

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_{CE0} | 30 | V |
| Emitter-collector voltage | V_{ECO} | 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 +100 | °C |

Applications

- Optical control equipment
- Cameras
- Floppy disk drives
- Digital video disc

Features

- 1) Ultra-small.
- 2) Minimal influence from stray light.
- 3) Low collector-emitter saturation 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 | $I_F=50\text{mA}$ |
| Reverse current | I_R | - | - | 10 | μA | $V_R=5\text{V}$ |
| Output characteristics | | | | | | |
| Dark current | I_{CEO} | - | - | 0.5 | μA | $V_{CE}=10\text{V}$ |
| Peak sensitivity wavelength | λ_P | - | 800 | - | nm | - |
| Transfer characteristics | | | | | | |
| Collector current | I_C | 0.18 | 0.3 | 0.95 | mA | $V_{CE}=5\text{V}, I_F=10\text{mA}$ |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | - | - | 0.4 | V | $I_F=20\text{mA}, I_C=0.1\text{mA}$ |
| Response time | t_{r-f} | - | 10 | - | μs | $V_{CC}=5\text{V}, I_F=20\text{mA}, R_L=100\Omega$ |
| Infrared light emitter diode | | | | | | |
| Cut-off frequency | f_c | - | 1 | - | MHz | $I_F=50\text{mA}$ * Non-coherent Infrared light emitting diode used. |
| Peak light emitting wavelength | λ_P | - | 950 | - | nm | - |
| Photo transistor | | | | | | |
| Response time | t_{r-f} | - | 10 | - | μs | $V_{CC}=5\text{V}, I_C=1\text{mA}, R_L=100\Omega$ * This product is not designed to be protected against electromagnetic wave. |
| Maximum sensitivity wavelength | λ_P | - | 800 | - | nm | - |

Electrical and optical characteristics curves

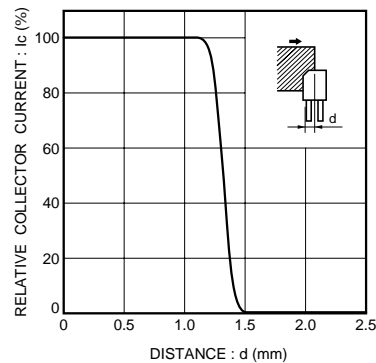


Fig.1 Relative output current vs. distance (I)

