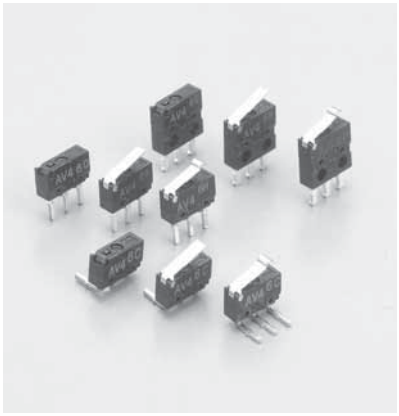
Panasonic
ideas for life

ONE OF THE SMALLEST SNAP-ACTION SWITCHES IN THE WORLD

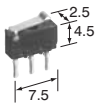
AV4 SWITCHES



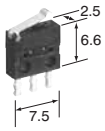
FEATURES

• Superminiature type, light-weight snap action switch

PC board terminal type (0.2g)



Solder terminal type with mounting holes (0.3g)

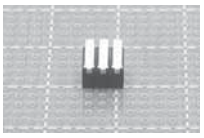


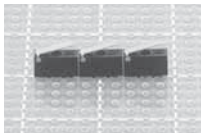
mm

• Mechanical life of 300,000 operations minimum

Stainless steel plated silver or gold is used for actuating spring

• Switches can be mounted close together in any directions





TYPICAL APPLICATIONS

• Compact visual equipment

Camera, portable VCR

• Small-sized audio equipment

Cassette tape recorder, Car stereo

• Office automation equipment

Light pen for personal computer, floppy disc apparatus, printer, computer

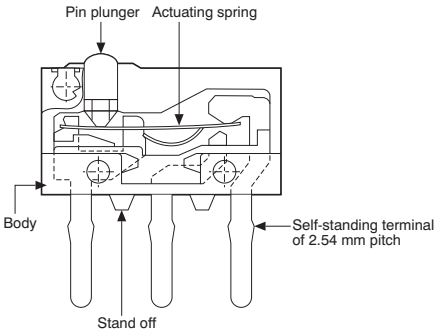
ORDERING INFORMATION

Ex. AV 4 4 0 4 61

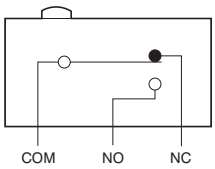
Product Name	Terminals	Actuators	Operating force, max. (by pin plunger)	Contacts
FU	0: Solder terminal with mounting holes (1.65 mm dia.) 4: PC board straight terminal 5: PC board angle terminal 6: PC board reverse angle terminal	0: Pin plunger 2: Hinge lever 4: Simulated roller lever	4: 0.98 N	Nil: Ag plated contact 61: Au plated contact

CONSTRUCTION

PC board straight terminal type



CONTACT ARRANGEMENT



PRODUCT TYPES

Type of contacts	Actuator	Operating force, Max.	Part No.			
			PC board terminal			Solder terminal with mounting holes
			Straight terminal	Angle terminal	Reverse angle terminal	
Ag plated contact type	Pin plunger	0.98 N	AV4404	AV4504	AV4604	AV4004
	Hinge lever	0.25 N	AV4424	AV4524	AV4624	AV4024
	Simulated roller lever	0.29 N	AV4444	AV4544	AV4644	AV4044
Au plated contact type	Pin plunger	0.98 N	AV440461	AV450461	AV460461	AV400461
	Hinge lever	0.25 N	AV442461	AV452461	AV462461	AV402461
	Simulated roller lever	0.29 N	AV444461	AV454461	AV464461	AV404461

SPECIFICATIONS

1. Contact rating

Type of contact	Resistive load (cos $\phi \approx 1$)
Ag plated contact	0.5A 30V DC
Au plated contact	0.1A 30V DC

The color of:

Color / Type	Body	Cap	Plunger
Ag plated contact	Black	Black	Black
Au plated contact	Black	Black	Red

