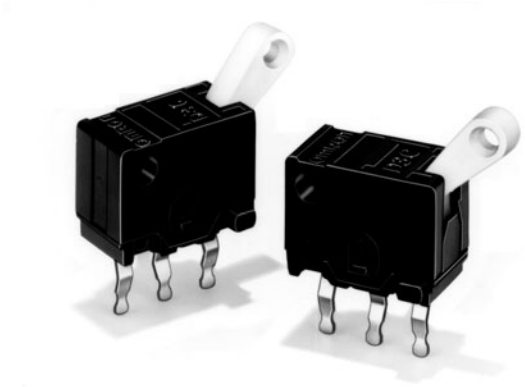
OMRON

Ultra Subminiature Detection Switch | D3C

Ultra Subminiature Detection Switch with Slide Mechanism and Lever Actuator



- Compact (8×6×4.2 mm (W×H×D)) and light (approximately 0.3 g) with long, 3-mm stroke.
- Built-in slide mechanism allows selection of shorting or non-shorting timing to match the application.
- Ideal for a wide variety of applications, including compact household appliances, audio equipment, office machines, and telecommunications equipment.

RoHS Compliant

Ordering Information

■ Model Number Legend

D3C-□2□0
(1) (2)

1. Switching Timing
1: Non-shorting
2: Shorting

2. Maximum Oprating Force
1: 1.28 N {130 gf}
2: 0.39 N {40 gf}

■ List of Models

Actuator	OF 1.28 N {130 gf}		OF 0.39 N {40 gf}	
	Non-shorting Model	Shorting Model	Non-shorting Model	Shorting Model
Rotary lever 	D3C-1210	D3C-2210	D3C-1220	D3C-2220

Specifications

■ Ratings

Electrical ratings	0.1 A at 30 VDC (resistive load)

Note: The ratings values apply under the following test conditions:
Ambient temperature: 20±2°C
Ambient humidity: 65±5%
Operating frequency: 30 operations/min

■ Characteristics

Operating speed	1 mm to 500 mm/s
Operating frequency	Mechanical: 200 operations/min max. Electrical: 30 operations/min max.
Insulation resistance	100 MΩ min. (at 250 VDC)
Contact resistance (initial value)	50 mΩ max.
Dielectric strength	250 VAC, 50/60 Hz for 1 min between terminals of same polarity 250 VAC, 50/60 Hz for 1 min 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^2 {approx. 100G} max. Malfunction: 300 m/s^2 {approx. 30G} max.
Durability (see note 2)	50,000 operations min. (30 operations/min)
Degree of protection	IEC IP00
Degree of protection against electric shock	Class III
Proof tracking index (PTI)	175
Ambient operating temperature	–20°C to 80°C (at ambient humidity of 60% max.) (with no icing or condensation)
Ambient operating humidity	85% max. (for 5°C to 35°C)
Weight	Approx. 0.3 g

Note: **1.** The data given above are initial values.

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

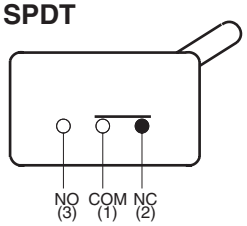
■ Contact Specifications

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

Note: For more information on the minimum applicable load, refer to *Using Micro Loads* on page 4.

■ Contact Form

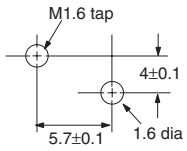
SPDT



Dimensions

■ Mounting Holes

Note: All units are in millimeters unless otherwise indicated.

