

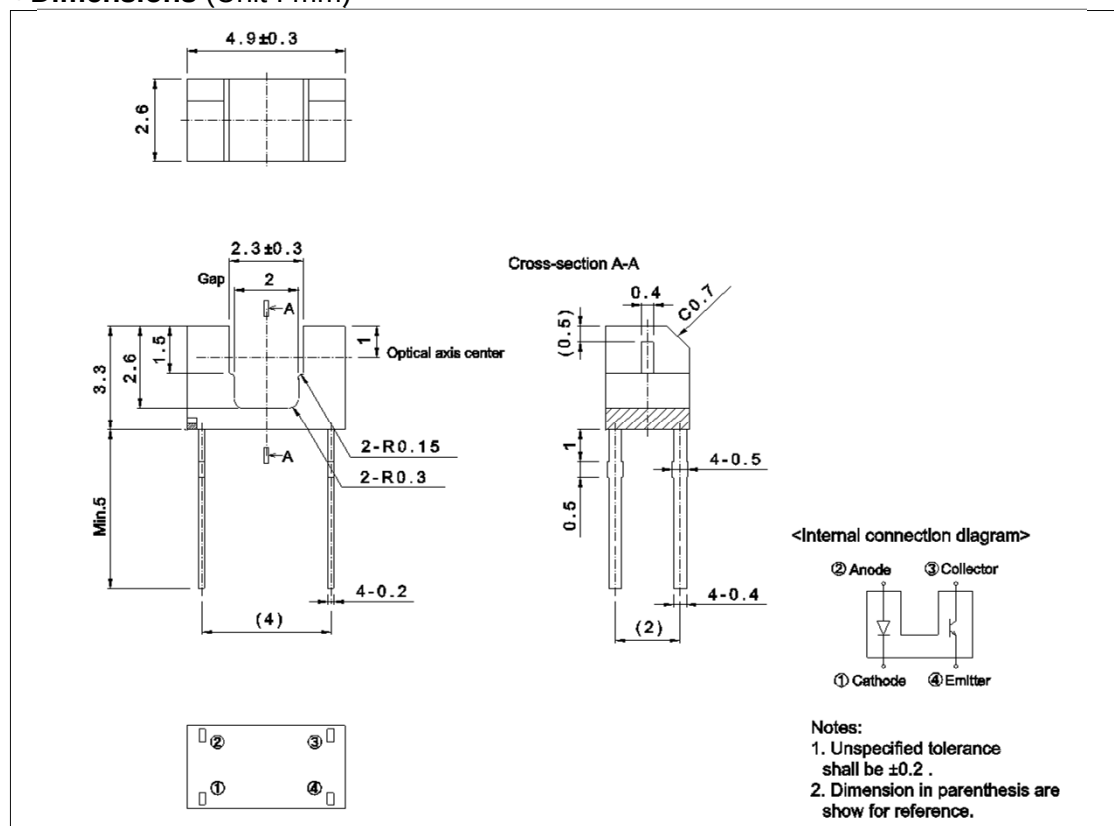
●Applications

- Optical control equipment
- HV
- Cameras

●Features

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

●Dimensions (Unit : mm)



●Outline



●Absolute maximum ratings (T_a = 25°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	°C
Storage temperature		T _{stg}	-30 to +85	°C

●Electrical and optical characteristics (T_a = 25°C)

Parameter		Symbol	Conditions	Values			Unit
				Min.	Typ.	Max.	
Input characteristics	Forward voltage	V _F	I _F =50mA	-	1.3	1.6	V
	Reverse current	I _R	V _R =5V	-	-	10	μA
Output characteristics	Dark current	I _{CEO}	V _{CE} =10V	-	-	0.5	μA
	Peak sensitivity wavelength	λ _p	-	-	800	-	nm
Transfer characteristics	Collector current	I _C	V _{CE} =5V, I _F =20mA	0.2	1	-	mA
	Collector-emitter saturation voltage	V _{CE(sat)}	I _F =20mA, I _C =0.1mA	-	-	0.4	V
	Response time	tr·tf	V _{CC} =5V, I _F =20mA, R _L =100Ω	-	10	-	μs
Infrared light emitter diode	Cut-off frequency	f _C	I _F =50mA	-	1	-	MHz
	Peak light emitting wavelength	λ _p	* Non-coherent Infrared light emitting diode used.	-	950	-	nm
Photo transistor	Response time	tr·tf	V _{CC} =5V, I _C =1mA, R _L =100Ω *This product is not designed to be protected against electromagnetic wave.	-	10	-	μs
	Maximum sensitivity wavelength	λ _p	-	-	800	-	nm

