

# SUBMINIATURE PHOTOINTERRUPTER

## MIT-4A11B

### Description

The MIT-4A11B consists of a Gallium Arsenide infrared emitting diode and a NPN silicon phototransistor, double-layer mold plastic package. It is a transmissive subminiature photointerrupter.

### Features

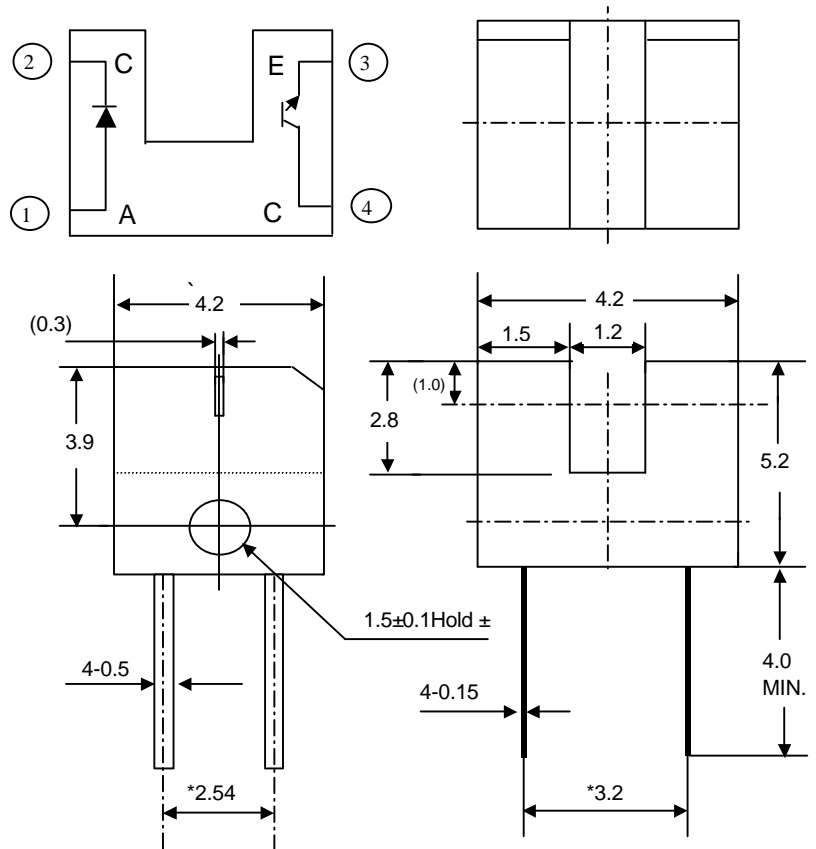
- Ultra-compact
- PWB mounting type package
- High sensing accuracy ( Slit width: 0.3mm )
- Gap between light emitter and detector: 1.2mm

### Applications

- Cameras
- Floppy disk drives
- Printer

### Package Dimensions

Unit : mm



### NOTE

1. Tolerance is  $\pm 0.25$  mm (.010") unless otherwise noted.
2. Burr's dimension : 0.15MAX
- 3.( ) : Reference dimensions
4. The dimensions indicated by \* refer to those measured from the lead base

### Absolute Maximum Ratings

@ $T_A = 25$

Parameter		Symbol	Maximum Rating	Unit
INPUT	Continuous Forward Current	$I_F$	50	mA
	Reverse Voltage	$V_R$	5	V
	Power Dissipation	$P_{ad}$	75	mW
OUTPUT	Collector-emitter breakdown voltage	$V_{(BR)CEO}$	30	V
	Emitter-Collector breakdown voltage	$V_{(BR)ECO}$	5	V
	Collector power dissipation	$P_C$	75	mW
Total power dissipation		$P_{TOT}$	100	mW
Operating Temperature Range		$T_{opr}$	-25 to + 85	
Storage Temperature Range		$T_{stg}$	-40 to + 100	
Soldering temperature		$T_{sol}$	260°C for 3 seconds	

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Unity Opto Technology Co., Ltd.

