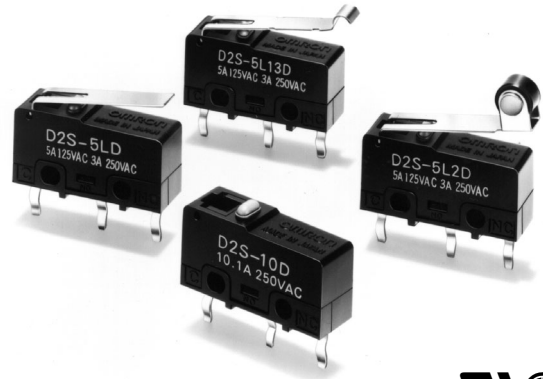


Subminiature Switch with Superb Flux Resistance

- 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.
- Available with self-clinching PCB or solder terminals.



Ordering Information

Model Number Legend

D2S-□□□□
1 2 3 4

1. Ratings

10: 10.1 A at 250 VAC
 5: 5 A at 125 VAC
 01: 0.1 A at 30 VDC

2. Actuator

None: Pin plunger
 L: Hinge lever
 L13: Simulated roller lever
 L2: Hinge roller lever

3. Maximum Operating Force





None: 1.47 N {150 gf}
 -F: 0.49 N {50 gf}

Note: These value are for the pin plunger models.

4. Terminals

None: Solder terminals
 D: Self-clinching PCB terminals

List of Models

Actuator	Terminals	OF max.	Model		
			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

Specifications

■ Ratings

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

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

■ Switching Capacity per Load (Reference Values)

Voltage	D2S-10, D2S-5: Rivet contact								D2S-01: Crossbar contact	
	Non-inductive load				Inductive load				Non-inductive load	
	Resistive load		Lamp load		Inductive load		Motor load		Resistive load	
	NC	NO	NC	NO	NC	NO	NC	NO	NC	NO
125 VAC	5 (10.1) A		1.5 A	0.7 A	3 A		2.5 A	1.3 A	0.1 A	
250 VAC	3 (10.1) A		1 A	0.5 A	2 A		1.5 A	0.8 A	---	
8 VDC	5 (10.1) A		2 A		5 A	4 A	3 A		0.1 A	
14 VDC	5 (10.1) A		2 A		4 A	4 A	3 A		0.1 A	
30 VDC	4 A		2 A		3 A	3 A	3 A		0.1 A	
125 VDC	0.4 A		0.05 A		0.4 A	0.4 A	0.05 A		---	
250 VDC	0.2 A		0.03 A		0.2 A	0.2 A	0.03 A		---	

Note:

1. Data in parentheses apply to the D2S-10 models only.
2. The above values are for the steady-state current.
3. Inductive loads have a power factor of 0.4 min. (AC) and a time constant of 7 ms max. (DC).
4. Lamp loads have an inrush current of 10 times the steady-state current.
5. Motor loads have an inrush current of 6 times the steady-state current.

