OMRON

Ultra Subminiature Basic Switch

D2F

A Variety of D2F Models Including Models Incorporating Simulated Hinge Lever and Hinge Roller Lever

- Subminiature switch (12.8 x 6.5 x 5.8 (W x H x D)) ideal for PCB mounting.
- Incorporating a snapping mechanism made with two highly precise split springs which ensures a long service life (1,000,000 operations).
- Two-stage bottom different in level and insertion molded terminals prevents flux penetration.
- PCB, self-clinching, solder, and right-angle terminals are available.
- Ideal for home appliances, audio equipment, office machines, and communications equipment.
- Conforms to EN61058-1

Ordering Information

■ Model Number Legend

D2F-□□□□
1 2 3 4

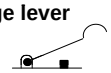
1. Ratings
None: General load
01: 0.1 A

2. Operating Force max.
None: 1.47 N {150 gf}
F: 0.74 N {75 gf}
Note: These values are for the pin plunger model.

3. Actuator
None: Pin plunger
L: Hinge lever
L2: Hinge roller lever
L3: Simulated hinge lever

4. Terminals
None: PCB terminal
-T: Self-clinching PCB terminal
-D: Solder terminal
-A: Right-angle PCB terminal

■ List of Models

Actuator	Operaating force (OF) (see note)	Microvoltage/current load		Standard	
		0.1 A		1 A	3 A
		Low operating force 0.74 N {75 gf}	General-purpose 1.47 N {150 gf}	Low operating force 0.74 N {75 gf}	General-purpose 1.47 N {150 gf}
Pin plunger	PCB terminals	D2F-01F	D2F-01	D2F-F	D2F
	Self-clinching terminals	D2F-01F-T	D2F-01-T	D2F-F-T	D2F-T
	Solder terminals	D2F-01F-D	D2F-01-D	D2F-F-D	D2F-D
	Right-angle terminals	D2F-01F-A	D2F-01-A	D2F-F-A	D2F-A
Hinge lever 	PCB terminals	D2F-01FL	D2F-01L	D2F-FL	D2F-L
	Self-clinching terminals	D2F-01FL-T	D2F-01L-T	D2F-FL-T	D2F-L-T
	Solder terminals	D2F-01FL-D	D2F-01L-D	D2F-FL-D	D2F-L-D
	Right-angle terminals	D2F-01FL-A	D2F-01L-A	D2F-FL-A	D2F-L-A
Simulated hinge lever 	PCB terminals	D2F-01FL3	D2F-01L3	D2F-FL3	D2F-L3
	Self-clinching terminals	D2F-01FL3-T	D2F-01L3-T	D2F-FL3-T	D2F-L3-T
	Solder terminals	D2F-01FL3-D	D2F-01L3-D	D2F-FL3-D	D2F-L3-D
	Right-angle terminals	D2F-01FL3-A	D2F-01L3-A	D2F-FL3-A	D2F-L3-A
Hinge roller lever 	PCB terminals	D2F-01FL2	D2F-01L2	D2F-FL2	D2F-L2
	Self-clinching terminals	D2F-01FL2-T	D2F-01L2-T	D2F-FL2-T	D2F-L2-T
	Solder terminals	D2F-01FL2-D	D2F-01L2-D	D2F-FL2-D	D2F-L2-D
	Right-angle terminals	D2F-01FL2-A	D2F-01L2-A	D2F-FL2-A	D2F-L2-A

Note: The OF values shown in the table are for the pin plunger models.

Specifications

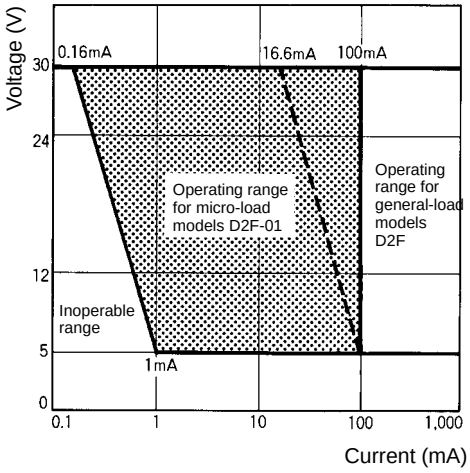
■ Ratings

Item	OF max.	D2F models		D2F-01 models	
		1.47 N {150 gf} (General-purpose)	0.74 N {75 gf} (Low operating)	1.47 N {150 gf} (General-purpose)	0.74 N {75 gf} (Low operating)
		Resistive load			
Rated voltage	**125 VAC**	3 A	1 A	---	
	30 VDC	2 A	0.5 A	0.1 A	

Note: 1. Consult your OMRON representative before using the Switch with inductive or motor loads.

