

●Applications

- Optical control equipment
- Cameras

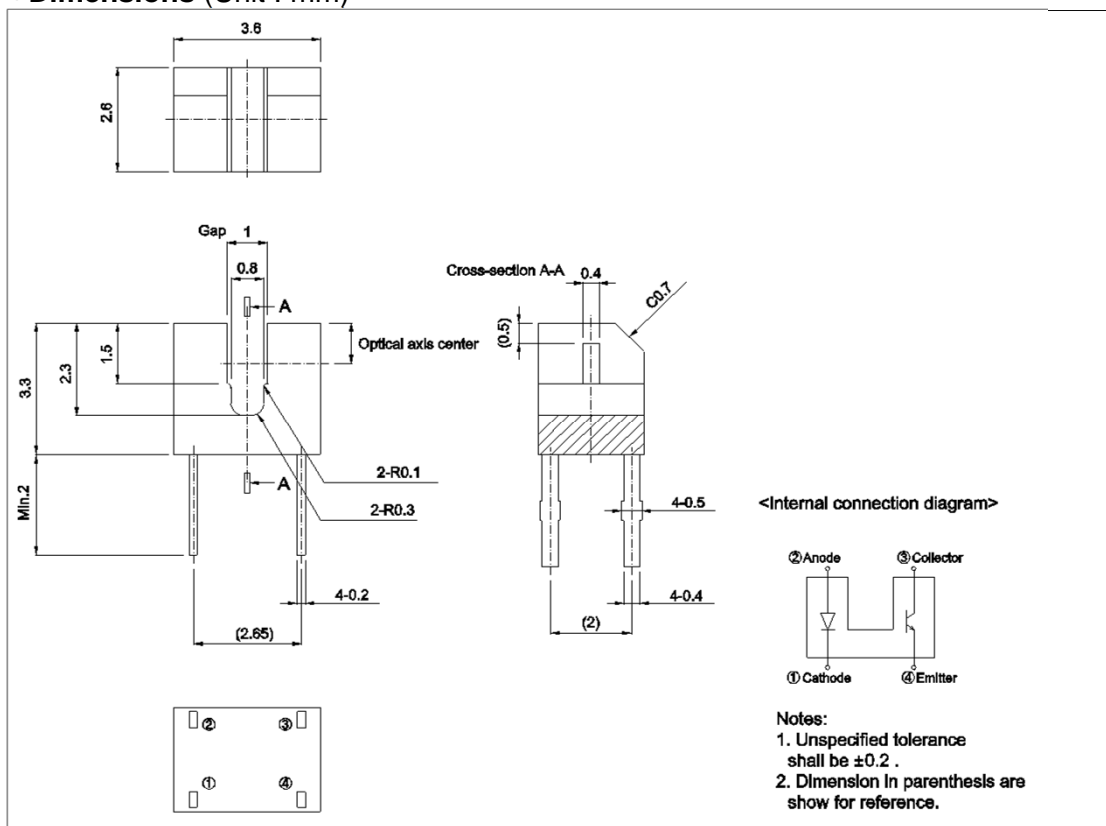
●Features

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

●Outline



●Dimensions (Unit : mm)



●Absolute maximum ratings ($T_a = 25^\circ\text{C}$)

Parameter		Symbol	Value	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 to +85	$^\circ\text{C}$
Storage temperature		T_{stg}	-40 to +100	$^\circ\text{C}$

●Electrical and optical characteristics ($T_a = 25^\circ\text{C}$)

Parameter		Symbol	Conditions	Values			Unit
				Min.	Typ.	Max.	
Input characteristics	Forward voltage	V_F	$I_F=50\text{mA}$	-	1.3	1.6	V
	Reverse current	I_R	$V_R=5\text{V}$	-	-	10	μA
Output characteristics	Dark current	I_{CEO}	$V_{\text{CE}}=10\text{V}$	-	-	0.5	μA
	Peak sensitivity wavelength	λ_p	-	-	800	-	nm
Transfer characteristics	Collector current	I_{C1}	$V_{\text{CE}}=5\text{V}, I_F=20\text{mA}$	0.7	-	-	mA
		I_{C2}	$V_{\text{CE}}=5\text{V}, I_F=5\text{mA}$	0.2	-	-	mA
	Collector-emitter saturation voltage	$V_{\text{CE(sat)}}$	$I_F=20\text{mA}, I_C=0.3\text{mA}$	-	-	0.3	V
	Response time	tr·tf	$V_{\text{CC}}=5\text{V}, I_F=20\text{mA}, R_L=100\Omega$	-	10	-	μs
Infrared light emitter diode	Cut-off frequency	f_c	$I_F=50\text{mA}$	-	1	-	MHz
	Peak light emitting wavelength	λ_p	* Non-coherent Infrared light emitting diode used.	-	950	-	nm
Photo transistor	Response time	tr·tf	$V_{\text{CC}}=5\text{V}, I_C=1\text{mA}, R_L=100\Omega$ *This product is not designed to be protected against electromagnetic wave.	-	10	-	μs
	Maximum sensitivity wavelength	λ_p	-	-	800	-	nm

