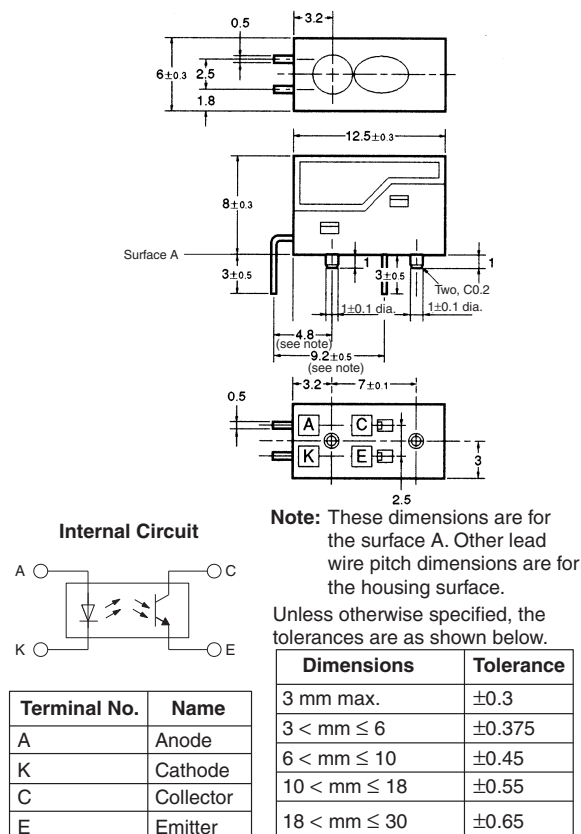


# Photomicrosensor (Reflective) EE-SY169

## ■ Dimensions

Note: All units are in millimeters unless otherwise indicated.



## ■ Features

- High-quality model with plastic lenses.
- Highly precise sensing range with a tolerance of ±0.6 mm horizontally and vertically.
- With a red LED sensing dyestuff-type inks.
- Limited reflective model.
- For lesser LED forward current, use EE-SY169B.
- RoHS Compliant.

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

Item		Symbol	Rated value
Emitter	Forward current	$I_F$	40 mA (see note 1)
	Pulse forward current	$I_{FP}$	300 mA (see note 2)
	Reverse voltage	$V_R$	3 V
Detector	Collector–Emitter voltage	$V_{CEO}$	30 V
	Emitter–Collector voltage	$V_{ECO}$	---
	Collector current	$I_C$	20 mA
	Collector dissipation	$P_C$	100 mW (see note 1)
Ambient temperature	Operating	$T_{opr}$	0°C to 70°C
	Storage	$T_{stg}$	-20°C to 80°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 μs maximum with a frequency of 100 Hz.  
 3. Complete soldering within 10 seconds.

## ■ Ordering Information

Description	Model
Photomicrosensor (reflective)	EE-SY169

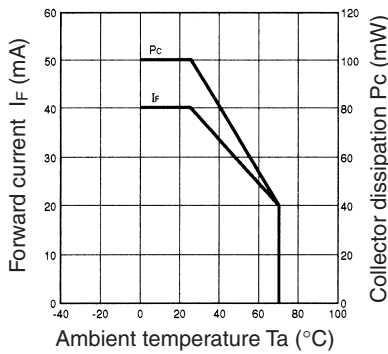
## ■ Electrical and Optical Characteristics (Ta = 25°C)

Item		Symbol	Value	Condition
Emitter	Forward voltage	$V_F$	1.85 V typ., 2.3 V max.	$I_F = 20$ mA
	Reverse current	$I_R$	0.01 μA typ., 10 μA max.	$V_R = 3$ V
	Peak emission wavelength	$\lambda_P$	660 nm typ.	$I_F = 20$ mA
Detector	Light current	$I_L$	160 μA min., 2,000 μA max.	$I_F = 20$ mA, $V_{CE} = 5$ V White paper with a reflection ratio of 90%, d = 4 mm (see note)
	Dark current	$I_D$	2 nA typ., 200 nA max.	$V_{CE} = 5$ V, 0 lx
	Leakage current	$I_{LEAK}$	2 μA max.	$I_F = 20$ mA, $V_{CE} = 5$ V with no reflection
	Collector–Emitter saturated voltage	$V_{CE(sat)}$	---	---
	Peak spectral sensitivity wavelength	$\lambda_P$	850 nm typ.	$V_{CE} = 5$ V
Rising time		tr	30 μs typ.	$V_{CC} = 5$ V, $R_L = 1$ kΩ, $I_L = 1$ mA
Falling time		tf	30 μs typ.	$V_{CC} = 5$ V, $R_L = 1$ kΩ, $I_L = 1$ mA

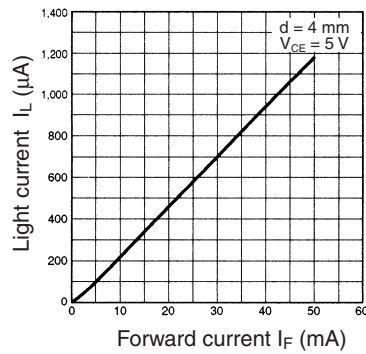
Note: The letter “d” indicates the distance between the top surface of the sensor and the sensing object.

