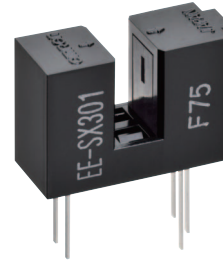


Slot/Terminal Type (Slot Width: 3.4 mm)

- Photo IC output (Two types available: Dark-ON (EE-SX301)/ Light-ON (EE-SX401))
- For use with power supply voltage of 4.5 to 16 VDC
- Directly connectable to C-MOS



⚠ Be sure to read *Safety Precautions* on Page 3.

RoHS Compliant

Ordering Information**Photomicrosensor**

Appearance	Sensing method	Connecting method	Sensing distance	Aperture size (H × W) (mm)	Output type	Model	Minimum packing unit (Unit: pcs)
	Transmissive (slot type)	Terminal for PCB mounting	3.4 mm (Slot width)	Both emitting side and detecting side 2.1 × 0.5	Photo IC	EE-SX301 (Dark-ON) EE-SX401 (Light-ON)	1

Note: Order in multiples of minimum packing unit.

Ratings, Characteristics and Exterior Specifications**Absolute Maximum Ratings (Ta = 25°C)**

Item	Symbol	Rated value	Unit
Emitter			
Forward current	I _F	50*1	mA
Reverse voltage	V _R	4	V
Detector			
Power supply voltage	V _{CC}	16	V
Output voltage	V _{OUT}	28	V
Output current	I _{OUT}	16	mA
Permissible output dissipation	P _{OUT}	250*1	mW
Operating temperature	T _{opr}	-40 to 75	°C
Storage temperature	T _{stg}	-40 to 85	°C
Soldering temperature	T _{sol}	260*2	°C

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

*2. Complete soldering within 10 seconds.

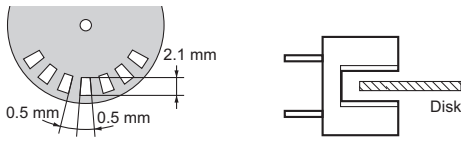
Exterior Specifications

Connecting method	Weight (g)	Material	
		Case	Bottom plate
Terminal for PCB mounting	0.8	Polycarbonate	Polycarbonate

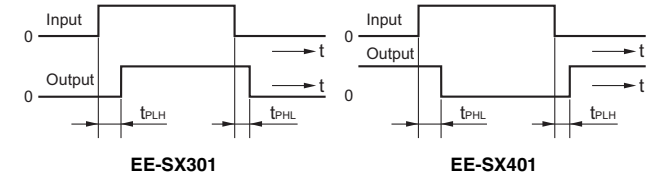
Electrical and Optical Characteristics (Ta = 25°C)

Item	Sym- bol	Value			Unit	Condition
		MIN.	TYP.	MAX.		
Emitter						
Forward voltage	V _F	—	1.2	1.5	V	I _F = 20 mA
Reverse current	I _R	—	0.01	10	μA	V _R = 4 V
Peak emission wavelength	λ _P	—	940	—	nm	I _F = 20 mA
Detector						
Low-level output voltage	V _{OL}	—	0.12	0.4	V	V _{CC} = 4.5 to 16 V, I _{OL} = 16 mA I _F = 0 mA (EE-SX301) I _F = 8 mA (EE-SX401)
High-level output voltage	V _{OH}	15	—	—	V	V _{CC} = 16 V, R _L = 1 kΩ I _F = 8 mA (EE-SX301) I _F = 0 mA (EE-SX401)
Current consumption	I _{CC}	—	3.2	10	mA	V _{CC} = 16 V
Peak spectral sensitivity wavelength	λ _P	—	870	—	nm	V _{CC} = 4.5 to 16 V
LED current when output OFF (EE-SX301)	I _{FT}	—	3	8	mA	V _{CC} = 4.5 to 16 V
LED current when output ON (EE-SX401)						
Hysteresis	ΔH	—	15	—	%	V _{CC} = 4.5 to 16 V*1
Response frequency	f	3	—	—	kHz	V _{CC} = 4.5 to 16 V*2 I _F = 15 mA, I _{OL} = 16 mA
Response delay time	t _{PLH} (t _{PHL})	—	3	—	μs	V _{CC} = 4.5 to 16 V*3 I _F = 15 mA, I _{OL} = 16 mA
Response delay time	t _{PHL} (t _{PLH})	—	20	—	μs	V _{CC} = 4.5 to 16 V*3 I _F = 15 mA, I _{OL} = 16 mA

- *1. Hysteresis is the difference in LED current between two states when the output state is inverted and expressed as a percentage.
- *2. The value of the response frequency is measured by rotating the disk as shown below.



