Photomicrosensor (Transmissive)

EE-SX3088/EE-SX4088

Slot/Terminal Type (Slot Width: 3.4 mm)

- Photo IC output (Two types available: Dark-ON (EE-SX3088)/ Light ON (EE-SX4088))
- For use with power supply voltage of 4.5 to 16 VDC
- Directly connectable to C-MOS
- Pre-wired types available (EE-SX3088-W11/EE-SX4088-W11)

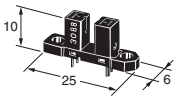


⚠ **Be sure to read *Safety Precautions* on Page 3.**

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 1.9 × 0.5	Photo IC	**EE-SX3088** (Dark-ON) **EE-SX4088** (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.

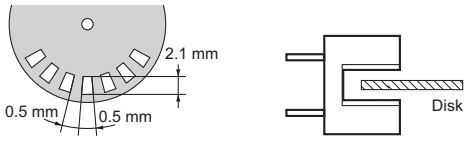
Exterior Specifications

Connecting method	Weight (g)	Material
		Case
Terminal for PCB mounting	0.6	Polycarbonate

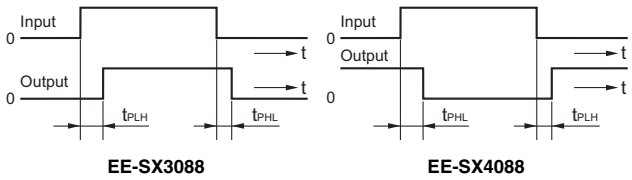
Electrical and Optical Characteristics (Ta = 25°C)

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-SX3088) I_F = 5 mA (EE-SX4088)
	High-level output voltage	V_{OH}	15	—	—	V	V_{CC} = 16 V, R_L = 1 kΩ I_F = 5 mA (EE-SX3088) I_F = 0 mA (EE-SX4088)
	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-SX3088) / **LED current when output ON (EE-SX4088)**		I_{FT}	—	2	5	mA	V_{CC} = 4.5 to 16 V
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-SX4088



Engineering Data (Reference Value) Note: Values in parentheses are for EE-SX4088

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

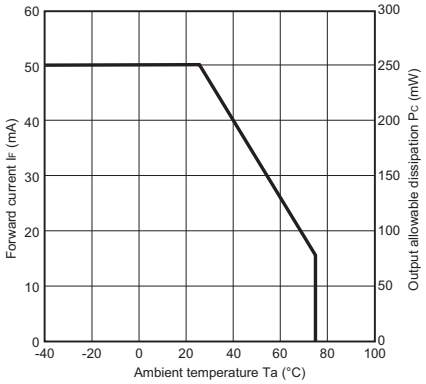


Fig 2. Forward Current vs. Forward Voltage Characteristics (Typical)

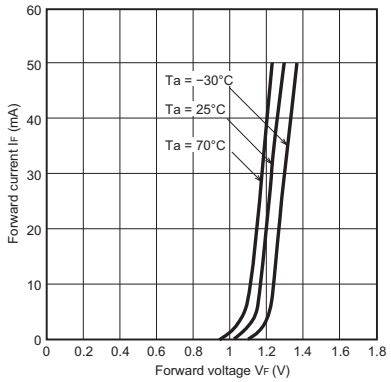


Fig 3. LED Current When Output ON (OFF) vs. Power Supply Voltage Characteristics (Typical)

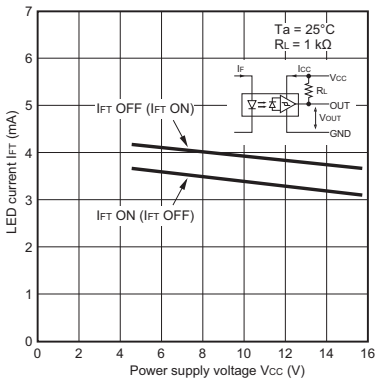


Fig 4. LED Current When Output ON (OFF) vs. Ambient Temperature Characteristics (Typical)

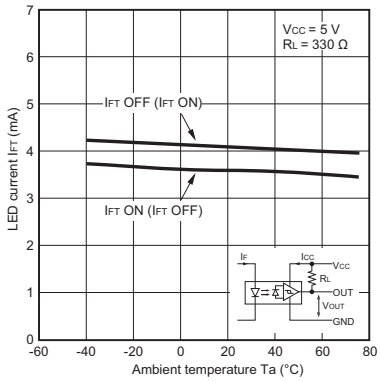


Fig 5. Low-level Output Voltage vs. Output Current Characteristics (Typical)

