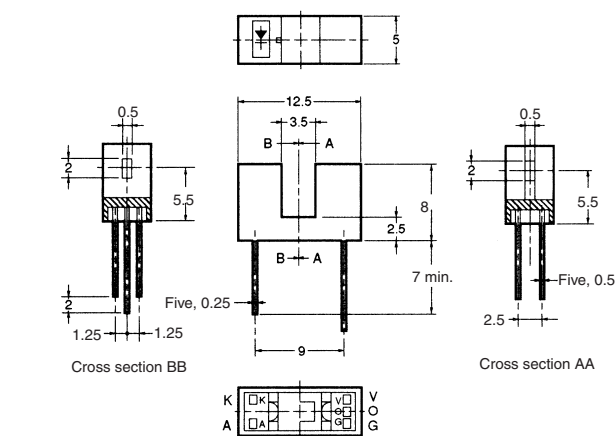


Photomicrosensor (Transmissive)

EE-SX384/-SX484

■ Dimensions

Note: All units are in millimeters unless otherwise indicated.



Internal Circuit

Terminal No.	Name
A	Anode
K	Cathode
V	Power supply (V _{CC})
O	Output (OUT)
G	Ground (GND)

Unless otherwise specified,
the tolerances are ± 0.2 mm.

■ Features

- Incorporates an IC chip with a built-in detector element and amplifier.
- Incorporates a detector element with a built-in temperature compensation circuit.
- A wide supply voltage range: 4.5 to 16 VDC
- Directly connects with C-MOS and TTL.
- High resolution with a 0.5-mm-wide sensing aperture.
- Dark ON model (EE-SX384); Light ON model (EE-SX484)
- RoHS Compliant.

■ Absolute Maximum Ratings (Ta = 25°C)

Item		Symbol	Rated value
Emitter	Forward current	I_F	50 mA (see note 1)
	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 mW (see note 1)
Ambient temperature	Operating	T_{opr}	-40°C to 75°C
	Storage	T_{stg}	-40°C to 85°C
Soldering temperature		T_{sol}	260°C (see note 2)

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

2. Complete soldering within 10 seconds.

■ Ordering Information

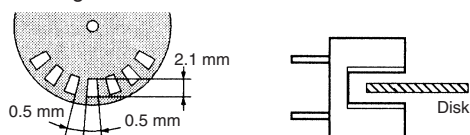
Description		Model
Photomicrosensor (transmissive)	Dark ON	EE-SX384
	Light ON	EE-SX484

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

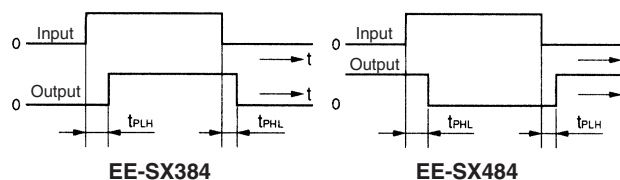
Item		Symbol	Value	Condition
Emitter	Forward voltage	V _F	1.2 V typ., 1.5 V max.	I _F = 20 mA
	Reverse current	I _R	0.01 μA typ., 10 μA max.	V _R = 4 V
	Peak emission wavelength	λ _P	940 nm typ.	I _F = 20 mA
Detector	Low-level output voltage	V _{OL}	0.12 V typ., 0.4 V max.	V _{CC} = 4.5 to 16 V, I _{OL} = 16 mA, I _F = 0 mA (EE-SX384), I _F = 8 mA (EE-SX484)
	High-level output voltage	V _{OH}	15 V min.	V _{CC} = 16 V, R _L = 1 kΩ, I _F = 8 mA (EE-SX384), I _F = 0 mA (EE-SX484)
	Current consumption	I _{CC}	3.2 mA typ., 10 mA max.	V _{CC} = 16 V
	Peak spectral sensitivity wavelength	λ _P	870 nm typ.	V _{CC} = 4.5 to 16 V
LED current when output is OFF		I _{FT}	3 mA typ., 8 mA max.	V _{CC} = 4.5 to 16 V
LED current when output is ON				
Hysteresis		ΔH	15% typ.	V _{CC} = 4.5 to 16 V (see note 1)
Response frequency		f	3 kHz min.	V _{CC} = 4.5 to 16 V, I _F = 15 mA, I _{OL} = 16 mA (see note 2)
Response delay time		t _{PLH} (t _{PHL})	3 μs typ.	V _{CC} = 4.5 to 16 V, I _F = 15 mA, I _{OL} = 16 mA (see note 3)
Response delay time		t _{PHL} (t _{PLH})	20 μs typ.	V _{CC} = 4.5 to 16 V, I _F = 15 mA, I _{OL} = 16 mA (see note 3)

Note: 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.



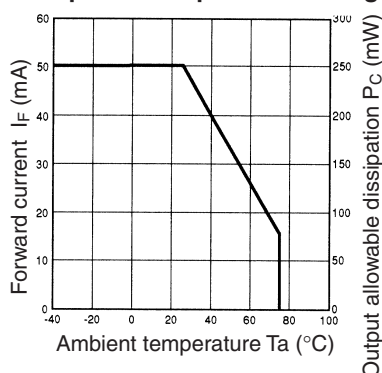
3. The following illustrations show the definition of response delay time. The value in the parentheses applies to the EE-SX484.



