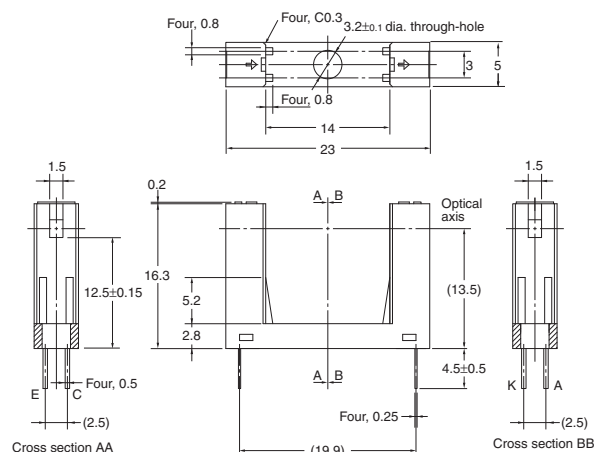


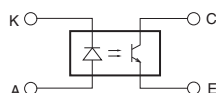
# Photomicrosensor (Transmissive) EE-SX1140

## ■ Dimensions

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



### Internal Circuit



Unless otherwise specified, the tolerances are as shown below.

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

| 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     |

## ■ Features

- General-purpose model with a 14-mm-wide slot.
- 16.3-mm-tall model with a deep slot.
- PCB mounting type.
- 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     | $I_{FP}$ 1 A (see note 2) |
|                       | Reverse voltage           | $V_R$ 4 V                 |
| Detector              | Collector–Emitter voltage | $V_{CEO}$ 30 V            |
|                       | Emitter–Collector voltage | $V_{ECO}$ ---             |
|                       | Collector current         | $I_C$ 20 mA               |
|                       | Collector dissipation     | $P_C$ 100 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 3)        |

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

## ■ Ordering Information

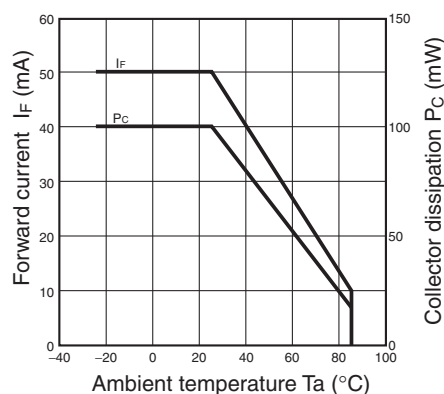
| Description                     | Model     |
|---------------------------------|-----------|
| Photomicrosensor (transmissive) | EE-SX1140 |

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

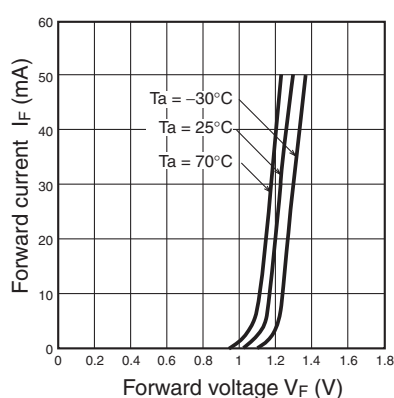
| Item         | Symbol                               | Value                                    | Condition                                         |
|--------------|--------------------------------------|------------------------------------------|---------------------------------------------------|
| Emitter      | Forward voltage                      | $V_F$ 1.2 V typ., 1.5 V max.             | $I_F = 30$ mA                                     |
|              | Reverse current                      | $I_R$ 0.01 $\mu$ A typ., 10 $\mu$ A max. | $V_R = 4$ V                                       |
|              | Peak emission wavelength             | $\lambda_P$ 940 nm typ.                  | $I_F = 20$ mA                                     |
| Detector     | Light current                        | $I_L$ 0.4 mA min.                        | $I_F = 20$ mA, $V_{CE} = 10$ V                    |
|              | Dark current                         | $I_D$ 2 nA typ., 200 nA max.             | $V_{CE} = 10$ V, 0 lx                             |
|              | Leakage current                      | $I_{LEAK}$ ---                           | ---                                               |
|              | Collector–Emitter saturated voltage  | $V_{CE(sat)}$ 0.1 V typ., 0.4 V max.     | $I_F = 20$ mA, $I_L = 0.1$ mA                     |
|              | Peak spectral sensitivity wavelength | $\lambda_P$ 850 nm typ.                  | $V_{CE} = 10$ V                                   |
| Rising time  | $t_r$                                | 4 $\mu$ s typ.                           | $V_{CC} = 5$ V, $R_L = 100 \Omega$ , $I_L = 5$ mA |
| Falling time | $t_f$                                | 4 $\mu$ s typ.                           | $V_{CC} = 5$ V, $R_L = 100 \Omega$ , $I_L = 5$ mA |

