

# D2QW

## Sealed Subminiature Basic Switch

**Sealed long stroke slide-contact switch for reliable ON/OFF action even in severe environmental conditions.**

- Extra-long stroke even without levers. (OT: 2.7 mm)
- Clip contacts with highly reliable slide contact mechanism.
- High temperature resistance up to 85°C and drip-proof structure for wide range of applications environmental resistance required.  
(Conforms to IP67, except for terminal section.)

RoHS Compliant

### Model Number Legend

D2QW-□□□□□-□-□

**1. Cover**

C: M3-screw Mounting

**2. Ratings**

0: 5 VDC 1 mA~30 VDC 0.1 A

**3. Actuator**

0: Pin plunger

7: Simulated roller leaf lever

**4. Contact form**

3: SPST-NO

**5. Terminals**

D: Straight PCB terminals

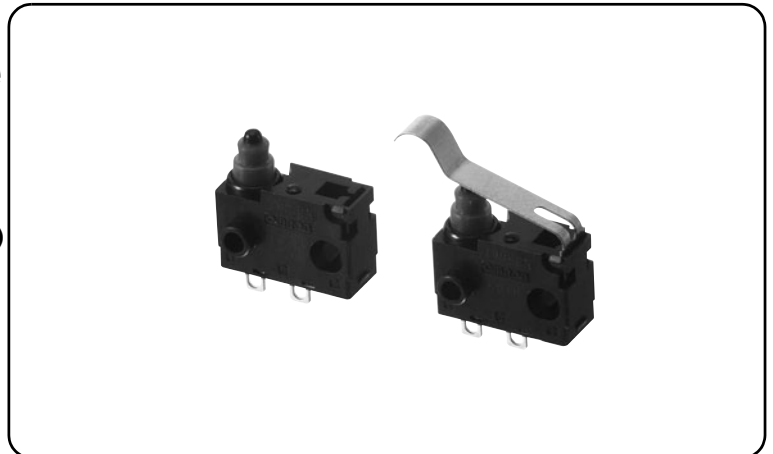
H: Solder terminals

**6. Special Product Number**

Up to 3 numeric digits

**7. Special Industry Compatibility**

AQ: For automotive application

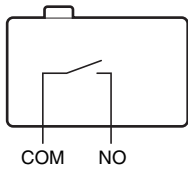


## List of Models

| Actuator  | Terminals    | Contact form | Model             |
|---|--------------|--------------|-------------------|
| Pin plunger<br>            | Straight PCB | SPST-NO      | <b>D2QW-C003D</b> |
|   | Solder       | SPST-NO      | <b>D2QW-C003H</b> |
| Simulated Roller Lever<br> | Straight PCB | SPST-NO      | <b>D2QW-C073D</b> |
|   | Solder       | SPST-NO      | <b>D2QW-C073H</b> |

## Contact form

### ●SPST-NO



## Contact Specifications

| Contact                            | Specification | Slide     |
|------------------------------------|---------------|-----------|
|                                    | Material      |           |
| Minimum applicable load (see note) |               | 5 VDC 1mA |

## Ratings

| Rated voltage    | Resistive load |
|------------------|----------------|
| 30 VDC<br>14 VDC | 0.1A<br>10mA   |

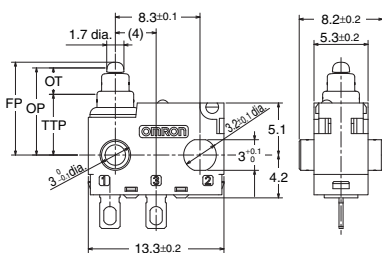
Note. The above rating values apply under the following test conditions.