■ Characteristics

Operating speed	0.1 mm to 1 m/s (pin plunger models)
Operating frequency	Mechanical: 400 operations/min max. Electrical: 30 operations/min max.
Insulation resistance	100 MΩ min. (at 500 VDC)
Contact resistance (initial value) (see note 2)	OF 1.47 N {150 gf}: D2S-10, D2S-5 models: 30 mΩ max. D2S-01 models: 50 mΩ max. OF 0.49 N {50 gf}: D2S-5 models: 50 mΩ max. D2S-01 models: 100 mΩ max.
Dielectric strength (see note 3)	1,000 VAC, 50/60 Hz for 1 min between terminals of same polarity 1,500 VAC, 50/60 Hz for 1 min between current-carrying metal parts and ground 1,500 VAC, 50/60 Hz for 1 min between each terminal and non-current-carrying metal parts
Vibration resistance (see note 4)	Malfunction: 10 to 55 Hz, 1.5-mm double amplitude
Shock resistance (see note 4)	Destruction: OF 1.47 N {150 gf}: 1,000 m/s ² {approx. 100G} max. OF 0.49 N {50 gf}: 500 m/s ² {approx. 50G} max. Malfunction: OF 1.47 N {150 gf}: 300 m/s ² {approx. 30G} max. OF 0.49 N {50 gf}: 200 m/s ² {approx. 20G} max.
Durability (see note 5)	Mechanical: D2S-10 models: 10,000,000 operations min. (60 operations/min) D2S-5, D2S-01 models: 30,000,000 operations min. (60 operations/min) (Refer to <i>Engineering Data</i> .) Electrical: D2S-10 models: 50,000 operations min. (30 operations/min) D2S-5, D2S-01 models: 200,000 operations min. (30 operations/min) (Refer to <i>Engineering Data</i> .)
Degree of protection	IEC IP40
Degree of protection against electric shock	Class 1
Proof tracking index (PTI)	175
Ambient operating temperature	-25° to 85°C (at ambient humidity of 60% max.) (with no icing)
Ambient operating humidity	85% max. (for 5°C to 35°C)
Weight	Approx. 1.6 g (pin plunger models)

- Note:**
1. The data given above are initial values.
 2. The specifications shown with the OF values are those for pin plunger models.
 3. The dielectric strength shown in the table is for models with a Separator.
 4. For the pin plunger models, the above values apply for use at both the free position and total travel position. For the lever models, they apply at the total travel position.
 5. For testing conditions, consult your OMRON sales representative.

■ Approved Standards

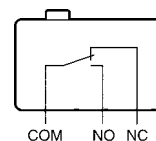
Consult your OMRON sales representative for specific models with standard approvals.

UL1054 (File No. E41515)/
CSA C22.2 No.55 (File No. LR21642)

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

■ Contact Form

SPDT



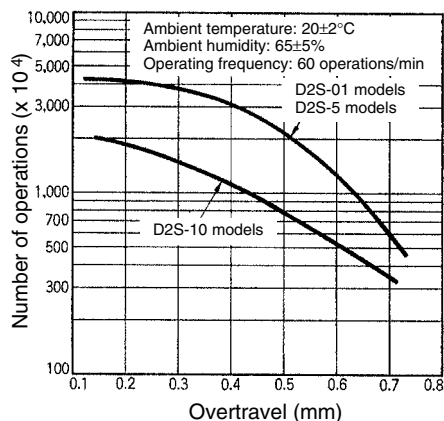
■ Contact Specifications

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

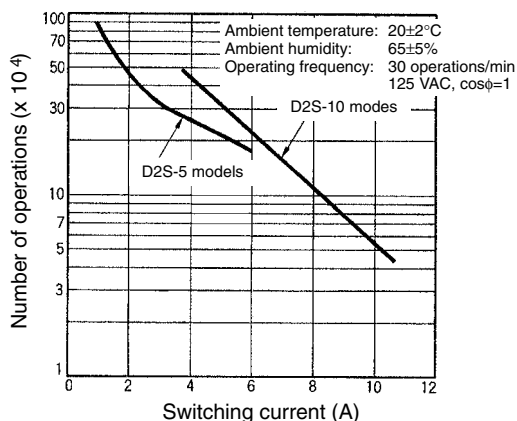
Note: For more information on the minimum applicable load, refer to *Using Micro Loads* on page 196.

Engineering Data (Reference Values)

Mechanical Durability (Pin Plunger Models)



Electrical Durability (Pin Plunger Models)

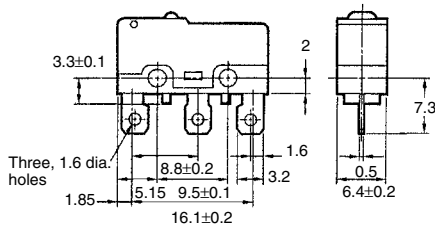


Dimensions

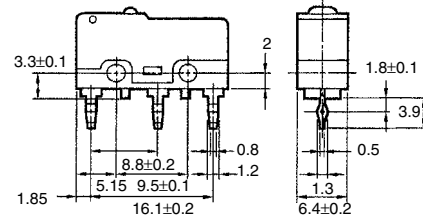
Note: All units are in millimeters unless otherwise indicated.

