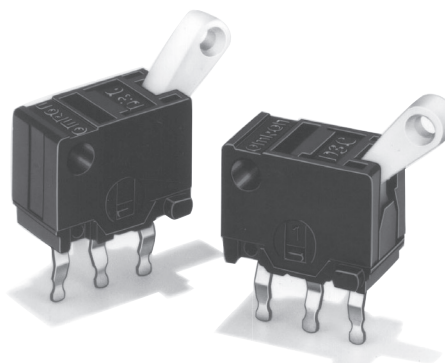


# Detection Switch D3C

## Subminiature Detection Switch

- Built-in slide mechanism provides reliable contact
- Choose from shorting or non-shorting switch timing models
- PCB mount switch with 100 milliamp capacity
- Ideal for household appliances, sound equipment, office equipment, communications equipment, etc.
- Compact size
- RoHS Compliant



## Ordering Information

| Actuator             | General Purpose    |                | Low Operating Force |                |
|----------------------|--------------------|----------------|---------------------|----------------|
|                      | Non-shorting Model | Shorting Model | Non-shorting Model  | Shorting Model |
| Pivoting Hinge lever | D3C-1210           | D3C-2210       | D3C-1220            | D3C-2220       |

### Model Number Legend

D3C-□□2□0  
1 2

1. Switching Timing

- 1: Non-shorting (Break-before-make)
- 2: Shorting (Make-before-break)

2. Maximum Operating Force

- 1: 130 gf
- 2: 40 gf

## Specifications

### Characteristics

|   |   |
|---|---|
| Electrical rating                           | 100 mA, 30 VDC (resistive load)   |
| Operating speed                             | 1 to 500 mm/s   |
| Operating frequency                         | Mechanical: 200 operations per minute, max.<br>Electrical: 30 operations per minute, max.   |
| Contact resistance                          | 50 mΩ max.  |
| Insulation resistance                       | 100 MΩ min. at 250 VDC  |
| Dielectric strength                         | 250 VAC, 50/60 Hz for 1 minute between terminals of same polarity<br>250 VAC, 50/60 Hz for 1 minute between current-carrying metal parts and ground |
| Vibration resistance                        | Malfunction: 10 to 55 Hz, 1.5 mm double amplitude   |
| Shock resistance                            | Destruction: 1,000 m/s <sup>2</sup> (approx 100G) max.<br>Malfunction: 300 m/s <sup>2</sup> (approx. 30G) max.                                      |
| Degree of protection                        | IEC IP00  |
| Degree of protection against electric shock | Class III   |
| Proof tracking index (PTI)                  | 175   |
| Ambient operating temperature               | -20° to 80°C (at 60% RH max) with no icing  |
| Ambient operating humidity                  | 85% max. (for 5° to 35°C)   |
| Service life                                | 50,000 operations min. at 30 operations per minute  |
| Weight                                      | Approx. 0.3 g   |

Note: 1. Data shown are of initial value.

- 2. The electrical rating applies under the following test conditions:  
Ambient Temperature = 20±2°C, Ambient Humidity = 65±5%, Operating frequency = 30 operations/min.

# Engineering Data

## Contact Specifications

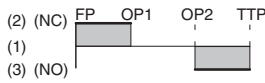
| Item                               | Specification |
|------------------------------------|---------------|
| Specification                      | Slide         |
| Material                           | Silver plated |
| Minimum applicable load (see note) | 1 mA at 5 VDC |

**Note:** Minimum applicable loads are indicated by N standard reference values. This value represents the failure rate at a 60% ( $\lambda_{60}$ ) reliability level (JIS C5003).

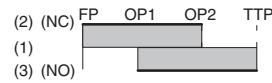
The equation  $\lambda_{60}=0.5 \times 10^{-6}/\text{operations}$  indicates that a failure rate of 1/2,000,000 operations can be expected at a reliability level of 60%.

## Switching Timing

### Non-shorting Model

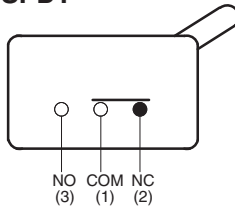


### Shorting Model



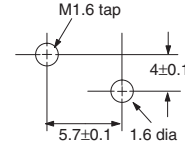
## Contact Form

### SPDT

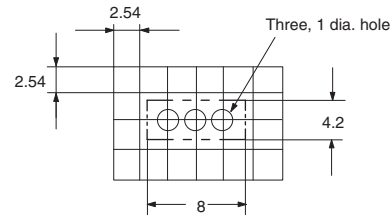


## Mounting

All D3C switches may be panel mounted using M1.6 mounting screws with plane washers or spring washers to securely mount the switch. Tighten the screws to a torque of 4.9 to 9.8 x 10<sup>-2</sup> N-m.



