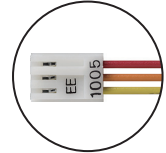


# Photomicrosensor (Transmissive)

# EE-SX3009-P1/EE-SX4009-P1/ EE-1005

## Slot/Screw-fixed Type (Slot Width: 5 mm)

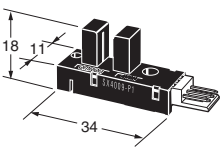
- Photo IC output (Two types available: Dark-ON (EE-SX3009-P1)/ Light-ON (EE-SX4009-P1))
- Mounting can be performed through use of one screw together with a boss.
- Featuring enhanced maintainability through use of an all-purpose EI connector manufactured by TE Connectivity.
- Connector with cable(Order Separately) is available.  
EE-1005 (see page 3)



Be sure to read *Safety Precautions* on Page 2.

## Ordering Information

### Photomicrosensor

| Appearance                                                                         | Sensing method           | Connecting method | Sensing distance  | Aperture size (H x W) (mm)                         | Output type | Model                                             | Minimum packing unit (Unit: pcs) |
|------------------------------------------------------------------------------------|--------------------------|-------------------|-------------------|----------------------------------------------------|-------------|---------------------------------------------------|----------------------------------|
|  | Transmissive (slot type) | Connector         | 5 mm (Slot width) | Both emitting side and detecting side<br>2.4 x 0.5 | Photo IC    | EE-SX3009-P1 (Dark-ON)<br>EE-SX4009-P1 (Light-ON) | 1                                |

**Note:** Order in multiples of minimum packing unit.

## Ratings, Characteristics and Exterior Specifications

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

| Item                           | Symbol           | Rated value | Unit |
|--------------------------------|------------------|-------------|------|
| Power supply voltage           | V <sub>CC</sub>  | 10          | V    |
| Output voltage                 | V <sub>OUT</sub> | 28          | V    |
| Output current                 | I <sub>OUT</sub> | 16          | mA   |
| Permissible output dissipation | P <sub>OUT</sub> | 250*        | mW   |
| Operating temperature          | T <sub>opr</sub> | -25 to 75   | °C   |
| Storage temperature            | T <sub>stg</sub> | -40 to 85   | °C   |

\* Refer to the temperature rating chart if the ambient temperature exceeds 25°C.

### Exterior Specifications

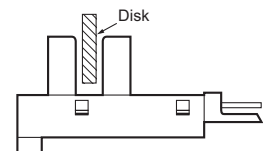
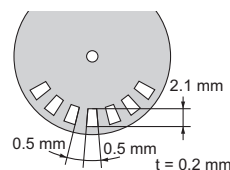
| Connecting method | Weight (g) | Material      |               |
|-------------------|------------|---------------|---------------|
|                   |            | Case          | Bottom plate  |
| Connector         | 3          | Polycarbonate | Polycarbonate |

### Electrical and Optical Characteristics

(Ta = 25°C, V<sub>CC</sub> = 5 V±10%)

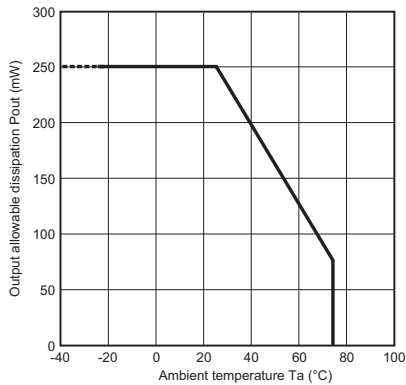
| Item                      | Symbol          | Value                   |      |      | Unit | Condition                                                                                                                     |
|---------------------------|-----------------|-------------------------|------|------|------|-------------------------------------------------------------------------------------------------------------------------------|
|                           |                 | MIN.                    | TYP. | MAX. |      |                                                                                                                               |
| Current consumption       | I <sub>CC</sub> | —                       | —    | 30   | mA   | With and without incident                                                                                                     |
| Low-level output voltage  | V <sub>OL</sub> | —                       | —    | 0.3  | V    | I <sub>OUT</sub> = 16 mA<br>Without incident: EE-SX3009-P1<br>With incident: EE-SX4009-P1                                     |
| High-level output voltage | V <sub>OH</sub> | (V <sub>CC</sub> × 0.9) | —    | —    | V    | V <sub>OUT</sub> = V <sub>CC</sub><br>With incident: EE-SX3009-P1<br>Without incident: EE-SX4009-P1<br>R <sub>L</sub> = 47 kΩ |
| Response frequency        | f               | 3                       | —    | —    | kHz  | V <sub>OUT</sub> = V <sub>CC</sub><br>R <sub>L</sub> = 47 kΩ*                                                                 |

\* The value of the response frequency is measured by rotating the disk as shown below.

