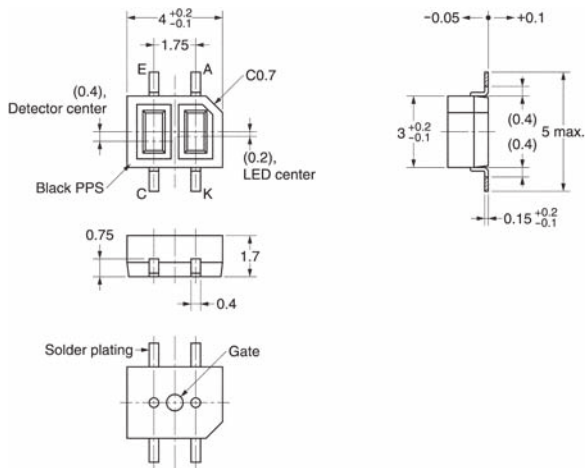


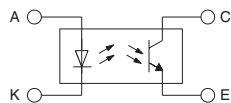
# Photomicrosensor (Reflective) EE-SY125

## ■ 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
A	Anode
K	Cathode
C	Collector
E	Emitter

## ■ Features

- Ultra-compact model.
- PCB surface mounting type

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

Item		Symbol	Rated value
Emitter	Forward current	$I_F$	50 mA (see note 1)
	Pulse forward current	$I_{FP}$	1 A (see note 2)
	Reverse voltage	$V_R$	4 V
Detector	Collector–Emitter voltage	$V_{CEO}$	30 V
	Emitter–Collector voltage	$V_{ECO}$	5 V
	Collector current	$I_C$	20 mA
	Collector dissipation	$P_C$	75 mW (see note 1)
Ambient temperature	Operating	$T_{opr}$	-25°C to 85°C
	Storage	$T_{stg}$	-40°C to 100°C
Soldering temperature		$T_{sol}$	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-SY125

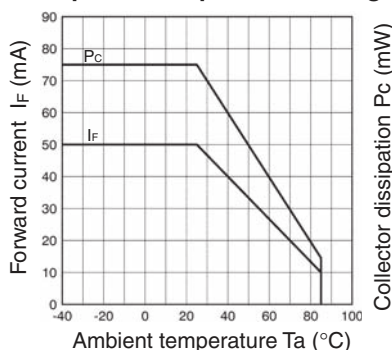
## ■ Electrical and Optical Characteristics (Ta = 25°C)

Item	Symbol	Value	Condition
Emitter	Forward voltage	$V_F$	1.2 V typ., 1.4 V max.
	Reverse current	$I_R$	0.01 $\mu$ A typ., 10 $\mu$ A max.
	Peak emission wavelength	$\lambda_P$	950 nm typ.
Detector	Light current	$I_L$	50 $\mu$ A min., 300 $\mu$ A max.
	Dark current	$I_D$	2 nA typ., 200 nA max.
	Leakage current	$I_{LEAK}$	200 nA max.
	Collector–Emitter saturated voltage	$V_{CE(sat)}$	---
	Peak spectral sensitivity wavelength	$\lambda_P$	930 nm typ.
Rising time	$t_r$	35 $\mu$ s typ.	$V_{CC} = 2$ V, $R_L = 1$ k $\Omega$ , $I_L = 100$ $\mu$ A
Falling time	$t_f$	25 $\mu$ s typ.	$V_{CC} = 2$ V, $R_L = 1$ k $\Omega$ , $I_L = 100$ $\mu$ A

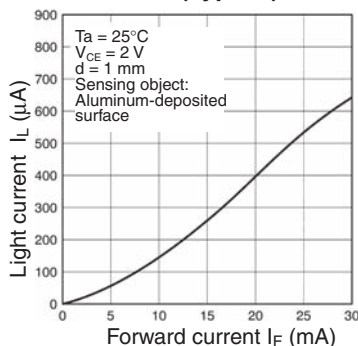
**Note:** The letter “d” indicates the distance between the top surface of the sensor and the sensing object.

Engineering Data

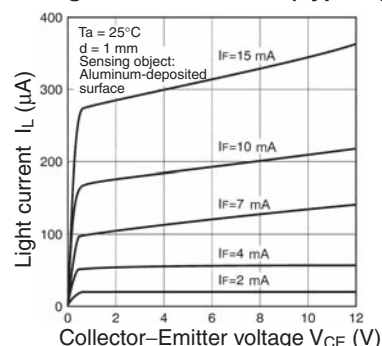
Forward Current vs. Collector Dissipation Temperature Rating



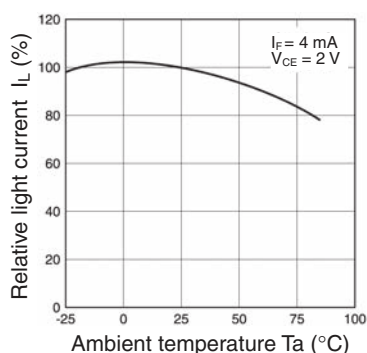
Light Current vs. Forward Current Characteristics (Typical)



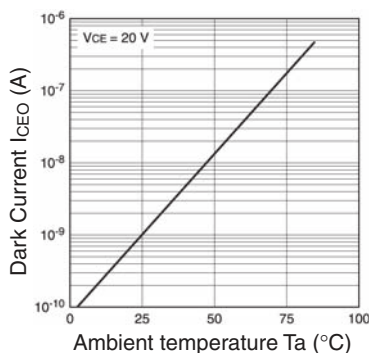
Light Current vs. Collector-Emitter Voltage Characteristics (Typical)



