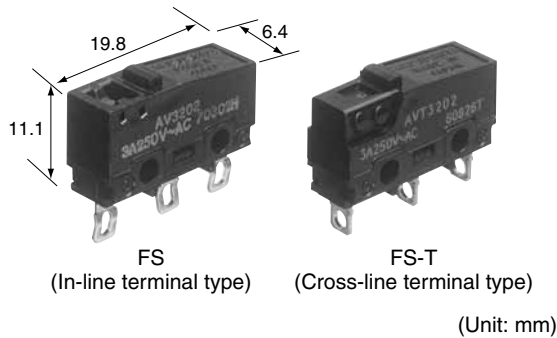




Subminiature Size Switches with Excellent Operating Position Accuracy

AV3/AVM3/AVT3/AVL3 (FS/FS-T) SWITCHES



RoHS compliant

FEATURES

- Excellent operating position accuracy
- Flux-resistant construction with integrally molded terminals
- Added to former in-line terminal (AV3/AVM3), range now includes (AVT3/AVL3) type with cross-line terminals
- Self-standing terminal structure (AV3/AVM3 type) with temporarily fix switch to PC Board
- Lever pivot position can be changed
- Series of low-level circuit type switches added to range
- Protection grade: IP40

PRODUCT TYPES TABLE

■ Combination of Operating Force (OF) and Applicable current range

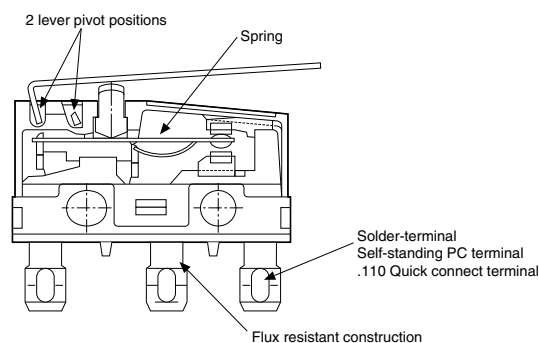
| Expected life | Contact | Applicable current range | | | | Operating Force (OF) | | | |
|-------------------|---|--------------------------|-------|----|----|----------------------|-------|-------|-------|
| | | 1mA | 100mA | 3A | 5A | 0.25N | 0.49N | 0.98N | 1.47N |
| Standard version | AgNi alloy contact | | | ● | | | ● | ● | |
| | CuNi alloy + AgNi alloy + Au-clad triple layer contact type (End of part No.: 61) | ● | | | | ● | ● | ● | |
| | CuNi alloy + Au-clad double layer contact For low-level circuit (End of part No.: 64) | ● | | | | ● | ● | ● | |
| Long life version | AgNi alloy contact | | | ● | | | | | ● |
| | CuNi alloy + AgNi alloy + Au-clad triple layer contact type (End of part No.: 61) | ● | | | | | | | ● |
| | CuNi alloy + Au-clad double layer contact For low-level circuit (End of part No.: 64) | ● | | | | | | | ● |

Note: For high capacity contact rating up to 10.1 A, please refer to PS (AVM3□□□P) switches catalog.

CONSTRUCTION

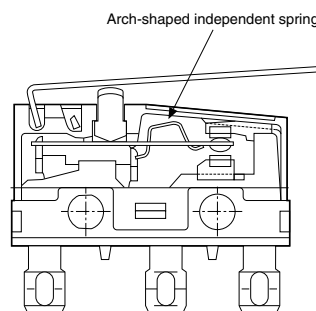
■ Standard version (FS type)

- As for FS-T switches, the terminals are the different shape.

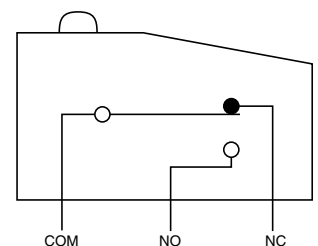


■ Long life version (FS type)

- As for FS-T switches, the terminals are the different shape.

