RPI-121

Photointerrupter, Ultraminiature type



Applications

Optical control equipment
Cameras
Floppy disk drives

Features

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

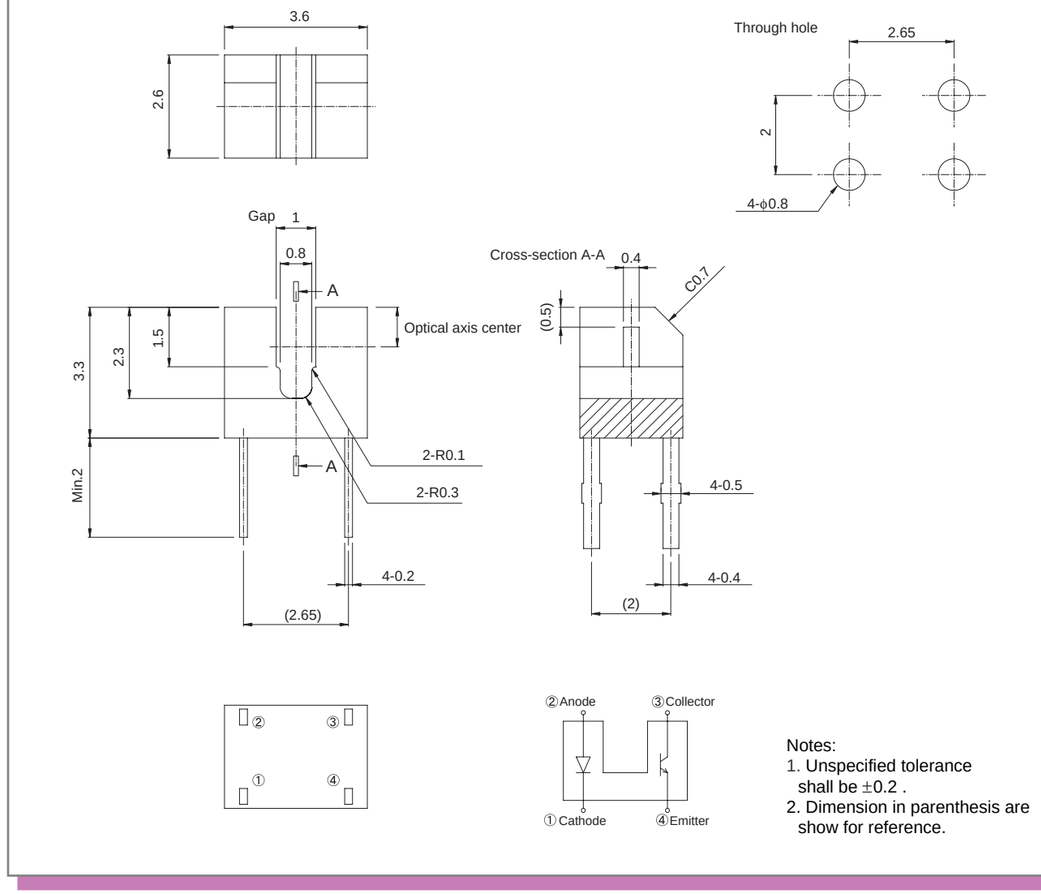
Absolute maximum ratings (Ta=25°C)

	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	Topr	−25 to +85	°C
	Storage temperature	Tstg	−40 to +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 = 50mA
	Reverse current	I_R	−	−	10	μA	V_R = 5V
Output characteristics	Dark current	I_{CEO}	−	−	0.5	μA	V_{CE} = 10V
	Peak sensitivity wavelength	λ_P	−	800	−	nm	−
Transfer characteristics	Collector current	I_{C1}	0.7	−	−	mA	V_{CE} = 5V, I_F = 20mA
		I_{C2}	0.2	−	−	mA	V_{CE} = 5V, I_F = 5m
	Collector-emitter saturation voltage	$V_{CE(sat)}$	−	−	0.3	V	I_F = 20mA, I_C = 0.3mA
	Response time	tr・tf	−	10	−	μs	V_{CC} = 5V, I_F = 20mA, R_L=100Ω
Infrared light emitter diode	Cut-off frequency	f_C	−	1	−	MHz	I_F=50mA ＊ Non-coherent Infrared light emitting diode used.
	Peak light emitting wavelength	λ_P	−	950	−	nm	
Photo transistor	Response time	tr・tf	−	10	−	μs	V_{CC}=5V, I_C=1mA, R_L=100Ω ＊ This product is not designed to be protected against electromagnetic wave.
	Maximum sensitivity wavelength	λ_P	−	800	−	nm	−

