

# Photomicrosensor (Transmissive)

# EE-SX3350/EE-SX4350

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

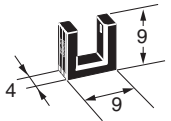

- Unique 5 mm Slot width.
- PCB surface mounting type.
- High resolution with a 0.5-mm-wide aperture.
- Choice of 2 types of Photo-IC output (EE-SX3350: Dark ON, EE-SX4350: Light ON).

 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 Detector 1.4 × 0.5	Photo IC	<b>EE-SX3350</b> (Dark-ON) <b>EE-SX4350</b> (Light-ON)

## 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
Reverse voltage	V <sub>R</sub>	4	V	---
<b>Detector</b>				
Power supply voltage	V <sub>CC</sub>	16	V	---
Output voltage	V <sub>OUT</sub>	28	V	---
Output current	I <sub>OUT</sub>	16	mA	---
Permissible output dissipation	P <sub>OUT</sub>	80	mW	--- *1
Operating temperature	T <sub>opr</sub>	-30 to +85	°C	--- *1
Storage temperature	T <sub>stg</sub>	-40 to +100	°C	--- *1
Reflow 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

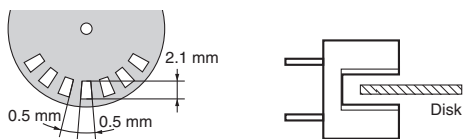
Connecting method	Weight (g)	Material
		Case
SMT	0.3	PPS

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

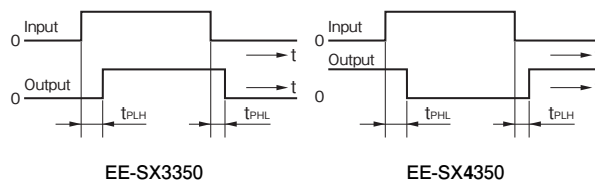
Item	Symbol	Value			Unit	Condition
		MIN.	TYP.	MAX.		
<b>Emitter</b>						
Forward voltage	V <sub>F</sub>	---	1.2	1.5	V	I <sub>F</sub> = 20 mA
Reverse current	I <sub>R</sub>	---	0.01	10	μA	V <sub>R</sub> = 4 V
Peak emission wavelength	λ <sub>P</sub>	---	940	---	nm	I <sub>F</sub> = 20 mA
<b>Detector</b>						
Power supply voltage	V <sub>CC</sub>	4.5	---	16	V	---
Low-level output voltage	V <sub>OL</sub>	---	0.12	0.4	V	V <sub>CC</sub> = 4.5 to 16 V I <sub>F</sub> = 0 mA (EE-SX3350) I <sub>F</sub> = 10 mA (EE-SX4350) I <sub>OL</sub> = 16 mA
High-level output voltage	I <sub>OH</sub>	---	---	100	μA	V <sub>CC</sub> = 4.5 to 16 V I <sub>F</sub> = 10 mA (EE-SX3350) I <sub>F</sub> = 0 mA (EE-SX4350) V <sub>OH</sub> = 28 V
Current consumption	I <sub>CC</sub>	---	4	10	mA	V <sub>CC</sub> = 4.5 to 16 V
Peak spectral sensitivity wavelength	λ <sub>P</sub>	---	870	---	nm	V <sub>CC</sub> = 4.5 to 16 V
LED current when output is OFF (EE-SX3350)	I <sub>FT</sub>	---	---	10	mA	V <sub>CC</sub> = 4.5 to 16 V
LED current when output is ON (EE-SX4350)	I <sub>FT</sub>	---	---	10	mA	V <sub>CC</sub> = 4.5 to 16 V
Hysteresis	ΔH	---	15	---	%	V <sub>CC</sub> = 4.5 to 16 V *1
Response frequency	f	3	---	---	kHz	V <sub>CC</sub> = 4.5 to 16 V I <sub>F</sub> = 20 mA I <sub>OL</sub> = 16 mA *2
Response delay time	t <sub>PLH</sub>	---	6	---	μs	V <sub>CC</sub> = 4.5 to 16 V I <sub>F</sub> = 20 mA I <sub>OL</sub> = 16 mA *3
Response delay time	t <sub>PHL</sub>	---	10	---	μs	V <sub>CC</sub> = 4.5 to 16 V I <sub>F</sub> = 20 mA I <sub>OL</sub> = 16 mA *3

\*1. Hysteresis denotes the difference in forward LED current value, expressed in percentage, calculated from the respective forward LED currents when the photo IC is turned from ON to OFF and when the photo IC is turned from OFF to ON.

\*2. The value of the response frequency is measured by rotating the disk as shown below.



\*3. The following illustrations show the definition of response delay time. The value in the parentheses applies to the EE-SX4350.