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

Use the Switch in the following operating range.



Model	D2F-01	D2F
Minimum applicable load	1 mA at 5 VDC	100 mA at 5 VDC

■ Characteristics

Operating speed	1 to 500 mm/s (at pin plunger models)
Operating frequency	Mechanical: 200 operations/min Electrical: 30 operations/min
Insulation resistance	100 MΩ min. (at 500 VDC)
Contact resistance (initial value)	D2F models: 30 mΩ max. D2F-F models: 50 mΩ max. D2F-01 models: 100 mΩ max.
Dielectric strength	600 VAC, 50/60 Hz for 1 min between terminals of the same polarity 1,500 VAC, 50/60 Hz for 1 min between current-carrying metal parts and ground (see note 1), and between each terminal and non-current-carrying metal part
Vibration resistance (see note 2)	Malfunction: 10 to 55 Hz, 1.5-mm double amplitude
Shock resistance (see note 2)	Malfunction: 300 m/s^2 {approx. 30G} max.
Life expectancy	Mechanical: 1,000,000 operations min. (Refer to *Engineering Data.*) Electrical: 30,000 operations min. (Refer to *Engineering Data.*)
Degree of protection	IP00
Degree of protection against electric shock	Class I
Proof tracking index (PTI)	175
Ambient temperature	Operating: –25°C to 65°C (with no icing)
Ambient humidity	Operating: 85% max. (for 5°C to 35°C)
Weight	Approx. 0.5 g (pin plunger models)

Note: 1. The dielectric strength shown in the table indicates a value for models with a Separator.

2. For the pin plunger models, the values are at the free position and total travel position. For the lever models, they are at the total travel position.

■ Approved Standards

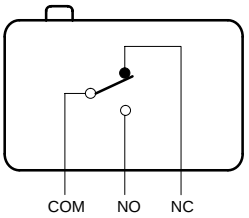
UL1054 (File No. 41515)
CSA C22.2 No. 55 (LR21642)

Rated voltage	D2F (general-purpose)	D2F (low operating force)	D2F-01
125 VAC	3 A	1 A	---
30 VDC	2 A	0.5 A	0.1 A

■ Contact Specifications

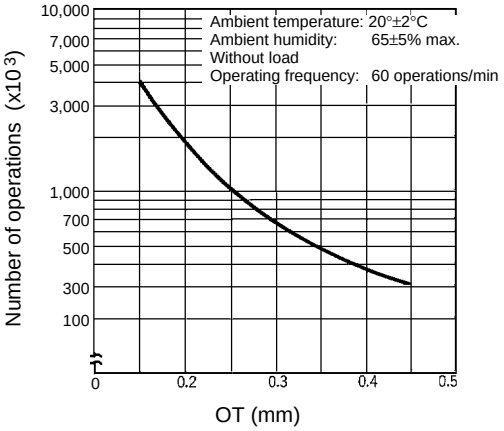
Item		D2F models	D2F-01 models
Contact	Specification	Crossbar	
	Material	Silver alloy	Gold alloy
	Gap (standard value)	0.25 mm	

Contact Form (SPDT)



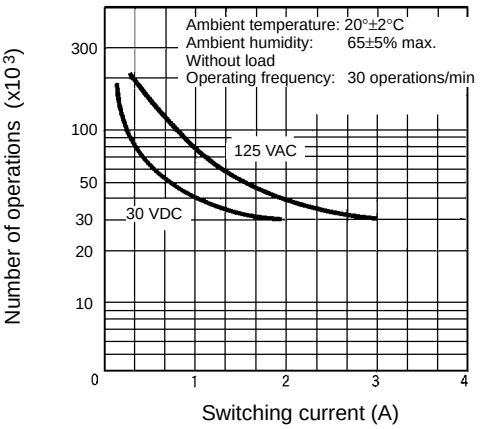
Engineering Data

Mechanical Life Expectancy (D2F, D2F-01)



The values are for the pin plunger model.

