2. Dimension in parenthesis show for reference.

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