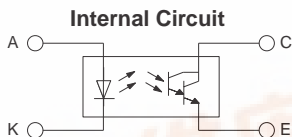
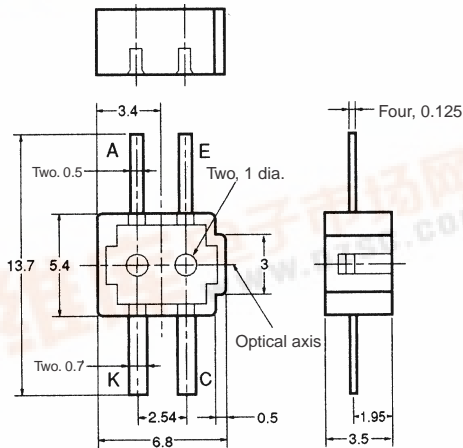


# Photomicrosensor (Reflective) EE-SY201

## ■ Dimensions

Note: All units are in millimeters unless otherwise indicated.



Unless otherwise specified, the tolerances are as shown below.

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

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

## ■ Features

- The LED requires a forward current of only 5 mA due to the Photo-Darlington transistor built into the detector.
- With a red LED light source.

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

Item	Symbol	Rated value
Emitter	Forward current	$I_F$ 15 mA (see note 1)
	Pulse forward current	$I_{FP}$ ---
	Reverse voltage	$V_R$ 4 V
Detector	Collector-Emitter voltage	$V_{CEO}$ 24 V
	Emitter-Collector voltage	$V_{ECO}$ ---
	Collector current	$I_C$ 20 mA
	Collector dissipation	$P_C$ 50 mW (see note 1)
Ambient temperature	Operating	$T_{opr}$ -20°C to 60°C
	Storage	$T_{stg}$ -20°C to 80°C
Soldering temperature	$T_{sol}$	260°C (see note 2)

- Note: 1. Refer to the temperature rating chart if the ambient temperature exceeds 25°C.  
2. Complete soldering within 10 seconds.

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

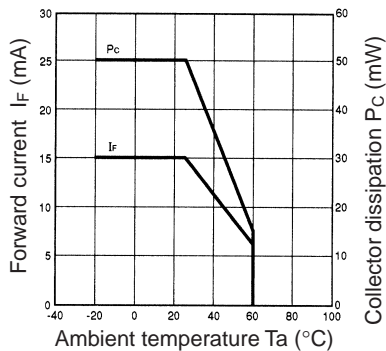
Item	Symbol	Value	Condition	
Emitter	Forward voltage	$V_F$ 2.0 V typ., 2.6 V max.	$I_F = 15$ mA	
	Reverse current	$I_R$ 0.01 $\mu$ A typ., 5 $\mu$ A max.	$V_R = 4$ V	
	Peak emission wavelength	$\lambda_P$ 700 nm typ.	$I_F = 10$ mA	
Detector	Light current	$I_L$ 0.3 $\mu$ A min., 8.0 $\mu$ A max.	$I_F = 5$ mA, $V_{CE} = 10$ V White paper with a reflection ratio of 90%, $d = 4$ mm (see note)	
	Dark current	$I_D$ 2 nA typ., 250 nA max.	$V_{CE} = 10$ V, 0 lx	
	Leakage current	$I_{LEAK}$ ---	---	
	Collector-Emitter saturated voltage	$V_{CE} (sat)$	---	---
	Peak spectral sensitivity wavelength	$\lambda_P$	750 nm typ.	$V_{CE} = 10$ V
Rising time	$t_r$	180 $\mu$ s typ.	$V_{CC} = 5$ V, $R_L = 100 \Omega$ , $I_L = 1$ mA	
Falling time	$t_f$	60 $\mu$ s typ.	$V_{CC} = 5$ V, $R_L = 100 \Omega$ , $I_L = 1$ mA	