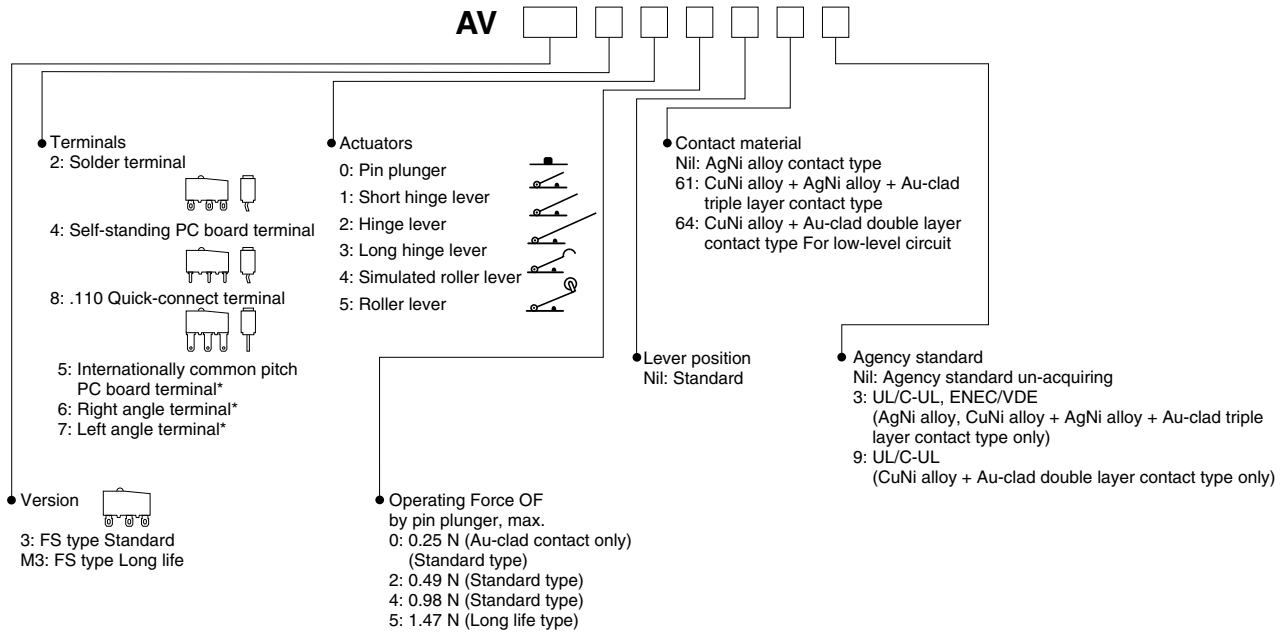


CONTACT FORM

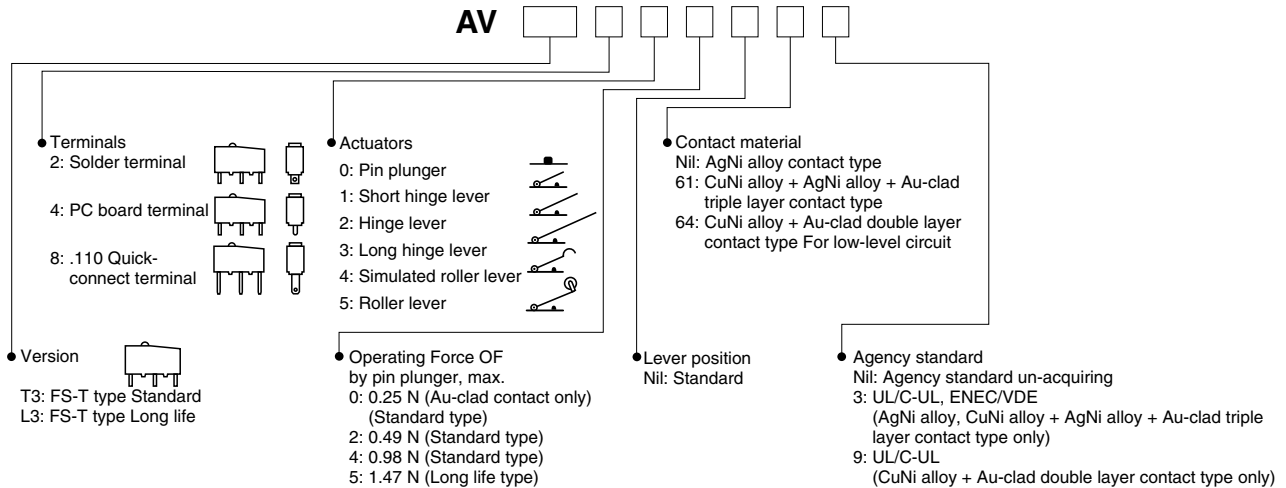


ORDERING INFORMATION

■ FS switches (In-line terminal type)



■ FS-T switches (Cross-line terminal type)



Note: Since the switches of terminal of an asterisk "*" will be manufactured after an order receipt, please contact our office.

PRODUCT TYPES

(Color of plunger; AgNi alloy contact type: black, CuNi alloy + AgNi alloy + Au-clad triple layer contact type: red, CuNi alloy + Au-clad contact type: green)

■ FS type, Standard version (In-line terminal type)

1) AgNi alloy contact type

| Actuator | Operating Force OF, Max. | Part No. | | |
|------------------------|--------------------------|-----------------|---------------------------------|--------------------|
| | | Solder terminal | Self-standing PC board terminal | .110 Quick-connect |
| Pin plunger | 0.49N | AV32023 | AV34023 | AV38023 |
| | 0.98N | AV32043 | AV34043 | AV38043 |
| Short hinge lever | 0.20N | AV32123 | AV34123 | AV38123 |
| | 0.39N | AV32143 | AV34143 | AV38143 |
| Hinge lever | 0.16N | AV32223 | AV34223 | AV38223 |
| | 0.34N | AV32243 | AV34243 | AV38243 |
| Long hinge lever | 0.12N | AV32323 | AV34323 | AV38323 |
| | 0.25N | AV32343 | AV34343 | AV38343 |
| Simulated roller lever | 0.16N | AV32423 | AV34423 | AV38423 |
| | 0.34N | AV32443 | AV34443 | AV38443 |
| Roller lever | 0.20N | AV32523 | AV34523 | AV38523 |
| | 0.39N | AV32543 | AV34543 | AV38543 |

2) CuNi alloy + AgNi alloy + Au-clad triple layer contact type

| Actuator | Operating Force OF, Max. | Part No. | | |
|------------------------|--------------------------|-----------------|---------------------------------|--------------------|
| | | Solder terminal | Self-standing PC board terminal | .110 Quick-connect |
| Pin plunger | 0.25N | AV3200613 | AV3400613 | AV3800613 |
| | 0.49N | AV3202613 | AV3402613 | AV3802613 |
| | 0.98N | AV3204613 | AV3404613 | AV3804613 |
| Short hinge lever | 0.098N | AV3210613 | AV3410613 | AV3810613 |
| | 0.20N | AV3212613 | AV3412613 | AV3812613 |
| | 0.39N | AV3214613 | AV3414613 | AV3814613 |
| Hinge lever | 0.078N | AV3220613 | AV3420613 | AV3820613 |
| | 0.16N | AV3222613 | AV3422613 | AV3822613 |
| | 0.34N | AV3224613 | AV3424613 | AV3824613 |
| Long hinge lever | 0.12N | AV3232613 | AV3432613 | AV3832613 |
| | 0.25N | AV3234613 | AV3434613 | AV3834613 |
| Simulated roller lever | 0.16N | AV3242613 | AV3442613 | AV3842613 |
| | 0.34N | AV3244613 | AV3444613 | AV3844613 |
| Roller lever | 0.20N | AV3252613 | AV3452613 | AV3852613 |
| | 0.39N | AV3254613 | AV3454613 | AV3854613 |

3) CuNi alloy + Au-clad contact type, for low-level circuit

| Actuator | Operating Force OF, Max. | Part No. | | |
|------------------------|--------------------------|-----------------|---------------------------------|--------------------|
| | | Solder terminal | Self-standing PC board terminal | .110 Quick-connect |
| Pin plunger | 0.25N | AV3200649 | AV3400649 | AV3800649 |
| | 0.49N | AV3202649 | AV3402649 | AV3802649 |
| | 0.98N | AV3204649 | AV3404649 | AV3804649 |
| Short hinge lever | 0.098N | AV3210649 | AV3410649 | AV3810649 |
| | 0.20N | AV3212649 | AV3412649 | AV3812649 |
| | 0.39N | AV3214649 | AV3414649 | AV3814649 |
| Hinge lever | 0.078N | AV3220649 | AV3420649 | AV3820649 |
| | 0.16N | AV3222649 | AV3422649 | AV3822649 |
| | 0.34N | AV3224649 | AV3424649 | AV3824649 |
| Long hinge lever | 0.12N | AV3232649 | AV3432649 | AV3832649 |
| | 0.25N | AV3234649 | AV3434649 | AV3834649 |
| Simulated roller lever | 0.16N | AV3242649 | AV3442649 | AV3842649 |
| | 0.34N | AV3244649 | AV3444649 | AV3844649 |
| Roller lever | 0.20N | AV3252649 | AV3452649 | AV3852649 |
| | 0.39N | AV3254649 | AV3454649 | AV3854649 |

Note: When ordering, please refer to "ORDERING INFORMATION".