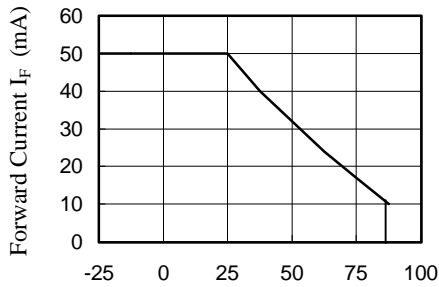
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Optical-Electrical Characteristics

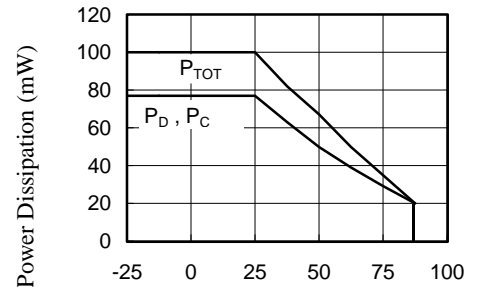
@T<sub>A</sub> =25

Parameter		symbol	Min.	Typ.	Max.	Unit.	Test Conditions
Input	Forward Voltage	V <sub>F</sub>		1.2	1.4	V	I <sub>F</sub> =20mA
	Reverse Current	I <sub>R</sub>			10	μA	V <sub>R</sub> =3V
Output	Collector Dark Current	I <sub>ceo</sub>			100	nA	V <sub>ce</sub> =10V
	Collector Emitter Saturation Voltage	V <sub>CE(SAT)</sub>			0.4	V	I <sub>c</sub> =0.1mA, E <sub>e</sub> =0.1mW/cm <sup>2</sup>
Transfer Characteristics	Collector Current	I <sub>c</sub> (on)	0.6		5.0	mA	I <sub>F</sub> =20mA, V <sub>ce</sub> =5V
	Response Time (RISE)	t <sub>r</sub>		50	150	μS	I <sub>c</sub> =100μA, V <sub>ce</sub> =5V
	Response Time (FALL)	t <sub>f</sub>		50	150	μS	R <sub>L</sub> =1KΩ

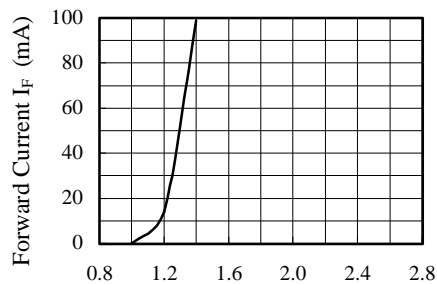
Typical Optical-Electrical Characteristic Curves



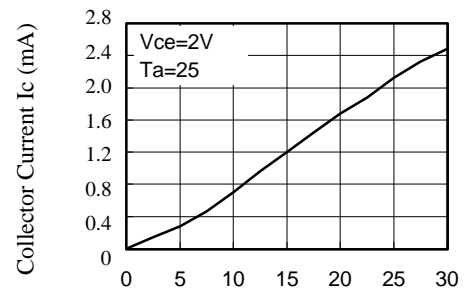
Ambient Temperature T<sub>A</sub>  
Fig.1 forward Current vs. Ambient Temperature



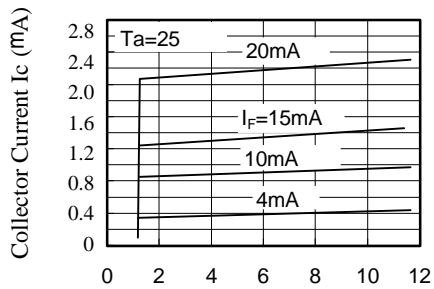
Ambient Temperature T<sub>A</sub> (°C)  
Fig.2 Power Dissipation vs Ambient Temperature



