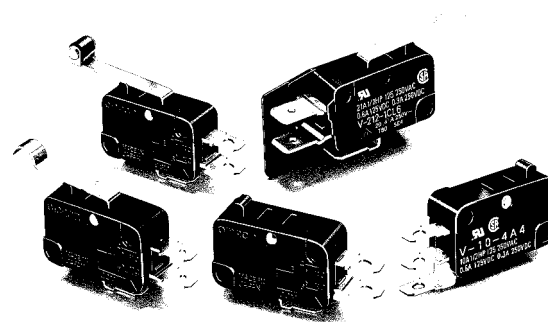


## Miniature Basic Switch

# V

### Reliable Basic Switches in a Wide Variation

- Wide variation of best-selling microswitches with switching currents of 10 to 21 A.
- Can be used for interrupting current when doors are opened or closed.
- Available in two types of cases: thermoplastic resin and thermosetting resin.



### Ordering Information

#### ■ Model Number Legend

V-□□□-□□□□-□  
1 2 3 4 5 6 7 8

#### 1. Ratings

21: 21 A at 250 VAC  
16: 16 A at 250 VAC  
15: 15 A at 250 VAC  
11: 11 A at 250 VAC  
10: 10 A at 250 VAC

#### 2. Contact Gap

None: 1 mm (F gap)  
G: 0.5 mm (G gap) (for remodelling)

#### 3. Actuator

None: Pin plunger  
1: Short hinge lever  
2: Hinge lever  
3: Long hinge lever  
4: Simulated roller lever  
5: Short hinge roller lever  
6: Hinge roller lever

#### 4. Contact Form

1: SPDT (COM bottom terminal, double-throw)  
2: SPST-NC (COM bottom terminal, normally closed)  
3: SPST-NO (COM bottom terminal, normally open)  
4: SPDT (COM side terminal, double-throw)  
5: SPST-NC (COM side terminal, normally closed)  
6: SPST-NO (COM side terminal, normally open)

#### 5. Terminals

A: Solder terminals  
C2: Quick-connect terminals (#187)  
C: Quick-connect terminals (#250)  
B: Screw terminals

#### 6. Barrier (Models with Thermoplastic Case Only)

None: Without barrier  
R: Right-hand barrier  
L: Left-hand barrier

#### 7. Maximum Operating Force

6: 3.92 N {400 gf}  
5: 1.96 N {200 gf}  
4: 0.98 N {100 gf}

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

#### 8. Special Purpose (Models with Thermosetting Case Only)

T: Heat-resistive

## ■ Available Combinations

| Terminal              |                    |                        |                                     | Thermoplastic case |                 |                 |                 | Thermosetting case |                 |                 |                 |
|-----------------------|--------------------|------------------------|-------------------------------------|--------------------|-----------------|-----------------|-----------------|--------------------|-----------------|-----------------|-----------------|
|                       |                    |                        |                                     | Model              | V-16            |                 | V-11            | V-15               |                 | V-10            |                 |
| COM terminal position | Insulation barrier | Heat resistance        | Terminal symbol                     | Rated current      | 16 A            |                 | 11 A            | 15 A               |                 | 10 A            |                 |
|                       |                    |                        |                                     | 3.92 N {400 gf}    | 3.92 N {400 gf} | 1.96 N {200 gf} | 0.98 N {100 gf} | 3.92 N {400 gf}    | 1.96 N {200 gf} | 1.96 N {200 gf} | 0.98 N {100 gf} |
|                       |                    |                        |                                     | OF                 |                 |                 |                 |                    |                 |                 |                 |
| Bottom                | No                 | Standard (80°C)        | Solder terminals (A)                | ---                | ○               | ●               | ●               | ○                  | ●               | ●               | ●               |
|                       |                    |                        | Quick-connect terminals (#187) (C2) | ---                | ○               | ●               | ●               | ○                  | ●               | ●               | ●               |
|                       |                    |                        | Quick-connect terminals (#250) (C)  | ●                  | ○               | ●               | ●               | ○                  | ○               | ○               | ○               |
|                       |                    |                        | Screw terminals (B)                 | ---                | ---             | ---             | ○ (1.96 N)      | ○                  | ●               | ●               | ●               |
|                       |                    | Heat resistant (150°C) | Solder terminals (A)                | ---                | ---             | ---             | ---             | ○                  | ●               | ●               | ●               |
|                       |                    |                        | Quick-connect terminals (#187) (C2) | ---                | ---             | ---             | ---             | ○                  | ○               | ○               | ○               |
|                       |                    |                        | Quick-connect terminals (#250) (C)  | ---                | ---             | ---             | ---             | ---                | ---             | ---             | ---             |
|                       |                    |                        | Screw terminals (B)                 | ---                | ---             | ---             | ---             | ---                | ---             | ---             | ---             |
|                       | Yes                | Standard (80°C)        | Solder terminals (A)                | ---                | ○               | ●               | ---             | ---                | ---             | ---             | ---             |
|                       |                    |                        | Quick-connect terminals (#187) (C2) | ---                | ○               | ●               | ---             | ---                | ---             | ---             | ---             |
|                       |                    |                        | Quick-connect terminals (#250) (C)  | ●                  | ○               | ●               | ---             | ---                | ---             | ---             | ---             |
|                       |                    |                        |                                     |                    |                 |                 |                 |                    |                 |                 |                 |
| Side                  | No                 | Standard (80°C)        | Solder terminals (A)                | ---                | ---             | ---             | ---             | ○                  | ●               | ●               | ●               |
|                       |                    |                        | Quick-connect terminals (#187) (C2) | ---                | ---             | ---             | ---             | ○                  | ○               | ○               | ○               |
|                       |                    |                        | Quick-connect terminals (#250) (C)  | ○                  | ---             | ---             | ---             | ---                | ---             | ---             | ---             |

**Note:** 1. ●: Standard  
○: Semi-standard

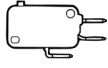
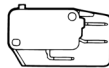
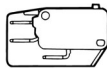
2. Consult your OMRON sales representative for specific models with standard approvals.

## ■ List of Models

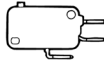
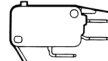
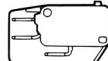
### General-purpose Models

(Only combinations with standard terminals are shown.)

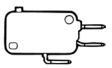
#### Thermoplastic Case

| Actuator                                                                                                   | COM terminal position | Contact form | Terminals (see note) | 21 A (OF: 3.92 N {400 gf})                                                                                   |                                                                                                             |                                                                                                            |            |
|------------------------------------------------------------------------------------------------------------|-----------------------|--------------|----------------------|--------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|------------|
|                                                                                                            |                       |              |                      | Without barrier<br>       | Right-hand barrier<br> | Left-hand barrier<br> |            |
| Pin plunger             | Bottom                | SPDT         | C                    | V-21-1C6                                                                                                     | V-21-1CR6                                                                                                   | V-21-1CL6                                                                                                  |            |
|                                                                                                            |                       | SPST-NC      |                      | V-21-2C6                                                                                                     | V-21-2CR6                                                                                                   | V-21-2CL6                                                                                                  |            |
|                                                                                                            |                       | SPST-NO      |                      | V-21-3C6                                                                                                     | V-21-3CR6                                                                                                   | V-21-3CL6                                                                                                  |            |
| Short hinge lever       |                       | SPDT         |                      | V-211-1C6                                                                                                    | V-211-1CR6                                                                                                  | V-211-1CL6                                                                                                 |            |
|                                                                                                            |                       |              |                      | V-212-1C6                                                                                                    | V-212-1CR6                                                                                                  | V-212-1CL6                                                                                                 |            |
|                                                                                                            |                       |              |                      | V-213-1C6                                                                                                    | V-213-1CR6                                                                                                  | V-213-1CL6                                                                                                 |            |
| Simulated roller lever  |                       |              |                      | V-214-1C6                                                                                                    | V-214-1CR6                                                                                                  | V-214-1CL6                                                                                                 |            |
|                                                                                                            |                       |              |                      | Short hinge roller lever  | V-215-1C6                                                                                                   | V-215-1CR6                                                                                                 | V-215-1CL6 |
|                                                                                                            |                       |              |                      |                                                                                                              | Hinge roller lever       | V-216-1C6                                                                                                  | V-216-1CR6 |