2. Characteristics

Items			Characteristics
Life	Mechanical		Min. 3×10^5 operations (at 60 cpm)
	Electrical	Ag plated contact	Min. 2×10^4 operations (0.5A 30V DC; at 20 cpm)
		Au plated contact	Min. 2×10^5 operations (0.1A 30V DC; at 20 cpm)
Insulation resistance			Min. 100 MΩ (250V DC by insulation resistance meter)
Dielectric strength	Between non-continuous terminals		500V AC for 1 min.
	Between each terminal and other exposed metal parts		500V AC for 1 min.
	Between each terminal and ground		500V AC for 1 min.
Vibration resistance		Pin plunger type	10 to 55 Hz at single amplitude of 0.75mm (contact opening: max. 1 msec.)
		Lever type	10 to 55 Hz at single amplitude of 0.15mm (contact opening: max. 1 msec.)
Shock resistance		Pin plunger type	Min. 294m/s² (contact opening: max. 1 msec.)
		Lever type	Min. 147m/s² (contact opening: max. 1 msec.)
Contact resistance (initial)			Max. 200 mΩ
Allowable operation speed			0.1mm/s to 500mm/s (pin plunger type)
Mechanical max. switching frequency			60 operations/min.
Ambient temperature			–25 to +80°C (Not freezing below 0°C)
Unit weight			PC board terminal type: Approx. 0.2g Solder terminal with mounting holes type: Approx. 0.3g

3. Operating characteristics

1) PC board terminal

Actuators	Operating force, Max.	Release force, Min.	Pretravel, Max. mm	Movement differential, Max. mm	Overtravel, Min. mm	Operating position mm
Pin plunger	0.98 N	0.098 N	0.3	0.1	0.1	4.8±0.15
Hinge lever	0.25 N	0.010 N	2.4	0.7	0.4	5.8±0.7
Simulated roller lever	0.29 N	0.010 N	2.2	0.7	0.3	6.1±0.7

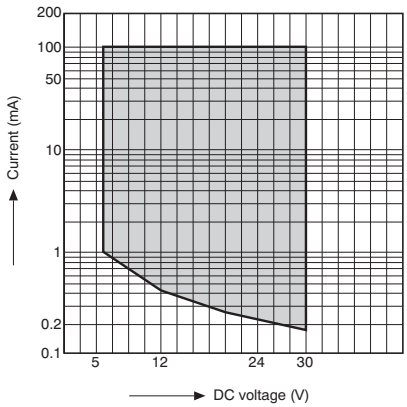
2) Solder terminal

Actuators	Operating force, Max.	Release force, Min.	Pretravel, Max. mm	Movement differential, Max. mm	Overtravel, Min. mm	Operating position mm
Pin plunger	0.98 N	0.098 N	0.3	0.1	0.1	5.4±0.15
Hinge lever	0.25 N	0.020 N	2.4	0.7	0.4	6.4±0.6
Simulated roller lever	0.29 N	0.020 N	2.2	0.7	0.3	6.7±0.5

DATA

Au plated contact type

Range of low-level current and voltage (Reference only)



DIMENSIONS

Interested in CAD data? You can obtain CAD data for all products with a CAD Data mark from your local Panasonic Electric Works representative.