AV3/AVM3/AVT3/AVL3 (FS/FS-T) Subminiature Switches

■ FS-T type Standard version (Cross-line terminal type)

1) AgNi alloy contact type

| Actuator | Operating Force OF, Max. | Part No. | | |
|------------------------|-----------------------------|-----------------|-------------------|--------------------|
| | | Solder terminal | PC board terminal | .110 Quick-connect |
| Pin plunger | 0.49N | AVT32023 | AVT34023 | AVT38023 |
| | 0.98N | AVT32043 | AVT34043 | AVT38043 |
| Short hinge lever | 0.20N | AVT32123 | AVT34123 | AVT38123 |
| | 0.39N | AVT32143 | AVT34143 | AVT38143 |
| Hinge lever | 0.16N | AVT32223 | AVT34223 | AVT38223 |
| | 0.34N | AVT32243 | AVT34243 | AVT38243 |
| Long hinge lever | 0.12N | AVT32323 | AVT34323 | AVT38323 |
| | 0.25N | AVT32343 | AVT34343 | AVT38343 |
| Simulated roller lever | 0.16N | AVT32423 | AVT34423 | AVT38423 |
| | 0.34N | AVT32443 | AVT34443 | AVT38443 |
| Roller lever | 0.20N | AVT32523 | AVT34523 | AVT38523 |
| | 0.39N | AVT32543 | AVT34543 | AVT38543 |

2) CuNi alloy + AgNi alloy + Au-clad triple layer contact type

| Actuator | Operating Force OF, Max. | Part No. | | |
|------------------------|-----------------------------|-----------------|-------------------|--------------------|
| | | Solder terminal | PC board terminal | .110 Quick-connect |
| Pin plunger | 0.25N | AVT3200613 | AVT3400613 | AVT3800613 |
| | 0.49N | AVT3202613 | AVT3402613 | AVT3802613 |
| | 0.98N | AVT3204613 | AVT3404613 | AVT3804613 |
| Short hinge lever | 0.098N | AVT3210613 | AVT3410613 | AVT3810613 |
| | 0.20N | AVT3212613 | AVT3412613 | AVT3812613 |
| | 0.39N | AVT3214613 | AVT3414613 | AVT3814613 |
| Hinge lever | 0.078N | AVT3220613 | AVT3420613 | AVT3820613 |
| | 0.16N | AVT3222613 | AVT3422613 | AVT3822613 |
| | 0.34N | AVT3224613 | AVT3424613 | AVT3824613 |
| Long hinge lever | 0.12N | AVT3232613 | AVT3432613 | AVT3832613 |
| | 0.25N | AVT3234613 | AVT3434613 | AVT3834613 |
| Simulated roller lever | 0.16N | AVT3242613 | AVT3442613 | AVT3842613 |
| | 0.34N | AVT3244613 | AVT3444613 | AVT3844613 |
| Roller lever | 0.20N | AVT3252613 | AVT3452613 | AVT3852613 |
| | 0.39N | AVT3254613 | AVT3454613 | AVT3854613 |

3) CuNi alloy + Au-clad double layer contact type, for low-level circuit

| Actuator | Operating Force OF, Max. | Part No. | | |
|------------------------|-----------------------------|-----------------|-------------------|--------------------|
| | | Solder terminal | PC board terminal | .110 Quick-connect |
| Pin plunger | 0.25N | AVT3200649 | AVT3400649 | AVT3800649 |
| | 0.49N | AVT3202649 | AVT3402649 | AVT3802649 |
| | 0.98N | AVT3204649 | AVT3404649 | AVT3804649 |
| Short hinge lever | 0.098N | AVT3210649 | AVT3410649 | AVT3810649 |
| | 0.20N | AVT3212649 | AVT3412649 | AVT3812649 |
| | 0.39N | AVT3214649 | AVT3414649 | AVT3814649 |
| Hinge lever | 0.078N | AVT3220649 | AVT3420649 | AVT3820649 |
| | 0.16N | AVT3222649 | AVT3422649 | AVT3822649 |
| | 0.34N | AVT3224649 | AVT3424649 | AVT3824649 |
| Long hinge lever | 0.12N | AVT3232649 | AVT3432649 | AVT3832649 |
| | 0.25N | AVT3234649 | AVT3434649 | AVT3834649 |
| Simulated roller lever | 0.16N | AVT3242649 | AVT3442649 | AVT3842649 |
| | 0.34N | AVT3244649 | AVT3444649 | AVT3844649 |
| Roller lever | 0.20N | AVT3252649 | AVT3452649 | AVT3852649 |
| | 0.39N | AVT3254649 | AVT3454649 | AVT3854649 |

Note: When ordering, please refer to "ORDERING INFORMATION".

