

Photointerrupter, Ultraminiature type



Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	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 +100 °C	

Applications

- Optical control equipment
- Cameras
- Floppy disk drives

Features

- Ultra-small.
- High-precision position detection (slit width = 0.15mm).
- Minimal influence from stray light.
- Low collector-emitter saturation voltage.

Electrical and optical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions	
Input characteristics	Forward voltage	V <sub>F</sub>	1.3	1.6	V	I <sub>F</sub> =50mA	
	Reverse current	I <sub>R</sub>	-	-	10	μA	V <sub>R</sub> =5V
Output characteristics	Dark current	I <sub>CEO</sub>	-	-	0.5	μA	V <sub>CE</sub> =10V
	Peak sensitivity wavelength	λ <sub>P</sub>	-	800	-	nm	-
Transfer characteristics	Collector current	I <sub>C</sub>	0.3	-	1.5	mA	V <sub>CE</sub> =5V, I <sub>F</sub> =20mA
	Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	-	-	0.3	V	I <sub>F</sub> =20mA, I <sub>C</sub> =0.15mA
Infrared light emitting diode	Response time	t <sub>r</sub> -t <sub>f</sub>	-	10	μs	V <sub>CC</sub> =5V, I <sub>F</sub> =20mA, R <sub>L</sub> =100Ω	
	Cut-off frequency	f <sub>c</sub>	-	1	-	MHz	I <sub>F</sub> =50mA * Non-coherent Infrared light emitting diode used.
Photo transistor	Peak light emitting wavelength	λ <sub>P</sub>	-	950	nm	-	
	Response time	t <sub>r</sub> -t <sub>f</sub>	-	10	μs	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.	
Maximum sensitivity wavelength	λ <sub>P</sub>	-	800	-	nm	-	

Electrical and optical characteristics curves

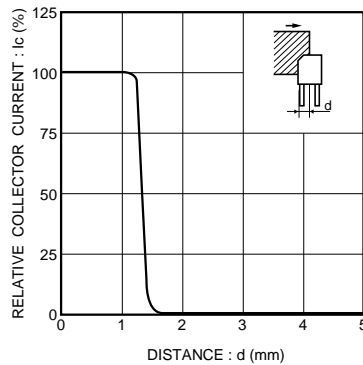


Fig.1 Relative output current vs. distance (I)