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

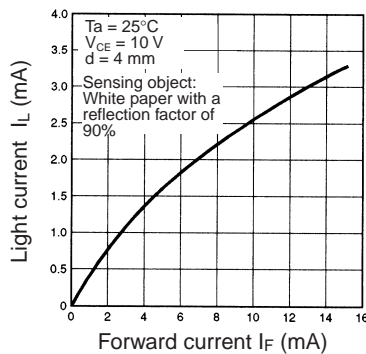


■ Engineering Data

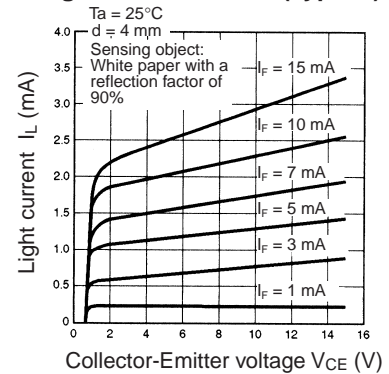
Forward Current vs. Collector Dissipation Temperature Rating



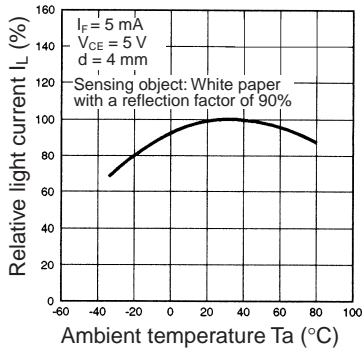
Light Current vs. Forward Current Characteristics (Typical)



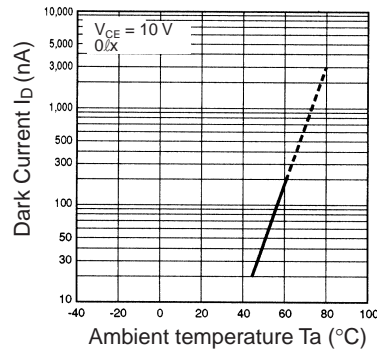
Light Current vs. Collector-Emitter Voltage Characteristics (Typical)



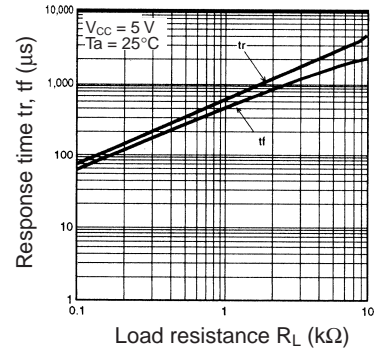
Relative Light Current vs. Ambient Temperature Characteristics (Typical)



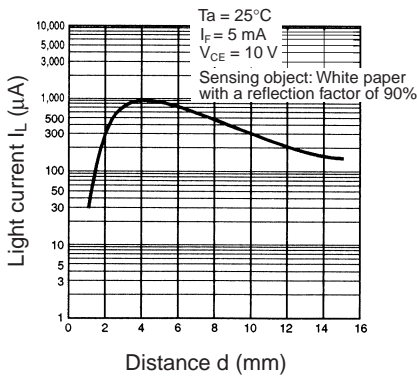
Dark Current vs. Ambient Temperature Characteristics (Typical)



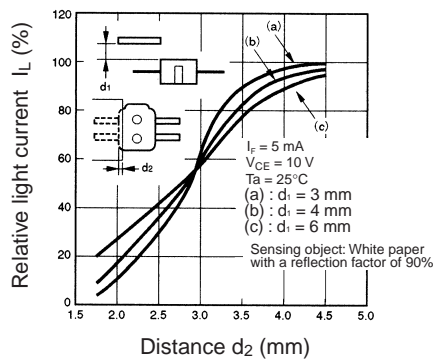
Response Time vs. Load Resistance Characteristics (Typical)



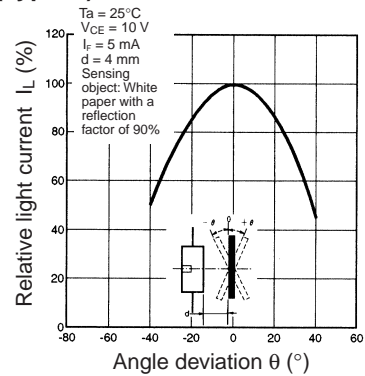
Sensing Distance Characteristics (Typical)



Sensing Position Characteristics (Typical)



Sensing Angle Characteristics (Typical)



Response Time Measurement Circuit