- (1) Ambient temperature: 20±2°C
- (2) Ambient humidity: 65±5%
- (3) Operating frequency: 30 operations/min

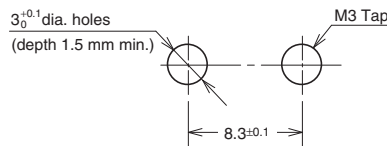
## Characteristics

|   |   |  |
|---|---|--|
| Permissible operating speed                 | 1 mm to 500 m/s   |  |
| Permissible operating frequency             | 30 operations/min   |  |
| Insulation resistance                       | 100 MΩ min. (at 500 VDC with insulation tester)                                     |  |
| Contact resistance (initial value)          | 100 mΩ max.   |  |
| Dielectric strength                         | Between terminals of the same polarity  | 600 VAC 50/60 Hz 1min  |
|   | Between current-carrying metal parts and ground                                     | 1,500 VAC 50/60 Hz 1min  |
|   | Between terminals and non-current-carrying metal parts                              | 1,500 VAC 50/60 Hz 1min  |
| Vibration resistance                        | Malfunction   | 10 to 55 Hz,<br>1.5 mm double amplitude  |
|   | Durability  | 1,000 m/s <sup>2</sup> {approx. 100G} max.   |
| Shock resistance                            | Malfunction   | 300 m/s <sup>2</sup> {approx. 30G} max.  |
|   | Mechanical  | 500,000 operations min. (30 operations/min)  |
| Durability                                  | Electrical  | 30 VDC 0.1 A 200,000 operations min.<br>14 VDC 10 mA 500,000 operations min. (20 operations/min) |
|   | Degree of protection  | IEC IP67 (excluding the terminals)   |
| Degree of protection against electric shock | Class I   |  |
| Proof tracking index (PTI)                  | 175   |  |
| Ambient operating temperature               | -40°C to +85°C (at ambient humidity of 60% max.)<br>(with no icing or condensation) |  |
| Ambient operating humidity                  | 95% max. (for +5°C to +35°C)  |  |
| Weight                                      | Approx. 0.7 g (for pin plunger models)  |  |

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

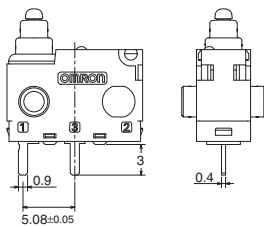


### Mounting Hole Dimensions (Reference)

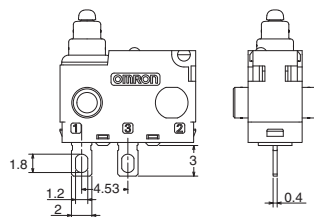


## Terminals/Appearances (Units: mm)

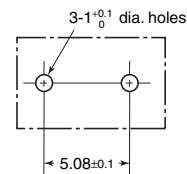
### ●Straight PCB terminals (D)



### ●Solder terminals (H)



### <PCB Mounting Dimensions (Reference)>



## Dimensions (Unit: mm) / Operating Characteristics

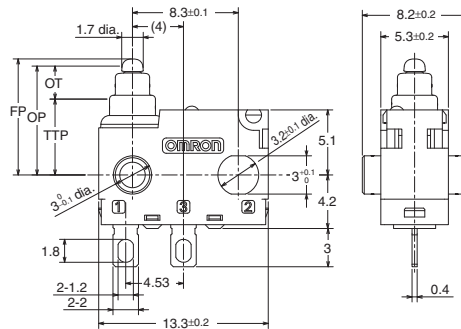
The illustrations and drawings are for solder terminals models.

Refer to "Terminals/Apearances" of the previous page for details on models with Straight PCB terminals.

When ordering, replace □ with the code for the terminal that you need.

### ● Pin plunger

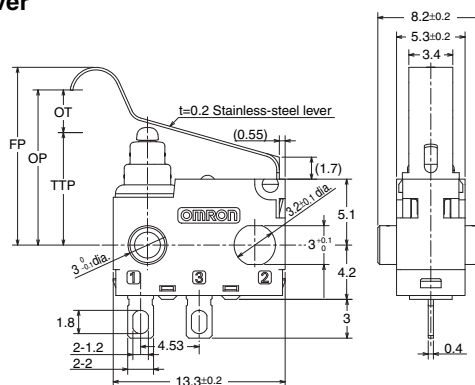
D2QW-C003□



| Operating characteristics | Model   | D2QW-C003□     |
|---------------------------|---------|----------------|
| Operating Force           | OF Max. | 1.5 N {153 gf} |
| Overtravel                | OT      | (2.7) mm       |
| Free Position             | FP Max. | 9.2 mm         |
| Operating Position        | OP      | 8.4±0.3 mm     |
| Total Travel Position     | TTP     | 5.9 mm         |

