

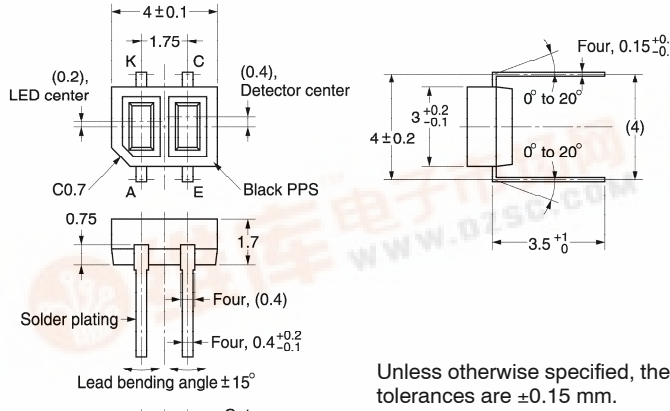
OMRON

# EE-SY124

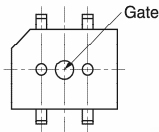
# Photomicrosensor (Reflective)

### ■ Dimensions

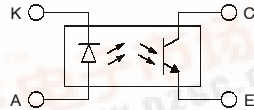
Note: All units are in millimeters unless otherwise indicated.



Unless otherwise specified, the tolerances are ±0.15 mm.



### Internal Circuit



Terminal No.	Name
A	Anode
K	Cathode
C	Collector
E	Emitter

### ■ Features

- Ultra-compact model with 1 mm sensing distance.

### ■ Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Rated value
Emitter	Forward current	I <sub>F</sub> 50 mA (see note 1)
	Pulse forward current	I <sub>FP</sub> 1 A (see note 2)
	Reverse voltage	V <sub>R</sub> 4 V
Detector	Collector-Emmitter voltage	V <sub>CEO</sub> 30 V
	Emmitter-Collector voltage	V <sub>ECO</sub> 5 V
	Collector current	I <sub>C</sub> 20 mA
	Collector dissipation	P <sub>C</sub> 75 mW (see note 1)
Ambient temperature	Operating	Topr -25°C to 85°C
	Storage	Tstg -40°C to 100°C
Soldering temperature	Tsol	260°C (see note 3)

- Note:
1. Refer to the temperature rating chart if the ambient temperature exceeds 25°C.
  2. The pulse width is 10 μs maximum with a frequency of 100 Hz.
  3. Complete soldering within 10 seconds.

### ■ Ordering Information

Description	Part number
Photomicrosensor (Reflective)	EE-SY124

### ■ Electrical and Optical Characteristics (Ta = 25°C)

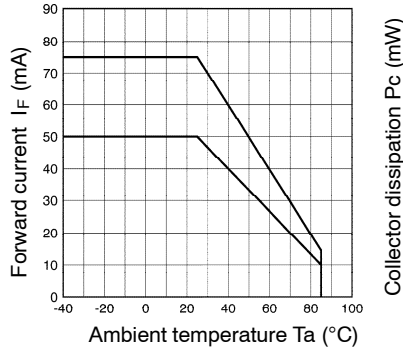
Item	Symbol	Value	Condition	
Emitter	Forward voltage	V <sub>F</sub> 1.2 V typ., 1.4 V max.	I <sub>F</sub> = 20 mA	
	Reverse current	I <sub>R</sub> 0.01 μA typ., 10 μA max.	V <sub>R</sub> = 4 V	
	Peak emission wavelength	λ <sub>p</sub> 950 nm typ.	I <sub>F</sub> = 4 mA	
Detector	Light current	I <sub>L</sub> 50 μA min., 300 μA max.	I <sub>F</sub> = 4 mA, V <sub>CE</sub> = 2 V Aluminum-deposited surface, d = 1 mm (see note)	
	Dark current	I <sub>D</sub> 2 nA typ., 200 nA max.	V <sub>CE</sub> = 10 V, 0 lx	
	Leakage current	I <sub>LEAK</sub> 200 nA max.	I <sub>F</sub> = 4 mA, V <sub>CE</sub> = 2 V with no reflection	
	Collector-Emmitter saturated voltage	V <sub>CE (sat)</sub>	---	---
	Peak spectral sensitivity wavelength	λ <sub>p</sub>	930 nm typ.	V <sub>CE</sub> = 10 V
Rising time	t <sub>r</sub>	35 μs typ.	V <sub>CC</sub> = 2 V, R <sub>L</sub> = 1 kΩ, I <sub>L</sub> = 100 μA	
Falling time	t <sub>f</sub>	25 μs typ.	V <sub>CC</sub> = 2 V, R <sub>L</sub> = 1 kΩ, I <sub>L</sub> = 100 μA	

Note: The letter "d" indicates the distance between the top surface of the sensor and the sensing object.

