

## 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	$V_{CE(sat)}$	—	0.3	V	$I_F=20\text{mA}$ , $I_C=0.15\text{mA}$
	Response time	$t_{R-tf}$	—	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 $I_F=50\text{mA}$
Infrared light emitting diode	Peak light emitting wavelength	$\lambda_P$	—	950	nm	* Non-coherent Infrared light emitting diode used.
	Response time	$t_{R-tf}$	—	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.
	Maximum sensitivity wavelength	$\lambda_P$	—	800	nm	—

## Electrical and optical characteristics curves

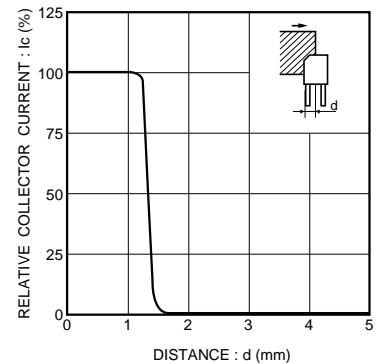


Fig.1 Relative output current vs. distance (I)

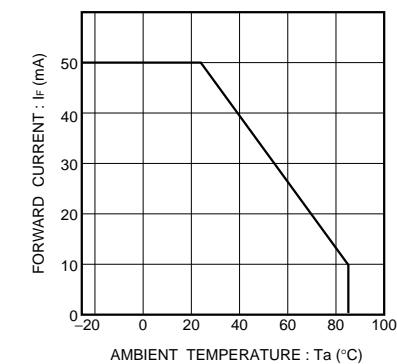


Fig.2 Forward current falloff

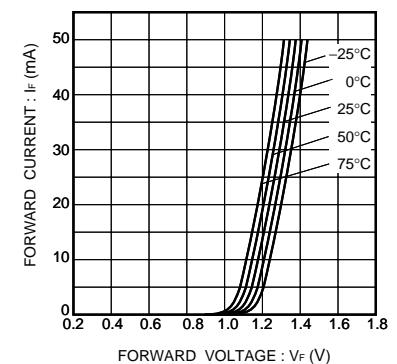


Fig.3 Forward current vs. forward voltage

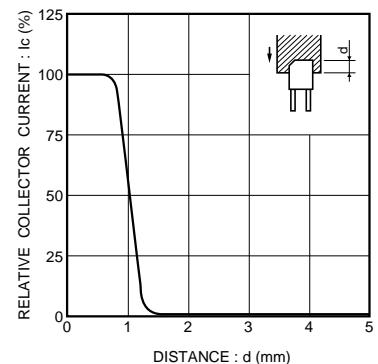


Fig.4 Relative output current vs. distance (II)

