

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 _{CC}	7	VDC	---
Output voltage	V _{OUT}	16	V	Output transistor voltage (Between Collector and Emitter)
Output current	I _{OUT}	30	mA	Output transistor collector current
Output power dissipation *1	P _{OUT}	250	mW	Output transistor collector power dissipation
Operating temperature *2	T _{opr}	-10 to 60	°C	---
Storage temperature	T _{stg}	-40 to 85	°C	---

*1. Output power dissipation (P_{OUT}) 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.

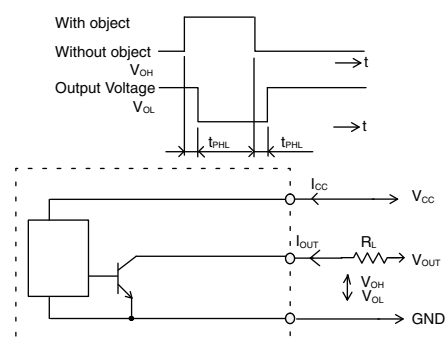
Exterior Specifications

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 _{CC}	---	---	25	mA	With/without object
Low level output voltage	V _{OL}	---	0.4	0.4	V	I _{OUT} = 20 mA with object
High level output voltage	V _{OH}	V _{CC} by 0.9	---	---	V	V _{OUT} = V _{CC} , R _L = 1 KΩ Without object
Response delay time *	t _{PLH} t _{PHL}	---	---	1	ms	V _{OUT} = V _{CC} , R _L = 1 KΩ

* Response delay time is defined as below.



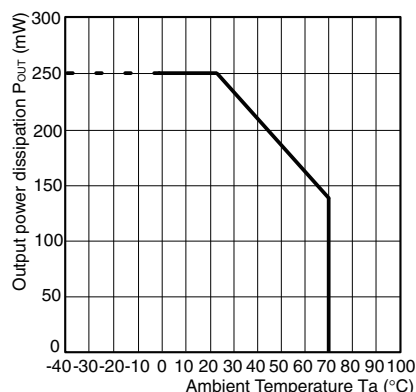
Ratings

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 ² (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.

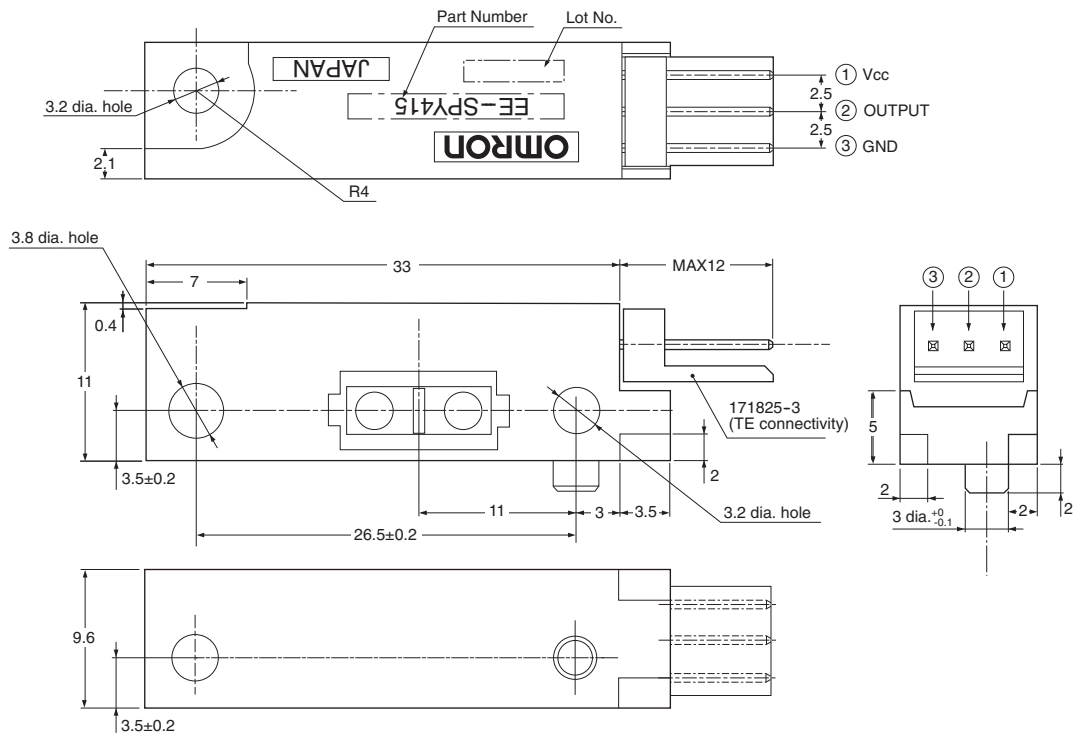
Otherwise explosion or burning may occur.

This product does not resist water. Do not use the product in places where water or oil may be sprayed onto the product.

Dimensions

(Unit: mm)

EE-SPY415



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