●Electrical and optical characteristics curves

Fig.1 Relative Output Current vs.Distance (I)

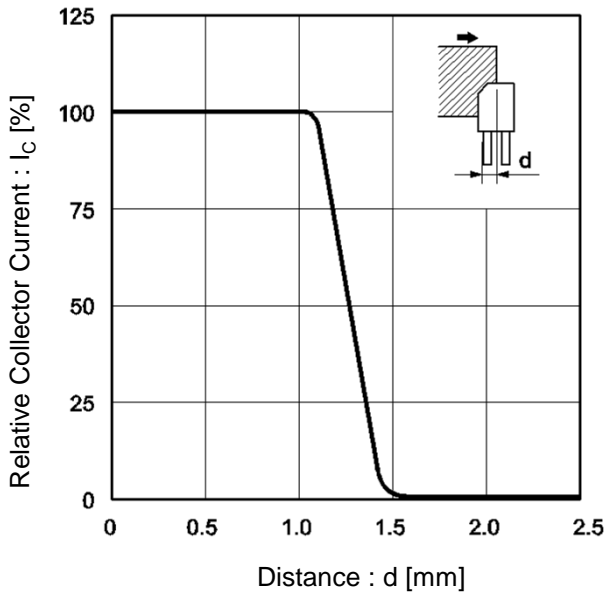


Fig.2 Relative Output Current vs.Distance (II)

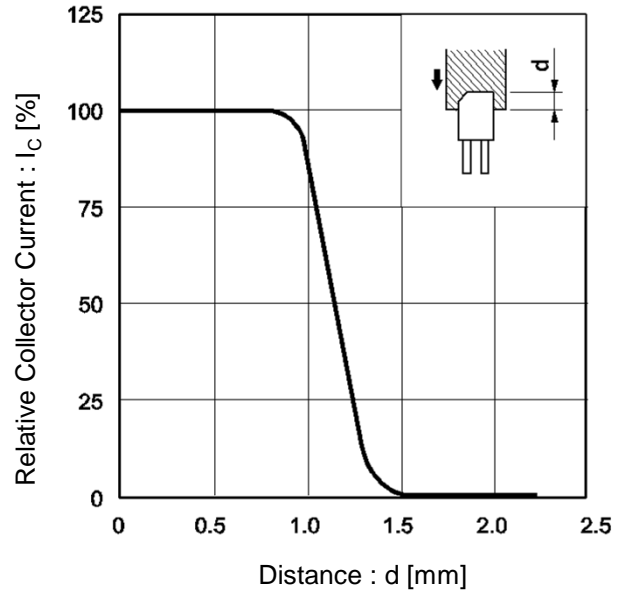


Fig.3 Forward Current Falloff

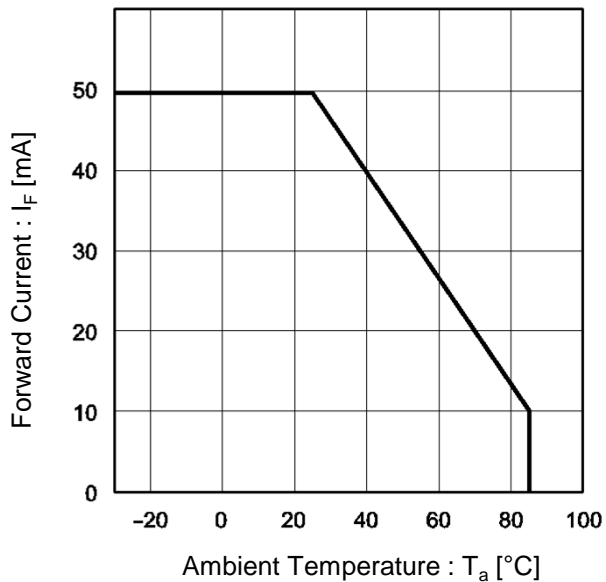
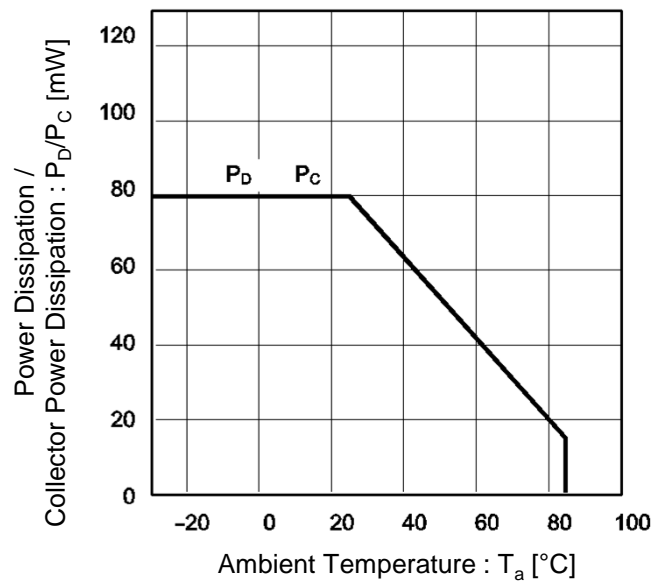