**Note:** C: Quick-connect terminals (#250)

| Actuator                                                                                                   | COM terminal position | Contact form | Terminals (see note)                                                                               | 16 A (OF: 1.96 N {200 gf})                                                                           |                                                                                                           |                                                                                                          |
|------------------------------------------------------------------------------------------------------------|-----------------------|--------------|----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
|                                                                                                            |                       |              |                                                                                                    | Without barrier<br> | Right-hand barrier<br> | Left-hand barrier<br> |
| Pin plunger               | Bottom                | SPDT         | A                                                                                                  | V-16-1A5                                                                                             | V-16-1AR5                                                                                                 | V-16-1AL5                                                                                                |
|                                                                                                            |                       |              | C2                                                                                                 | V-16-1C25                                                                                            | V-16-1C2R5                                                                                                | V-16-1C2L5                                                                                               |
|                                                                                                            |                       |              | C                                                                                                  | V-16-1C5                                                                                             | ---                                                                                                       | ---                                                                                                      |
|                                                                                                            |                       | SPST-NC      | A                                                                                                  | V-16-2A5                                                                                             | V-16-2AR5                                                                                                 | V-16-2AL5                                                                                                |
|                                                                                                            |                       |              | C2                                                                                                 | V-16-2C25                                                                                            | V-16-2C2R5                                                                                                | V-16-2C2L5                                                                                               |
|                                                                                                            |                       |              | C                                                                                                  | V-16-2C5                                                                                             | ---                                                                                                       | ---                                                                                                      |
|                                                                                                            |                       | SPST-NO      | A                                                                                                  | V-16-3A5                                                                                             | V-16-3AR5                                                                                                 | V-16-3AL5                                                                                                |
|                                                                                                            |                       |              | C2                                                                                                 | V-16-3C25                                                                                            | V-16-3C2R5                                                                                                | V-16-3C2L5                                                                                               |
|                                                                                                            |                       |              | C                                                                                                  | V-16-3C5                                                                                             | ---                                                                                                       | ---                                                                                                      |
| Short hinge lever         |                       | SPDT         | A                                                                                                  | V-161-1A5                                                                                            | V-161-1AR5                                                                                                | V-161-1AL5                                                                                               |
| Hinge lever               |                       |              | C2                                                                                                 | V-161-1C25                                                                                           | V-161-1C2R5                                                                                               | V-161-1C2L5                                                                                              |
|                                                                                                            |                       |              | C                                                                                                  | V-161-1C5                                                                                            | ---                                                                                                       | ---                                                                                                      |
|                                                                                                            |                       |              | Long hinge lever  | A                                                                                                    | V-162-1A5                                                                                                 | V-162-1AR5                                                                                               |
| C2                                                                                                         |                       |              |                                                                                                    | V-162-1C25                                                                                           | V-162-1C2R5                                                                                               | V-162-1C2L5                                                                                              |
| C                                                                                                          |                       |              |                                                                                                    | V-162-1C5                                                                                            | ---                                                                                                       | ---                                                                                                      |
| Simulated roller lever    |                       |              | A                                                                                                  | V-163-1A5                                                                                            | V-163-1AR5                                                                                                | V-163-1AL5                                                                                               |
|                                                                                                            |                       |              | C2                                                                                                 | V-163-1C25                                                                                           | V-163-1C2R5                                                                                               | V-163-1C2L5                                                                                              |
|                                                                                                            |                       |              | C                                                                                                  | V-163-1C5                                                                                            | ---                                                                                                       | ---                                                                                                      |
| Short hinge roller lever  |                       |              | A                                                                                                  | V-164-1A5                                                                                            | V-164-1AR5                                                                                                | V-164-1AL5                                                                                               |
|                                                                                                            |                       |              | C2                                                                                                 | V-164-1C25                                                                                           | V-164-1C2R5                                                                                               | V-164-1C2L5                                                                                              |
|                                                                                                            |                       |              | C                                                                                                  | V-164-1C5                                                                                            | ---                                                                                                       | ---                                                                                                      |
| Hinge roller lever      |                       |              | A                                                                                                  | V-165-1A5                                                                                            | V-165-1AR5                                                                                                | V-165-1AL5                                                                                               |
|                                                                                                            |                       |              | C2                                                                                                 | V-165-1C25                                                                                           | V-165-1C2R5                                                                                               | V-165-1C2L5                                                                                              |
|                                                                                                            |                       |              | C                                                                                                  | V-165-1C5                                                                                            | ---                                                                                                       | ---                                                                                                      |
|                                                                                                            |                       |              | A                                                                                                  | V-166-1A5                                                                                            | V-166-1AR5                                                                                                | V-166-1AL5                                                                                               |
|                                                                                                            |                       |              | C2                                                                                                 | V-166-1C25                                                                                           | V-166-1C2R5                                                                                               | V-166-1C2L5                                                                                              |
|                                                                                                            |                       |              | C                                                                                                  | V-166-1C5                                                                                            | ---                                                                                                       | ---                                                                                                      |

**Note:** A: Solder terminals  
C2: Quick-connect terminals (#187)  
C: Quick-connect terminals (#250)

| Actuator                                                                                                          | COM terminal position | Contact form | Terminals (see note) | 11 A (OF: 0.98 N {100 gf})                                                                             |
|-------------------------------------------------------------------------------------------------------------------|-----------------------|--------------|----------------------|--------------------------------------------------------------------------------------------------------|
|                                                                                                                   |                       |              |                      | Without barrier<br> |
| <b>Pin plunger</b>               | Bottom                | SPDT         | A                    | V-11-1A4                                                                                               |
|                                                                                                                   |                       |              | C2                   | V-11-1C24                                                                                              |
|                                                                                                                   |                       |              | C                    | V-11-1C4                                                                                               |
| <b>Short hinge lever</b>         |                       |              | A                    | V-111-1A4                                                                                              |
|                                                                                                                   |                       |              | C2                   | V-111-1C24                                                                                             |
|                                                                                                                   |                       |              | C                    | V-111-1C4                                                                                              |
| <b>Hinge lever</b>               |                       |              | A                    | V-112-1A4                                                                                              |
|                                                                                                                   |                       |              | C2                   | V-112-1C24                                                                                             |
|                                                                                                                   |                       |              | C                    | V-112-1C4                                                                                              |
| <b>Long hinge lever</b>          |                       |              | A                    | V-113-1A4                                                                                              |
|                                                                                                                   |                       |              | C2                   | V-113-1C24                                                                                             |
|                                                                                                                   |                       |              | C                    | V-113-1C4                                                                                              |
| <b>Simulated roller lever</b>    |                       |              | A                    | V-114-1A4                                                                                              |
|                                                                                                                   |                       |              | C2                   | V-114-1C24                                                                                             |
|                                                                                                                   |                       |              | C                    | V-114-1C4                                                                                              |
| <b>Short hinge roller lever</b>  |                       |              | A                    | V-115-1A4                                                                                              |
|                                                                                                                   |                       |              | C2                   | V-115-1C24                                                                                             |
|                                                                                                                   |                       |              | C                    | V-115-1C4                                                                                              |
| <b>Hinge roller lever</b>        |                       |              | A                    | V-116-1A4                                                                                              |
|                                                                                                                   |                       |              | C2                   | V-116-1C24                                                                                             |
|                                                                                                                   |                       |              | C                    | V-116-1C4                                                                                              |

