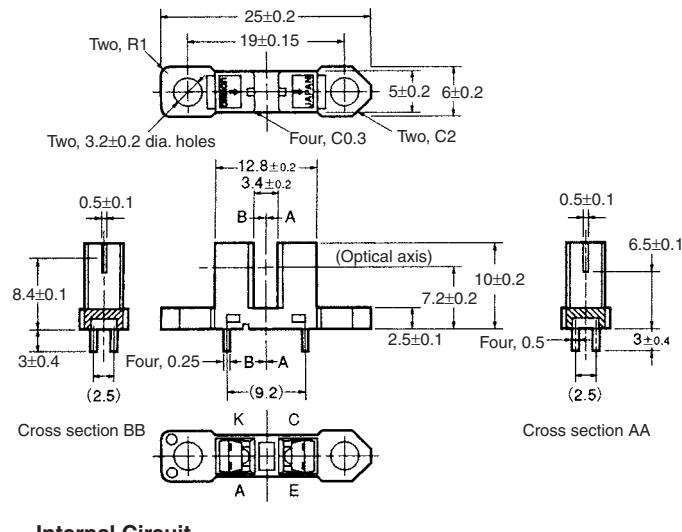


# Photomicrosensor (Transmissive) EE-SX1088

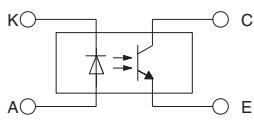
**⚠ Be sure to read *Precautions* on page 25.**

## ■ Dimensions

Note: All units are in millimeters unless otherwise indicated.



Internal Circuit



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     |

## ■ Features

- General-purpose model with a 3.4-mm-wide slot.
- Mounts to PCBs or connects to connectors.
- High resolution with a 0.5-mm-wide aperture.
- OMRON's XK8-series Connectors can be connected without soldering. Contact your OMRON representative for information on obtaining XK8-series Connectors.

## ■ Absolute Maximum Ratings ( $T_a = 25^\circ\text{C}$ )

|                       | Item                      | Symbol    | Rated value            |
|-----------------------|---------------------------|-----------|------------------------|
| Emitter               | Forward current           | $I_F$     | 50 mA<br>(see note 1)  |
|                       | Pulse forward current     | $I_{FP}$  | 1 A<br>(see note 2)    |
|                       | Reverse voltage           | $V_R$     | 4 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<br>(see note 1) |
| Ambient temperature   | Operating                 | $T_{opr}$ | -25°C to 85°C          |
|                       | Storage                   | $T_{stg}$ | -30°C to 100°C         |
| Soldering temperature |                           | $T_{sol}$ | 260°C<br>(see note 3)  |

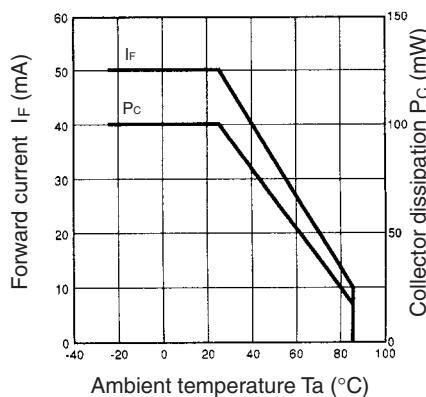
- Note:
- Refer to the temperature rating chart if the ambient temperature exceeds 25°C.
  - The pulse width is 10  $\mu\text{s}$  maximum with a frequency of 100 Hz.
  - Complete soldering within 10 seconds.

## ■ Electrical and Optical Characteristics ( $T_a = 25^\circ\text{C}$ )

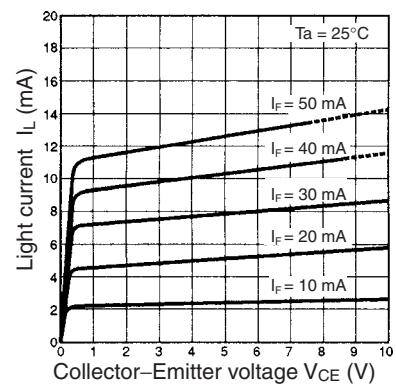
|              | Item                                 | Symbol                | Value  | Condition  |
|--------------|--------------------------------------|-----------------------|--|--|
| Emitter      | Forward voltage                      | $V_F$                 | 1.2 V typ., 1.5 V max.                         | $I_F = 30 \text{ mA}$  |
|              | Reverse current                      | $I_R$                 | 0.01 $\mu\text{A}$ typ., 10 $\mu\text{A}$ max. | $V_R = 4 \text{ V}$  |
|              | Peak emission wavelength             | $\lambda_P$           | 940 nm typ.                                    | $I_F = 20 \text{ mA}$  |
| Detector     | Light current                        | $I_L$                 | 0.5 mA min., 14 mA max.                        | $I_F = 20 \text{ mA}, V_{CE} = 10 \text{ V}$                 |
|              | Dark current                         | $I_D$                 | 2 nA typ., 200 nA max.                         | $V_{CE} = 10 \text{ V}, 0 \text{ lux}$                       |
|              | Leakage current                      | $I_{LEAK}$            | ---  | ---  |
|              | Collector-Emitter saturated voltage  | $V_{CE} (\text{sat})$ | 0.15 V typ., 0.4 V max.                        | $I_F = 20 \text{ mA}, I_L = 0.1 \text{ mA}$                  |
|              | Peak spectral sensitivity wavelength | $\lambda_P$           | 850 nm typ.                                    | $V_{CE} = 10 \text{ V}$                                      |
| Rising time  | $t_r$                                |                       | 4 $\mu\text{s}$ typ.                           | $V_{CC} = 5 \text{ V}, R_L = 100 \Omega, I_L = 5 \text{ mA}$ |
| Falling time | $t_f$                                |                       | 4 $\mu\text{s}$ typ.                           | $V_{CC} = 5 \text{ V}, R_L = 100 \Omega, I_L = 5 \text{ mA}$ |

