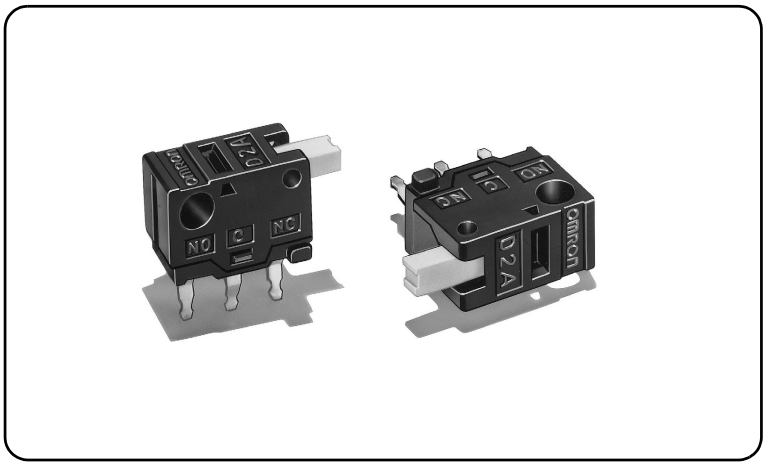
D2A

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.**



Model Number Legend

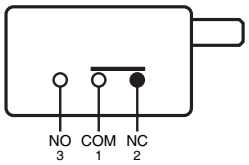
D2A-□1□2□0

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



List of models

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

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.

Ratings

Rated voltage	Resistive load
30 VDC	0.1 A

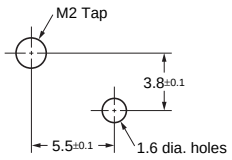
Note. The ratings values apply under the following test conditions.
(1) Ambient temperature: 20±2°C
(2) Ambient humidity: 65±5%
(3) Operating frequency: 30 operations/min

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

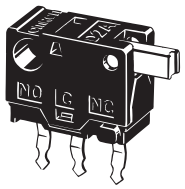
Note.The data given above are initial values.
*1. The values are at Free Position and Total Travel Position. Close or open circuit of contact is 1ms max.
*2. For testing conditions, consult your OMRON sales representative.

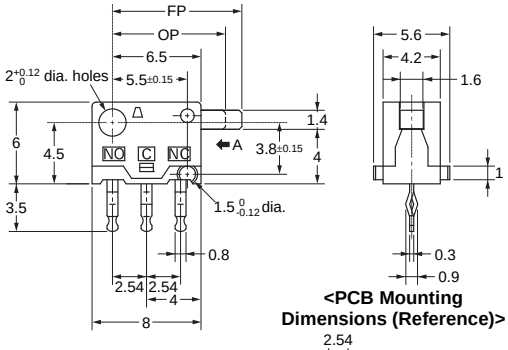
Mounting Holes (unit: mm)



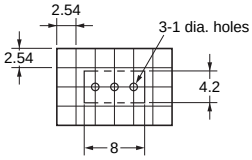
Dimensions (unit: mm) and Operating Characteristics

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



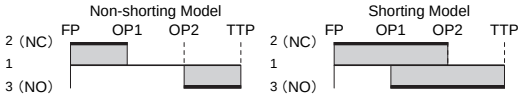


<PCB Mounting Dimensions (Reference)>



Operating characteristics		Models / Model	Non- Shorting Model D2A -1110	Non- Shorting Model D2A -1120	Shorting Model D2A -2110	Shorting Model 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



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

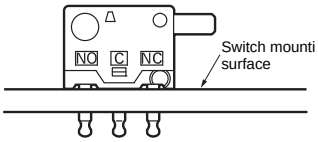
★Please refer to "Common Precautions" for correct use.

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.



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

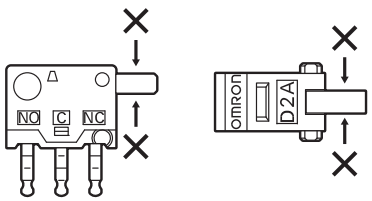
Correct Use

●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^{-2}N • 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.



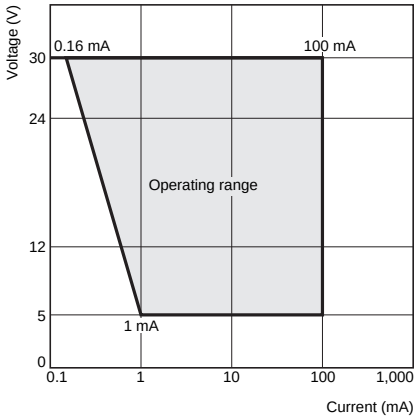
●Mounting Plate

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, $\lambda_{60}=0.5\times10^{-6}$/operation, indicates that the estimated malfunction rate is less than $\frac{1}{2{,}000{,}000}$ operations with a reliability level of 60%.



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