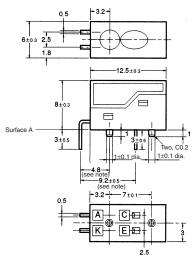
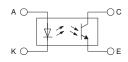
Photomicrosensor (Reflective)

Dimensions

Note: All units are in millimeters unless otherwise indicated.



Internal Circuit



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

Note: These dimensions are for the surface A. Other lead wire pitch dimensions are for the housing surface.

Unless otherwise specified, the tolerances are as shown below.

Dimensions	Tolerance
3 mm max.	±0.3
$3 < mm \le 6$	±0.375
$6 < mm \le 10$	±0.45
$10 < mm \le 18$	±0.55
18 < mm ≤ 30	±0.65

■ 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		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	Operating	T _{opr}	0°C to 70°C
temperature	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	

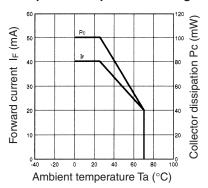
■ Electrical and Optical Characteristics (Ta = 25°C)

	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	λ_{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	λ_{P}	850 nm typ.	V _{CE} = 5 V
Rising time		tr	30 μs typ.	$V_{CC} = 5 \text{ V}, \text{ R}_{L} = 1 \text{ k}\Omega, \text{ I}_{L} = 1 \text{ mA}$
Falling time		tf	30 μs typ.	$V_{CC} = 5 \text{ V}, \text{ R}_{L} = 1 \text{ k}\Omega, \text{ I}_{L} = 1 \text{ mA}$

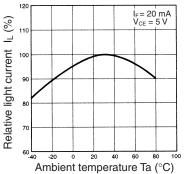
Note: The letter "d" indicates the distance between the top surface of the sensor and the sensing object.

■ Engineering Data

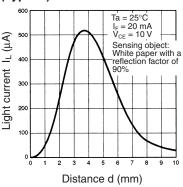
Forward Current vs. Collector Dissipation Temperature Rating



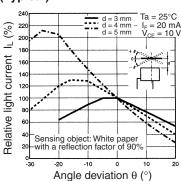
Relative Light Current vs. **Ambient Temperature** Characteristics (Typical)



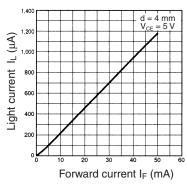
Sensing Distance Characteristics (Typical)



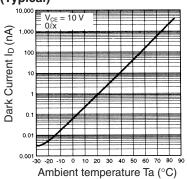
Sensing Angle Characteristics (Typical)



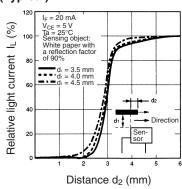
Light Current vs. Forward Current Characteristics (Typical)



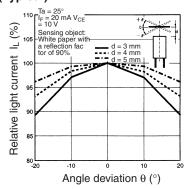
Dark Current vs. Ambient **Temperature Characteristics** (Typical)



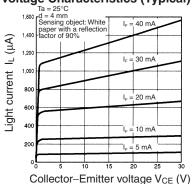
Sensing Position Characteristics (Typical)



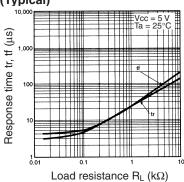
Sensing Angle Characteristics (Typical)



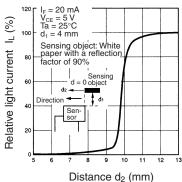
Light Current vs. Collector-Emitter Voltage Characteristics (Typical)



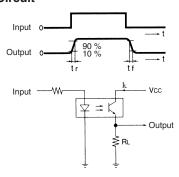
Response Time vs. Load **Resistance Characteristics** (Typical)

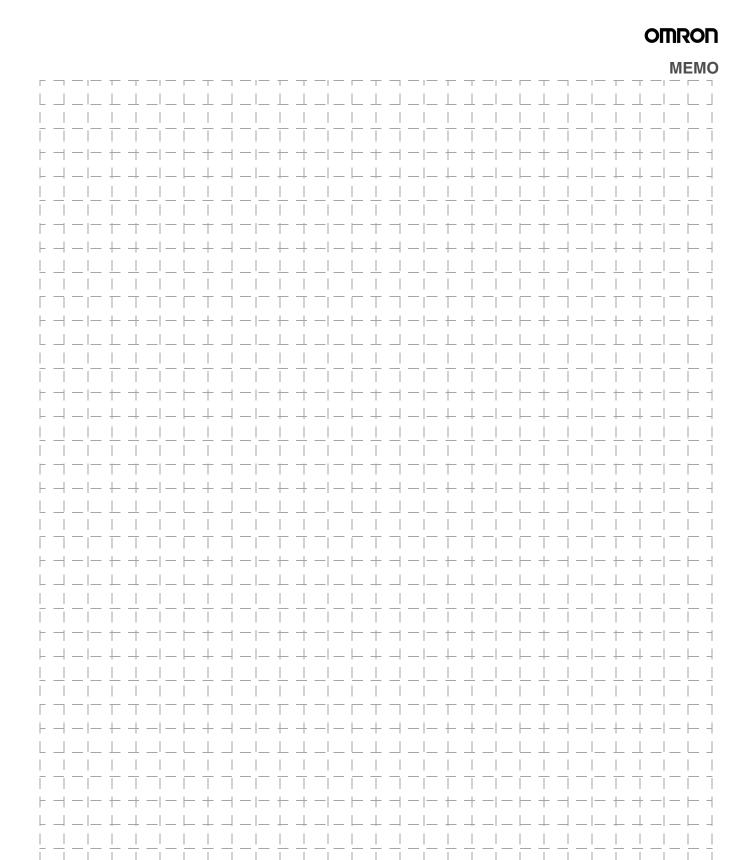


Sensing Position Characteristics (Typical)



Response Time Measurement Circuit







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Photomicrosensor (Reflective) **EE-SY169**