**Note:** A: Solder terminals  
C2: Quick-connect terminals (#187)  
C: Quick-connect terminals (#250)

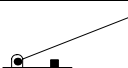
**Thermosetting Case**

| Actuator                                                                                                            | COM terminal position | Contact form | Terminals (see note 1) | 15 A                | 10 A                |                     |
|---------------------------------------------------------------------------------------------------------------------|-----------------------|--------------|------------------------|---------------------|---------------------|---------------------|
|                                                                                                                     |                       |              |                        | OF: 1.96 N {200 gf} | OF: 1.96 N {200 gf} | OF: 0.98 N {100 gf} |
| <b>Pin plunger</b>                 | Bottom                | SPDT         | A                      | V-15-1A5            | V-10-1A5            | V-10-1A4            |
|                                                                                                                     |                       |              | C2                     | V-15-1C25           | V-10-1C25           | V-10-1C24           |
|                                                                                                                     |                       |              | B                      | V-15-1B5            | V-10-1B5            | V-10-1B4            |
|                                                                                                                     |                       | SPST-NC      | A                      | V-15-2A5            | V-10-2A5            | V-10-2A4            |
|                                                                                                                     |                       |              | C2                     | V-15-2C25           | V-10-2C25           | V-10-2C24           |
|                                                                                                                     |                       |              | B                      | V-15-2B5            | V-10-2B5            | V-10-2B4            |
|                                                                                                                     |                       | SPST-NO      | A                      | V-15-3A5            | V-10-3A5            | V-10-3A4            |
|                                                                                                                     |                       |              | C2                     | V-15-3C25           | V-10-3C25           | V-10-3C24           |
|                                                                                                                     |                       |              | B                      | V-15-3B5            | V-10-3B5            | V-10-3B4            |
|                                                                                                                     | Side                  | SPDT         | A                      | V-15-4A5            | V-10-4A5            | V-10-4A4            |
|                                                                                                                     |                       | SPST-NC      |                        | V-15-5A5            | V-10-5A5            | V-10-5A4            |
|                                                                                                                     |                       | SPST-NO      |                        | V-15-6A5            | V-10-6A5            | V-10-6A4            |
| <b>Short hinge lever</b>           | Bottom                | SPDT         | A                      | V-151-1A5           | V-101-1A5           | V-101-1A4           |
|                                                                                                                     |                       |              | C2                     | V-151-1C25          | V-101-1C25          | V-101-1C24          |
|                                                                                                                     |                       |              | B                      | V-151-1B5           | V-101-1B5           | V-101-1B4           |
| <b>Hinge lever</b>                 |                       |              | A                      | V-152-1A5           | V-102-1A5           | V-102-1A4           |
|                                                                                                                     |                       |              | C2                     | V-152-1C25          | V-102-1C25          | V-102-1C24          |
|                                                                                                                     |                       |              | B                      | V-152-1B5           | V-102-1B5           | V-102-1B4           |
| <b>Long hinge lever</b>            |                       |              | A                      | V-153-1A5           | V-103-1A5           | V-103-1A4           |
|                                                                                                                     |                       |              | C2                     | V-153-1C25          | V-103-1C25          | V-103-1C24          |
|                                                                                                                     |                       |              | B                      | V-153-1B5           | V-103-1B5           | V-103-1B4           |
| <b>Simulated roller lever</b>    |                       |              | A                      | V-154-1A5           | V-104-1A5           | V-104-1A4           |
|                                                                                                                     |                       |              | C2                     | V-154-1C25          | V-104-1C25          | V-104-1C24          |
|                                                                                                                     |                       |              | B                      | V-154-1B5           | V-104-1B5           | V-104-1B4           |
| <b>Short hinge roller lever</b>  |                       |              | A                      | V-155-1A5           | V-105-1A5           | V-105-1A4           |
|                                                                                                                     |                       |              | C2                     | V-155-1C25          | V-105-1C25          | V-105-1C24          |
|                                                                                                                     |                       |              | B                      | V-155-1B5           | V-105-1B5           | V-105-1B4           |
| <b>Hinge roller lever</b>        |                       |              | A                      | V-156-1A5           | V-106-1A5           | V-106-1A4           |
|                                                                                                                     |                       |              | C2                     | V-156-1C25          | V-106-1C25          | V-106-1C24          |
|                                                                                                                     |                       |              | B                      | V-156-1B5           | V-106-1B5           | V-106-1B4           |

**Note:** 1. A: Solder terminals  
C2: Quick-connect terminals (#187)  
B: Screw terminals

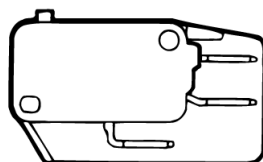
2. OF values shown in the table are for the pin plunger models.

### Heat Resistant Models (Up to 150°C)

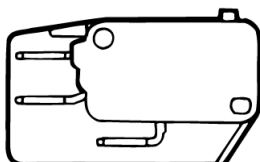
| Actuator                                                                                                   | COM terminal position | Contact form | Terminals            | 15 A                | 10 A                |
|------------------------------------------------------------------------------------------------------------|-----------------------|--------------|----------------------|---------------------|---------------------|
|                                                                                                            |                       |              |                      | OF: 1.96 N {200 gf} | OF: 0.98 N {100 gf} |
| Pin plunger               | Bottom                | SPDT         | Solder terminals (A) | V-15-1A5-T          | V-10-1A4-T          |
| Short hinge lever         |                       |              |                      | V-151-1A5-T         | V-101-1A4-T         |
| Hinge lever               |                       |              |                      | V-152-1A5-T         | V-102-1A4-T         |
| Long hinge lever          |                       |              |                      | V-153-1A5-T         | V-103-1A4-T         |
| Simulated roller lever    |                       |              |                      | V-154-1A5-T         | V-104-1A4-T         |
| Short hinge roller lever  |                       |              |                      | V-155-1A5-T         | V-105-1A4-T         |
| Hinge roller lever        |                       |              |                      | V-156-1A5-T         | V-106-1A4-T         |

### ■ Barrier (V-21 and V-16 Models Only)

Right-hand Barrier



Left-hand Barrier



## Specifications

### ■ Ratings

| Model |         | Item          | Resistive load |
|-------|---------|---------------|----------------|
|       |         | Rated voltage |                |
| V-21  | 250 VAC | 21 A          |                |
|       | 125 VDC | 0.6 A         |                |
|       | 250 VDC | 0.3 A         |                |
| V-16  | 250 VAC | 16 A          |                |
|       | 125 VDC | 0.6 A         |                |
|       | 250 VDC | 0.3 A         |                |
| V-15  | 250 VAC | 15 A          |                |
|       | 125 VDC | 0.6 A         |                |
|       | 250 VDC | 0.3 A         |                |
| V-11  | 250 VAC | 11 A          |                |
|       | 125 VDC | 0.6 A         |                |
|       | 250 VDC | 0.3 A         |                |
| V-10  | 250 VAC | 10 A          |                |
|       | 125 VDC | 0.6 A         |                |
|       | 250 VDC | 0.3 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

