

Photointerrupter, double-layer mold type

RPI-243

The RPI-243 is a compact, double-layer mold photointerrupter.

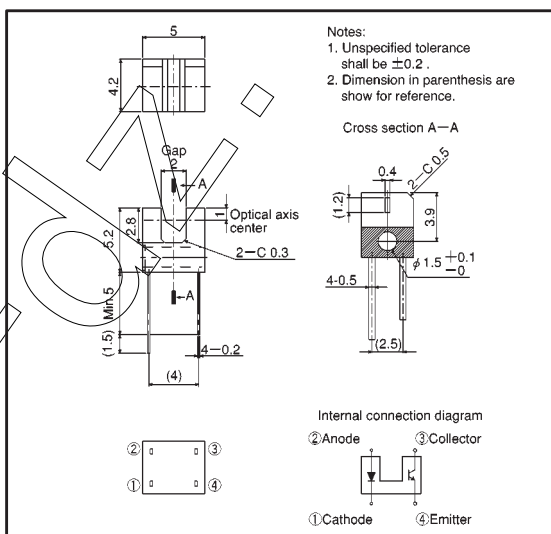
●Applications

Floppy disk drives
Printers
CD-ROM

●Features

- 1) Compact package based on the double-mold method.
- 2) High resolution (slit width = 0.4 mm).
- 3) Gap between emitter and detector is 2.0 mm.

●External dimensions (Units: mm)



●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_{ECO} | 4.5 | V |
| | Collector current | I_C | 30 | mA |
| | Collector power dissipation | P_C | 80 | mW |
| | Operating temperature | T_{opr} | $-25 \sim +85$ | °C |
| | Storage temperature | T_{stg} | $-30 \sim +100$ | °C |

●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 | 0.5 | — | — | mA | $V_{CE}=5\text{V}, I_F=20\text{mA}$ |
| | Collector-emitter saturation voltage | $V_{CE(\text{sat})}$ | — | — | 0.4 | V | $I_F=20\text{mA}, I_C=0.3\text{mA}$ |
| | Response time | $t_r \cdot t_f$ | — | 10 | — | μs | $V_{CC}=5\text{V}, I_F=20\text{mA}, R_L=100\Omega$ |

●Electrical and optical characteristic curves

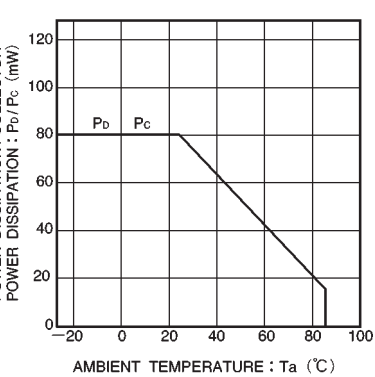


Fig.1 Power dissipation / collector power dissipation vs. ambient temperature

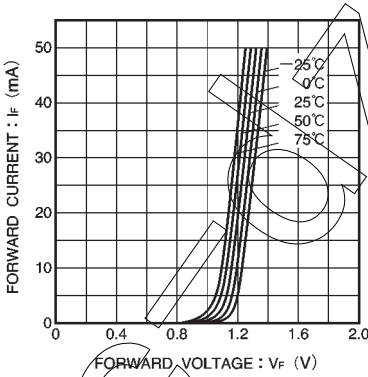


Fig.2 Forward current vs. forward voltage

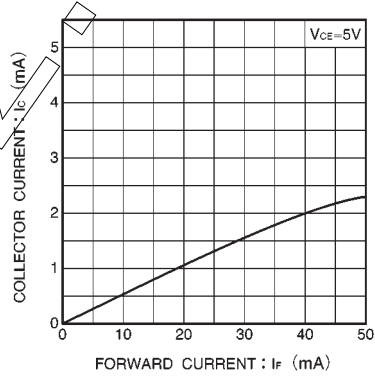


Fig.3 Collector current vs. forward current

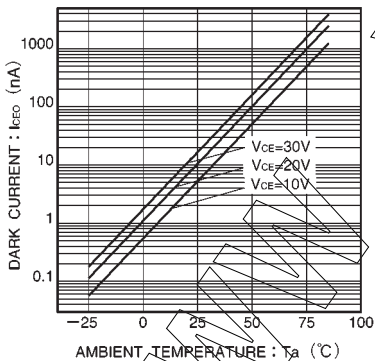


Fig.4 Dark current vs. ambient temperature

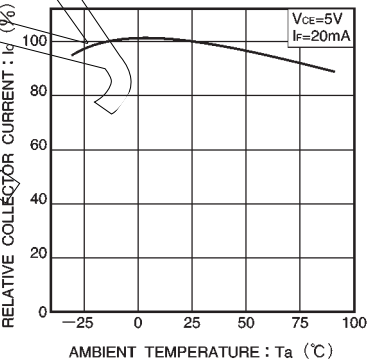


Fig.5 Relative output vs. ambient temperature

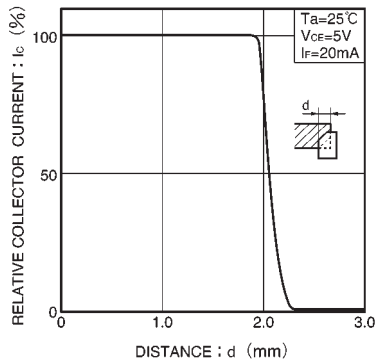


Fig.6 Relative output vs. distance

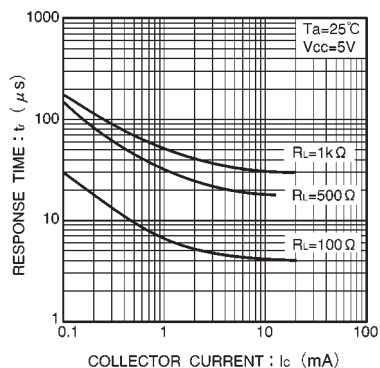


Fig.7 Response time vs.
collector current

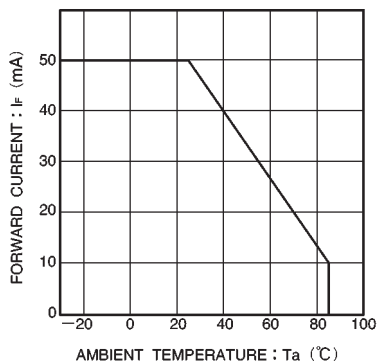


Fig.8 Forward current falloff

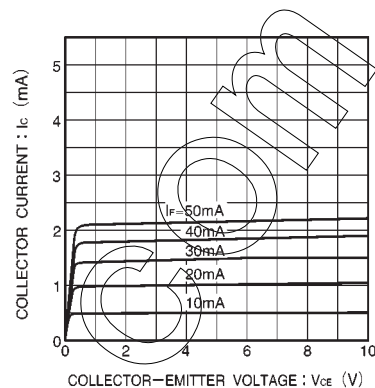
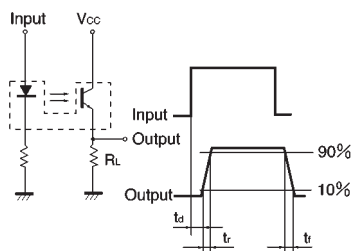


Fig.9 Output characteristics



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)

Fig.10 Response time measurement circuit

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