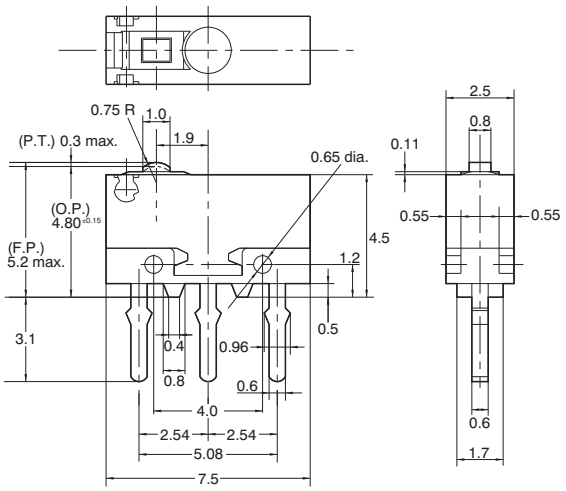
1. PC board terminal

Straight terminal

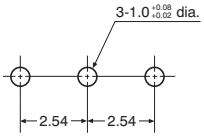
Pin plunger type

CAD Data

mm General tolerance: ±0.15



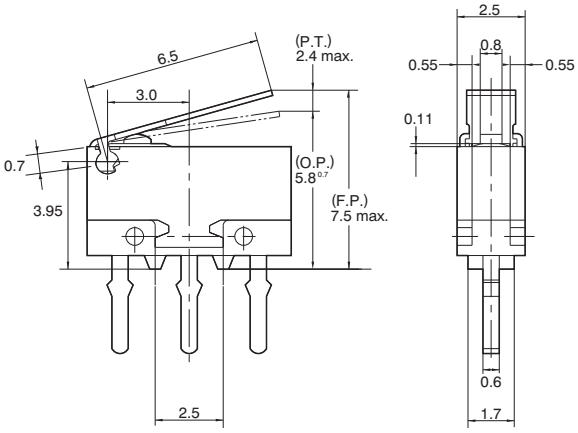
PC board pattern



Pretravel, Max. mm	0.3
Movement differential, Max. mm	0.1
Overtravel, Min. mm	0.1
Operating position, mm	4.8±0.15
Free position, mm	5.2

Hinge lever type

CAD Data



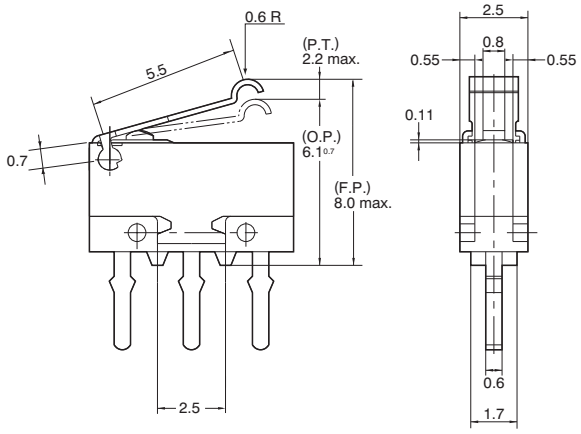
Pretravel, Max. mm	2.4
Movement differential, Max. mm	0.7
Overtravel, Min. mm	0.4
Operating position, mm	5.8±0.7
Free position, mm	7.5

Remark: All other dimensions are the same as those of pin plunger type.

Simulated roller lever type

mm General tolerance: ±0.15

CAD Data



Pretravel, Max. mm	2.2
Movement differential, Max. mm	0.7
Overtravel, Min. mm	0.3
Operating position, mm	6.1±0.7
Free position, mm	8.0

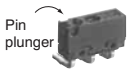
Remark: All other dimensions are the same as those of pin plunger type.

