

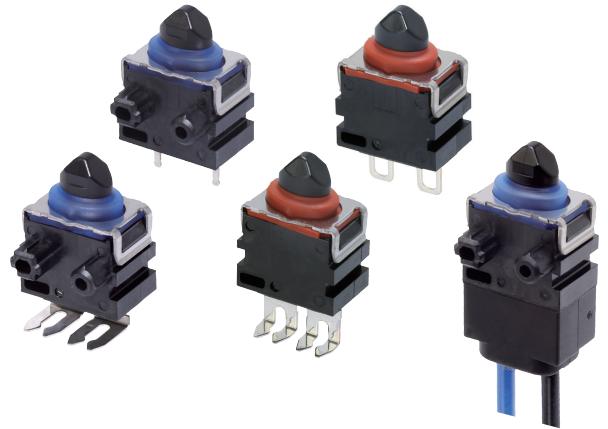
# Sealed Ultra Subminiature Basic Switch

## D2EW

**Supports multi-angle operation without using a lever, increased flexibility in customer unit design**

- The industry's smallest class \*(8.3 x 7.0 x 5.3 mm) D2GW equivalent size
- A left-right asymmetrical post shape prevents misassembly
- A sliding contact structure delivers quiet operation
- Contributes to energy saving (Minimum applicable load 50  $\mu$ A)

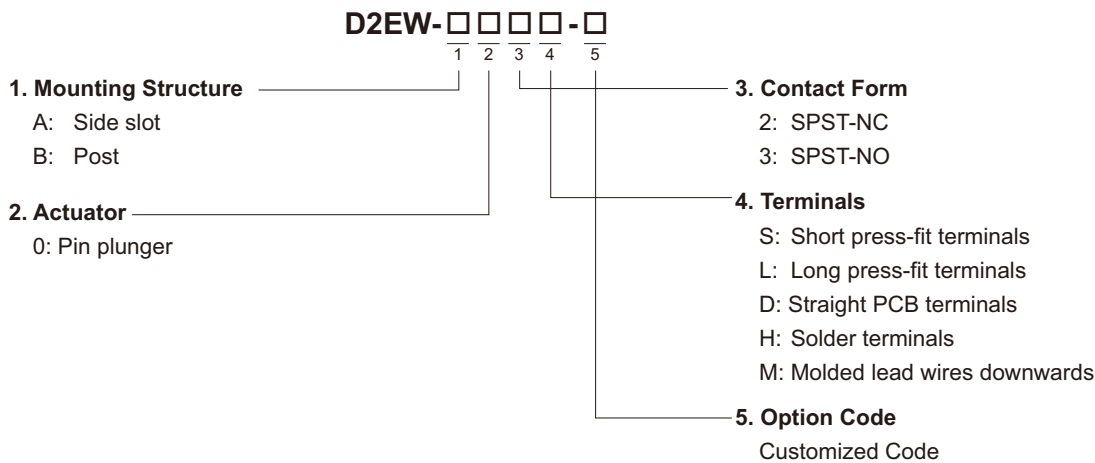
\* Based on OMRON investigation in May 2024



## Model Number Legend

Some model number elements cannot be used in conjunction.

If you have any desired model with a specification not in this model number legend, contact your OMRON sales representative. We will consider if a requested model can be manufactured by modifying existing models.



# D2EW

## List of Models

| Model                                                                                         |                             |              | Side Slot | Post      |
|-----------------------------------------------------------------------------------------------|-----------------------------|--------------|-----------|-----------|
| Actuator                                                                                      | Terminals                   | Contact Form |           |           |
| Pin plunger  | Short press-fit terminals   | SPST-NC      | D2EW-A02S | —         |
|                                                                                               |                             | SPST-NO      | D2EW-A03S | —         |
|                                                                                               | Long press-fit terminals    | SPST-NC      | —         | D2EW-B02L |
|                                                                                               |                             | SPST-NO      | —         | D2EW-B03L |
|                                                                                               | Straight PCB terminals      | SPST-NC      | D2EW-A02D | D2EW-B02D |
|                                                                                               |                             | SPST-NO      | D2EW-A03D | D2EW-B03D |
|                                                                                               | Solder terminals            | SPST-NC      | D2EW-A02H | D2EW-B02H |
|                                                                                               |                             | SPST-NO      | D2EW-A03H | D2EW-B03H |
|                                                                                               | Molded lead wires downwards | SPST-NC      | —         | D2EW-B02M |
|                                                                                               |                             | SPST-NO      | —         | D2EW-B03M |

If you have any desired model with a specification not in the above list, contact your OMRON sales representative. We will consider if a requested model can be manufactured by modifying existing models.

