

●Applications

- Printers
- Amusement

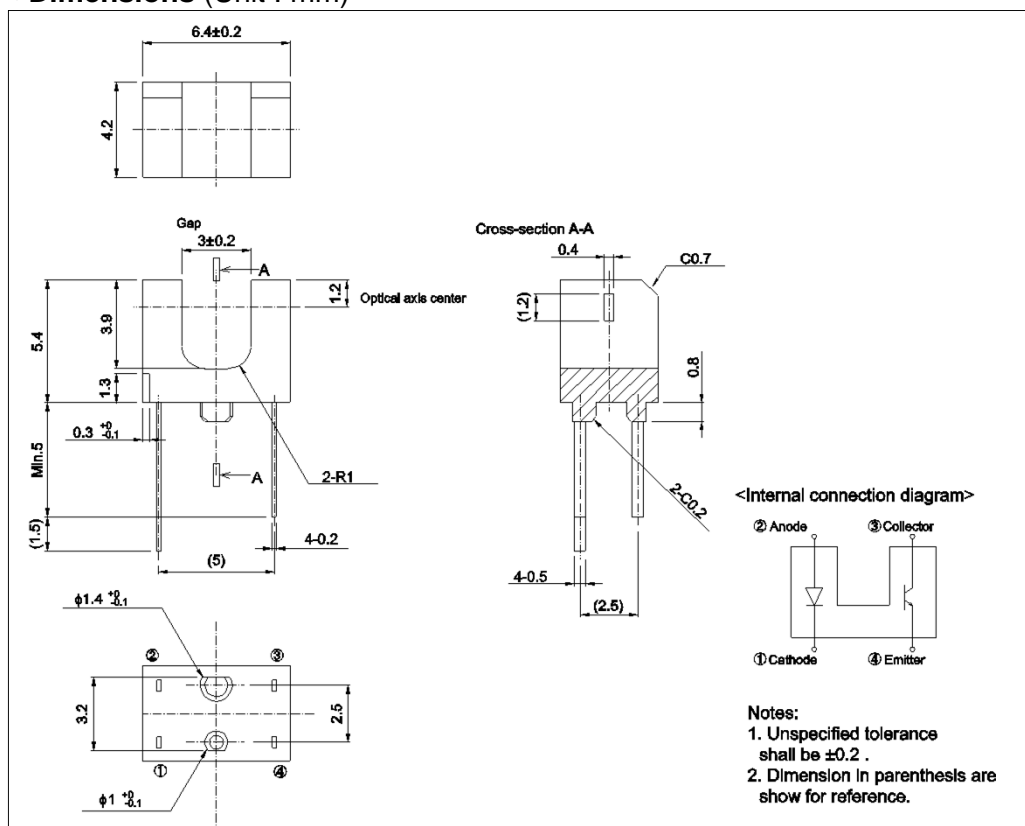
●Features

- 1) Positioning pin enables precision mounting.
- 2) Gap between emitter and detector is 3.0mm.
- 3) Compact

●Outline



●Dimensions (Unit : mm)



●Absolute maximum ratings ($T_a = 25^\circ\text{C}$)

| Parameter | | Symbol | Value | 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_{ECO} | 4.5 | V |
| | Collector current | I_C | 30 | mA |
| | Collector power dissipation | P_C | 80 | mW |
| Operating temperature | | T_{opr} | -25 to +85 | $^\circ\text{C}$ |
| Storage temperature | | T_{stg} | -30 to +85 | $^\circ\text{C}$ |

●Electrical and optical characteristics (T_a = 25°C)

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

●Electrical and optical characteristics curves

Fig.1 Relative Output Current vs.Distance (I)

