

Photointerrupter, Ultraminiature type



Absolute maximum ratings (Ta=25°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}	-40 to +100	°C

Applications

Optical control equipment
Cameras
Floppy disk drives

Features

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

Electrical and optical characteristics (Ta=25°C)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Conditions
Input charac-teristics	Forward voltage	V_F	-	1.3	1.6	V	$I_F=50\text{mA}$
	Reverse current	I_R	-	-	10	μA	$V_R=5\text{V}$
Output charac-teristics	Dark current	I_{CEO}	-	-	0.5	μA	$V_{CE}=10\text{V}$
	Peak sensitivity wavelength	λ_P	-	800	-	nm	-
Transfer charac-teristics	Collector current	I_C	0.18	-	1.08	mA	$V_{CE}=0.7\text{V}, I_F=3\text{mA}$
	Collector-emitter saturation voltage	$V_{CE(sat)}$	-	-	0.3	V	$I_F=20\text{mA}, I_C=0.3\text{mA}$
	Response time	t_{r+tf}	-	10	-	μs	$V_{CC}=5\text{V}, I_F=20\text{mA}, R_L=100\Omega$
Infrared light emitting diode	Cut-off frequency	f_c	-	1	-	MHz	$I_F=50\text{mA}$ * Non-coherent Infrared light emitting diode used.
	Peak light emitting wavelength	λ_P	-	950	-	nm	-
Photo transistor	Response time	t_{r+tf}	-	10	-	μs	$V_{CC}=5\text{V}, I_C=1\text{mA}, R_L=100\Omega$ * This product is not designed to be protected against electromagnetic wave.
	Maximum sensitivity wavelength	λ_P	-	800	-	nm	-

Electrical and optical characteristics curves

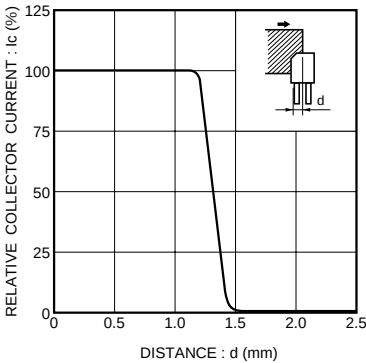


Fig.1 Relative output current vs. distance (I)

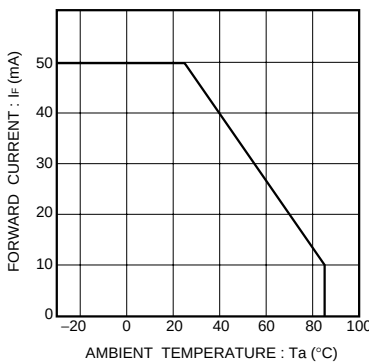


Fig.2 Forward current falloff

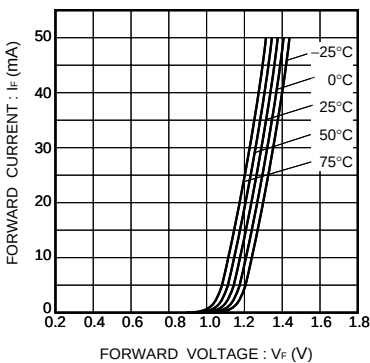


Fig.3 Forward current vs. forward voltage

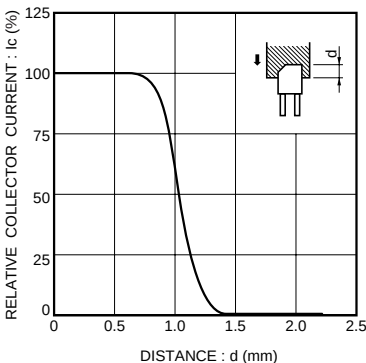


Fig.4 Relative output current vs. distance (II)

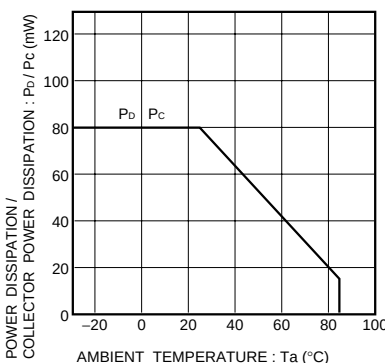


Fig.5 Power dissipation / collector power dissipation vs. ambient temperature

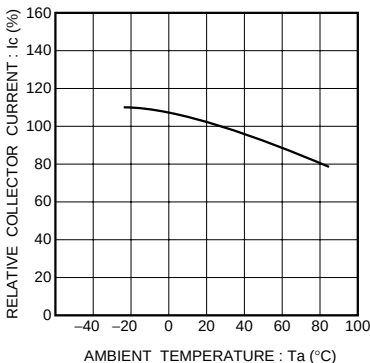


Fig.6 Relative output vs. ambient temperature

External dimensions (Unit : mm)