# ■ Switching Capacity per Load (Reference Values)

| Model | Voltage | Non-inductive load |    |           |    | Inductive load |    |            |    |
|-------|---------|--------------------|----|-----------|----|----------------|----|------------|----|
|       |         | Resistive load     |    | Lamp load |    | Inductive load |    | Motor load |    |
|       |         | NC                 | NO | NC        | NO | NC             | NO | NC         | NO |
| V-21  | 250 VAC | 21 A               |    | 3 A       |    | 12 A           |    | 4 A        |    |
|       | 8 VDC   | 21 A               |    | 5 A       |    | 12 A           |    | 7 A        |    |
|       | 30 VDC  | 14 A               |    | 5 A       |    | 12 A           |    | 5 A        |    |
|       | 125 VDC | 0.6 A              |    | 0.1 A     |    | 0.6 A          |    | 0.1 A      |    |
|       | 250 VDC | 0.3 A              |    | 0.05 A    |    | 0.3 A          |    | 0.05 A     |    |
| V-16  | 250 VAC | 16 A               |    | 2 A       |    | 10 A           |    | 3 A        |    |
|       | 8 VDC   | 16 A               |    | 4 A       |    | 10 A           |    | 6 A        |    |
|       | 30 VDC  | 10 A               |    | 4 A       |    | 10 A           |    | 4 A        |    |
|       | 125 VDC | 0.6 A              |    | 0.1 A     |    | 0.6 A          |    | 0.1 A      |    |
|       | 250 VDC | 0.3 A              |    | 0.05 A    |    | 0.3 A          |    | 0.05 A     |    |
| V-15  | 250 VAC | 15 A               |    | 2 A       |    | 10 A           |    | 3 A        |    |
|       | 8 VDC   | 15 A               |    | 4 A       |    | 10 A           |    | 6 A        |    |
|       | 30 VDC  | 10 A               |    | 4 A       |    | 10 A           |    | 4 A        |    |
|       | 125 VDC | 0.6 A              |    | 0.1 A     |    | 0.6 A          |    | 0.1 A      |    |
|       | 250 VDC | 0.3 A              |    | 0.05 A    |    | 0.3 A          |    | 0.05 A     |    |
| V-11  | 250 VAC | 11 A               |    | 1.5 A     |    | 6 A            |    | 2 A        |    |
|       | 8 VDC   | 11 A               |    | 3 A       |    | 6 A            |    | 3 A        |    |
|       | 30 VDC  | 6 A                |    | 3 A       |    | 6 A            |    | 3 A        |    |
|       | 125 VDC | 0.6 A              |    | 0.1 A     |    | 0.6 A          |    | 0.1 A      |    |
|       | 250 VDC | 0.3 A              |    | 0.05 A    |    | 0.3 A          |    | 0.05 A     |    |
| V-10  | 250 VAC | 10 A               |    | 1.5 A     |    | 6 A            |    | 2 A        |    |
|       | 8 VDC   | 10 A               |    | 3 A       |    | 6 A            |    | 3 A        |    |
|       | 30 VDC  | 6 A                |    | 3 A       |    | 6 A            |    | 3 A        |    |
|       | 125 VDC | 0.6 A              |    | 0.1 A     |    | 0.6 A          |    | 0.1 A      |    |
|       | 250 VDC | 0.3 A              |    | 0.05 A    |    | 0.3 A          |    | 0.05 A     |    |

- Note:**
1. The above current values are the normal current values of models with a contact gap of 1 mm (gap F), which vary with the normal current values of models with a contact gap of 0.5 mm (gap G).
  2. Inductive load has a power factor of 0.4 min. (AC) and a time constant of 7 ms max. (DC).
  3. Lamp load has an inrush current of 10 times the steady-state current.
  4. Motor load has an inrush current of 6 times the steady-state current.

## ■ Characteristics

|                                                    |                                                                                                                                                                                                                                                                           |
|----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Operating speed</b>                             | 0.1 mm to 1 m/s (pin plunger models)                                                                                                                                                                                                                                      |
| <b>Operating frequency</b>                         | Mechanical: 600 operations/min max.<br>Electrical: 30 operations/min max.                                                                                                                                                                                                 |
| <b>Insulation resistance</b>                       | 100 MΩ min. (at 500 VDC)                                                                                                                                                                                                                                                  |
| <b>Contact resistance (initial value)</b>          | 15 mΩ max.                                                                                                                                                                                                                                                                |
| <b>Dielectric strength (see note 2)</b>            | 1,000 VAC, 50/60 Hz for 1 min between terminals of the same polarity                                                                                                                                                                                                      |
|                                                    | V-21, V-16, and V-11 models: 2,000 VAC, 50/60 Hz for 1 min between current-carrying metal parts and ground, and between each terminal and non-current-carrying metal parts                                                                                                |
|                                                    | V-15 and V-10 models: 1,500 VAC, 50/60 Hz for 1 min between current-carrying metal parts and ground, and 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: 1,000 m/s <sup>2</sup> {approx. 100G} max.                                                                                                                                                                                                                   |
|                                                    | Malfunction: V-21/V-16/V-15: 300 m/s <sup>2</sup> {approx. 30G} max.<br>V-11/V-10: 200 m/s <sup>2</sup> {approx. 20G} max.                                                                                                                                                |
| <b>Durability (see note 4)</b>                     | Mechanical: 50,000,000 operations min. (60 operations/min)                                                                                                                                                                                                                |
|                                                    | Electrical: V-21/V-16/V-15: 100,000 operations min. (30 operations/min)<br>(V-15 heat resistive: 20,000 operation min. (30 operations/min))<br>V-11/V-10: 300,000 operations min. (30 operations/min)<br>(V-10 heat resistive: 50,000 operation min. (30 operations/min)) |
| <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)<br>–25°C to 150°C for heat-resistive model (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. 6.2 g (pin plunger models)                                                                                                                                                                                                                                        |

- Note:**
1. The data given above are initial values.
  2. The dielectric strength values shown in the table 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. IR21642)

| Rated voltage | V-21         | V-16         | V-15         | V-11         | V-10         |
|---------------|--------------|--------------|--------------|--------------|--------------|
| 125 VAC       | 21 A, 1/2 HP | 16 A, 1/2 HP | 15 A, 1/2 HP | 11 A, 1/3 HP | 10 A, 1/3 HP |
| 250 VAC       |              |              |              |              |              |
| 125 VDC       | 0.6 A        | 0.6 A        | 0.6 A        | 0.6 A        | 0.6 A        |
| 250 VDC       | 0.3 A        | 0.3 A        | 0.3 A        | 0.3 A        | 0.3 A        |

### EN61058-01 (File No. 129608, VDE approval)

| Rated voltage | V-21     | V-16     | V-11     |
|---------------|----------|----------|----------|
| 250 VAC       | 20 (4) A | 16 (4) A | 11 (3) A |

Testing conditions: 5E4 (50,000 operations), T105 (0°C to 105°C)

### EN61058-1 (File No. T9451451, TÜV Rheinland approval)

| Rated voltage | V-15  | V-10  |
|---------------|-------|-------|
| 250 VAC       | 15 A  | 10 A  |
| 250 VDC       | 0.3 A | 0.3 A |

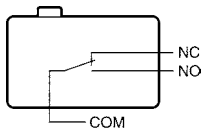
Testing conditions: 5E4 (50,000 operations), T85 (0°C to 85°C)

■ **Contact Specifications**

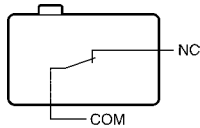
| Item                    |                      | V-21                           | V-16      | V-15      | V-11      | V-10 |
|-------------------------|----------------------|--------------------------------|-----------|-----------|-----------|------|
| Contact                 | Specification        | Rivet                          |           |           |           |      |
|                         | Material             | Silver alloy                   |           |           | Silver    |      |
|                         | Gap (standard value) | 1 mm (F gap) or 0.5 mm (G gap) |           |           |           |      |
| Inrush current          | NC                   | 50 A max.                      | 40 A max. | 36 A max. | 24 A max. |      |
|                         | NO                   |                                |           |           |           |      |
| Minimum applicable load |                      | 160 mA at 5 VDC                |           |           |           |      |

■ **Contact Form**

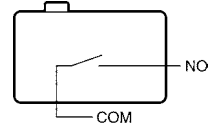
**SPDT**



**SPST-NC**



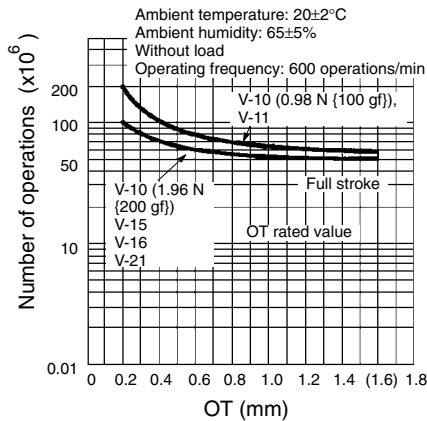
**SPST-NO**



Engineering Data (Reference Values)

