Photointerrupter, Ultraminiature SMD type

RPI-0125 Datasheet

●Applications

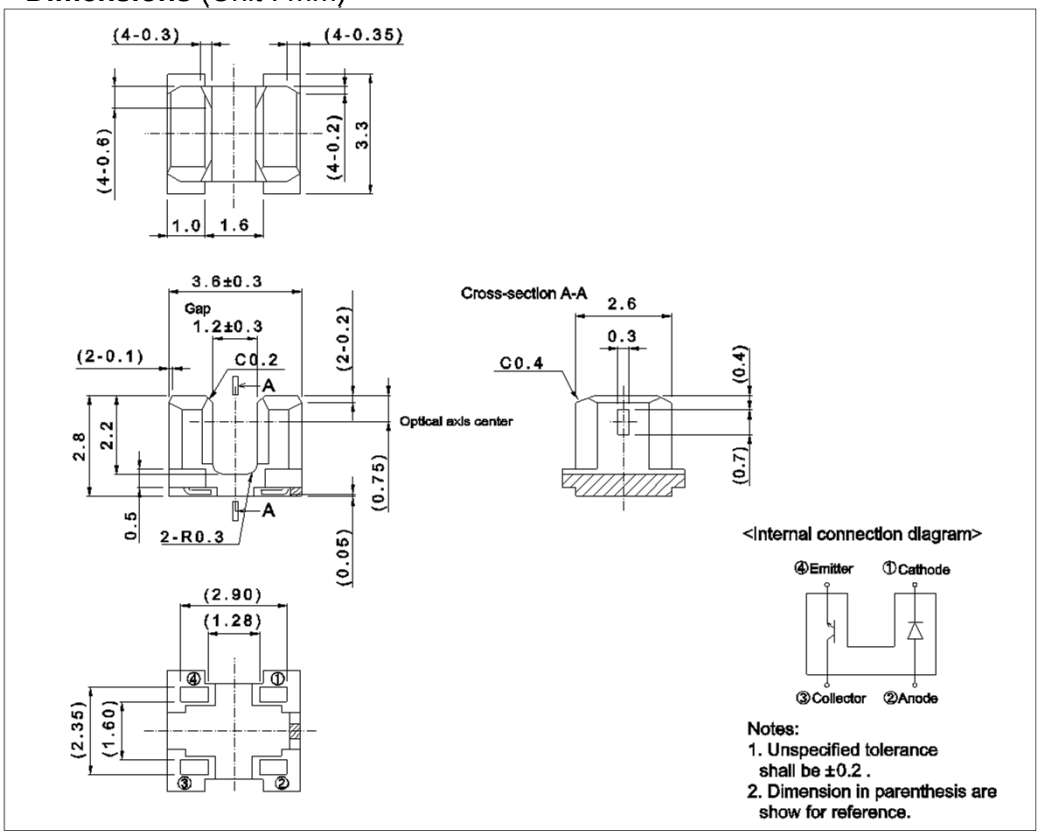
- DSC(Digital steal camera)
- DVC(Digital video camera)

●Outline

●Features

1) Ultra-small.
2) Gap 1.2mm.

●Dimensions (Unit : mm)



●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	0.45	-	4.95	mA
	Collector-emitter saturation voltage		$V_{CE(sat)}$	I_F=20mA, I_C=0.1mA	-	-	0.4	V
	Response time	Rise time	tr	V_{CC}=5V, I_F=20mA, R_L=100Ω	-	10	-	μs
		Fall time	tf		-	10	-	μs
Collector rank	A		I_C	V_{CE}=5V, I_F=20mA	0.45	-	2.33	mA
	B				0.95	-	4.95	
Infrared light emitter diode	Cut-off frequency		f_C	I_F=50mA * Non-coherent Infrared light emitting diode used.	-	1	-	MHz
	Peak light emitting wavelength		λ_p		-	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