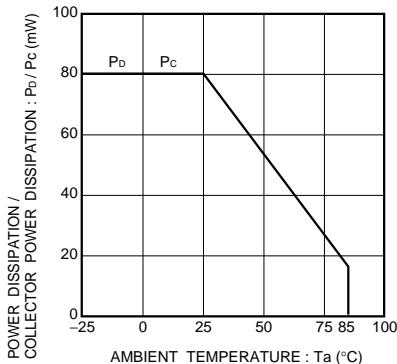


Fig.5 Power dissipation / collector power dissipation vs. ambient temperature

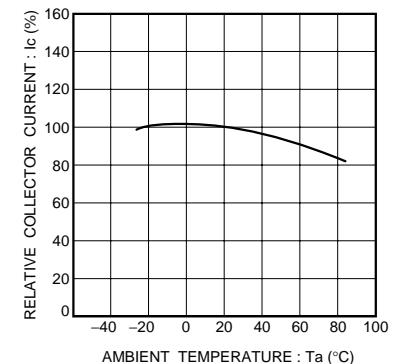
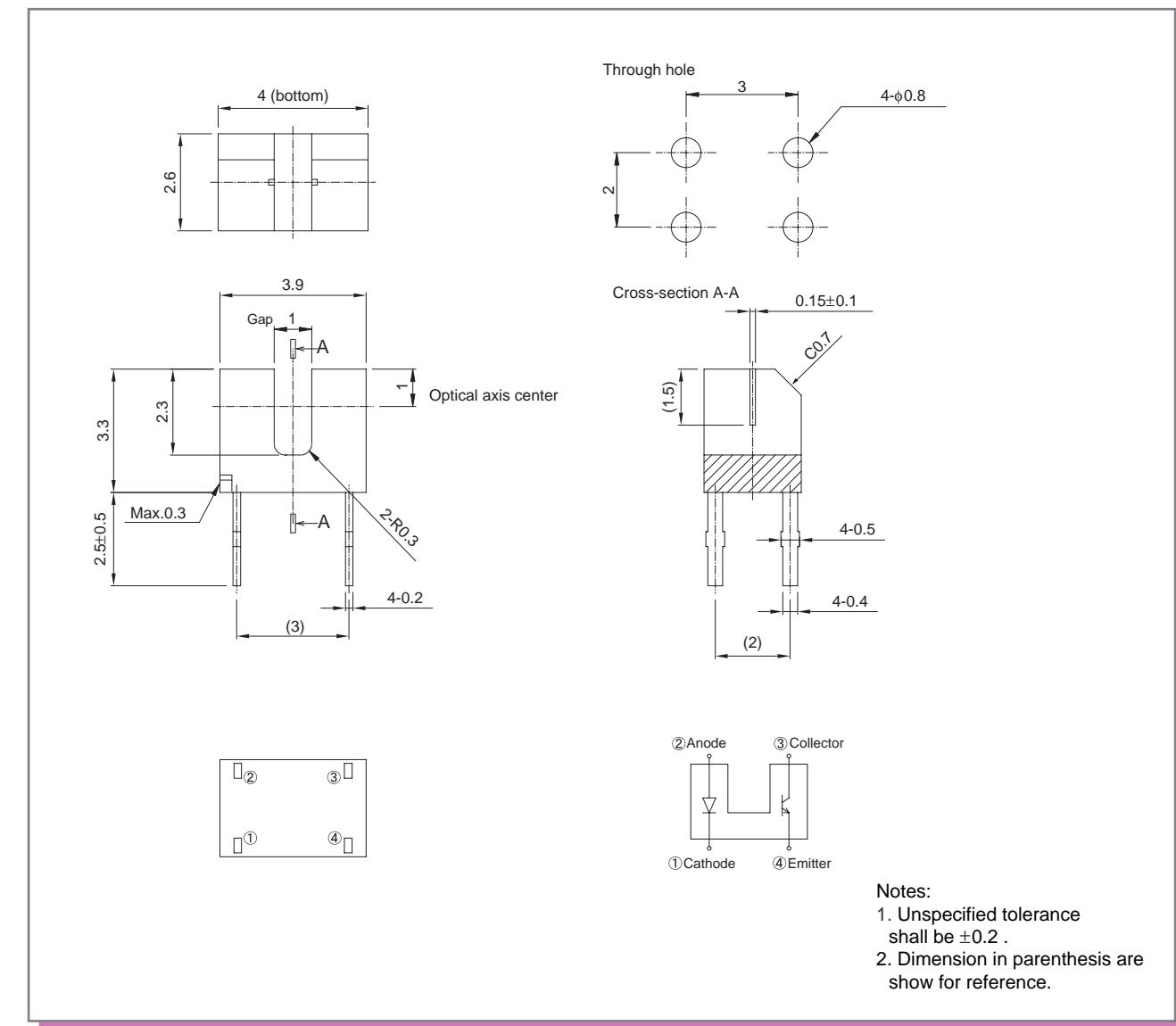


Fig.6 Relative output vs. ambient temperature

## External dimensions (Unit : mm)



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

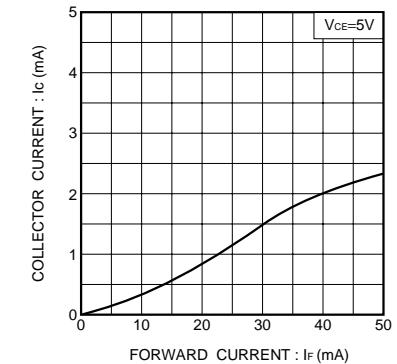


Fig.7 Collector current vs. forward current

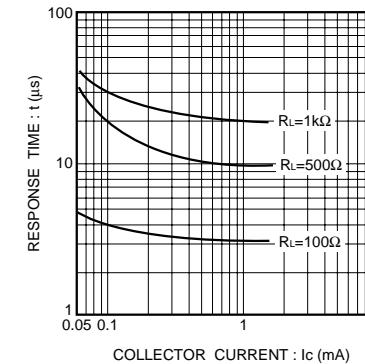


Fig.8 Response time vs. collector current

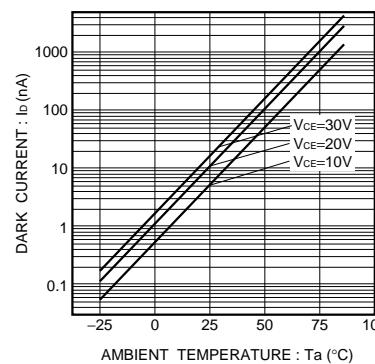


Fig.9 Dark current vs. ambient temperature

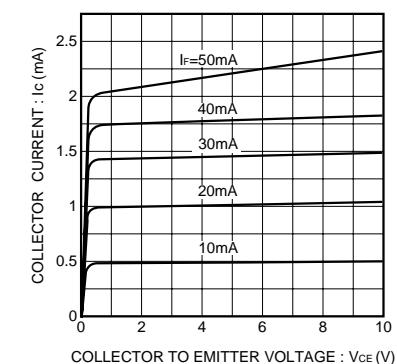


Fig.10 Output characteristics

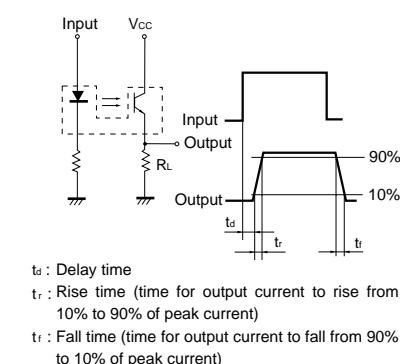


Fig.11 Response time measurement circuit

## Appendix

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