Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832
Email & Skype: info@chipsmall.com Web: www.chipsmall.com
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

Slot / Connector Type

- Photo IC output (Dark-ON / Light ON)
- Connector with strong lock manufactured by JST. Mates with GHR-03.
- Mounted with M2 screws
- Models available for 5-V or 12-V power supply.
- Zener diode mounted for greater noise immunity (EE-SX3162-P1-Z and EE-SX4162-P1-Z only).
- Connector with cable (Order Separately) is available. EE-5002 1M (Refer to page 5.)
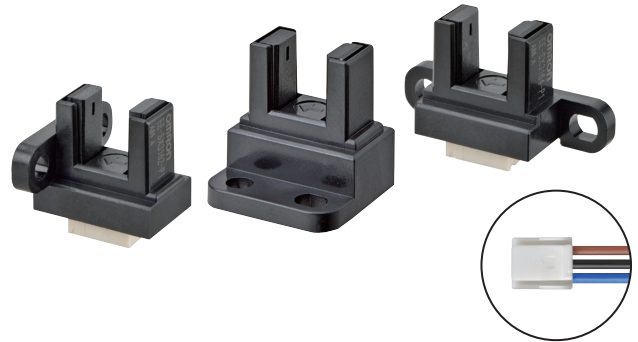
⚠ **Be sure to read *Safety Precautions* on page 3.**

Features

Models with Connectors Eliminate the Need for a Separate PCB
All-in-One Structure Facilitates Downsizing

Photomicro sensor

No PCB designing! Enables downsizing!

Control PCB
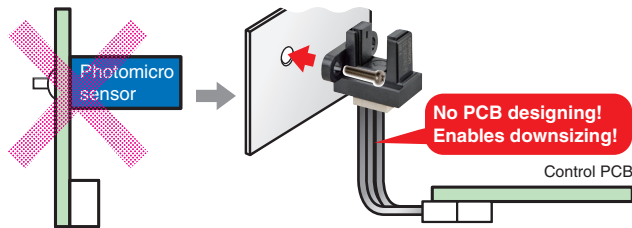
Models Available for Mounting on X, Y, and Z Axes
Models with connectors are available with different mounting directions.

Axis Z

Axis X

Axis Y
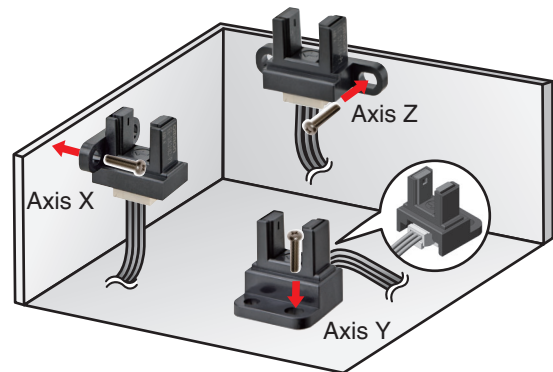
Application

Office Automation Equipment (Copier, Printer)
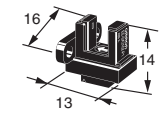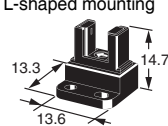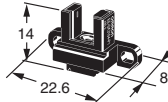
Amusement Equipment

Home Appliances (Air Cleaner)

Vending Machine, ATM

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Ordering Information

Photomicrosensor

Appearance	Sensing method	Connecting method	Sensing distance	Aperture size (H × W) (mm)	Output type	Power supply voltage	Output configuration	Model
Side mounting 16 14 13	Transmissive (slot type)	Connector	5 mm (Slot width)	Emitter 1.4 x 1.4 Detector 1.4 x 0.5	Photo IC	12 VDC	Dark-ON	EE-SX3162-P1
								EE-SX3162-P1-Z
							Light-ON	EE-SX4162-P1
L-shaped mounting 13.3 14.7 13.6								EE-SX4162-P1-Z
						5 VDC	Dark-ON	EE-SX3162-P2
							Light-ON	EE-SX4162-P2
						12 VDC	Dark-ON	EE-SX3163-P1
							Light-ON	EE-SX4163-P1
Horizontal mounting 14 8.3 22.6						5 VDC	Dark-ON	EE-SX3163-P2
							Light-ON	EE-SX4163-P2
						12 VDC	Dark-ON	EE-SX3164-P1
							Light-ON	EE-SX4164-P1
						5 VDC	Dark-ON	EE-SX3164-P2
							Light-ON	EE-SX4164-P2