## Contact Specifications

|                                      |               |                  |
|--------------------------------------|---------------|------------------|
| Contact                              | Specification | Slide            |
|                                      | Material      | Gold plated      |
| Minimum applicable load ( see note ) |               | 5 VDC 50 $\mu$ A |

**Note:** For more information on the minimum applicable load, refer to *Using Micro Loads of Precautions*.

## Ratings

| Rating voltage | Resistive load |
|----------------|----------------|
| 12 VDC         | 100 mA         |
| 18 VDC         | 20 mA          |

**Note:** The rating values apply under the following test conditions.

1. Ambient temperature:  $20 \pm 2^{\circ}\text{C}$
2. Ambient humidity:  $65 \pm 5\%$
3. Operating frequency: 30 operations/min

## Characteristics

| Items                              |                                                 |                                                                |
|------------------------------------|-------------------------------------------------|----------------------------------------------------------------|
| Operating speed                    |                                                 | 30 mm to 500 mm/s (pin plunger models)                         |
| Operating frequency                | Mechanical                                      | 30 operations/min Max.                                         |
|                                    | Electrical                                      | 30 operations/min Max.                                         |
| Insulation resistance              |                                                 | 100 M $\Omega$ Min. (at 500 VDC)                               |
| Contact resistance (initial value) | Terminals                                       | 500 m $\Omega$ Max.                                            |
|                                    | Molded lead wires                               | 500 m $\Omega$ Max.                                            |
| Dielectric strength                | Between same polarity                           | 500 VAC 50/60 Hz 1 min                                         |
|                                    | Between current carrying metal parts and ground | 1,500 VAC 50/60 Hz 1 min                                       |
| Vibration resistance *1            | Malfunction                                     | 10 to 55 Hz, 1.5 mm double amplitude                           |
| Shock resistance                   | Destruction                                     | 1,000 m/s <sup>2</sup> Max.                                    |
|                                    | Malfunction *1                                  | 300 m/s <sup>2</sup> Max.                                      |
| Durability *2                      | Mechanical                                      | 300,000 operations Min. (at 30 operations/min)                 |
|                                    | Electrical                                      | 300,000 operations Min. (at 30 operations/min)                 |
| Degree of protection               | Terminals                                       | IEC IP67 (excluding the terminals)                             |
|                                    | Molded lead wires                               | IEC IP67                                                       |
| Ambient operating temperature      |                                                 | -40 to +85°C (at 60% RH Max.)(with no icing or condensation)   |
| Ambient operation humidity         |                                                 | 95%RH Max. (for +5 to +35°C)                                   |
| Heat resistance                    |                                                 | 85°C 500 hours                                                 |
| Cold resistance                    |                                                 | -40°C 500 hours                                                |
| Humidity resistance                |                                                 | 85°C 85% RH 500 hours                                          |
| Temperature cycle resistance       |                                                 | -40°C (0.5hours) $\leftrightarrow$ 85°C (0.5 hours) 500 cycles |
| Weight                             |                                                 | Approx. 0.5 g (for pin plunger models with terminals)          |

**Note:** The data given above are initial values.

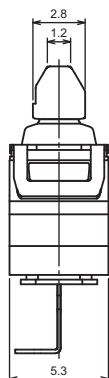
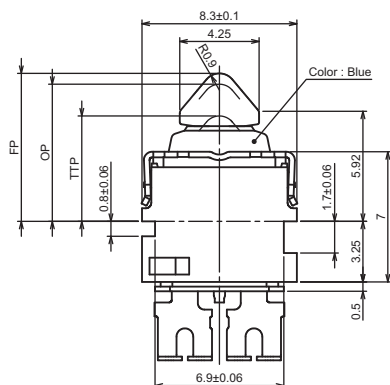
\*1. For the pin plunger models, the above values apply for use at the free position, and total travel position. Close or open circuit of the contact is 1 ms Max.

\*2. For testing conditions, consult your OMRON sales representative.

