

## VX

### Miniature Snap Action Switch



- Compact snap action switch with low force operation
- Internal hinge lever mechanism assures outstanding contact reliability
- Models available for micro load up through 5 Amps
- ROHS Compliant

| Part        | Rated Resistive Load - Switch | Actuator types    | Contact form | Operating Force | Seal type | Termination Style          | Service Life - Electrical (Min. @ Rated Loads) |
|-------------|-------------------------------|-------------------|--------------|-----------------|-----------|----------------------------|------------------------------------------------|
| VX-01-1A2   | 0.1A @ 125VAC/0.1A @ 30VDC    | Pin plunger       | SPDT         | 25g             | Unsealed  | Solder / 187 Quick Connect | 1,000,000 ops                                  |
| VX-01-1A3   | 0.1A @ 125VAC/0.1A @ 30VDC    | Pin plunger       | SPDT         | 50g             | Unsealed  | Solder / 187 Quick Connect | 1,000,000 ops                                  |
| VX-01-1C22  | 0.1A @ 125VAC/0.1A @ 30VDC    | Pin plunger       | SPDT         | 25g             | Unsealed  | 187 Quick Connect          | 1,000,000 ops                                  |
| VX-01-1C23  | 0.1A @ 125VAC/0.1A @ 30VDC    | Pin plunger       | SPDT         | 50g             | Unsealed  | 187 Quick Connect          | 1,000,000 ops                                  |
| VX-011-1A3  | 0.1A @ 125VAC/0.1A @ 30VDC    | Short hinge lever | SPDT         | 50g             | Unsealed  | Solder / 187 Quick Connect | 1,000,000 ops                                  |
| VX-011-1C23 | 0.1A @ 125VAC/0.1A @ 30VDC    | Short hinge lever | SPDT         | 50g             | Unsealed  | 187 Quick Connect          | 1,000,000 ops                                  |
| VX-012-1A3  | 0.1A @ 125VAC/0.1A @ 30VDC    | Hinge lever       | SPDT         | 30g             | Unsealed  | Solder / 187 Quick Connect | 1,000,000 ops                                  |
| VX-012-1C23 | 0.1A @ 125VAC/0.1A @ 30VDC    | Hinge lever       | SPDT         | 30g             | Unsealed  | 187 Quick Connect          | 1,000,000 ops                                  |
| VX-013-1A3  | 0.1A @ 125VAC/0.1A @ 30VDC    | Long hinge lever  | SPDT         | 20g             | Unsealed  | Solder / 187 Quick Connect | 1,000,000 ops                                  |
| VX-013-1C23 | 0.1A @ 125VAC/0.1A @ 30VDC    | Long hinge lever  | SPDT         | 20g             | Unsealed  | 187 Quick Connect          | 1,000,000 ops                                  |
| VX-014-1A3  | 0.1A @ 125VAC/0.1A            | Simulated roller  | SPDT         | 30g             | Unsealed  | Solder / 187 Quick         | 1,000,000 ops                                  |

|                    |                            |                          |      |     |          |                            |               |
|--------------------|----------------------------|--------------------------|------|-----|----------|----------------------------|---------------|
|                    | @ 30VDC                    | lever                    |      |     |          | Connect                    |               |
| <b>VX-014-1C23</b> | 0.1A @ 125VAC/0.1A @ 30VDC | Simulated roller lever   | SPDT | 30g | Unsealed | 187 Quick Connect          | 1,000,000 ops |
| <b>VX-015-1A3</b>  | 0.1A @ 125VAC/0.1A @ 30VDC | Short hinge roller lever | SPDT | 60g | Unsealed | Solder / 187 Quick Connect | 1,000,000 ops |
| <b>VX-015-1C23</b> | 0.1A @ 125VAC/0.1A @ 30VDC | Short hinge roller lever | SPDT | 60g | Unsealed | 187 Quick Connect          | 1,000,000 ops |
| <b>VX-016-1A3</b>  | 0.1A @ 125VAC/0.1A @ 30VDC | Hinge roller lever       | SPDT | 30g | Unsealed | Solder / 187 Quick Connect | 1,000,000 ops |
| <b>VX-016-1C23</b> | 0.1A @ 125VAC/0.1A @ 30VDC | Hinge roller lever       | SPDT | 30g | Unsealed | 187 Quick Connect          | 1,000,000 ops |

