

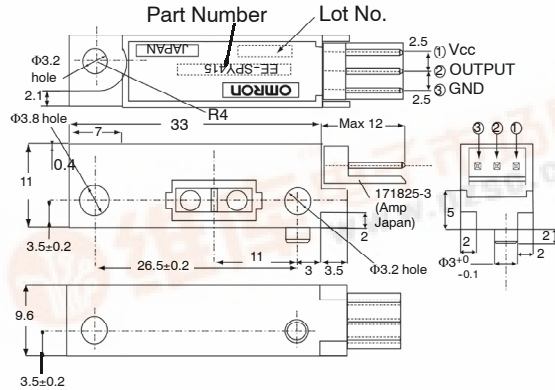
OMRON

# EE-SPY415

## Photomicrosensor (Reflective)

### ■ Dimensions

**Note:** All units are in millimeters unless otherwise indicated.



### ■ Features

- Photo IC circuitry greatly improves response time.
- Pulse modulation effectively reduces external light interference.
- Convergent technology ensures enhanced sensing area.

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

| Item                  | Symbol | Rated value   |
|-----------------------|--------|---------------|
| Supply voltage        | Vcc    | 7 VDC         |
| Output voltage        | Vout   | 16 V          |
| Output current        | Iout   | 30 mA         |
| Operating temperature | Topr   | -10°C to 60°C |
| Storage temperature   | Tstg   | -40°C to 85°C |

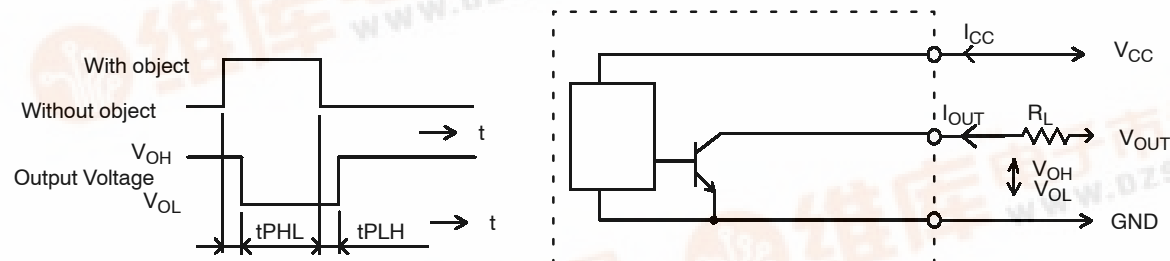
### ■ Ordering Information

| Description                   | Part number |
|-------------------------------|-------------|
| Photomicrosensor (Reflective) | EE-SPY415   |

### ■ Electrical and Optical Characteristics (Ta = 25°C, Vcc = 12 V±10%)

| Item                               | Symbol                               | Limits                 |     |     | Unit | Test 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 | 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> RL=1 KΩ<br>Without object |
| Response delay time<br>(See Note.) | t <sub>PLH</sub><br>t <sub>PHL</sub> | --                     | --  | 1   | ms   | V <sub>OUT</sub> =V <sub>CC</sub> RL=1 KΩ                   |

**Note:** Response delay time is defined as below.



### ■ Ratings ( $T_a = 25^\circ\text{C}$ , $V_{cc} = 12\text{ V} \pm 10\%$ )

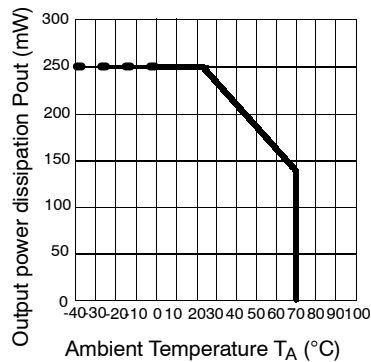
| Item                                       |                       | Limits                                                                                                       |
|--------------------------------------------|-----------------------|--------------------------------------------------------------------------------------------------------------|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

**Note:** 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



**NOTE: DIMENSIONS SHOWN ARE IN MILLIMETERS. To convert millimeters to inches divide by 25.4.**

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