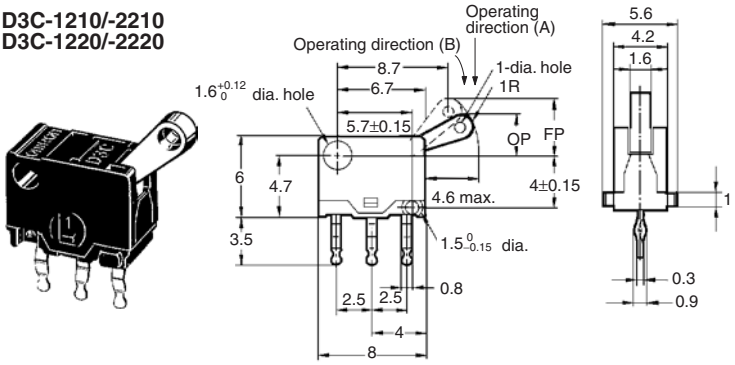


■ Dimensions and Operating Characteristics

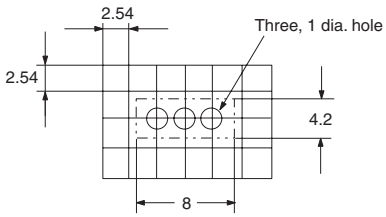
Note: **1.** All units are in millimeters unless otherwise indicated.

2. Unless otherwise specified, a tolerance of ±0.4 mm applies to all dimensions.

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



PCB Dimensions

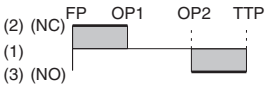


Model	Non-shorting Models		Shorting Models	
	D3C-1210	D3C-1220	D3C-2210	D3C-2220
OF max.	1.28 N {130 gf} (0.98 N)	0.39 N {40 gf} (0.29 N)	1.28 N {130 gf} (0.98 N)	0.39 N {40 gf} (0.29 N)
RF min.	0.10 N {10 gf} (0.15 N)	0.03 N {3 gf} (0.05 N)	0.10 N {10 gf} (0.15 N)	0.03 N {3 gf} (0.05 N)
FP max.	4.8 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	

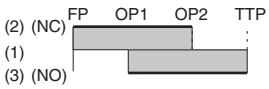
Note: The values for operating characteristics apply for operation in the A direction (▼) shown above. The values in parentheses indicate those for operation in the B direction (▼).

Switching Timing

Non-shorting Model



Shorting Model



Precautions

Refer to *General Information*.

■ Cautions

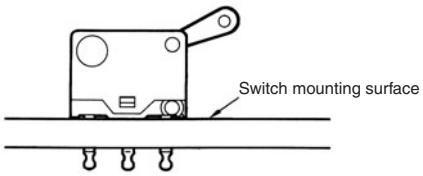
Terminal Connection

When soldering the lead wire to the terminal, first bind the lead wire to the terminal and then apply the solder to the terminal. Complete soldering within 5 s 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 using automatic baths, we recommend soldering at 260±5°C within 5 seconds.

Make sure that liquid surface of the solder does not flow over the edge of the board.

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



■ Correct Use

Mounting

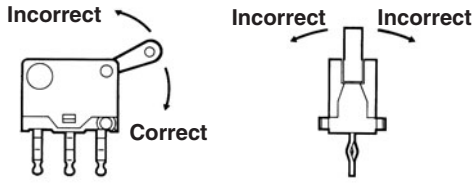
Turn OFF the power supply before mounting or removing the Switch, wiring, or performing maintenance or inspection. Failure to do so may result in electric shock or burning.

Use 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 9.8×10^{-2} N·m {0.5 to 1 kgf·cm}.

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.



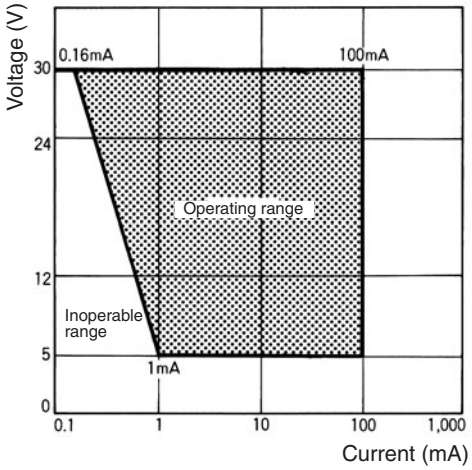
Mounting Plate

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

Using Micro Loads

Using a model for ordinary loads to open or close the contact of a micro load circuit may result in faulty contact. Use models that operate in the following range. However, even when using micro load models within the operating range shown below, if inrush current occurs when the contact is opened or closed, it may increase 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% (λ 60). The equation, λ 60 = 0.5×10^{-6}/operations indicates that the estimated malfunction rate is less than 1/2,000,000 operations with a reliability level of 60%.



ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Cat. No. C099-E1-03