■ FS type, Long life version (In-line terminal type)

1) AgNi alloy contact type

| Actuator | Operating Force OF, Max. | Part No. | | |
|------------------------|-----------------------------|-----------------|---------------------------------|--------------------|
| | | Solder terminal | Self-standing PC board terminal | .110 Quick-connect |
| Pin plunger | 1.47N | AVM32053 | AVM34053 | AVM38053 |
| Short hinge lever | 0.59N | AVM32153 | AVM34153 | AVM38153 |
| Hinge lever | 0.54N | AVM32253 | AVM34253 | AVM38253 |
| Long hinge lever | 0.44N | AVM32353 | AVM34353 | AVM38353 |
| Simulated roller lever | 0.54N | AVM32453 | AVM34453 | AVM38453 |
| Roller lever | 0.59N | AVM32553 | AVM34553 | AVM38553 |

2) CuNi alloy + AgNi alloy + Au-clad triple layer contact type

| Actuator | Operating Force OF, Max. | Part No. | | |
|------------------------|-----------------------------|-----------------|---------------------------------|--------------------|
| | | Solder terminal | Self-standing PC board terminal | .110 Quick-connect |
| Pin plunger | 1.47N | AVM3205613 | AVM3405613 | AVM3805613 |
| Short hinge lever | 0.59N | AVM3215613 | AVM3415613 | AVM3815613 |
| Hinge lever | 0.54N | AVM3225613 | AVM3425613 | AVM3825613 |
| Long hinge lever | 0.44N | AVM3235613 | AVM3435613 | AVM3835613 |
| Simulated roller lever | 0.54N | AVM3245613 | AVM3445613 | AVM3845613 |
| Roller lever | 0.59N | AVM3255613 | AVM3455613 | AVM3855613 |

3) CuNi alloy + Au-clad double layer contact type, for low-level circuit

| Actuator | Operating Force OF, Max. | Part No. | | |
|------------------------|-----------------------------|-----------------|---------------------------------|--------------------|
| | | Solder terminal | Self-standing PC board terminal | .110 Quick-connect |
| Pin plunger | 1.47N | AVM3205649 | AVM3405649 | AVM3805649 |
| Short hinge lever | 0.59N | AVM3215649 | AVM3415649 | AVM3815649 |
| Hinge lever | 0.54N | AVM3225649 | AVM3425649 | AVM3825649 |
| Long hinge lever | 0.44N | AVM3235649 | AVM3435649 | AVM3835649 |
| Simulated roller lever | 0.54N | AVM3245649 | AVM3445649 | AVM3845649 |
| Roller lever | 0.59N | AVM3255649 | AVM3455649 | AVM3855649 |

Note: When ordering, please refer to "ORDERING INFORMATION".

■ FS-T Long life version (Cross-line terminal type)

1) AgNi alloy contact type

| Actuator | Operating Force OF, Max. | Part No. | | |
|------------------------|-----------------------------|-----------------|-------------------|--------------------|
| | | Solder terminal | PC board terminal | .110 Quick-connect |
| Pin plunger | 1.47N | AVL32053 | AVL34053 | AVL38053 |
| Short hinge lever | 0.59N | AVL32153 | AVL34153 | AVL38153 |
| Hinge lever | 0.54N | AVL32253 | AVL34253 | AVL38253 |
| Long hinge lever | 0.44N | AVL32353 | AVL34353 | AVL38353 |
| Simulated roller lever | 0.54N | AVL32453 | AVL34453 | AVL38453 |
| Roller lever | 0.59N | AVL32553 | AVL34553 | AVL38553 |

2) CuNi alloy + AgNi alloy + Au-clad triple layer contact type

| Actuator | Operating Force OF, Max. | Part No. | | |
|------------------------|-----------------------------|-----------------|-------------------|--------------------|
| | | Solder terminal | PC board terminal | .110 Quick-connect |
| Pin plunger | 1.47N | AVL3205613 | AVL3405613 | AVL3805613 |
| Short hinge lever | 0.59N | AVL3215613 | AVL3415613 | AVL3815613 |
| Hinge lever | 0.54N | AVL3225613 | AVL3425613 | AVL3825613 |
| Long hinge lever | 0.44N | AVL3235613 | AVL3435613 | AVL3835613 |
| Simulated roller lever | 0.54N | AVL3245613 | AVL3445613 | AVL3845613 |
| Roller lever | 0.59N | AVL3255613 | AVL3455613 | AVL3855613 |

3) CuNi alloy + Au-clad double layer contact type, for low-level circuit

| Actuator | Operating Force OF, Max. | Part No. | | |
|------------------------|-----------------------------|-----------------|-------------------|--------------------|
| | | Solder terminal | PC board terminal | .110 Quick-connect |
| Pin plunger | 1.47N | AVL3205649 | AVL3405649 | AVL3805649 |
| Short hinge lever | 0.59N | AVL3215649 | AVL3415649 | AVL3815649 |
| Hinge lever | 0.54N | AVL3225649 | AVL3425649 | AVL3825649 |
| Long hinge lever | 0.44N | AVL3235649 | AVL3435649 | AVL3835649 |
| Simulated roller lever | 0.54N | AVL3245649 | AVL3445649 | AVL3845649 |
| Roller lever | 0.59N | AVL3255649 | AVL3455649 | AVL3855649 |

SPECIFICATIONS

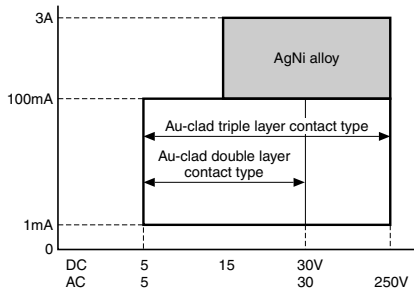
(Common for FS type and FS-T type)

■ Contact rating

| Type | Standard version | | | | Long life version | | | |
|-------------------------------|---|---|---|--|---|---|---|--|
| Contact specification | AgNi alloy contact type Plunger color: Black | | Au-clad contact type | | AgNi alloy contact type Plunger color: Black | | Au-clad contact type | |
| | | | Triple layer contact type Plunger color: Red | Double layer contact type For low-level circuit Plunger color: Green | | | Triple layer contact type Plunger color: Red | Double layer contact type For low-level circuit Plunger color: Green |
| Load style Contact voltage | Resistive load ($\cos\phi \approx 1$) | Inductive load ($\cos\phi \approx 0.6$ to 0.7) | Resistive load ($\cos\phi \approx 1$) | Inductive load ($\cos\phi \approx 1$) | Resistive load ($\cos\phi \approx 1$) | Inductive load ($\cos\phi \approx 0.6$ to 0.7) | Resistive load ($\cos\phi \approx 1$) | Inductive load ($\cos\phi \approx 1$) |
| 125V AC | 3A | 2A | 0.1A | — | 5A | 3A | 0.1A | — |
| 250V AC | 3A | 2A | 0.1A | — | 5A | 3A | 0.1A | — |
| 30V DC | 3A | 2A | 0.1A | 0.1A | 5A | 3A | 0.1A | 0.1A |
| 125V DC | 0.4A | 0.05A | — | — | 0.4A | 0.05A | — | — |

Note: Time constant shall be less than 7 msec. for DC inductive loads.