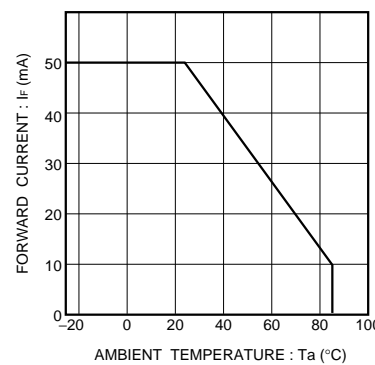


Fig.2 Forward current falloff

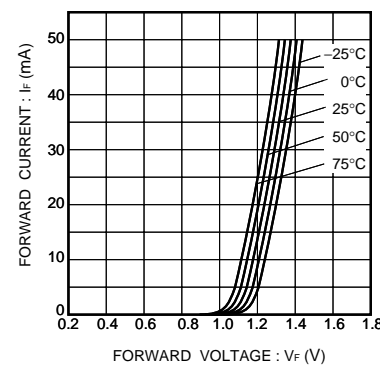


Fig.3 Forward current vs. forward voltage

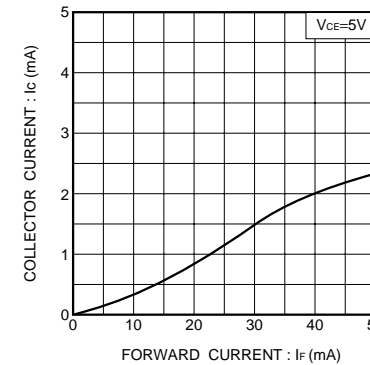


Fig.7 Collector current vs. forward current

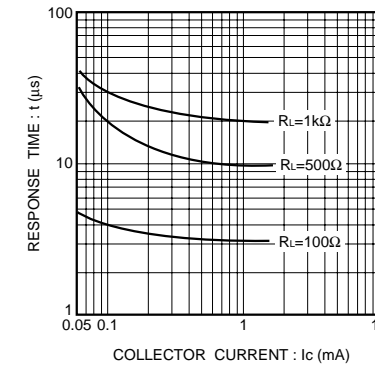


Fig.8 Response time vs. collector current

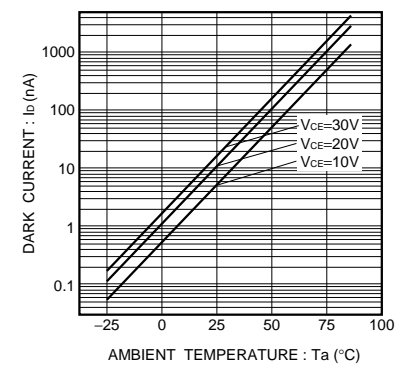


Fig.9 Dark current vs. ambient temperature

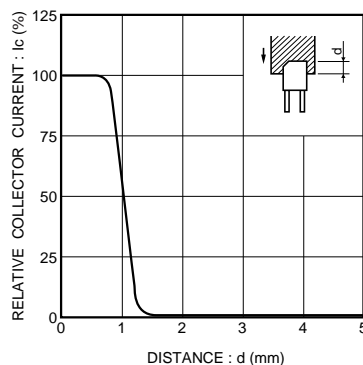


Fig.4 Relative output current vs. distance (II)