●Classified table of rank

Item	Collector current : Ic I		Collector current : Ic II		Unit
A	0.8	to 4.0	0.20	to 1.0	mA
B	0.2	to	-		mA

◎ Condition Ic I : V_{ce}=5V, I_F=20mA / Ic II : V_{ce}=5V, I_F=5mA

●Electrical and optical characteristics curves

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

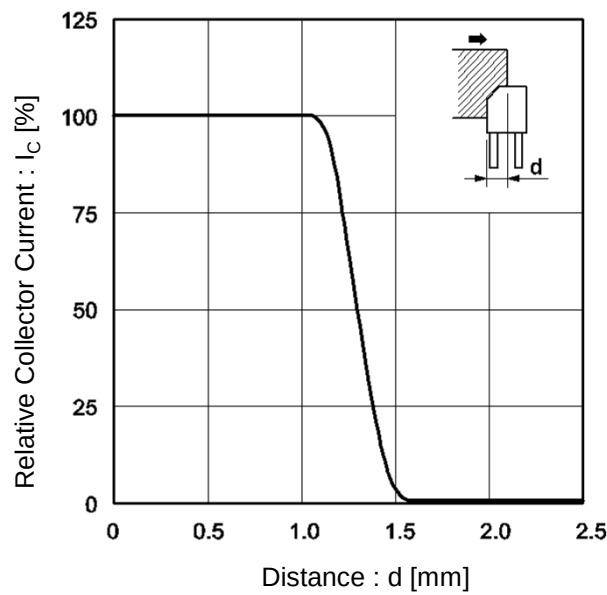


Fig.2 Relative Output Current vs.Distance (II)

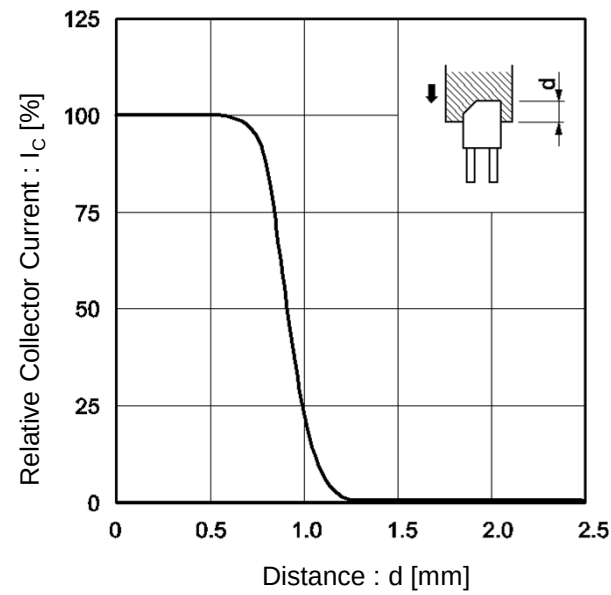


Fig.3 Forward Current Falloff

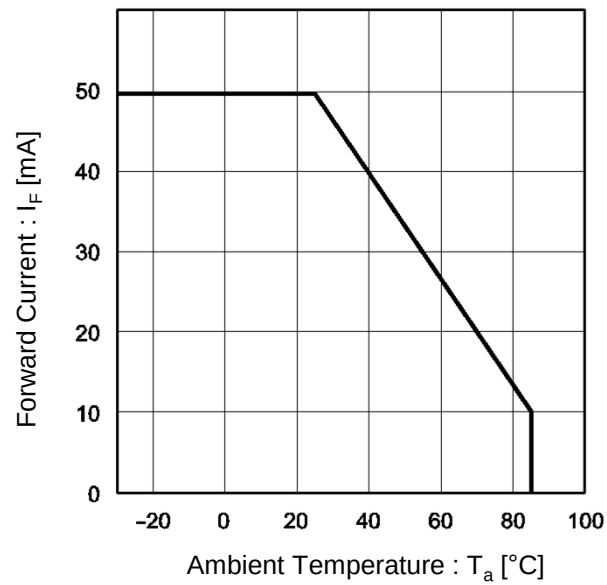
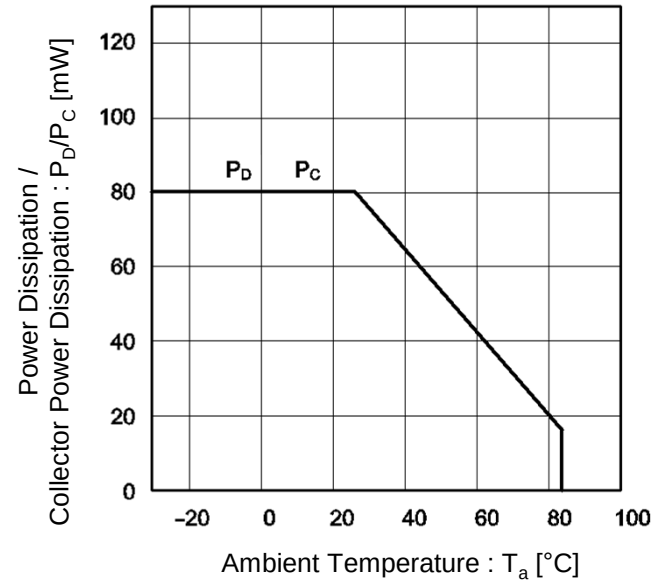