• Contact material reference chart classified by load voltage & current



Note: If the contact is being used in the constant low-level circuit load range, the Au-clad double layer contact type is recommended. If there is a danger of the current being less than 0.5 A, for instance if the contact is being turned on and off, the Au-clad triple layer contact type is recommended.

■ Characteristics

| Item | | Standard version | | Long life version | | Test condition |
|---|---|--|--|--|---------------------------|---|
| | | AgNi alloy contact type | Au-clad contact type | AgNi alloy contact type | Au-clad contact type | |
| Expected life | Mechanical life | Min. 5×10^5 (OTmax.) | | Min. 3×10^7 (OT: Specified value) Min. 10^7 (OTmax.) | | at 60 cpm |
| | Electrical life | Min. 5×10^4 | Min. 2×10^5 | 5×10^4 | 2×10^5 | at 20 cpm, at rated load, OT max. |
| Insulation resistance | | Min. 100M Ω | | | | at 500V DC |
| Dielectric strength | Between non-continuous terminals | 1,000 Vrms | | | | |
| | Between each terminal and other exposed metal parts | 1,500 Vrms | | | | |
| | Between each terminal and ground | 1,500 Vrms | | | | |
| Contact resistance (Initial) | | Max. 50 m Ω | Max. 100 m Ω | Max. 50 m Ω | Max. 50 m Ω | Ag alloy contact type: by voltage drop 1 A, 6 to 8V DC Au-clad contact type: by voltage drop 0.1 A, 6 to 8V DC |
| Vibration resistance (Pin plunger type) | | 10 to 55 Hz at single amplitude of 0.75mm | | | | Contact opening: Max. 1 msec. |
| Shock resistance (Pin plunger type) | | 294 m/s ² min. (OF 0.98 N type) 147 m/s ² min. (OF 0.49 N type) | 294 m/s ² min. (OF 0.98 N type) 147 m/s ² min. (OF 0.49 N type) 49 m/s ² min. (OF 0.25 N type) | Min. 294 m/s ² | Min. 294 m/s ² | Contact opening: 1 msec. max. |
| Allowable operating speed (no load) | | 0.1 to 1,000 mm/sec. | | | | |
| Max. operating cycle rate (no load) | | 300 cpm | | | | |
| Ambient temperature | | -25°C to +85°C | | | | no freezing and condensing |
| Unit weight | | Approx. 2g | | | | |
| Protection grade | | IP40 | | | | |

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

■ Operating characteristics

1) Pin plunger

| 4th digit number of Part No. | Operating Force OF, Max. | Release Force RF, Min. | Pretravel PT, Max. | Movement Differential MD, Max. | Overtravel OT, Min. | Operating Position OP |
|------------------------------|--------------------------|------------------------|--------------------|--------------------------------|---------------------|--|
| 0 | 0.25N | 0.020N | 0.6mm | 0.1mm | 0.4mm | Distance from mounting holes: 8.4±0.3mm Distance from stand-off: FS 11.8±0.4mm FS-T 11.7±0.4mm |
| 2 | 0.49N | 0.074N | | | | |
| 4 | 0.98N | 0.15N | | | | |
| 5 | 1.47N | 0.20N | | | | |

2) Short hinge lever

| 4th digit number of Part No. | Operating Force OF, Max. | Release Force RF, Min. | Pretravel PT, Max. | Movement Differential MD, Max. | Overtravel OT, Min. | Operating Position OP |
|------------------------------|--------------------------|------------------------|--------------------|--------------------------------|---------------------|--|
| 0 | 0.098N | 0.004N | 2.5mm | 0.5mm | 0.8mm | Distance from mounting holes: 8.8±0.8mm Distance from stand-off: FS 12.2±0.9mm FS-T 12.1±0.9mm |
| 2 | 0.20N | 0.017N | | | | |
| 4 | 0.39N | 0.034N | | | | |
| 5 | 0.59N | 0.039N | | | | |

3) Hinge lever

| 4th digit number of Part No. | Operating Force OF, Max. | Release Force RF, Min. | Pretravel PT, Max. | Movement Differential MD, Max. | Overtravel OT, Min. | Operating Position OP |
|------------------------------|--------------------------|------------------------|--------------------|--------------------------------|---------------------|--|
| 0 | 0.078N | 0.003N | 2.8mm | 0.8mm | 1.2mm | Distance from mounting holes: 8.8±0.8mm Distance from stand-off: FS 12.2±0.9mm FS-T 12.1±0.9mm |
| 2 | 0.16N | 0.015N | | | | |
| 4 | 0.34N | 0.029N | | | | |
| 5 | 0.54N | 0.034N | | | | |

4) Long hinge lever

| 4th digit number of Part No. | Operating Force OF, Max. | Release Force RF, Min. | Pretravel PT, Max. | Movement Differential MD, Max. | Overtravel OT, Min. | Operating Position OP |
|------------------------------|--------------------------|------------------------|--------------------|--------------------------------|---------------------|--|
| 0 | — | — | 3.5mm | 1.0mm | 1.6mm | Distance from mounting holes: 8.8±1.2mm Distance from stand-off: FS 12.2±1.3mm FS-T 12.1±1.3mm |
| 2 | 0.12N | 0.012N | | | | |
| 4 | 0.25N | 0.025N | | | | |
| 5 | 0.44N | 0.029N | | | | |

5) Simulated roller lever

| 4th digit number of Part No. | Operating Force OF, Max. | Release Force RF, Min. | Pretravel PT, Max. | Movement Differential MD, Max. | Overtravel OT, Min. | Operating Position OP |
|------------------------------|--------------------------|------------------------|--------------------|--------------------------------|---------------------|--|
| 0 | — | — | 2.8mm | 0.8mm | 1.2mm | Distance from mounting holes: 11.65±0.8mm Distance from stand-off: FS 15.05±0.9mm FS-T 14.95±0.9mm |
| 2 | 0.16N | 0.015N | | | | |
| 4 | 0.34N | 0.029N | | | | |
| 5 | 0.54N | 0.034N | | | | |

