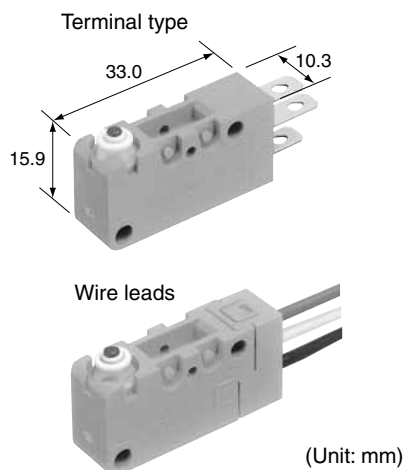




### Miniature Size Sealed Switches

### TURQUOISE SWITCHES ABV (BV) SWITCHES



RoHS compliant

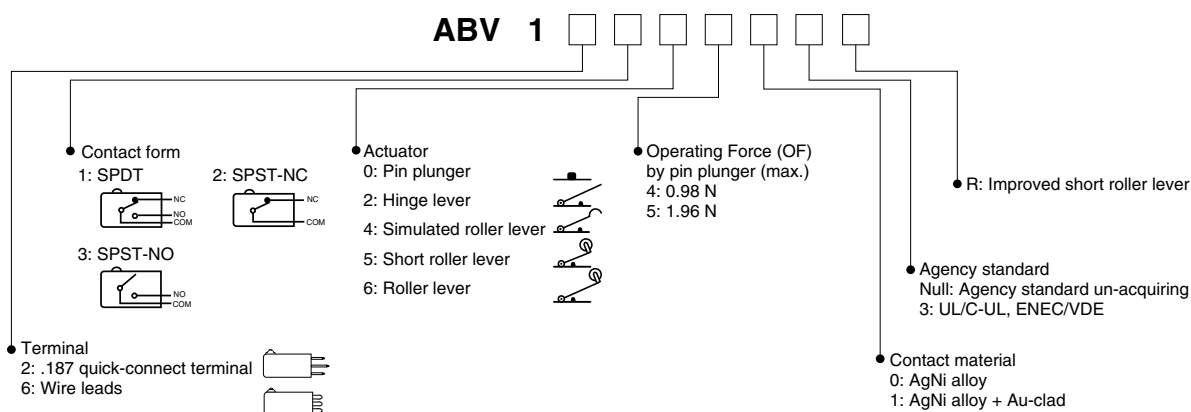
### FEATURES

- Integral construction of body and cover, sealed switches
- Long life (Mechanical life: Min.  $5 \times 10^6$ )
- Wide variation.

### TYPICAL APPLICATIONS

- Automotive
- Agricultural machinery (Combine, Rice planting machine)
- Ice maker, etc.

## ORDERING INFORMATION

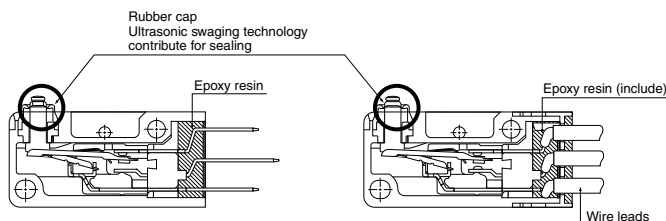


Notes: 1. Standard packing: Dust protected type 50 pcs./carton, 500 pcs./case; Immersion protected type 50 pcs./case.  
2. Not every combination is available. Please refer to the following table, "PRODUCT TYPES".

