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OMRON

D2FC

Ultra Subminiature Basic Switch

Ultra Subminiature Basic Switches for operations requiring high reliability with a long life and a clear click feeling

- A long life achieved using a stable spring structure
- Ideal for applications such as mouse operations

⚠ Refer to “Precautions” on page 4.



Model Number Legend

D2FC-□□

(1) (2)

(1) Operating Force (OF)

None: 1.0±0.23 N

F: 0.59±0.15N

(2) Durability

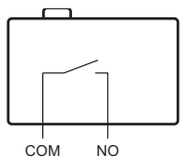
-7: 5 million times

-7N (20M): 20 million times

-7N (60M): 60 million times

Contact Form

SPST-NO



List of Models

Operating Force (OF)	Durability, Mechanical/Electrical	Button color	Model	Minimum packing unit
1.0 N	5,000,000 operations min.	WHITE	**D2FC-7**	1,000 pcs.
0.59 N	20,000,000 operations min.	WHITE	**D2FC-F-7N(20M)**	
0.59 N	60,000,000 operations min.	ORANGE	**D2FC-F-7N(60M)**	

Contact Specifications

Contact	**Specification**	Crossbar
	Material	Silver
	Gap (standard value)	0.4 mm
Minimum applicable load (reference value)*		5 VDC 1 mA

*For the minimum applicable load, refer to ●Using Micro-loads under Precautions.

Ratings

Rated voltage	Resistive load
6 VDC	1 mA

Note: The rating values apply under the following test conditions.
Ambient temperature: 20 ± 15°C
Ambient humidity: 65 ± 20%RH
Operating frequency: 300 operations/1 min.

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Characteristics

		D2FC-7	D3FC-F-7N(20M)	D2FC-F-7N(60M)
Operating speed		1 mm to 500 mm/s		
Operatiing frequency	**Mechanical/Electrical**	300 operations/1 min. max.		
Insulation resistance		100 MΩ min. (at 500 VDC)		
Contact resistance (initial value)		100 mΩ max.		
Dielectric strength	**Between terminals of same polarity**	600 VAC 50/60 Hz 1 min		
Vibration resistance *1	**Malfunction**	10 to 55 Hz, 1.5 mm double amplitude		
Shock resistance *1	**Destruction**	1,000 m/s^2 max.		
	Malfunction	300 m/s^2 max.		
Durability *2	**Mechanical/Electrical**	5,000,000 operations min. (at 300 ops./1 min.)	20,000,000 operations min. (at 300 ops./1 min.)	60,000,000 operations min. (at 300 ops./1 min.)
Degree of protection		Equivalent to IEC IP40		
Ambient operating tamperature		–25 to +65°C (at 60%RH Max.) (with no icing or condensation)		
Ambient operation humidity		85%RH max. (for +5 to +35°C)		
Weight		Approx. 0.5 g		

Note: The data given above are initial values.

✻1. The values are at Free Position and Total Travel Position values.
Close or open circuit of the contact is 1ms max.

✻2. For testing conditions, consult your OMRON sales representative.

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Dimensions (Unit: mm) / Operating Characteristics

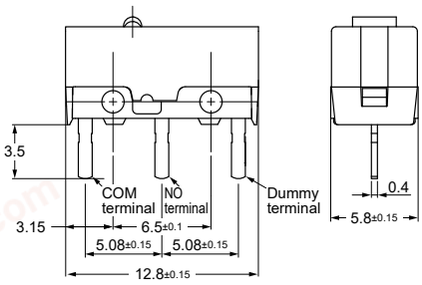
CAD Data marked products, 2D drawings and 3D CAD models are available.
For CAD information, please visit our website, which is noted on the last page.

D2FC-7
D2FC-F-7N(20M)
D2FC-F-7N(60M)

CAD Data

PCB pad terminals (straight type)



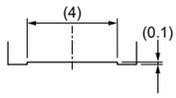


<PCB pad dimensions (reference)>

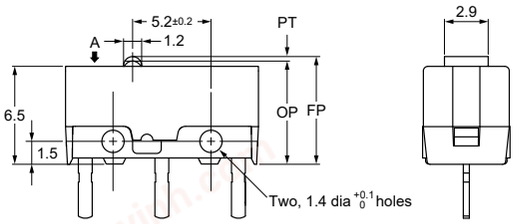


Do not connect the dummy terminal to the circuit.

Recommended shape for proper stalk operation



Operation characteristics



		D2FC-F-7N(20M) D2FC-F-7N(60M)	D2FC-7
Operating Force	**OF**	0.59 ± 0.15 N	1.0 ± 0.23 N
Releasing Force	**RF**	0.24 N min.	0.2 N min.
Movement up to Operation	**PT**	0.3 ± 0.2 mm	0.3 ± 0.2 mm
Overtravel	**OT**	0.2 mm min.	0.2 mm min.
Movement Differential	**MD**	0.12 mm max.	0.15 mm max.
Free Position	**FP**	7.35 mm max.	7.35 mm max.
Operating Position	**OP**	6.9 ± 0.2 mm	6.9 ± 0.3 mm

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

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Precautions

★Refer to General Information.

Cautions

Electrical Ratings

- Use the Switch within the rated voltage and current ranges, otherwise the Switch may have a shortened durability, radiate heat, or burn out. This particularly applies to the instantaneous voltages and currents when switching.

Correct Use

Soldering

- Before soldering the Switch on a multilayer PCB, test to confirm that soldering can be performed properly. Otherwise, the Switch may be deformed by the soldering heat on the pattern or lands of the multilayer PCB.
- When using an automatic solder bath, work is recommended to be carried out within five seconds at 260°C. In addition, ensure that the liquid surface level of the solder and flux do not exceed the board.
- For manual soldering, ensure that the processing time is within roughly three seconds for a soldering iron with a tip temperature of 350°C or less. Be sure not to apply external force for around one minute after soldering. In addition, feed the solder away from the switch case and ensure that the solder and flux do not flow to the case side.

Washing

- The Switch is not sealed, and cannot be washed. Doing so will cause the washing agent, together with flux or dust particles on the PCB, to enter the Switch, resulting in malfunction.

Application Environment

- Do not use the Switch in locations that are subject to toxic gas, silicon, excessive dust, excessive dirt, high temperatures, high humidity, sudden temperature changes, water splashes, or oil splashes.
  Otherwise, damage resulted by faulty contact of the Switch contacts, corrosion, or other causes, or other functional faults may occur.

Using Micro-loads

- Loads in which inrushes or surges occur may cause a drop in durability, so insert a contact protection circuit as necessary. The minimum applicable load is the M-level reference value. This indicates the failure level at a confidence level of 60% (λ 60). (JIS C5003)
- λ 60 = 1.0 x 10 - 6/times indicates that failures are assumed to occur less than 1/1,000,000 times at a confidence level of 60%.

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NOTES

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Cat. No. B152-E1-01
0423