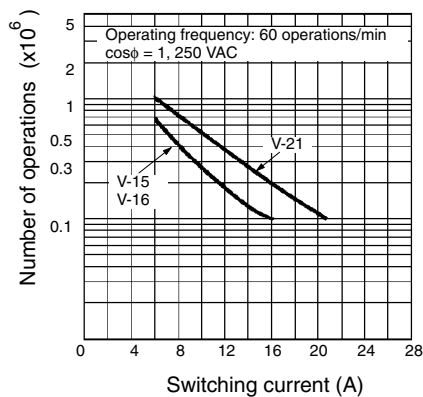
**Mechanical Durability  
(Pin Plunger Models)**

V-21/-16/-15/-10

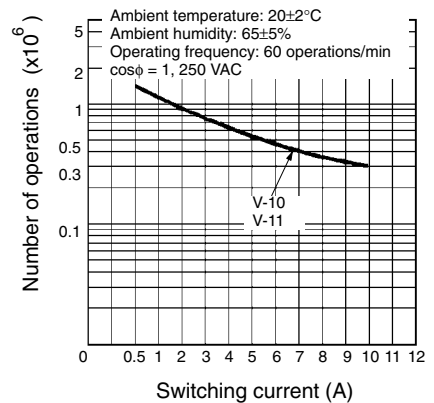


**Electrical Durability  
(Pin Plunger Models)**

V-21/-16/-15



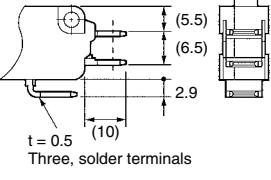
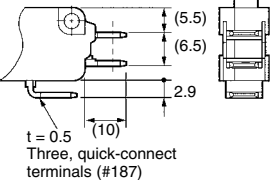
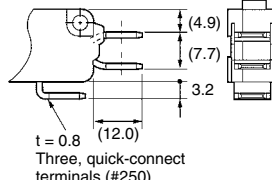
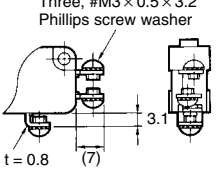
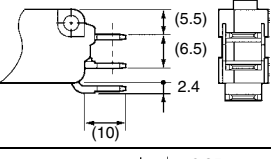
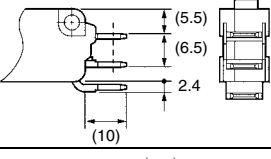
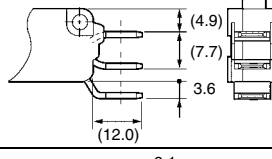
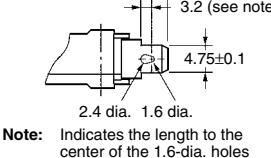
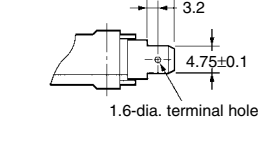
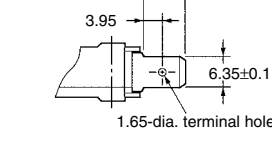
V-11/-10



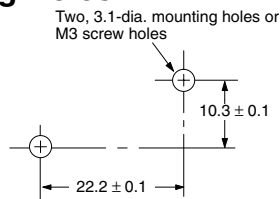
## Dimensions

### ■ Terminals

- Note:**
1. All units are in millimeters unless otherwise indicated.
  2. The following is for the SPDT contact specifications. Two terminals will be available for SPST-NO or SPST-NC contact specifications. For terminal positions, refer to *Contact Form* on page 118.
  3. Right-angle PCB terminal type is available  
 D5 type: Pins at right angles, to the right.  
 D6 type: Pins at right angles, to the left.  
 Drawings will be provided if requested.

| Terminal type       | Solder terminals (A)                                                               | Quick-connect Terminals (#187) (C2)                                                | Quick-connect Terminals (#250) (C)                                                  | Screw Terminals (B)                                                                 |
|---------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| COM bottom position |   |   |   |  |
| COM side position   |   |   |   | ---                                                                                 |
| Terminal dimensions |  |  |  | ---                                                                                 |

### ■ Mounting Holes



## ■ Dimensions and Operating Characteristics

- Note:**
1. All units are in millimeters unless otherwise indicated.
  2. Unless otherwise specified, a tolerance of  $\pm 0.4$  mm applies to all dimensions.
  3. The following illustrations and drawings are for quick-connect terminals (#250) (terminals C). V models with a switching current of 16 A or 11 A incorporate terminals A and C2. These models are different from #250 models in terminal size only. Terminals A, C2, and side common terminals are omitted from the following drawings. Refer to *Kinds of Terminals* on page 119 for these terminals.
  4. The □ in the model number is for the terminal code.
  5. The operating characteristics are for operation in the A direction (▼).

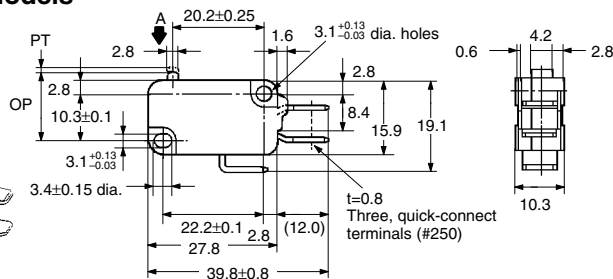
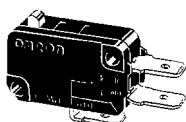
### Pin Plunger Models

(Without Barrier)

V-21-1□6

V-16-1□5

V-11-1□4

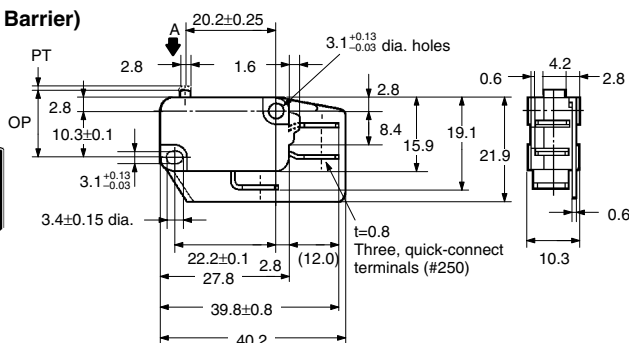
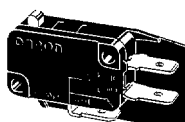


| Model   | V-21-1□6        | V-16-1□5        |
|---------|-----------------|-----------------|
| OF max. | 3.92 N {400 gf} | 1.96 N {200 gf} |
| RF min. | 0.78 N {80 gf}  | 0.49 N {50 gf}  |
| PT max. | 1.2 mm          |                 |
| OT min. | 1.0 mm          |                 |
| MD max. | 0.4 mm          |                 |
| OP      | 14.7±0.4 mm     |                 |

(With Right-hand Barrier)

V-21-1□R6

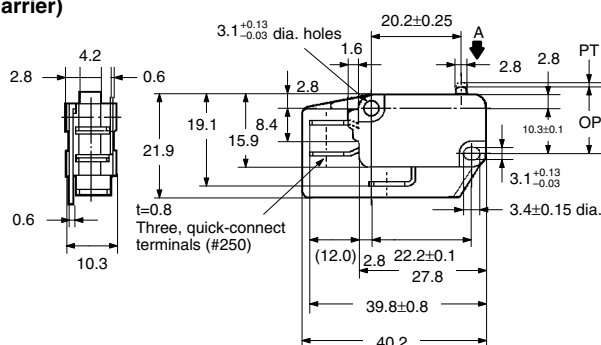
V-16-1□R5



(With Left-hand Barrier)