- *3. Refer to the following diagrams for definitions of response delay time. (t_{PHL}) and (t_{PLH}) are applicable to EE-SX401



Engineering Data (Reference Value) Note: Values in parentheses are for EE-SX401

Fig 1. Forward Current vs. Temperature Ratings for Output Allowable Dissipation

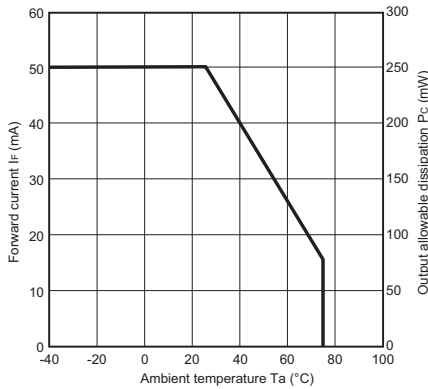


Fig 2. Forward Current vs. Forward Voltage Characteristics (Typical)

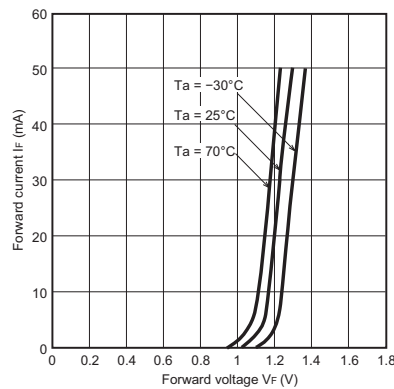


Fig 3. LED Current When Output ON (OFF) vs. Power Supply Voltage Characteristics (Typical)

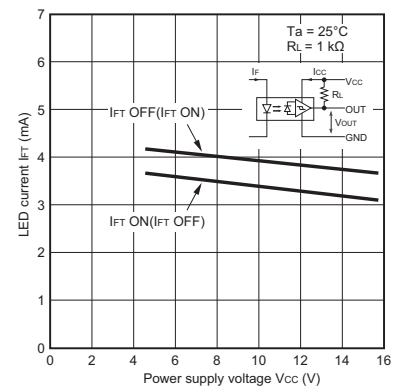


Fig 4. LED Current When Output ON (OFF) vs. Ambient Temperature Characteristics (Typical)

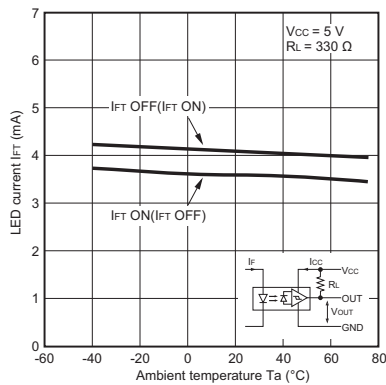


Fig 5. Low-level Output Voltage vs. Output Current Characteristics (Typical)

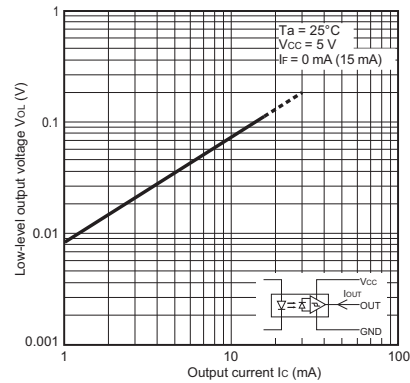


Fig 6. Low-level Output Voltage vs. Ambient Temperature Characteristics (Typical)

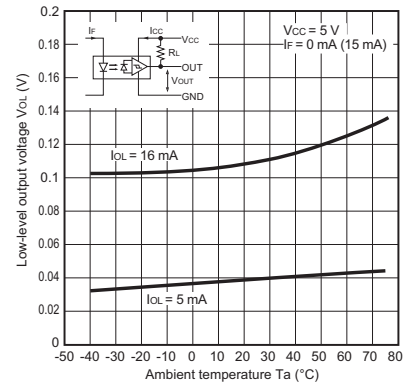


Fig 7. Current Consumption vs. Power Supply Voltage Characteristics (Typical)

