Photomicrosensor (Transmissive) EE-SX3081/EE-SX4081

Slot/Terminal Type (Slot Width: 5 mm)

- Photo IC output (Two types available: Dark-ON (EE-SX3081)/ Light ON (EE-SX4081))
- 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.

Ordering Information

Photomicrosensor

Appearance	Sensing method	Connecting method	Sensing distance	Aperture size (H × W) (mm)	Output type	Model	Minimum packing unit (Unit: pcs)
10 13.7 5	Transmissive (slot type)	Terminal for PCB mounting	5 mm (Slot width)	Both emitting side and detecting side 2 × 0.5	Photo IC	EE-SX3081 (Dark-ON) EE-SX4081 (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	lf	50* ¹	mA
	Reverse voltage	VR	4	V
Detector				
	Power supply voltage	Vcc	16	V
	Output voltage	Vout	28	V
	Output current	Іоит	16	mA
	Permissible output dissipation	Роит	250* ¹	mW
Operating temperature		Topr	-40 to 75	°C
Storage te	emperature	Tstg	-40 to 85	°C
Soldering	temperature	Tsol	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	Woight (g)	Material		
connecting method	weigin (g)	Case		
Terminal for PCB mounting	0.5	Polycarbonate		

Electrical and Optical Characteristics (Ta = 25°C)

Item		Svm- Value						
		bol	MIN.	TYP.	MAX.	Unit	Condition	
Emitter								
	Forward voltage	VF	—	1.2	1.5	V	I⊧ = 20 mA	
	Reverse current	IR	—	0.01	10	μA	VR = 4 V	
	Peak emission wavelength	λρ	_	940	_	nm	l⊧ = 20 mA	
De	tector							
	Low-level output voltage	Vol	_	0.12	0.4	v	Vcc = 4.5 to 16 V, loL = 16 mA IF = 0 mA (EE-SX3081) IF = 8 mA (EE-SX4081)	
	High-level output voltage	Vон	15	_	_	V	$\label{eq:Vcc} \begin{array}{l} V_{cc} = 16 \ V, \\ R_{L} = 1 \ k\Omega \\ I_{F} = 8 \ mA \\ (EE-SX3081) \\ I_{F} = 0 \ mA \\ (EE-SX4081) \end{array}$	
	Current consumption	lcc	_	3.2	10	mA	Vcc = 16 V	
	Peak spectral sensitivity wavelength	λр	_	870	_	nm	Vcc = 4.5 to 16 V	
LED current when output OFF (EE-SX3081) LED current when output ON (EE-SX4081)		IFT	_	_	8	mA	Vcc = 4.5 to 16 V	
Hysteresis		ΔH	—	15	—	%	Vcc = 4.5 to 16 V*1	
Response frequency		f	3	_	_	kHz	Vcc = 4.5 to 16 V*2 IF = 20 mA, Io∟ = 16 mA	
Response delay time		tplн (tpнL)	_	3	_	μs	Vcc = 4.5 to 16 V ^{*3} IF = 20 mA, Io∟ = 16 mA	
Response delay time		tpнL (tplн)	_	20	_	μs	Vcc = 4.5 to 16 V*3 IF = 20 mA, IoL = 16 mA	



EE-SX3081/EE-SX4081

- *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. (tPHL) and (tPLH) are applicable to EE-SX4081



Engineering Data (Reference Value) Note: Values in parentheses are for EE-SX4081

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Fig 1. Forward Current vs. Temperature Fig 2. Forward Current vs. Forward **Ratings for Output Allowable Dissipation Voltage Characteristics (Typical)**



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



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





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



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



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



Fig 6. Low-level Output Voltage vs. Ambient **Temperature 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.

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.

Dimensions and Internal Circuit

Photomicrosensor

EE-SX3081 EE-SX4081

Aperture size (H × W)
Emitter De

 2×0.5



Internal circuit



Terminal No.	Name		
А	Anode		
К	Cathode		
V	Power supply (Vcc)		
0	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

Precautions for Correct Use

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

(Unit: mm)

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