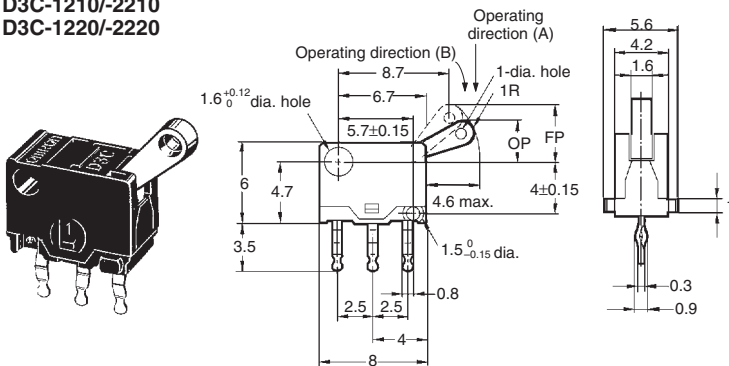
## PCB Layout (reference)



## Dimensions

**Note: 1.** Unless otherwise specified, all units are in millimeters and a tolerance of ±0.4 mm applies to all dimensions.

D3C-1210/-2210  
D3C-1220/-2220



| Model   | Non-shorting Model |               | Shorting Model  |               |
|---------|--------------------|---------------|-----------------|---------------|
|         | D3C-1210           | D3C-1220      | D3C-2210        | D3C-2220      |
| OF max. | 130 gf (100 gf)    | 40 gf (30 gf) | 130 gf (100 gf) | 40 gf (30 gf) |
| RF min. | 10 gf (15 gf)      | 3 gf (5 gf)   | 10 gf (15 gf)   | 3 gf (5 gf)   |
| FP max. | 4.8 mm             |               | 4.8 mm          |               |
| OP1     | 3.5 ± 0.3 mm       |               | 3.4 ± 0.3 mm    |               |
| OP2     | 2.5 ± 0.3 mm       |               | 2.6 ± 0.3 mm    |               |
| TTP     | 1.3 ± 0.4 mm       |               | 1.3 ± 0.4 mm    |               |

**Note:** The values for operating characteristics apply for operation in the A direction (↗). The values in parentheses indicate those for operation in the B direction (↘).

# Precautions

Be sure to read the precautions and information common to all Snap Action and Detection Switches, contained in the Technical User's Guide, "Snap Action Switches, Technical Information" for correct use.

## ■ Correct Use

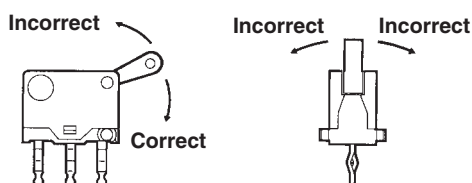
### Mounting

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.

Mount the switch onto a flat surface. Mounting on an uneven surface may cause deformation of the switch, resulting in faulty operation or breakage in the housing.

### Application of Operation Force to the Lever

Apply operation forces to the lever in its operating direction. Applying operating force to the lever in any other directions will damage the switch or cause malfunction.

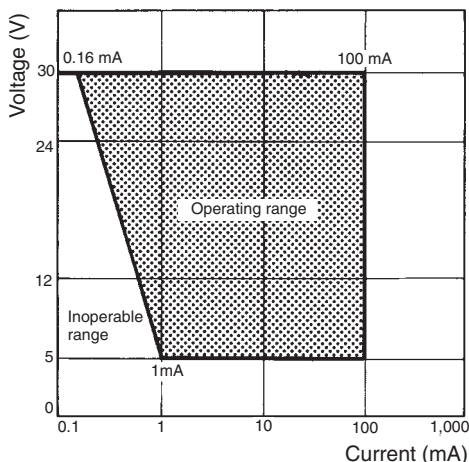


### Mounting Plate

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

### Using Microloads

Using a model for ordinary loads to switch microloads may result in faulty operation. Instead, use the models that are designed for microloads and that operate in the following range;



However, even when using microload models within the operating range shown above, if inrush current or inductive voltage spikes occur when the contact is opened or closed, then contact wear may increase and so decrease the service life. Therefore, insert a contact protection circuit where necessary.

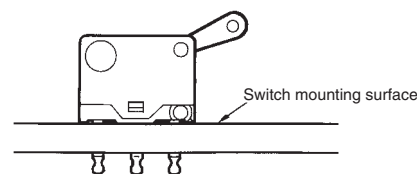
## ■ Cautions

### Terminal Connection

When soldering the lead wire to the terminals, first bind the lead wire to the terminal and then apply the 60(Sn):40(Pb) solder to the terminals. Complete soldering within 5s at a soldering iron temperature of 260°C. Soldering at a temperature exceeding 260°C, soldering for more than 5 s, or repeated soldering will degrade the switch characteristics.

When soldering the lead wire to the PCB terminal, pay careful attention so that the flux and solder liquid level does not exceed the PCB level.

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



MEMO

A large grid of 20 columns and 30 rows of small squares, intended for taking notes. The grid is composed of thin, light gray lines forming a series of small, uniform squares. The grid is positioned below the 'MEMO' header and above the footer.

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