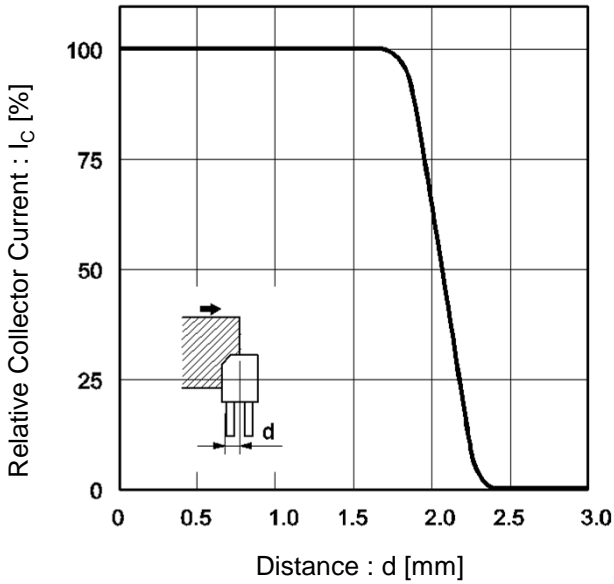


Fig.2 Relative Output Current vs.Distance (II)

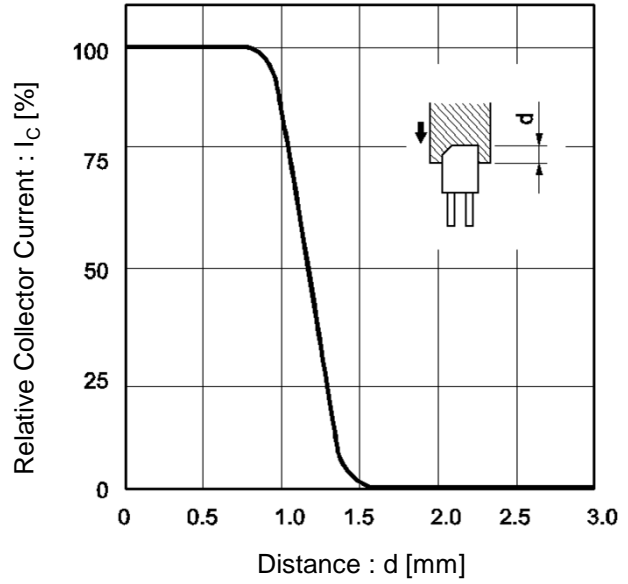


Fig.3 Forward Current Falloff

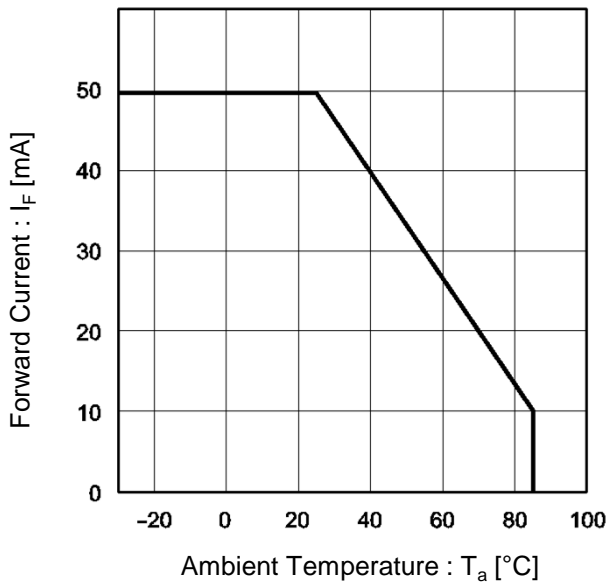
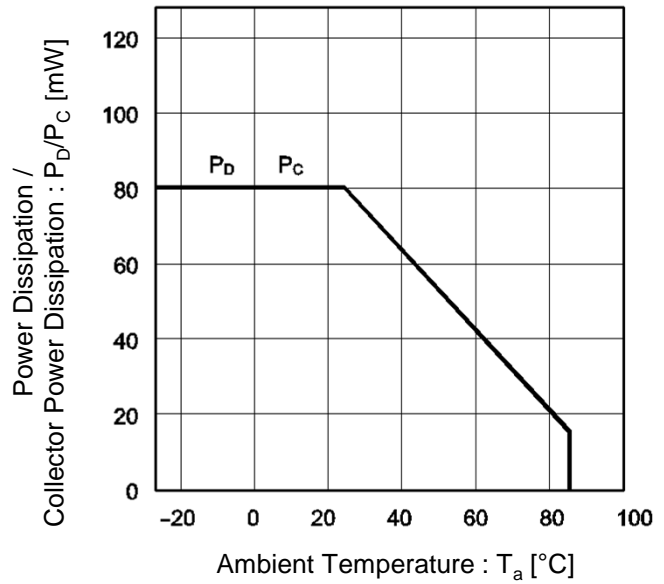


