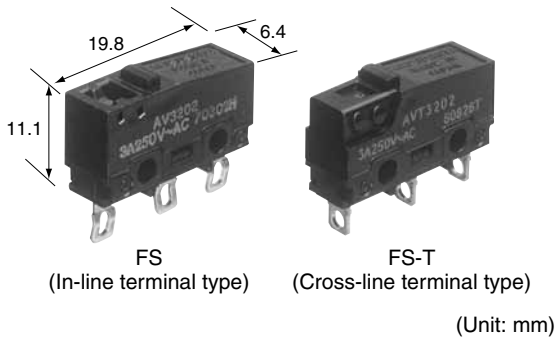




### Subminiature Size Switches with Excellent Operating Position Accuracy

## 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

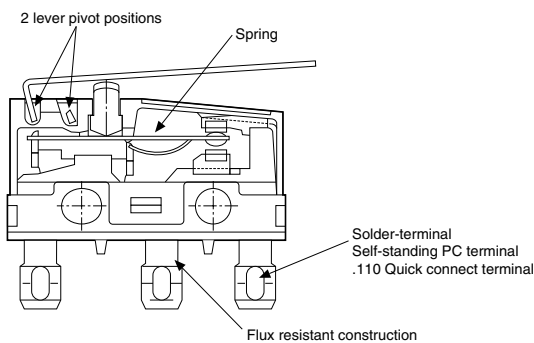
Expected life	Contact	Applicable current range				Operating Force (OF)			
		1mA	100mA	3A	5A	0.25N	0.49N	0.98N	1.47N
Standard version	AgNi alloy contact			●			●	●	
	CuNi alloy + AgNi alloy + Au-clad triple layer contact type (End of part No.: 61)	●				●	●	●	
	CuNi alloy + Au-clad double layer contact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

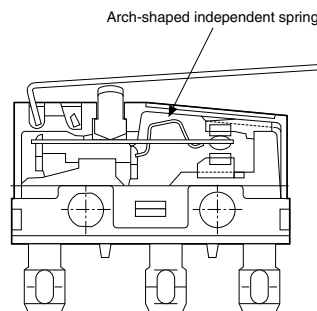
#### ■ Standard version (FS type)