■ Terminals

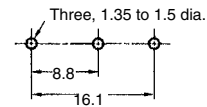
Solder terminals



Self-clinching PCB terminals

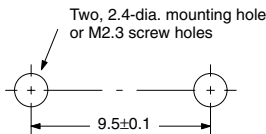


PCB Mounting Dimensions (Reference)



Thickness of PCB: $t = 1.6$ mm

■ Mounting Holes

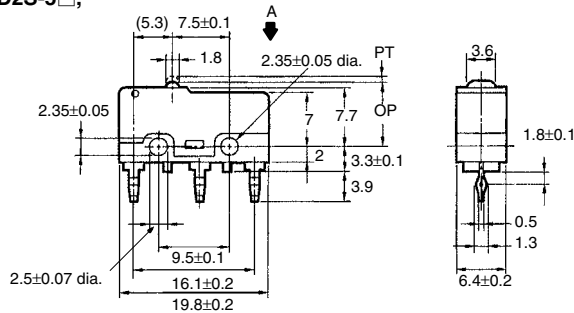
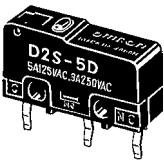


■ Dimensions and Operating Characteristics

- Note:**
- All units are in millimeters unless otherwise indicated.
 - Unless specified, a tolerance of ± 0.4 mm applies to all dimensions.
 - The following figures show models with self-clinching PCB terminals. For the solder terminals, refer to *Terminals*.
 - The □ in the model number is replaced with "D" for self-clinching PCB terminals or removed for solder terminals.
 - The operating characteristics are for operation in the A direction (▼).

Pin Plunger Models

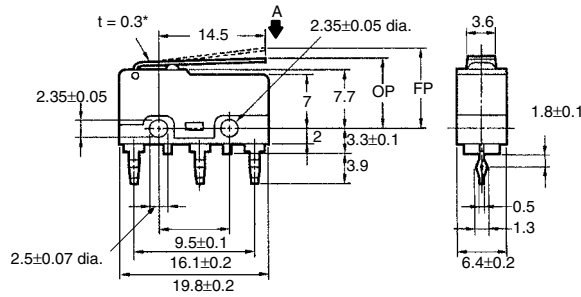
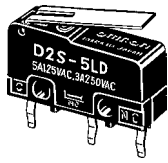
D2S-01□, D2S-01-F□, D2S-5□, D2S-5-F□, D2S-10□



Model	D2S-01□ D2S-5□ D2S-10□	D2S-01-F□ D2S-5-F□
OF max.	1.47 N {150 gf}	0.49 N {50 gf}
RF min.	0.25 N {25 gf}	0.04 N {4 gf}
PT max.	0.7 mm	
OT min.	0.4 mm	
MD max.	0.1 mm	
OP	8.4±0.25 mm	

Hinge Lever Models

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

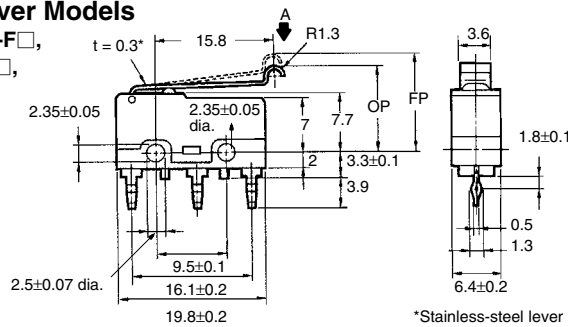
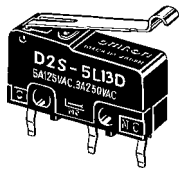