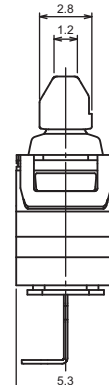
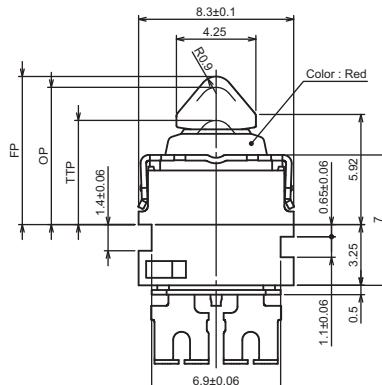
### Mounting Structure and Reference Positions for Operating Characteristics (Unit: mm)

(Unit: mm)

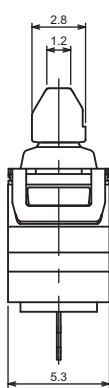
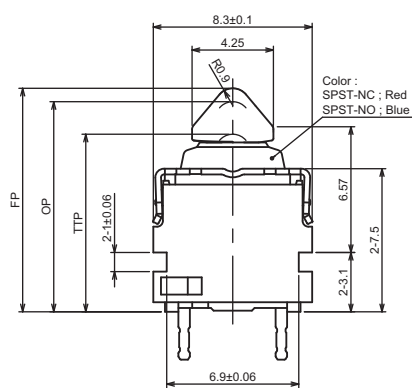
● Side slot Short / SPST-NO  
D2EW-A03S



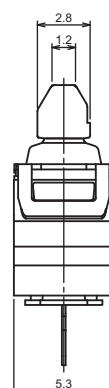
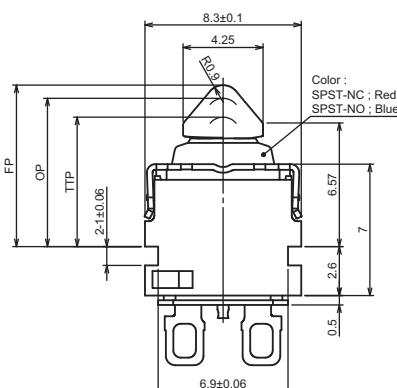
● Side slot Short / SPST-NC  
D2EW-A02S



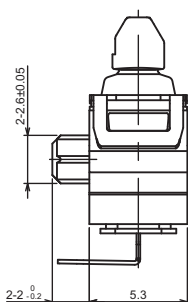
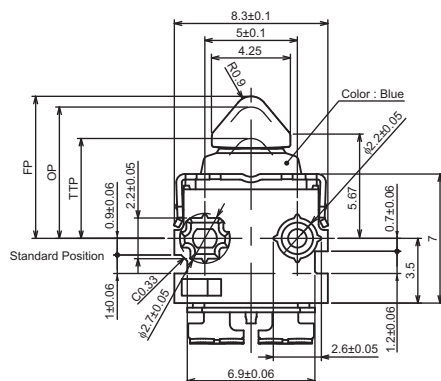
● Straight PCB terminals  
D2EW-A0□D



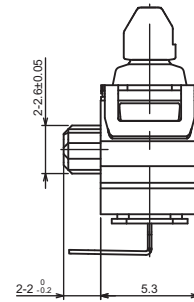
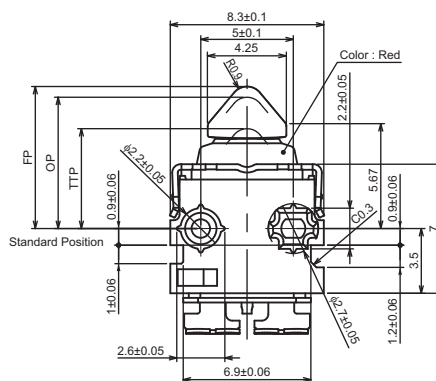
● Solder terminals  
D2EW-A0□H



