

Photointerrupter, Ultraminiature SMD type



Absolute maximum ratings (Ta=25°C)

| Parameter                 | Symbol                      | Limits           | Unit       |
|---------------------------|-----------------------------|------------------|------------|
| Input (LED)               | Forward current             | I <sub>F</sub>   | 50 mA      |
|                           | Reverse voltage             | V <sub>R</sub>   | 5 V        |
|                           | Power dissipation           | P <sub>D</sub>   | 80 mW      |
| Output (photo-transistor) | Collector-emitter voltage   | V <sub>CE0</sub> | 30 V       |
|                           | Emitter-collector voltage   | V <sub>ECO</sub> | 4.5 V      |
|                           | Collector current           | I <sub>C</sub>   | 30 mA      |
|                           | Collector power dissipation | P <sub>C</sub>   | 80 mW      |
|                           | Operating temperature       | T <sub>opr</sub> | -30 to +85 |
| Storage temperature       | T <sub>stg</sub>            | -40 to +85       | °C         |

Applications

- DSC(Digital steal camera)
- DVC(Digital video camera)
- Digital handy phone

Features

- 1) Ultraminiature middle size SMD type.
- 2) Gap 1.2mm.

Electrical and optical characteristics (Ta=25°C)

| Parameter                    | Symbol                               | Min.                           | Typ.           | Max. | Unit | Conditions  |   |
|------------------------------|--------------------------------------|--------------------------------|----------------|------|------|---|---|
| Input charac-teristics       | Forward voltage                      | V <sub>F</sub>                 | 1.8            | 2.3  | V    | I <sub>F</sub> =50mA  |   |
|                              | Reverse current                      | I <sub>R</sub>                 | -              | 10   | μA   | V <sub>R</sub> =5V  |   |
|                              | Dark current                         | I <sub>CEO</sub>               | -              | 0.1  | μA   | V <sub>CE</sub> =10V  |   |
| Output charac-teristics      | Peak sensitivity wavelength          | λ <sub>P</sub>                 | 800            | -    | nm   | -   |   |
|                              | Collector current                    | I <sub>C</sub>                 | 0.1            | -    | mA   | V <sub>CE</sub> =5V, I <sub>F</sub> =5mA  |   |
| Transfer characteristics     | Collector-emitter saturation voltage | V <sub>CE(sat)</sub>           | -              | 0.4  | V    | I <sub>F</sub> =20mA, I <sub>C</sub> =0.1mA   |   |
|                              | Response time                        | Rise time                      | t <sub>r</sub> | 30   | 150  | μs  | V <sub>CC</sub> =5V, I <sub>F</sub> =0.1mA, R <sub>L</sub> =1000Ω |
|                              |                                      | Fall time                      | t <sub>f</sub> | 30   | 150  | μs  |   |
| Infrared light emitter diode | Peak light emitting wavelength       | λ <sub>P</sub>                 | 850            | -    | nm   | I <sub>F</sub> =50mA<br>* Non-coherent Infrared light emitting diode used.  |   |
|                              | Response time                        | t <sub>r</sub> -t <sub>f</sub> | 50             | -    | μs   | V <sub>CC</sub> =5V, I <sub>C</sub> =0.1mA, R <sub>L</sub> =1000Ω<br>* This product is not designed to be protected against electromagnetic wave. |   |
| Photo transistor             | Maximum sensitivity wavelength       | λ <sub>P</sub>                 | 800            | -    | nm   | -   |   |

Electrical and optical characteristics curves

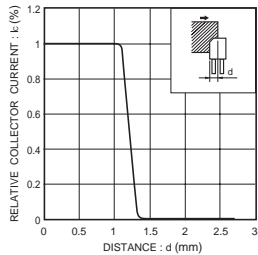


Fig.4 Relative output current vs. distance (II)

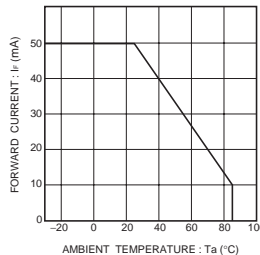


Fig.2 Forward current falloff

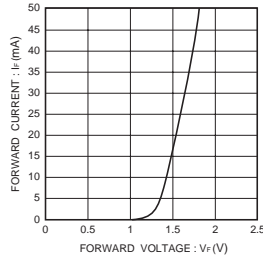


Fig.3 Forward current vs. forward voltage

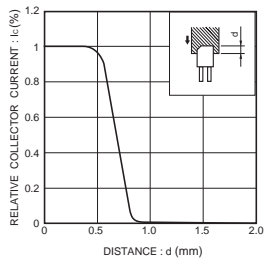


Fig.1 Relative output current vs. distance (I)