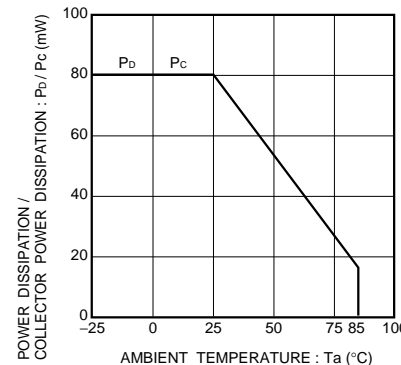


Fig.5 Power dissipation / collector power dissipation vs. ambient temperature

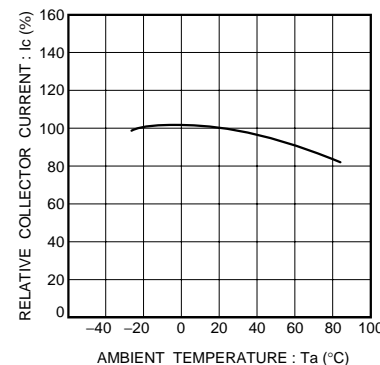


Fig.6 Relative output vs. ambient temperature

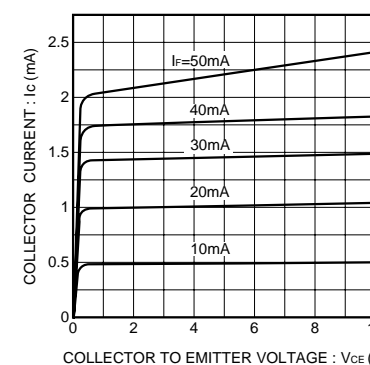


Fig.10 Output characteristics

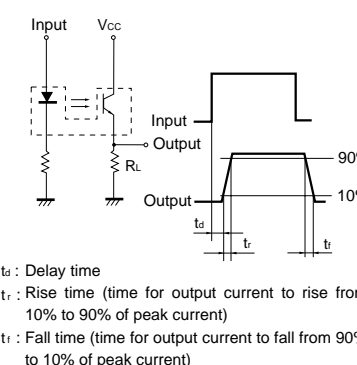
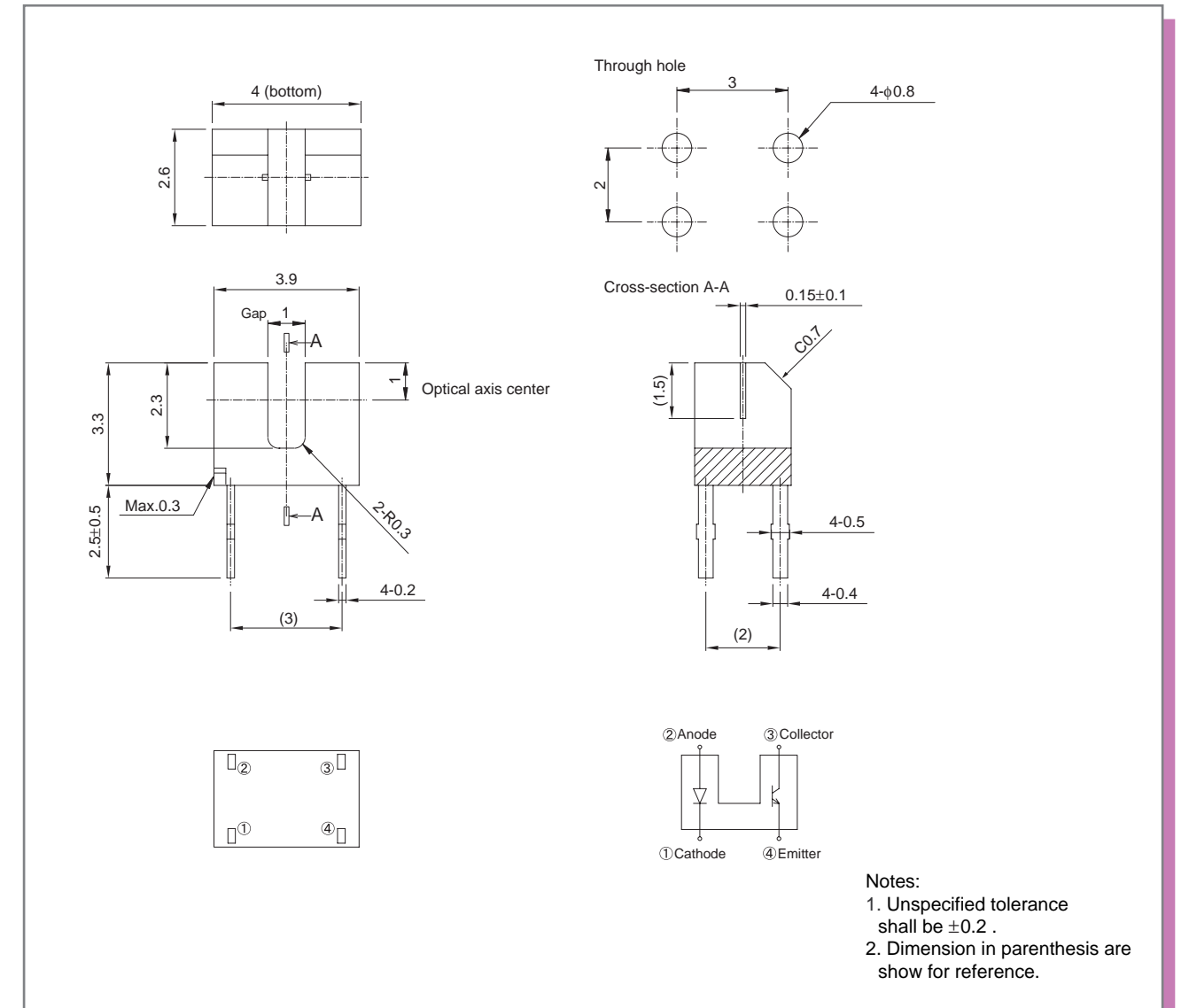


Fig.11 Response time measurement circuit

External dimensions (Unit : mm)



Notes:  
1. Unspecified tolerance shall be ±0.2 .  
2. Dimension in parenthesis show for reference.

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