### ● Simulated roller leaf lever

D2QW-C073□



| Operating characteristics | Model   | D2QW-C073□     |
|---------------------------|---------|----------------|
| Operating Force           | OF Max. | 1.5 N {153 gf} |
| Overtravel                | OT      | (3.5) mm       |
| Free Position             | FP Max. | 14.4 mm        |
| Operating Position        | OP      | 12.0±0.5 mm    |
| Total Travel Position     | TTP     | 8.7 mm         |

## Precautions

★Please refer to "Basic Switches Common Switches" for correct use.

### Cautions

#### ● Degree of Protection

- Do not use this product underwater.  
Although molded lead wire models 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 (Japanese Industrial Standards)  
C0920 (Waterproof test of the electrical machinery/appliance and wiring materials)  
Degree of protection: 7, Model: Waterproof
- IEC (International Electrotechnical Commission)  
Publication 529 (Degrees of Protection Provided by Enclosures)  
Degree of protection: IP67
- 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. Complete soldering within 3 seconds using a soldering iron with a capacity of 50 W max and a tip temperature of 300°C max. Also, do not apply external force to the Switch for 1 minute after soldering.  
Improper soldering involving an excessively high temperature or excessive soldering time may deteriorate the characteristics of the Switch.  
When performing automatic soldering, solder at 260 °C max and complete soldering with 5 seconds. Pay careful attention so that flux or solder liquid does not flow over the edge of the PCB panel.

#### ● Side-actuated (Cam/Dog) Operation

- When using a cam or dog to operate the Switch, factors such as the operating speed, operating frequency, push-button indentation, and material and shape of the cam or dog will affect the durability of the Switch. Confirm performance specifications under actual operation conditions before using the Switch in applications.

### Correct Use

#### ●Mounting

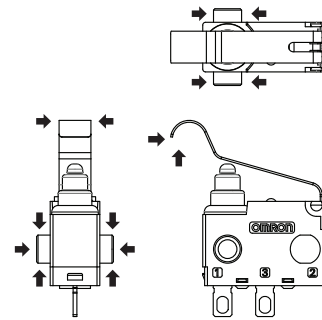
- Turn OFF the power supply before mounting or removing the Switch, wiring, or performing maintenance or inspection. Failure to do so may result in electric shock or burning.
- When mounting with screw, use M3 mounting screw with plane washers or spring washers to securely mount the Switch. Tighten the screws to a torque of 0.27 to 0.29 N·m {28 to 30 gf}. Exceeding the specified torque may result in deterioration of the sealing or damage.
- Secure the posts by thermal caulking or by pressing into an attached device. When pressed into an attached device, provide guides on the opposite ends of the posts to ensure that they do not fall out or rattle.

#### ●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 posts in the directions shown in the following diagram. Also, ensure that uneven pressure or pressure in a direction other than the operating direction is not applied to the Actuator as shown in the following diagram. Otherwise, the post, Actuator, or Switch may be damaged, or the durability may be reduced.



#### ●Using Micro Loads

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

• Application examples provided in this document are for reference only. In actual applications, confirm equipment functions and safety before using the product.  
 • Consult your OMRON representative before using the product under conditions which are not described in the manual or applying the product to nuclear control systems, railroad systems, aviation systems, vehicles, combustion systems, medical equipment, amusement machines, safety equipment, and other systems or equipment that may have a serious influence on lives and property if used improperly. Make sure that the ratings and performance characteristics of the product provide a margin of safety for the system or equipment, and be sure to provide the system or equipment with double safety mechanisms.

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

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