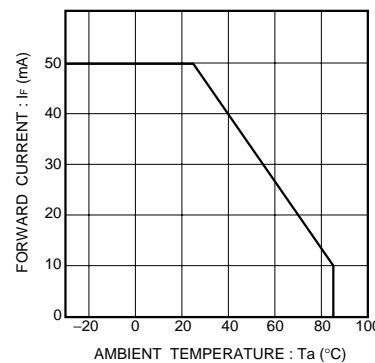


Fig.2 Forward current falloff

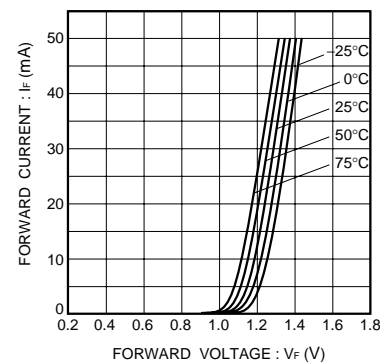


Fig.3 Forward current vs. forward voltage

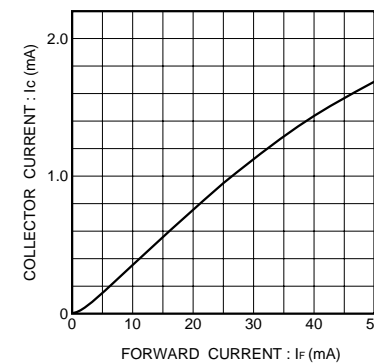


Fig.7 Collector current vs. forward current

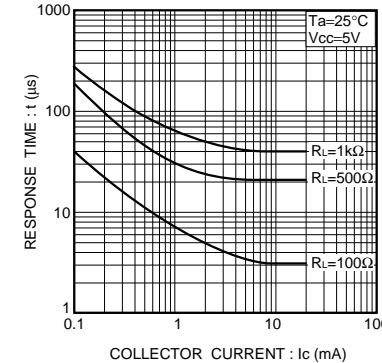


Fig.8 Response time vs. collector current

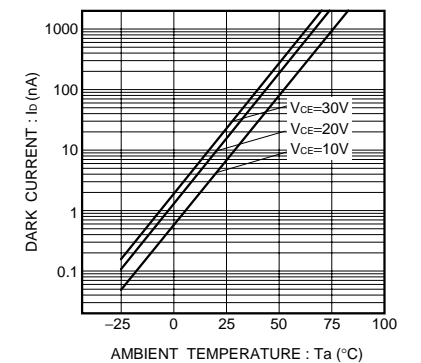


Fig.9 Dark current vs. ambient temperature

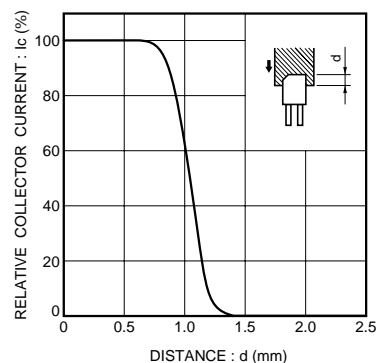


Fig.4 Relative output current vs. distance (II)