Ratings, Characteristics and Exterior Specifications

Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Rated value		Unit	Remarks
		EE-SX3162-P1 EE-SX3162-P1-Z EE-SX3163-P1 EE-SX3164-P1 EE-SX4162-P1 EE-SX4162-P1-Z EE-SX4163-P1 EE-SX4164-P1	EE-SX3162-P2 EE-SX3163-P2 EE-SX3164-P2 EE-SX4162-P2 EE-SX4163-P2 EE-SX4164-P2		
Power supply voltage	V_{CC}	13.2 DC	5.5 DC	V	—
Output voltage	V_{OUT}	13.2		V	—
Output current	I_{OUT}	16		mA	—
Permissible output dissipation	P_{OUT}	80		mW	—*
Operating temperature	T_{opr}	-20 to +85		°C	—*
Storage temperature	T_{stg}	-30 to +85		°C	—*

* Even if the specified conditions are met, perform derating of the voltage and current as required by the temperature rating diagram. Also, do not expose the product to freezing or condensation.

Exterior Specifications

Appearance		Side mounting	L-shaped mounting	Horizontal mounting
Item		EE-SX3162-P1 EE-SX3162-P1-Z EE-SX4162-P1 EE-SX4162-P1-Z EE-SX3162-P2 EE-SX4162-P2	EE-SX3163-P1 EE-SX4163-P1 EE-SX3163-P2 EE-SX4163-P2	EE-SX3164-P1 EE-SX4164-P1 EE-SX3164-P2 EE-SX4164-P2
Connecting method		Connector		
Weight		Approx. 1.2 g	Approx.1.4 g	Approx. 1.1 g
Material	Case	Polybutylene terephthalate (PBT)		
	Emitter and receiver sections	Polyphenylene sulfide (PPS)		

Electrical and Optical Characteristics
(Ta = 25°C)

Item	Symbol		Rated value	
			12 VDC model	5 VDC model
	Dark-ON		EE-SX3162-P1 EE-SX3162-P1-Z EE-SX3163-P1 EE-SX3164-P1	EE-SX3162-P2 EE-SX3163-P2 EE-SX3164-P2
	Light-ON		EE-SX4162-P1 EE-SX4162-P1-Z EE-SX4163-P1 EE-SX4164-P1	EE-SX4162-P2 EE-SX4163-P2 EE-SX4164-P2
Power supply voltage	V_{CC}		10.8 to 13.2VDC	4.5 to 5.5 VDC
Current consumption	I_{CC}		25 mA max. (With and without incident)	
Low-level output voltage	V_{OL}		0.3 V max. (I_{OUT}=16 mA) (Dark-ON: without incident, Light-ON: with incident)	
High-level output voltage	V_{OH}		(V_{CC}×0.9 V max. (V_{OUT}=V_{CC}, R_L=47 kΩ)) (Dark-ON: with incident, Light-ON: without incident)	
Response frequency	f		3 kHz min. (V_{OUT}=V_{CC}, I_{OUT}=16 mA *1)	
			1 kHz min. (V_{OUT}=V_{CC}, I_{OUT}=16 mA *1,*2)	

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

2.1 mm
0.5 mm
0.5 mm
Disk
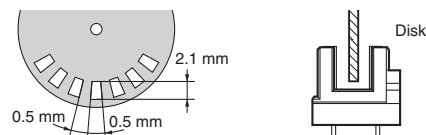
*2. Only with models ending in -Z.

Engineering Data (Reference value)

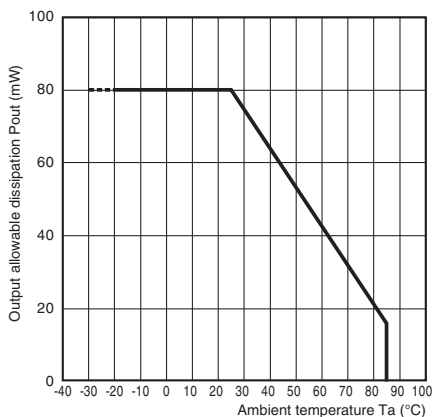**Fig 1. Output Allowable Dissipation vs. Ambient Temperature Characteristics**

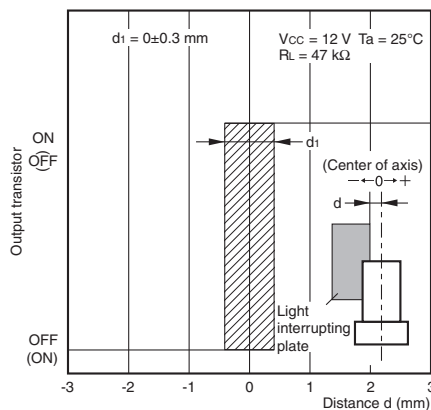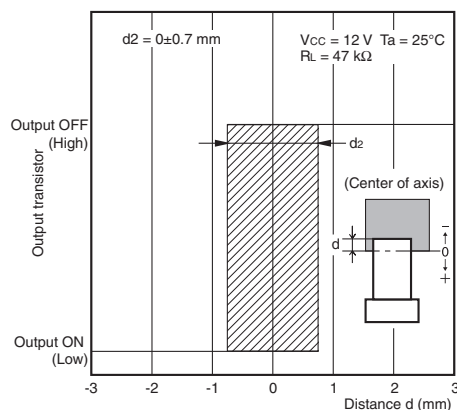**Fig 2. Sensing Position Characteristics (Typical)**

Fig 3. 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.

