

### Ultra-low Load, Miniature Basic Switch

- Twin crossbar contact employed for exceptionally high contact reliability in micro load applications.
- A coil spring employed in the internal mechanism extends durability and improves contact reliability.

RoHS Compliant



## Ordering Information

### Model Number Legend

D2MV-□□-□□□□  
1 2 3 4 5

#### 1. Ratings

- 1: 1 A at 125 VAC  
01: 0.1 A at 30 VDC

#### 2. Actuator

- None: Pin plunger  
L11: Short hinge lever  
L: Hinge lever  
L111: Long hinge lever  
L13: Simulated roller lever  
L22: Short hinge roller lever  
L2: Hinge roller lever

#### 3. Contact Form

- 1: SPDT  
2: SPST-NC  
3: SPST-NO

#### 4. Terminals








- C: Solder terminals

#### 5. Maximum Operating Force

- 1: 0.10 N {10 gf}  
2: 0.25 N {25 gf}  
3: 0.49 N {50 gf}

**Note:** These values are for the pin plunger models.

### List of Models

Actuator	OF max.	1 A	0.1 A
Pin plunger 	0.10 N {10 gf}	D2MV-1-1C1	D2MV-01-1C1
	0.25 N {25 gf}	D2MV-1-1C2	D2MV-01-1C2
	0.49 N {50 gf}	D2MV-1-1C3	D2MV-01-1C3
Short hinge lever 	0.49 N {50 gf}	D2MV-1L11-1C3	D2MV-01L11-1C3
Hinge lever 	0.29 N {30 gf}	D2MV-1L-1C3	D2MV-01L-1C3
Long hinge lever 	0.15 N {15 gf}	D2MV-1L111-1C3	D2MV-01L111-1C3
Simulated roller lever 	0.29 N {30 gf}	D2MV-1L13-1C3	D2MV-01L13-1C3
Short hinge roller lever 	0.49 N {50 gf}	D2MV-1L22-1C3	D2MV-01L22-1C3
Hinge roller lever 	0.29 N {30 gf}	D2MV-1L2-1C3	D2MV-01L2-1C3

**Note:** Consult your OMRON sales representative for details on SPST-NO and SPST-NC models.

# Specifications

## ■ Ratings

Rated voltage	Model	D2MV-1	D2MV-01
	Item	Resistive load	
125 VAC		1 A	0.1 A
30 VDC		1 A	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

## ■ Characteristics

<b>Operating speed</b>	1 mm to 1 m/s (pin plunger models)
<b>Operating frequency</b>	Mechanical: 300 operations/min max. (pin plunger models) Electrical: 60 operations/min max.
<b>Insulation resistance</b>	100 MΩ min. (at 500 VDC)
<b>Contact resistance (initial value)</b>	D2MV-01 models: 50 mΩ max. D2MV-1 models: 30 mΩ max.
<b>Dielectric strength (see note 2)</b>	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 the ground 1,500 VAC, 50/60 Hz for 1 min between each terminal and non-current-carrying metal parts
<b>Vibration resistance (see note 3)</b>	Malfunction: 10 to 55 Hz, 1.5-mm double amplitude
<b>Shock resistance (see note 3)</b>	Destruction: Models with OF of 0.10 N: 150 m/s <sup>2</sup> {approx. 15G} max. Models with OF between 0.25 and 0.49 N: 400 m/s <sup>2</sup> {approx. 40G} max. Malfunction: 100 m/s <sup>2</sup> {approx. 10G} max.
<b>Durability (see note 4)</b>	Mechanical: 10,000,000 operations min. (60 operations/min) (Refer to <i>Engineering Data</i> .) Electrical: D2MV-1 models: 500,000 operations min. (30 operations/min) D2MV-01 models: 1,000,000 operations min. (30 operations/min) (Refer to <i>Engineering Data</i> .)
<b>Degree of protection</b>	IEC IP40
<b>Degree of protection against electric shock</b>	Class I
<b>Proof tracking index (PTI)</b>	175
<b>Ambient operating temperature</b>	–25°C to 80°C (at ambient humidity of 60% max.) (with no icing)
<b>Ambient operating humidity</b>	85% max. (for 5°C to 35°C)
<b>Weight</b>	Approx. 6 g (pin plunger models)

**Note:** 1. The data given above are initial values.

2. The values for dielectric strength shown are for models with a Separator.

3. 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.

