

# Photomicrosensor (Reflective)

# EE-SPY415

## Screw mounting, Reflective Photomicrosensor with a connector (Detectable sensing distance of 3 to 19 mm: white paper)

- Photo IC circuitry greatly improves response time
- Pulse modulation effectively reduces external light interference
- Convergent technology



**⚠** Be sure to read *Safety Precautions* on page 2.

RoHS Compliant

## Model Number Structure

**EE-S P Y 4 15**

(1) (2) (3) (4) (5)

(1) Photomicrosensor (2) Light modulation (3) Reflective (4) Photo IC output, Light-ON (5) 15: Serial number

## Ordering Information

### Photomicrosensor

Appearance	Sensing method	Connecting method	Sensing distance	Output type	Model	Minimum packing unit (Unit: pcs)
	Reflective	Connector	11±8 mm	Photo IC	EE-SPY415	1

Note: Order in multiples of minimum packing unit.

## Specifications

### Absolute Maximum Ratings (Ta = 25°C)

Item	Sym bol	Rated value	Unit	Remarks
Supply voltage	V <sub>CC</sub>	7	VDC	---
Output voltage	V <sub>OUT</sub>	16	V	Output transistor voltage (Between Collector and Emitter)
Output current	I <sub>OUT</sub>	30	mA	Output transistor collector current
Output power dissipation *1	P <sub>OUT</sub>	250	mW	Output transistor collector power dissipation
Operating temperature *2	T <sub>opr</sub>	-10 to 60	°C	---
Storage temperature	T <sub>stg</sub>	-40 to 85	°C	---

\*1. Output power dissipation (P<sub>OUT</sub>) must be derated in accordance with Figure 1 in the Engineering Data Section.  
\*2. To be used in applications where no freezing or condensation occurs.

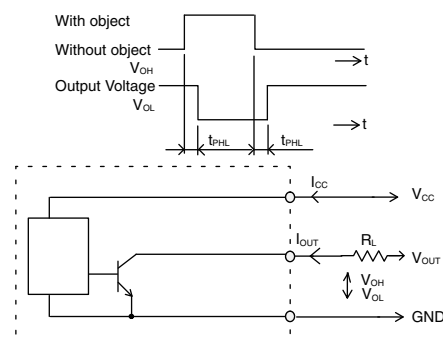
### Exterior Specifications

Connecting method	Weight (g)	Material
		Case
Connector	3.25	PPE

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

Item	Symbo l	Value			Unit	Conditions
		MIN.	TYP.	MAX.		
Consumption current	I <sub>CC</sub>	---	---	25	mA	With/without object
Low level output voltage	V <sub>OL</sub>	---	0.4	0.4	V	I <sub>OUT</sub> = 20 mA with object
High level output voltage	V <sub>OH</sub>	V <sub>CC</sub> by 0.9	---	---	V	V <sub>OUT</sub> = V <sub>CC</sub> , R <sub>L</sub> = 1 KΩ Without object
Response delay time *	t <sub>PLH</sub> t <sub>PHL</sub>	---	---	1	ms	V <sub>OUT</sub> = V <sub>CC</sub> , R <sub>L</sub> = 1 KΩ

\* Response delay time is defined as below.



