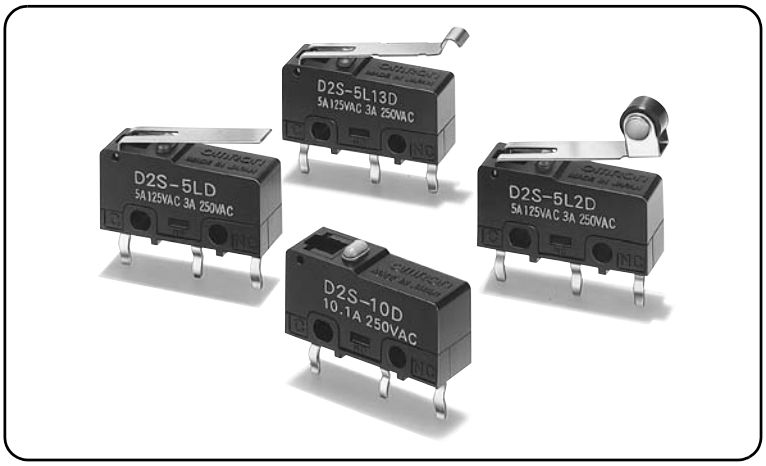
D2S
Subminiature Basic Switch

Subminiature Switch with Superb Flux Resistance

- **One-piece terminal construction to keep out flux.**
- **High operating-position accuracy (±0.25 mm) enables easy peripheral design and positioning. Use of pin plunger also allows horizontal operation.**

RoHS Compliant



Model Number Legend

D2S-[1][2][3][4]

1. Ratings
- 10: 250 VAC 10.1 A
- 5 : 125 VAC 5 A
- 01: 30 VDC 0.1 A

2. Actuator
- None: Pin plunger
- L : Hinge lever
- L13 : Simulated roller lever
- L2 : Hinge roller lever

3. Maximum Operating Force (OF)
- None: 1.47 N {150 gf}
- -F : 0.49 N {50 gf} (For 0.1 A, 5 A)

Note: The given values are for pin plunger models only.

4. Terminals
- None: Solder terminals
- D : Self-clinching PCB terminals

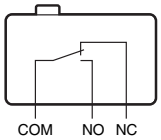
List of Models

Actuator	Terminals	Ratings OF max.	10.1 A	5 A	0.1 A
Pin plunger 	Solder terminals	1.47 N {150 gf}	**D2S-10**	**D2S-5**	**D2S-01**
		0.49 N {50 gf}	-	**D2S-5-F**	**D2S-01-F**
	Self-clinching PCB terminals	1.47 N {150 gf}	**D2S-10D**	**D2S-5D**	**D2S-01D**
		0.49 N {50 gf}	-	**D2S-5-FD**	**D2S-01-FD**
Hinge lever 	Solder terminals	0.49 N {50 gf}	**D2S-10L**	**D2S-5L**	**D2S-01L**
		0.18 N {18 gf}	-	**D2S-5L-F**	**D2S-01L-F**
	Self-clinching PCB terminals	0.49 N {50 gf}	**D2S-10LD**	**D2S-5LD**	**D2S-01LD**
		0.18 N {18 gf}	-	**D2S-5L-FD**	**D2S-01L-FD**
Simulated roller lever 	Solder terminals	0.49 N {50 gf}	**D2S-10L13**	**D2S-5L13**	**D2S-01L13**
		0.18 N {18 gf}	-	**D2S-5L13-F**	**D2S-01L13-F**
	Self-clinching PCB terminals	0.49 N {50 gf}	**D2S-10L13D**	**D2S-5L13D**	**D2S-01L13D**
		0.18 N {18 gf}	-	**D2S-5L13-FD**	**D2S-01L13-FD**
Hinge roller lever 	Solder terminals	0.49 N {50 gf}	**D2S-10L2**	**D2S-5L2**	**D2S-01L2**
		0.18 N {18 gf}	-	**D2S-5L2-F**	**D2S-01L2-F**
	Self-clinching PCB terminals	0.49 N {50 gf}	**D2S-10L2D**	**D2S-5L2D**	**D2S-01L2D**
		0.18 N {18 gf}	-	**D2S-5L2-FD**	**D2S-01L2-FD**

