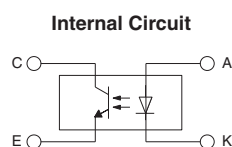
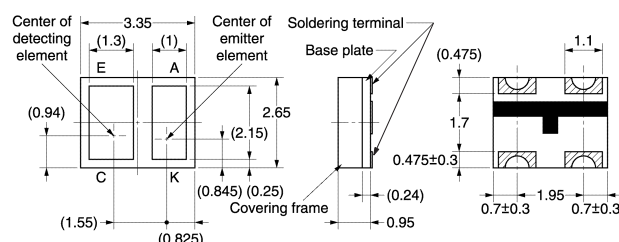


Photomicrosensor (Reflective) EE-SY193

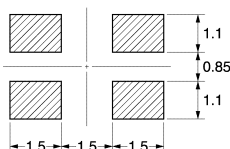
■ Dimensions

Note: All units are in millimeters unless otherwise indicated.



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

Recommended soldering patterns



Unless otherwise specified, the tolerances are ± 0.2 mm.

■ Features

- Ultra-compact model.
- PCB surface mounting type.
- RoHS Compliant.

■ Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Rated value
Emitter	Forward current	I_F 25 mA (see note 1)
	Pulse forward current	I_{FP} 100 mA (see note 2)
	Reverse voltage	V_R 6 V
Detector	Collector-Emitter voltage	V_{CEO} 18 V
	Emitter-Collector voltage	V_{ECO} 4 V
	Collector current	I_C 20 mA
	Collector dissipation	P_C 75 mW (see note 1)
Ambient temperature	Operating	T_{opr} -30°C to 80°C
	Storage	T_{stg} -40°C to 85°C
	Reflow soldering	T_{sol} 220°C (see note 3)
	Manual soldering	T_{sol} 300°C (see note 3)

Note: 1. Refer to the temperature rating chart if the ambient temperature exceeds 25°C.

2. Duty: 1/100; Pulse width: 0.1 ms

3. Complete soldering within 10 seconds for reflow soldering and within 3 seconds for manual soldering.

■ Ordering Information

Description	Model
Photomicrosensor (reflective)	EE-SY193

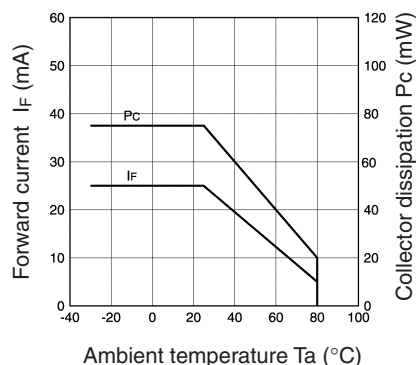
■ Electrical and Optical Characteristics (Ta = 25°C)

Item	Symbol	Value	Condition
Emitter	Forward voltage	V_F 1.1 V typ., 1.3 V max.	$I_F = 4$ mA
	Reverse current	I_R 10 μ A max.	$V_R = 6$ V
	Peak emission wavelength	λ_P 940 nm typ.	$I_F = 20$ mA
Detector	Light current	I_L 100 μ A min., 150 μ A typ., 360 μ A max.	Aluminum-deposited surface, $I_F = 4$ mA, $V_{CE} = 2$ V, $d = 1$ mm (see note)
	Dark current	I_D 100 nA max.	$V_{CE} = 10$ V, 0 lx
	Leakage current	I_{LEAK} 1 μ A max.	$I_F = 4$ mA, $V_{CE} = 2$ V
	Collector-Emitter saturated voltage	$V_{CE(sat)}$ ---	---
	Peak spectral sensitivity wavelength	λ_P 900 nm typ.	---
	Rising time	t_r 25 μ s typ.	$V_{CC} = 2$ V, $R_L = 1$ k Ω ,
	Falling time	t_f 30 μ s typ.	$V_{CC} = 2$ V, $R_L = 1$ k Ω ,

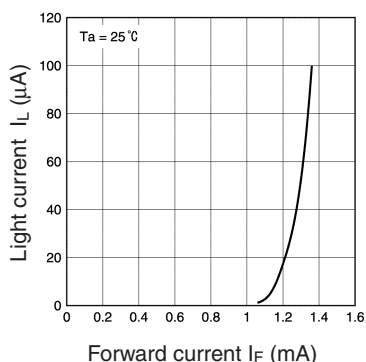
Note: The letter "d" indicates the distance between the top surface of the sensor and the sensing object.

