

## Photointerrupter, Ultraminiature type

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

Parameter	Symbol	Limits	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 +100	°C

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

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	$\mu\text{A}$	$V_R=5\text{V}$
	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	$I_C$	0.3	—	1.5 mA	$V_{CE}=5\text{V}$ , $I_F=20\text{mA}$
	Collector-emitter saturation voltage	$V_{CE(\text{sat})}$	—	0.3	V	$I_F=20\text{mA}$ , $I_C=0.15\text{mA}$
	Response time	$t_{\text{tr}-\text{tf}}$	—	10	— $\mu\text{s}$	$V_{CC}=5\text{V}$ , $I_F=20\text{mA}$ , $R_L=100\Omega$
	Cut-off frequency	$f_C$	—	1	— MHz	$I_F=50\text{mA}$ * Non-coherent Infrared light emitting diode used.
Infrared light emitting diode	Peak light emitting wavelength	$\lambda_P$	—	950	— nm	—
	Response time	$t_{\text{tr}-\text{tf}}$	—	10	— $\mu\text{s}$	$V_{CC}=5\text{V}$ , $I_C=1\text{mA}$ , $R_L=100\Omega$ * This product is not designed to be protected against electromagnetic wave.
Photo-transistor	Maximum sensitivity wavelength	$\lambda_P$	—	800	— nm	—

## Electrical and optical characteristics curves

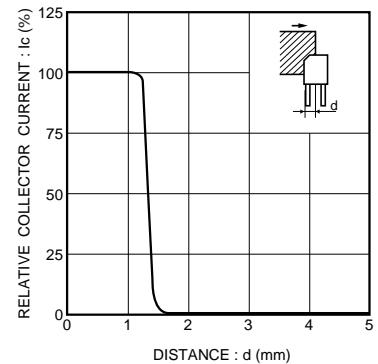


Fig.1 Relative output current vs. distance (I)

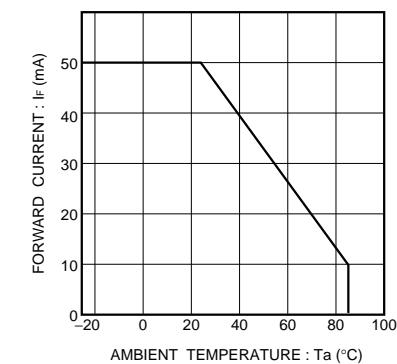


Fig.2 Forward current falloff

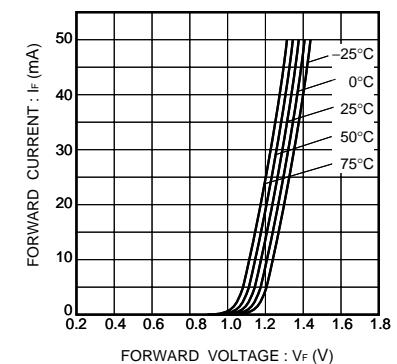


Fig.3 Forward current vs. forward voltage

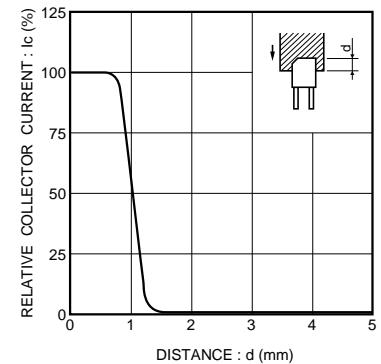


Fig.4 Relative output current vs. distance (II)