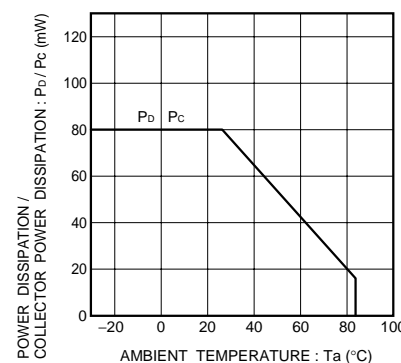


Fig.5 Power dissipation / collector power dissipation vs. ambient temperature

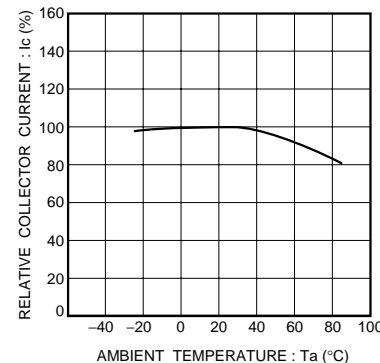


Fig.6 Relative output vs. ambient temperature

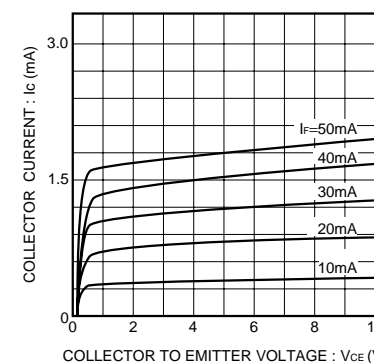


Fig.10 Output characteristics

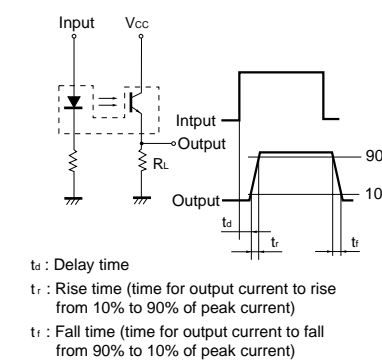
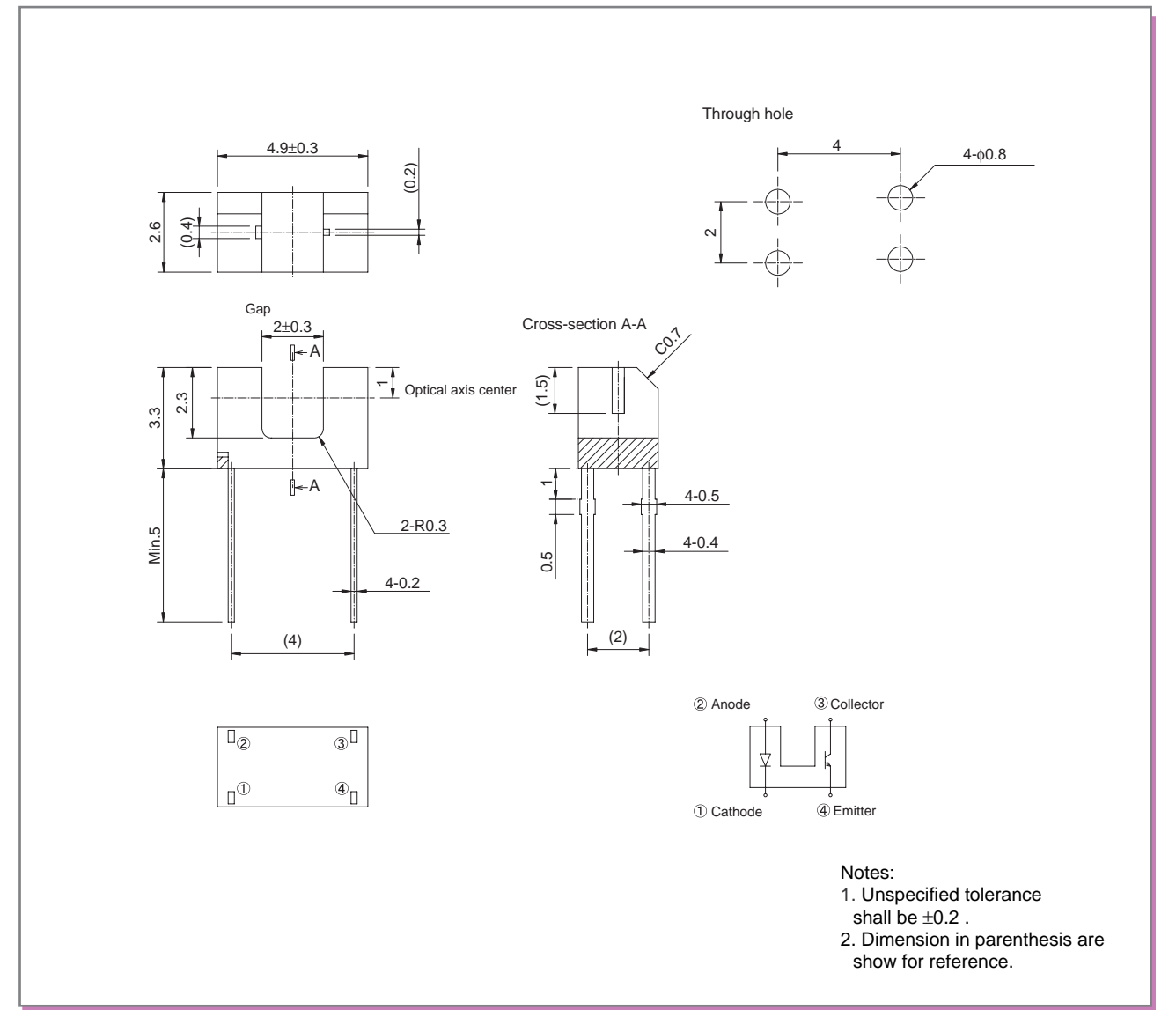


Fig.11 Response time measurement circuit

External dimensions (Unit : mm)



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

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Тел: +7 (812) 336 43 04 (многоканальный)
Email: org@lifeelectronics.ru