

# EE-SX1350

## Compact Slot / SMD Type (Slot width: 5 mm)

- Unique 5 mm Slot width.
- PCB surface mounting type.
- High resolution with a 0.5-mm-wide aperture.



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



## Ordering Information

### Photomicrosensor

| Appearance | Sensing method           | Connecting method | Sensing distance  | Aperture size (H × W) (mm)              | Output type     | Model     |
|------------|--------------------------|-------------------|-------------------|-----------------------------------------|-----------------|-----------|
|            | Transmissive (slot type) | SMT               | 5 mm (slot width) | Emitter 1.4 × 1.4<br>Detector 1.4 × 0.5 | Phototransistor | EE-SX1350 |

## Ratings, Characteristics and Exterior Specifications

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

| Item                      | Symbol           | Rated value | Unit | Remarks                              |
|---------------------------|------------------|-------------|------|--------------------------------------|
| <b>Emitter</b>            |                  |             |      |                                      |
| Forward current           | I <sub>F</sub>   | 30          | mA   | --- *1                               |
| Pulse forward current     | I <sub>FP</sub>  | 100         | mA   | Duty ratio: 1%<br>Puls width: 0.1 ms |
| Reverse voltage           | V <sub>R</sub>   | 4           | V    | ---                                  |
| <b>Detector</b>           |                  |             |      |                                      |
| Collector-Emitter voltage | V <sub>CEO</sub> | 12          | V    | ---                                  |
| Emitter-Collector voltage | V <sub>ECO</sub> | 5           | V    | ---                                  |
| Collector current         | I <sub>C</sub>   | 20          | mA   | ---                                  |
| Collector dissipation     | P <sub>C</sub>   | 50          | mW   | --- *1                               |
| Operating temperature     | T <sub>opr</sub> | -30 to 85   | °C   | --- *1                               |
| Storage temperature       | T <sub>stg</sub> | -40 to 100  | °C   | --- *1                               |
| Soldering temperature     | T <sub>sol</sub> | 255         | °C   | 10 sec. max. *2                      |

\*1. Continuous Forward Current and Collector Power Dissipation must be derated complying. The product should be used without freezing or condensation.

\*2. In case of reflow soldering, conditions which are shown at the temperature profile should be kept.

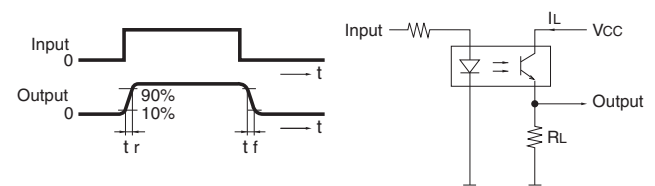
### Exterior Specifications

| Connecting method | Weight (g) | Material |
|-------------------|------------|----------|
|                   |            | Case     |
| SMT               | 0.3        | PPS      |

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

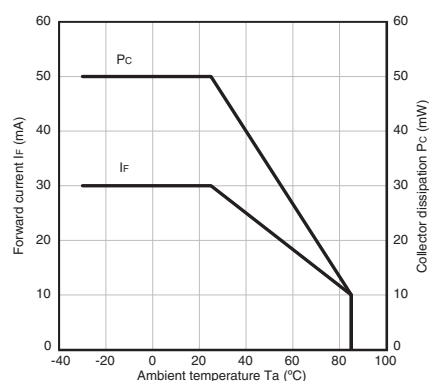
| Item                                 | Symbol                | Value |      |      | Unit | Condition                                                                |
|--------------------------------------|-----------------------|-------|------|------|------|--------------------------------------------------------------------------|
|                                      |                       | MIN.  | TYP. | MAX. |      |                                                                          |
| Emitter                              |                       |       |      |      |      |                                                                          |
| Forward voltage                      | V <sub>F</sub>        | ---   | 1.2  | 1.5  | V    | I <sub>F</sub> = 30 mA                                                   |
| Reverse current                      | I <sub>R</sub>        | ---   | 0.01 | 10   | μA   | V <sub>R</sub> = 4 V                                                     |
| Peak emission wavelength             | λ <sub>P</sub>        | ---   | 940  | ---  | nm   | I <sub>F</sub> = 20 mA                                                   |
| Detector                             |                       |       |      |      |      |                                                                          |
| Light current                        | I <sub>L</sub>        | 0.4   | ---  | 4    | mA   | I <sub>F</sub> = 20 mA, V <sub>CE</sub> = 10 V                           |
| Dark current                         | I <sub>D</sub>        | ---   | 10   | 200  | nA   | V <sub>CE</sub> = 10 V, 0 lx                                             |
| Collector-Emitter saturated voltage  | V <sub>CE</sub> (sat) | ---   | 0.1  | 0.4  | V    | I <sub>F</sub> = 20 mA, I <sub>L</sub> = 0.1 mA                          |
| Peak spectral sensitivity wavelength | λ <sub>P</sub>        | ---   | 900  | ---  | nm   | V <sub>CE</sub> = 5 V                                                    |
| Rising time                          | t <sub>r</sub>        | ---   | 11   | ---  | μs   | V <sub>CC</sub> = 5 V, R <sub>L</sub> = 100 Ω<br>I <sub>L</sub> = 1 mA * |
| Falling time                         | t <sub>f</sub>        | ---   | 14   | ---  | μs   | V <sub>CC</sub> = 5 V, R <sub>L</sub> = 100 Ω<br>I <sub>L</sub> = 1 mA * |

\* Refer to the following timing diagram for t<sub>r</sub> and t<sub>f</sub>.