● Post/SPST-NO  
D2EW-B03□

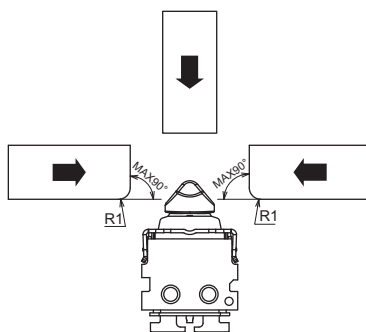


● Post/SPST-NC  
D2EW-B02□



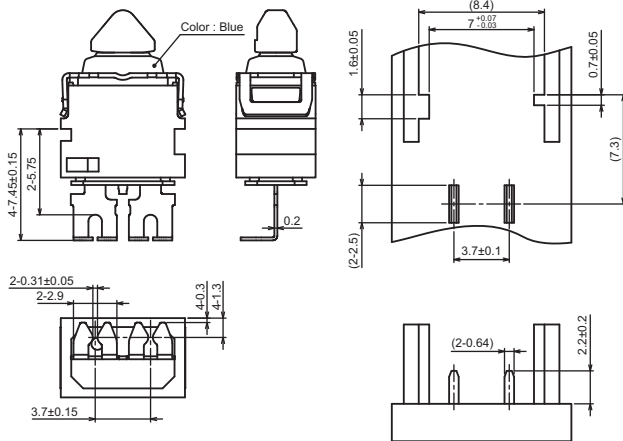
### Operation allowable angle

It can be operated not only from above, but also from the side up to 90 degrees.

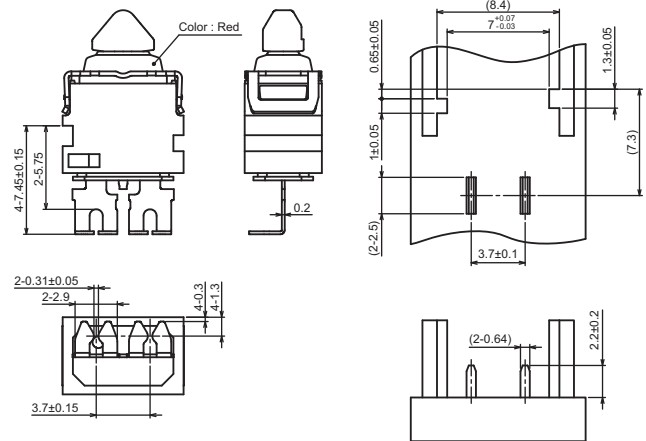


## Terminals (Unit: mm)

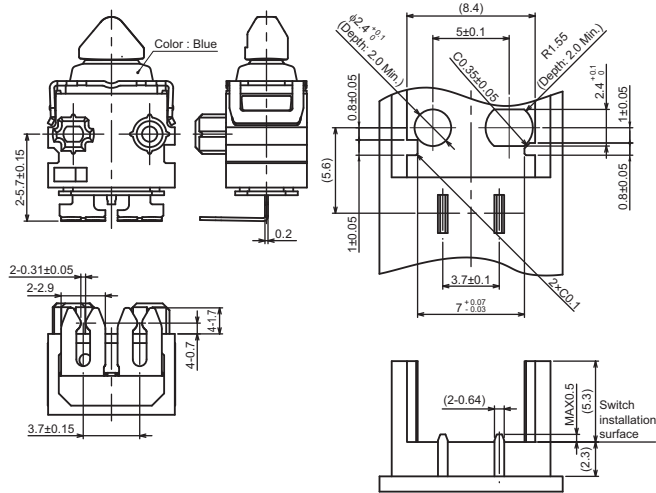
### ● Short press-fit terminals SPST-NO



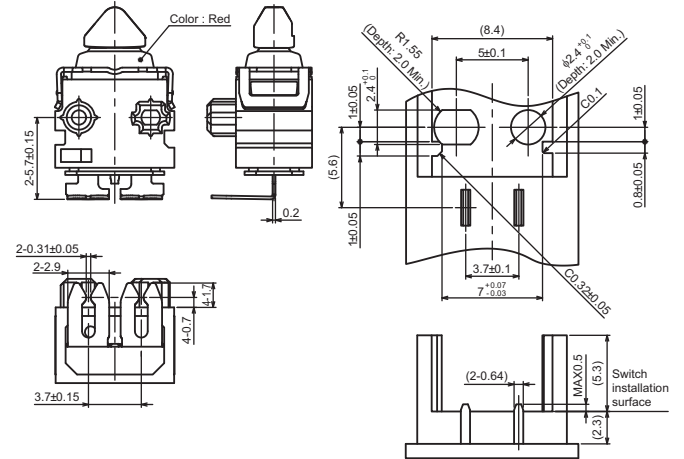
### SPST-NC



### ● Long press-fit terminals SPST-NO



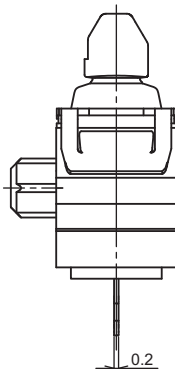
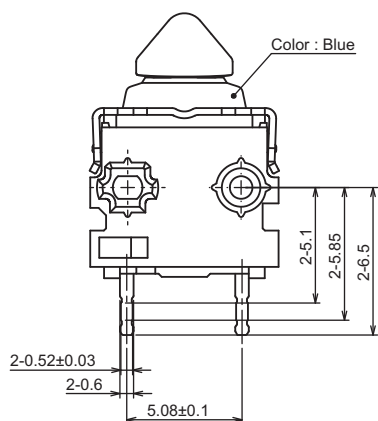
### SPST-NC