Fig.4 Power Dissipation / Collector Power Dissipation vs. Ambient Temperature



●Electrical and optical characteristics curves

Fig.5 Forward Current vs. Forward Voltage

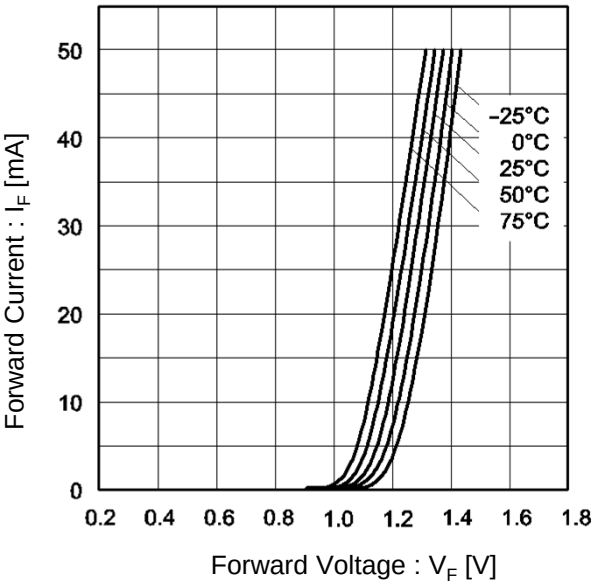


Fig.6 Collector Current vs. Forward Current

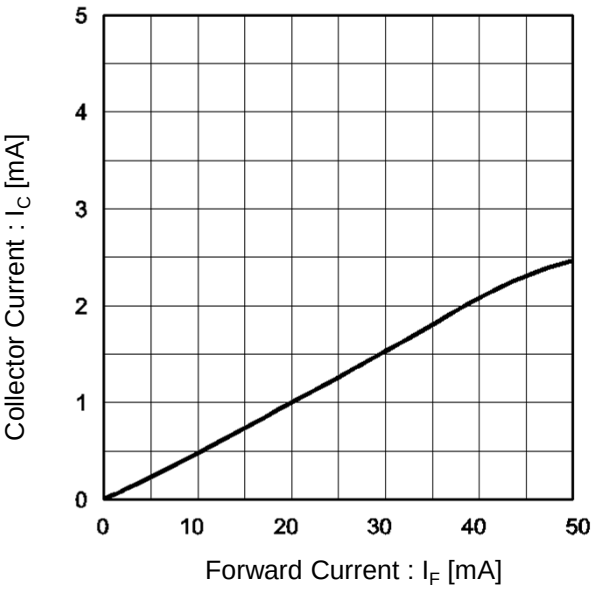


Fig.7 Relative Output vs. Ambient Temperature

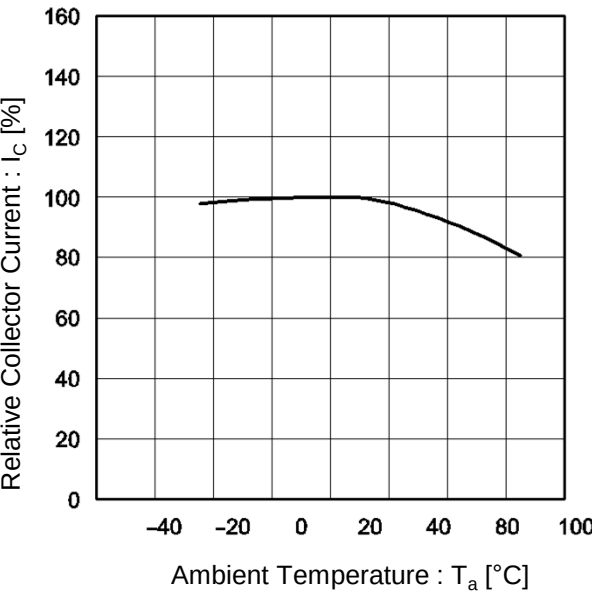
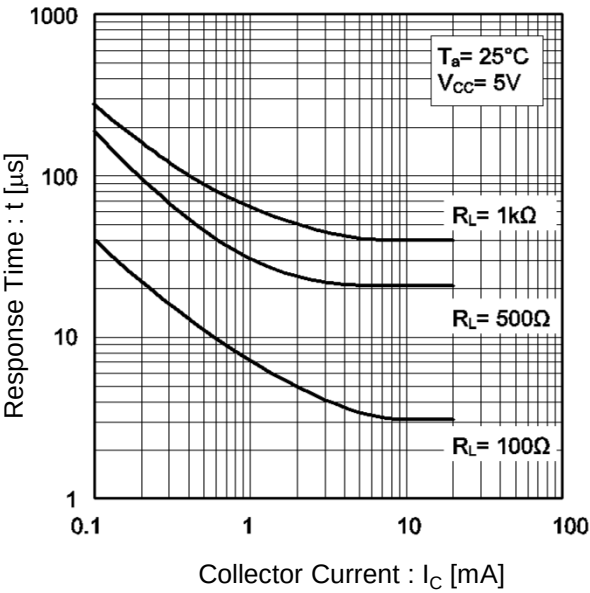