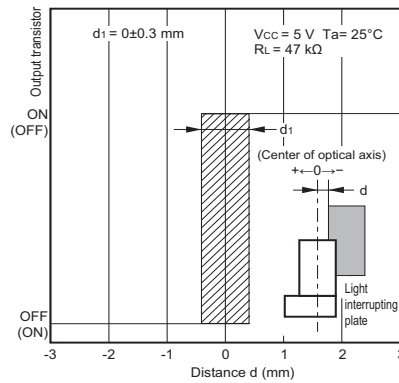


## Engineering Data (Reference Value) Note: Values in parentheses are for EE-SX4009-P1

**Fig 1. Output Allowable Dissipation vs. Ambient Temperature Characteristics**



**Fig 2. Sensing Position Characteristics (Typical)**



## Safety Precautions

To ensure safe operation, be sure to read and follow the Instruction Manual provided with the Sensor.

### CAUTION

This product is not designed or rated for ensuring safety of persons either directly or indirectly. Do not use it for such purposes.



### Precautions for Correct Use

Do not use the product in atmospheres or environments that exceed product ratings. Dispose of this product as industrial waste.

### Precautions for Safe Use

**Do not use the product with a voltage or current that exceeds the rated range.**

Applying a voltage or current that is higher than the rated range may result in explosion or fire.

**Do not miswire such as the polarity of the power supply voltage.**

Otherwise the product may be damaged or it may burn.

**Do not short-circuit the load.**

Otherwise explosion or burning may occur.

**This product does not resist water. Do not use the product in places where water or oil may be sprayed onto the product.**

## Dimensions and Internal Circuit

(Unit: mm)

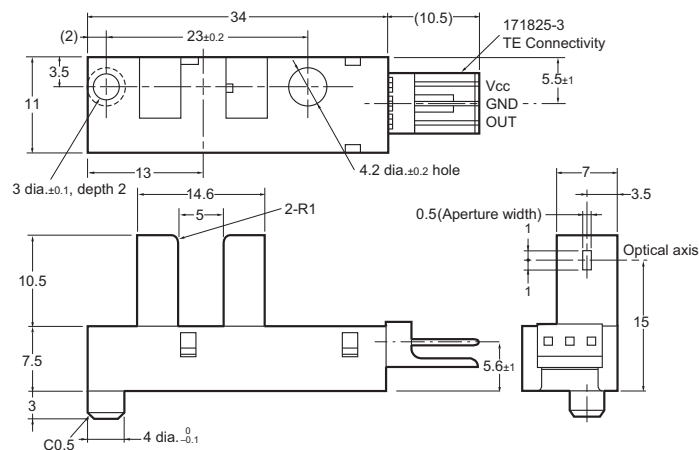
## Photomicrosensor

EE-SX3009-P1  
EE-SX4009-P1



Aperture size (H × W)

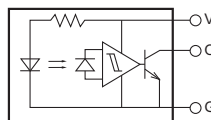
| Emitter          | Detector         |
|------------------|------------------|
| $2.4 \times 0.5$ | $2.4 \times 0.5$ |



Recommended compatible connector: Connector manufactured by TE Connectivity  
Connector manufactured by OMRON

171822-3 (crimp type)  
172142-3 (crimp type)  
EE-1005 (with harness)

Internal circuit



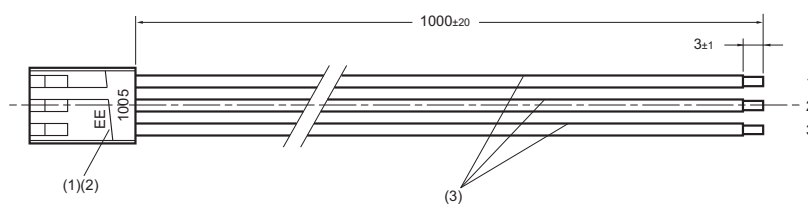
| Terminal No. | Name               |
|--------------|--------------------|
| V            | Power supply (Vcc) |
| O            | Output (OUT)       |
| G            | Ground (GND)       |

Unless otherwise specified, the tolerances are as shown below.

| Dimensions   | Tolerance |
|--------------|-----------|
| 4 mm max.    | ±0.2      |
| 4 < mm ≤ 16  | ±0.3      |
| 16 < mm ≤ 63 | ±0.5      |

## Compatible Connector

EE-1005



| No. | Product name       | Model/ Specification | Quantity | Manufacturer    |
|-----|--------------------|----------------------|----------|-----------------|
| (1) | Receptacle housing | 171822-3             | 1        | TE Connectivity |
| (2) | Receptacle contact | 170262-1             | 3        | TE Connectivity |
| (3) | Lead wire          | UL1007 AWG24         | 3        | —               |

## Wiring

| Connector circuit No. | Lead wire color | Output when connected with EE-SX4009-P1 |
|-----------------------|-----------------|-----------------------------------------|
| 1                     | Red             | Vcc                                     |
| 2                     | Orange          | GND                                     |
| 3                     | Yellow          | OUT                                     |

Please check each region's Terms & Conditions by region website.

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Device & Module Solutions Company

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