Electrical Life Expectancy (D2F)



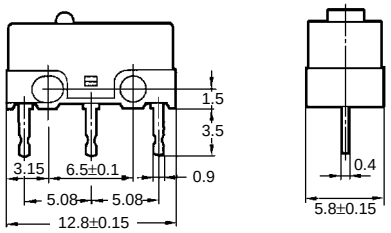
For details about the D2F-01, contact your OMRON sales representative.

Dimensions

■ Terminals

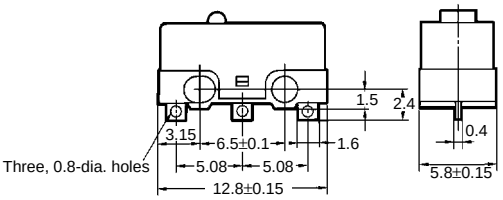
PCB Terminals (Standard)

D2F



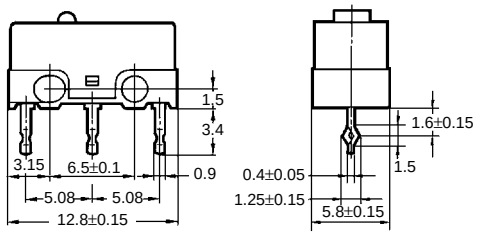
Solder Terminals

D2F-D



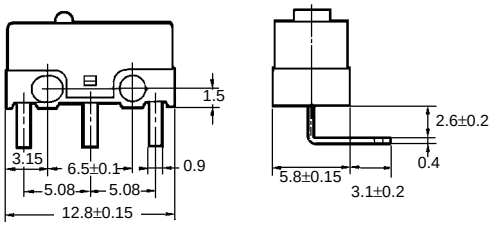
Self-clinching PCB Terminals

D2F-T



Right-angle PCB Terminals

D2F-A



■ Dimensions and Operating Characteristics

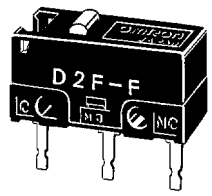
Note: 1. All units are in millimeters unless otherwise indicated.

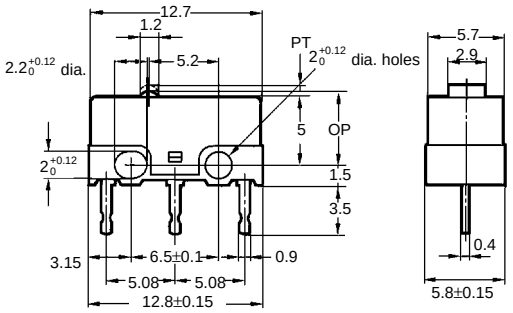
2. Unless otherwise specified, a tolerance of ±0.4 mm applies to all dimensions.

3. The following illustrations and drawings are for D2F models with PCB terminals. Self-clinching, solder, and right-angle terminals are omitted from the following drawings. Refer to page 144 for these terminals. When ordering, replace □ with the code for the terminal that you need.

Pin Plunger

D2F□
D2F-01□
D2F-F□
D2F-01F□

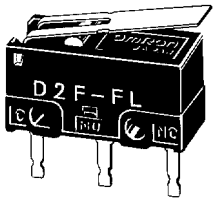


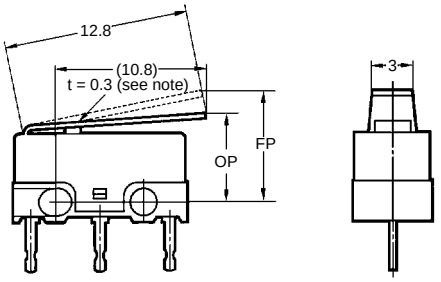


Model	D2F□ D2F-01□	D2F-F□ D2F-01F□
OF max.	1.47 N {150 gf}	0.74 N {75 gf}
RF min.	0.20 N {20 gf}	0.05 N {5 gf}
PT max.	0.5 mm	
OT min.	0.25 mm	
MD max.	0.12 mm	
OP	5.5±0.3 mm	

