# OMRON

Photomicrosensor (Transmissive)
EE-SX1106

⚠ **Be sure to read *Precautions* on page 25.**

■ Dimensions

Note: All units are in millimeters unless otherwise indicated.

Internal Circuit

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

Unless otherwise specified,
the tolerances are ±0.2 mm.
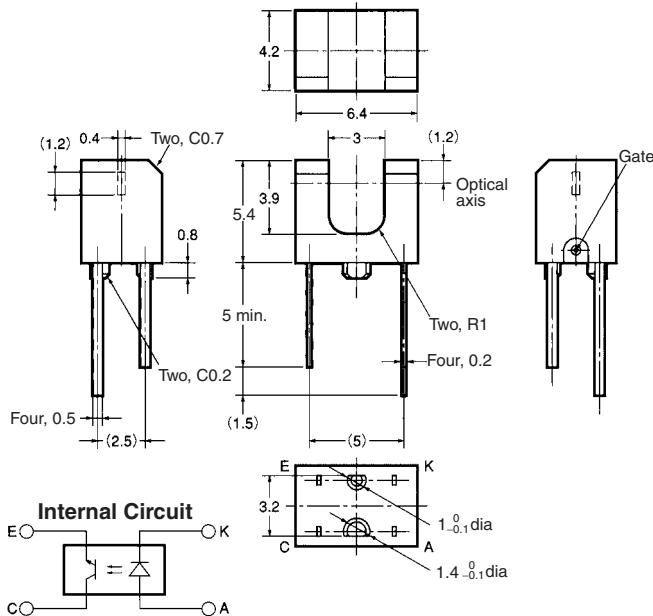
■ Features

- Ultra-compact with a slot width of 3 mm.
- PCB mounting type.
- High resolution with a 0.4-mm-wide aperture.

■ 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}	---
	Reverse voltage	V_R	5 V
Detector	Collector–Emitter voltage	V_{CEO}	30 V
	Emitter–Collector voltage	V_{ECO}	4.5 V
	Collector current	I_C	30 mA
	Collector dissipation	P_C	80 mW (see note 1)
Ambient temperature	Operating	Topr	−25°C to 85°C
	Storage	Tstg	−30°C to 85°C
Soldering temperature		Tsol	260°C (see note 2)

Note: 1. Refer to the temperature rating chart if the ambient temperature exceeds 25°C.
   **2.** Complete soldering within 3 seconds.

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

| Item		Symbol	Value	Condition
Emitter	Forward voltage	V_F	1.3 V typ., 1.6 V max.	$I_F = 50$ mA
	Reverse current	I_R	10 µA max.	$V_R = 5$ V
	Peak emission wavelength	λ_P	950 nm typ.	$I_F = 50$ mA
Detector	Light current	I_L	0.2 mA min.	$I_F = 20$ mA, $V_{CE} = 5$ V
	Dark current	I_D	500 nA max.	$V_{CE} = 10$ V, 0 ℓx
	Leakage current	I_{LEAK}	---	---
	Collector–Emitter saturated voltage	V_{CE} (sat)	0.4 V max.	$I_F = 20$ mA, $I_L = 0.1$ mA
	Peak spectral sensitivity wavelength	λ_P	800 nm typ.	$V_{CE} = 5$ V
Rising time		tr	10 µs typ.	$V_{CC} = 5$ V, $R_L = 100$ Ω, $I_F = 20$ mA
Falling time		tf	10 µs typ.	$V_{CC} = 5$ V, $R_L = 100$ Ω, $I_F = 20$ mA

■ Engineering Data

### Forward Current vs. Collector Dissipation Temperature Rating

Forward current I_F (mA) / Collector dissipation P_C (mW)
I_F
P_C
Ambient temperature Ta (°C)
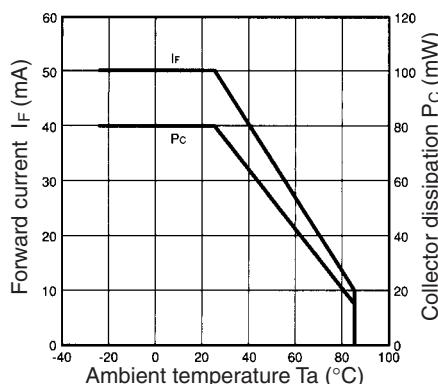
Forward Current vs. Forward Voltage Characteristics (Typical)

Forward current I_F (mA)
75°C
25°C
−25°C
Forward voltage V_F (V)
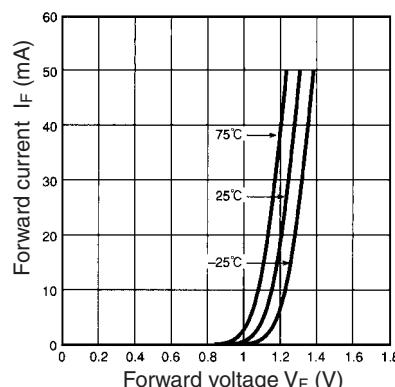
Light Current vs. Forward Current Characteristics (Typical)

