

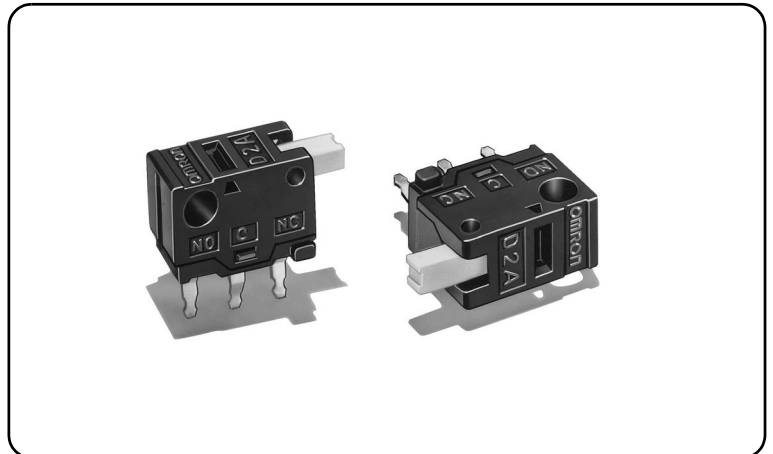
# D2A

## Ultra Subminiature Detection Switch

### Ultra Subminiature Detection Switch with Slide Mechanism and Pushbutton Actuator

- Compact, light weight, and 3 mm long stroke.
- Built-in slide mechanism allows selection of shorting or non-shortening switching timing of the switch.

RoHS Compliant



D  
2  
A

### Model Number Legend

D2A-1120


#### 1. Switching timing

- 1: Non-shortening Model
- 2: Shortening Model

#### 2. Maximum Operating Force (OF)

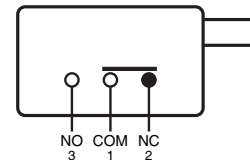
- 1: 0.98 N {100 gf}
- 2: 0.49 N {50 gf}

### List of models

| Operating Force (OF)<br>Switching timing<br>Actuator  | 0.98N (standard)     |                  | 0.49N (low operating force) |                  |
|---|----------------------|------------------|-----------------------------|------------------|
|   | Non-shortening Model | Shortening Model | Non-shortening Model        | Shortening Model |
| Pin plunger  | D2A-1110             | D2A-2110         | D2A-1120                    | D2A-2120         |

### Contact form

#### ●SPDT



### Contact specifications

| Contact                                     | Specification | Slide     |
|---|---------------|-----------|
|   | Material      |           |
| Minimum applicable load (reference value) * |               | 5 VDC 1mA |

\* Please refer to the "■Using Micro Loads" in "●Precautions" for more information on the minimum applicable load.

### Ratings

| Rated voltage | Resistive load |
|---------------|----------------|
| 30 VDC        | 0.1 A          |

Note. The ratings values apply under the following test conditions.

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

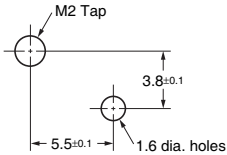
### Characteristics

|                                    |   |   |
|------------------------------------|---|---|
| Permissible operating speed        |   | 1 mm to 500 mm/s  |
| Permissible operating frequency    | Mechanical                                      | 200 operations/min  |
|                                    | Electrical                                      | 30 operations/min   |
| Insulation resistance              |   | 100 MΩ min. (at 250 VDC with insulation tester)                               |
| Contact resistance (initial value) |   | 50 mΩ max.  |
| Dielectric strength                | Between terminals of the same polarity          | 250 VAC 50/60 Hz 1 min  |
|                                    | Between current-carrying metal parts and ground | 250 VAC 50/60 Hz 1 min  |
| Vibration resistance *1            | Malfunction                                     | between 10 to 55 Hz, 1.5 mm-double amplitude                                  |
| Shock resistance                   | Durability                                      | 1,000 m/s <sup>2</sup> {approx. 100G} max.                                    |
|                                    | Malfunction *1                                  | 300 m/s <sup>2</sup> {approx. 30G} max.                                       |
| Durability *2                      |   | 50,000 operations min. (30 operations/min)                                    |
| Degree of protection               |   | IEC IP00  |
| Ambient operating temperature      |   | -10°C to +80°C (at ambient humidity 60% max.) (with no icing or condensation) |
| Ambient operating humidity         |   | 85% max. (for +5°C to +35°C)  |
| Weight                             |   | Approx. 0.3 g   |

Note. The data given above are initial values.

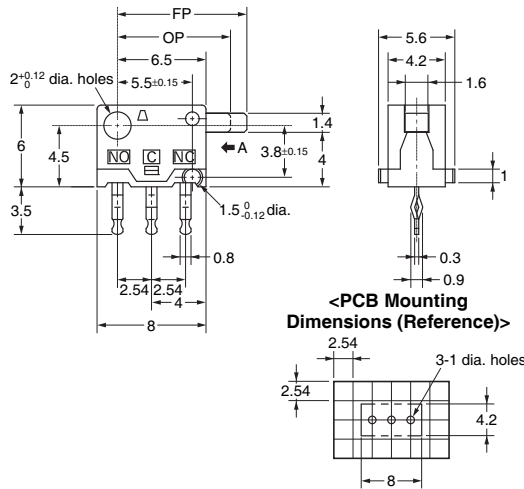
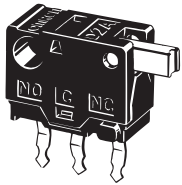
- \*1. The values are at Free Position and Total Travel Position. Close or open circuit of contact is 1ms max.
- \*2. For testing conditions, consult your OMRON sales representative.