Fig.4 Power Dissipation / Collector Power Dissipation vs. Ambient Temperature



●Electrical and optical characteristics curves

Fig.5 Forward Current vs. Forward Voltage

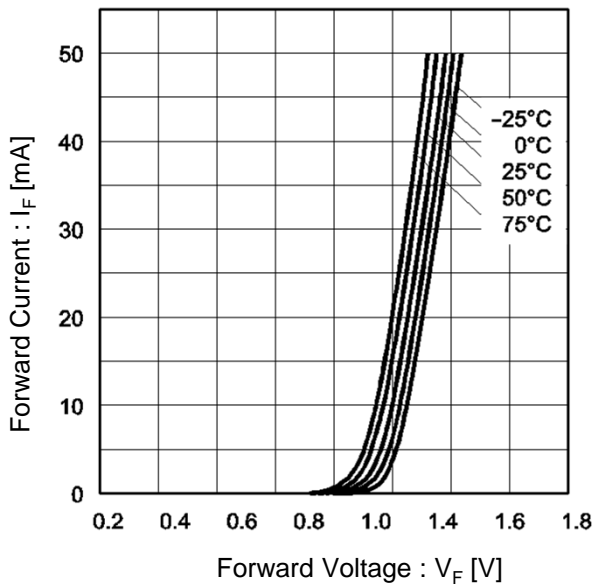


Fig.6 Collector Current vs. Forward Current

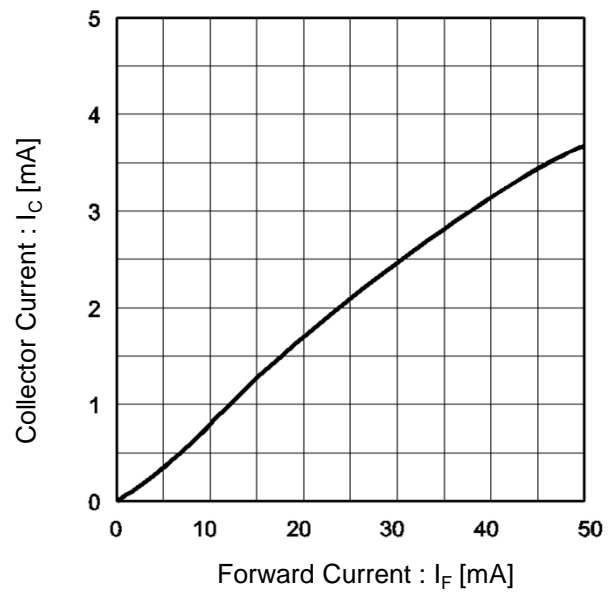


Fig.7 Relative Output vs. Ambient Temperature

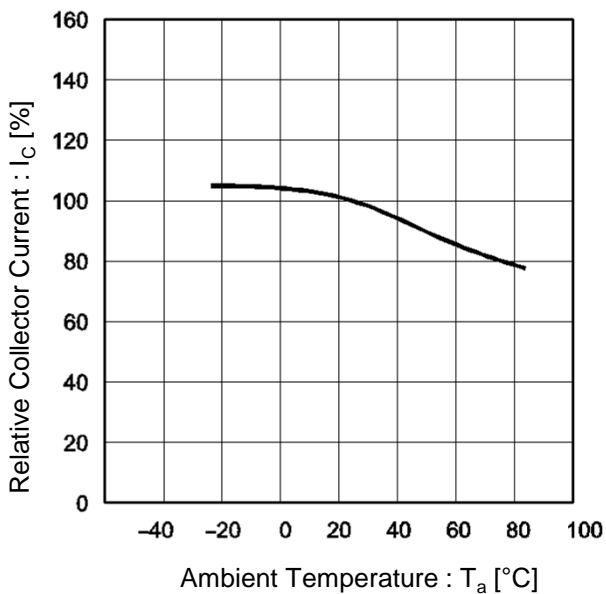
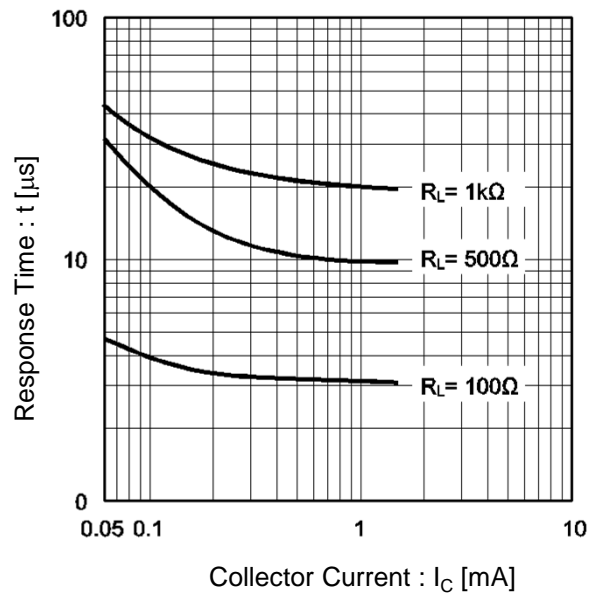


Fig.8 Response Time vs. Collector Current



●Electrical and optical characteristics curves

Fig.9 Dark Current vs. Ambient Temperature