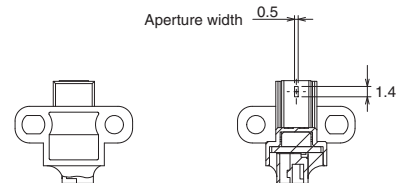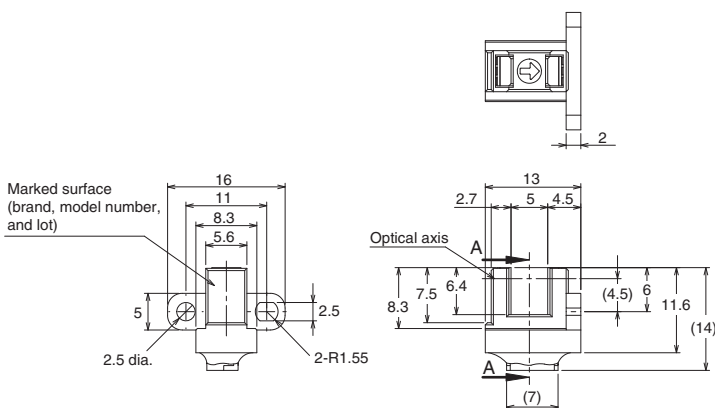Otherwise explosion or burning may occur.

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. Dispose of this product as industrial waste.

Dimensions and Internal Circuit

(Unit: mm)

Photomicrosensor

EE-SX3162-P1
EE-SX3162-P1-Z
EE-SX4162-P1
EE-SX4162-P1-Z
EE-SX3162-P2
EE-SX4162-P2

Marked surface
(brand, model number,
and lot)

16
11
8.3
5.6

5
2.5

2.5 dia.
2-R1.55

2

13
2.7
5
4.5

Optical axis
A

7.5
6.4
8.3

(4.5)
6
11.6
(14)

A
(7)

Aperture width
0.5
1.4

Cross section view A-A
(Detector side)

Aperture size (H × W)

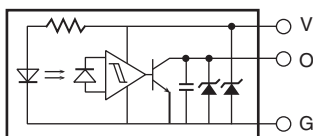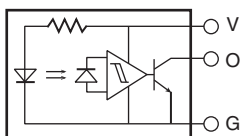| Emitter	Detector
1.4 × 1.4	1.4 × 0.5

Manufactured by JST

Recommended Mating Connectors:
JST (Japan Solderless Terminal) GHR-03

(3) (2) (1)

Internal Circuit

○ V
○ O
○ G

○ V
○ O
○ G

Note: Only with models ending in -Z.

Terminal No.	Name
(1)	Ground (GND)
(2)	Output (OUT)
(3)	Power supply (Vcc)

Unless otherwise specified, the
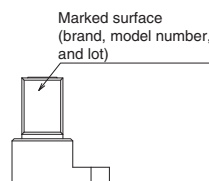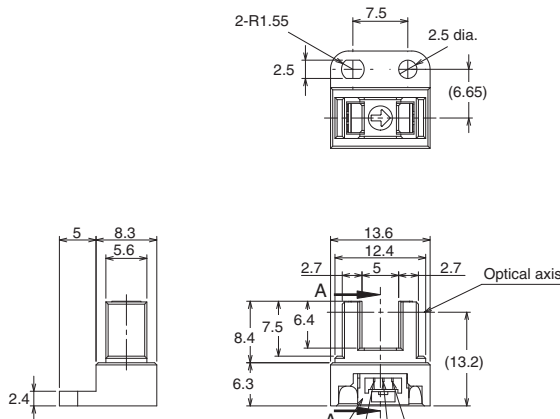tolerances are as shown below.

Dimensions	Tolerance
3 mm max.	±0.2
3 < mm ≤ 6	±0.24
6 < mm ≤ 10	±0.29
10 < mm ≤ 18	±0.35
18 < mm ≤ 30	±0.42

Note: Dimensions in
parentheses are for
reference only.