## Engineering Data (Reference value)

Fig 1. Forward Current vs. Collector Dissipation Temperature Rating

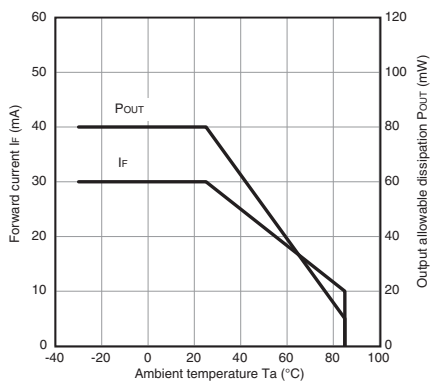


Fig 2. Forward Current vs. Forward Voltage Characteristics (Typical)

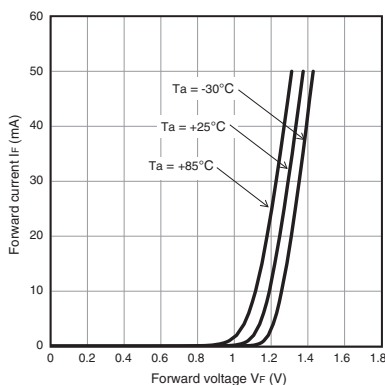


Fig 3. LED Current vs. Supply Voltage (Typical)

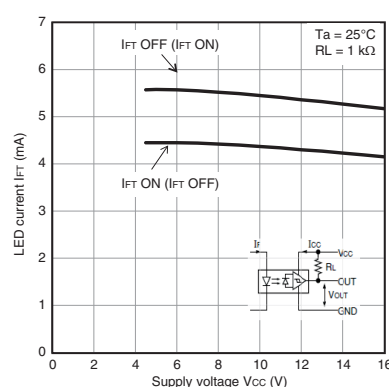


Fig 4. LED Current vs. Ambient Temperature Characteristics (Typical)

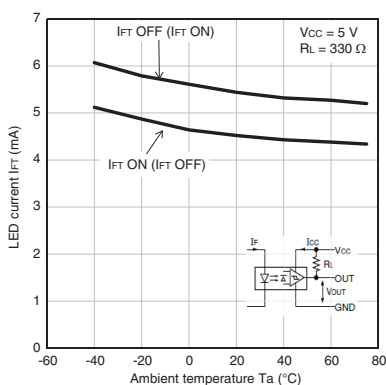


Fig 5. Low-level Output Voltage vs. Output Current (Typical)

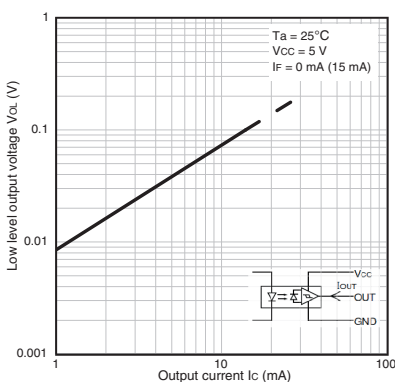


Fig 6. Low-level Output Voltage vs. Ambient Temperature Characteristics (Typical)

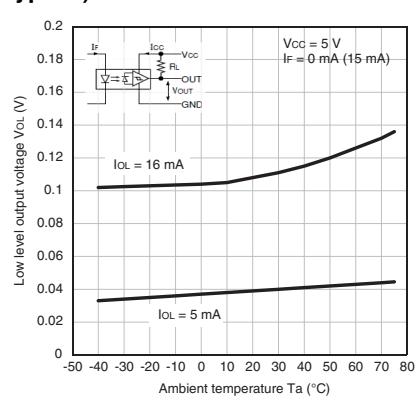


Fig 7. Current Consumption vs. Supply Voltage (Typical)

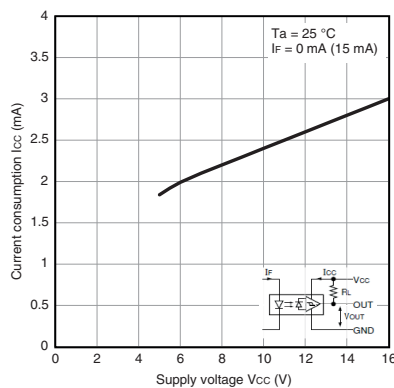


Fig 8. Response Delay Time vs. Forward Current (Typical)

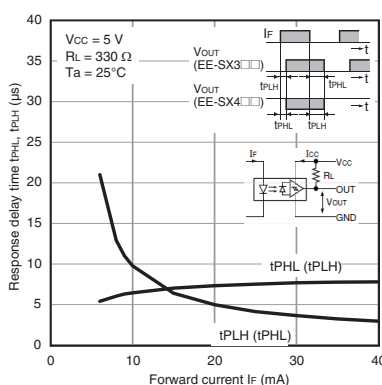


Fig 9. Repeat Sensing Position Characteristics (Typical)

