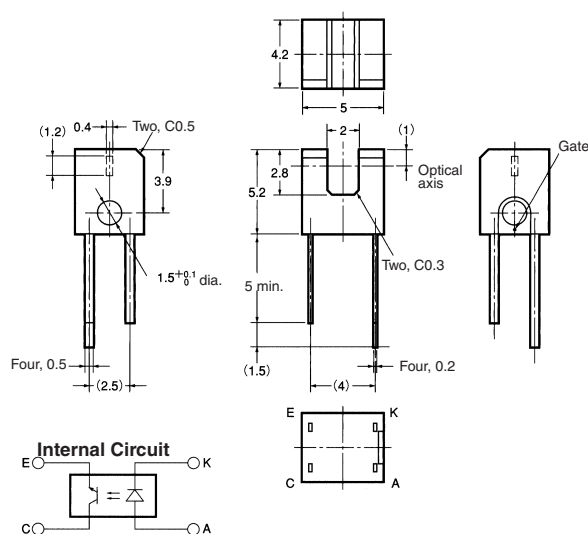


# Photomicrosensor (Transmissive) EE-SX1103

## ■ Dimensions

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



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

Unless otherwise specified, the tolerances are  $\pm 0.2$  mm.

## ■ Features

- Ultra-compact with a sensor width of 5 mm and a slot width of 2 mm.
- PCB mounting type.
- High resolution with a 0.4-mm-wide aperture.
- RoHS Compliant.

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

| Item                  |                           | Symbol    | Rated value        |
|-----------------------|---------------------------|-----------|--------------------|
| Emitter               | Forward current           | $I_F$     | 50 mA (see note 1) |
|                       | Pulse forward current     | $I_{FP}$  | ---                |
|                       | Reverse voltage           | $V_R$     | 5 V                |
| Detector              | Collector–Emitter voltage | $V_{CEO}$ | 30 V               |
|                       | Emitter–Collector voltage | $V_{ECO}$ | 4.5 V              |
|                       | Collector current         | $I_C$     | 30 mA              |
|                       | Collector dissipation     | $P_C$     | 80 mW (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 (see note 2) |

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

- 2. Complete soldering within 3 seconds.**

## ■ Ordering Information

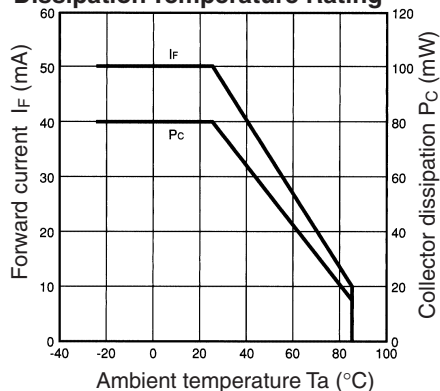
| Description                     | Model     |
|---------------------------------|-----------|
| Photomicrosensor (transmissive) | EE-SX1103 |

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

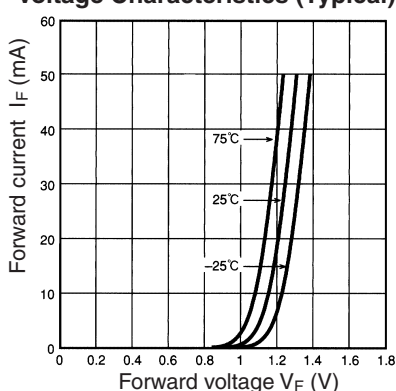
| Item         |                                      | Symbol        | Value                  | Condition                                                           |
|--------------|--------------------------------------|---------------|------------------------|---------------------------------------------------------------------|
| Emitter      | Forward voltage                      | $V_F$         | 1.3 V typ., 1.6 V max. | $I_F = 50 \text{ mA}$                                               |
|              | Reverse current                      | $I_R$         | 10 $\mu\text{A}$ max.  | $V_R = 5 \text{ V}$                                                 |
|              | Peak emission wavelength             | $\lambda_P$   | 950 nm typ.            | $I_F = 50 \text{ mA}$                                               |
| Detector     | Light current                        | $I_L$         | 0.5 mA min.            | $I_F = 20 \text{ mA}$ , $V_{CE} = 5 \text{ V}$                      |
|              | Dark current                         | $I_D$         | 500 nA max.            | $V_{CE} = 10 \text{ V}$ , 0 $\mu\text{x}$                           |
|              | Leakage current                      | $I_{LEAK}$    | ---                    | ---                                                                 |
|              | Collector–Emitter saturated voltage  | $V_{CE(sat)}$ | 0.4 V max.             | $I_F = 20 \text{ mA}$ , $I_L = 0.3 \text{ mA}$                      |
|              | Peak spectral sensitivity wavelength | $\lambda_P$   | 800 nm typ.            | $V_{CE} = 5 \text{ V}$                                              |
| Rising time  |                                      | $t_r$         | 10 $\mu\text{s}$ typ.  | $V_{CC} = 5 \text{ V}$ , $R_L = 100 \Omega$ , $I_F = 20 \text{ mA}$ |
| Falling time |                                      | $t_f$         | 10 $\mu\text{s}$ typ.  | $V_{CC} = 5 \text{ V}$ , $R_L = 100 \Omega$ , $I_F = 20 \text{ mA}$ |