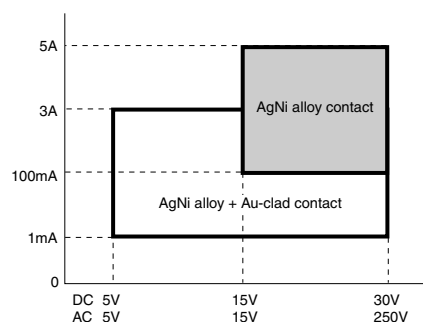
## CONSTRUCTION

Terminal type

Wire leads



## APPLICABLE CURRENT RANGE (Reference)



## PRODUCT TYPES

### ■ AgNi alloy contact type

| Actuator               | Contact form | Operating Force OF, Max. | .187 Quick-connect terminal | Wire Leads  |
|------------------------|--------------|--------------------------|-----------------------------|-------------|
|                        |              |                          | Part number                 | Part number |
| Pin plunger            | SPDT         | 0.98 N                   | ABV1210403                  | ABV1610403  |
|                        |              | 1.96 N                   | ABV1210503                  | ABV1610503  |
|                        | SPST-NC      | 0.98 N                   | ABV1220403                  | ABV1620403  |
|                        |              | 1.96 N                   | ABV1220503                  | ABV1620503  |
|                        | SPST-NO      | 0.98 N                   | ABV1230403                  | ABV1630403  |
|                        |              | 1.96 N                   | ABV1230503                  | ABV1630503  |
| Hinge lever            | SPDT         | 0.59 N                   | ABV1212403                  | ABV1612403  |
|                        |              | 1.18 N                   | ABV1212503                  | ABV1612503  |
|                        | SPST-NC      | 0.59 N                   | ABV1222403                  | ABV1622403  |
|                        |              | 1.18 N                   | ABV1222503                  | ABV1622503  |
|                        | SPST-NO      | 0.59 N                   | ABV1232403                  | ABV1632403  |
|                        |              | 1.18 N                   | ABV1232503                  | ABV1632503  |
| Simulated roller lever | SPDT         | 0.59 N                   | ABV1214403                  | ABV1614403  |
|                        |              | 1.18 N                   | ABV1214503                  | ABV1614503  |
|                        | SPST-NC      | 0.59 N                   | ABV1224403                  | ABV1624403  |
|                        |              | 1.18 N                   | ABV1224503                  | ABV1624503  |
|                        | SPST-NO      | 0.59 N                   | ABV1234403                  | ABV1634403  |
|                        |              | 1.18 N                   | ABV1234503                  | ABV1634503  |
| Short roller lever     | SPDT         | 1.08 N                   | ABV121540R3                 | ABV161540R3 |
|                        |              | 2.16 N                   | ABV121550R3                 | ABV161550R3 |
|                        | SPST-NC      | 1.08 N                   | ABV122540R3                 | ABV162540R3 |
|                        |              | 2.16 N                   | ABV122550R3                 | ABV162550R3 |
|                        | SPST-NO      | 1.08 N                   | ABV123540R3                 | ABV163540R3 |
|                        |              | 2.16 N                   | ABV123550R3                 | ABV163550R3 |
| Roller lever           | SPDT         | 0.59 N                   | ABV1216403                  | ABV1616403  |
|                        |              | 1.18 N                   | ABV1216503                  | ABV1616503  |
|                        | SPST-NC      | 0.59 N                   | ABV1226403                  | ABV1626403  |
|                        |              | 1.18 N                   | ABV1226503                  | ABV1626503  |
|                        | SPST-NO      | 0.59 N                   | ABV1236403                  | ABV1636403  |
|                        |              | 1.18 N                   | ABV1236503                  | ABV1636503  |

### ■ AgNi alloy + Au-clad contact type

| Actuator               | Contact form | Operating Force OF, Max. | .187 Quick-connect terminal | Wire Leads  |
|------------------------|--------------|--------------------------|-----------------------------|-------------|
|                        |              |                          | Part number                 | Part number |
| Pin plunger            | SPDT         | 0.98 N                   | ABV1210413                  | ABV1610413  |
|                        |              | 1.96 N                   | ABV1210513                  | ABV1610513  |
|                        | SPST-NC      | 0.98 N                   | ABV1220413                  | ABV1620413  |
|                        |              | 1.96 N                   | ABV1220513                  | ABV1620513  |
|                        | SPST-NO      | 0.98 N                   | ABV1230413                  | ABV1630413  |
|                        |              | 1.96 N                   | ABV1230513                  | ABV1630513  |
| Hinge lever            | SPDT         | 0.59 N                   | ABV1212413                  | ABV1612413  |
|                        |              | 1.18 N                   | ABV1212513                  | ABV1612513  |
|                        | SPST-NC      | 0.59 N                   | ABV1222413                  | ABV1622413  |
|                        |              | 1.18 N                   | ABV1222513                  | ABV1622513  |
|                        | SPST-NO      | 0.59 N                   | ABV1232413                  | ABV1632413  |
|                        |              | 1.18 N                   | ABV1232513                  | ABV1632513  |
| Simulated roller lever | SPDT         | 0.59 N                   | ABV1214413                  | ABV1614413  |
|                        |              | 1.18 N                   | ABV1214513                  | ABV1614513  |
|                        | SPST-NC      | 0.59 N                   | ABV1224413                  | ABV1624413  |
|                        |              | 1.18 N                   | ABV1224513                  | ABV1624513  |
|                        | SPST-NO      | 0.59 N                   | ABV1234413                  | ABV1634413  |
|                        |              | 1.18 N                   | ABV1234513                  | ABV1634513  |
| Short roller lever     | SPDT         | 1.08 N                   | ABV121541R3                 | ABV161541R3 |
|                        |              | 2.16 N                   | ABV121551R3                 | ABV161551R3 |
|                        | SPST-NC      | 1.08 N                   | ABV122541R3                 | ABV162541R3 |
|                        |              | 2.16 N                   | ABV122551R3                 | ABV162551R3 |
|                        | SPST-NO      | 1.08 N                   | ABV123541R3                 | ABV163541R3 |
|                        |              | 2.16 N                   | ABV123551R3                 | ABV163551R3 |
| Roller lever           | SPDT         | 0.59 N                   | ABV1216413                  | ABV1616413  |
|                        |              | 1.18 N                   | ABV1216513                  | ABV1616513  |
|                        | SPST-NC      | 0.59 N                   | ABV1226413                  | ABV1626413  |
|                        |              | 1.18 N                   | ABV1226513                  | ABV1626513  |
|                        | SPST-NO      | 0.59 N                   | ABV1236413                  | ABV1636413  |
|                        |              | 1.18 N                   | ABV1236513                  | ABV1636513  |