4. For testing conditions, contact 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	D2MV-1	D2MV-01
125 VAC	1 A	0.1 A
30 VDC	1 A	0.1 A

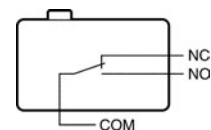
## ■ Contact Specifications

Item		D2MV-1 models	D2MV-01 models
Contact	Specification	Needle	Twin crossbar
	Material	Silver	Gold alloy
	Gap (standard value)	0.5 mm	
Inrush current	NC	1 A max.	0.1 A max.
	NO		
Minimum applicable load (see note)		30 mA at 5 VDC	1 mA at 5 VDC

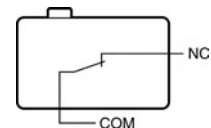
**Note:** For more information on the minimum applicable load, refer to *Using Micro Loads* on page 6.

## ■ Contact Form

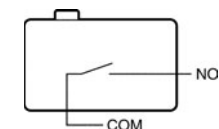
### SPDT



### SPST-NC



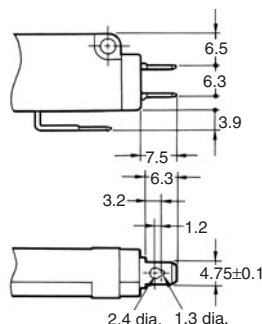
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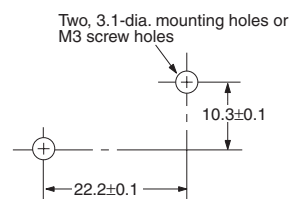
## Dimensions

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

### ■ Terminals



### ■ Mounting Holes

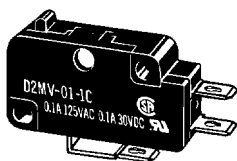


### ■ Dimensions and Operating Characteristics

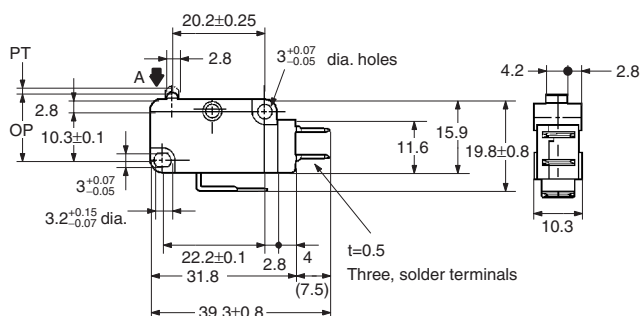
- Note:**
1. All units are in millimeters unless otherwise indicated.
  2. The RF values indicated in parentheses are for cases where the lever weight is not applied to the plunger.
  3. Unless otherwise specified, a tolerance of  $\pm 0.4$  mm applies to all dimensions.
  4. The operating characteristics are for operation in the A direction (▼).

#### Pin Plunger Models

D2MV-1-1C□  
D2MV-01-1C□



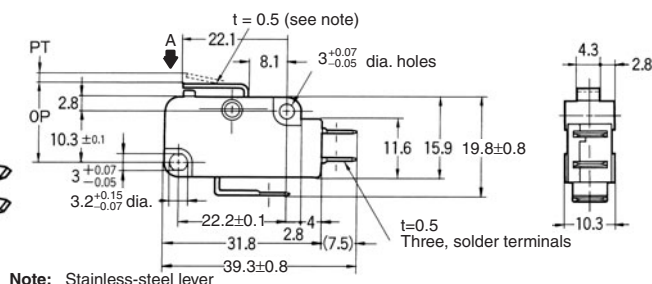
**Note:** The □ in the model number is for the OF code.