V-21-1□L6

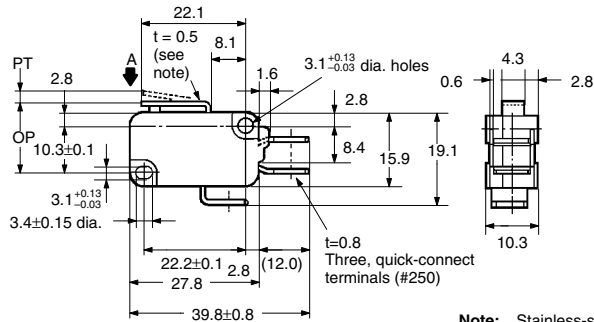
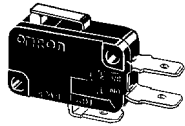
V-16-1□L5



| Model   | V-11-1□4        | V-11-1□5        |
|---------|-----------------|-----------------|
| OF max. | 0.98 N {100 gf} | 1.96 N {200 gf} |
| RF min. | 0.20 N {20 gf}  | 0.49 N {50 gf}  |
| PT max. | 1.2 mm          |                 |
| OT min. | 1.0 mm          |                 |
| MD max. | 0.4 mm          |                 |
| OP      | 14.7±0.4 mm     |                 |

### Short Hinge Lever Models

V-211-1□6  
V-161-1□5  
V-111-1□4



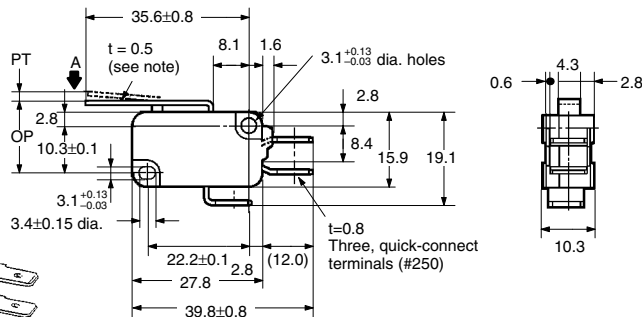
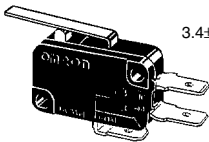
Note: Stainless-steel lever

| Model   | V-211-1□6       | V-161-1□5       |
|---------|-----------------|-----------------|
| OF max. | 3.92 N {400 gf} | 1.96 N {200 gf} |
| RF min. | 0.49 N {50 gf}  | 0.49 N {50 gf}  |
| PT max. | 1.6 mm          |                 |
| OT min. | 0.8 mm          |                 |
| MD max. | 0.6 mm          |                 |
| OP      | 15.2±0.5 mm     |                 |

| Model   | V-111-1□4       |
|---------|-----------------|
| OF max. | 0.98 N {100 gf} |
| RF min. | 0.15 N {15 gf}  |
| PT max. | 1.6 mm          |
| OT min. | 0.8 mm          |
| MD max. | 0.6 mm          |
| OP      | 15.2±0.5 mm     |

### Hinge Lever Models

V-212-1□6  
V-162-1□5  
V-112-1□4



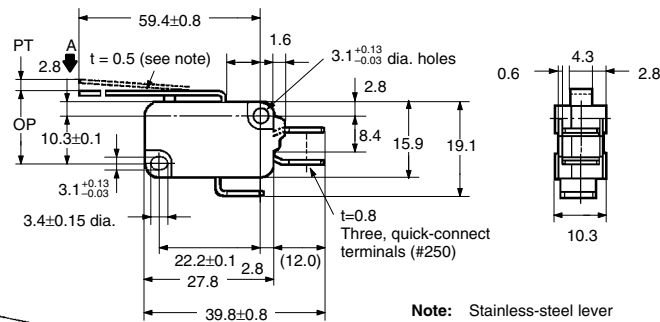
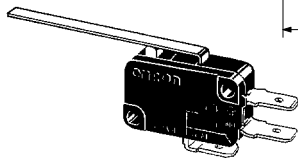
Note: Stainless-steel lever

| Model   | V-212-1□6       | V-162-1□5       |
|---------|-----------------|-----------------|
| OF max. | 2.45 N {250 gf} | 1.23 N {125 gf} |
| RF min. | 0.25 N {25 gf}  | 0.14 N {14 gf}  |
| PT max. | 4.0 mm          |                 |
| OT min. | 1.6 mm          |                 |
| MD max. | 1.5 mm          |                 |
| OP      | 15.2±1.2 mm     |                 |

| Model   | V-112-1□4      |
|---------|----------------|
| OF max. | 0.59 N {60 gf} |
| RF min. | 0.06 N {6 gf}  |
| PT max. | 4.0 mm         |
| OT min. | 1.6 mm         |
| MD max. | 1.5 mm         |
| OP      | 15.2±1.2 mm    |

### Long Hinge Lever Models

V-213-1□6  
V-163-1□5  
V-113-1□4



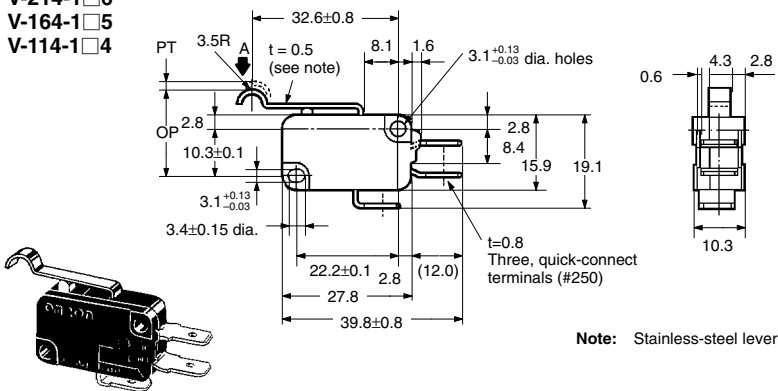
Note: Stainless-steel lever

| Model   | V-213-1□6                               | V-163-1□5      |
|---------|-----------------------------------------|----------------|
| OF max. | 1.27 N {130 gf}                         | 0.69 N {70 gf} |
| RF min. | 0.12 N {12 gf}                          | 0.06 N {6 gf}  |
| PT max. | 9.0 mm                                  |                |
| OT min. | 2.0 mm                                  |                |
| MD max. | 2.8 mm                                  |                |
| OP      | 15.2 <sup>+2.6</sup> <sub>-3.2</sub> mm |                |

| Model   | V-113-1□4      |
|---------|----------------|
| OF max. | 0.34 N {35 gf} |
| RF min. | ---            |
| PT max. | 9.0 mm         |
| OT min. | 3.2 mm         |
| MD max. | 2.8 mm         |
| OP      | 15.2±2.6 mm    |

### Simulated Roller Lever Models

V-214-1□6  
V-164-1□5  
V-114-1□4

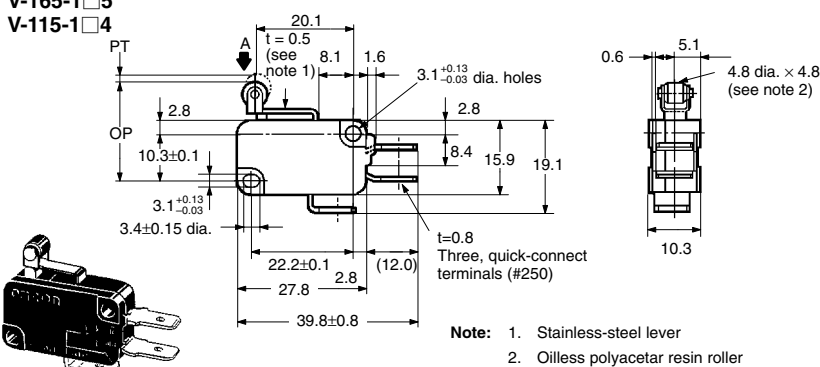


| Model   | V-214-1□6       | V-164-1□5       |
|---------|-----------------|-----------------|
| OF max. | 2.45 N {250 gf} | 1.23 N {125 gf} |
| RF min. | 0.25 N {25 gf}  | 0.14 N {14 gf}  |
| PT max. | 4.0 mm          |                 |
| OT min. | 1.6 mm          |                 |
| MD max. | 1.5 mm          |                 |
| OP      | 18.7±1.2 mm     |                 |

| Model   | V-114-1□4      |
|---------|----------------|
| OF max. | 0.59 N {60 gf} |
| RF min. | 0.06 N {6 gf}  |
| PT max. | 4.0 mm         |
| OT min. | 1.6 mm         |
| MD max. | 1.5 mm         |
| OP      | 18.7±1.2 mm    |