●Electrical and optical characteristics curves

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

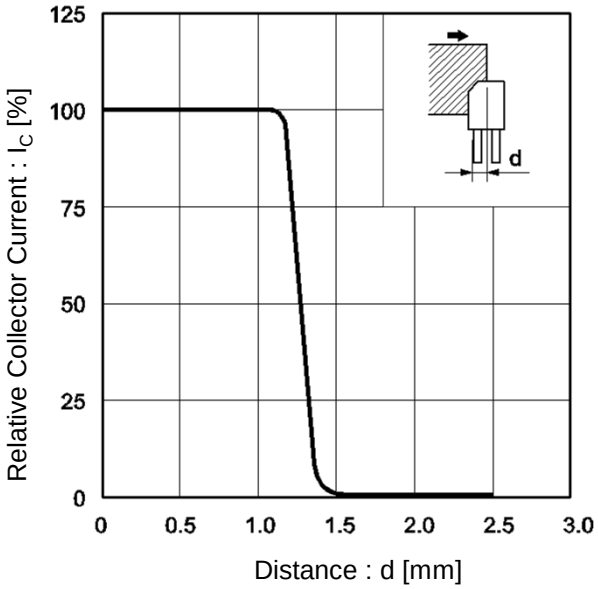


Fig.2 Relative Output Current vs.Distance (II)

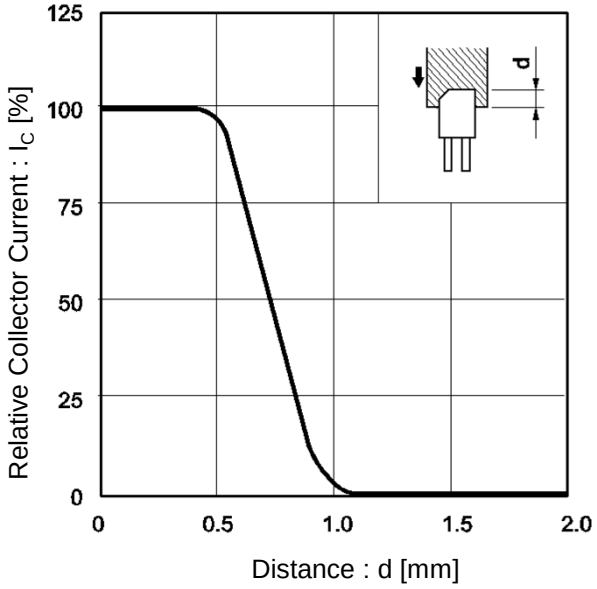


Fig.3 Forward Current Falloff

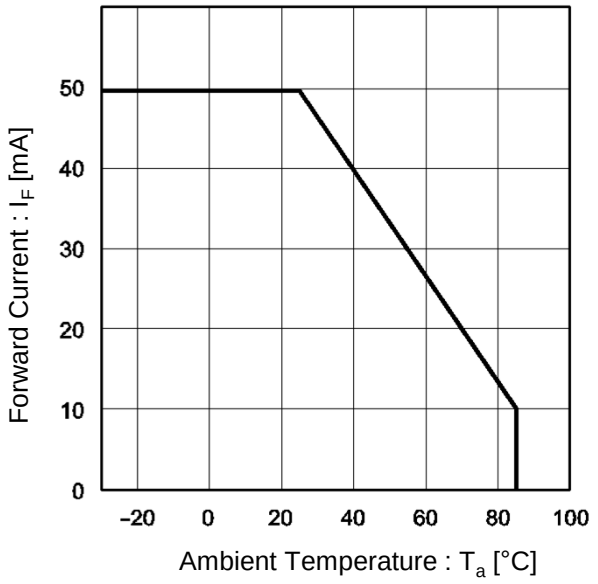
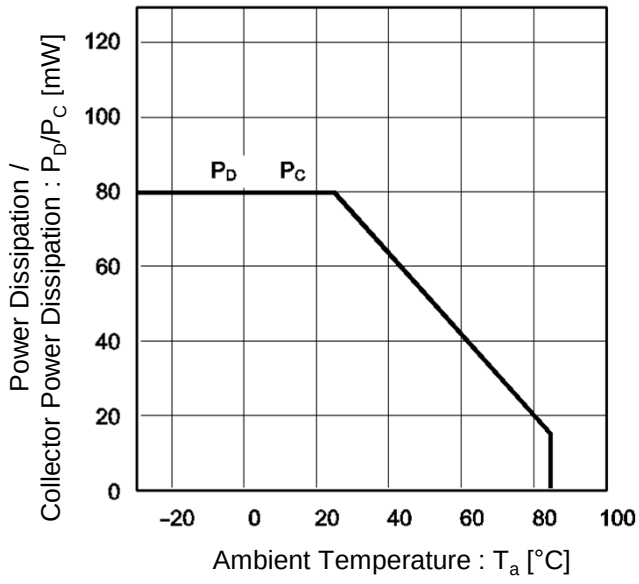


