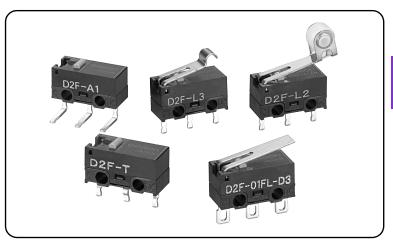
D2FUltra Subminiature Basic Switch

Ultra Subminiature Basic Switch with plenty of terminal variations

- Incorporating a snapping mechanism made with two highly precise split springs that ensures long durability.
- Using insertion molded terminals that prevents flux penetration.
- In addition to self-clinching PCB, left-angled, right-angled terminals,
 - 2 types of soldering terminals are available.
- Lineup of 5A type for high load applications.



Model Number Legend

D2F - 1 2 3 4

None: 125 VAC 3A

125 VAC 1A (Low operating force)

01 : 30 VDC 0.1A 5 : 250 VAC 5A

2. Maximum Operating Force (OF)

None: 1.47 N {150 gf} F : 0.74 N {75 gf}

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

3. Actuator

None: Pin plunger
L: Hinge lever
L2: Hinge Roller Lever

L3 : Simulated roller lever (R1.3) L30 : Simulated roller lever (R2.5) 4. Terminals

None: PCB terminals (Straight)
-T: Self-clinching PCB terminals
-A: PCB terminals (Right-angled)
-A1: PCB terminals (Left-angled)

-D3: Solder terminals

-D : Compact solder terminals

List of Models

	Ratings	3 A	1 A	0.	1 A	5 A
Actuator	laximum Operating Force (OF) * Terminals	General Purpose 1.47 N {150 gf}	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 (Standard)	D2F	D2F-F	D2F-01	D2F-01F	D2F-5
	Self-clinching PCB terminals	D2F-T	D2F-F-T	D2F-01-T	D2F-01F-T	
_	PCB terminals (Right-angled)	D2F-A	D2F-F-A	D2F-01-A	D2F-01F-A	
	PCB terminals (Left-angled)	D2F-A1	D2F-F-A1	D2F-01-A1	D2F-01F-A1	-
	Solder terminals	D2F-D3	D2F-F-D3	D2F-01-D3	D2F-01F-D3	
	Compact solder terminals	D2F-D	D2F-F-D	D2F-01-D	D2F-01F-D	
Hinge lever	PCB terminals (Standard)	D2F-L	D2F-FL	D2F-01L	D2F-01FL	D2F-5L
	Self-clinching PCB terminals	D2F-L-T	D2F-FL-T	D2F-01L-T	D2F-01FL-T	
	PCB terminals (Right-angled)	D2F-L-A	D2F-FL-A	D2F-01L-A	D2F-01FL-A	
	PCB terminals (Left-angled)	D2F-L-A1	D2F-FL-A1	D2F-01L-A1	D2F-01FL-A1	-
	Solder terminals	D2F-L-D3	D2F-FL-D3	D2F-01L-D3	D2F-01FL-D3	
	Compact solder terminals	D2F-L-D	D2F-FL-D	D2F-01L-D	D2F-01FL-D	
Hinge roller	PCB terminals (Standard)	D2F-L2	D2F-FL2	D2F-01L2	D2F-01FL2	
lever	Self-clinching PCB terminals	D2F-L2-T	D2F-FL2-T	D2F-01L2-T	D2F-01FL2-T	
	PCB terminals (Right-angled)	D2F-L2-A	D2F-FL2-A	D2F-01L2-A	D2F-01FL2-A	
୍	PCB terminals (Left-angled)	D2F-L2-A1	D2F-FL2-A1	D2F-01L2-A1	D2F-01FL2-A1	-
	Solder terminals	D2F-L2-D3	D2F-FL2-D3	D2F-01L2-D3	D2F-01FL2-D3	
<u>~</u>	Compact solder terminals	D2F-L2-D	D2F-FL2-D	D2F-01L2-D	D2F-01FL2-D	
Simulated roller	PCB terminals (Standard)	D2F-L3	D2F-FL3	D2F-01L3	D2F-01FL3	D2F-5L3
lever (R1.3)	Self-clinching PCB terminals	D2F-L3-T	D2F-FL3-T	D2F-01L3-T	D2F-01FL3-T	
	PCB terminals (Right-angled)	D2F-L3-A	D2F-FL3-A	D2F-01L3-A	D2F-01FL3-A	
~	PCB terminals (Left-angled)	D2F-L3-A1	D2F-FL3-A1	D2F-01L3-A1	D2F-01FL3-A1	-
<u> </u>	Solder terminals	D2F-L3-D3	D2F-FL3-D3	D2F-01L3-D3	D2F-01FL3-D3	
	Compact solder terminals	D2F-L3-D	D2F-FL3-D	D2F-01L3-D	D2F-01FL3-D	
Simulated roller	PCB terminals (Standard)	D2F-L30	D2F-FL30	D2F-01L30	D2F-01FL30	
lever (R2.5)	Self-clinching PCB terminals	D2F-L30-T	D2F-FL30-T	D2F-01L30-T	D2F-01FL30-T	
	PCB terminals (Right-angled)	D2F-L30-A	D2F-FL30-A	D2F-01L30-A	D2F-01FL30-A	
5	PCB terminals (Left-angled)	D2F-L30-A1	D2F-FL30-A1	D2F-01L30-A1	D2F-01FL30-A1	-
<u>a</u>	Solder terminals	D2F-L30-D3	D2F-FL30-D3	D2F-01L30-D3	D2F-01FL30-D3	
	Compact solder terminals	D2F-L30-D	D2F-FL30-D	D2F-01L30-D	D2F-01FL30-D	