### Short Hinge Roller Lever Models

V-215-1□6  
V-165-1□5  
V-115-1□4

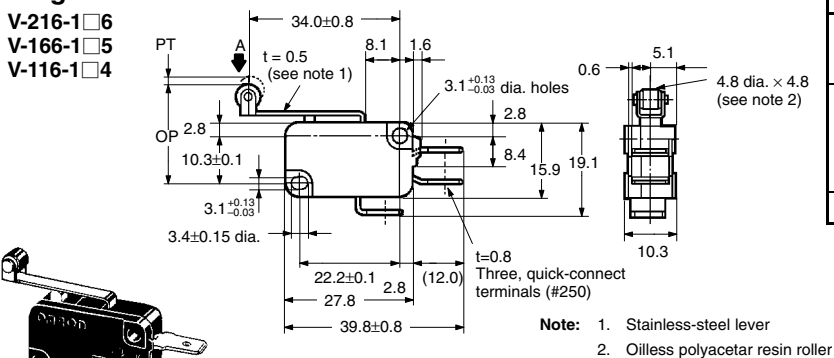


| Model   | V-215-1□6       | V-165-1□5       |
|---------|-----------------|-----------------|
| OF max. | 4.71 N {480 gf} | 2.35 N {240 gf} |
| RF min. | 0.49 N {50 gf}  | 0.49 N {50 gf}  |
| PT max. | 1.6 mm          |                 |
| OT min. | 0.8 mm          |                 |
| MD max. | 0.6 mm          |                 |
| OP      | 20.7±0.6 mm     |                 |

| Model   | V-115-1□4       |
|---------|-----------------|
| OF max. | 1.18 N {120 gf} |
| RF min. | 0.15 N {15 gf}  |
| PT max. | 1.6 mm          |
| OT min. | 0.8 mm          |
| MD max. | 0.6 mm          |
| OP      | 20.7±0.6 mm     |

### Hinge Roller Lever Models

V-216-1□6  
V-166-1□5  
V-116-1□4



| Model   | V-216-1□6       | V-166-1□5       |
|---------|-----------------|-----------------|
| OF max. | 2.45 N {250 gf} | 1.23 N {125 gf} |
| RF min. | 0.25 N {25 gf}  | 0.14 N {14 gf}  |
| PT max. | 4.0 mm          |                 |
| OT min. | 1.6 mm          |                 |
| MD max. | 1.5 mm          |                 |
| OP      | 20.7±1.2 mm     |                 |

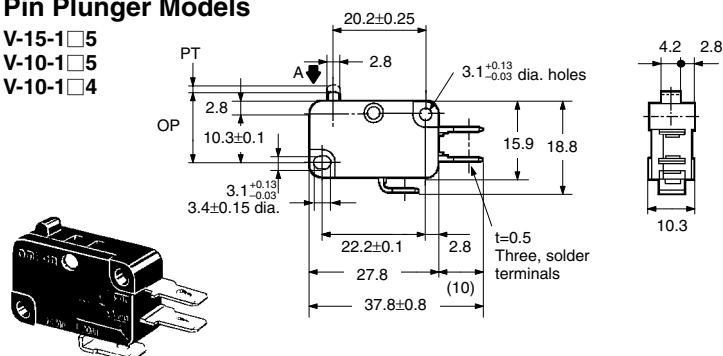
| Model   | V-116-1□4      |
|---------|----------------|
| OF max. | 0.59 N {60 gf} |
| RF min. | 0.06 N {6 gf}  |
| PT max. | 4.0 mm         |
| OT min. | 1.6 mm         |
| MD max. | 1.5 mm         |
| OP      | 20.7±1.2 mm    |

## ■ Thermosetting Case (V-15/-10 Models)

The following illustration and drawing are for solder and quick-connect terminals (#187) (terminals A). V models with a switching current of 15 A or 10 A incorporate terminals B or C2. These models are different from #187 models in terminal size only. Refer to *Terminals* on page 119 for these terminals.

### Pin Plunger Models

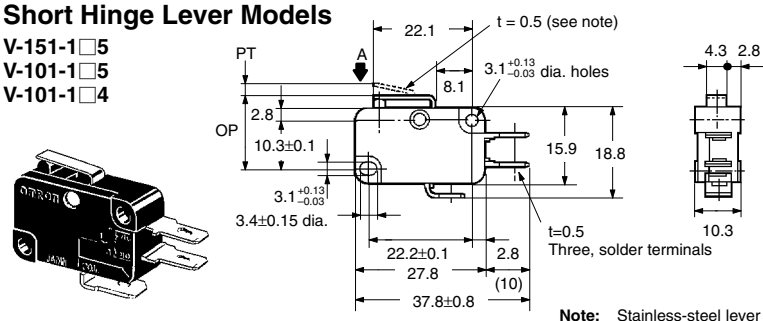
V-15-1□5  
V-10-1□5  
V-10-1□4



| Model   | V-15-1□5<br>V-10-1□5 | V-10-1□4        |
|---------|----------------------|-----------------|
| OF max. | 1.96 N {200 gf}      | 0.98 N {100 gf} |
| RF min. | 0.49 N {50 gf}       | 0.20 N {20 gf}  |
| PT max. | 1.2 mm               |                 |
| OT min. | 1.0 mm               |                 |
| MD max. | 0.4 mm               |                 |
| OP      | 14.7±0.4 mm          |                 |

### Short Hinge Lever Models

V-151-1□5  
V-101-1□5  
V-101-1□4

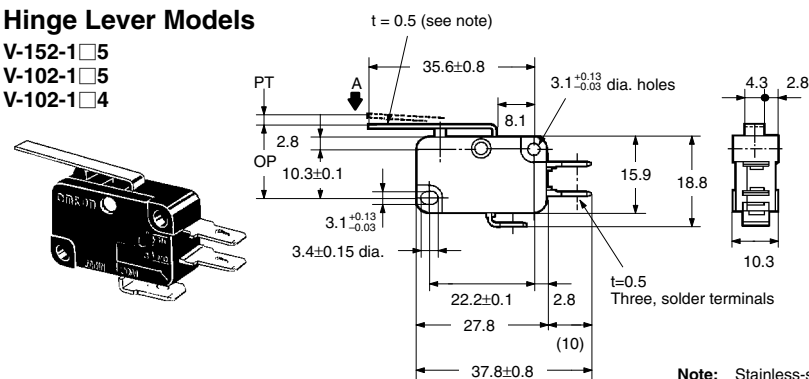


Note: Stainless-steel lever

| Model   | V-151-1□5<br>V-101-1□5 | V-101-1□4       |
|---------|------------------------|-----------------|
| OF max. | 1.96 N {200 gf}        | 0.98 N {100 gf} |
| RF min. | 0.49 N {50 gf}         | 0.15 N {15 gf}  |
| PT max. | 1.6 mm                 |                 |
| OT min. | 0.8 mm                 |                 |
| MD max. | 0.6 mm                 |                 |
| OP      | 15.2±0.5 mm            |                 |