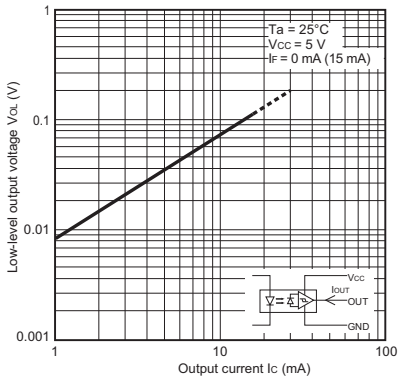


Fig 6. Low-level Output Voltage vs. Ambient Temperature Characteristics (Typical)

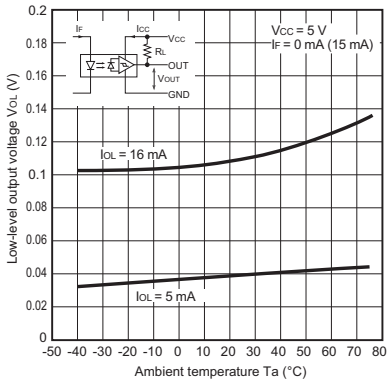


Fig 7. Current Consumption vs. Power Supply Voltage Characteristics (Typical)

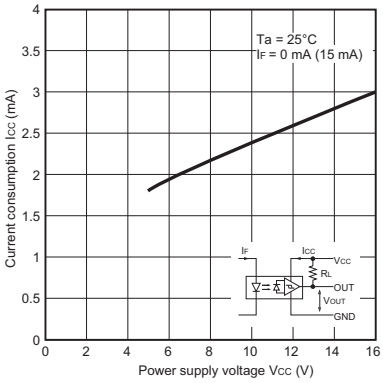


Fig 8. Response Delay Time vs. Forward Current Characteristics (Typical)

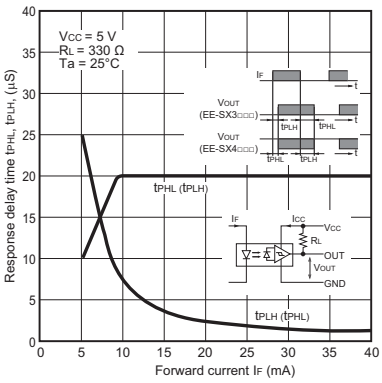
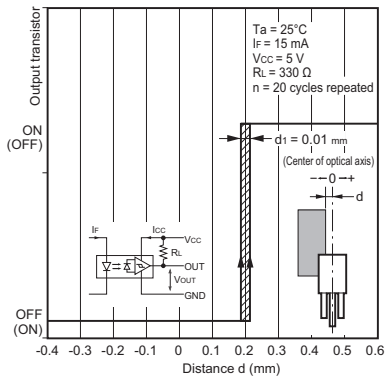


Fig 9. Repeated Sensing Position Characteristics (Typical)



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 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.

Precautions for Correct Use

Do not use the product in atmospheres or environments that exceed product ratings.

When using the sensor on moving parts, secure the pull out portion of the cord so that it is not subjected to direct stress.

Do not perform cord wiring when power supply voltage is applied. Doing so may result in breakage.

Dispose of this product as industrial waste.

Dimensions and Internal Circuit

(Unit: mm)

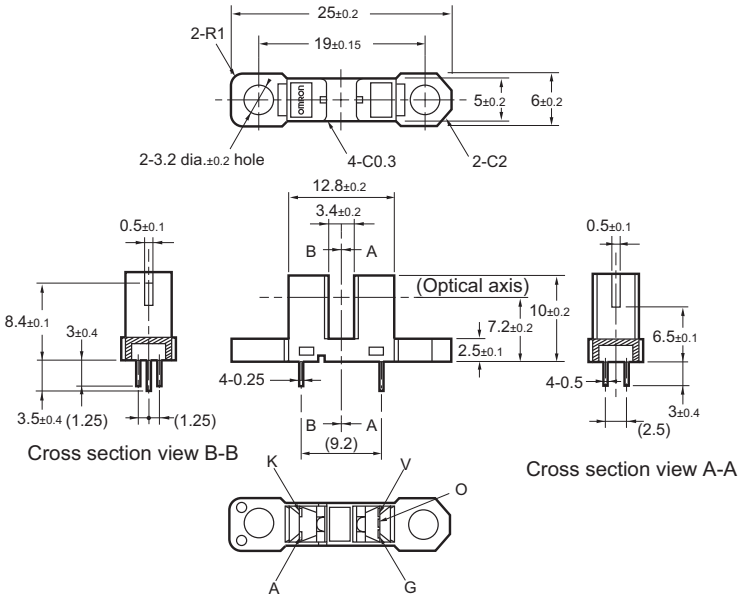
Photomicrosensor

EE-SX3088
EE-SX4088

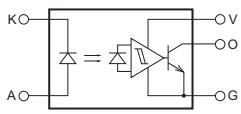


Aperture size (H × W)

Emitter	Detector
1.9 × 0.5	1.9 × 0.5



Internal circuit



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

Unless otherwise specified, the tolerances are as shown below.

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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