

### ●Applications

- Printers
- Amusement

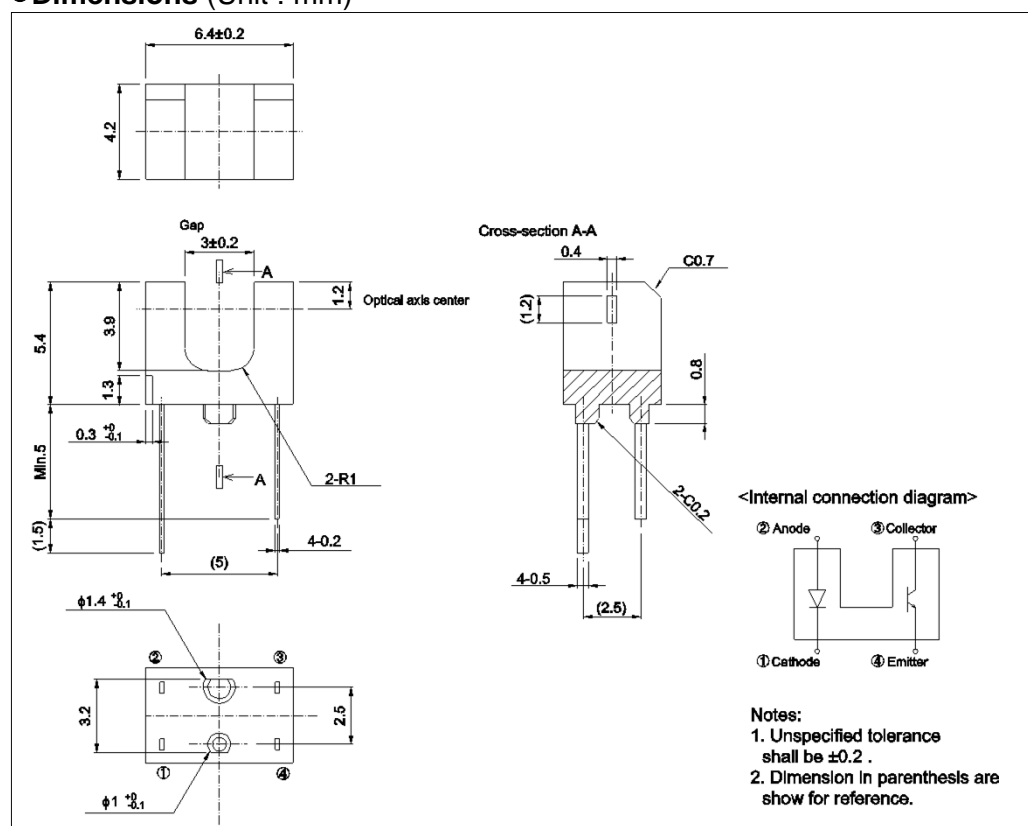
### ●Features

- 1) Positioning pin enables precision mounting.
- 2) Gap between emitter and detector is 3.0mm.
- 3) Compact

### ●Outline



### ●Dimensions (Unit : mm)



### ●Absolute maximum ratings (T<sub>a</sub> = 25°C)

Parameter		Symbol	Value	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 to +85	°C
Storage temperature		T <sub>stg</sub>	-30 to +85	°C

**●Electrical and optical characteristics (T<sub>a</sub> = 25°C)**

Parameter		Symbol	Conditions	Values			Unit
				Min.	Typ.	Max.	
Input characteristics	Forward voltage	V <sub>F</sub>	I <sub>F</sub> =50mA	-	1.3	1.6	V
	Reverse current	I <sub>R</sub>	V <sub>R</sub> =5V	-	-	10	μA
Output characteristics	Dark current	I <sub>CEO</sub>	V <sub>CE</sub> =10V	-	-	0.5	μA
	Peak sensitivity wavelength	λ <sub>p</sub>	-	-	800	-	nm
Transfer characteristics	Collector current	I <sub>C</sub>	V <sub>CE</sub> =5V, I <sub>F</sub> =20mA	0.2	1.0	-	mA
	Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	I <sub>F</sub> =20mA, I <sub>C</sub> =0.1mA	-	-	0.4	V
	Response time	tr·tf	V <sub>CC</sub> =5V, I <sub>F</sub> =20mA, R <sub>L</sub> =100Ω	-	10	-	μs
Infrared light emitter diode	Cut-off frequency	f <sub>C</sub>	I <sub>F</sub> =50mA	-	1	-	MHz
	Peak light emitting wavelength	λ <sub>p</sub>	* Non-coherent Infrared light emitting diode used.	-	950	-	nm
Photo transistor	Response time	tr·tf	V <sub>CC</sub> =5V, I <sub>C</sub> =1mA, R <sub>L</sub> =100Ω *This product is not designed to be protected against electromagnetic wave.	-	10	-	μs
	Maximum sensitivity wavelength	λ <sub>p</sub>	-	-	800	-	nm

