

Photointerrupter, double-layer mold type

RPI-243

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

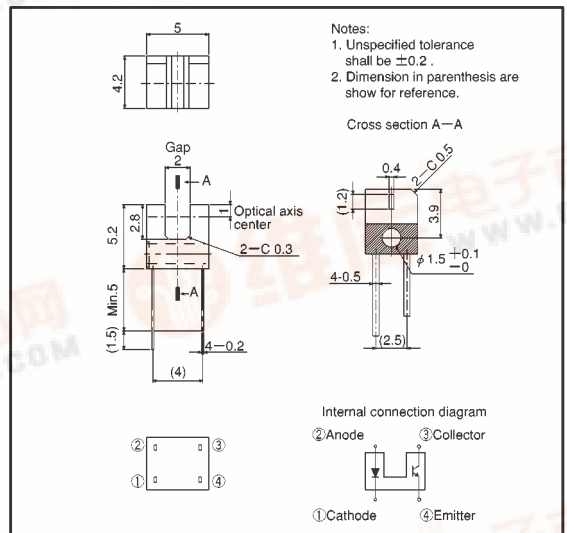
●Applications

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 ($T_a = 25^\circ\text{C}$)

	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}	$-25 \sim +85$	$^\circ\text{C}$
	Storage temperature	T_{stg}	$-30 \sim +100$	$^\circ\text{C}$

● 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	$V_{CE(sat)}$	—	—	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

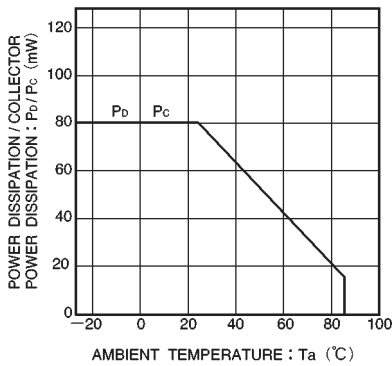


Fig.1 Power dissipation / collector power dissipation vs. ambient temperature

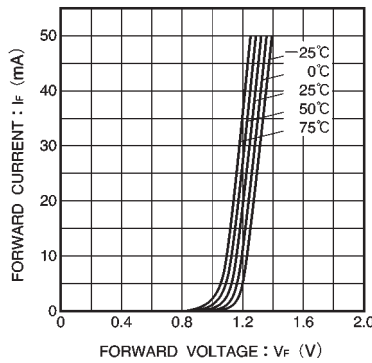


Fig.2 Forward current vs. forward voltage

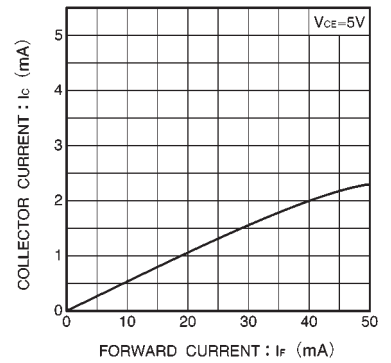


Fig.3 Collector current vs. forward current

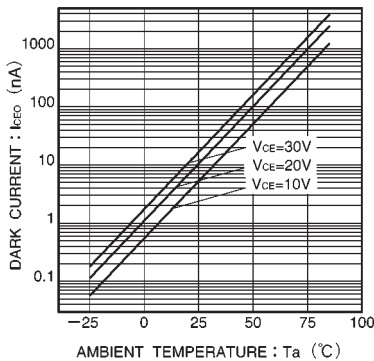


Fig.4 Dark current vs. ambient temperature

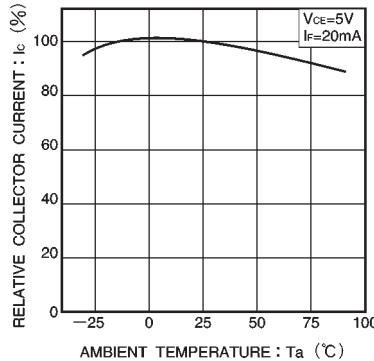


Fig.5 Relative output vs. ambient temperature

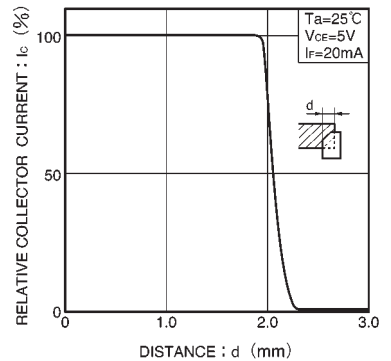


Fig.6 Relative output vs. distance

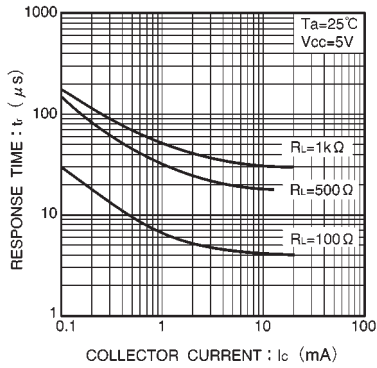


Fig.7 Response time vs. collector current

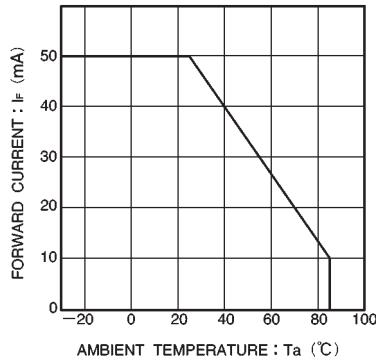


Fig.8 Forward current falloff

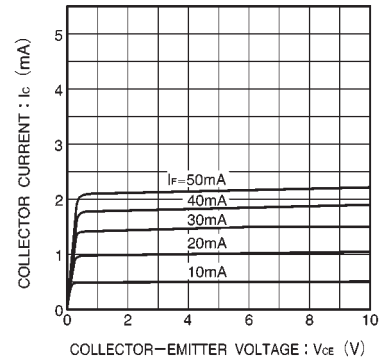
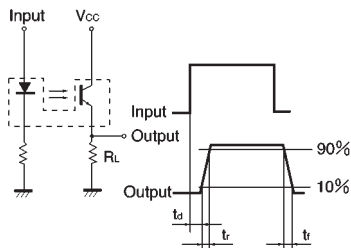


Fig.9 Output characteristics



- 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