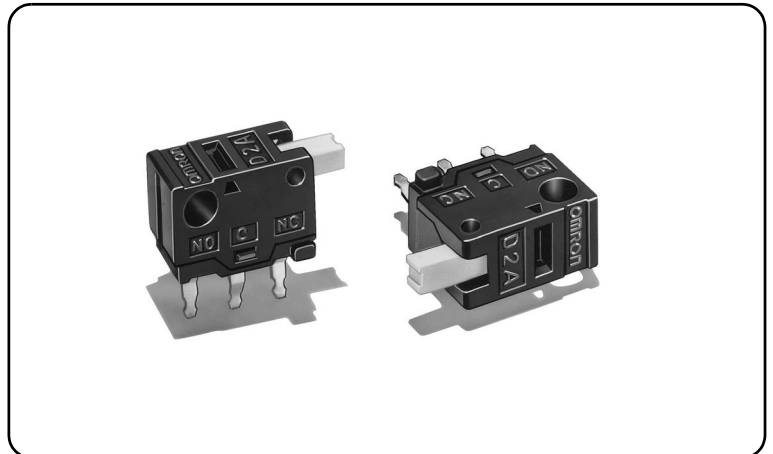# D2A
Ultra Subminiature Detection Switch

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-shorting switching timing of the switch.

RoHS Compliant

Model Number Legend

D2A-1120

1. Switching timing
1: Non-shorting Model
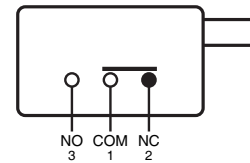2: Shorting Model

2. Maximum Operating Force (OF)
1: 0.98 N {100 gf}
2: 0.49 N {50 gf}

Contact form

● SPDT

NO COM NC
3   1   2

Contact specifications

Contact	Specification	Slide
	Material	Silver plated
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.

List of models

Operating Force (OF)		0.98N (standard)		0.49N (low operating force)	
Switching timing Actuator		Non-shorting Model	Shorting Model	Non-shorting Model	Shorting Model
Pin plunger		**D2A-1110**	**D2A-2110**	**D2A-1120**	**D2A-2120**

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

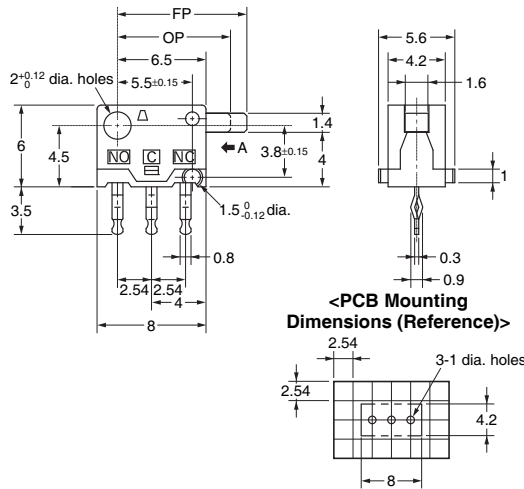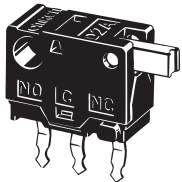|		
Permissible operating speed		1 mm to 500 mm/s
Permissible operating frequency	Mechanical	200 operations/min
	Electrical	30 operations/min
Insulation resistance		100 MΩ min. (at 250 VDC with insulation tester)
Contact resistance (initial value)		50 mΩ max.
Dielectric strength	Between terminals of 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/s² {approx. 100G} max.
	Malfunction *1	300 m/s² {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.
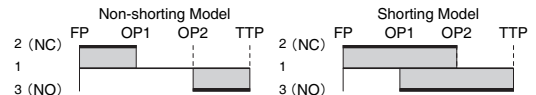
Mounting Holes (unit: mm)

M2 Tap

3.8±0.1

5.5±0.1 → 1.6 dia. holes
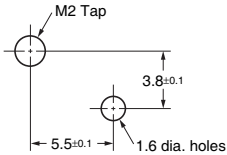
Dimensions (unit: mm) and Operating Characteristics

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

FP
OP
6.5
2+0.12/0 dia. holes
5.5±0.15
NO C NC
← A
3.8±0.15
6
4.5
3.5
1.5 0/-0.12 dia.
0.8
2.54 2.54
4
8
1.4
4

5.6
4.2
1.6
1

<PCB Mounting Dimensions (Reference)>

2.54
2.54
3-1 dia. holes
4.2
8

0.3
0.9

	Models	Non- Shorting Model		Shorting Model	
Operating characteristics	Model	D2A -1110	D2A -1120	D2A -2110	D2A -2120
Operating Force	OF Max.	0.98 N {100 gf}	0.49 N {50 gf}	0.98 N {100 gf}	0.49 N {50 gf}
Releasing Force	RF Min.	0.15 N {15 gf}	0.05 N {5 gf}	0.15 N {15 gf}	0.05 N {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

Non-shorting Model
FP OP1 OP2 TTP
2 (NC)
1
3 (NO)

Shorting Model
FP OP1 OP2 TTP
2 (NC)
1
3 (NO)

Note1. Unless otherwise specified, a tolerance of ±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.

Switch mounti surface

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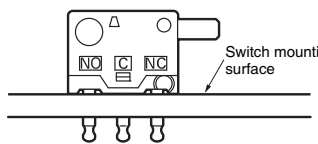
Correct Use

●**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 9.8×10⁻²N • 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.
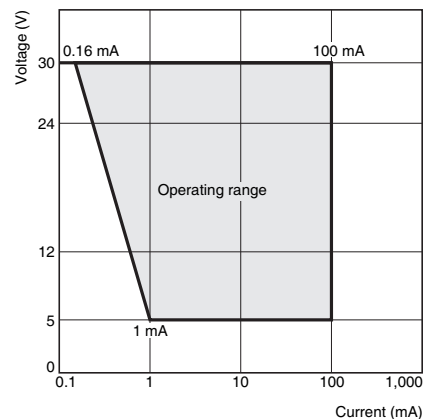
It may damage the Switch or cause malfunction.
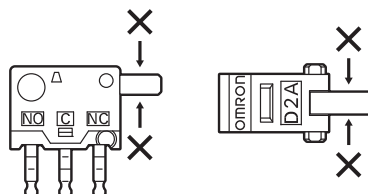
●**Mounting Plate**

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% (λ_{60}). (JIS C5003)

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

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