Engineering Data

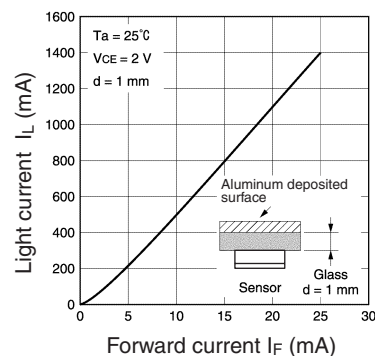
Forward Current vs. Collector Dissipation Temperature Rating



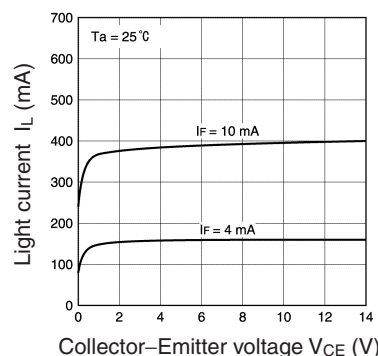
Forward Current vs. Forward Voltage Characteristics (Typical)



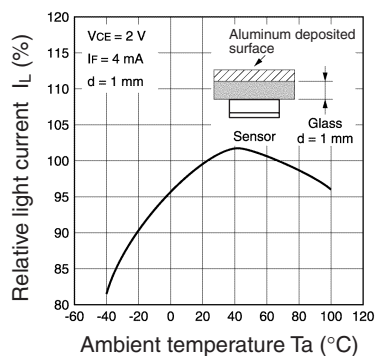
Light Current vs. Forward Current Characteristics (Typical)



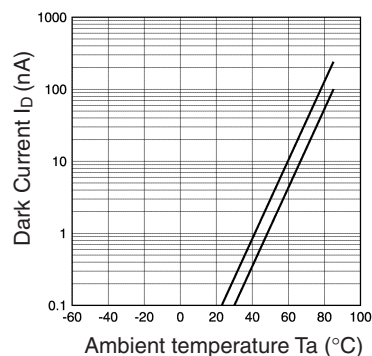
Light Current vs. Collector–Emitter Voltage Characteristics (Typical)



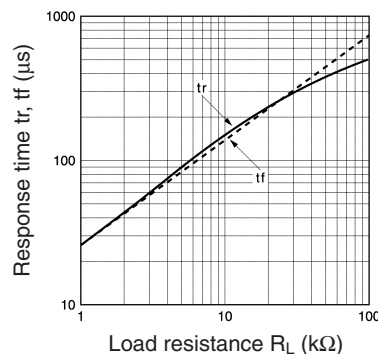
Relative Light Current vs. Ambient Temperature Characteristics (Typical)



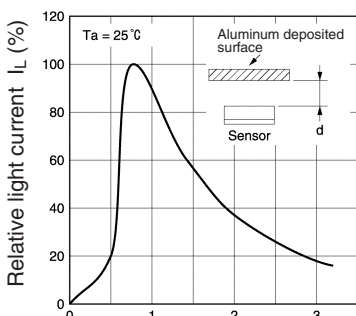
Dark Current vs. Ambient Temperature Characteristics (Typical)



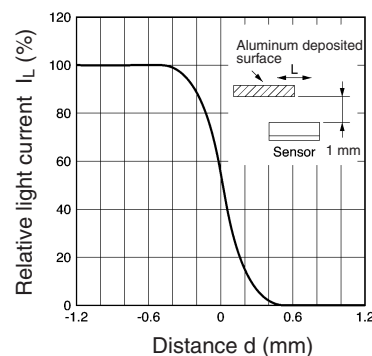
Response Time vs. Load Resistance Characteristics (Typical)



Sensing Distance Characteristics (Typical)



Sensing Position Characteristics (Typical)



Response Time Measurement Circuit