## ■ Engineering Data

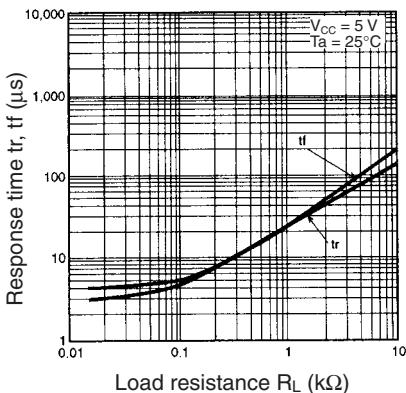
**Forward Current vs. Collector Dissipation Temperature Rating**



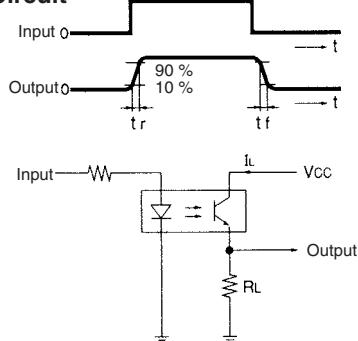
**Light Current vs. Collector-Emitter Voltage Characteristics (Typical)**



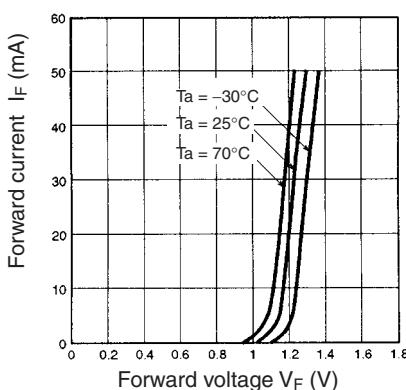
**Response Time vs. Load Resistance Characteristics (Typical)**



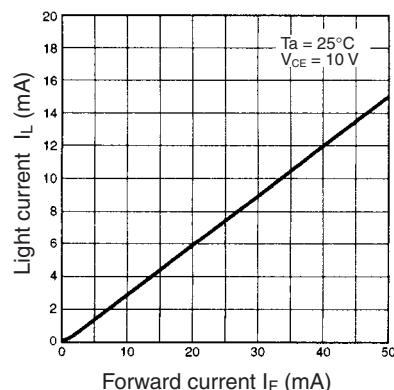
**Response Time Measurement Circuit**



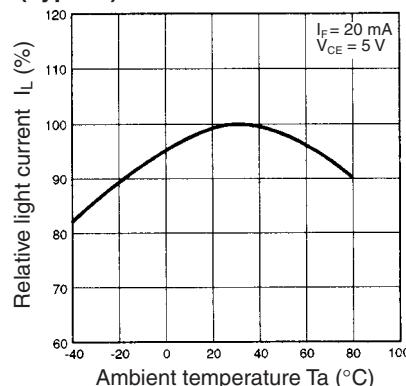
**Forward Current vs. Forward Voltage Characteristics (Typical)**



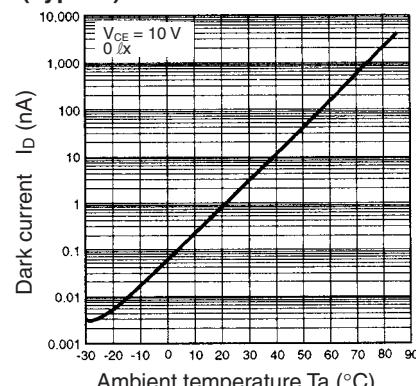
**Light Current vs. Forward Current Characteristics (Typical)**



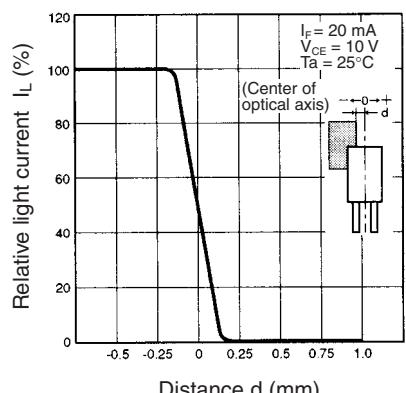
**Relative Light Current vs. Ambient Temperature Characteristics (Typical)**



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



**Sensing Position Characteristics (Typical)**



**Sensing Position Characteristics (Typical)**

