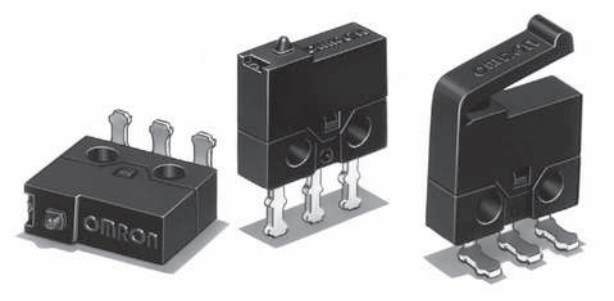
D2MQ

Subminiature Basic Switch

Ultra Slim Snap-action Switch with 2.7 mm in depth

- **Excellent electrical characteristics and snap action mechanism in spite of its ultra small size.**
- **Ideal for applications where size is extremely limited and high reliability is demanded.**

RoHS Compliant



Model Number Legend

D2MQ-1 [1] [2] [3]

1. Actuator
None: Pin plunger
L : Leaf lever

2. Switching capacity
None: 30 VDC 0.5A
-105 : 30 VDC 50mA

3. Terminals
None: PCB terminals (Straight)
-TL : PCB Terminals (Left-angled)
-TR : PCB Terminals (Right-angled)

<Hinge lever>

D2MQ-[1] [2] - 1 [3]

1. Actuator
4L: Hinge lever

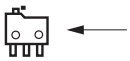
2. Ratings
None: 30 VDC 0.5A
-105 : 30 VDC 50mA

3. Terminals
None: PCB terminals (Straight)
-L : PCB Terminals (Left-angled)
-R : PCB Terminals (Right-angled)

List of Models

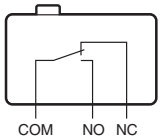
Actuator \ Ratings / Terminals *	0.5 A			50 mA		
	Straight terminals	Left-angled terminals *	Right angled terminals *	Straight terminals	Left-angled terminals *	Right angled terminals *
Pin plunger	**D2MQ-1**	**D2MQ-1-TL**	**D2MQ-1-TR**	**D2MQ-1-105**	-	-
Leaf lever	**D2MQ-1L**	**D2MQ-1L-TL**	**D2MQ-1L-TR**	**D2MQ-1L-105**	-	-
Hinge lever	**D2MQ-4L-1**	**D2MQ-4L-1-L**	**D2MQ-4L-1-R**	**D2MQ-4L-105-1**	**D2MQ-4L-105-1-L**	**D2MQ-4L-105-1-R**

* The terminal shape drawings indicate the shape when the Switch is viewed from the direction of the arrow in the drawing below.



Contact Form

●SPDT



Contact Specifications

Item	Model	0.5 A models	50 mA models
Contact	Specification	Rivet	
	Material	Silver plated	Gold plated
	Gap (standard value)	0.15 mm	
Minimum applicable load (see note)		5 VDC 50 mA	5 VDC 5 mA

Ratings

Type / Rated voltage / Item	0.5A models	50mA models
	Resistive load	
30 VDC	0.5A	50 mA

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

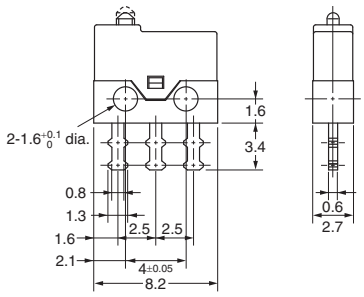
Characteristics

Permissible operating speed		0.1 mm to 0.5 mm/s (for pin plunger models)
Permissible operating frequency	Mechanical	60 operations/min
	Electrical	30 operations/min
Insulation resistance		100 MΩ min. (at 250 VDC with insulation tester)
Contact resistance (initial value)		100 mΩ max.
Dielectric strength	Between terminals of the same polarity	500 VAC 50/60 Hz 1min
	Between current-carrying metal parts and ground	500 VAC 50/60 Hz 1min
Vibration resistance * 1	Malfunction	10 to 55 Hz, 1.5 mm double amplitude
Shock resistance	Durability	1,000 m/s² {approx. 100G} max.
	Malfunction * 1	300 m/s² {approx. 30G} max.
Durability * 2	Mechanical	30,000 operations min. (60 operations/min)
	Electrical	10,000 operations min. (30 operations/min)
Degree of protection		IEC IP40
Ambient operating temperature		−15°C to +70°C (at ambient humidity of 60% max.) (with no icing or condensation)
Ambient operating humidity		35% to 85% (for +5°C to +35°C)
Weight		Approx. 0.3g

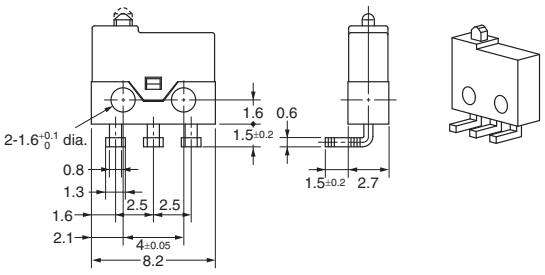
Note. The data given above are initial values.
*1. For the pin plunger models, the above values apply for use at the free position and total travel position. For the lever models, they apply at the total travel position. Close or open circuit of the contact is 1ms max.
*2. For testing conditions, consult your OMRON sales representative.