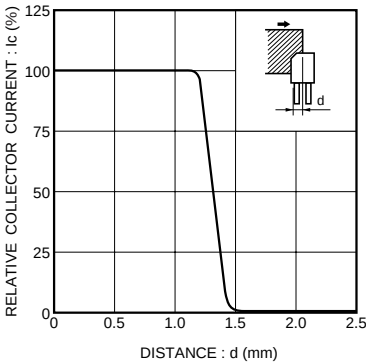
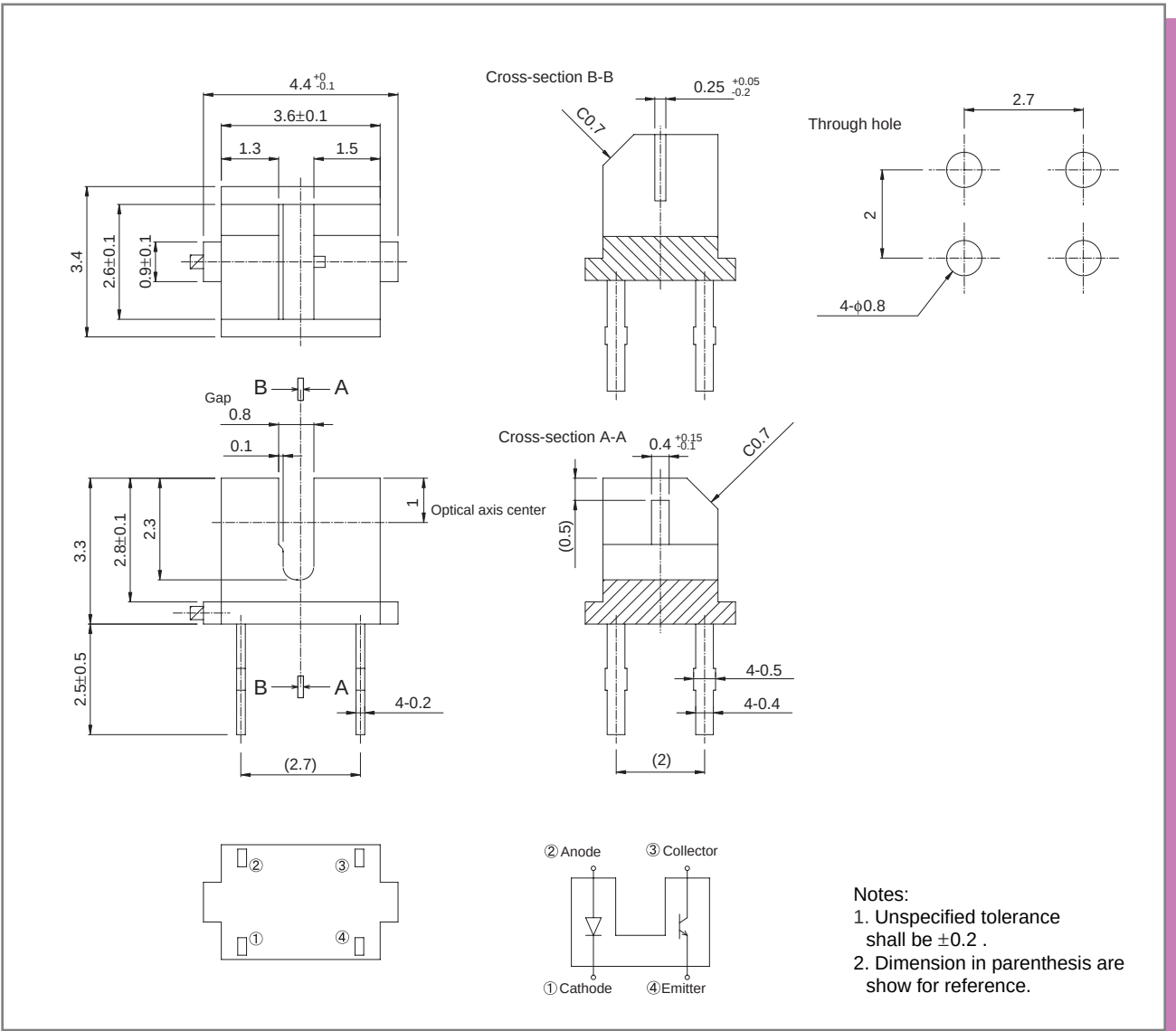


Fig.1 Relative output current vs. distance (I)