^{*} OF are value for Pin plunger.

Contact Form

●SPDT



Contact Specifications

Item	Model	D2F models D2F-5 models	D2F-01 models
	Specifications	Cros	sbar
Contact	Material	Silver alloy	Gold alloy
	Gap (standard value)	0.25	mm
Minimum ap	pplicable load (see note) *	100 mA at 5 VDC	1 mA at 5 VDC

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

Ratings

Model		nodels	D2F-01 models		D2F-5 models	
Maximum Operating	1.47N (General-purpose)	0.74N (Low Operating Force)	1.47N (General-purpose)	0.74N (Low Operating Force)	1.47N (General-purpose)	
Rated voltage		1.47N (General-purpose) 0.74N (Low Operating Force) 1.47N (General-purpose) 0.74N (Low Operating Force) Resistive load				
125 VAC	3 A	1 A		-	-	
30 VDC	2 A	0.5 A	0.	1 A	-	
250 VAC		-		-	5 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 Standard

The items shown in the "List of Models" above are not standard approved models.

Consult your OMRON sales representative for specific models with standard approvals. **UL (UL61058-1)/cUL (CSA C22.2 No.61058-1)**

Rated voltage	Model	D2F (General-purpose)	D2F (Low operating force)	D2F-01
30 VDC		2 A	0.5 A	0.1 A