# ■ Engineering Data

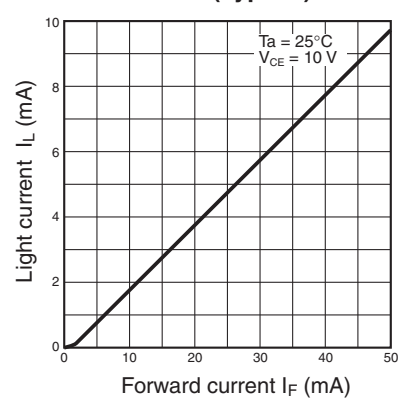
**Forward Current vs. Collector Dissipation Temperature Rating**



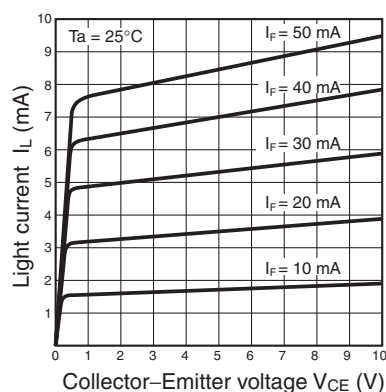
**Forward Current vs. Forward Voltage Characteristics (Typical)**



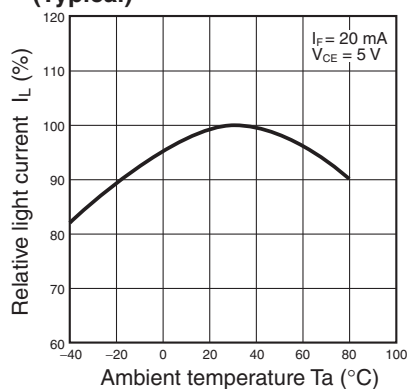
**Light Current vs. Forward Current Characteristics (Typical)**



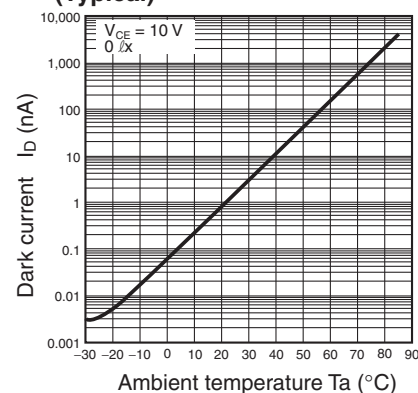
**Light Current vs. Collector-Emitter Voltage Characteristics (Typical)**



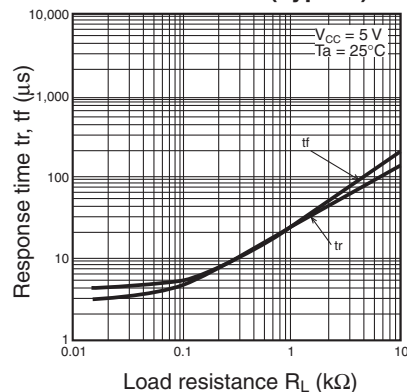
**Relative Light Current vs. Ambient Temperature Characteristics (Typical)**



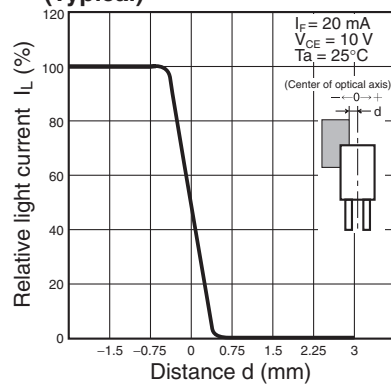
**Dark Current vs. Ambient Temperature Characteristics (Typical)**



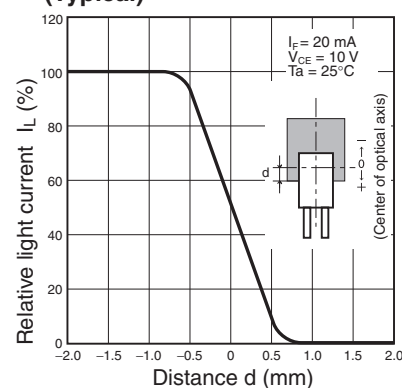
**Response Time vs. Load Resistance Characteristics (Typical)**