## SPECIFICATIONS

### ■ Rating

|                                                    | Standard rating                                    | Low-level rating                        |
|----------------------------------------------------|----------------------------------------------------|-----------------------------------------|
| AgNi alloy + Au-clad contact<br>Plunger color: Red | 3 A 250 V AC (OF 1.96 N), 1 A 250 V AC (OF 0.98 N) | 6 V DC 5 mA, 12 V DC 2 mA, 24 V DC 1 mA |
| AgNi alloy contact<br>Plunger color: Black         | 5 A 250 V AC (OF 1.96 N), 3 A 250 V AC (OF 0.98 N) | —                                       |

### ■ Characteristics

| Item                      |                                                     |                                        | Specifications                                                                           |
|---------------------------|-----------------------------------------------------|----------------------------------------|------------------------------------------------------------------------------------------|
| Expected life             | Mechanical life (OT: Specified value)               |                                        | Min. 5x10 <sup>6</sup> (at 60 cpm)                                                       |
|                           | Electrical life                                     | Nominal rating (OT: Max.)              | Min. 10 <sup>5</sup> (at 20 cpm)                                                         |
|                           |                                                     | Low-level rating (OT: Specified value) | Min. 10 <sup>6</sup> (at 20 cpm) OF 0.98N type is Min 5 × 10 <sup>5</sup> (at 20 com)    |
| Insulation resistance     |                                                     |                                        | Min. 100 MΩ (at 500 V DC insulation resistance meter)                                    |
| Dielectric strength       | Between non-continuous terminals                    |                                        | 1,000 Vrms                                                                               |
|                           | Between each terminal and other exposed metal parts |                                        | 2,000 Vrms                                                                               |
|                           | Between each terminal and ground                    |                                        | 2,000 Vrms                                                                               |
| Vibration resistance      |                                                     |                                        | 10 to 55 Hz at single amplitude of 0.75 mm (Contact opening: max. 1 msec.)               |
| Shock resistance          |                                                     |                                        | Min. 294 m/s <sup>2</sup> (Contact opening: Max. 1 msec.)                                |
| Contact resistance        | AgNi alloy contact type                             |                                        | Terminal type: Max. 50 mΩ<br>Wire leads: Max. 100 mΩ (by voltage drop 1 A 6 to 8 V DC)   |
|                           | AgNi alloy + Au-clad contact type                   |                                        | Terminal type: Max. 50 mΩ<br>Wire leads: Max. 100 mΩ (by voltage drop 0.1 A 6 to 8 V DC) |
| Allowable operating speed |                                                     |                                        | 1 to 500 mm/sec.                                                                         |
| Max. operating cycle rate |                                                     |                                        | 120 cpm                                                                                  |
| Ambient temperature       |                                                     |                                        | −40°C to +85°C                                                                           |
| Unit weight               |                                                     |                                        | Approx. 7 g (Terminal type)                                                              |
| Protection grade          |                                                     |                                        | IP67 (except exposed terminal part of terminal type)                                     |

Note: Test conditions and judgement are complying with "NECA C4505".