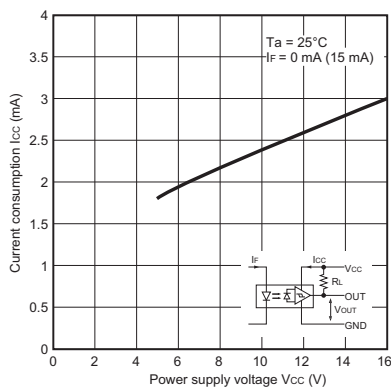


Fig 8. Response Delay Time vs. Forward Current Characteristics (Typical)

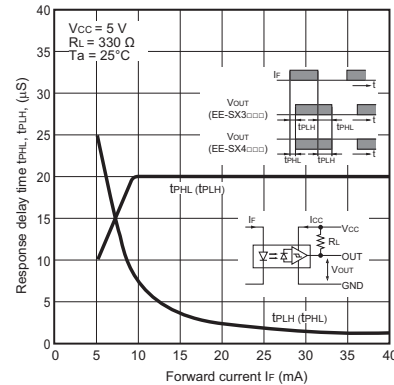
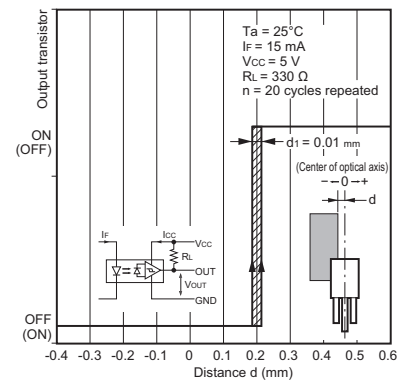


Fig 9. Repeated Sensing Position Characteristics (Typical)



Safety Precautions

To ensure safe operation, be sure to read and follow the Instruction Manual provided with the Sensor.

CAUTION

This product is not designed or rated for ensuring safety of persons either directly or indirectly.
Do not use it for such purposes.



Precautions for Correct Use

Do not use the product in atmospheres or environments that exceed product ratings.
Dispose of this product as industrial waste.

Precautions for Safe Use

Do not use the product with a voltage or current that exceeds the rated range.

Applying a voltage or current that is higher than the rated range may result in explosion or fire.

Do not miswire such as the polarity of the power supply voltage.

Otherwise the product may be damaged or it may burn.

Do not short-circuit the load.

Otherwise explosion or burning may occur.

This product does not resist water. Do not use the product in places where water or oil may be sprayed onto the product.

Dimensions and Internal Circuit

(Unit: mm)

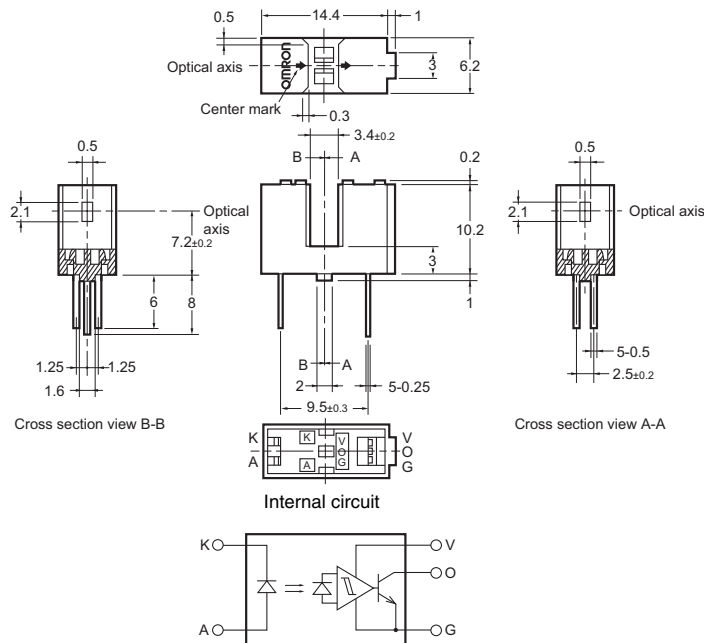
Photomicrosensor

EE-SX301
EE-SX401



Aperture size (H × W)

Emitter	Detector
2.1 × 0.5	2.1 × 0.5



Unless otherwise specified, the tolerances are as shown below.

Terminal No.	Name
A	Anode
K	Cathode
V	Power supply (Vcc)
O	Output (OUT)
G	Ground (GND)

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

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