Terminals/Appearances (Unit:mm)

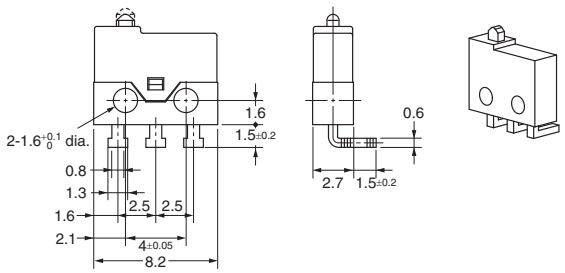
●PCB terminals (Straight)



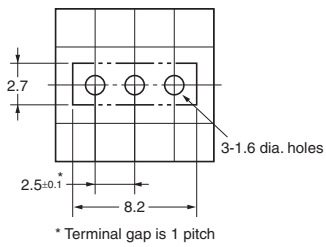
●PCB terminals (Left-angled)



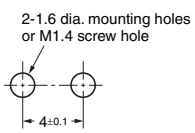
●PCB terminals (Right-angled)



<PCB Mounting Dimensions (Reference)>



Mounting Holes (Unit: mm)

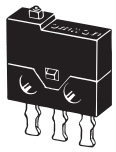


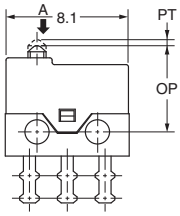
Dimensions (Unit: mm) /Operating Characteristics

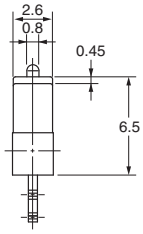
The illustrations and drawings are for PCB terminals (straight) models.
Refer to "Terminals/Appearances" of the previous page for details on models with PCB terminals (Right-angled) and PCB terminals (Left-angled).

●Pin plunger Models

D2MQ-1 **D2MQ-1-TR**
D2MQ-1-TL **D2MQ-1-105**



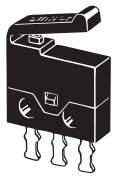


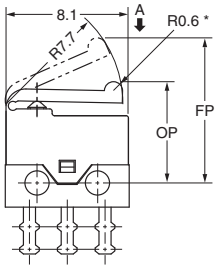


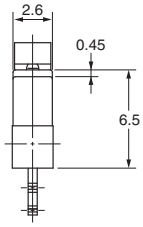
Operating Force	OF	Max.	1.18N {120 gf}
Releasing Force	RF	Min.	0.20N {21 gf}
Pretravel	PT	Max.	0.4 mm
Overtravel	OT	Min.	0.1 mm
Movement Differential	MD	Max.	0.1 mm
Operating Position	OP		5.7±0.2 mm

●Leaf lever Models

D2MQ-1L **D2MQ-1L-TR**
D2MQ-1L-TL **D2MQ-1L-105**





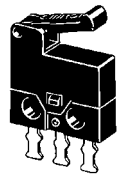


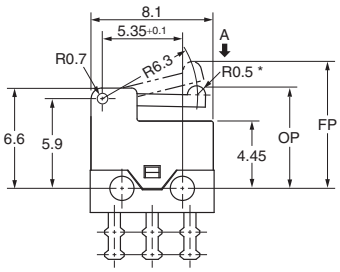
* Plastic lever

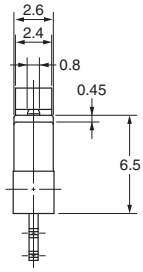
Operating Force	OF	Max.	0.59N {60 gf}
Releasing Force	RF	Min.	0.08N {8 gf}
Pretravel	PT	Max.	2.4 mm
Overtravel	OT	Min.	0.3 mm
Movement Differential	MD	Max.	0.7 mm
Free Position	FP	Max.	9.6 mm
Operating Position	OP		6.7±0.5 mm

●Hinge lever Models

D2MQ-4L-1 **D2MQ-4L-105-1**
D2MQ-4L-1-L **D2MQ-4L-105-1-L**
D2MQ-4L-1-R **D2MQ-4L-105-1-R**







* Plastic lever

Operating Force	OF	Max.	0.39N {40 gf}
Releasing Force	RF	Min.	0.04N {4 gf}
Pretravel	PT	Max.	2.1 mm
Overtravel	OT	Min.	0.3 mm
Movement Differential	MD	Max.	0.7 mm
Free Position	FP	Max.	8.7 mm
Operating Position	OP		7.1±0.5 mm

Note 1. Unless otherwise specified, a tolerance of ±0.15 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

- Terminal connections
  When soldering terminals manually, perform soldering within 3 seconds at iron tip temperature no higher than 300°C. 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. It is recommended that you apply flux guard to the mounting surface of the Switch.

Correct Use

●Mounting

Use M1.4 mounting screw 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}.

●Operation

- Do not apply a force more than two times the rated operating force to the actuator and leaf lever.
- Provide an amount of OT that equals or exceeds the standard.
- Do not change the operating position by modifying the actuator.
- Do not use the Switch in an application where the operating speed is extremely slow or the actuator is set in the midpoint between the free position and operating position.
- Mount the pin plunger so that the operating force is applied in perpendicular alignment with the stroke of the actuator.
- Do not apply a shock to the actuator, otherwise, the Switch may be damaged.
- Do not apply excessive force to the actuator of the Leaf Lever Switch in the operating, releasing, and horizontal directions.

• Application examples provided in this document are for reference only. In actual applications, confirm equipment functions and safety before using the product.
• Consult your OMRON representative before using the product under conditions which are not described in the manual or applying the product to nuclear control systems, railroad systems, aviation systems, vehicles, combustion systems, medical equipment, amusement machines, safety equipment, and other systems or equipment that may have a serious influence on lives and property if used improperly. Make sure that the ratings and performance characteristics of the product provide a margin of safety for the system or equipment, and be sure to provide the system or equipment with double safety mechanisms.

Note: Do not use this document to operate the Unit.

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