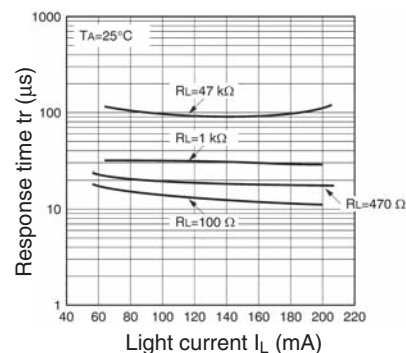
Relative Light Current vs. Ambient Temperature Characteristics (Typical)



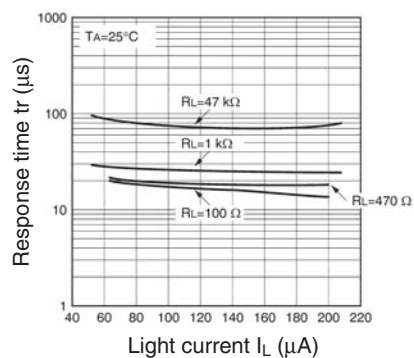
Dark Current vs. Ambient Temperature Characteristics (Typical)



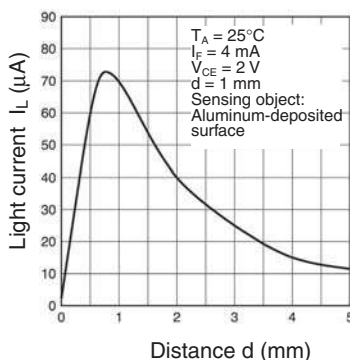
Response Time vs. Load Resistance Characteristics (Typical)



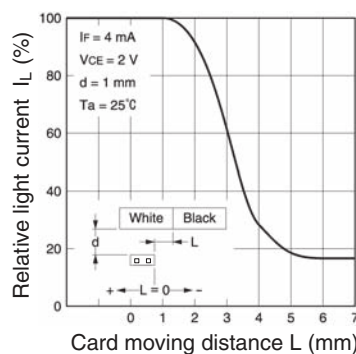
Response Time vs. Load Resistance Characteristics (Typical)



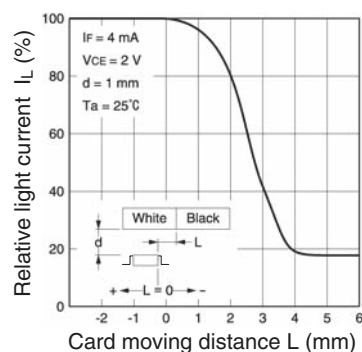
Sensing Distance Characteristics (Typical)



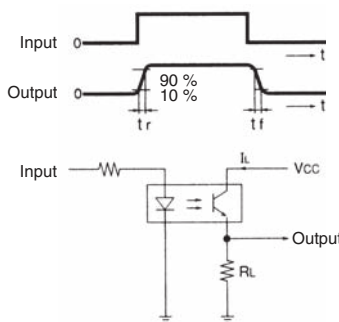
Relative Light Current vs. Card Moving Distance (1)



Relative Collector Current vs. Card Moving Distance (2)



Response Time Measurement Circuit

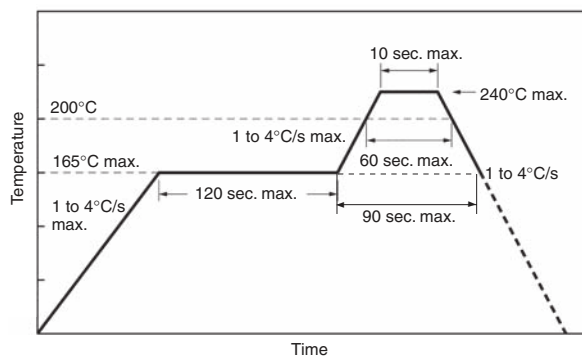


# Precautions

## ■ Soldering Information

### Reflow soldering

- Set the reflow oven so that the temperature profile shown in the following chart is obtained for the upper surface of the product being soldered.



### Manual soldering

- Use a soldering iron of less than 25 W, and keep the temperature of the iron tip at 260°C or below.
- Solder each point for a maximum of three seconds.
- After soldering, allow the product to return to room temperature before handling it.

### Storage

To protect the product from the effects of humidity until the package is opened, dry-box storage is recommended. If this is not possible, store the product under the following conditions:

Temperature: 5 to 30°C

Humidity: 70% max.

The product is packed in a humidity-proof envelope. Reflow soldering must be done within 48 hours after opening the envelope, during which time the product must be stored at 5 to 25°C at 60% maximum humidity.

If it is necessary to store the product after opening the envelope, use dry-box storage or reseal the envelope at 5 to 30°C at 70% maximum humidity within two weeks.

### Baking

If a product has remained packed in a humidity-proof envelope for six months or more, or if more than 48 hours have lapsed since the envelope was opened, bake the product under the following conditions before use only one time:

Bulk: 125°C for 16 to 24 hours

MEMO

A large grid of dashed lines for taking notes, consisting of 20 columns and 25 rows of squares.

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