| Part              | Rated Resistive Load - Switch | Actuator types    | Contact form | Operating Force | Seal type | Termination Style          | Service Life - Electrical (Min. @ Rated Loads) |
|-------------------|-------------------------------|-------------------|--------------|-----------------|-----------|----------------------------|------------------------------------------------|
| <b>VX-5-1A2</b>   | 5A @ 125VAC/5A @ 30VDC        | Pin plunger       | SPDT         | 25g             | Unsealed  | Solder / 187 Quick Connect | 500,000 ops                                    |
| <b>VX-5-1A3</b>   | 5A @ 125VAC/5A @ 30VDC        | Pin plunger       | SPDT         | 50g             | Unsealed  | Solder / 187 Quick Connect | 500,000 ops                                    |
| <b>VX-5-1C22</b>  | 5A @ 125VAC/5A @ 30VDC        | Pin plunger       | SPDT         | 25g             | Unsealed  | 187 Quick Connect          | 500,000 ops                                    |
| <b>VX-5-1C23</b>  | 5A @ 125VAC/5A @ 30VDC        | Pin plunger       | SPDT         | 50g             | Unsealed  | 187 Quick Connect          | 500,000 ops                                    |
| <b>VX-51-1A3</b>  | 5A @ 125VAC/5A @ 30VDC        | Short hinge lever | SPDT         | 50g             | Unsealed  | Solder / 187 Quick Connect | 500,000 ops                                    |
| <b>VX-51-1C23</b> | 5A @ 125VAC/5A @ 30VDC        | Short hinge lever | SPDT         | 50g             | Unsealed  | 187 Quick Connect          | 500,000 ops                                    |
| <b>VX-52-1A3</b>  | 5A @ 125VAC/5A @ 30VDC        | Hinge lever       | SPDT         | 30g             | Unsealed  | Solder / 187 Quick Connect | 500,000 ops                                    |
| <b>VX-52-1C23</b> | 5A @ 125VAC/5A @ 30VDC        | Hinge lever       | SPDT         | 30g             | Unsealed  | 187 Quick Connect          | 500,000 ops                                    |
| <b>VX-53-1A3</b>  | 5A @ 125VAC/5A @ 30VDC        | Long hinge lever  | SPDT         | 20g             | Unsealed  | Solder / 187 Quick Connect | 500,000 ops                                    |
| <b>VX-53-1C23</b> | 5A @ 125VAC/5A @ 30VDC        | Long hinge lever  | SPDT         | 20g             | Unsealed  | 187 Quick Connect          | 500,000 ops                                    |
|                   |                               |                   |              |                 |           |                            |                                                |

|                   |                              |                                   |      |     |          |                                  |                |
|-------------------|------------------------------|-----------------------------------|------|-----|----------|----------------------------------|----------------|
| <b>VX-54-1A3</b>  | 5A @<br>125VAC/5A<br>@ 30VDC | Simulated<br>roller<br>lever      | SPDT | 30g | Unsealed | Solder /<br>187 Quick<br>Connect | 500,000<br>ops |
| <b>VX-54-1C23</b> | 5A @<br>125VAC/5A<br>@ 30VDC | Simulated<br>roller<br>lever      | SPDT | 30g | Unsealed | 187 Quick<br>Connect             | 500,000<br>ops |
| <b>VX-55-1A3</b>  | 5A @<br>125VAC/5A<br>@ 30VDC | Short<br>hinge<br>roller<br>lever | SPDT | 60g | Unsealed | Solder /<br>187 Quick<br>Connect | 500,000<br>ops |
| <b>VX-55-1C23</b> | 5A @<br>125VAC/5A<br>@ 30VDC | Short<br>hinge<br>roller<br>lever | SPDT | 60g | Unsealed | 187 Quick<br>Connect             | 500,000<br>ops |
| <b>VX-56-1A3</b>  | 5A @<br>125VAC/5A<br>@ 30VDC | Hinge<br>roller<br>lever          | SPDT | 30g | Unsealed | Solder /<br>187 Quick<br>Connect | 500,000<br>ops |
| <b>VX-56-1C23</b> | 5A @<br>125VAC/5A<br>@ 30VDC | Hinge<br>roller<br>lever          | SPDT | 30g | Unsealed | 187 Quick<br>Connect             | 500,000<br>ops |