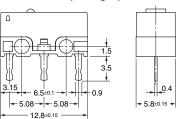
Characteristics

Model Item		D2F-01 models	D2F m	nodels	D2F-5 models	
		D2F-01 models	0.74 N (Low operating force)	1.47 N (General-purpose)	1.47 N (General-purpose)	
Permissible operating speed		Pin plunger models: 1 mm to 500 mm/s, Lever models: 5 mm to 500 mm/s				
Permissible operating	Mechanical	Pin plunger models: 200 operations/min, Lever models: 100 operations/min				
frequency	Electrical		30 opera	tions/min		
Insulation resistance			100 MΩ min. (at 500 VD	C with insulation tester)		
Contact resistance (initia	al value)	100 mΩ max.	50 m $Ω$ max.	30 mg	2 max.	
	Between terminals of the same polarity	same 600 VAC 50/60 Hz for 1min				
Dielectric strength	Between current-carrying metal parts and ground	1,500 VAC 50/60 Hz for 1min				
	Between each terminal and non-current-carrying metal parts	1,500 VAC 50/60 Hz for 1min				
Vibration resistance * 1	Malfunction	10 to 55 Hz, 1.5-mm double amplitude				
Shock resistance	Durability		1,000 m/s ² {app	rox. 100G} max.		
OHOCK resistance	Malfunction * 1	300 m/s ² {approx. 30G} max.				
	Mechanical		1,000,000 operations min. (60 operations/min)			
Durability * 2	Electrical	100,000 operations min. (30 operations/min)	30,000 oper (30 opera		10,000 operations min. (30 operations/min)	
Degree of protection		IEC IP40				
Ambient operating temperature		-40°C to +85°C (at ambient humidity 60% max.) (with no icing or condensation)				
Ambient operating humi-	dity	85% max. (for +5°C to +35°C)				
Weight		Approx. 0.5 g (pin plunger models)				

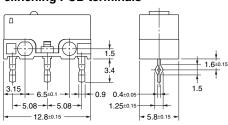
Note. The data given above are initial values.

Terminals/Appearances (Unit: mm)

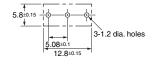
●PCB terminals (Straight)



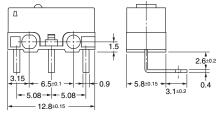
●Self-clinching PCB terminals



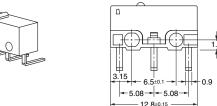
<PCB Mounting Dimensions (Reference)>

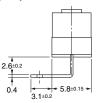


●PCB terminals (Right-angled)



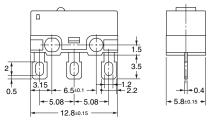
●PCB terminals (Left-angled)



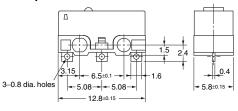




Solder terminals



Compact solder terminals



Mounting Holes (Unit: mm)



^{*1.} 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.

^{*2.} For testing conditions, consult your OMRON sales representative.

Dimensions (Unit: mm) / Operating Characteristics

The following illustrations and drawings are for D2F models with PCB terminals (straight). Self-clinching, solder, compact solder, and right-angled, left angled terminals are omitted from the following drawings. Refer to the **previous page** for these terminals. When ordering, replace \square with the code for the terminal that you need. See the "**List of Models**" for available combinations of models.

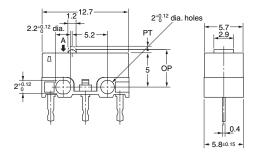
●Pin Plunger Models

D2F-01□

D2F-F D2F-01F□

D2F-5



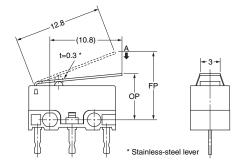


Operating Characteristics	N	lodel	D2F-□ D2F-01□ D2F-5	D2F-F□ D2F-01F□
Operating Force Releasing Force		Max. Min.	1.47 N {150 gf} 0.20 N {20 gf}	0.74 N {75 gf} 0.05 N {5 gf}
•			(0,	, ,,
Pretravel	PT	Max.	0.5 mm	0.5 mm
Overtravel	OT	Min.	0.25 mm	0.25 mm
Movement Differential	MD	Max.	0.12 mm	0.12 mm
Operating Position OP		5.5±0	.3 mm	

Hinge Lever Models

D2F-L□ D2F-01L□ D2F-FL D2F-01FL



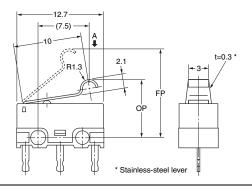


Operating Characteristics	N	lodel	D2F-L□ D2F-01L□ D2F-5L	D2F-FL□ D2F-01FL□
Operating Force Releasing Force		Max. Min.	0.78 N {80 gf} 0.05 N {5 gf}	0.25 N {25 gf} 0.02 N {2 gf}
Overtravel	OT	Min.	0.55 mm	0.55 mm
Movement Differential	MD	Max.	0.5 mm	0.5 mm
Free Position	FP	Max.	10	mm
Operating Position	OP		6.8±1.5 mm	