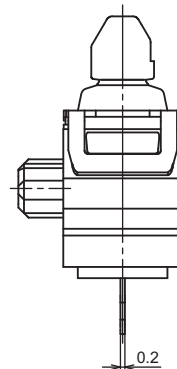
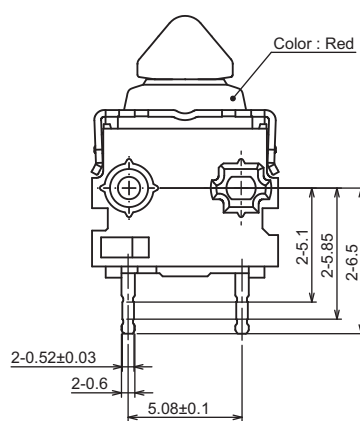
# D2EW

## Terminals (Unit: mm)

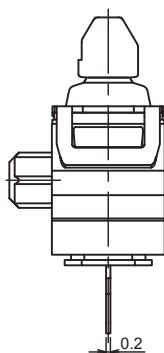
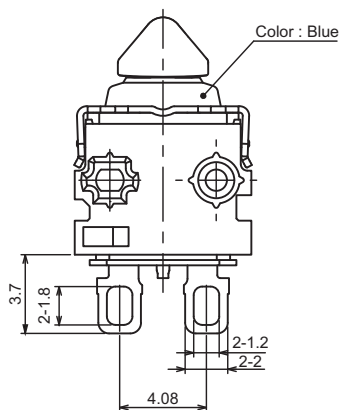
### ● Straight PCB terminals SPST-NO



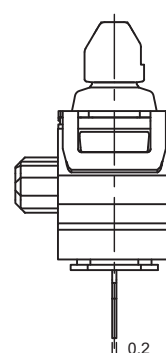
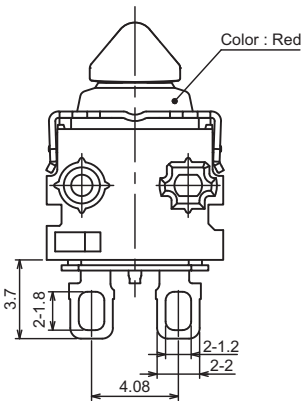
### SPST-NC



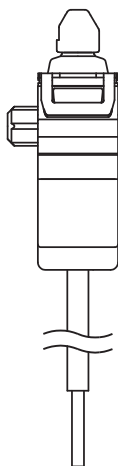
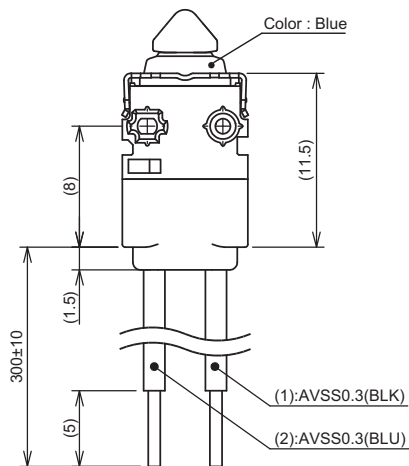
### ● Solder terminals SPST-NO



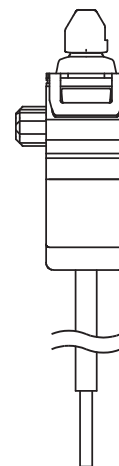
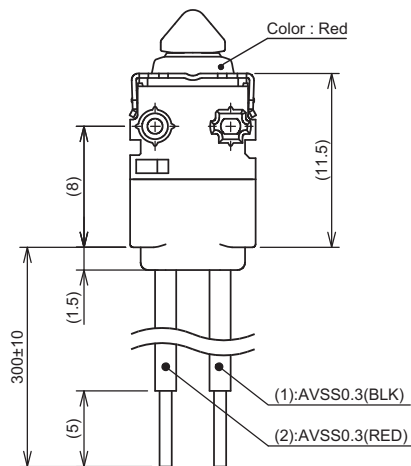
### SPST-NC



### ● Molded lead wires downwards SPST-NO



### SPST-NC



# Dimensions (Unit: mm) / Operating Characteristics

**CAD Data** Please visit our website, which is noted on the last page.

The following drawing is for example model. When ordering, replace □ with the code for the rating that you need. For the combination of models, refer to *List of Models*.

