

# Actuator-type photointerrupter

## RPI-5100

The RPI-5100 is a compact, actuator-type photointerrupter.

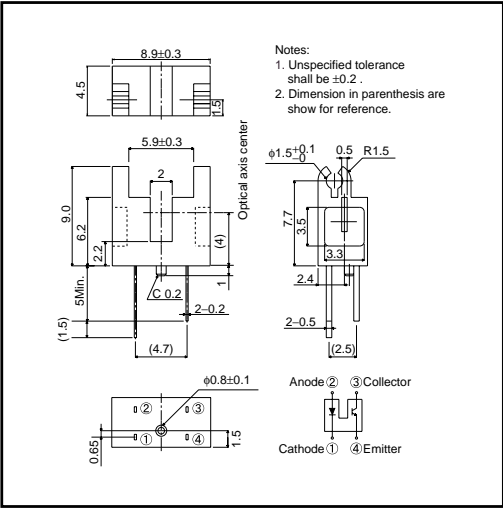
**●Applications**

- Optical control equipment
- Facsimiles
- Plain paper copiers

**●Features**

- 1) Compact.
- 2) Minimal influence from stray light.
- 3) Equipped with an actuator mount.

**●External dimensions (Units : mm)**



**●Absolute maximum ratings (Ta = 25°C)**

Parameter		Symbol	Limits	Unit
Input(LED)	Forward current	I <sub>F</sub>	50	mA
	Reverse voltage	V <sub>R</sub>	5	V
	Power dissipation	P <sub>D</sub>	80	mW
Output (photo-transistor)	Collector-emitter voltage	V <sub>CEO</sub>	30	V
	Emitter-collector voltage	V <sub>ECO</sub>	4.5	V
	Collector current	I <sub>C</sub>	30	mA
	Collector power dissipation	P <sub>C</sub>	80	mW
Operating temperature		T <sub>opr</sub>	-25~+85	°C
Storage temperature		T <sub>stg</sub>	-30~+85	°C



Sensors

● 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	$\mu\text{A}$	$V_R=5\text{V}$
Output characteristics	Dark current	$I_{CEO}$	-	-	0.5	$\mu\text{A}$	$V_{CE}=10\text{V}$
	Peak sensitivity wavelength	$\lambda_P$	-	800	-	nm	-
Transfer characteristics	Collector current	$I_C$	0.2	1.0	-	mA	$V_{CE}=5\text{V}, I_F=20\text{mA}$
	Collector-emitter saturation voltage	$V_{CE(sat)}$	-	-	0.4	V	$I_F=20\text{mA}, I_C=0.1\text{mA}$
	Response time	$t_r \cdot t_f$	-	10	-	$\mu\text{s}$	$V_{CC}=5\text{V}, I_F=20\text{mA}, R_L=100\Omega$

● Electrical and optical characteristic curves

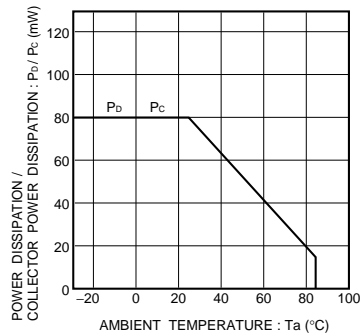


Fig.1 Power dissipation / collector power dissipation vs. ambient temperature

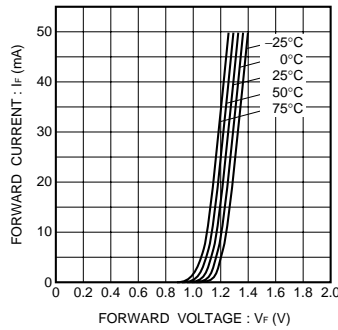


Fig.2 Forward current vs. forward voltage

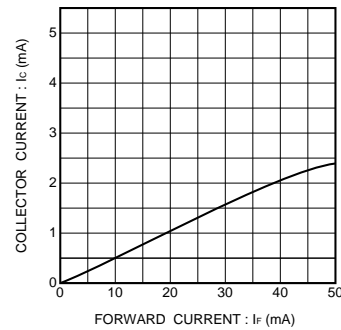


Fig.3 Collector current vs. forward current

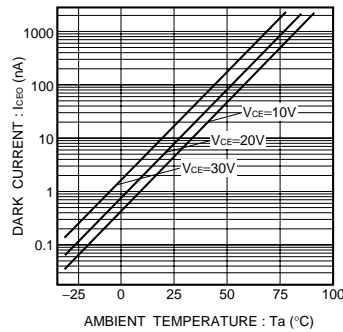


Fig.4 Dark current vs. ambient temperature

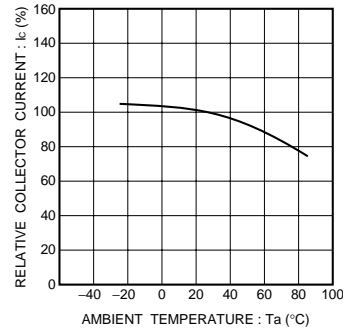


Fig.5 Relative output vs. ambient temperature

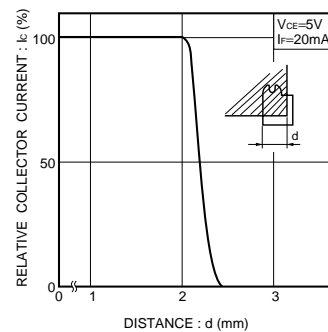


Fig.6 Relative output vs. distance (l)

Sensors

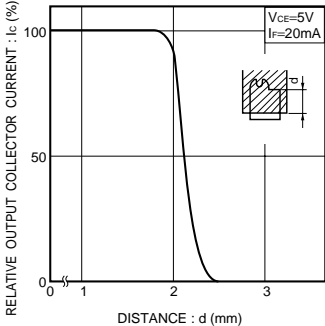


Fig.7 Relative output vs. distance (II)

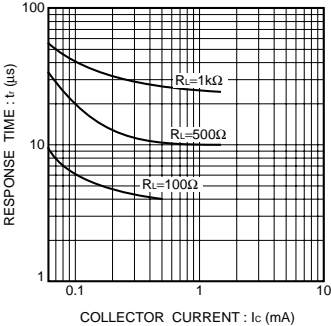


Fig.8 Response time vs. output current

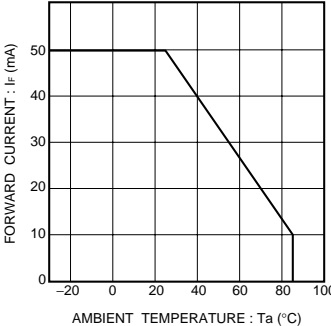


Fig.9 Forward current falloff

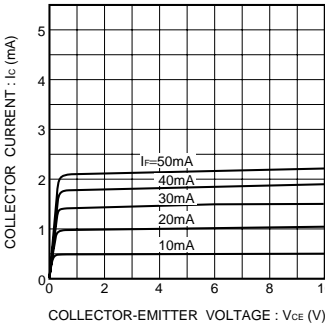


Fig.10 Output characteristics

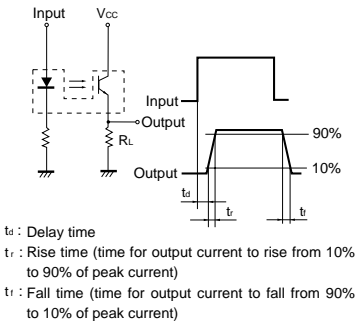


Fig.11 Response time measurement circuit