6) Roller lever

| 4th digit number of Part No. | Operating Force OF, Max. | Release Force RF, Min. | Pretravel PT, Max. | Movement Differential MD, Max. | Overtravel OT, Min. | Operating Position OP |
|------------------------------|--------------------------|------------------------|--------------------|--------------------------------|---------------------|---|
| 0 | — | — | 2.5mm | 0.5mm | 0.8mm | Distance from mounting holes: 14.5±0.8mm Distance from stand-off: FS 17.9±0.9mm FS-T 17.8±0.9mm |
| 2 | 0.20N | 0.017N | | | | |
| 4 | 0.39N | 0.034N | | | | |
| 5 | 0.59N | 0.039N | | | | |

AV3/AVM3/AVT3/AVL3 (FS/FS-T) Subminiature Switches

DIMENSIONS

(Unit: mm) General tolerance: ±0.25

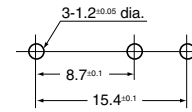
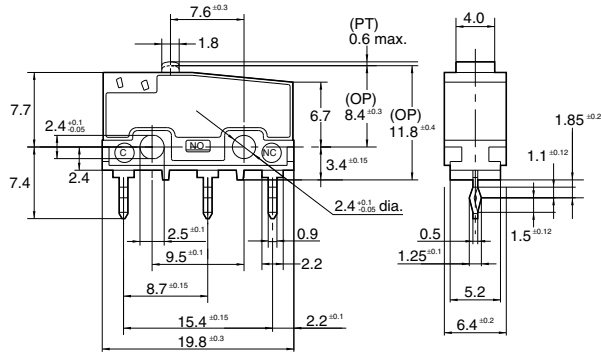
The CAD data of the products with a **CAD Data** mark can be downloaded from: <http://industrial.panasonic.com/ac/e/>

FS switches (In-line terminal type)

1) Self-standing PC board terminal

Pin plunger

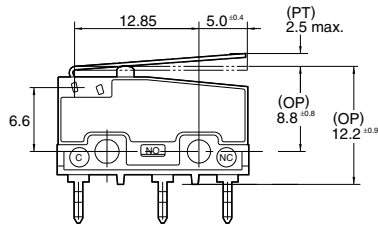
CAD Data



| | | |
|--------------------------------|-----------------------------|------------|
| Pretravel PT, Max. | 0.6mm | |
| Movement Differential MD, Max. | 0.1mm | |
| Overtravel OT, Min. | 0.4mm | |
| Operating Position OP | Distance from mounting hole | 8.4±0.3mm |
| | Distance from stand-off | 11.8±0.4mm |

Short hinge lever

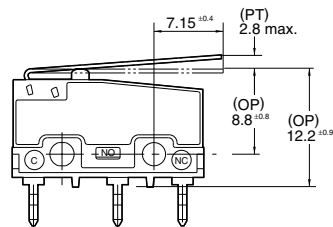
CAD Data



| | | |
|--------------------------------|-----------------------------|------------|
| Pretravel PT, Max. | 2.5mm | |
| Movement Differential MD, Max. | 0.5mm | |
| Overtravel OT, Min. | 0.8mm | |
| Operating Position OP | Distance from mounting hole | 8.8±0.8mm |
| | Distance from stand-off | 12.2±0.9mm |

Hinge lever

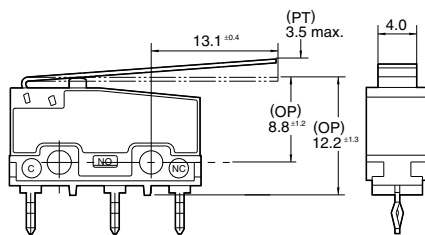
CAD Data



| | | |
|--------------------------------|-----------------------------|------------|
| Pretravel PT, Max. | 2.8mm | |
| Movement Differential MD, Max. | 0.8mm | |
| Overtravel OT, Min. | 1.2mm | |
| Operating Position OP | Distance from mounting hole | 8.8±0.8mm |
| | Distance from stand-off | 12.2±0.9mm |

Long hinge lever

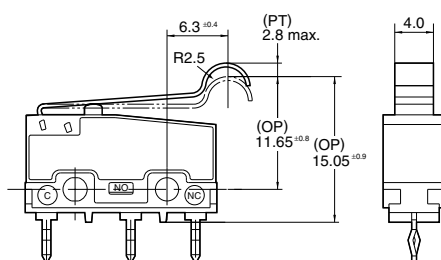
CAD Data



| | | |
|--------------------------------|-----------------------------|------------|
| Pretravel PT, Max. | 3.5mm | |
| Movement Differential MD, Max. | 1.0mm | |
| Overtravel OT, Min. | 1.6mm | |
| Operating Position OP | Distance from mounting hole | 8.8±1.2mm |
| | Distance from stand-off | 12.2±1.3mm |

Simulated roller lever

CAD Data

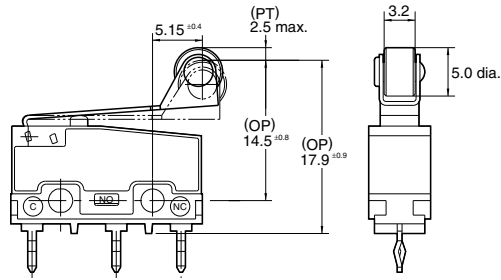


| | | |
|--------------------------------|-----------------------------|-------------|
| Pretravel PT, Max. | 2.8mm | |
| Movement Differential MD, Max. | 0.8mm | |
| Overtravel OT, Min. | 1.2mm | |
| Operating Position OP | Distance from mounting hole | 11.65±0.8mm |
| | Distance from stand-off | 15.05±0.9mm |

AV3/AVM3/AVT3/AVL3 (FS/FS-T) Subminiature Switches

Roller lever

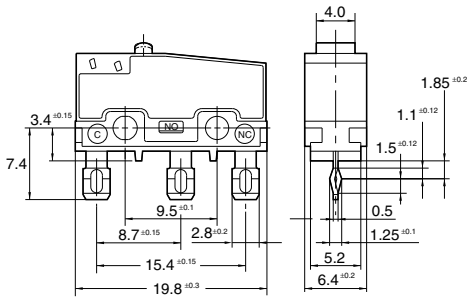
CAD Data



| | | |
|--------------------------------|-----------------------------|------------|
| Pretravel PT, Max. | 2.5mm | |
| Movement Differential MD, Max. | 0.5mm | |
| Overtravel OT, Min. | 0.8mm | |
| Operating Position OP | Distance from mounting hole | 14.5±0.8mm |
| | Distance from stand-off | 17.9±0.9mm |

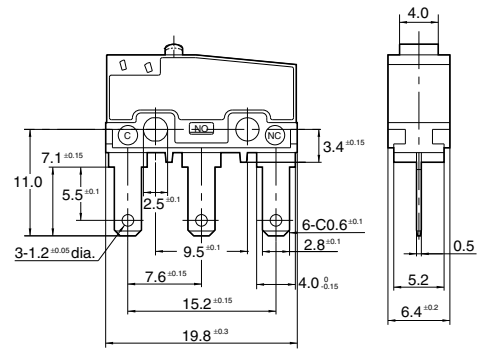
2) Solder terminal

CAD Data



3) .110 Quick-connect terminal

CAD Data



Note: Dimensions other than drawn above is same as self-standing PC board terminal.