## ● Post

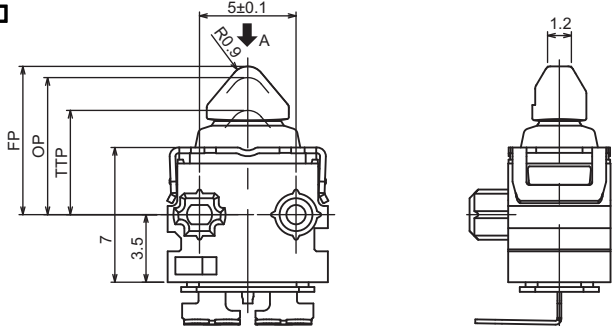
Press-fit terminals

Straight PCB terminals

Solder terminals

Molded lead wires downwards

D2EW-B0□□



| Operating characteristics | Type    | Post                     |
|---------------------------|---------|--------------------------|
| Operating Force           | OF Max. | 1.2 N {122 gf}           |
| Releasing Force           | RF Min. | 0.1 N {10 gf}            |
| Overtravel                | OT      | 1.7 mm (reference value) |
| Movement Differential     | MD Max. | 0.25 mm                  |
| Free Position             | FP      | 7.8 mm                   |
| Operating Position        | OP      | 7.1±0.2 mm               |
| Total Travel Position     | TTP     | 5.4 mm                   |

**CAD Data**

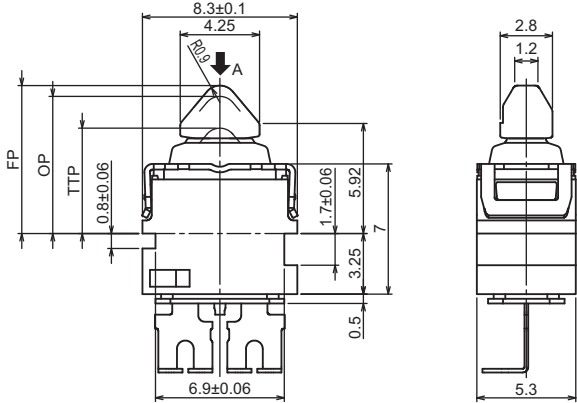
**Note:** 1. Unless otherwise specified, a tolerance of  $\pm 0.2$  mm applies to all dimensions.  
2. The operating characteristics are for operation in the A direction (↓).

## ● Side slot

Press-fit terminals

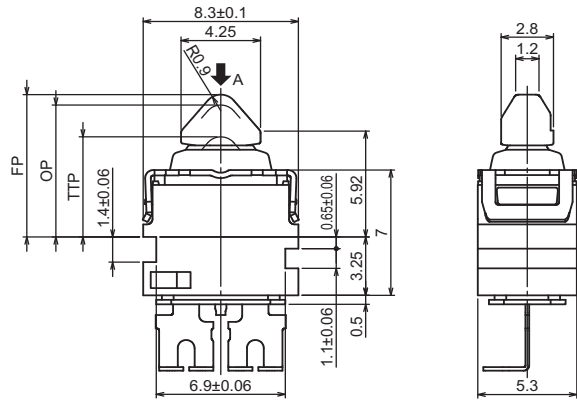
D2EW-A0□S

SPST-NO



| Operating characteristics | Type    | Press-fit terminals      |
|---------------------------|---------|--------------------------|
| Operating Force           | OF Max. | 1.2 N {122 gf}           |
| Releasing Force           | RF Min. | 0.1 N {10 gf}            |
| Overtravel                | OT      | 1.7 mm (reference value) |
| Movement Differential     | MD Max. | 0.25 mm                  |
| Free Position             | FP      | 8.05 mm                  |
| Operating Position        | OP      | 7.35±0.2 mm              |
| Total Travel Position     | TTP     | 5.65 mm                  |