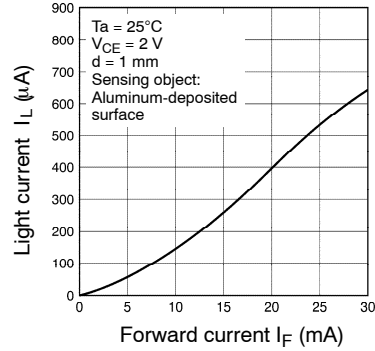


■ Engineering Data

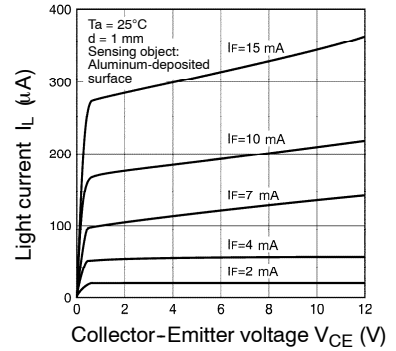
**Forward Current vs. Collector Dissipation Temperature Rating**



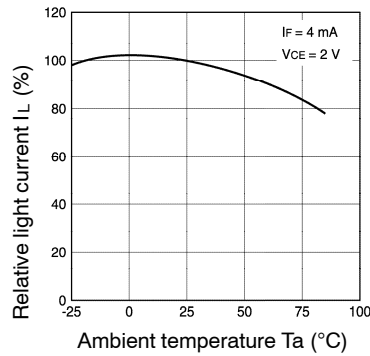
**Light Current vs. Forward Current Characteristics (Typical)**



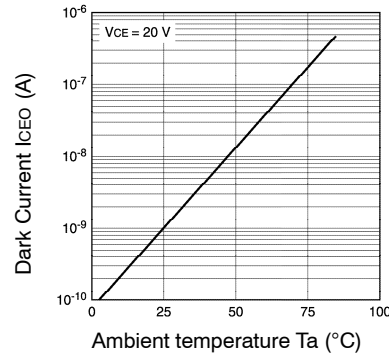
**Light Current vs. Collector-Emitter Voltage Characteristics (Typical)**



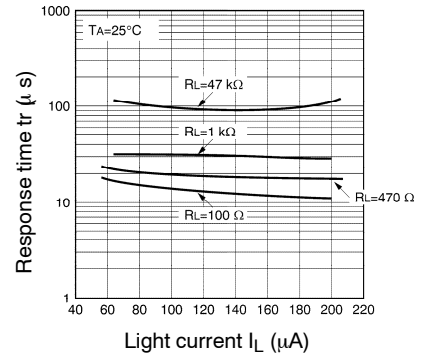
**Relative Light Current vs. Ambient Temperature Characteristics (Typical)**



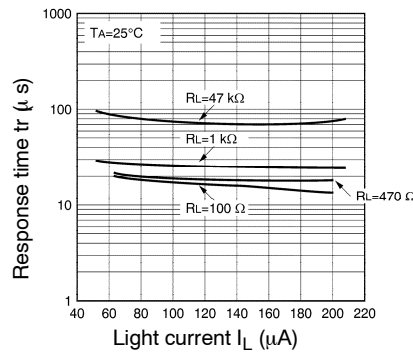
**Dark Current vs. Ambient Temperature Characteristics (Typical)**



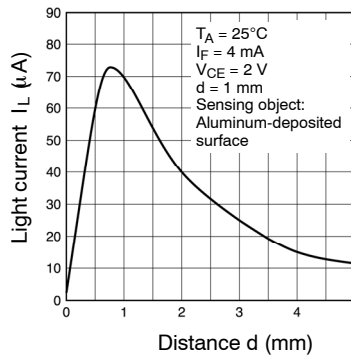
**Response Time vs. Load Resistance Characteristics (Typical)**



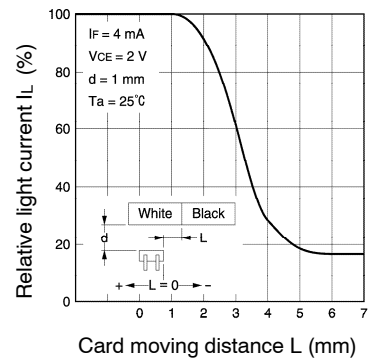
**Response Time vs. Load Resistance Characteristics (Typical)**



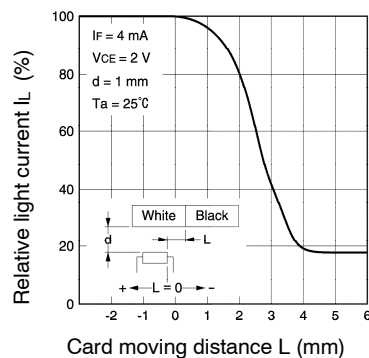
**Sensing Distance Characteristics (Typical)**



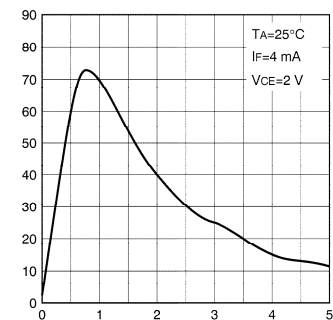
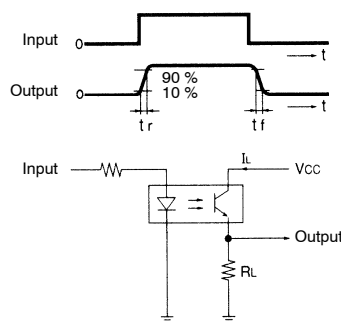
**Relative Light Current vs. Card Moving Distance (1)**



**Relative Collector Current vs. Card Moving Distance (2)**



**Response Time Measurement Circuit**



**NOTE: DIMENSIONS SHOWN ARE IN MILLIMETERS. To convert millimeters to inches divide by 25.4.**

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