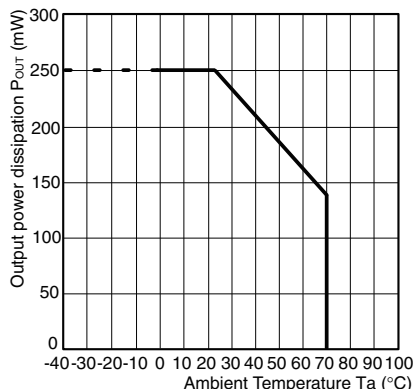
## Ratings

Item	Value	
Detectable distance*	11 ± 2 mm (Black paper and OHP paper) 11± 8 mm (White paper)	
Non-detectable distance*	20 mm (Black sponge) 45 mm (White paper)	
Usable ambient illumination	3,000 Lx max. at Receiver surface (incandescent lamp, fluorescent lamp)	
Vibration	Mechanical durability	10 to 150 Hz, Peak acceleration 10 G (100 m/s) 1.5 mm double amplitude for 2 hours each in X, Y, Z directions
Shock	Mechanical durability	300 m/s <sup>2</sup> (approximately 30 G) in X, Y, Z directions, respectively 3 times
Resistance to noise (normal mode)	Faulty operation	200 Vp, pulse width: 1 μs
	Break	350 Vp, pulse width: 1 μs
Resistance to noise (common mode)	Faulty operation	250 Vp, pulse width: 1 μs
	Break	500 Vp, pulse width: 1 μs
Terminal strength	Tensile strength	2 kgf (20 N), for 5 seconds
	Flexure strength	1 kgf (10 N), 1 time, for 5 seconds

\* If a background object is present, the object should be located at the specified non-detectable distance or further from the receiver surface.  
 White paper: reflection factor of 90%  
 Black paper: reflection factor of 16%

## Engineering Data (Reference value)

Fig 1. Output power dissipation vs. Ambient Temperature Characteristics



## 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.

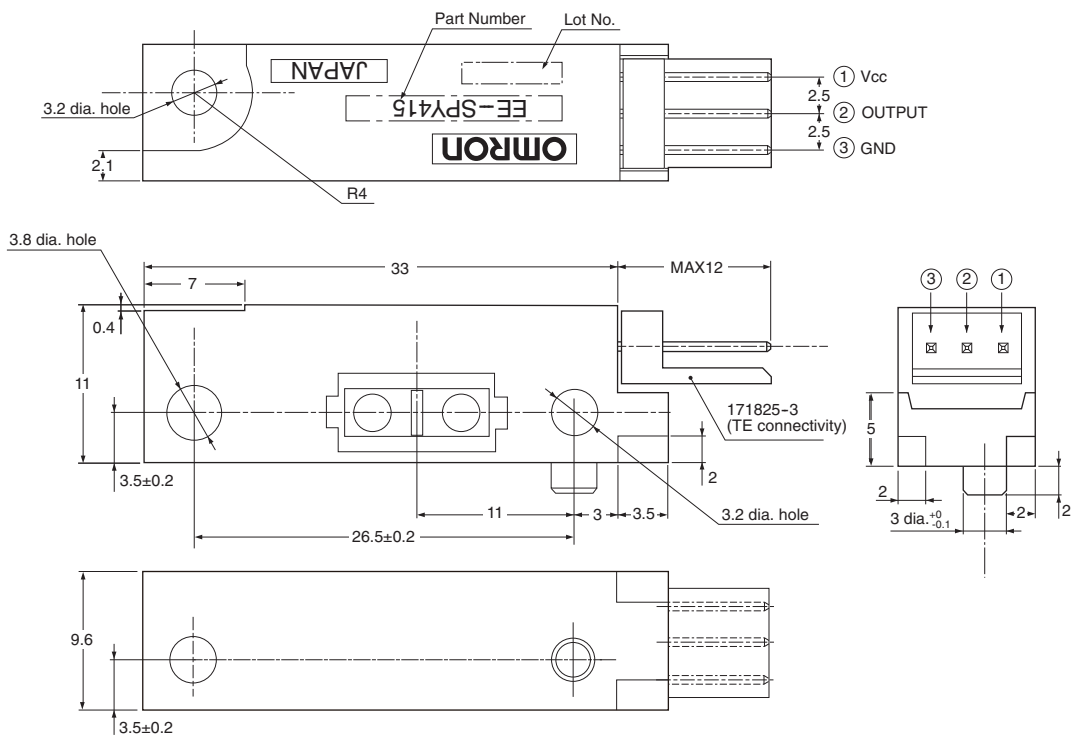
**Do not short-circuit the load.**

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

EE-SPY415



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