

# Photomicrosensor (Transmissive)

# EE-SX1103

## Compact Slot/Terminal Type (Slot Width: 2 mm)

- Low profile (Height: 5.2 mm) type
- Terminal for PCB mounting



Be sure to read *Safety Precautions* on Page 3.

RoHS Compliant

## Ordering Information

### Photomicrosensor

| Appearance | Sensing method           | Connecting method         | Sensing distance  | Aperture size (H × W) (mm)                         | Output type     | Model     | Minimum packing unit (Unit: pcs) |
|------------|--------------------------|---------------------------|-------------------|----------------------------------------------------|-----------------|-----------|----------------------------------|
|            | Transmissive (slot type) | Terminal for PCB mounting | 2 mm (Slot width) | Both emitting side and detecting side<br>1.2 × 0.4 | Phototransistor | EE-SX1103 | 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 |
|---------------------------|------------------|-------------|------|
| <b>Emitter</b>            |                  |             |      |
| Forward current           | I <sub>F</sub>   | 50*1        | mA   |
| Pulse forward current     | I <sub>FP</sub>  | —           | A    |
| Reverse voltage           | V <sub>R</sub>   | 5           | V    |
| <b>Detector</b>           |                  |             |      |
| Collector-Emitter voltage | V <sub>CEO</sub> | 30          | V    |
| Emitter-Collector voltage | V <sub>ECO</sub> | 4.5         | V    |
| Collector current         | I <sub>C</sub>   | 30          | mA   |
| Collector dissipation     | P <sub>C</sub>   | 80*1        | mW   |
| Operating temperature     | T <sub>opr</sub> | -25 to 85   | °C   |
| Storage temperature       | T <sub>stg</sub> | -30 to 100  | °C   |
| Soldering temperature     | T <sub>sol</sub> | 260*2       | °C   |

\*1. Refer to the temperature rating chart if the ambient temperature exceeds 25°C.

\*2. Complete soldering within 3 seconds.

### Exterior Specifications

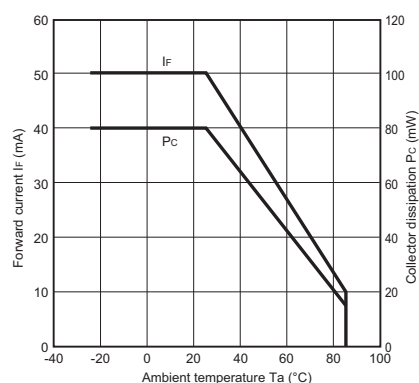
| Connecting method         | Weight (g) | Material |             |
|---------------------------|------------|----------|-------------|
|                           |            | Case     | Lens        |
| Terminal for PCB mounting | 0.2        | PPS      | Epoxy resin |