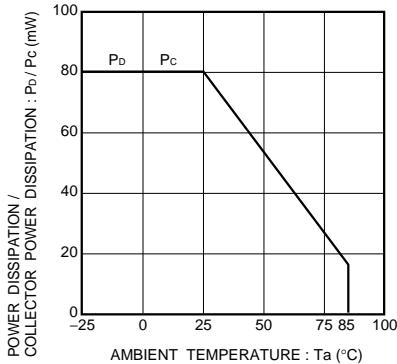


Fig.5 Power dissipation / collector power dissipation vs. ambient temperature

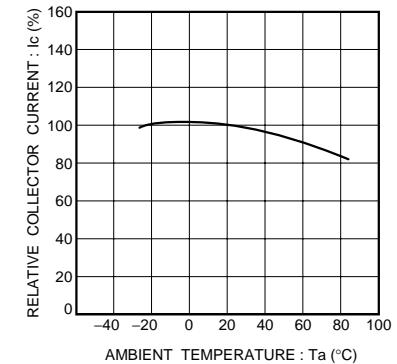


Fig.6 Relative output vs. ambient temperature

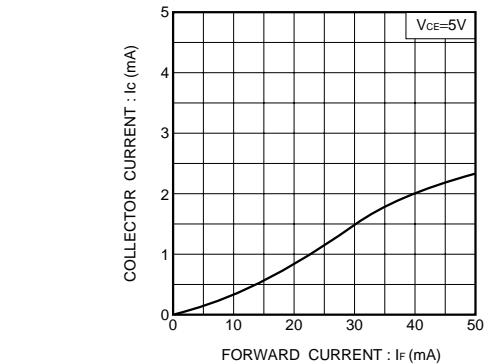


Fig.7 Collector current vs. forward current

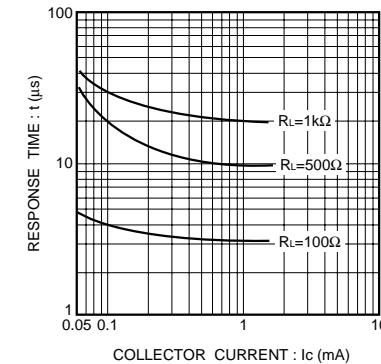


Fig.8 Response time vs. collector current

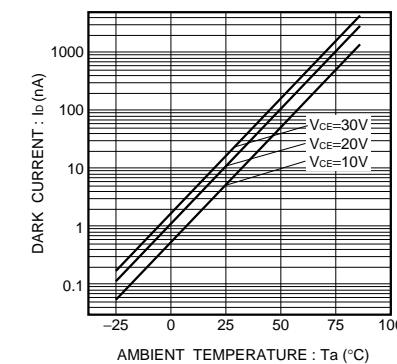


Fig.9 Dark current vs. ambient temperature

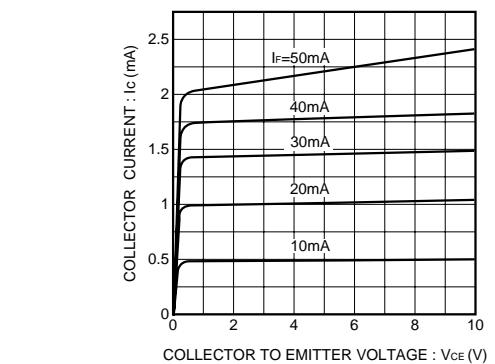


Fig.10 Output characteristics

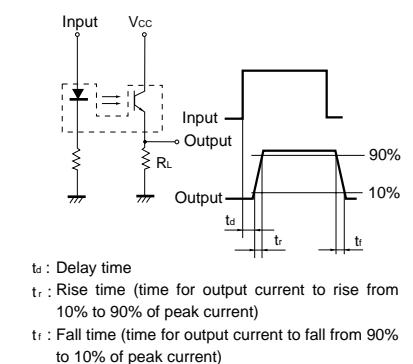
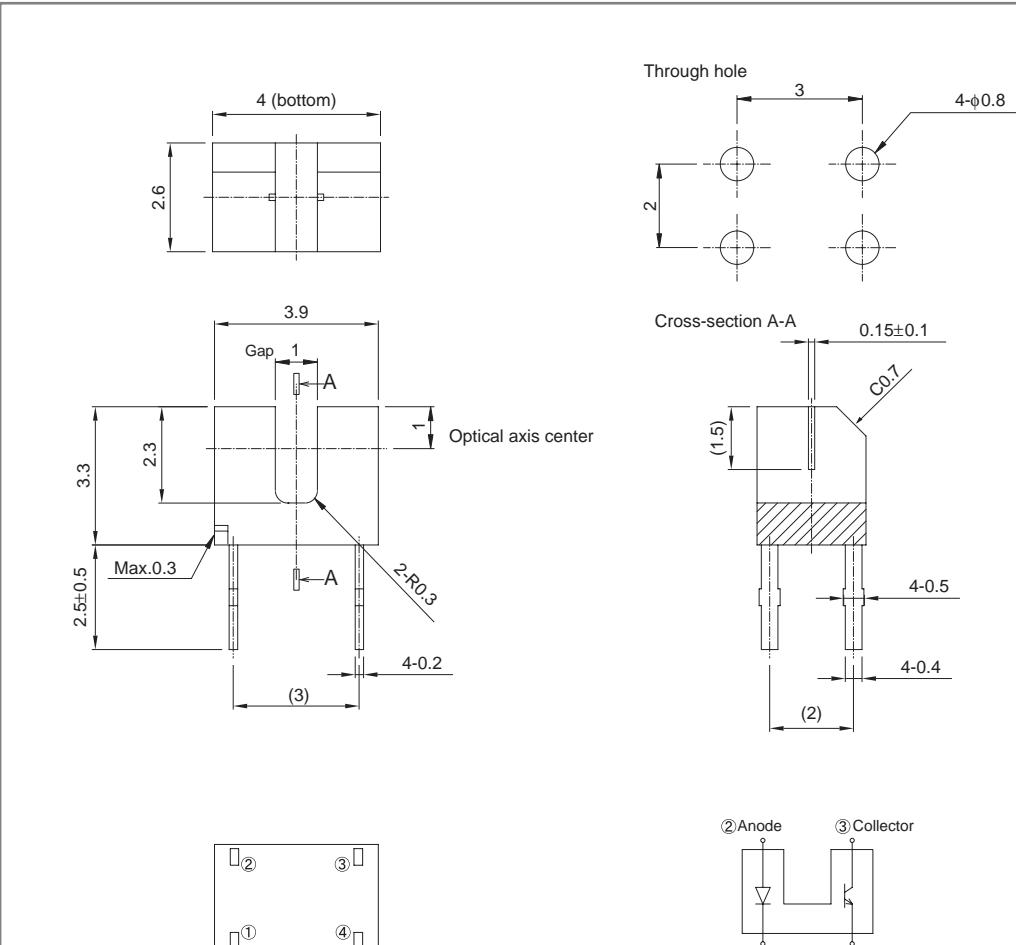


Fig.11 Response time measurement circuit

## External dimensions (Unit : mm)



Notes:  
1. Unspecified tolerance shall be  $\pm 0.2$ .  
2. Dimension in parenthesis are show for reference.

Fig.12 External dimensions (Unit : mm)

## Appendix

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