Fig.8 Response Time vs. Collector Current



●Electrical and optical characteristics curves

Fig.9 Dark Current vs. Ambient Temperature

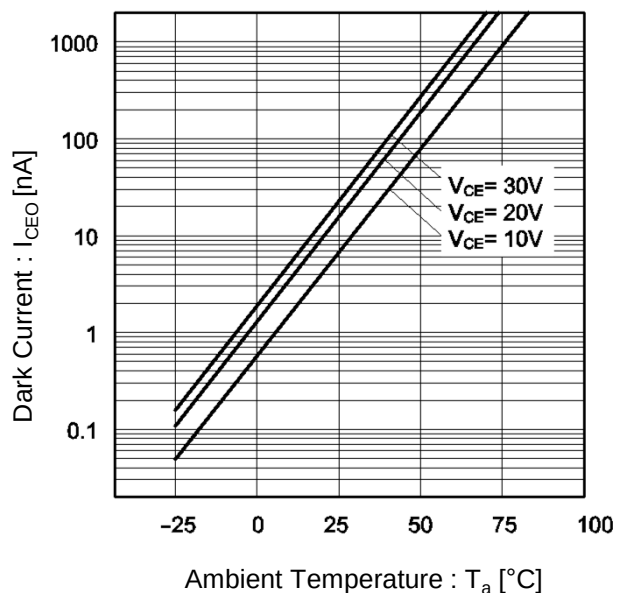


Fig.10 Output Characteristics

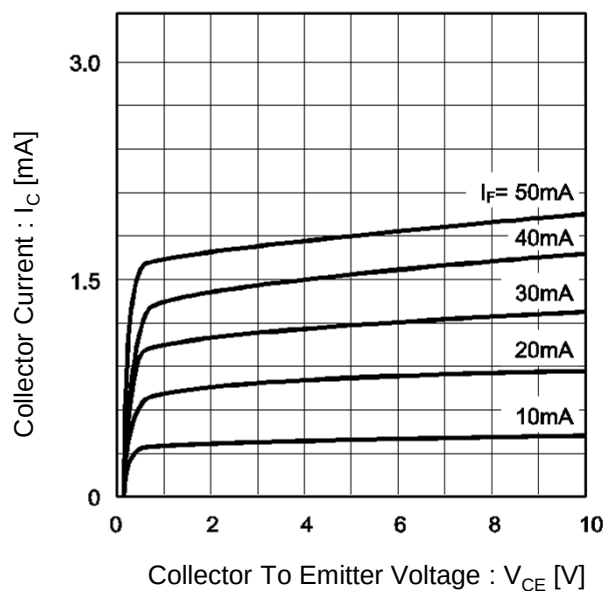
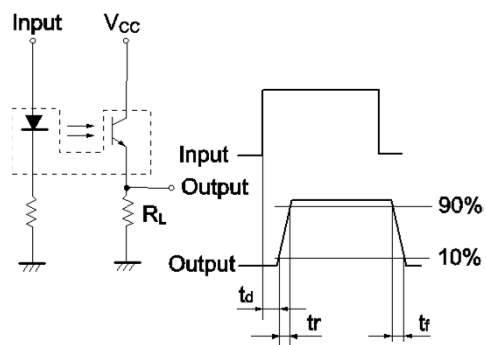


Fig.11 Response Time Measurement Circuit



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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Part Number	rpi-221
Package	RPI-221
Unit Quantity	2000
Minimum Package Quantity	2000
Packing Type	Bulk
Constitution Materials List	inquiry
RoHS	Yes