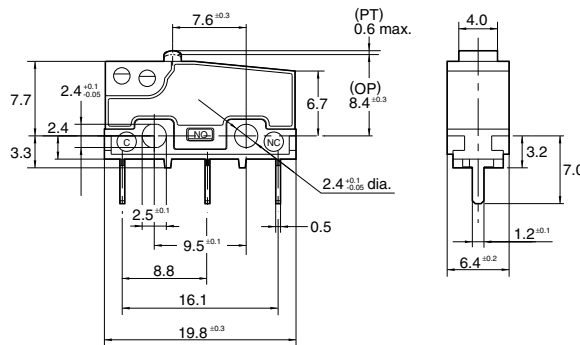
Note: Dimensions other than drawn above is same as self-standing PC board terminal.

FS-T switches (Cross-line terminal type)

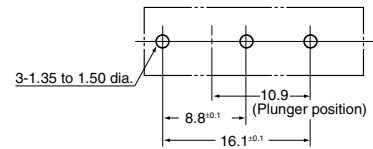
1) PC board terminal

Pin plunger

CAD Data



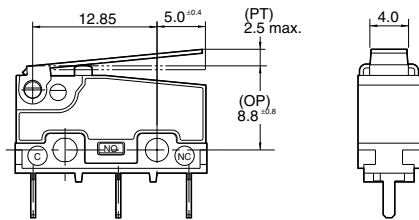
PC board pattern



| | | |
|--------------------------------|-----------------------------|------------|
| Pretravel PT, Max. | 0.6mm | |
| Movement Differential MD, Max. | 0.1mm | |
| Overtravel OT, Min. | 0.4mm | |
| Operating Position OP | Distance from mounting hole | 8.4±0.3mm |
| | Distance from stand-off | 11.7±0.4mm |

Short hinge lever

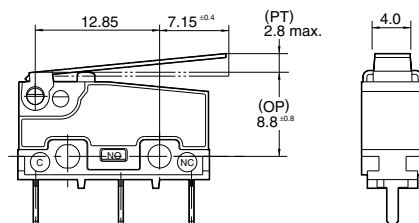
CAD Data



| | | |
|--------------------------------|-----------------------------|------------|
| Pretravel PT, Max. | 2.5mm | |
| Movement Differential MD, Max. | 0.5mm | |
| Overtravel OT, Min. | 0.8mm | |
| Operating Position OP | Distance from mounting hole | 8.8±0.8mm |
| | Distance from stand-off | 12.1±0.9mm |

Hinge lever

CAD Data

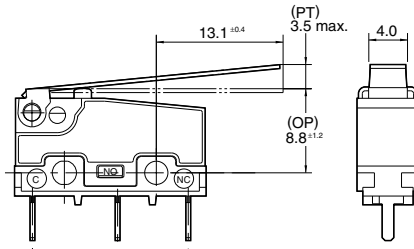


| | | |
|--------------------------------|-----------------------------|------------|
| Pretravel PT, Max. | 2.8mm | |
| Movement Differential MD, Max. | 0.8mm | |
| Overtravel OT, Min. | 1.2mm | |
| Operating Position OP | Distance from mounting hole | 8.8±0.8mm |
| | Distance from stand-off | 12.1±0.9mm |

AV3/AVM3/AVT3/AVL3 (FS/FS-T) Subminiature Switches

Long hinge lever

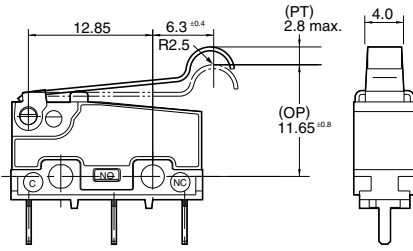
CAD Data



| | | |
|--------------------------------|-----------------------------|------------|
| Pretravel PT, Max. | 3.5mm | |
| Movement Differential MD, Max. | 1.0mm | |
| Overtravel OT, Min. | 1.6mm | |
| Operating Position OP | Distance from mounting hole | 8.8±1.2mm |
| | Distance from stand-off | 12.1±1.3mm |

Simulated roller lever

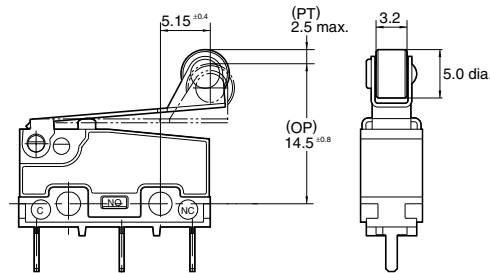
CAD Data



| | | |
|--------------------------------|-----------------------------|-------------|
| Pretravel PT, Max. | 2.8mm | |
| Movement Differential MD, Max. | 0.8mm | |
| Overtravel OT, Min. | 1.2mm | |
| Operating Position OP | Distance from mounting hole | 11.65±0.8mm |
| | Distance from stand-off | 14.95±0.9mm |