●Electrical and optical characteristics curves

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

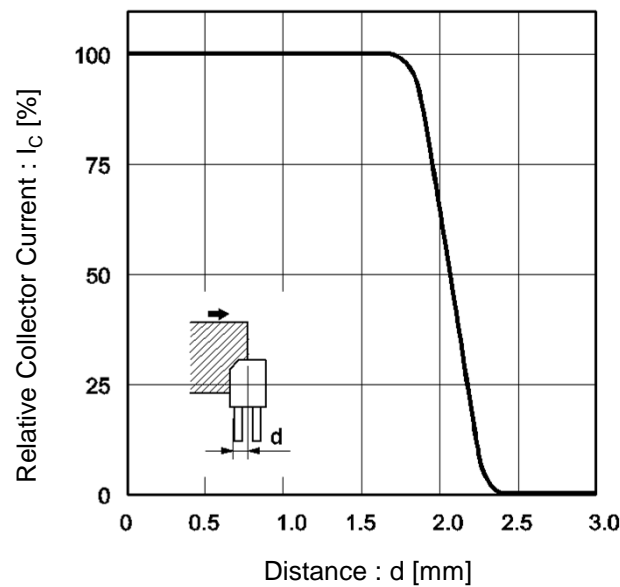


Fig.2 Relative Output Current vs.Distance (II)

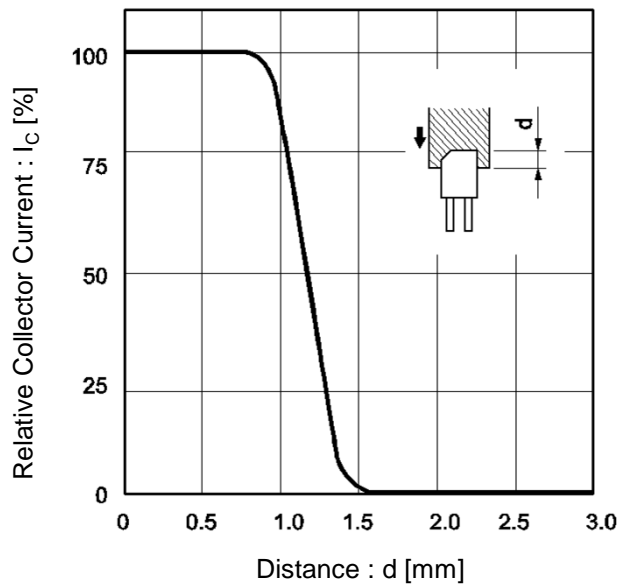


Fig.3 Forward Current Falloff

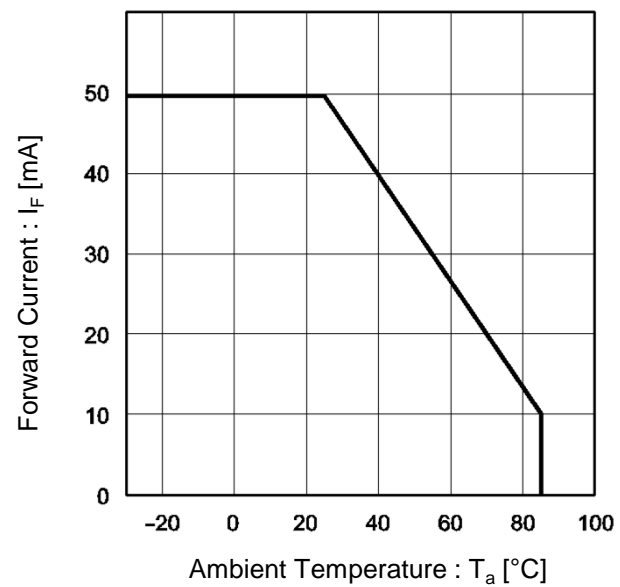
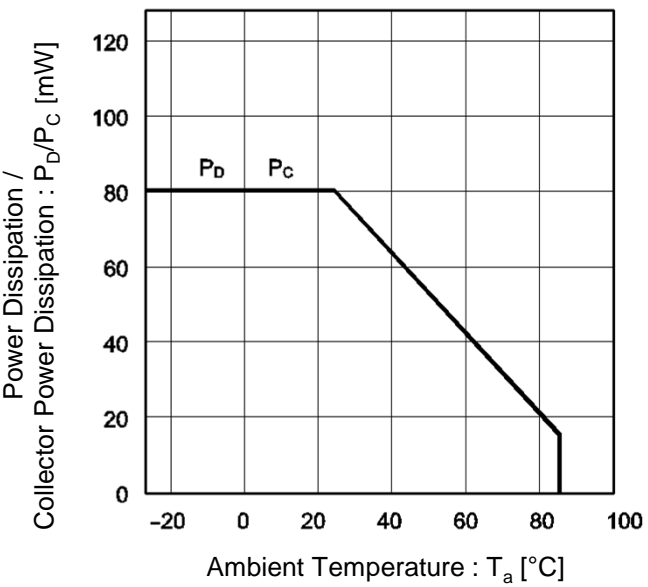