### ■ Operating characteristics

| Actuator               | 8th digit of Part No. | Operating Force OF, Max. | Release Force RF, Min. | Pretravel PT, Max. | Movement Differential MD, Max. | Overtravel OT, Min. | Operating position OP |
|------------------------|-----------------------|--------------------------|------------------------|--------------------|--------------------------------|---------------------|-----------------------|
| Pin plunger            | 4                     | 0.98N                    | 0.25N                  | 1.6 mm             | 0.4 mm                         | 0.8 mm              | 14.7±0.6 mm           |
|                        | 5                     | 1.96N                    | 0.39N                  | 1.6 mm             | 0.4 mm                         | 0.8 mm              | 14.7±0.6 mm           |
| Hinge lever            | 4                     | 0.59N                    | 0.098N                 | 3.2 mm             | 1.2 mm                         | 1.2 mm              | 15.3±1.2 mm           |
|                        | 5                     | 1.18N                    | 0.13N                  | 3.2 mm             | 1.2 mm                         | 1.2 mm              | 15.3±1.2 mm           |
| Simulated roller lever | 4                     | 0.59N                    | 0.098N                 | 3.2 mm             | 1.2 mm                         | 1.2 mm              | 18.5±1.2 mm           |
|                        | 5                     | 1.18N                    | 0.13N                  | 3.2 mm             | 1.2 mm                         | 1.2 mm              | 18.5±1.2 mm           |
| Short roller lever     | 4                     | 1.08N                    | 0.20N                  | 1.6 mm             | 0.5 mm                         | 0.8 mm              | 20.7±0.8 mm           |
|                        | 5                     | 2.16N                    | 0.39N                  | 1.6 mm             | 0.5 mm                         | 0.8 mm              | 20.7±0.8 mm           |
| Roller lever           | 4                     | 0.59N                    | 0.098N                 | 3.2 mm             | 1.2 mm                         | 1.2 mm              | 20.7±1.2 mm           |
|                        | 5                     | 1.18N                    | 0.13N                  | 3.2 mm             | 1.2 mm                         | 1.2 mm              | 20.7±1.2 mm           |

## DIMENSIONS

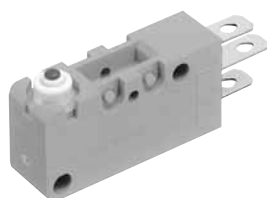
(Unit: mm) General tolerance: ±0.4

The CAD data of the products with a **CAD Data** mark can be downloaded from: <http://industrial.panasonic.com/ac/e/>

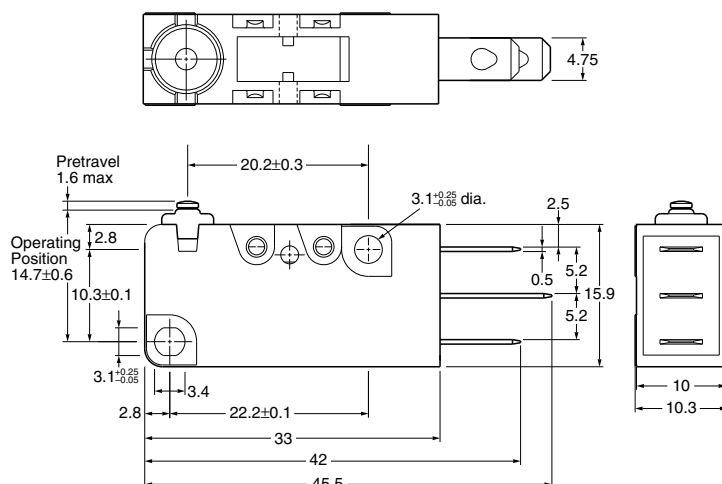
### ■ .187 quick-connect terminal

Pin plunger

**CAD Data**



External dimensions



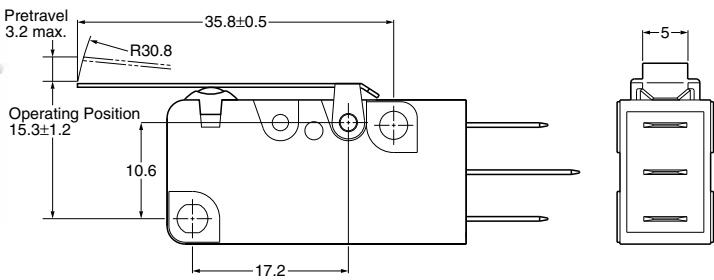
ABV (BV) Turquoise Switches

Hinge lever

CAD Data



External dimensions



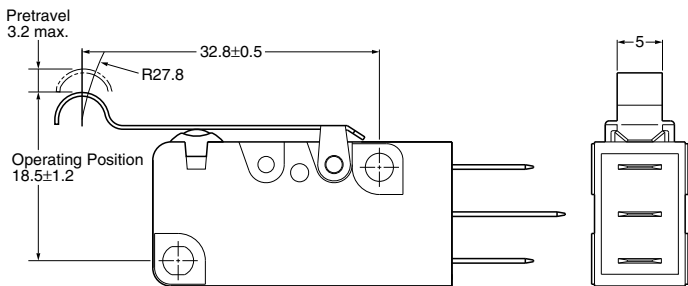
|                                |            |
|--------------------------------|------------|
| Pretravel PT, Max.             | 3.2mm      |
| Movement Differential MD, Max. | 1.2mm      |
| Overtravel OT, Min.            | 1.2mm      |
| Operating Position OP          | 15.3±1.2mm |