Fig.4 Power Dissipation / Collector Power Dissipation vs. Ambient Temperature



●Electrical and optical characteristics curves

Fig.5 Forward Current vs. Forward Voltage

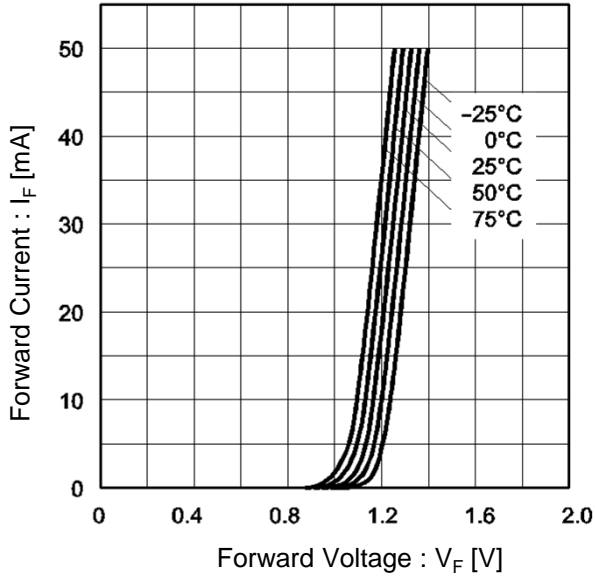


Fig.6 Collector Current vs. Forward Current

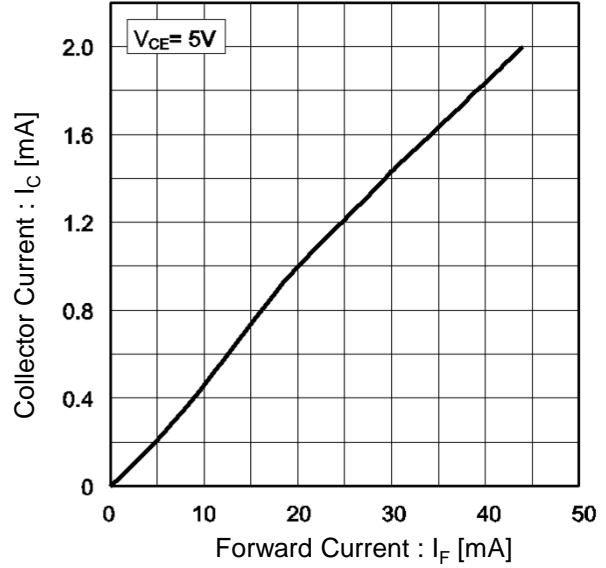


Fig.7 Relative Output vs. Ambient Temperature

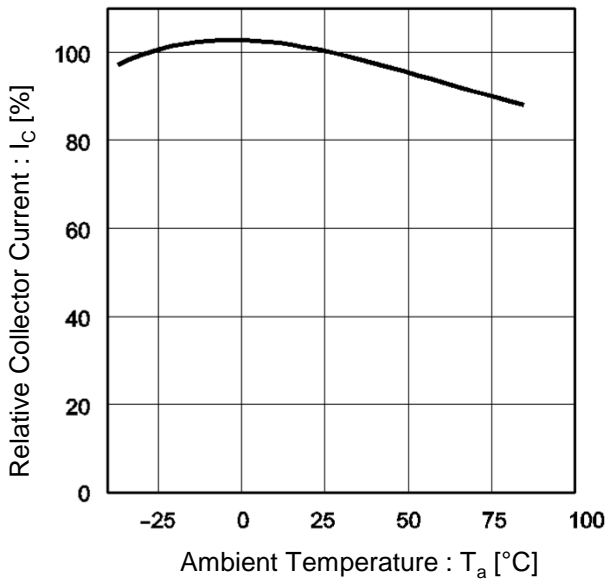
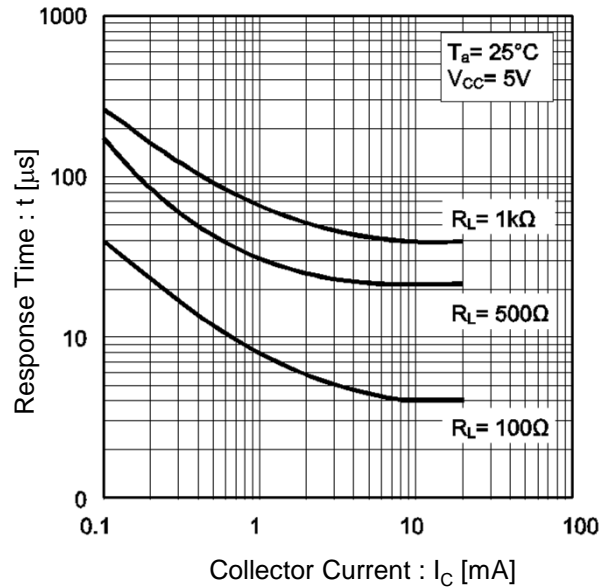