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

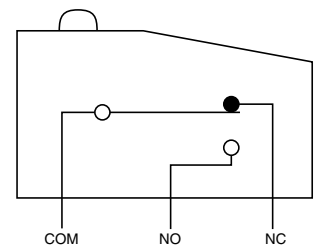


#### ■ Long life version (FS type)

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

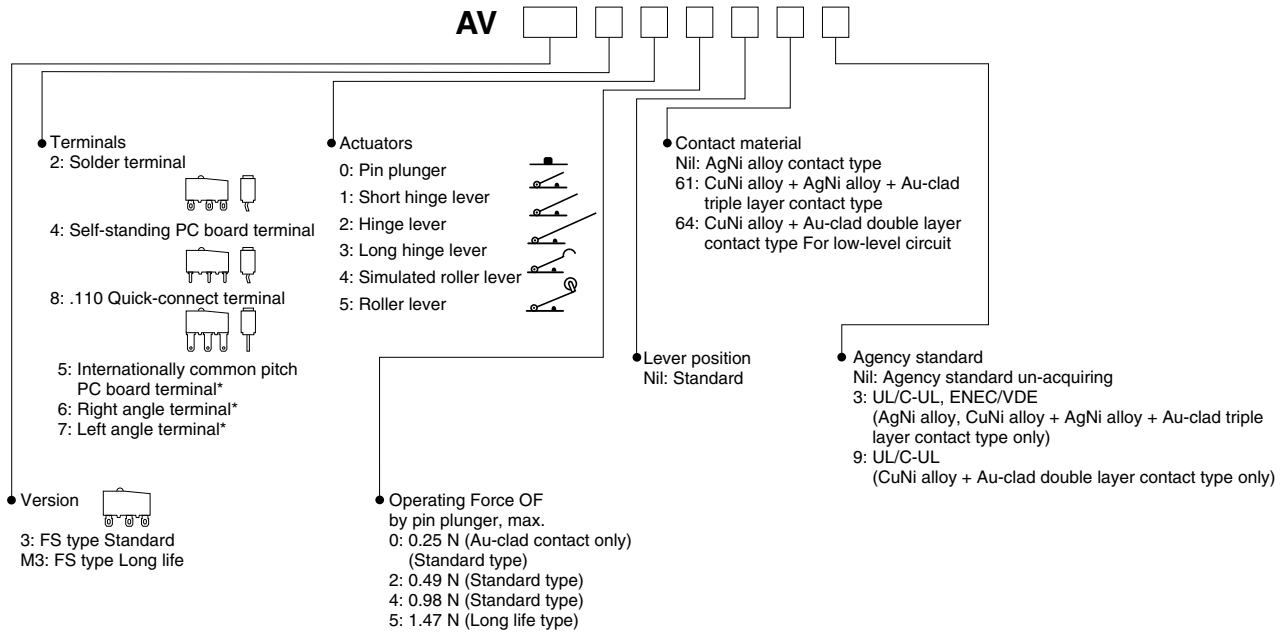


### CONTACT FORM

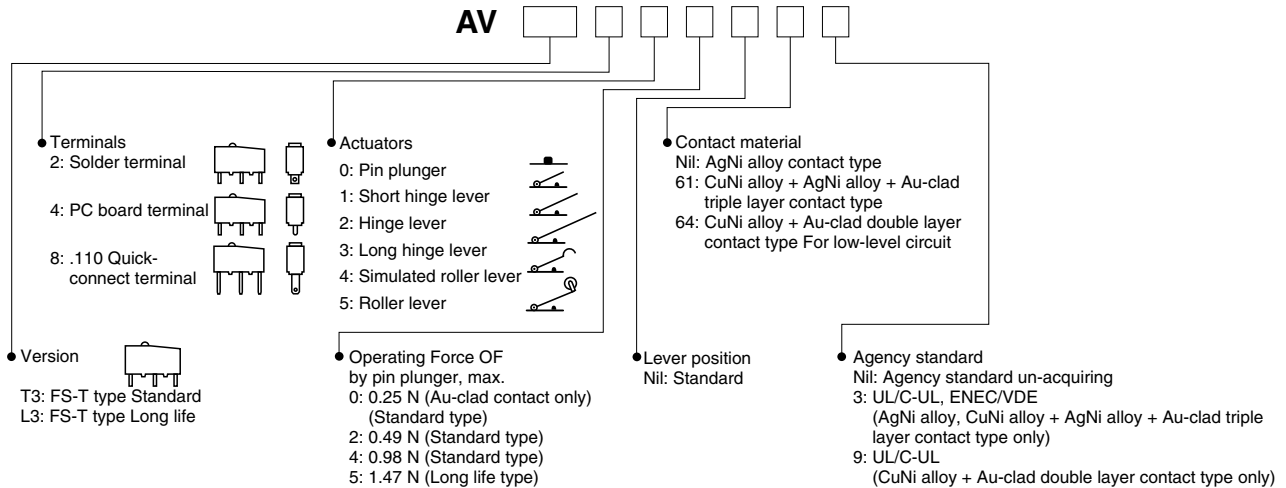


## ORDERING INFORMATION

### ■ 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

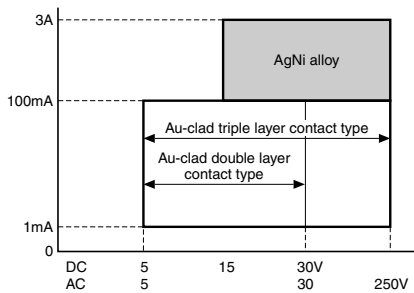
(Common for FS type and FS-T type)

### ■ 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. $5 \times 10^5$ (OTmax.)		Min. $3 \times 10^7$ (OT: Specified value) Min. $10^7$ (OTmax.)		at 60 cpm
	Electrical life	Min. $5 \times 10^4$	Min. $2 \times 10^5$	$5 \times 10^4$	$2 \times 10^5$	at 20 cpm, at rated load, OT max.
Insulation resistance		Min. 100M $\Omega$				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 $\Omega$	Max. 100 m $\Omega$	Max. 50 m $\Omega$	Max. 50 m $\Omega$	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 <sup>2</sup> min. (OF 0.98 N type) 147 m/s <sup>2</sup> min. (OF 0.49 N type)	294 m/s <sup>2</sup> min. (OF 0.98 N type) 147 m/s <sup>2</sup> min. (OF 0.49 N type) 49 m/s <sup>2</sup> min. (OF 0.25 N type)	Min. 294 m/s <sup>2</sup>	Min. 294 m/s <sup>2</sup>	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