Simulated roller lever

CAD Data



External dimensions



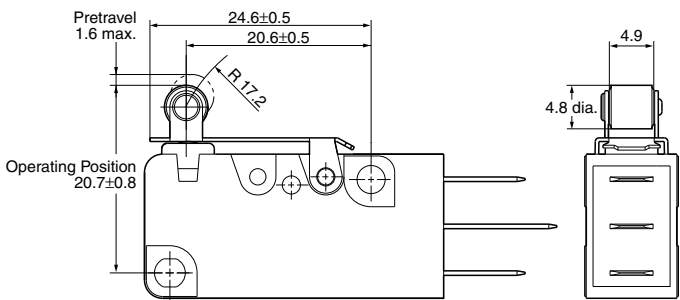
|                                |            |
|--------------------------------|------------|
| Pretravel PT, Max.             | 3.2mm      |
| Movement Differential MD, Max. | 1.2mm      |
| Overtravel OT, Min.            | 1.2mm      |
| Operating Position OP          | 18.5±1.2mm |

Short roller lever

CAD Data



External dimensions



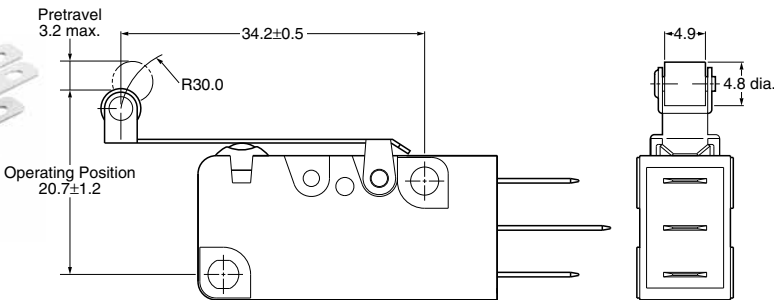
|                                |            |
|--------------------------------|------------|
| Pretravel PT, Max.             | 1.6mm      |
| Movement Differential MD, Max. | 0.5mm      |
| Overtravel OT, Min.            | 0.8mm      |
| Operating Position OP          | 20.7±0.8mm |

Roller lever

CAD Data



External dimensions



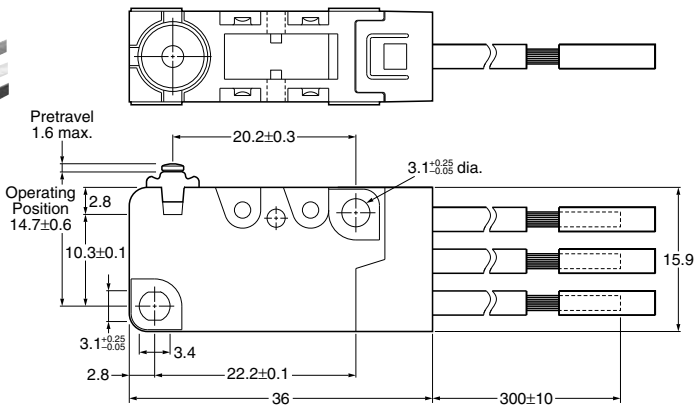
|                                |            |
|--------------------------------|------------|
| Pretravel PT, Max.             | 3.2mm      |
| Movement Differential MD, Max. | 1.2mm      |
| Overtravel OT, Min.            | 1.2mm      |
| Operating Position OP          | 20.7±1.2mm |

Wire Leads

CAD Data



External dimensions



Notes: 1. Dimensions of the actuator types are the same as those of corresponding solder and .187 quick-connect terminal types.  
2. With UL and CSA approved products, lead wire is changed to UL compliant (AWG18).

Thickness of the lead wire:  
0.75mm<sup>2</sup> (Note 2)  
Color of the lead wire  
NC .....red  
NO .....white  
COM ...black

# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Panasonic:

[ABV1215613R](#)