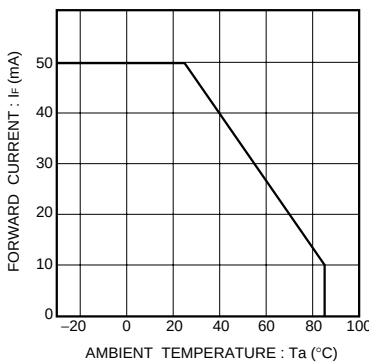


Fig.2 Forward current falloff

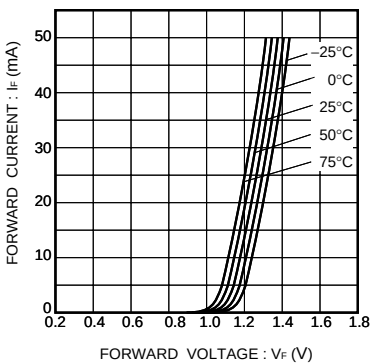


Fig.3 Forward current vs. forward voltage

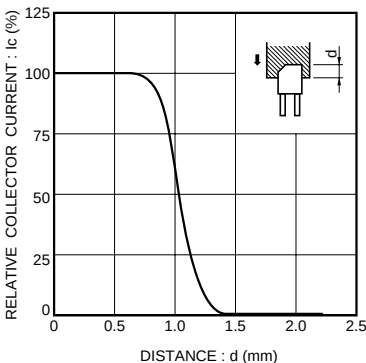


Fig.4 Relative output current vs. distance (II)

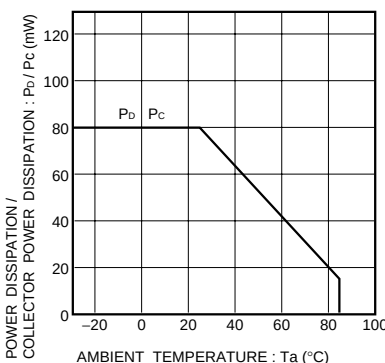


Fig.5 Power dissipation / collector power dissipation vs. ambient temperature

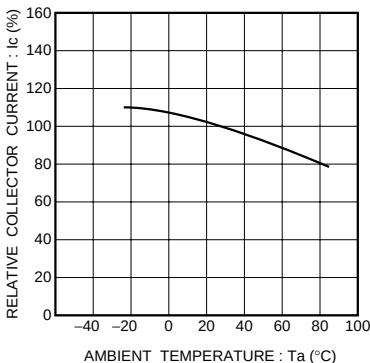


Fig.6 Relative output vs. ambient temperature

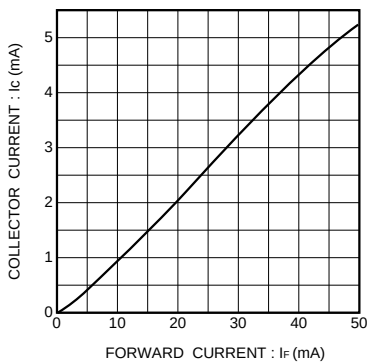


Fig.7 Collector current vs. forward current

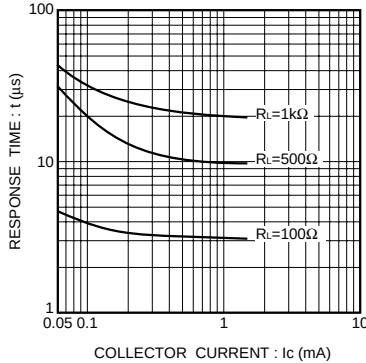


Fig.8 Response time vs. collector current

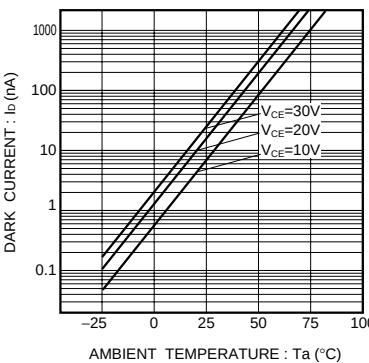


Fig.9 Dark current vs. ambient temperature

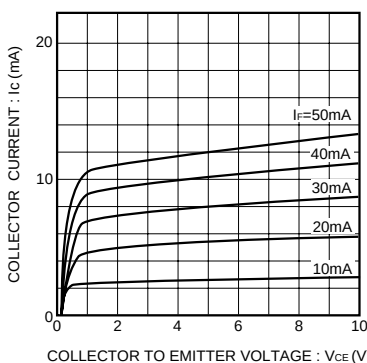


Fig.10 Output characteristics

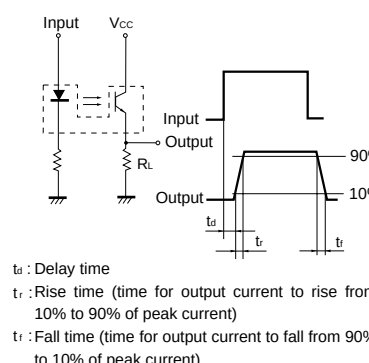


Fig.11 Response time measurement circuit

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