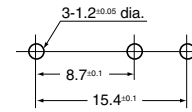
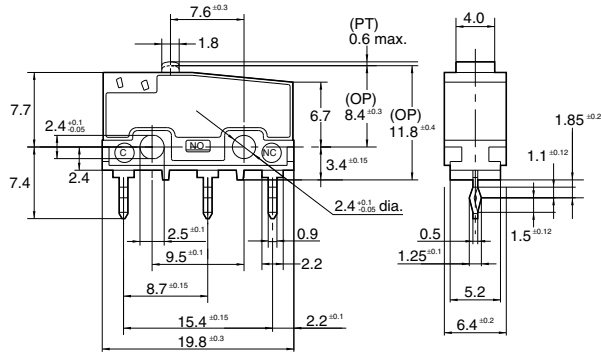
The CAD data of the products with a **CAD Data** mark can be downloaded from: <http://industrial.panasonic.com/ac/e/>

### ■ FS switches (In-line terminal type)

#### 1) Self-standing PC board terminal

#### Pin plunger

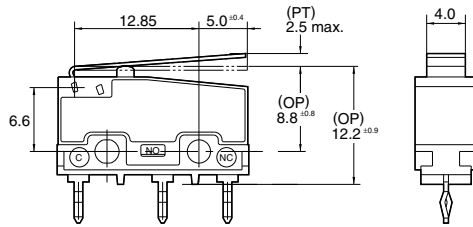
#### CAD Data



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

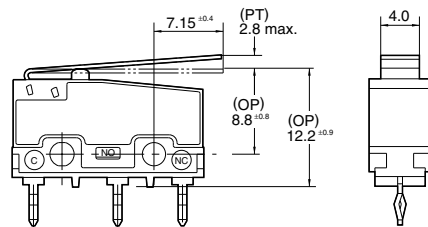
#### CAD Data



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

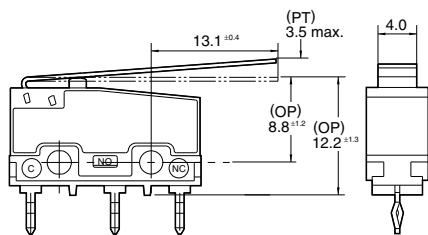
#### CAD Data



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

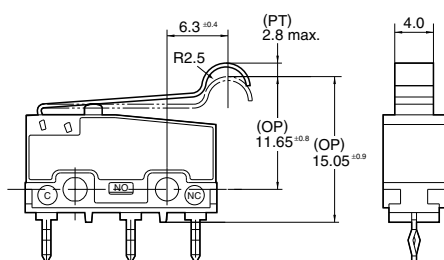
#### CAD Data



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



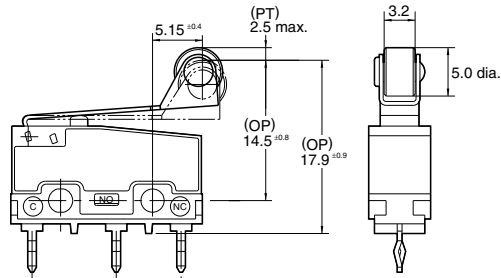
Pretravel PT, Max.	2.8mm	
Movement Differential MD, Max.	0.8mm	
Overtravel OT, Min.	1.2mm	
Operating Position OP	Distance from mounting hole	11.65±0.8mm
	Distance from stand-off	15.05±0.9mm