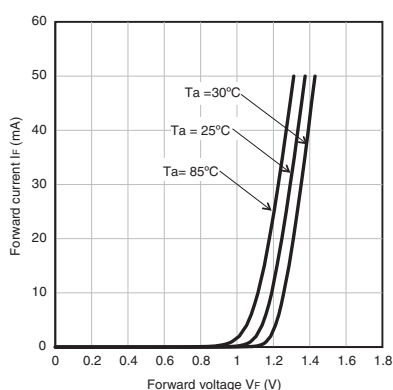


## Engineering Data (Reference value)

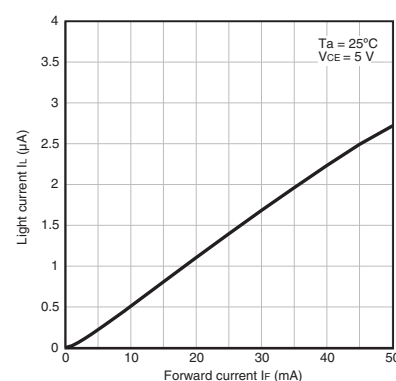
**Fig 1. Forward Current vs. Collector Dissipation Temperature Rating**



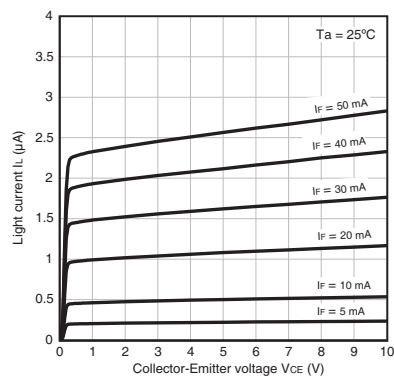
**Fig 2. Forward Current vs. Forward Voltage Characteristics (Typical)**



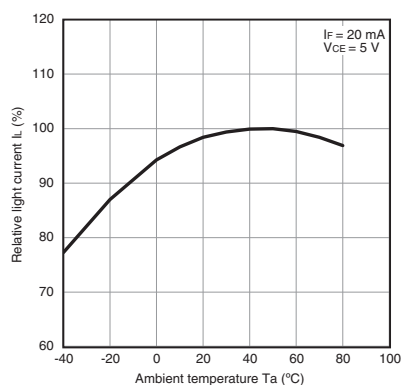
**Fig 3. Light Current vs. Forward Current Characteristics (Typical)**



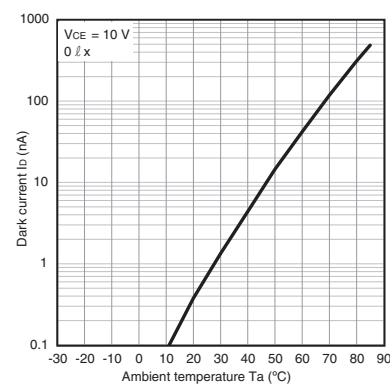
**Fig 4. Light Current vs. Collector-Emitter Voltage Characteristics (Typical)**



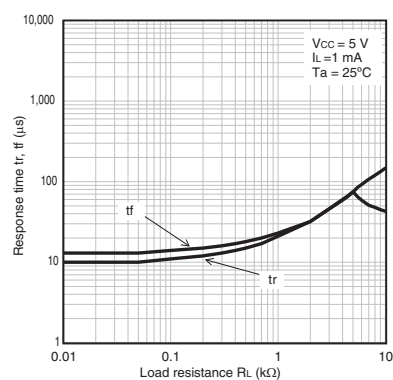
**Fig 5. Relative Light Current vs. Ambient Temperature Characteristics (Typical)**



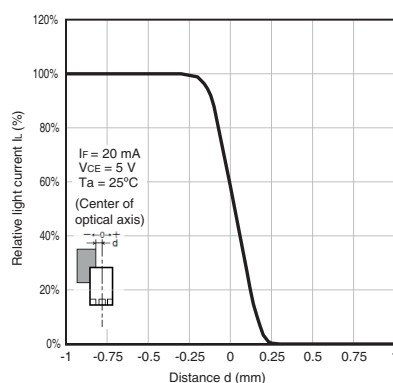
**Fig 6. Dark Current vs. Ambient Temperature Characteristics (Typical)**



**Fig 7. Response Time vs. Load Resistance Characteristics (Typical)**



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



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

