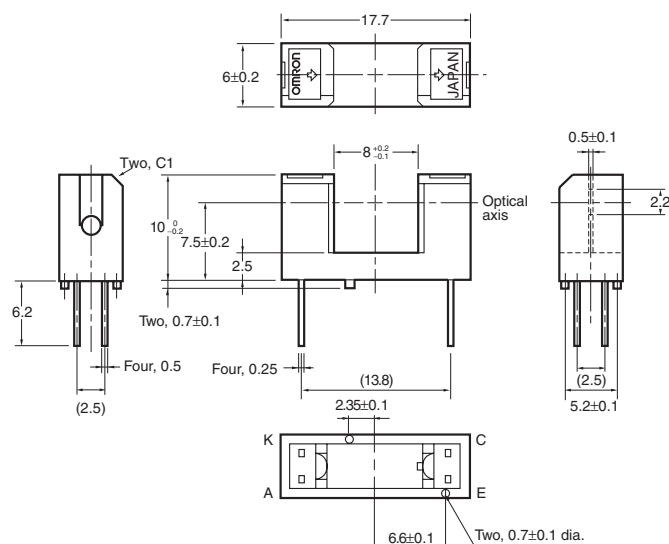


# Photomicrosensor (Transmissive) EE-SX1070

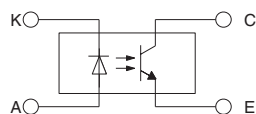
**⚠ Be sure to read *Precautions* on page 25.**

## ■ 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     |

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

## ■ Features

- Wide model with a 8-mm-wide slot.
- PCB mounting type.
- High resolution with a 0.5-mm-wide aperture.

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

| Item                  | Symbol                    | Rated value                         |
|-----------------------|---------------------------|-------------------------------------|
| Emitter               | Forward current           | I <sub>F</sub> 50 mA (see note 1)   |
|                       | Pulse forward current     | I <sub>FP</sub> 1 A (see note 2)    |
|                       | Reverse voltage           | V <sub>R</sub> 4 V                  |
| Detector              | Collector–Emitter voltage | V <sub>CEO</sub> 30 V               |
|                       | Emitter–Collector voltage | V <sub>ECO</sub> ---                |
|                       | Collector current         | I <sub>C</sub> 20 mA                |
|                       | Collector dissipation     | P <sub>C</sub> 100 mW (see note 1)  |
| Ambient temperature   | Operating                 | T <sub>opr</sub> –25°C to 95°C      |
|                       | Storage                   | T <sub>stg</sub> –30°C to 100°C     |
| Soldering temperature |                           | T <sub>sol</sub> 260°C (see note 3) |

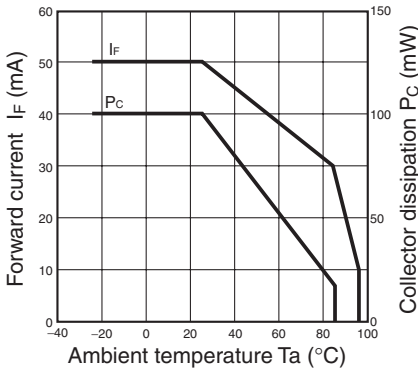
- Note:**
1. Refer to the temperature rating chart if the ambient temperature exceeds 25°C.
  2. The pulse width is 10 μs maximum with a frequency of 100 Hz.
  3. Complete soldering within 10 seconds.

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

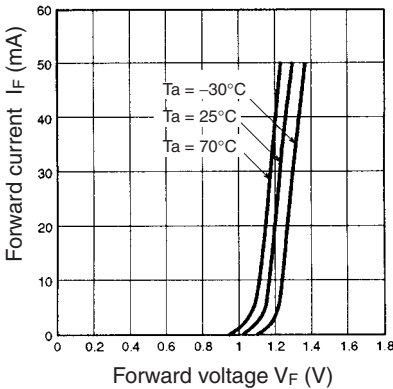
| Item         | Symbol                               | Value                                        | Condition                                                            |
|--------------|--------------------------------------|----------------------------------------------|----------------------------------------------------------------------|
| Emitter      | Forward voltage                      | V <sub>F</sub> 1.2 V typ., 1.5 V max.        | I <sub>F</sub> = 30 mA                                               |
|              | Reverse current                      | I <sub>R</sub> 0.01 μA typ., 10 μA max.      | V <sub>R</sub> = 4 V                                                 |
|              | Peak emission wavelength             | λ <sub>p</sub> 940 nm typ.                   | I <sub>F</sub> = 20 mA                                               |
| Detector     | Light current                        | I <sub>L</sub> 0.5 mA min., 14 mA max.       | I <sub>F</sub> = 20 mA, V <sub>CE</sub> = 10 V                       |
|              | Dark current                         | I <sub>D</sub> 2 nA typ., 200 nA max.        | V <sub>CE</sub> = 10 V, 0 lx                                         |
|              | Leakage current                      | I <sub>LEAK</sub> ---                        | ---                                                                  |
|              | Collector–Emitter saturated voltage  | V <sub>CE</sub> (sat) 0.1 V typ., 0.4 V max. | I <sub>F</sub> = 20 mA, I <sub>L</sub> = 0.1 mA                      |
|              | Peak spectral sensitivity wavelength | λ <sub>p</sub> 850 nm typ.                   | V <sub>CE</sub> = 10 V                                               |
| Rising time  | t <sub>r</sub>                       | 4 μs typ.                                    | V <sub>CC</sub> = 5 V, R <sub>L</sub> = 100 Ω, I <sub>L</sub> = 5 mA |
| Falling time | t <sub>f</sub>                       | 4 μs typ.                                    | V <sub>CC</sub> = 5 V, R <sub>L</sub> = 100 Ω, I <sub>L</sub> = 5 mA |