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

## Roller lever

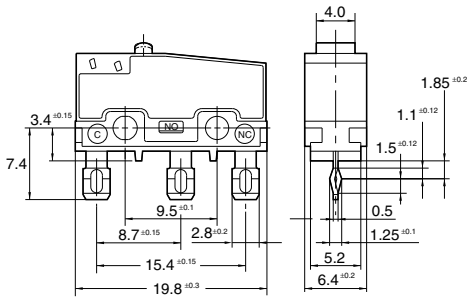
### CAD Data



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

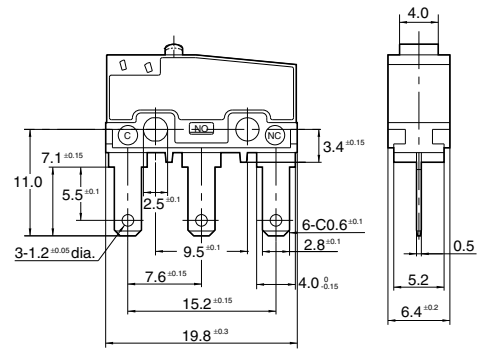
## 2) Solder terminal

### CAD Data



## 3) .110 Quick-connect terminal

### CAD Data



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

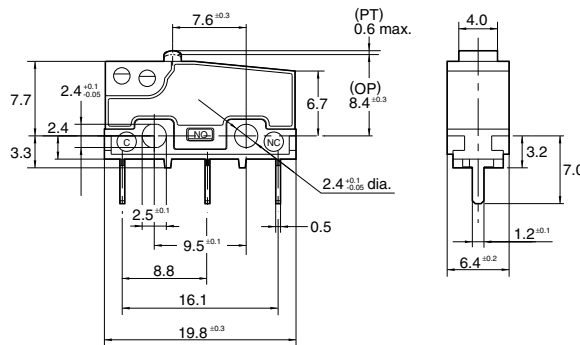
Note: Dimensions other than drawn above is same as self-standing PC board terminal.

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

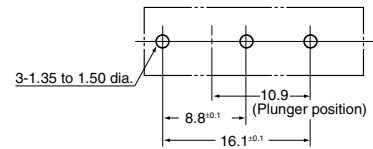
### 1) PC board terminal

#### Pin plunger

### CAD Data



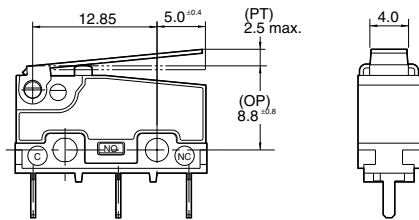
### PC board pattern



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

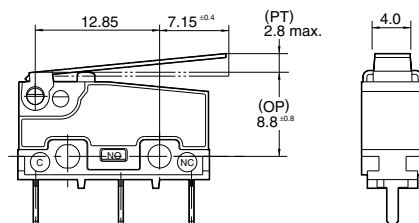
### CAD Data



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

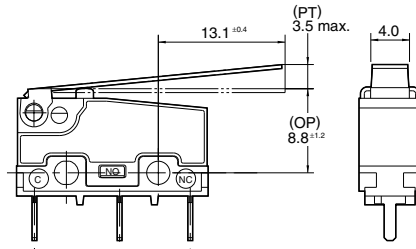


Pretravel PT, Max.		2.8mm
Movement Differential MD, Max.		0.8mm
Overtravel OT, Min.		1.2mm
Operating Position OP	Distance from mounting hole	8.8±0.8mm
	Distance from stand-off	12.1±0.9mm