Model	D2MV-1-1C1 D2MV-01-1C1	D2MV-1-1C2 D2MV-01-1C2	D2MV-1-1C3 D2MV-01-1C3
OF max.	0.10 N {10 gf}	0.25 N {25 gf}	0.49 N {50 gf}
RF min.	0.005 N {0.5 gf} (reference value)	0.01 N {1 gf} (reference value)	0.02 N {2 gf} (reference value)
PT max.	1.2 mm		
OT min.	1.3 mm		
MD max.	0.25 mm		
OP	14.7±0.4 mm		

#### Short Hinge Lever Models

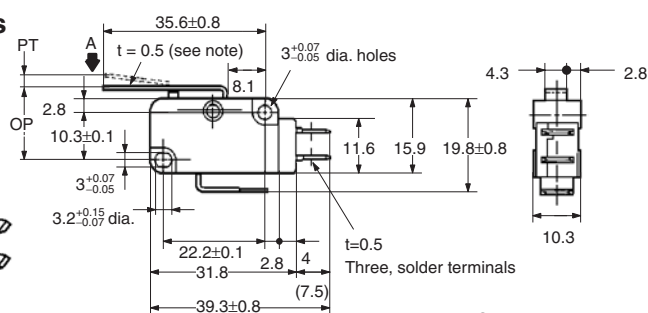
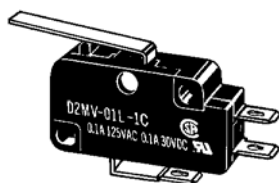
D2MV-1L11-1C3  
D2MV-01L11-1C3



Model	D2MV-1L11-1C3 D2MV-01L11-1C3
OF max.	0.49 N {50 gf}
RF min.	0.04 N {4 gf} (reference value)
PT max.	1.7 mm
OT min.	1.0 mm
MD max.	0.4 mm
OP	15.2±0.5 mm

## Hinge Lever Models

D2MV-1L-1C3  
D2MV-01L-1C3

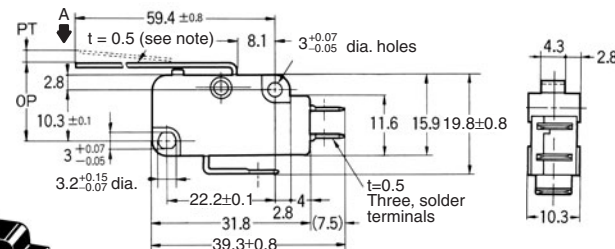
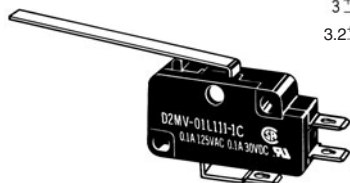


Note: Stainless-steel lever

Model	D2MV-1L-1C3 D2MV-01L-1C3
OF max.	0.29 N {30 gf}
RF min.	0.02 N {2 gf} (reference value)
PT max.	3.3 mm
OT min.	2.1 mm
MD max.	0.7 mm
OP	15.2±1.2 mm

## Long Hinge Lever Models

D2MV-1L111-1C3  
D2MV-01L111-1C3

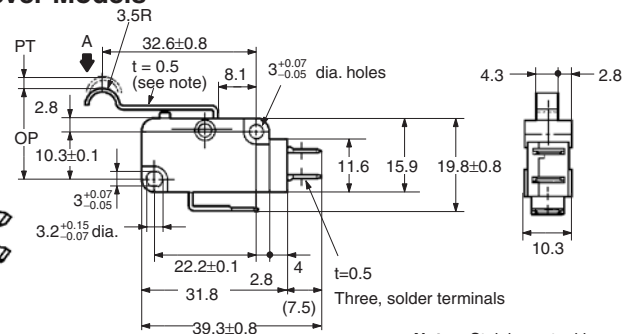
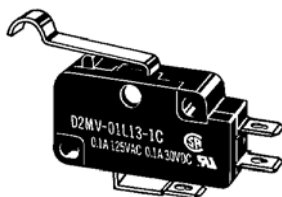


Note: Stainless-steel lever

Model	D2MV-1L111-1C3 D2MV-01L111-1C3
OF max.	0.15 N {15 gf}
RF min.	0.01 N {1 gf} (reference value)
PT max.	6.0 mm
OT min.	4.0 mm
MD max.	1.4 mm
OP	15.2±2.6 mm

## Simulated Roller Lever Models

D2MV-1L13-1C3  
D2MV-01L13-1C3

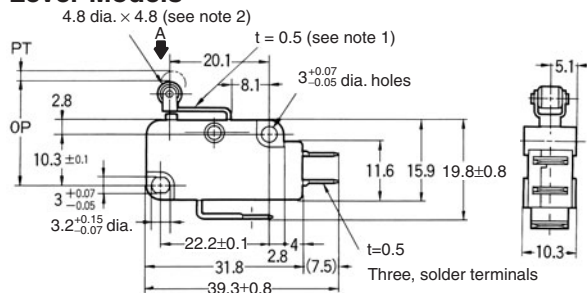
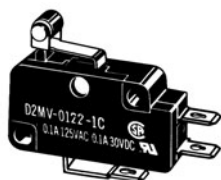


