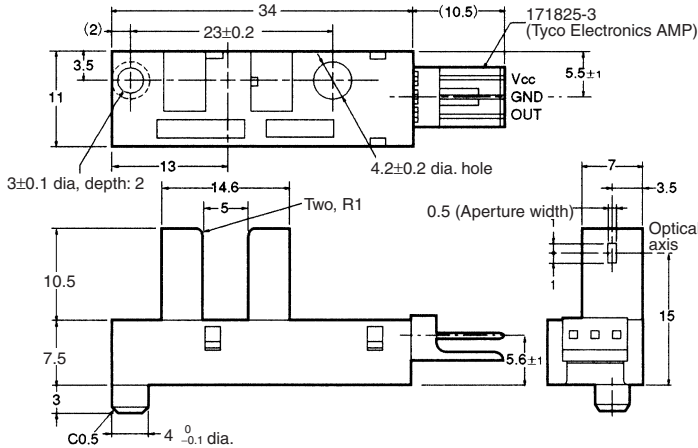


## Photomicrosensor (Transmissive) EE-SX3009-P1/-SX4009-P1

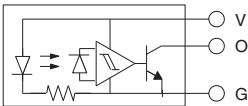
**⚠ Be sure to read *Precautions* on page 24.**

### ■ Dimensions

**Note:** All units are in millimeters unless otherwise indicated.



#### Internal Circuit



Unless otherwise specified, the tolerances are as shown below.

| Terminal No. | Name                            |
|--------------|---------------------------------|
| V            | Power supply (V <sub>CC</sub> ) |
| O            | Output (OUT)                    |
| G            | Ground (GND)                    |

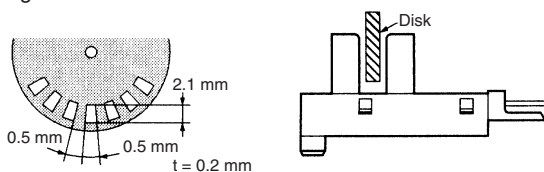
| Dimensions   | Tolerance |
|--------------|-----------|
| 4 mm max.    | ±0.2      |
| 4 < mm ≤ 16  | ±0.3      |
| 16 < mm ≤ 63 | ±0.5      |

Recommended Mating Connectors:  
 Tyco Electronics AMP 171822-3 (crimp connector)  
 172142-3 (crimp connector)  
 OMRON EE-1005 (with harness)

### ■ Electrical and Optical Characteristics (Ta = 25°C, V<sub>CC</sub> = 5 V ±10%)

| Item                      | Symbol          | Value                          | Condition   |
|---------------------------|-----------------|--------------------------------|---|
| Current consumption       | I <sub>CC</sub> | 30 mA max.                     | With and without incident   |
| Low-level output voltage  | V <sub>OL</sub> | 0.3 V max.                     | 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 min. | V <sub>OUT</sub> = V <sub>CC</sub><br>With incident (EE-SX3009-P1)<br>Without incident (EE-SX4009-P1), R <sub>L</sub> = 47 kΩ |
| Response frequency        | f               | 3 kHz min.                     | V <sub>OUT</sub> = V <sub>CC</sub> , R <sub>L</sub> = 47 kΩ (see note)  |

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



### ■ Features

- Screw-mounting model.
- High resolution with a 0.5-mm-wide sensing aperture.
- With a 5-mm-wide groove.
- Photo IC output signals directly connect with C-MOS and TTL.
- Connects to Tyco Electronics AMP's EI-series connectors.
- Dark ON model (EE-SX3009-P1)
- Light ON model (EE-SX4009-P1)

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

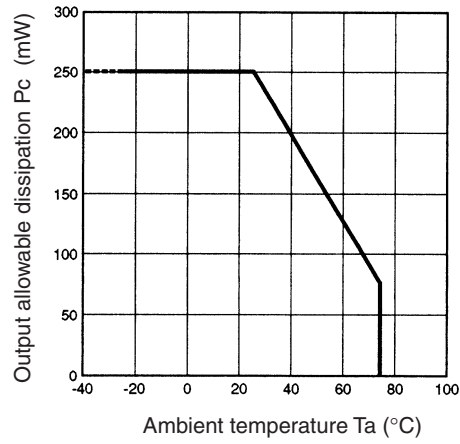
| Item                           | Symbol           | Rated value       |               |
|--------------------------------|------------------|-------------------|---------------|
| Power supply voltage           | V <sub>CC</sub>  | 10 V              |               |
| Output voltage              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

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

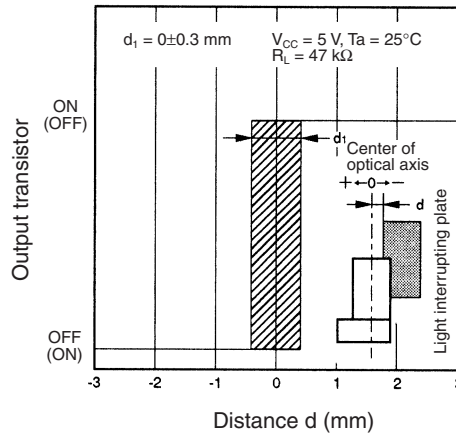
## Engineering Data

**Note:** The values in the parentheses apply to the EE-SX4009-P1.

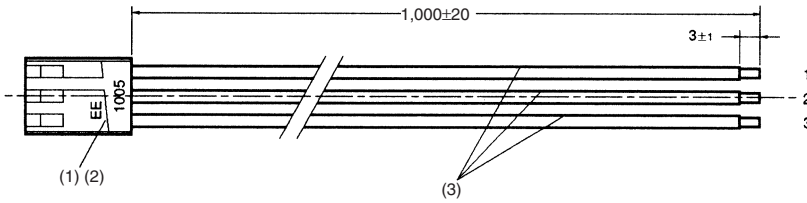
### Output Allowable Dissipation vs. Ambient Temperature Characteristics



### Sensing Position Characteristics (Typical)



### EE-1005 Connector



| No. | Name               | Model        | Quantity | Maker                |
|-----|--------------------|--------------|----------|----------------------|
| 1   | Receptacle housing | 171822-3     | 1        | Tyco Electronics AMP |
| 2   | Receptacle contact | 170262-1     | 3        | Tyco Electronics AMP |
| 3   | Lead wire          | UL1007 AWG24 | 3        | ---                  |

### Wiring

| Connector circuit no. | Lead wire color | Output when connected to EE-SX4009-P1/EE-SX3009-P1 |
|-----------------------|-----------------|--|
| 1                     | Red             | $V_{CC}$   |
| 2                     | Orange          | GND  |
| 3                     | Yellow          | OUT  |