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

## Long hinge lever

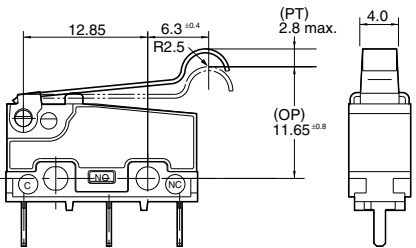
### CAD Data



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

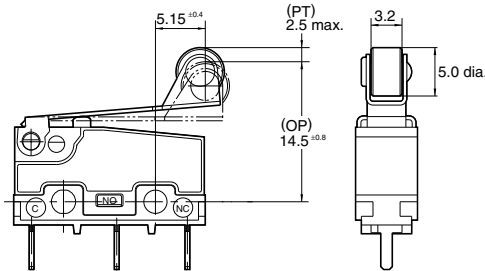
### CAD Data



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

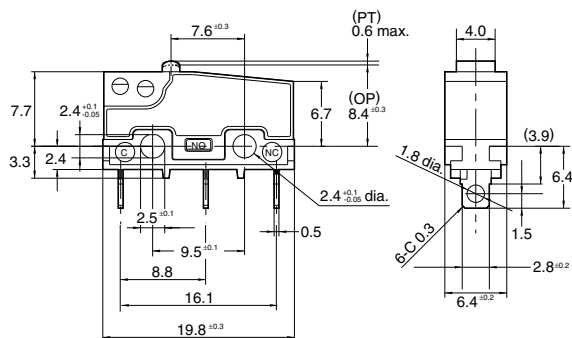
### CAD Data



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

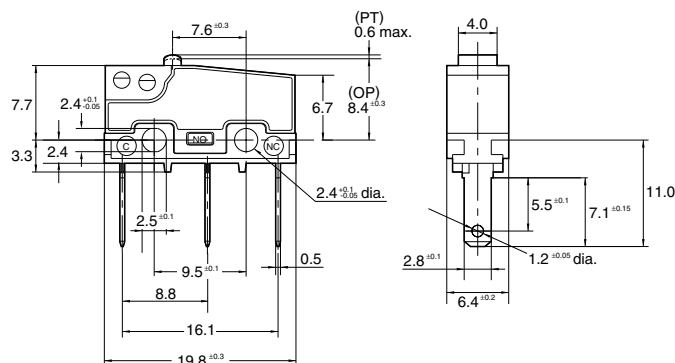
### CAD Data



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

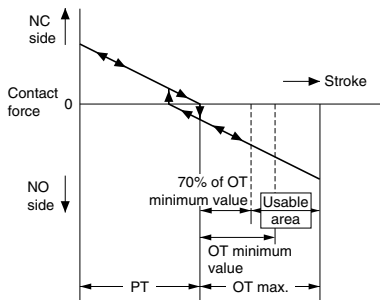


Note: As for the dimensions of lever types, dimensions other than terminals are same as PC board terminal.

**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.

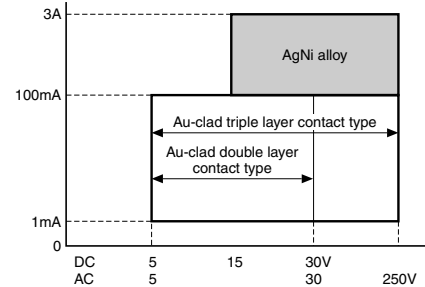
**■ In making the switch selection**

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

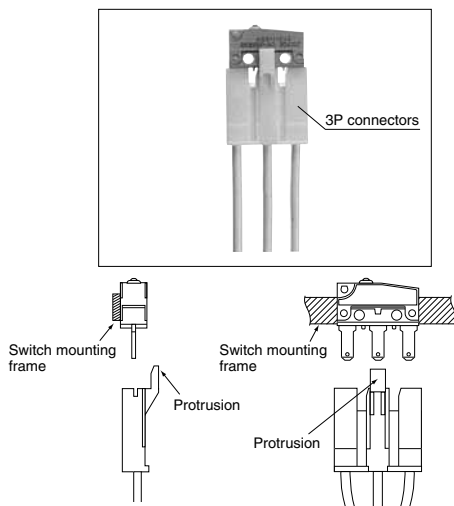


**3P CONNECTOR**

(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

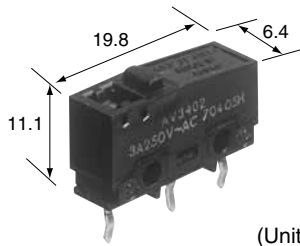
Name	Product number	Remark (Suitable wire)
Housing	9880-4203	—
Receptacle	171587-M2	0.3 to 0.75 mm <sup>2</sup>

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



### Subminiature Size Door Inter-lock Switches

### AV3 (FS) SWITCHES CONTACT GAP 1 mm TYPE



(Unit: mm)

RoHS compliant

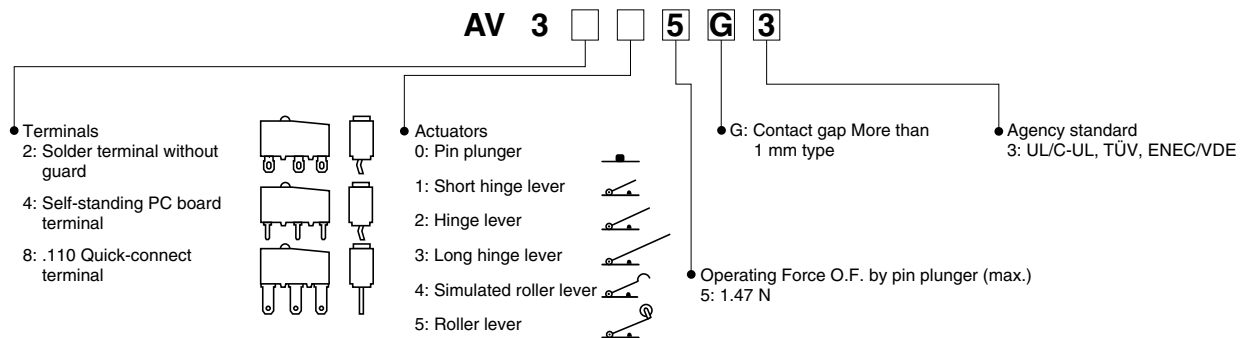
### FEATURES

- Complies with IEC60950-1 secondary circuit insulation distance standards
- Subminiature size door interlock switches
- Excellent operating position accuracy
- Protection grade: IP40