# Snap Action Switch

## VX

### Miniature Snap Action Switch

- Compact snap action switch with low force operation
- Internal hinge lever mechanism assures outstanding contact reliability
- RoHS Compliant



## Ordering Information

| Actuator                                                                                                        | Connect terminal | OF max. | Model         |             |
|-----------------------------------------------------------------------------------------------------------------|------------------|---------|---------------|-------------|
|                                                                                                                 |                  |         | Rated current |             |
|                                                                                                                 |                  |         | 5 A           | 0.1 A       |
| Pin plunger<br>                | A                | 25 g    | VX-5-1A2      | VX-01-1A2   |
|                                                                                                                 |                  | 50 g    | VX-5-1A3      | VX-01-1A3   |
|                                                                                                                 | C2               | 25 g    | VX-5-1C22     | VX-01-1C22  |
|                                                                                                                 |                  | 50 g    | VX-5-1C23     | VX-01-1C23  |
| Short hinge lever<br>        | A                | 50 g    | VX-51-1A3     | VX-011-1A3  |
|                                                                                                                 | C2               | 50 g    | VX-51-1C23    | VX-011-1C23 |
| Hinge lever<br>              | A                | 30 g    | VX-52-1A3     | VX-012-1A3  |
|                                                                                                                 | C2               | 30 g    | VX-52-1C23    | VX-012-1C23 |
| Long hinge lever<br>         | A                | 20 g    | VX-53-1A3     | VX-013-1A3  |
|                                                                                                                 | C2               | 20 g    | VX-53-1C23    | VX-013-1C23 |
| Simulated roller lever<br>   | A                | 30 g    | VX-54-1A3     | VX-014-1A3  |
|                                                                                                                 | C2               | 30 g    | VX-54-1C23    | VX-014-1C23 |
| Short hinge roller lever<br> | A                | 60 g    | VX-55-1A3     | VX-015-1A3  |
|                                                                                                                 | C2               | 60 g    | VX-55-1C23    | VX-015-1C23 |
| Hinge roller lever<br>       | A                | 30 g    | VX-56-1A3     | VX-016-1A3  |
|                                                                                                                 | C2               | 30 g    | VX-56-1C23    | VX-016-1C23 |

**Note:** C2 – tab terminal (#187): A – solder/#187 tab common terminal

# Specifications

## ■ Characteristics

|                           |                        | VX-5                                                                                                                                   | VX-01                         |
|---------------------------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| Operating speed           |                        | 0.1 mm to 1 m/second (0.004 to 39.4 in/second) at pin plunger                                                                          |                               |
| Operating frequency       | Mechanical             | 600 operations per minute                                                                                                              |                               |
|                           | Electrical             | 60 operations per minute                                                                                                               |                               |
| Contact resistance        |                        | 30 mΩ max.                                                                                                                             | 50 mΩ max.                    |
| Insulation resistance     |                        | 100 MΩ min. at 500 VDC                                                                                                                 |                               |
| Dielectric strength (VAC) |                        | 1,000 VAC, 50/60 Hz for 1 minute between non-continuous terminals<br>1,500 VAC, 50/60 Hz for 1 minute between each terminal and ground |                               |
| Vibration (see note 2)    | Malfunction durability | 10 to 55 Hz, 1.5 mm double amplitude                                                                                                   |                               |
| Shock (see note 2)        | Durability             | 400 m/s <sup>2</sup> min. (approx. 40 g)                                                                                               |                               |
|                           | Malfunction durability | 100 m/s <sup>2</sup> min. (approx. 10 g)                                                                                               |                               |
| Ambient temperature       |                        | -25° to 80° C (with no icing)                                                                                                          |                               |
| Humidity                  |                        | 85% RH max                                                                                                                             |                               |
| Service life              | Mechanical             | 50,000,000 operations minimum                                                                                                          | 10,000,000 operations minimum |
|                           | Electrical             | 500,000 operations minimum                                                                                                             | 1,000,000 operations minimum  |
| Weight                    |                        | Approx. 6.2 g                                                                                                                          |                               |

Note: 1. Data shown are of initial value.