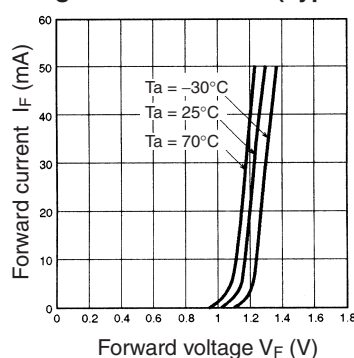
Engineering Data

Note: The values in the parentheses apply to the EE-SX484.

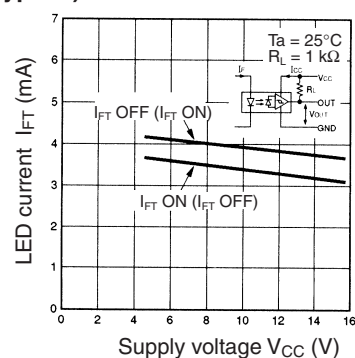
Forward Current vs. Collector Dissipation Temperature Rating



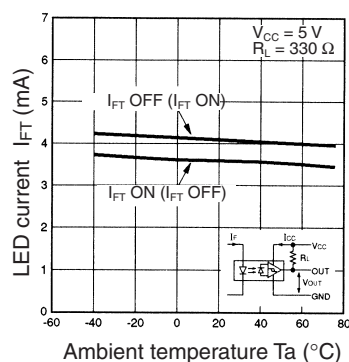
Forward Current vs. Forward Voltage Characteristics (Typical)



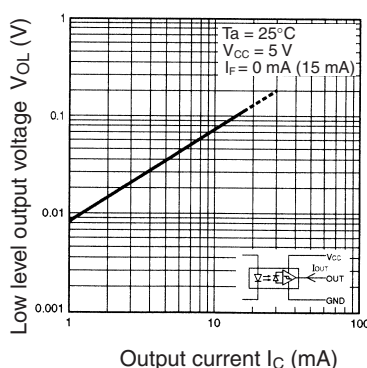
LED Current vs. Supply Voltage (Typical)



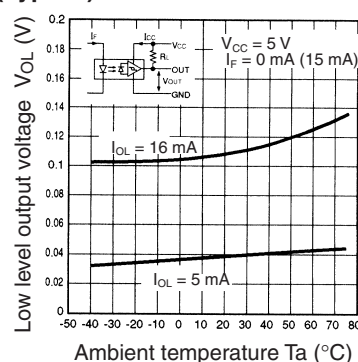
LED Current vs. Ambient Temperature Characteristics (Typical)



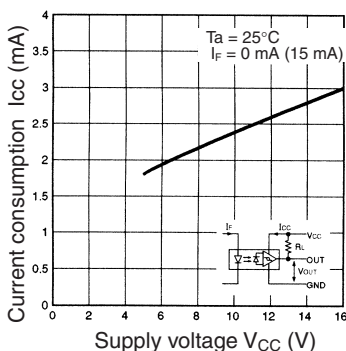
Low-level Output Voltage vs. Output Current (Typical)



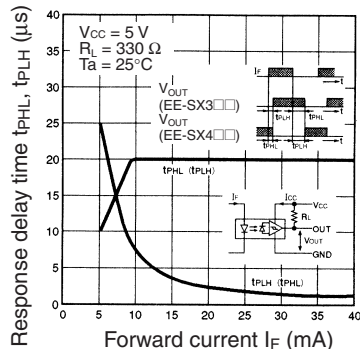
Low-level Output Voltage vs. Ambient Temperature Characteristics (Typical)



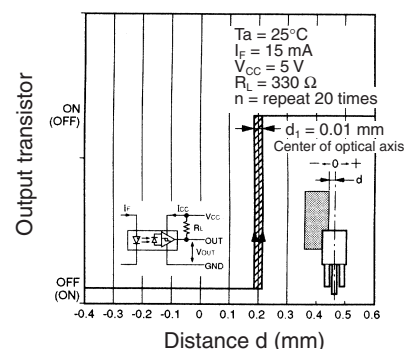
Current Consumption vs. Supply Voltage (Typical)



Response Delay Time vs. Forward Current (Typical)



Repeat Sensing Position Characteristics (Typical)





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**OMRON ELECTRONIC
COMPONENTS LLC**

55 E. Commerce Drive, Suite B
Schaumburg, IL 60173

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Contact Us :

➤ Address :

401 Building No.5, JiuGe Business Center, Lane 2301, Yishan Rd
Minhang District, Shanghai , China

➤ Sales :

Direct +86 (21) 6401-6692

Email amall@ameya360.com

QQ 800077892

Skype ameyasales1 ameyasales2

➤ Customer Service :

Email service@ameya360.com

➤ Partnership :

Tel +86 (21) 64016692-8333

Email mkt@ameya360.com