Fig.4 Power Dissipation / Collector Power Dissipation vs. Ambient Temperature



●Electrical and optical characteristics curves

Fig.5 Forward Current vs. Forward Voltage

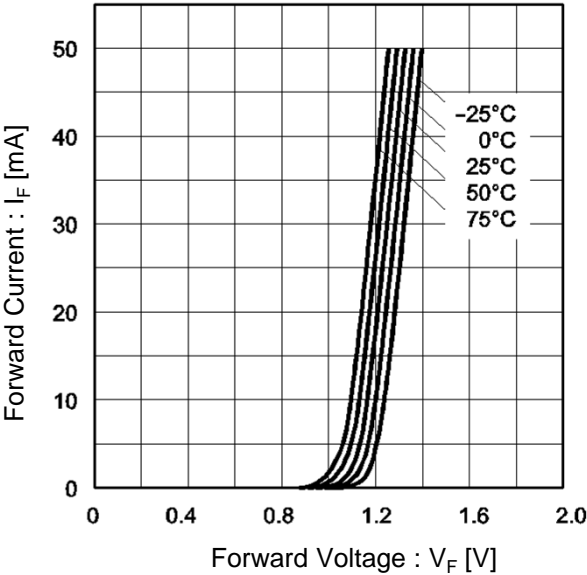


Fig.6 Collector Current vs. Forward Current

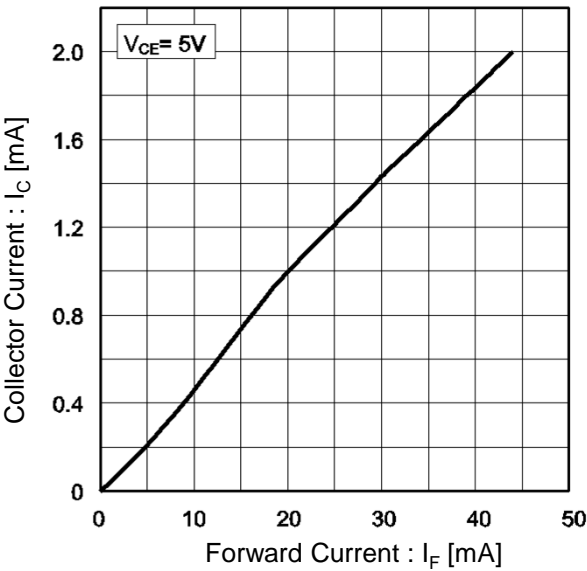


Fig.7 Relative Output vs. Ambient Temperature

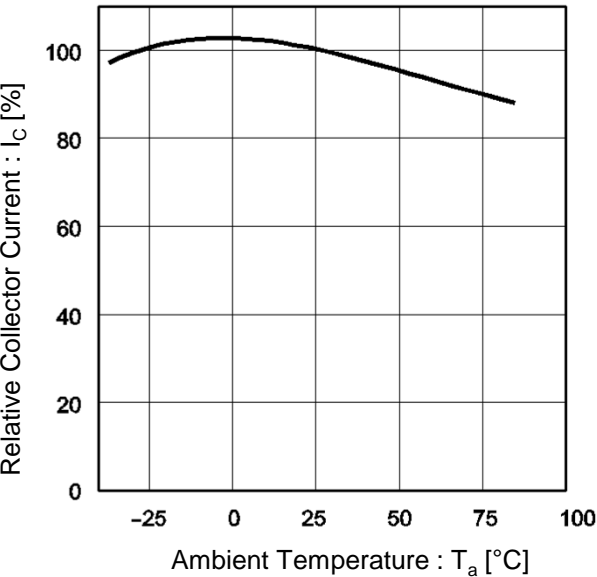
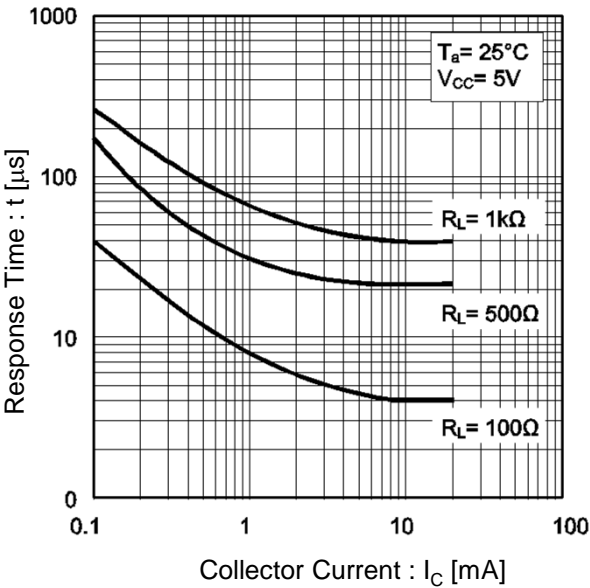