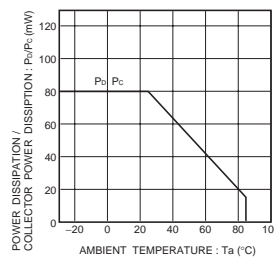


Fig.5 Power dissipation / collector power dissipation vs. ambient temperature

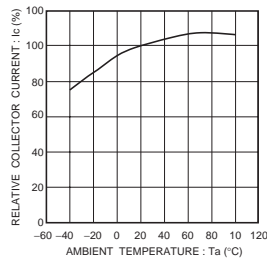


Fig.6 Relative output vs. ambient temperature

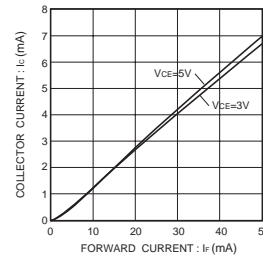


Fig.7 Collector current vs. forward current

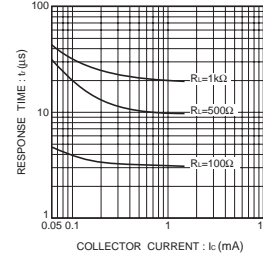


Fig.8 Response time vs. collector current

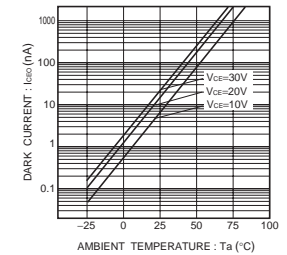


Fig.9 Dark current vs. ambient temperature

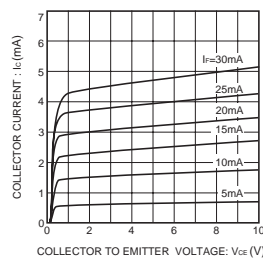


Fig.10 Output characteristics

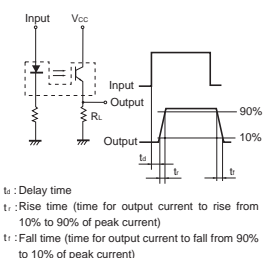
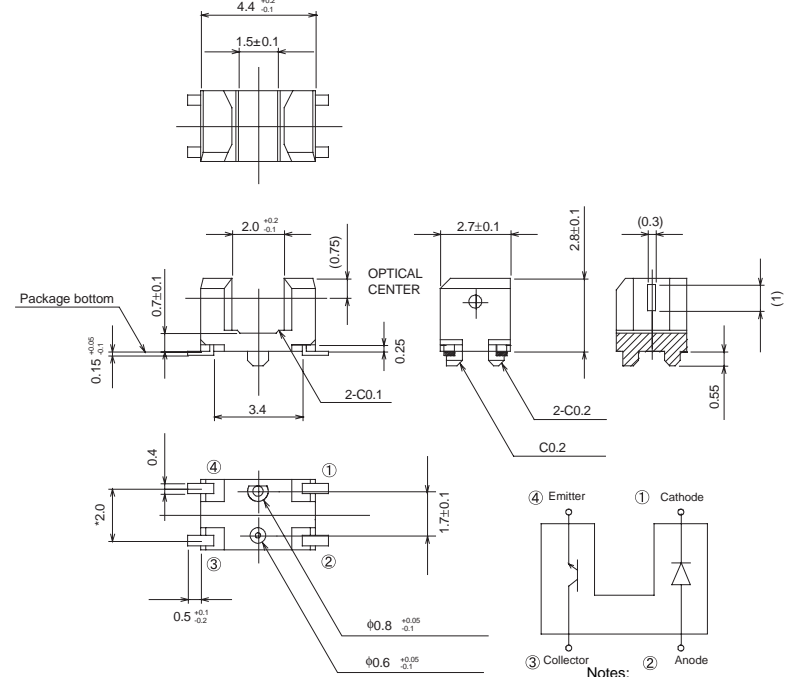


Fig.11 Response time measurement circuit

Dimensions (Unit : mm)



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

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