

Photointerrupter, double-layer mold type

RPI-121

The RPI-121 is an ultra-small size, double-layer mold photointerrupter.

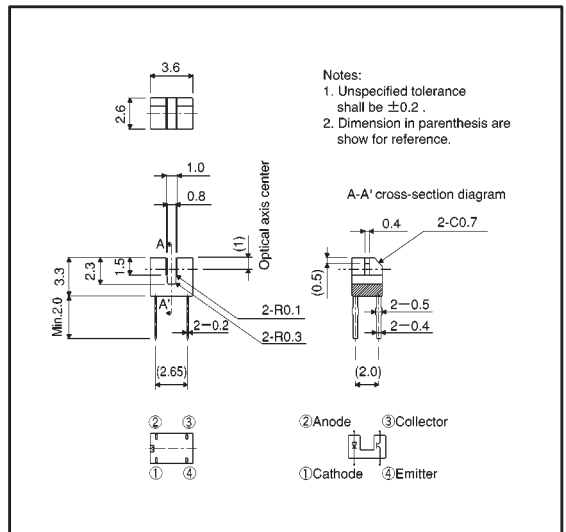
●Applications

Optical control equipment
Cameras
Floppy disk drives

●Features

- 1) Ultra-small.
- 2) Minimal influence from stray light.
- 3) Low collector-emitter saturation voltage.

●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~+85	°C
	Storage temperature	T_{stg}	-40~+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_{CE0}	—	—	0.5	μA	$V_{CE}=10\text{V}$
	Peak sensitivity wavelength	λ_P	—	800	—	nm	—
Transfer characteristics	Collector current	I_{C1}	0.7	—	—	mA	$V_{CE}=5\text{V}, I_F=20\text{mA}$
		I_{C2}	0.2	—	—	mA	$V_{CE}=5\text{V}, I_F=5\text{mA}$
	Collector-emitter saturation voltage	$V_{CE(sat)}$	—	—	0.3	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

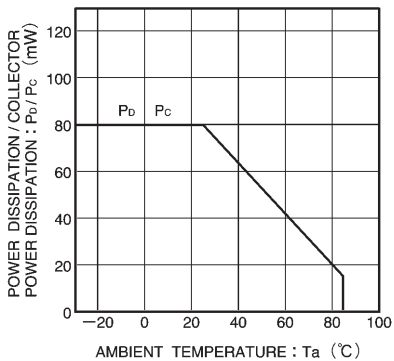


Fig. 1 Power dissipation / collector power dissipation vs. ambient temperature

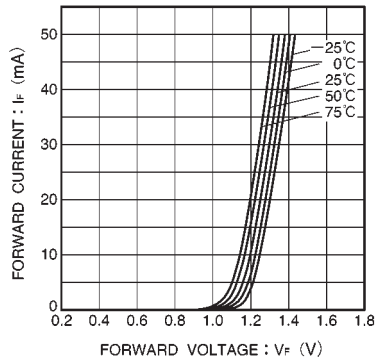


Fig. 2 Forward current vs. forward voltage

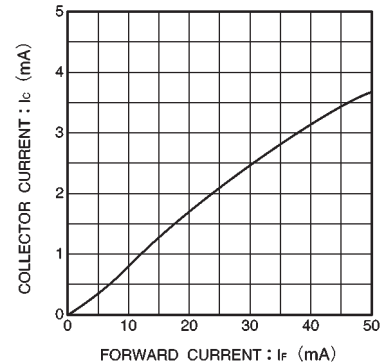


Fig. 3 Collector current vs. forward current

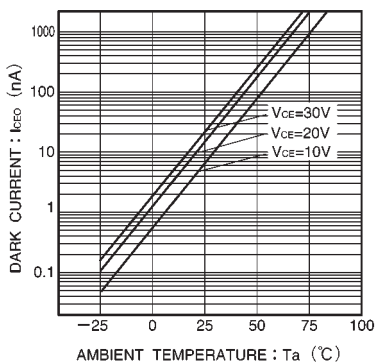


Fig. 4 Dark current vs. ambient temperature

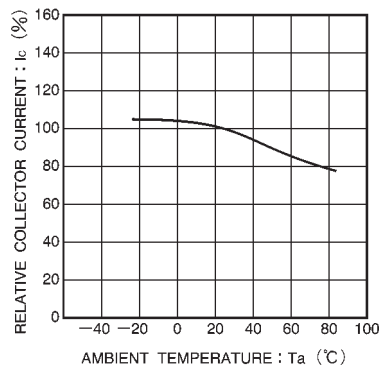


Fig. 5 Relative output vs. ambient temperature

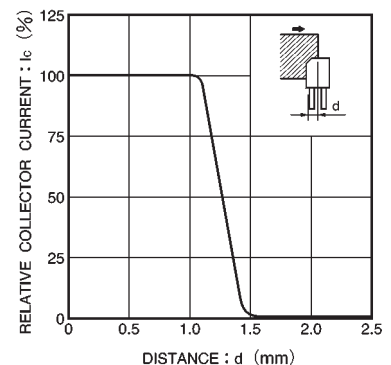


Fig. 6 Relative output current vs. distance (I)

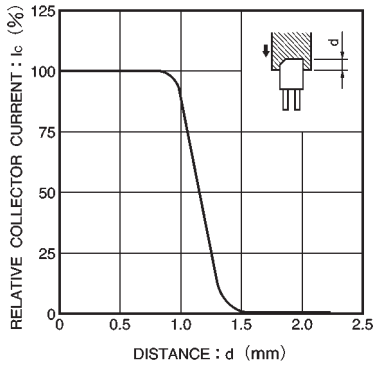


Fig.7 Relative output vs. distance (II)

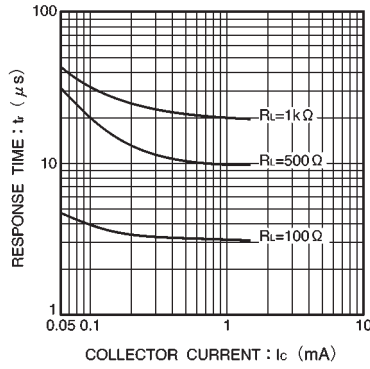


Fig.8 Response time vs. collector current

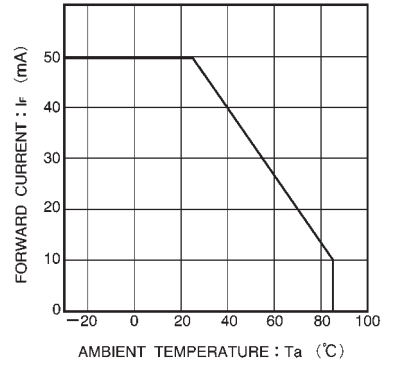


Fig.9 Forward current falloff

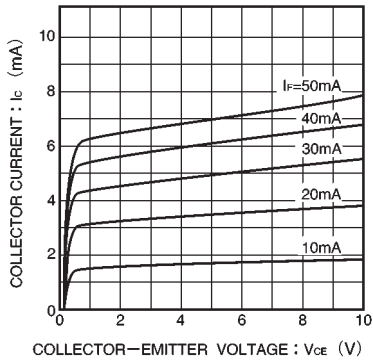
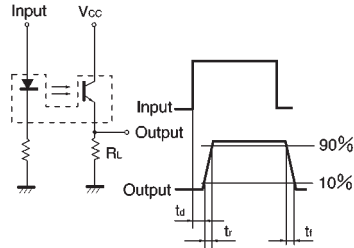


Fig.10 Output characteristics



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.11 Response time measurement circuit