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

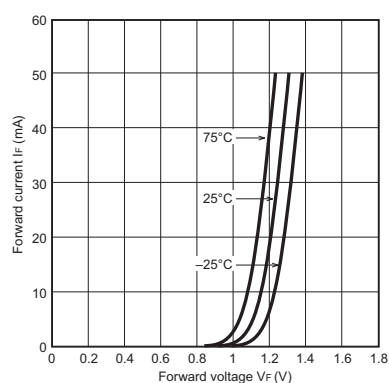
| Item                                 | Symbol                | Value |      |      | Unit | Condition                                                             |
|--------------------------------------|-----------------------|-------|------|------|------|-----------------------------------------------------------------------|
|                                      |                       | MIN.  | TYP. | MAX. |      |                                                                       |
| Emitter                              |                       |       |      |      |      |                                                                       |
| Forward voltage                      | V <sub>F</sub>        | —     | 1.3  | 1.6  | V    | I <sub>F</sub> = 50 mA                                                |
| Reverse current                      | I <sub>R</sub>        | —     | —    | 10   | μA   | V <sub>R</sub> = 5 V                                                  |
| Peak emission wavelength             | λ <sub>P</sub>        | —     | 950  | —    | nm   | I <sub>F</sub> = 50 mA                                                |
| Detector                             |                       |       |      |      |      |                                                                       |
| Light current                        | I <sub>L</sub>        | 0.5   | —    | —    | mA   | I <sub>F</sub> = 20 mA, V <sub>CE</sub> = 5 V                         |
| Dark current                         | I <sub>D</sub>        | —     | —    | 500  | nA   | V <sub>CE</sub> = 10 V, 0 lx                                          |
| Leakage current                      | I <sub>LEAK</sub>     | —     | —    | —    | μA   | —                                                                     |
| Collector-Emitter saturated voltage  | V <sub>CE</sub> (sat) | —     | —    | 0.4  | V    | I <sub>F</sub> = 20 mA, I <sub>L</sub> = 0.3 mA                       |
| Peak spectral sensitivity wavelength | λ <sub>P</sub>        | —     | 800  | —    | nm   | V <sub>CE</sub> = 5 V                                                 |
| Rising time                          | t <sub>r</sub>        | —     | 10   | —    | μs   | V <sub>CC</sub> = 5 V, R <sub>L</sub> = 100 Ω, I <sub>F</sub> = 20 mA |
| Falling time                         | t <sub>f</sub>        | —     | 10   | —    | μs   | V <sub>CC</sub> = 5 V, R <sub>L</sub> = 100 Ω, I <sub>F</sub> = 20 mA |

## Engineering Data (Reference Value)

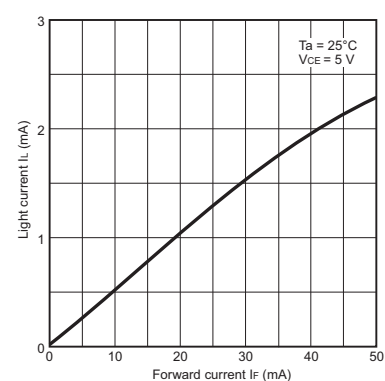
**Fig 1. Forward Current vs. Collector Dissipation Temperature Rating**



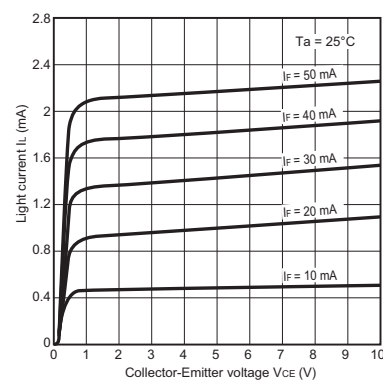
**Fig 2. Forward Current vs. Forward Voltage Characteristics (Typical)**



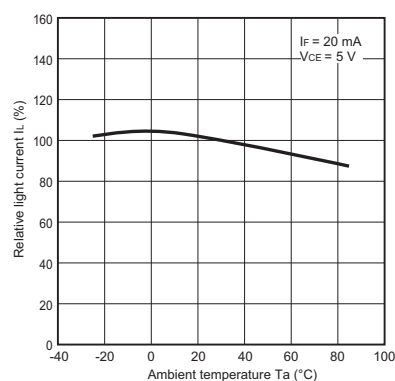
**Fig 3. Light Current vs. Forward Current Characteristics (Typical)**



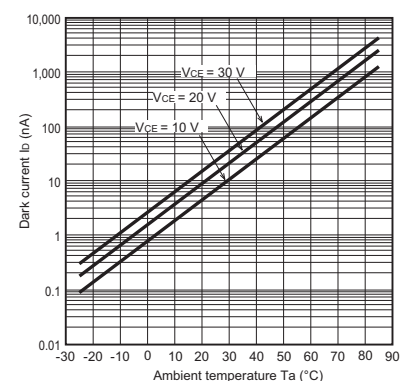
**Fig 4. Light Current vs. Collector-Emitter Voltage Characteristics (Typical)**