## Mounting Holes (unit: mm)



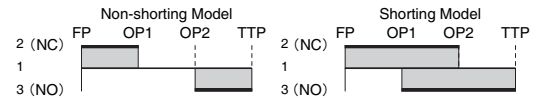
## Dimensions (unit: mm) and Operating Characteristics

D2A-1110, D2A-1120  
D2A-2110, D2A-2120



| Operating characteristics | Models  | Non- Shorting Model |                   | Shorting Model     |                   |
|---------------------------|---------|---------------------|-------------------|--------------------|-------------------|
|                           |         | D2A -1110           | D2A -1120         | D2A -2110          | D2A -2120         |
| Operating Force           | OF Max. | 0.98 N<br>{100 gf}  | 0.49 N<br>{50 gf} | 0.98 N<br>{100 gf} | 0.49 N<br>{50 gf} |
| Releasing Force           | RF Min. | 0.15 N<br>{15 gf}   | 0.05 N<br>{5 gf}  | 0.15 N<br>{15 gf}  | 0.05 N<br>{5 gf}  |
| Free Position             | FP Max. | 9.5 mm              |                   | 9.5 mm             |                   |
| Operating Position        | OP1     | 8.1±0.3 mm          |                   | 8.0±0.3 mm         |                   |
|                           | OP2     | 7.4±0.3 mm          |                   | 7.5±0.3 mm         |                   |
| Total Travel Position     | TTP     | 6.5±0.2 mm          |                   | 6.5±0.2 mm         |                   |

### Switching timing



Note1. Unless otherwise specified, a tolerance of  $\pm 0.4$  mm applies to all dimensions.

Note2. The operating characteristics are for operation in the A direction (←).

## Precautions

★ Please refer to "Common Precautions" for correct use.

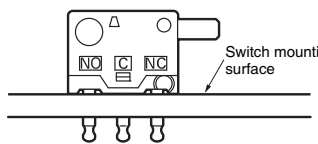
### Cautions

#### ●Soldering

For soldering time, we recommend to solder within 3 seconds at a soldering iron temperature of less than 350°C. When soldering exceeds this temperature and time, or repeated soldering will degrade the Switch characteristics.

Make sure that flux and liquid surface of the solder do not flow over the edge of the board when soldering. Please complete soldering at a temperature of 260°C within 5 seconds.

It is also recommended that you apply flux guard to the mounting surface of the Switch.



### Correct Use

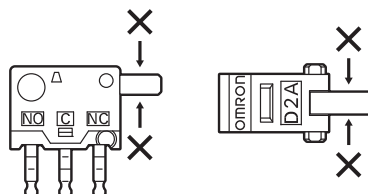
#### ●Mounting

Use M2 mounting screw with plane washers or spring washers to mount the Switch. Tighten the screws to a torque of 4.9 to  $9.8 \times 10^{-2} \text{ N} \cdot \text{m}$  {0.5 to 1kgf · cm}.

#### ●Application of Operation Force to the Actuator

Do not apply operation forces other than in the operating direction of the lever as shown in the following figure.

It may damage the Switch or cause malfunction.



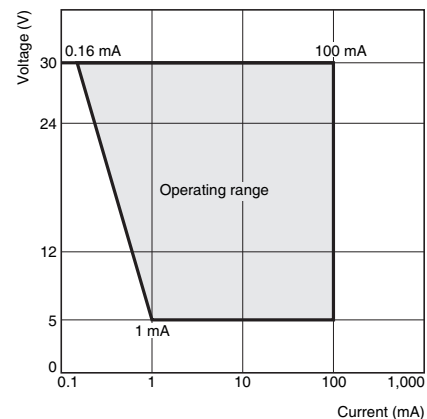
#### ●Mounting Plate

Use materials other than ABS or polycarbonate for the mounting plate. Since grease is used for the Switch, cracks may occur if grease from the Switch comes in contact with such materials.

#### ●Using Micro Loads

It is recommended to use the Switch in the operation range shown below. However, even when using micro load models within the following operating range, if inrush current occurs when the contact is opened or closed, it may increase the contact wear and so decrease durability. Therefore, insert a contact protection circuit where necessary. The minimum applicable load is the N-level reference value. This value indicates the malfunction reference level for the reliability level of 60% ( $\lambda_{60}$ ). (JIS C5003)

The equation,  $\lambda_{60} = 0.5 \times 10^{-6} / \text{operation}$ , indicates that the estimated malfunction rate is less than  $\frac{1}{2,000,000}$  operations with a reliability level of 60%.



- 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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