Separator (Sold Separately), Terminal Connector (Sold Separately) ➡ Refer to **"Basic Switch Common Accessories"**

Contact Form

●SPDT



Contact Specifications

Item	Model	D2S-10 models	D2S-5 models	D2S-01 models
Contact	Specification	Rivet		Crossbar
	Material	Silver alloy		Gold alloy
	Gap (standard value)	0.5 mm		
Inrush current	NC	20A max.		1 A max.
	NO	15 A max.	10 A max.	1 A max.
Minimum applicable load (reference value) *		5 VDC 160 mA		5 VDC 1 mA

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

Ratings

Model	Item Rated voltage	Resistive load
D2S-10 models	250 VAC	10.1 A
D2S-5 models	125 VAC 250 VAC	5 A 3 A
D2S-01 models	125 VAC	0.1 A
	30 VDC	0.1 A

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

Approved Safety Standards

The items shown in the "**List of Models**" are not standard approved models. Consult your OMRON sales representative for specific models with standard approvals.

UL (UL1054)/CSA(CSA C22.2 No.55)

Rated voltage / Model	D2S-10	D2S-5	D2S-01
125 VAC 250 V	- 10.1 A	5 A 3 A	0.1 A -
30 VDC	-	-	0.1 A

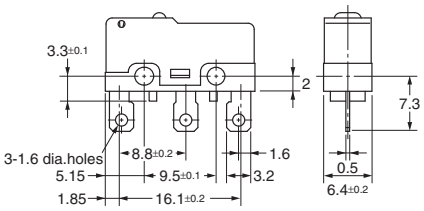
Characteristics

Item		Model	D2S-10 models	D2S-5 models	D2S-01 models
Permissible operating speed			0.1 mm to 1 m/s (for pin plunger models)		
Permissible operating frequency	Mechanical		400 operations/min		
	Electrical		60 operations/min		
Insulation resistance			100 MΩ min. (at 500 VDC with insulation tester)		
Contact resistance (initial value)		OF 1.47 N models	30mΩ max.		50 mΩ max.
		OF 0.49 N models	-	50 mΩ max.	100 mΩ max.
Dielectric strength * 1	Between terminals of the same polarity		1,000 VAC 50/60 Hz 1 min		
	Between current-carrying metal parts and ground		1,500 VAC 50/60 Hz 1 min		
	Between each terminals and non-current-carrying metal parts		1,500 VAC 50/60 Hz 1 min		
Vibration resistance * 2	Malfunction		10 to 55 Hz, 1.5 mm double amplitude		
Shock resistance	Durability	OF 1.47 N models	1,000 m/s² {approx. 100G} max.		
		OF 0.49 N models	500 m/s² {approx. 50G} max.		
	Malfunction * 2	OF 1.47 N models	300 m/s² {approx. 30G} max.		
		OF 0.49 models	200 m/s² {approx. 20G} max.		
Durability * 3	Mechanical		10,000,000 operations min. (60 operations/min)	30,000,000 operations min. (60 operations/min)	
	Electrical		50,000 operations min. (30 operations/min)	200,000 operations min. (30 operations/min)	
Degree of protection			IEC IP40		
Ambient operating temperature			-25°C to +85°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. 1.6 g (pin plunger models)		

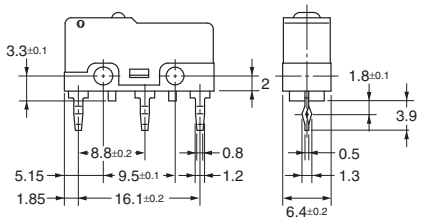
Note. The data given above are initial values.
*1. The values for dielectric strength shown are for models with a Separator (refer to "**Micro Switch Common Accessories**").
*2. The values are at Free Position and Total Travel Position values for pin plunger, and Total Travel Position value for lever.
Close or open circuit of the contact is 1ms max.
*3. For testing conditions, consult your OMRON sales representative.