2. The values indicated here are of the pin plunger type.

## ■ Operating Characteristics

| Characteristics | Part number                   |          |           |           |                               |            |
|-----------------|-------------------------------|----------|-----------|-----------|-------------------------------|------------|
|                 | VX-5-1□2                      | VX-5-1□3 | VX-01-1□2 | VX-01-1□3 | VX-51-1□3                     | VX-011-1□3 |
| OF max.         | 25 g                          | 50 g     | 25 g      | 50 g      | 50 g                          |            |
| RF min.         | 3 g                           | 5 g      | 3 g       | 5 g       | 4 g                           |            |
| PT max.         | 1.2 mm (0.05 in)              |          |           |           | 1.6 mm (0.06 in)              |            |
| OT min.         | 1.0 mm (0.04 in)              |          |           |           | 0.8 mm (0.03 in)              |            |
| MD max.         | 0.3 mm (0.01 in)              |          |           |           | 0.5 mm (0.02 in)              |            |
| OP              | 14.7±0.4 mm<br>(0.58±0.02 in) |          |           |           | 15.2±0.5 mm<br>(0.60±0.02 in) |            |

| Characteristics | Part number                   |            |                               |            |                               |            |
|-----------------|-------------------------------|------------|-------------------------------|------------|-------------------------------|------------|
|                 | VX-52-1□3                     | VX-012-1□3 | VX-53-1□3                     | VX-013-1□3 | VX-54-1□3                     | VX-014-1□3 |
| OF max.         | 30 g                          |            | 20 g                          |            | 60 g                          |            |
| RF min.         | —                             |            | —                             |            | 4 g                           |            |
| PT max.         | 4.0 mm (0.16 in)              |            | 9.0 mm (0.35 in)              |            | 1.6 mm (0.06 in)              |            |
| OT min.         | 1.6 mm (0.06 in)              |            | 3.2 mm (0.13 in)              |            | 0.8 mm (0.03 in)              |            |
| MD max.         | 0.8 mm (0.03 in)              |            | 2.0 mm (0.08 in)              |            | 0.5 mm (0.02 in)              |            |
| OP              | 15.2±1.2 mm<br>(0.60±0.05 in) |            | 15.2±2.6 mm<br>(0.60±2.10 in) |            | 20.7±0.6 mm<br>(0.81±0.02 in) |            |

| Characteristics | Part number                   |            |                               |            |
|-----------------|-------------------------------|------------|-------------------------------|------------|
|                 | VX-55-1□3                     | VX-015-1□3 | VX-56-1□3                     | VX-016-1□3 |
| OF max.         | 60 g                          |            | 30 g                          |            |
| RF min.         | 4 g                           |            | —                             |            |
| PT max.         | 1.6 mm (0.06 in)              |            | 4.0 mm (0.16 in)              |            |
| OT min.         | 0.8 mm (0.03 in)              |            | 1.6 mm (0.06 in)              |            |
| MD max.         | 0.5 mm (0.02 in)              |            | 0.8 mm (0.03 in)              |            |
| OP              | 20.7±0.6 mm<br>(0.81±0.02 in) |            | 20.7±1.2 mm<br>(0.81±0.05 in) |            |