Roller lever

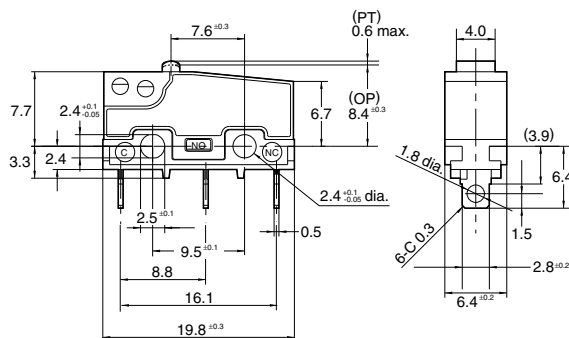
CAD Data



| | | |
|--------------------------------|-----------------------------|------------|
| Pretravel PT, Max. | 2.5mm | |
| Movement Differential MD, Max. | 0.5mm | |
| Overtravel OT, Min. | 0.8mm | |
| Operating Position OP | Distance from mounting hole | 14.5±0.8mm |
| | Distance from stand-off | 17.8±0.9mm |

2) Solder terminal

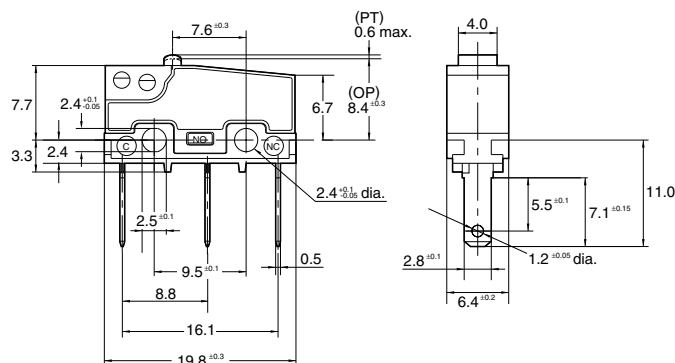
CAD Data



Note: As for the dimensions of lever types, dimensions other than terminals are same as PC board terminal.

3) .110 Quick-connect terminal

CAD Data

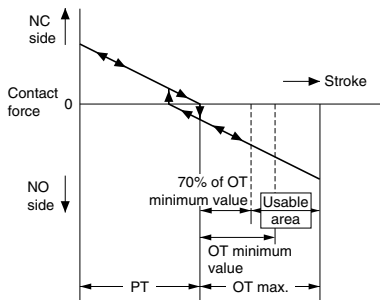


Note: As for the dimensions of lever types, dimensions other than terminals are same as PC board terminal.

CAUTIONS FOR USE (Common for FS type and FS-T type)

■ Regarding fastening of switch body

- 1) To secure the switch, please use an M2.3 small screw on a flat surface and tighten using a maximum torque of 0.29 N·m. It is recommended that spring washers be used with the screws and adhesive be applied to lock the screws to prevent loosening of the screws.
- 2) When the operation object is in the free position, force should not be applied directly to the actuator or pin plunger. Also force should be applied to the pin plunger from vertical direction to the switch.
- 3) In setting the movement after operation, the Overtravel OT should be set not less than 70% as a standard. Setting the movement at less than 70% of OT may cause troubles such as mis-contact and welding due to small contact force of the switch.



In addition, even if FS type switch actuator is pushed to full limit of operating position, it does not affect product life. However, heavy impact and excessive loading should not be applied.

■ Soldering operation

- 1) Manual soldering should be accomplished within 3 seconds with max. 350°C iron. Care should be taken not to apply force to the terminals during soldering.
- 2) Terminal portions must not be moved in min. 1 minute after soldering. Also no tensile strength of lead wires should be applied to terminals.

■ Environment

Locations where corrosive gases having a bad influence on contacts are present, and locations where there is an excessive amount of siliceous or other abrasive dust should be avoided.

■ Regarding connector connections (.110 quick connect terminals)

For making connections, a dedicated receptacle for .110 quick connect terminals should be used, and the terminals should be inserted parallel to the receptacle. Consideration should be given to mounting so that no tensile load is applied to the lead wires.

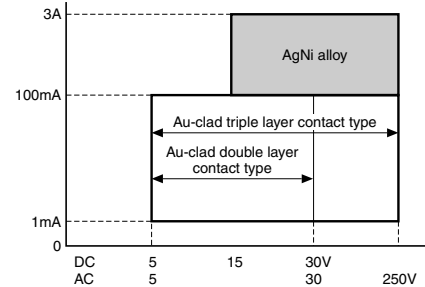
■ In making the switch selection

Consideration should be given to provide for no interference up to +20% variation of the standard characteristics values.

■ Please select Au-clad contact types when loads are in the low-level area of 1mA up to 100mA and 5V up to 30V.

See the diagram below for contact specification selection.

- Contact material reference chart classified by load voltage & current

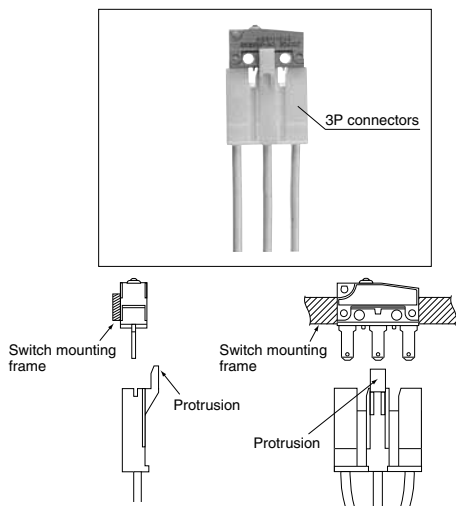


3P CONNECTOR

(Both AV3/AVM3 subminiature switches and ABS turquoise switches)

The .110 Quick-connect terminal type of S type turquoise switches and FS type subminiature switches fit direct contact 3P connectors (Nippon Tanshi Co., Ltd.)

■ Reverse insertion prevention



As shown in the diagram, the protrusion on the 3P connector can only be inserted on the corresponding side of the mounting frame. That is, using the plunger as a reference, the subminiature switches can only be inserted in the direction shown in the diagram: it is not possible to mount it the wrong way round.

■ If you have any questions, please directly contact:
Nippon Tanshi Co., Ltd.

■ Product name and Product number

Product name: 3P connectors for 7.6 mm pitch subminiature switches

Product number

| Name | Product number | Remark (Suitable wire) |
|------------|----------------|-----------------------------|
| Housing | 9880-4203 | — |
| Receptacle | 171587-M2 | 0.3 to 0.75 mm ² |

Note: Please note that Panasonic does not sell this connector.

Mouser Electronics

Authorized Distributor

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

[Panasonic:](#)

[AV3602649](#) [AV3602619-A](#)

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JONHON

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ВЧ соединители, коаксиальные кабели,
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