# Engineering Data

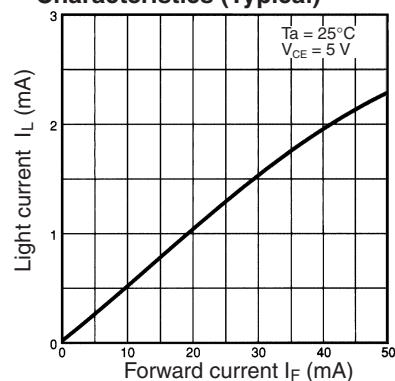
**Forward Current vs. Collector Dissipation Temperature Rating**



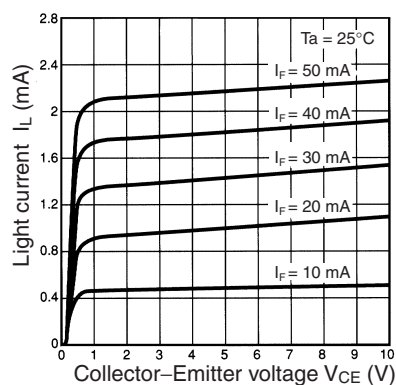
**Forward Current vs. Forward Voltage Characteristics (Typical)**



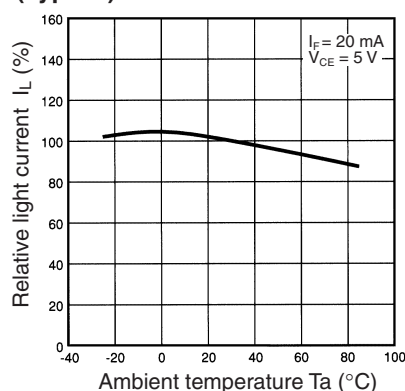
**Light Current vs. Forward Current Characteristics (Typical)**



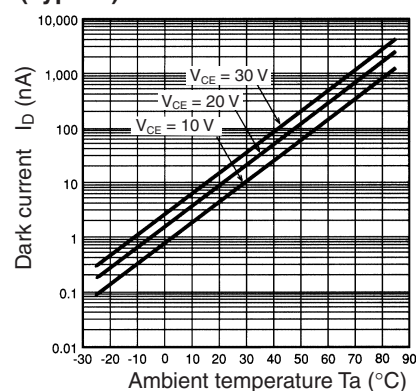
**Light Current vs. Collector-Emitter Voltage Characteristics (Typical)**



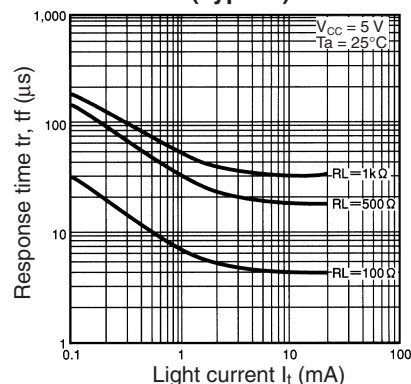
**Relative Light Current vs. Ambient Temperature Characteristics (Typical)**



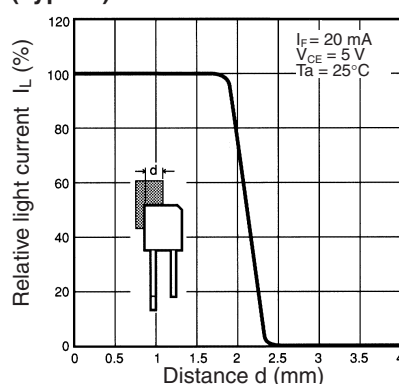
**Dark Current vs. Ambient Temperature Characteristics (Typical)**



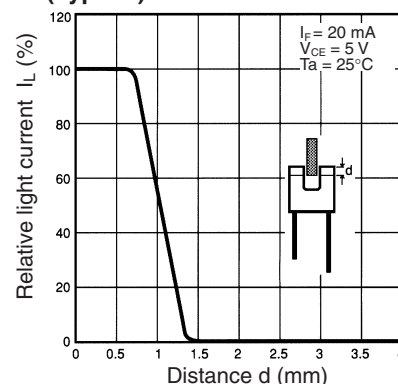
**Response Time vs. Light Current Characteristics (Typical)**



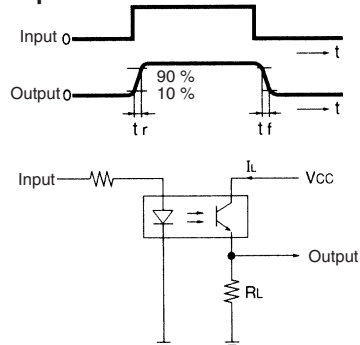
**Sensing Position Characteristics (Typical)**



**Sensing Position Characteristics (Typical)**



**Response Time Measurement Circuit**



The image displays a large grid of 1000 small squares, arranged in 20 rows and 50 columns. Each square contains a unique combination of symbols, including plus (+), minus (-), equals (=), and empty space. The symbols are distributed in a complex, non-random pattern across the grid, with some squares containing multiple symbols or none at all. The overall effect is a dense, textured field of mathematical and logical symbols.

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**ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.**

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

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