### TYPICAL APPLICATIONS

- Office equipment (printers, copiers, etc.)

## ORDERING INFORMATION

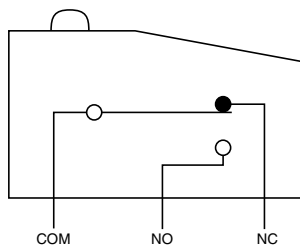


## PRODUCT TYPES

### ■ Ag alloy contact type

Actuator	Operating Force OP Max.	Part number		
		Solder terminal	Self-standing PC board terminal	.110 Quick- connect terminal
Pin plunger	1.47 N	AV3205G3	AV3405G3	AV3805G3
Short hinge lever	0.59 N	AV3215G3	AV3415G3	AV3815G3
Hinge lever	0.54 N	AV3225G3	AV3425G3	AV3825G3
Long hinge lever	0.44 N	AV3235G3	AV3435G3	AV3835G3
Simulated roller lever	1.54 N	AV3245G3	AV3445G3	AV3845G3
Roller lever	1.59 N	AV3255G3	AV3455G3	AV3855G3

## CONTACT FORM



# AV3 (FS) Subminiature Switches Contact Gap 1 mm Type

## SPECIFICATIONS

### ■ Contact rating

AgNi alloy contact type

Contact voltage	Resistive load ( $\cos \phi \approx 1$ )
30 V DC	3 A

### ■ Characteristics

Item		Specifications	Test conditions
Expected life	Mechanical (OT: Specified value)	Min. $5 \times 10^5$	at 60cpm
	Electrical (OT max.)	Min. $10^4$	at 20cpm
Dielectric strength	Between non-continuous terminals	1,000 Vrms for 1 min.	at detection current of 10mA
	Between each terminal and other exposed metal parts	2,000 Vrms for 1 min.	at detection current of 10mA
	Between each terminal and ground	2,000 Vrms for 1 min.	at detection current of 10mA
Insulation resistance		Min. 100M $\Omega$	at 500 V DC
Contact resistance (Initial)		Max. 50m $\Omega$	by voltage drop 6 to 8 V DC 1A
Vibration resistance (malfunction vibration resistance)		10 to 55 Hz at single amplitude of 0.75 mm	Contact opening: Max. 1 msec.
Shock resistance (malfunction shock resistance)		294m/s <sup>2</sup> (Pin plunger type) 147m/s <sup>2</sup> (Lever type)	Contact opening: Max. 1 msec.
Allowable operation speed (No load)		0.1 to 1,000 mm/s	
Max. switching frequency (No load)		300 cpm.	
Ambient temperature		-25°C to +85°C	no freezing and condensing
Unit weight		Approx. 2 g	
Contact specifications	Contact material	AgNi alloy	
Protection grade		IP40	

Note: Test conditions are in accordance with NECA C4505.

### ■ Operating characteristics

Actuator	Operating Force OF, Max.	Release Force RF, Min.	Pretravel PT, Max.	Movement Differential MD, Max.	Overtravel OT, Min.	Operating Position OP
Pin plunger	1.47 N	0.064 N	0.7mm	0.2mm	0.3mm	8.4±0.3mm
Short hinge lever	0.59 N	0.015 N	2.5mm	0.8mm	0.6mm	8.8±0.8mm
Hinge lever	0.54 N	0.013 N	2.8mm	1.0mm	0.8mm	8.8±0.8mm
Long hinge lever	0.44 N	0.0098 N	3.5mm	1.2mm	1.2mm	8.8±1.2mm
Simulated roller lever	0.54 N	0.013 N	2.8mm	1.0mm	0.8mm	11.65±0.8mm
Roller lever	0.59 N	0.015 N	2.5mm	0.8mm	0.6mm	14.5±0.8mm