Terminals/Appearances (Unit: mm)

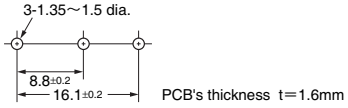
●Solder terminals



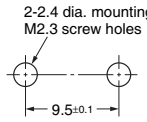
●Self-clinching PCB terminals



<PCB Mounting Dimensions (Reference)>



Mounting Holes (Unit: mm)



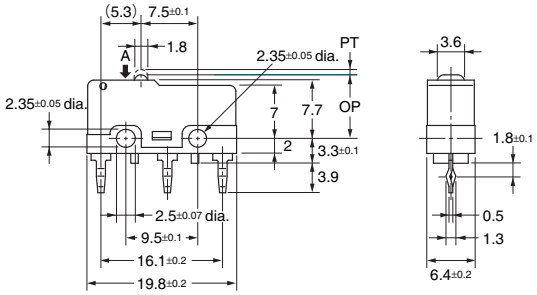
Dimensions (Unit: mm) and Operating Characteristics

The following figures show models with self-clinching PCB terminals. For the solder terminals, refer to "**Terminals/Appearances**".

The □ is replaced with the code for the terminal that you need. See the "**List of Models**" for available combinations of models.

●Pin plunger

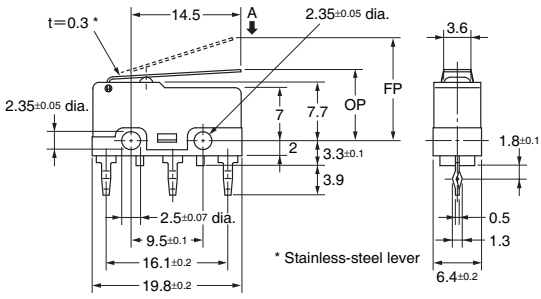
D2S-10□
D2S-5□
D2S-5-F□
D2S-01□
D2S-01-F□



Operating characteristics			Model D2S-10□ D2S-5□ D2S-01□	D2S-5-F□ D2S-01-F□
Operating Force	OF	Max.	1.47 N {150 gf}	0.49 N {50 gf}
Releasing Force	RF	Min.	0.25 N {25 gf}	0.04 N {4 gf}
Pretravel	PT	Max.	0.7 mm	
Overtravel	OT	Min.	0.4 mm	
Movement Differential	MD	Max.	0.1 mm	
Operating Position	OP		8.4±0.25 mm	

●Hinge lever

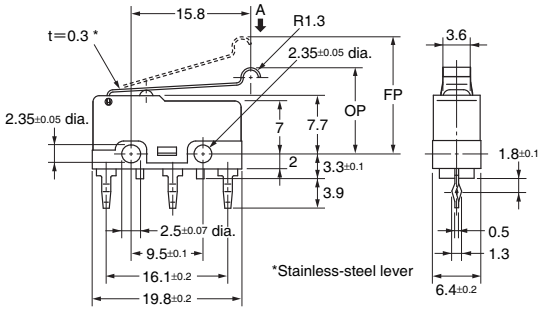
D2S-10L□
D2S-5L□
D2S-5L-F□
D2S-01L□
D2S-01L-F□



Operating characteristics			Model D2S-10L□ D2S-5L□ D2S-01L□	D2S-5L-F□ D2S-01L-F□
Operating Force	OF	Max.	0.49 N {50 gf}	0.18 N {18 gf}
Releasing Force	RF	Min.	0.06 N {6 gf}	0.02 N {2 gf}
Overtravel	OT	Min.	1.0 mm	
Movement Differential	MD	Max.	0.8 mm	
Free Position	FP	Max.	13.6 mm	
Operating Position	OP		9.4±0.8mm	