SPST-NC

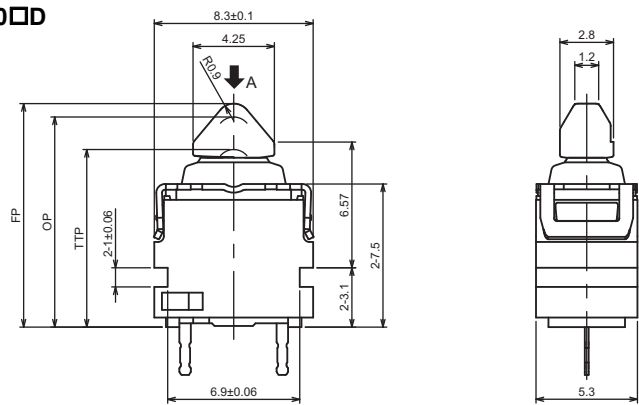


**Note:** 1. Unless otherwise specified, a tolerance of  $\pm 0.2$  mm applies to all dimensions.  
2. The operating characteristics are for operation in the A direction (↓).

D2EW

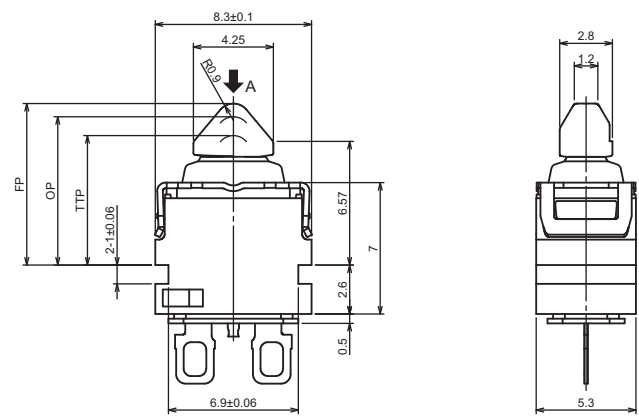
Dimensions (Unit: mm) / Operating Characteristics CAD Data Please visit our website, which is noted on the last page.

● Side slot  
Straight PCB terminals  
D2EW-A0□D



| Operating characteristics | Type    | Straight PCB terminals   |
|---------------------------|---------|--------------------------|
| Operating Force           | OF Max. | 1.2 N {122 gf}           |
| Releasing Force           | RF Min. | 0.1 N {10 gf}            |
| Overtravel                | OT      | 1.7 mm (reference value) |
| Movement Differential     | MD Max. | 0.25 mm                  |
| Free Position             | FP Max. | 11.8 mm                  |
| Operating Position        | OP      | 11.1±0.2 mm              |
| Total Travel Position     | TTP     | 9.4 mm                   |

Solder terminals  
D2EW-A0□H



| Operating characteristics | Type    | Solder terminals         |
|---------------------------|---------|--------------------------|
| Operating Force           | OF Max. | 1.2 N {122 gf}           |
| Releasing Force           | RF Min. | 0.1 N {10 gf}            |
| Overtravel                | OT      | 1.7 mm (reference value) |
| Movement Differential     | MD Max. | 0.25 mm                  |
| Free Position             | FP Max. | 8.7 mm                   |
| Operating Position        | OP      | 8.0±0.2 mm               |
| Total Travel Position     | TTP     | 6.3 mm                   |

CAD Data

**Note:** 1. Unless otherwise specified, a tolerance of ±0.2 mm applies to all dimensions.  
2. The operating characteristics are for operation in the A direction (↓).



## Precautions

Please refer to "Safety Precautions for All Detection Switches" for correct use.

### Cautions

#### ● Degree of Protection

- Do not use this product underwater.

Satisfy the test conditions for the standard given below, this test is to check the ingress of water into the switch enclosure after submerging the Switch in water for a given time.

Satisfying this test condition does not mean that the Switch can be used underwater.

JIS C0920:

Degrees of protection provided by enclosures of electrical apparatus (IP Code)

IEC 60529:

Degrees of protection provided by enclosures (IP Code)

Degree of protection: IP67

(check water intrusion after immersion for 30 min. submerged 1m underwater)

- Do not operate the Switch when it is exposed to water spray, or when water drops adhere to the Switch surface, or during sudden temperature changes, otherwise water may intrude into the interior of the Switch due to a suction effect.
- Prevent the Switch from coming into contact with oil and chemicals.  
Otherwise, damage to or deterioration of Switch materials may result.
- Do not use the Switch in areas where it is exposed to silicon adhesives, oil, or grease. Otherwise faulty contact may result due to the generation of silicon oxide.