## ■ Ratings

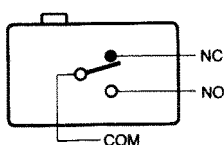
| Type           | Rated voltage | Non-inductive load (A)          |     |           |      | Inductive load (A)              |     |            |    |
|----------------|---------------|---------------------------------|-----|-----------|------|---------------------------------|-----|------------|----|
|                |               | Resistive load                  |     | Lamp load |      | Inductive load                  |     | Motor load |    |
|                |               | NC                              | NO  | NC        | NO   | NC                              | NO  | NC         | NO |
| 5 A            | 250 VAC       | 5                               | 5   | 0.5       | 0.5  | 4                               | 4   | —          | —  |
|                | 8 VDC         | 5                               | 5   | 3         | 3    | 4                               | 4   | —          | —  |
|                | 30 VDC        | 5                               | 5   | 3         | 3    | 4                               | 4   | —          | —  |
|                | 125 VDC       | 0.4                             | 0.4 | 0.1       | 0.1  | 0.4                             | 0.4 | —          | —  |
|                | 250 VDC       | 0.3                             | 0.3 | 0.05      | 0.05 | 0.2                             | 0.2 | —          | —  |
| 0.1 A          | 125 VAC       | 0.1                             | 0.1 | —         | —    | —                               | —   | —          | —  |
|                | 8 VDC         | 0.1                             | 0.1 | —         | —    | —                               | —   | —          | —  |
|                | 30 VDC        | 0.1                             | 0.1 | —         | —    | —                               | —   | —          | —  |
| Inrush current |               | Standard type (VX-5): 15 A max. |     |           |      | Standard type (VX-5): 15 A max. |     |            |    |

**Note: 1.** Inductive load has a power factor of 0.4 min. (AC) and a time constant of 7 milliseconds max. (DC).

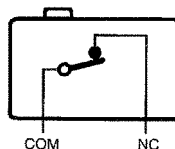
**2.** Lamp load has an inrush current of 10 times the steady-state current, while motor load has an inrush current of 6 times the steady-state current.

## ■ Contact Form

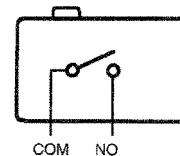
**SPDT**  
(Standard)



**SPST-NC**  
(Consult Omron for ordering information)



**SPST-NO**  
(Consult Omron for ordering information)



## ■ Approvals

**UL (File No. 41515), CSA (File No. LR21642) IEC 1058-1**

| Rating         |
|----------------|
| 5 A, 250 VAC   |
| 0.1 A, 125 VAC |

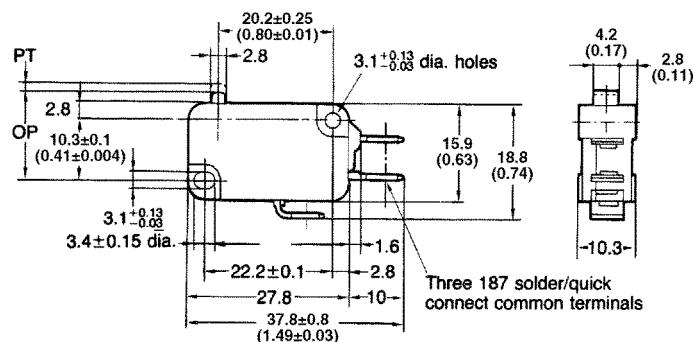
**Note:** The rated values approved by each of the safety standards (e.g. UL, CSA) may be different from the performance characteristics individually defined in this catalog.

# Dimensions

Unit: mm (inch)