# Engineering Data

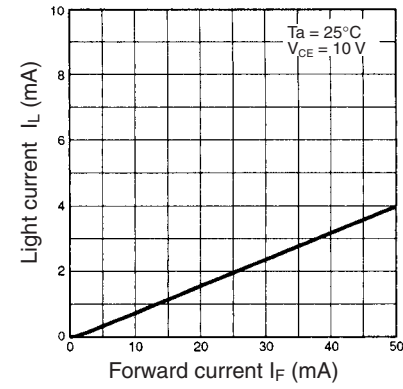
**Forward Current vs. Collector Dissipation Temperature Rating**



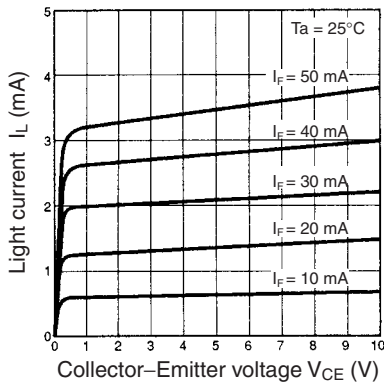
**Forward Current vs. Forward Voltage Characteristics (Typical)**



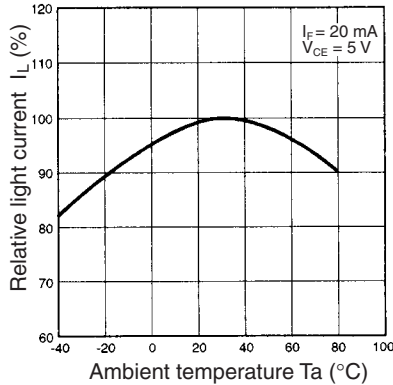
**Light Current vs. Forward Current Characteristics (Typical)**



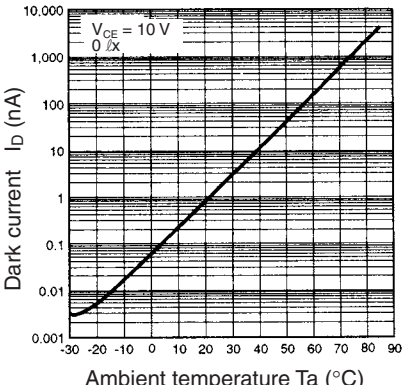
**Light Current vs. Collector-Emitter Voltage Characteristics (Typical)**



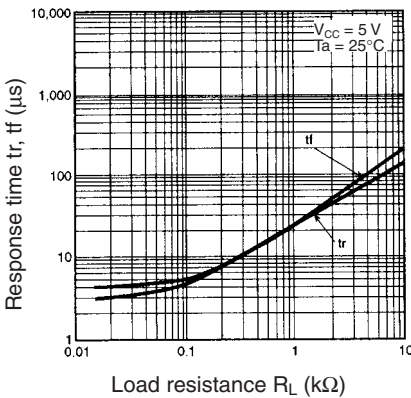
**Relative Light Current vs. Ambient Temperature Characteristics (Typical)**



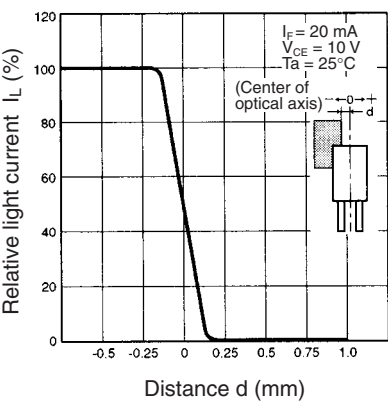
**Dark Current vs. Ambient Temperature Characteristics (Typical)**



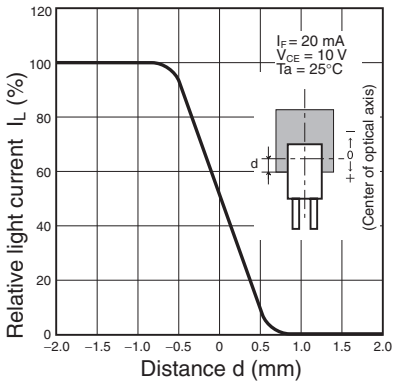
**Response Time vs. Load Resistance Characteristics (Typical)**



**Sensing Position Characteristics (Typical)**



**Sensing Position Characteristics (Typical)**



**Response Time Measurement Circuit**