Fig.4 Power Dissipation / Collector Power Dissipation vs. Ambient Temperature



●Electrical and optical characteristics curves

Fig.5 Forward Current vs. Forward Voltage

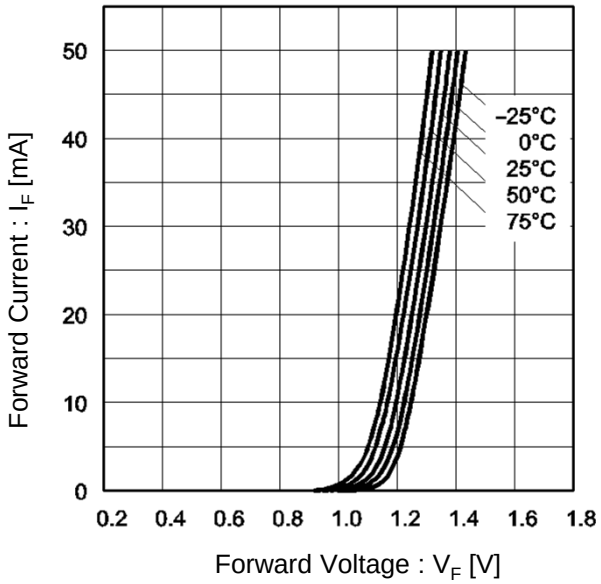


Fig.6 Collector Current vs. Forward Current

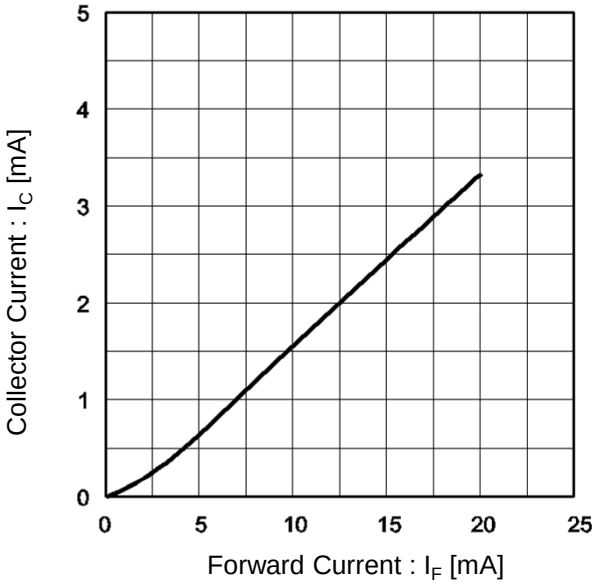


Fig.7 Relative Output vs. Ambient Temperature

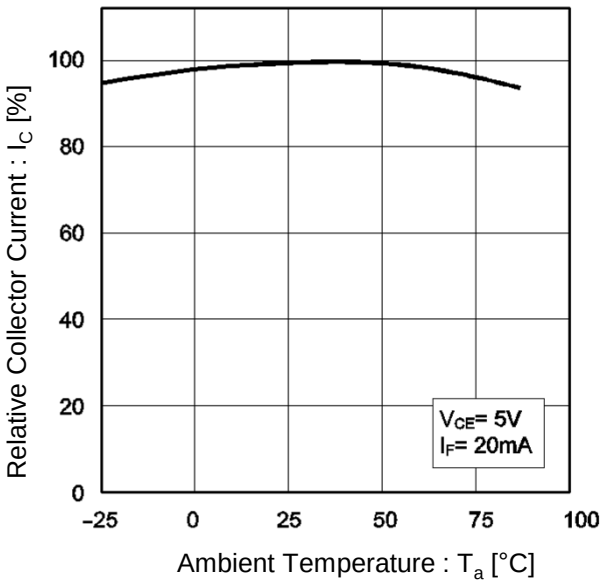
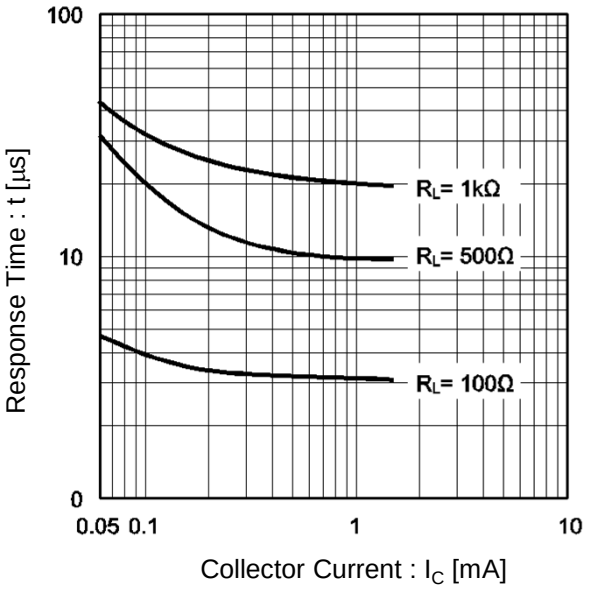