*Stainless-steel lever

Model	D2S-01L□ D2S-5L□ D2S-10L□	D2S-01L-F□ D2S-5L-F□
OF max.	0.49 N {50 gf}	0.18 N {18 gf}
RF min.	0.06 N {6 gf}	0.02 N {2 gf}
OT min.	1.0 mm	
MD max.	0.8 mm	
FP max.	13.6 mm	
OP	9.4±0.8 mm	

Simulated Roller Lever Models

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

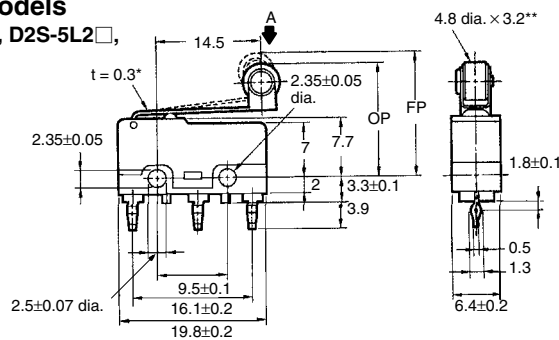
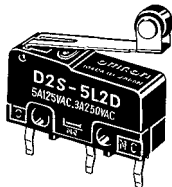


*Stainless-steel lever

Model	D2S-01L13□ D2S-5L13□ D2S-10L13□	D2S-01L13-F□ D2S-5L13-F□
OF max.	0.49 N {50 gf}	0.18 N {18 gf}
RF min.	0.06 N {6 gf}	0.02 N {2 gf}
OT min.	1.0 mm	
MD max.	0.8 mm	
FP max.	15.5 mm	
OP	11.4±0.8 mm	

Hinge Roller Lever Models

D2S-01L2□, D2S-01L2-F□, D2S-5L2□,
D2S-5L2-F□, D2S-10L2□



*Stainless-steel lever
**Oil-less polyacetal resin roller

Model	D2S-01L2□ D2S-5L2□ D2S-10L2□	D2S-01L2-F□ D2S-5L2-F□
OF max.	0.49 N {50 gf}	0.18 N {18 gf}
RF min.	0.06 N {6 gf}	0.02 N {2 gf}
OT min.	1.0 mm	
MD max.	0.8 mm	
FP max.	19.3 mm	
OP	15.1±0.8 mm	

Precautions

Refer to pages 26 to 31 for common precautions.

■ Cautions

Terminal Connection

When soldering the lead wire to the terminal, first insert the lead wire conductor through the terminal hole and then conduct soldering.

Make sure that the capacity of the soldering iron is 60 W maximum. Do not take more than 5 s to solder the switch terminal. Improper soldering involving an excessively high temperature or excessive soldering time may deteriorate the characteristics of the Switch.

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.

■ 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 M2.3 mounting screws 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}.

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.

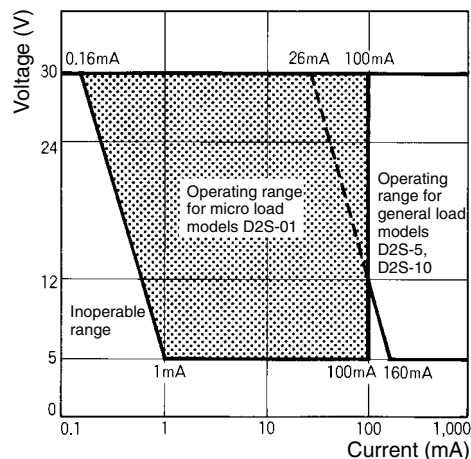
Operating Stroke Setting

Take particular care in setting the operating stroke for the pin plunger models. Make sure that the operating stroke is 70% to 100% of the rated OT distance. Do not operate the actuator exceeding the OT distance, otherwise the durability of the Switch may be shortened.

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% ($\lambda 60$). The equation, $\lambda 60 = 0.5 \times 10^{-6}/\text{operations}$ 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.