### Hinge Lever Models

V-152-1□5  
V-102-1□5  
V-102-1□4

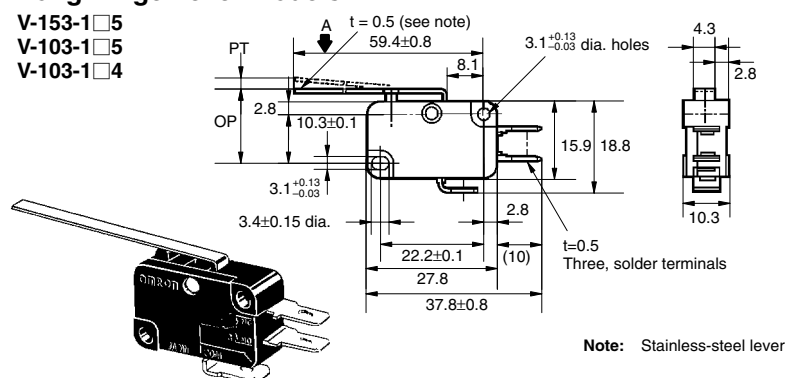


Note: Stainless-steel lever

| Model   | V-152-1□5<br>V-102-1□5 | V-102-1□4      |
|---------|------------------------|----------------|
| OF max. | 1.23 N {125 gf}        | 0.59 N {60 gf} |
| RF min. | 0.14 N {14 gf}         | 0.06 N {6 gf}  |
| PT max. | 4.0 mm                 |                |
| OT min. | 1.6 mm                 |                |
| MD max. | 1.5 mm                 |                |
| OP      | 15.2±1.2 mm            |                |

### Long Hinge Lever Models

V-153-1□5  
V-103-1□5  
V-103-1□4

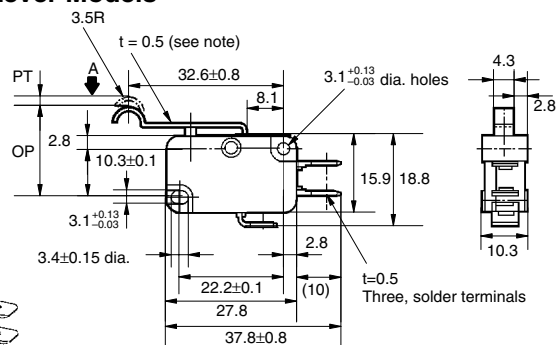
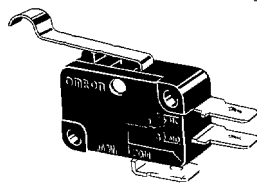


Note: Stainless-steel lever

| Model   | V-153-1□5<br>V-103-1□5                  | V-101-1□4      |
|---------|-----------------------------------------|----------------|
| OF max. | 0.69 N {70 gf}                          | 0.34 N {35 gf} |
| RF min. | 0.06 N {6 gf}                           | ---            |
| PT max. | 9.0 mm                                  | 9.0 mm         |
| OT min. | 2.0 mm                                  | 3.2 mm         |
| MD max. | 2.8 mm                                  | 2.8 mm         |
| OP      | 15.2 <sup>+2.6</sup> <sub>-3.2</sub> mm | 15.2±2.6 mm    |

### Simulated Roller Lever Models

V-154-1□5  
V-104-1□5  
V-104-1□4

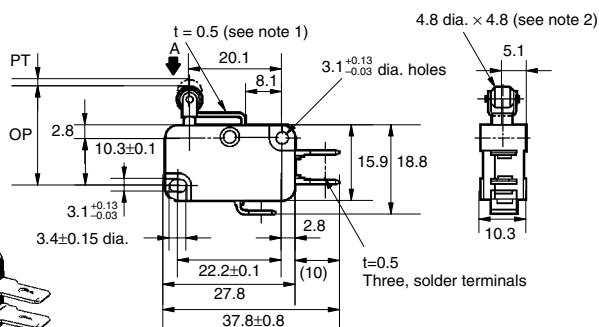
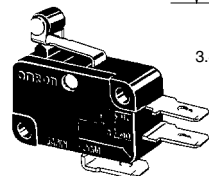


Note: Stainless-steel lever

| Model   | V-154-1□5<br>V-104-1□5 | V-104-1□4      |
|---------|------------------------|----------------|
| OF max. | 1.23 N {125 gf}        | 0.59 N {60 gf} |
| RF min. | 0.14 N {14 gf}         | 0.06 N {6 gf}  |
| PT max. | 4.0 mm                 |                |
| OT min. | 1.6 mm                 |                |
| MD max. | 1.5 mm                 |                |
| OP      | 18.7±1.2 mm            |                |

### Short Hinge Roller Lever Models

V-155-1□5  
V-105-1□5  
V-105-1□4

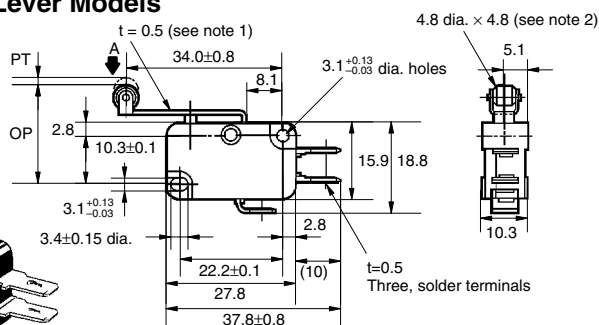
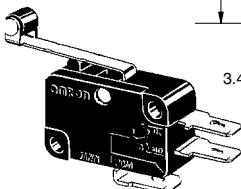


Note: 1. Stainless-steel lever  
2. Oilless polyacetal resin roller

| Model   | V-155-1□5<br>V-105-1□5 | V-105-1□4       |
|---------|------------------------|-----------------|
| OF max. | 2.35 N {240 gf}        | 1.18 N {120 gf} |
| RF min. | 0.49 N {50 gf}         | 0.15 N {15 gf}  |
| PT max. | 1.6 mm                 |                 |
| OT min. | 0.8 mm                 |                 |
| MD max. | 0.6 mm                 |                 |
| OP      | 20.7±0.6 mm            |                 |

### Hinge Roller Lever Models

V-156-1□5  
V-106-1□5  
V-106-1□4



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

| Model   | V-156-1□5<br>V-106-1□5 | V-106-1□4      |
|---------|------------------------|----------------|
| OF max. | 1.23 N {125 gf}        | 0.59 N {60 gf} |
| RF min. | 0.14 N {14 gf}         | 0.06 N {6 gf}  |
| PT max. | 4.0 mm                 |                |
| OT min. | 1.6 mm                 |                |
| MD max. | 1.5 mm                 |                |
| OP      | 20.7±1.2 mm            |                |

## Precautions

Refer to pages 26 to 31 for common precautions.

### ■ Correct Use

#### Specifications Approved by TÜV Rheinland According to EN61058-1

##### Appropriate Cable Size (mm<sup>2</sup>)

| Model | Solder terminals | Screw terminals |
|-------|------------------|-----------------|
| V-10  | 0.75, 1.25, 2.0  | 0.75, 1.25      |
| V-15  | 1.25, 2.0        | 1.25            |

Use M3 crimp terminals for connecting to the screw terminals.

Applicable M3 crimp terminals:

|                                          |          |
|------------------------------------------|----------|
| Daido Solderless Terminal Mfg. Co., Ltd. | F1.25-3  |
| J.S.T. Mfg. Co., Ltd.                    | 1.25 B3A |

### 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}.

### Insulation Distance

According to EN61058-1, the minimum insulation thickness for this Switch should be 1.1 mm and minimum clearance distance between the terminal and mounting plate should be 1.9 mm. If the insulation distance cannot be provided in the product incorporating the Switch, either use a Switch with insulation barrier or use a Separator to ensure sufficient insulation distance. Refer to Separator on page 152.

### ■ Actuator (Sold Separately)

Various Actuators are available as shown on pages 152 to 155.

### ■ Connector (Sold Separately)

Refer to Terminal Connectors on page 282.

**ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.**

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