Fig.8 Response Time vs. Collector Current



## ●Electrical and optical characteristics curves

Fig.9 Dark Current vs. Ambient Temperature

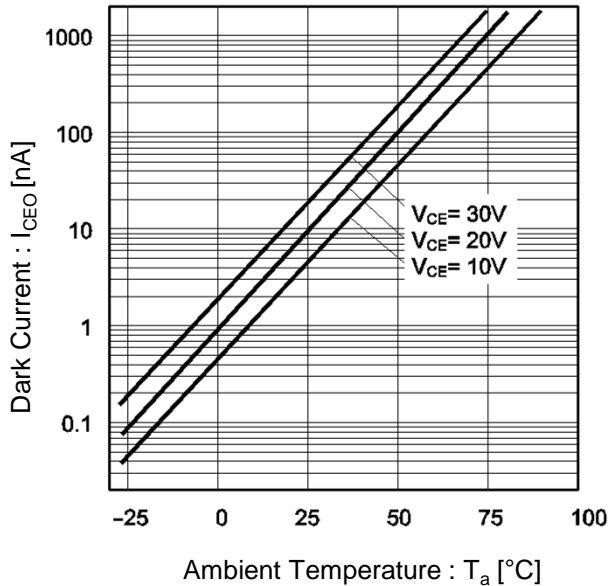


Fig.10 Output Characteristics

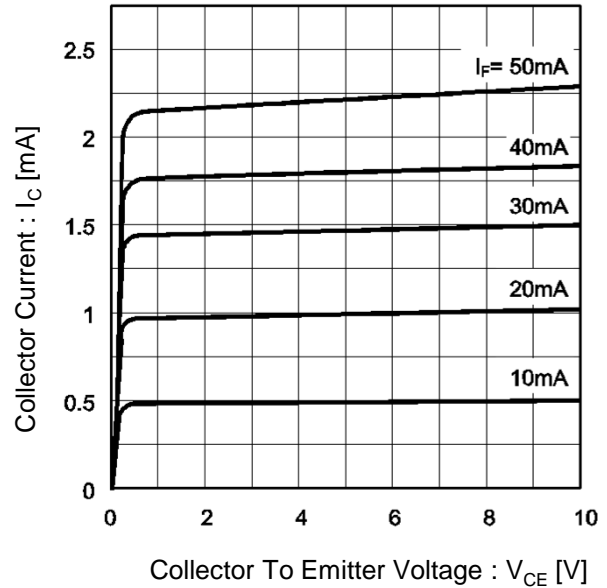
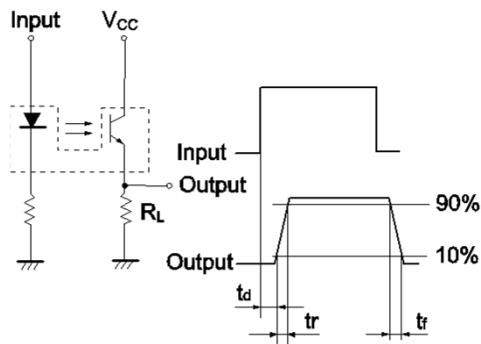


Fig.11 Response Time Measurement Circuit



$t_d$  : 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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