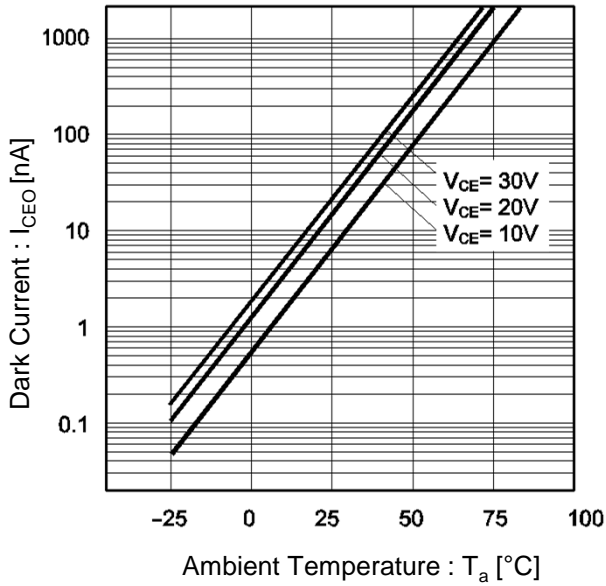


Fig.10 Output Characteristics

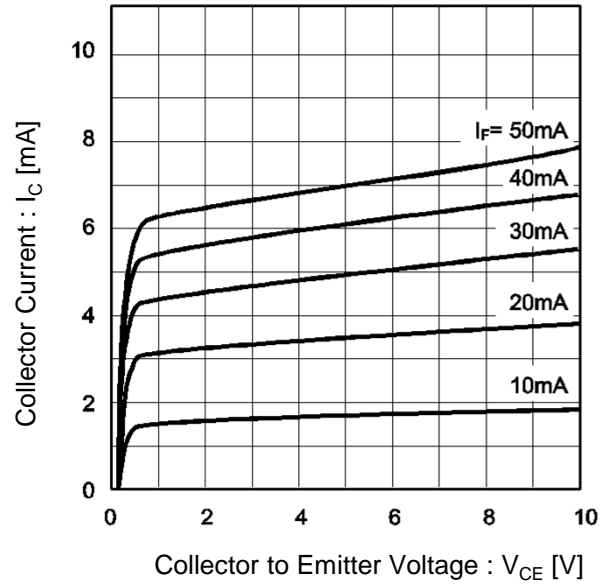
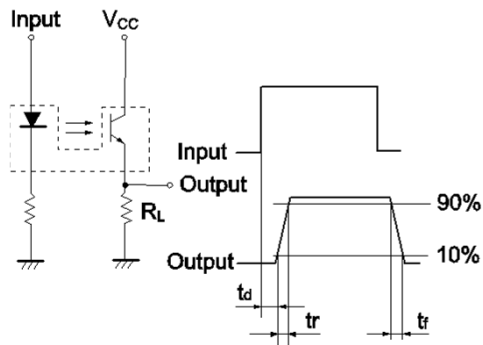


Fig.11 Response Time Measurement Circuit



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)

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RPI-121 - Web Page

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Part Number	RPI-121
Package	RPI-121
Unit Quantity	2000
Minimum Package Quantity	2000
Packing Type	Bulk
Constitution Materials List	inquiry
RoHS	Yes