#### ● Soldering

When soldering the lead wire to the terminal, first insert the lead wire conductor through the terminal hole and then conduct soldering.

Make sure that the temperature of the soldering iron tip does not exceed 300°C, and complete the soldering within 3 seconds. Do not apply any external force for 1 minute after soldering. Soldering at an excessively high temperature or soldering for more than 3 seconds may deteriorate the characteristics of the Switch.

In case of automatic soldering, please do not apply the heat beyond 260°C within 5 seconds. Pay careful attention so that flux or solder liquid does not flow over the edge of the PCB panel.

#### ● Horizontal and rotational operations

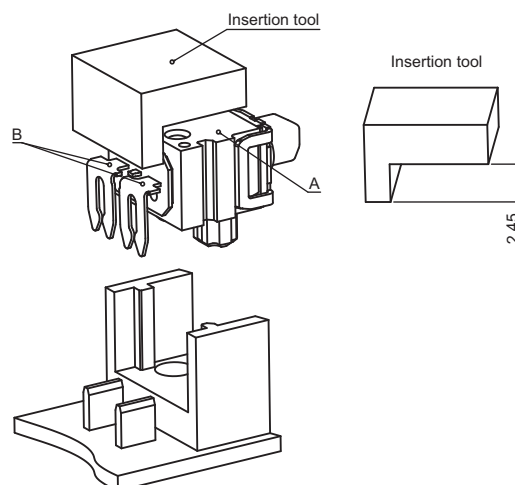
- Factors such as the operating speed, operating frequency, push-button indentation, and material and shape will affect the durability of the Switch. Confirm performance specifications under actual operating conditions before using the Switch in applications.

### Correct Use

#### ● Mounting

- Turn OFF the power supply before mounting or removing the Switch, wiring, or performing maintenance or inspection. Failure to do so may result in electric shock or burning.
- For models with posts, secure the posts by pressing into an attached device. Provide guides on the opposite ends of the posts to ensure that they do not fall out or rattle.

- When mounting a Press-fit terminals, press in A (body) and B (terminal) in the drawing below at the same time. If A (body) only is pressed in, the Press-fit terminals will be deformed and will not be properly inserted. Also, ensure that the Press-fit terminals is facing down when it is inserted. Mold the terminal part with urethane resin, etc., and use it in a state where the terminal part does not come into contact with outside air. Avoid connecting soldered or laser-welded terminals. Avoid mounting in conditions exposed to corrosive gases, high temperature and humidity, and dust.

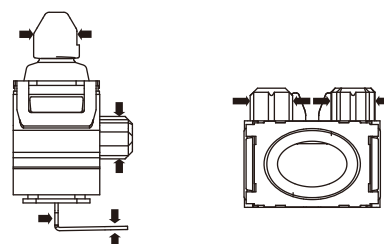


#### ● Operating Body

- Use an operating body with low frictional resistance and of a shape that will not interfere with the sealing rubber, otherwise the plunger may be damaged or the sealing may deteriorate.

#### ● Handling

- Do not handle the Switch in a way that may cause damage to the sealing rubber.
- When handling the Switch, ensure that pressure is not applied to the Pin plunger, Posts and Terminal in the directions shown in the following diagram. Otherwise, Switch may be damaged, or be reduced performance.



#### ● Wiring Molded Lead Wire Models

- When wiring molded lead wire models, ensure that there is no weight applied on the wire or that there are no sharp bends near the parts where the wire is drawn out. Otherwise, damage to the Switch or deterioration in the sealing may result.

#### ● Using Micro Loads

- Even when using micro load models within the specification range, if inrush/surge current occurs, it may increase the contact wear and so decrease durability. Therefore, insert a contact protection circuit where necessary.

Please check each region's Terms & Conditions by region website.

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## OMRON Corporation

Device & Module Solutions Company

### Regional Contact

#### Americas

<https://components.omron.com/us>

#### Asia-Pacific

<https://components.omron.com/ap>

#### Korea

<https://components.omron.com/kr>

#### Europe

<https://components.omron.com/eu>

#### China

<https://components.omron.com.cn>

#### Japan

<https://components.omron.com/jp>