Ta = 25°C
V_{CE} = 5 V
Light current I_L (mA)
Forward current I_F (mA)
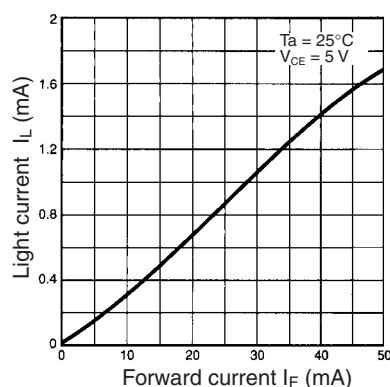
Light Current vs. Collector−Emitter Voltage Characteristics (Typical)

Ta = 25°C
Light current I_L (mA)
I_F = 25 mA
I_F = 20 mA
I_F = 15 mA
I_F = 10 mA
I_F = 5 mA
Collector−Emitter voltage V_{CE} (V)
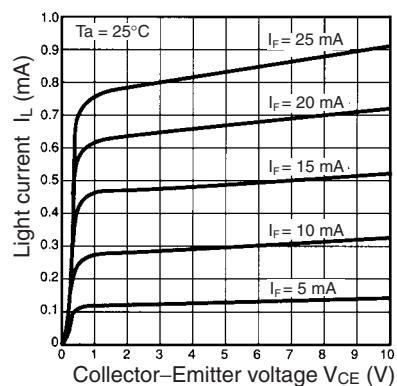
Relative Light Current vs. Ambient Temperature Characteristics (Typical)

I_F = 20 mA
V_{CE} = 5 V
Relative light current I_L (%)
Ambient temperature Ta (°C)

Dark Current vs. Ambient Temperature Characteristics (Typical)
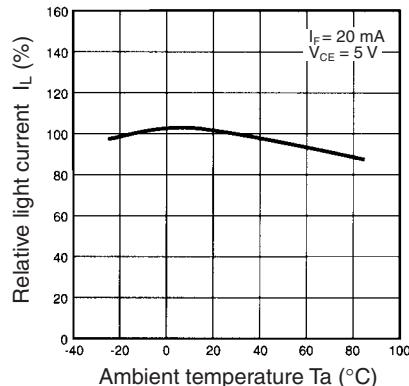
Dark current I_D (nA)
V_{CE} = 30 V
V_{CE} = 20 V
V_{CE} = 10 V
Ambient temperature Ta (°C)
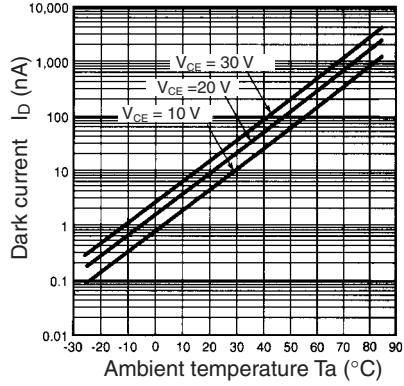
Response Time vs. Light Current Characteristics (Typical)
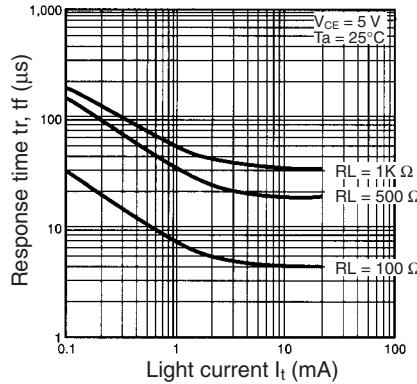
V_{CE} = 5 V
Ta = 25°C
Response time tr, tf (μs)
RL = 1K Ω
RL = 500 Ω
RL = 100 Ω
Light current I_t (mA)

Sensing Position Characteristics (Typical)

I_F = 20 mA
V_{CE} = 5 V
Ta = 25°C
Relative light current I_L (%)
d
Distance d (mm)

Sensing Position Characteristics (Typical)

I_F = 20 mA
V_{CE} = 5 V
Ta = 25°C
Relative light current I_L (%)
d
Distance d (mm)
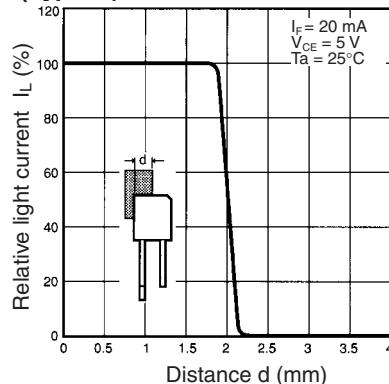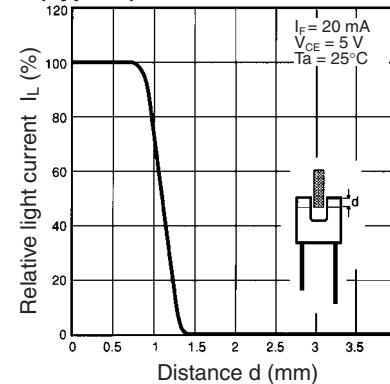
Response Time Measurement Circuit

Input
Output
90 %
10 %
tr
tf
Input
I_L
Vcc
Output
RL