Fig.8 Response Time vs. Collector Current



●Electrical and optical characteristics curves

Fig.9 Dark Current vs. Ambient Temperature

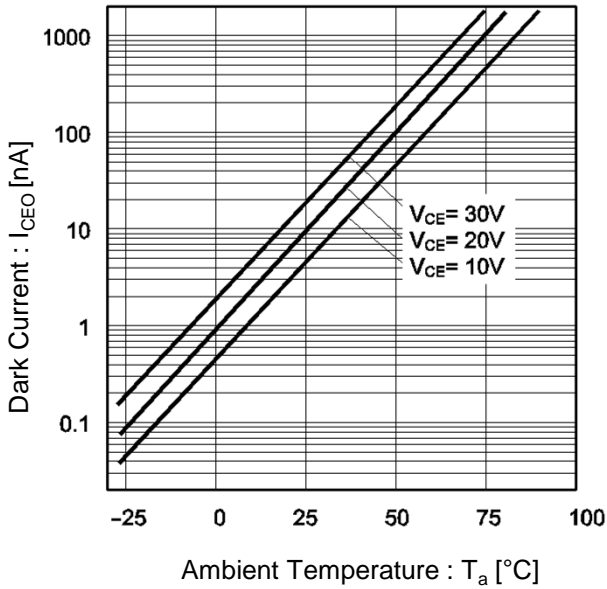


Fig.10 Output Characteristics

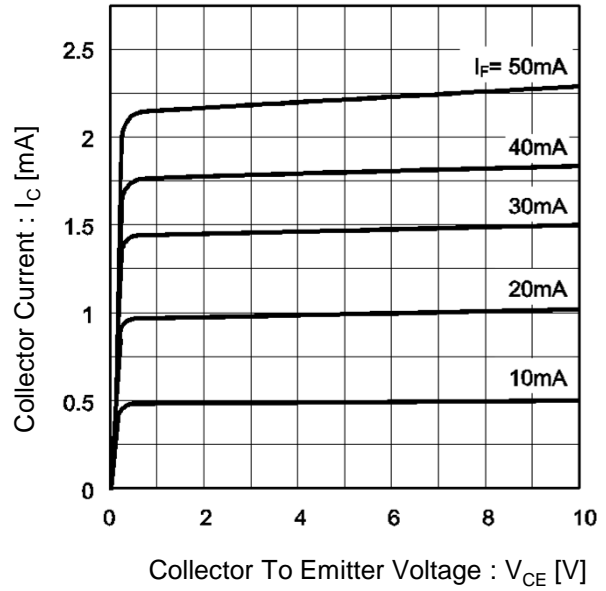
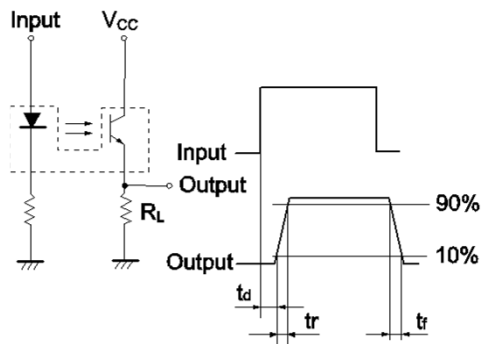


Fig.11 Response Time Measurement Circuit



t_d : Delay time
 t_r : Rise time (time for output current to rise from 10% to 90% of peak current)
 t_f : Fall time (time for output current to fall from 90% to 10% of peak current)

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