Fig.8 Response Time vs. Collector Current



●Electrical and optical characteristics curves

Fig.9 Dark Current vs. Ambient Temperature

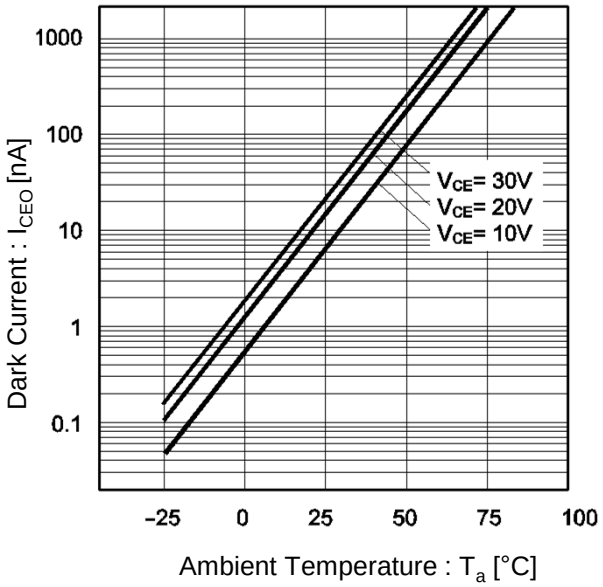


Fig.10 Output Characteristics

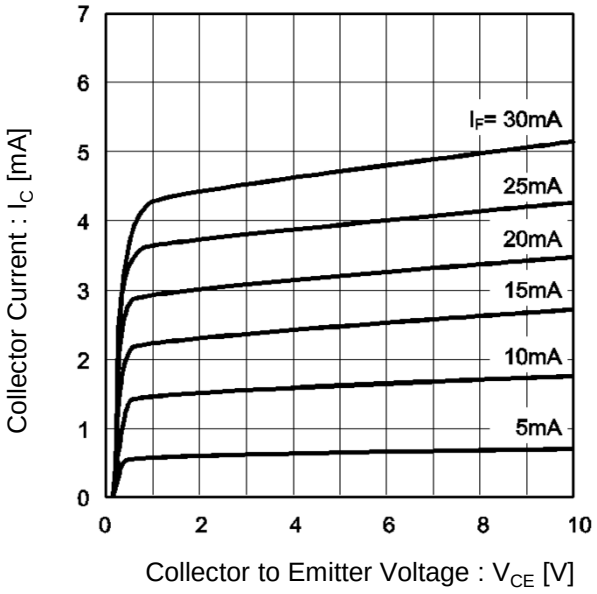
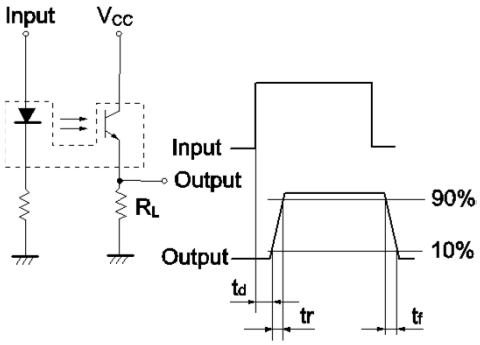


Fig.11 Response Time Measurement Circuit



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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