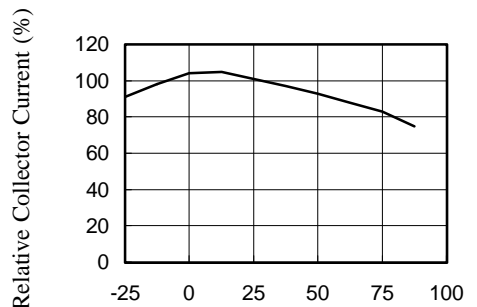
Forward Voltage V<sub>F</sub> (V)  
Fig.3 Forward Current vs Forward Voltage



Forward Current I<sub>F</sub> (mA)  
Fig.4 Collector Current vs Forward Current

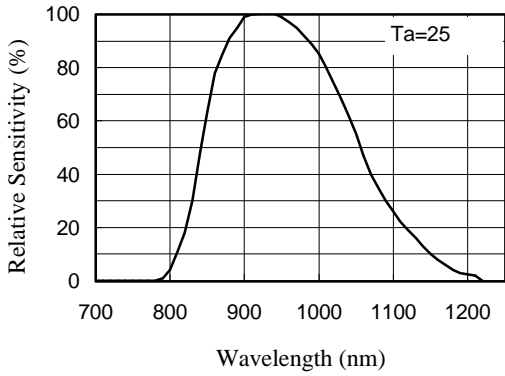
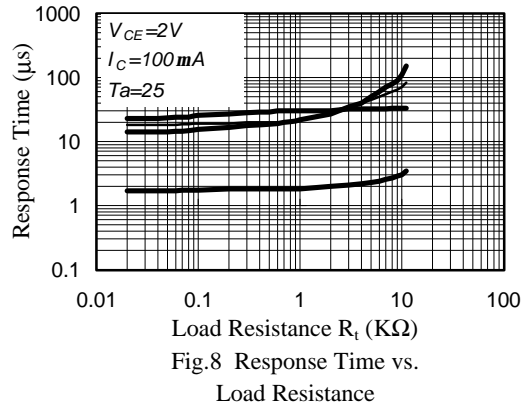
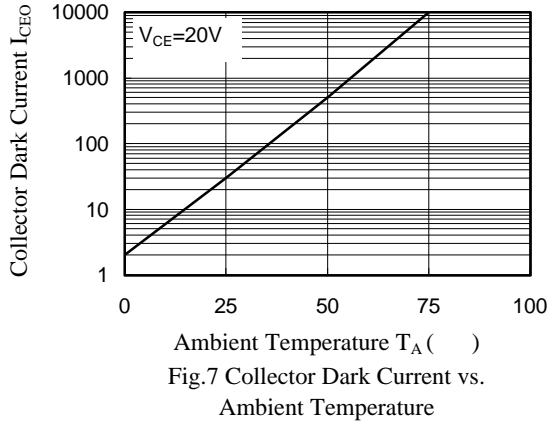


Collector-Emitter Voltage V<sub>ce</sub> (V)  
Fig.5 Collector Current vs. V<sub>ce</sub>

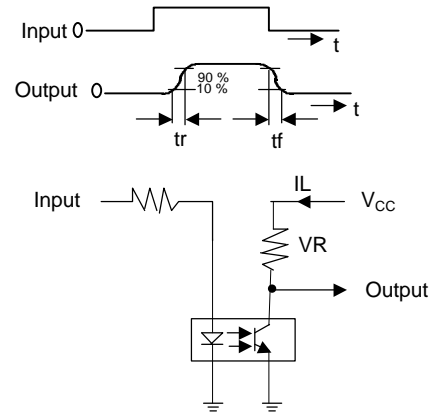


Ambient Temperature T<sub>A</sub> (°C)  
Fig.6 Relative Collector Current vs. T<sub>A</sub>

Typical Optical-Electrical Characteristic Curves



Response Time Measurement Circuit



Sensing Position Characteristics (Typical)