Hinge Lever

D2F-L□
D2F-01L□
D2F-FL□
D2F-01FL□



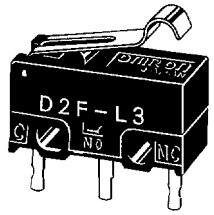


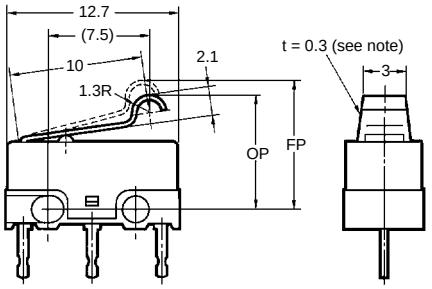
Note: Stainless-steel lever

Model	D2F-L□ D2F-01L□	D2F-FL□ D2F-01FL□
OF max.	0.78 N {80 gf}	0.25 N {25 gf}
RF min.	0.05 N {5 gf}	0.02 N {2 gf}
OT min.	0.55 mm	
MD max.	0.5 mm	
FP max.	10 mm	
OP	6.8±1.5 mm	

Simulate Hinge Lever

D2F-L3□
D2F-01L3□
D2F-FL3□
D2F-01FL3□



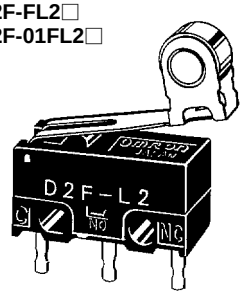


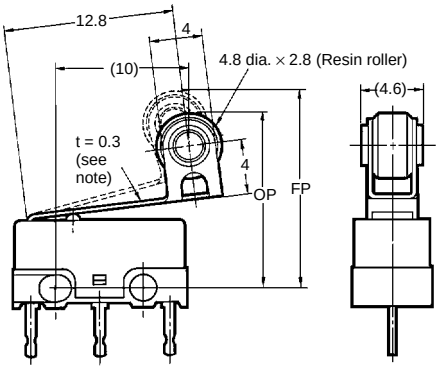
Note: Stainless-steel lever

Model	D2F-L3□ D2F-01L3□	D2F-FL3□ D2F-01FL3□
OF max.	0.78 N {80 gf}	0.39 N {40 gf}
RF min.	0.05 N {5 gf}	0.02 N {2 gf}
OT min.	0.5 mm	
MD max.	0.45 mm	
FP max.	13 mm	
OP	8.5±1.2 mm	

Hinge Roller Lever

D2F-L2□
D2F-01L2□
D2F-FL2□
D2F-01FL2□





Note: Stainless-steel lever

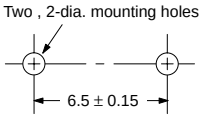
Model	D2F-L2□ D2F-01L2□	D2F-FL2□ D2F-01FL2□
OF max.	0.78 N {80 gf}	0.39 N {40 gf}
RF min.	0.05 N {5 gf}	0.02 N {2 gf}
OT min.	0.55 mm	
MD max.	0.5 mm	
FP max.	16.5 mm	
OP	13±2 mm	

Precautions

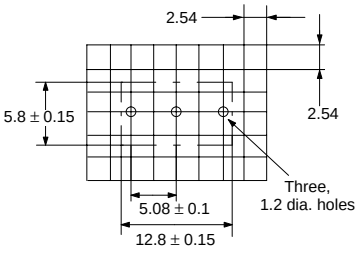
■ Mounting Dimensions

Use M2 mounting screws with plain or spring washers to mount the Switch. Tighten the screws to a torque of 0.08 to 0.1 N • m {0.8 to 1 kgf • cm}.

Mounting Holes

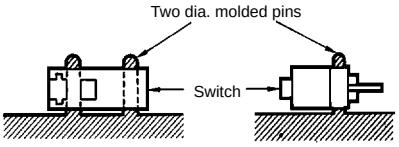


Mounting Dimensions



Molded fittings are recommended for securing the Switch.

Mounting with Molded Pin



■ Terminal Connections

When soldering the lead wire to the terminal, first insert the lead wire conductor through the terminal and then apply solder. Use a soldering iron rated at 30 W maximum (temperature of soldering iron: 350°C max.) within 3 s.

If soldering is not carried out under the proper conditions there is a danger of over-heating and subsequent heat damage.

Applying a soldering iron for too long a time or using one that is rated at more than 30 W may degrade the Switch characteristics.

When soldering the PCB terminal to the PCB, the flux and solder liquid level should not exceed the PCB level.

■ Correct Use

Refer to pages 22 to 29 for common precautions.

Handling

Mount the Switch on a smooth and flat surface. Mounting a Switch on an uneven surface may cause malfunction or break the housing.

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. B036-E1-7A