2. Angle terminal

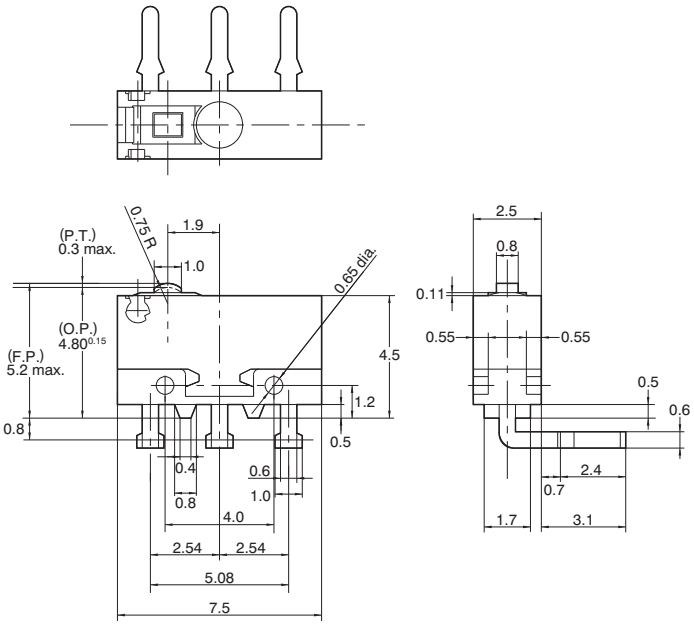
Right angle terminal

Pin plunger type

CAD Data



Right angle terminal



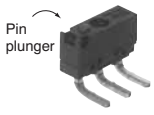
Pretravel, Max. mm	0.3
Movement differential, Max. mm	0.1
Overtravel, Min. mm	0.1
Operating position, mm	4.8±0.15
Free position, mm	5.2

Remark: All other dimensions of hinge lever type and simulated roller lever type are the same as those of straight terminal types.

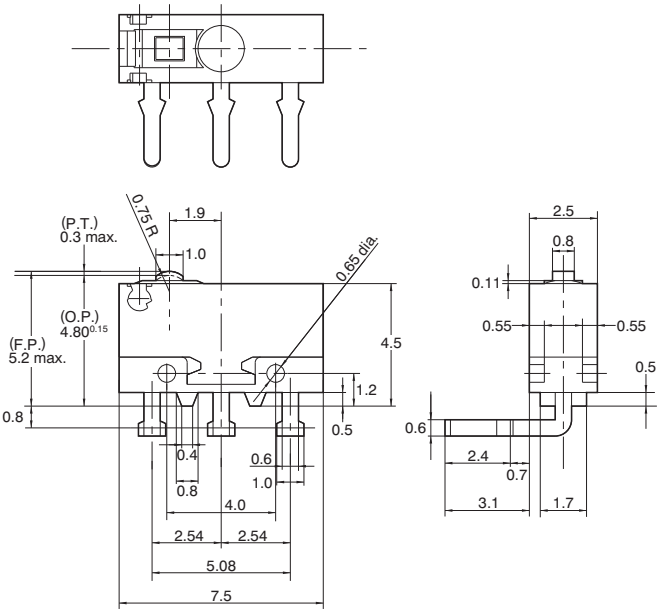
Left angle terminal

Pin plunger type

CAD Data



Left angle terminal



Pretravel, Max. mm	0.3
Movement differential, Max. mm	0.1
Overtravel, Min. mm	0.1
Operating position, mm	4.8±0.15
Free position, mm	5.2

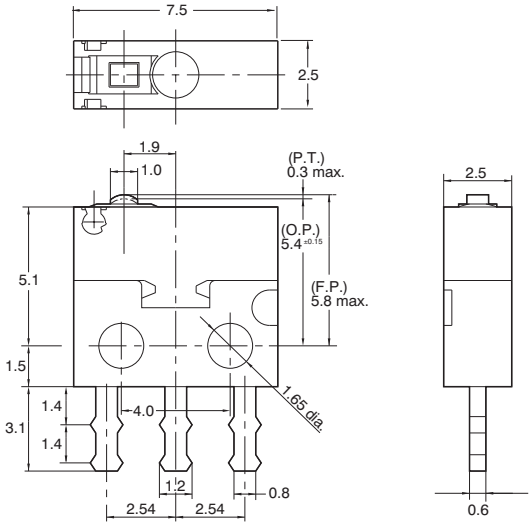
Remark: All other dimensions of hinge lever type and simulated roller lever type are the same as those of straight terminal types.

