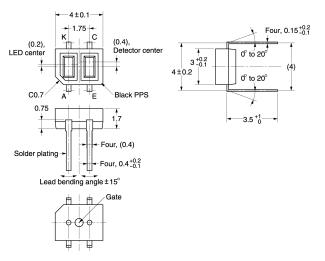
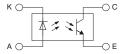
# Photomicrosensor (Reflective) **EE-SY124**

#### ■ Dimensions

Note: All units are in millimeters unless otherwise indicated.



#### **Internal Circuit**



Unless otherwise specified, the tolerances are  $\pm 0.15$  mm.

Terminal No.	Name	
Α	Anode	
K	Cathode	
С	Collector	
E	Emitter	

#### **■** Features

• Ultra-compact model.

#### ■ 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	$V_R$	4 V
Detector	Collector-Emitter voltage	V <sub>CEO</sub>	30 V
	Emitter-Collector voltage	$V_{ECO}$	5 V
	Collector current	I <sub>C</sub>	20 mA
	Collector dissipation	P <sub>C</sub>	75 mW (see note 1)
Ambient	Operating	Topr	–25°C to 85°C
temperature	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  $\mu s$  maximum with a frequency of 100 Hz.
  - 3. Complete soldering within 10 seconds.

#### Ordering Information

Description	Model
Photomicrosensor (reflective)	EE-SY124

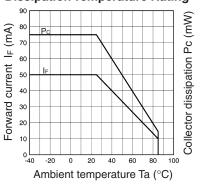
#### ■ Electrical and Optical Characteristics (Ta = 25°C)

Item		Symbol	Value	Condition
Emitter For	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	$\lambda_{P}$	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.	$I_F = 4 \text{ mA}, V_{CE} = 2 \text{ V}$ with no reflection
	Collector–Emitter saturated voltage	V <sub>CE</sub> (sat)		
	Peak spectral sensitivity wavelength	$\lambda_{P}$	930 nm typ.	V <sub>CE</sub> = 10 V
Rising time		tr	35 μs typ.	$V_{CC} = 2 \text{ V}, R_L = 1 \text{ k}\Omega, I_L = 100 \mu\text{A}$
Falling time	•	tf	25 μs typ.	$V_{CC} = 2 \text{ V}, R_L = 1 \text{ k}\Omega, I_L = 100 \mu\text{A}$

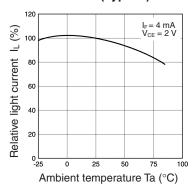
Note: The letter "d" indicates the distance between the top surface of the sensor and the sensing object.

#### **■** Engineering Data

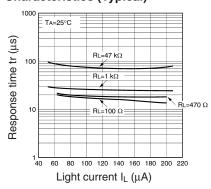
## Forward Current vs. Collector Dissipation Temperature Rating



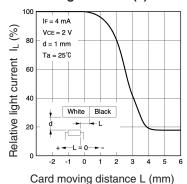
#### Relative Light Current vs. Ambient Temperature Characteristics (Typical)



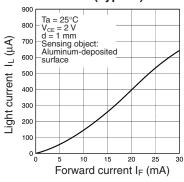
# Response Time vs. Load Resistance Characteristics (Typical)



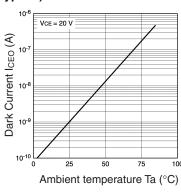
## Relative Collector Current vs. Card Moving Distance (2)



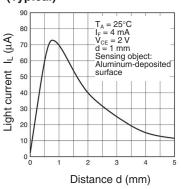
### Light Current vs. Forward Current Characteristics (Typical)



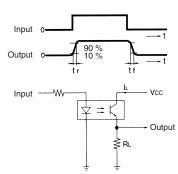
#### Dark Current vs. Ambient Temperature Characteristics (Typical)



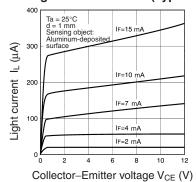
# Sensing Distance Characteristics (Typical)



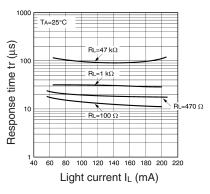
### Response Time Measurement Circuit



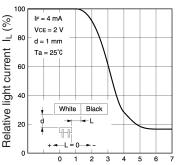
# Light Current vs. Collector–Emitter Voltage Characteristics (Typical)



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



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



Card moving distance L (mm)

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- paid by Buyer;

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