Note: Stainless-steel lever

Model	D2MV-1L13-1C3 D2MV-01L13-1C3
OF max.	0.29 N {30 gf}
RF min.	0.02 N {2 gf} (reference value)
PT max.	3.3 mm
OT min.	1.9 mm
MD max.	0.7 mm
OP	18.7±1.2 mm

## Short Hinge Roller Lever Models

D2MV-1L22-1C3  
D2MV-01L22-1C3

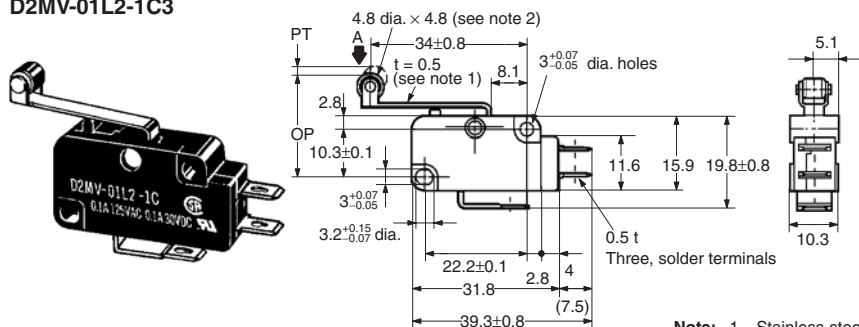


Note: 1. Stainless-steel lever  
2. Oilless polyacetal resin roller

Model	D2MV-1L22-1C3 D2MV-01L22-1C3
OF max.	0.49 N {50 gf}
RF min.	0.04 N {4 gf} (reference value)
PT max.	1.7 mm
OT min.	1.0 mm
MD max.	0.4 mm
OP	20.7±0.6 mm

## Hinge Roller Lever Models

D2MV-1L2-1C3  
D2MV-01L2-1C3



Note: 1. Stainless-steel lever  
2. Oilless polyacetal resin roller

Model	D2MV-1L2-1C3 D2MV-01L2-1C3
OF max.	0.29 N {30 gf}
RF min.	0.02 N {2 gf} (reference value)
PT max.	3.3 mm
OT min.	2.1 mm
MD max.	0.7 mm
OP	20.7±1.2 mm

## Precautions

Refer to *General Information*.

### ■ Cautions

#### Handling

Be careful not to drop the Switch. Doing so may cause damage to the Switch's internal components because it is designed for a small load.

### ■ Correct Use

#### Mounting

Use M3 mounting screws with plane washers or spring washers to securely mount the Switch. Tighten the screws to a torque of 0.39 to 0.59 N·m {4 to 6 kgf·cm}.

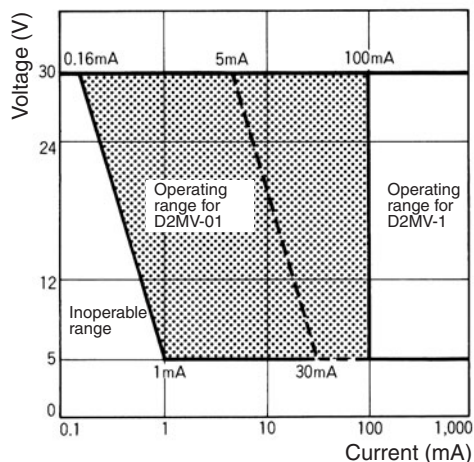
#### Mounting Direction

For a Switch with an actuator, mount the Switch in a direction where the actuator weight will not be applied to the Switch. Since the Switch is designed for a small load, its resetting force is small. Therefore, resetting failure may occur if unnecessary load is applied to the Switch.

### 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%.



### ■ Actuator (Sold Separately)

Various Actuators are available as shown on D3V/V/VX/D2MV/D2RV Common Accessories.

### ■ Connector (Sold Separately)

Refer to Terminal Connectors.

**ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.**

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.