■ Engineering Data

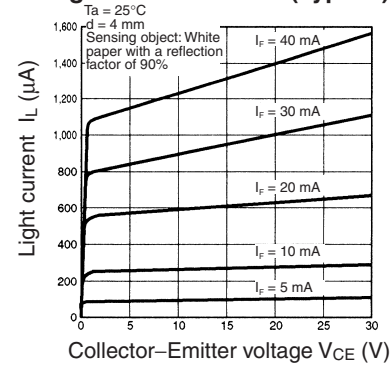
Forward Current vs. Collector Dissipation Temperature Rating



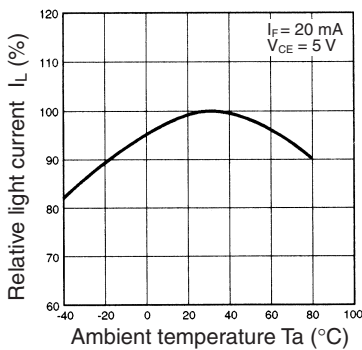
Light Current vs. Forward Current Characteristics (Typical)



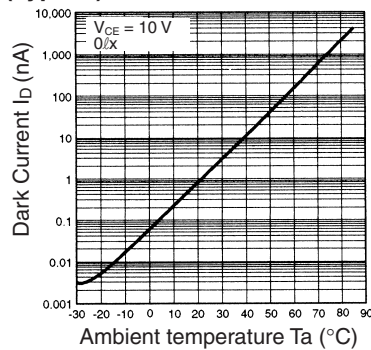
Light Current vs. Collector-Emitter Voltage Characteristics (Typical)



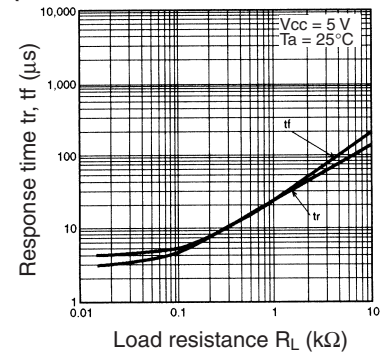
Relative Light Current vs. Ambient Temperature Characteristics (Typical)



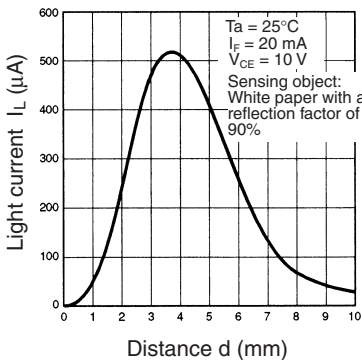
Dark Current vs. Ambient Temperature Characteristics (Typical)



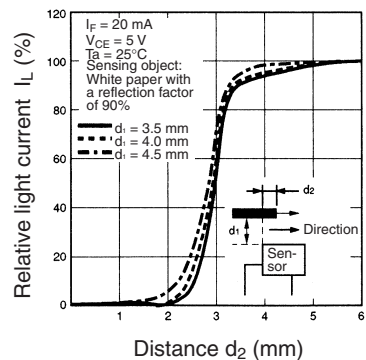
Response Time vs. Load Resistance Characteristics (Typical)



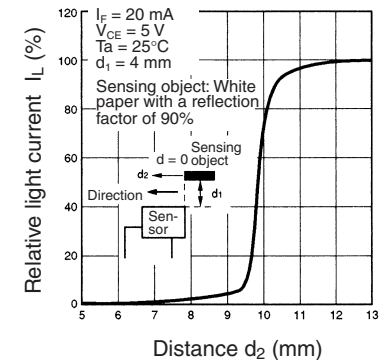
Sensing Distance Characteristics (Typical)



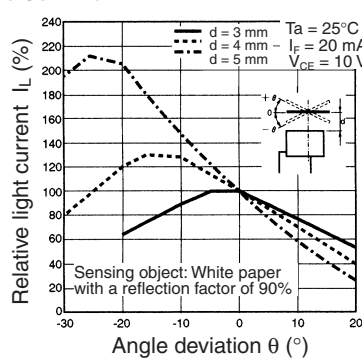
Sensing Position Characteristics (Typical)



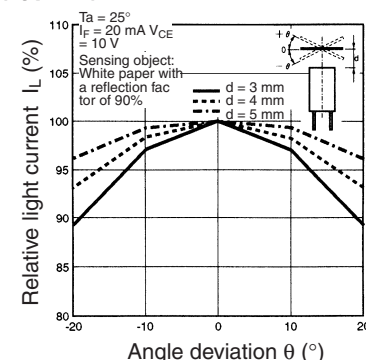
Sensing Position Characteristics (Typical)



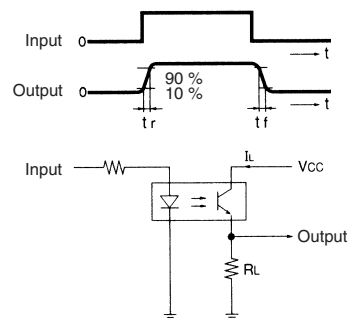
Sensing Angle Characteristics (Typical)



Sensing Angle Characteristics (Typical)



Response Time Measurement Circuit





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**ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.**  
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

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10/10

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