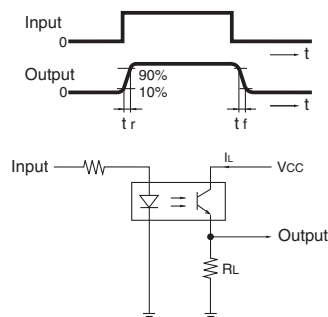
**Sensing Position Characteristics (Typical)**

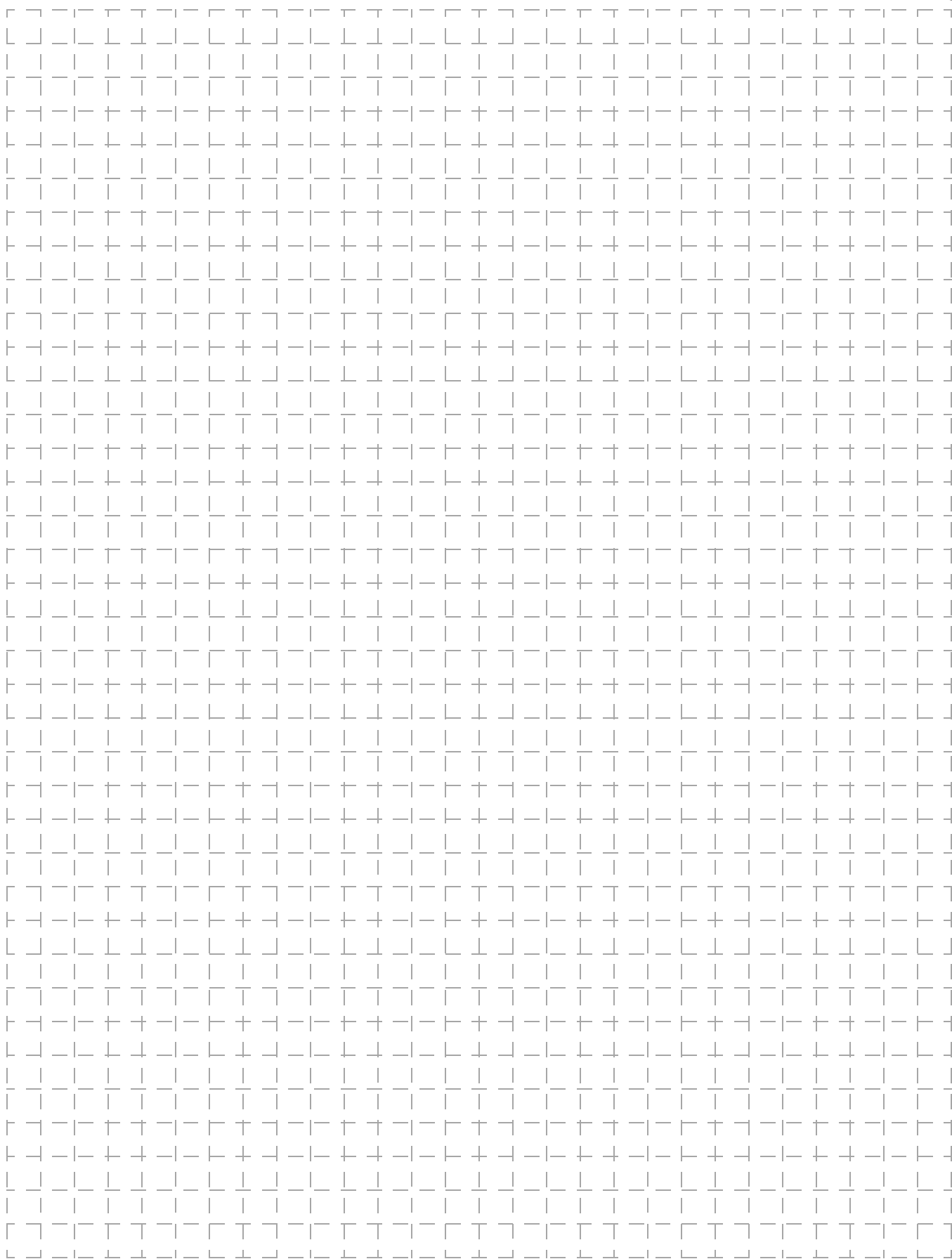


**Sensing Position Characteristics (Typical)**



**Response Time Measurement Circuit**





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