EE-SX3163-P1
EE-SX4163-P1
EE-SX3163-P2
EE-SX4163-P2

2-R1.55
7.5
2.5 dia.
2.5
(6.65)

5
8.3
5.6

13.6
12.4
2.7
5
2.7

Optical axis
A

7.5
6.4
8.4
6.3
2.4

(13.2)

A

Manufactured by JST

(3) (2) (1)

Recommended Mating Connectors:
JST (Japan Solderless Terminal) GHR-03

Marked surface
(brand, model number,
and lot)

Aperture width
0.5
1.4

Cross section view A-A
(Detector side)

Aperture size (H × W)

Emitter	Detector
1.4 × 1.4	1.4 × 0.5

Internal Circuit

○ V
○ O
○ G

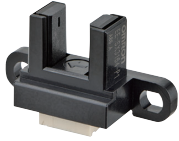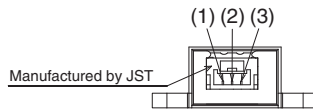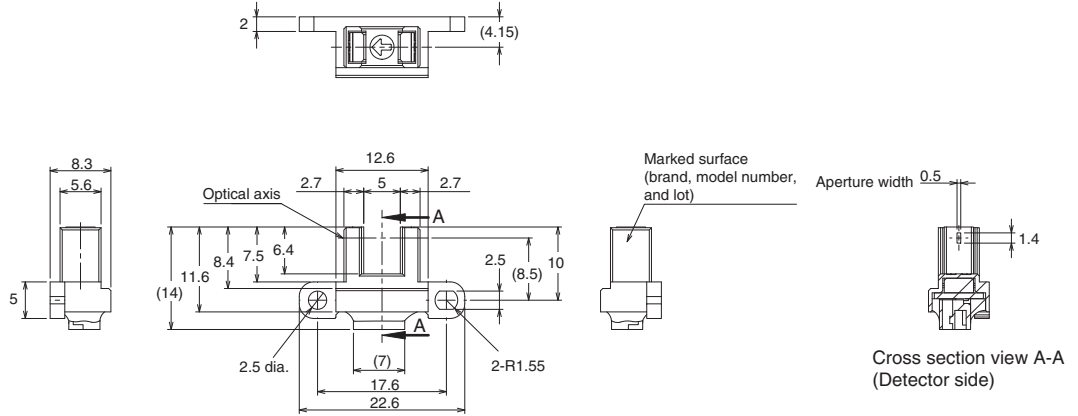| Terminal No.	Name
(1)	Ground (GND)
(2)	Output (OUT)
(3)	Power supply (Vcc)

Unless otherwise specified, the
tolerances are as shown below.

Dimensions	Tolerance
3 mm max.	±0.2
3 < mm ≤ 6	±0.24
6 < mm ≤ 10	±0.29
10 < mm ≤ 18	±0.35
18 < mm ≤ 30	±0.42

Note: Dimensions in
parentheses are for
reference only.

EE-SX3164-P1
EE-SX4164-P1
EE-SX3164-P2
EE-SX4164-P2

Marked surface (brand, model number, and lot)

Aperture width 0.5

Cross section view A-A (Detector side)

Optical axis

A

2.5 dia.

2-R1.55

Aperture size (H × W)

Emitter	Detector
1.4 × 1.4	1.4 × 0.5

Manufactured by JST

Recommended Mating Connectors:
JST (Japan Solderless Terminal) GHR-03

Internal Circuit
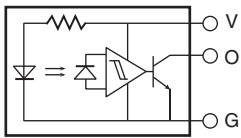
O V
O O
O G

Terminal No.	Name
(1)	Ground (GND)
(2)	Output (OUT)
(3)	Power supply (Vcc)

Unless otherwise specified, the tolerances are as shown below.

Dimensions	Tolerance
3 mm max.	±0.2
3 < mm ≤ 6	±0.24
6 < mm ≤ 10	±0.29
10 < mm ≤ 18	±0.35
18 < mm ≤ 30	±0.42

Note: Dimensions in parentheses are for reference only.

Connector with cable (Order Separately)

EE-5002 1M
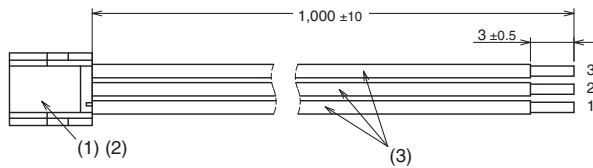
No.	Name	Model/Specifications	Quantity	Manufacturer
(1)	Connector, HS for 101-150 harness	GHR-03V-S	1	JST
(2)	Connector, CT for 101-150 harness	SSHL-002TP0.2	3	JST
(3)	Lead wires	UL1061 AWG26	3	—

Wiring

Connector circuit number	Lead-wire color
1	Blue
2	Black
3	Brown

1,000 ±10   3 ±0.5

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Note: Do not use this document to operate the Unit.

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Electronic and Mechanical Components Company   **Contact: www.omron.com/ecb**