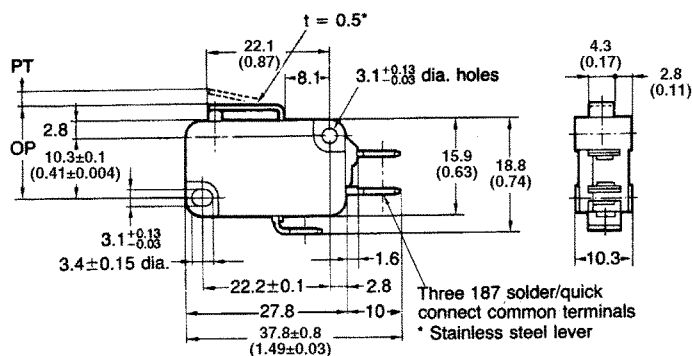
## Pin Plunger

VX-5-1□2  
VX-5-1□3  
VX-01-1□2  
VX-01-1□3



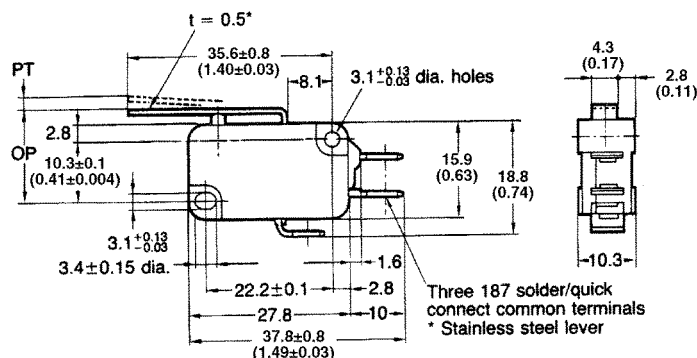
## Short Hinge Lever

VX-51-1□3  
VX-011-1□3



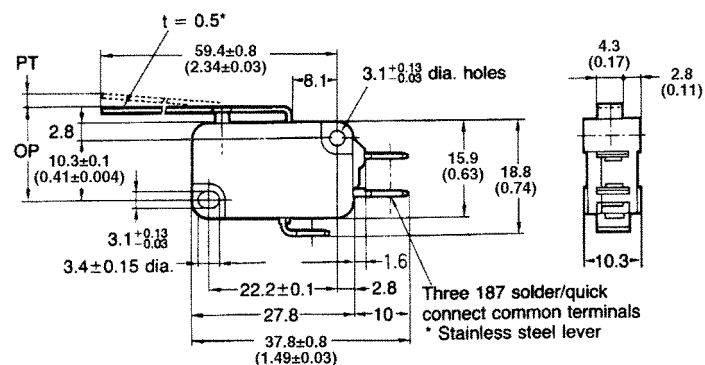
## Hinge Lever

VX-52-1□3  
VX-012-1□3



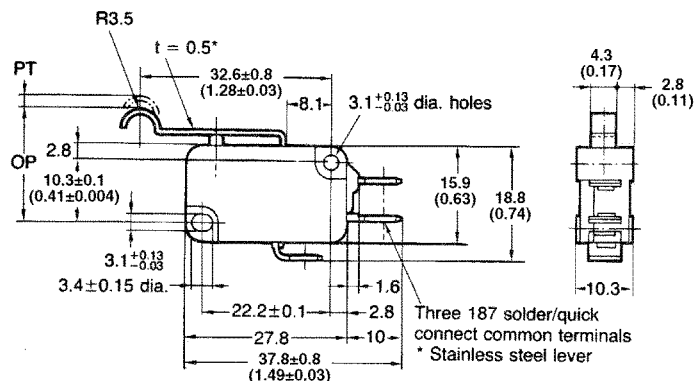
## Long Hinge Lever

VX-53-1□3  
VX-013-1□3



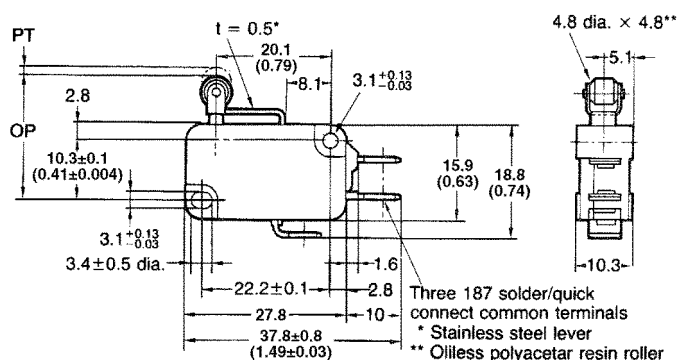
## ■ Simulated Roller Lever

VX-54-1□3  
VX-014-1□3



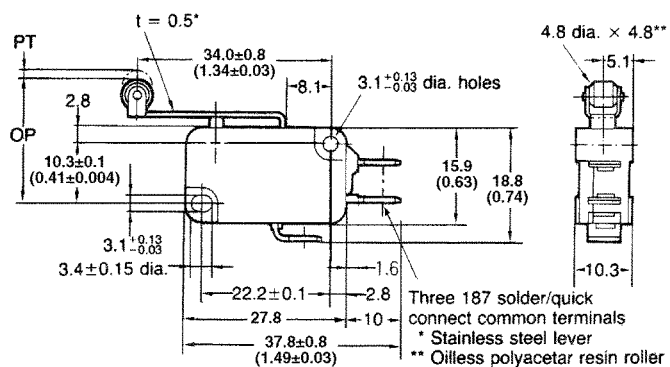
## ■ Short Hinge Roller Lever

VX-55-1□3  
VX-015-1□3



## ■ Hinge Roller Lever

VX-56-1□3  
VX-016-1□3



**Note:** 1. Unless otherwise specified, a tolerance of  $\pm 0.4$  mm applies to all dimensions.

2. Letters and numbers depend on the type of terminal put in □ shown above.

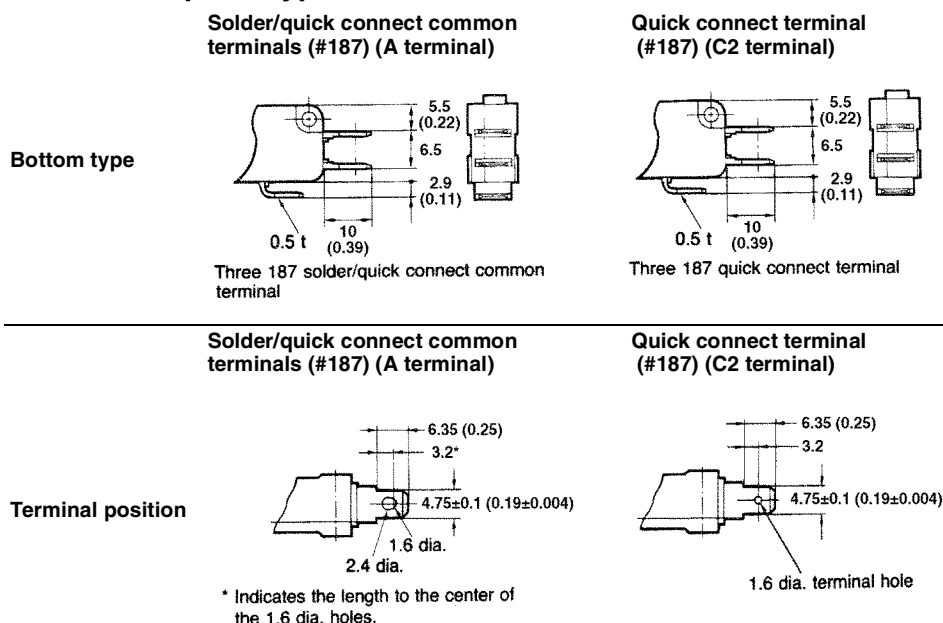
A: Solder/quick connect common terminal (187)

C2: Quick connect terminal (187)

3. For smaller mounting holes, please consult OMRON.

## ■ Terminals

### General Purpose Type



## Precautions

### ■ Mounting

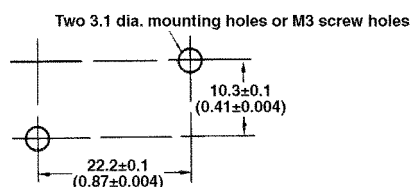
Mount the switch by tightening the two M3 screws with a matching driver, using appropriate torque (4 to 6 kg-cm).

#### Switch protection

Do not use where there are toxic gases (such as near an oilburning stove), nor in a dusty or humid environment.

Depending on environmental conditions, the switch should be rechecked about 3 to 6 months after it has been assembled.

#### Mounting hole dimensions



Quickly finish the soldering of the lead wire to its terminal. Use a soldering iron rated at 60W and preferably complete the soldering within 5 seconds.

Excess wattage or prolonged heating can deteriorate the characteristics of the switch.

When mounting, make sure there is sufficient insulation distance between the switch and its mounting panel. If it is insufficient, install an insulation guard or separator. Always install an insulation guard or separator when mounting the microswitch on a metallic body. Contact your OMRON representative for information about insulation guards and separators.

### ■ Operation

Keep the operation control completely separate from the actuator of the switch, and push it down fully when starting operation. Do not displace the operating position of the actuator when machining.

Consult OMRON in advance if the operating speed is to be extremely slow, or if the pushbutton is to be set somewhere between the free position and operating position.

Mount pin pushbutton switches so that stroke of the pushbutton and the stroke of the operating control overlap on a vertical line. The stroke of the switch, after operation, should be set to 60- 90% that of standard OT (MIN operation).