3. Solder terminal with mounting holes

mm General tolerance: ±0.15

Pin plunger type

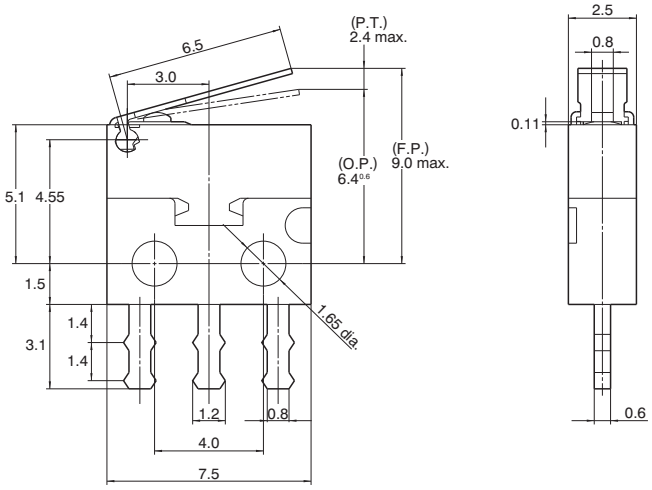
CAD Data



Pretravel, Max. mm	0.3
Movement differential, Max. mm	0.1
Overtravel, Min. mm	0.1
Operating position, mm	5.4±0.15
Free position, mm	5.8

Hinge lever type

CAD Data

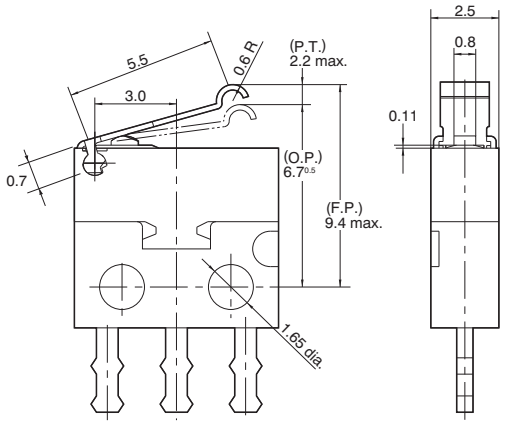


Pretravel, Max. mm	2.4
Movement differential, Max. mm	0.7
Overtravel, Min. mm	0.4
Operating position, mm	6.4±0.6
Free position, mm	9.0

Remark: All other dimensions are the same as those of pin plunger type.

Simulated roller lever type

CAD Data



Pretravel, Max. mm	2.2
Movement differential, Max. mm	0.7
Overtravel, Min. mm	0.3
Operating position, mm	6.7±0.5
Free position, mm	9.4

Remark: All other dimensions are the same as those of pin plunger type.

NOTES

1. Mounting

1) After mounting and wiring, the insulation distance between ground and each terminal should be confirmed as sufficient.

2) When the operation object is in the free position, force should not be applied to the actuator or to the 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 over-travel should be set within the range of the specified O.T. value.

4) In fastening the switch body, use the M1.4 screw, with tightening torque of not more than 0.098 N·m.

2. Soldering

1) Manual soldering should be accomplished within 5 seconds with max. 320°C iron.

Care should be taken not to apply force to the terminals during soldering.

2) Terminal portion must not be moved within 1 minute after soldering. Also no tensile strength of lead wires should be applied to the terminals.

3) When using the angle terminal type, insert an insulation separator between the switch body and the printed circuit board (Insulation separator 0.2 to 0.4mm thick) to prevent the soldering flux from flowing under the PC board.

3. Cleaning

As AV4 switch is not completely sealed construction, avoid cleaning.

4. Selection of switch

When specifying AV4 switches, allow ±20% to the listed operating characteristics.

5. Avoid using and keeping switches in the following conditions:

- In corrosive gases
- In a dusty environment
- Where silicon atmosphere prevails

6. When switching low-level circuits (max. 100 mA), Au plated contact types are recommended.

7. When using the lever type, avoid applying force from the reverse and side direction of actuating.