●Simulated Roller Lever Models (R1.3)

D2F-L3 D2F-01L3 D2F-FL3 D2F-01FL3□ D2F-5L3



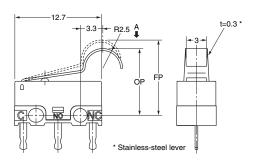


Operating Characteristics	N	lodel	D2F-L3□ D2F-01L3□ D2F-5L3	D2F-FL3□ D2F-01FL3□
Operating Force		Max.	0.78 N {80 gf}	0.39 N {40 gf}
Releasing Force		Min.	0.05 N {5 gf}	0.02 N {2 gf}
Overtravel	OT	Min.	0.5 mm	0.5 mm
Movement Differential	MD	Max.	0.45 mm	0.45 mm
Free Position	FP	Max.	13 mm	
Operating Position	OP		8.5±1.2 mm	

●Simulated Roller Lever Models (R2.5)

D2F-L30□ D2F-01L30□ D2F-FL30□ D2F-01FL30□





Operating Characteristics	N	lodel	D2F-L30□ D2F-01L30□	D2F-FL30□ D2F-01FL30□
Operating Force	OF	Max.	0.54 N {55 gf}	0.3 N {31 gf}
Releasing Force	RF	Min.	0.04 N {4 gf}	0.02 N {2 gf}
Overtravel	OT	Min.	0.5 mm	0.5 mm
Movement Differential	MD	Max.	0.5 mm	0.5 mm
Free Position	FP	Max.	12.6	mm
Operating Position	OP		9.5±1.	.0 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 Models

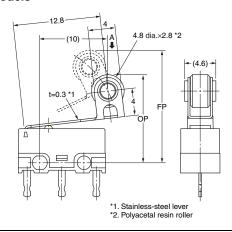
D2F-L2

D2F-01L2

D2F-FL2

D2F-01FL2





Operating Characteristics	N	lodel	D2F-L2□ D2F-01L2□	D2F-FL2 D2F-01FL2
Operating Force	OF	Max.	0.78 N {80 gf}	0.39 N {40 gf}
Releasing Force	RF	Min.	0.05 N {5 gf}	0.02 N {2 gf}
Overtravel	OT	Min.	0.55 mm	0.55 mm
Movement Differential	MD	Max.	0.5 mm	0.5 mm
Free Position	FP	Max.	16.5 mm	
Operating Position	OP		13±2 mm	

Note 1. Unless otherwise specified, a tolerance of ±0.4 mm applies to all dimensions.

Precautions

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

Cautions

Soldering

• Terminal connection

When soldering, make sure that the temperature of the soldering iron tip is not higher than 300°C, and complete the soldering within 3 seconds. Do not apply any external force for 1 minute after soldering. Soldering at an excessively high temperature or soldering for more than 3 seconds may deteriorate the characteristics of the Switch.

Connecting to PCB terminal Boards
 When using automatic soldering baths, we recommend soldering at 260°C ±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, perform soldering within 3 seconds at iron tip temperature not higher than 350°C. Do not apply any external force for at least 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

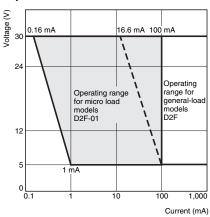
Use M2 mounting screws with plane washers or spring washers to securely mount the Switch. Tighten the screws to a torque of 0.08 to 0.1 N·m {0.8 to 1 kgf·cm}.

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 minimum applicable load is the N-level reference value. This value indicates the malfunction reference level for the reliability level of 60% $(\lambda_{60}).$

(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%.



Note 2. The operating characteristics are for operation in the A direction (♣).

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