External dimensions (Unit : mm)



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

Electrical and optical characteristics curves

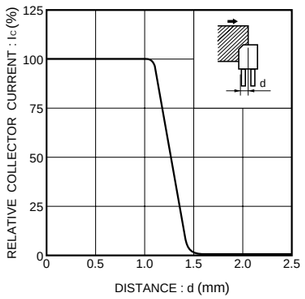


Fig.1 Relative output current vs. distance (I)

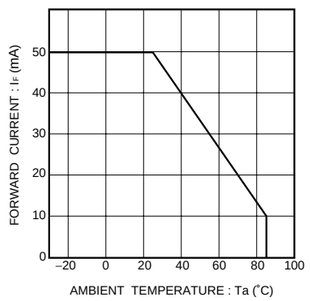


Fig.2 Forward current falloff

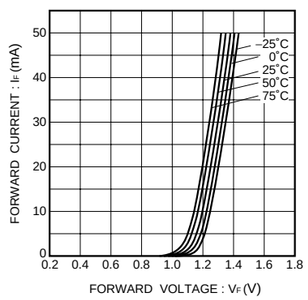


Fig.3 Forward current vs. forward voltage

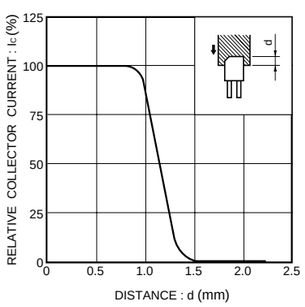


Fig.4 Relative output current vs. distance (II)

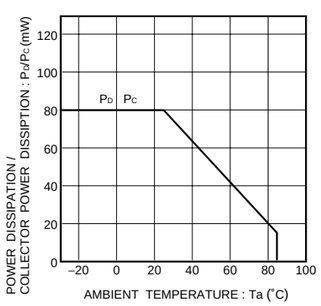


Fig.5 Power dissipation / collector power dissipation vs. ambient temperature

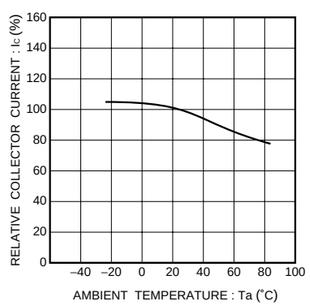


Fig.6 Relative output vs. ambient temperature

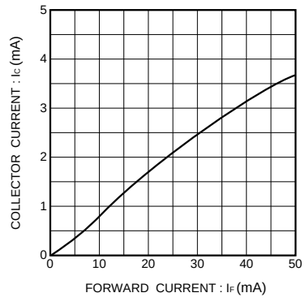


Fig.7 Collector current vs. forward current

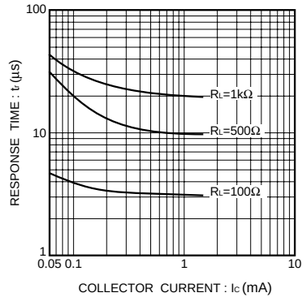


Fig.8 Response time vs. collector current

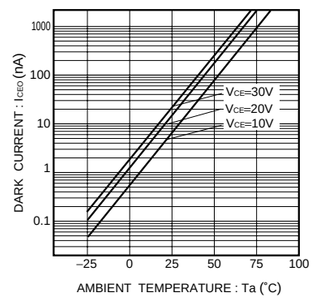


Fig.9 Dark current vs. ambient temperature

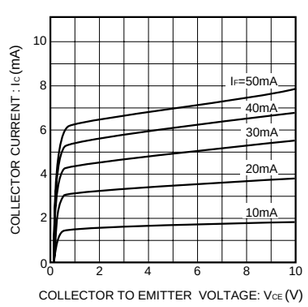
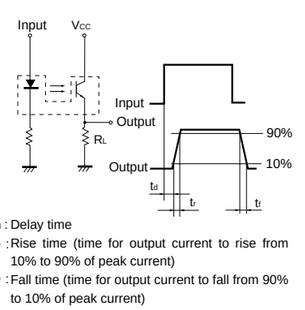


Fig.10 Output characteristics



td : Delay time
tr : Rise time (time for output current to rise from 10% to 90% of peak current)
tf : Fall time (time for output current to fall from 90% to 10% of peak current)

Fig.11 Response time measurement circuit

Notes

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