●Simulated roller lever

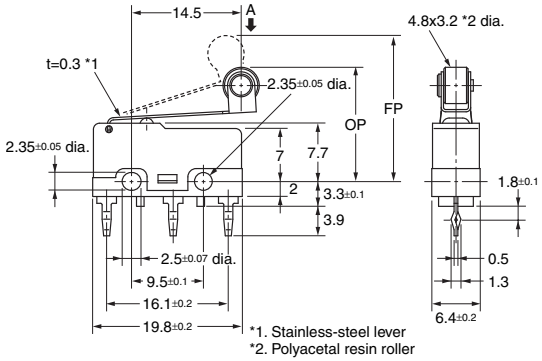
D2S-10L13□
D2S-5L13□
D2S-5L13-F□
D2S-01L13□
D2S-01L13-F□



Operating characteristics			Model D2S-10L13□ D2S-5L13□ D2S-01L13□	D2S-5L13-F□ D2S-01L13-F□
Operating Force	OF	Max.	0.49 N {50 gf}	0.18 N {18 gf}
Releasing Force	RF	Min.	0.06 N {6 gf}	0.02 N {2 gf}
Overtravel	OT	Min.	1.0 mm	
Movement Differential	MD	Max.	0.8 mm	
Free Position	FP	Max.	15.5 mm	
Operating Position	OP		11.4±0.8 mm	

Note 1. Unless otherwise specified, a tolerance of ±0.4 mm applies to all dimensions.
Note 2. The operating characteristics are for operation in the A direction (⬇).

●Hinge roller lever
D2S-10L2□
D2S-5L2□
D2S-5L2-F□
D2S-01L2□
D2S-01L2-F□



Operating characteristics	Model		D2S-10L2□ D2S-5L2□ D2S-01L2□	D2S-5L2-F□ D2S-01L2-F□
Operating Force Releasing Force	OF RF	Max. Min.	0.49 N {50 gf} 0.06 N {6 gf}	0.18 N {18 gf} 0.02 N {2 gf}
Overtravel Movement Differential	OT MD	Min. Max.	1.0 mm 0.8 mm	
Free Position Operating Position	FP OP	Max.	19.3 mm 15.1±0.8 mm	

Note 1. Unless otherwise specified, a tolerance of ±0.4 mm applies to all dimensions.
Note 2. The operating characteristics are for operation in the A direction (⬇).

Precautions

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

Cautions

●Soldering

When using automatic soldering baths, we recommend soldering at 260±5°C within 5 seconds. Make sure that the liquid surface of the solder does not flow over the edge of the board.
When soldering terminals manually, complete the soldering at the iron tip temperature between 350 to 400°C within 3 seconds, and do not apply any external force for 1 minute after soldering.
When applying solder, keep the solder away from the case of the Switch and do not allow solder or flux to flow into the case.

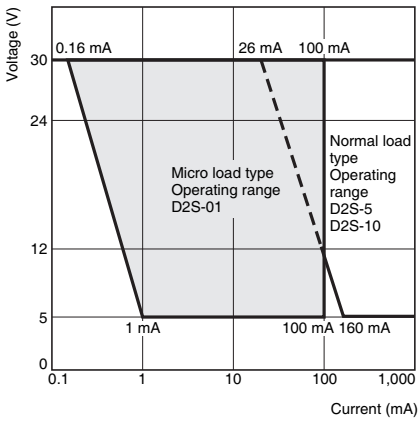
Correct Use

●Mounting

Use M2.3 mounting screw with plane washers or spring washers to securely mount the Switch. Tighten the screws to a torque of 0.23 to 0.26 N·m {2.3 to 2.7 kgf·cm}.

●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 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 N-level reference value applies for the minimum applicable load. This value indicates the malfunction reference level for the reliability level of 60% (λ_{60}).
(JIS C5003)
The equation, $\lambda_{60}=0.5\times10^{-6}$/operations 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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