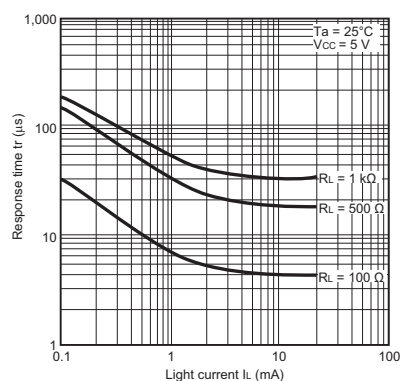
**Fig 5. Relative Light Current vs. Ambient Temperature Characteristics (Typical)**



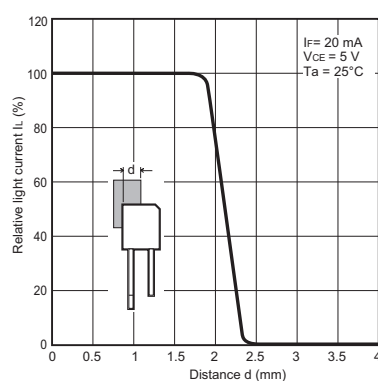
**Fig 6. Dark Current vs. Ambient Temperature Characteristics (Typical)**



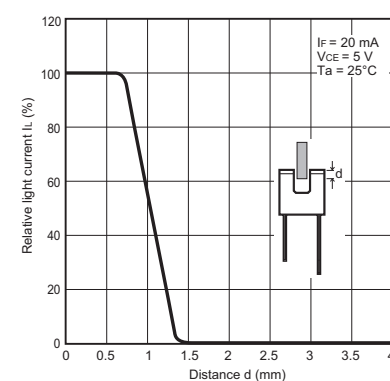
**Fig 7. Response Time vs. Light Current Characteristics (Typical)**



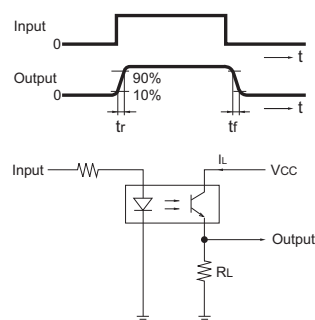
**Fig 8. Sensing Position Characteristics (Typical)**



**Fig 9. Sensing Position Characteristics (Typical)**



**Fig 10. Response Time Measurement Circuit**



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.

**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.

**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)

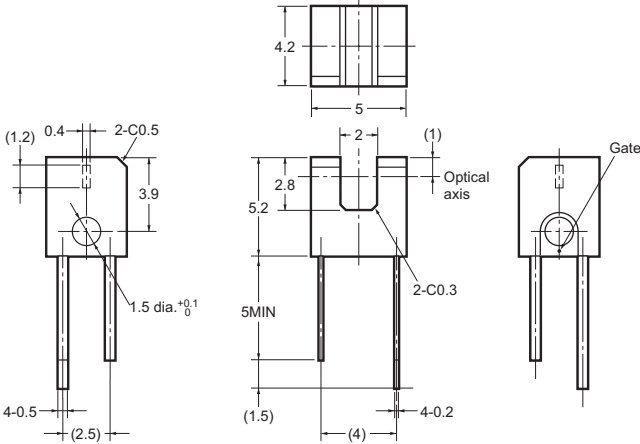
Photomicrosensor

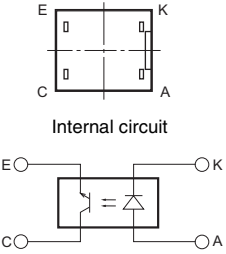
EE-SX1103



Aperture size (H × W)

| Emitter   | Detector  |
|-----------|-----------|
| 1.2 × 0.4 | 1.2 × 0.4 |





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

**Note:** 1. Unless otherwise specified, the tolerances are ±0.2 mm.  
2. Dimensions in parentheses are for reference only.  
3. Dimensions of the slit are those of the primary mold.

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## OMRON Corporation

Electronic and Mechanical Components Company

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