

# Sealed Ultra Subminiature Basic Switch D2EW

**Supports multi-angle operation without using a lever, increased flexibility in customer unit design**

- The industry's smallest class \*(8.3 x 7.0 x 5.3 mm) D2GW equivalent size
- A left-right asymmetrical post shape prevents misassembly
- A sliding contact structure delivers quiet operation
- Contributes to energy saving (Minimum applicable load 50  $\mu$ A)

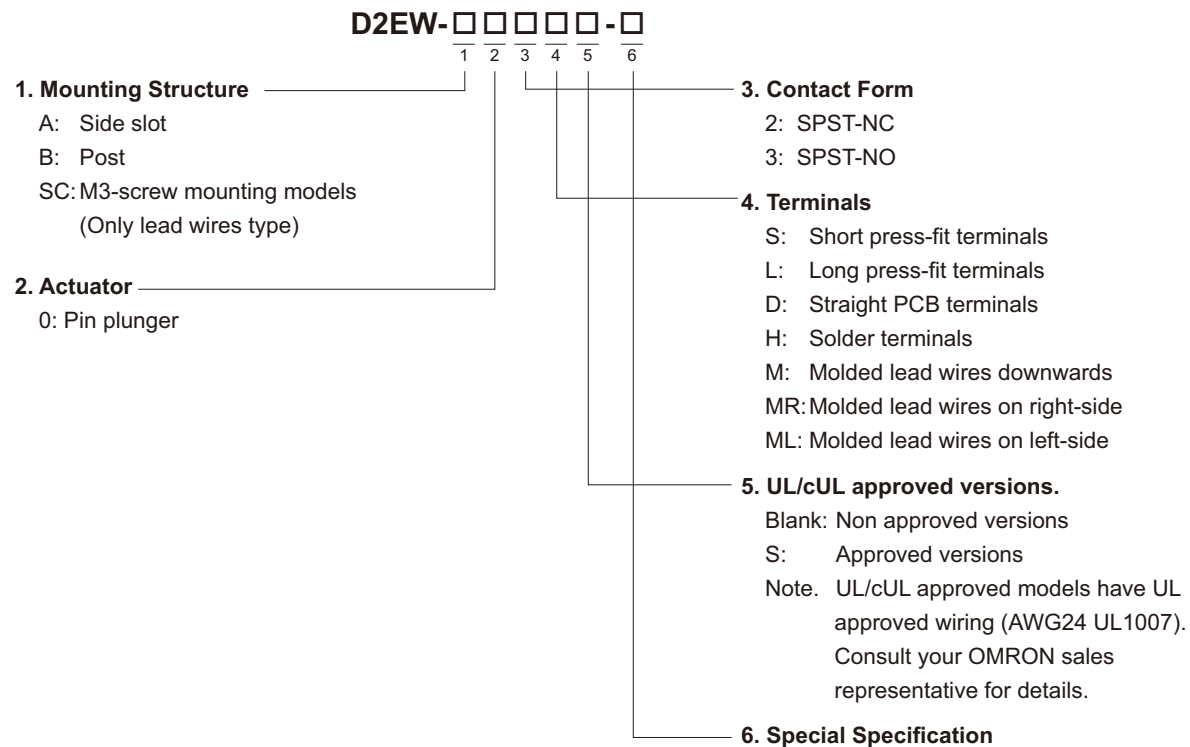
\* Based on OMRON investigation in August 2024



## Model Number Legend


Some model number elements cannot be used in conjunction.

If you have any desired model with a specification not in this model number legend, contact your OMRON sales representative. We will consider if a requested model can be manufactured by modifying existing models.




# D2EW

## List of Models

Actuator	Terminals	Model Contact Form	Side Slot	Post	M3-screw mounting models
<b>Pin plunger</b> 	Short press-fit terminals	SPST-NC	D2EW-A02S	—	
		SPST-NO	D2EW-A03S	—	
	Long press-fit terminals	SPST-NC	—	D2EW-B02L	
		SPST-NO	—	D2EW-B03L	
	Straight PCB terminals	SPST-NC	D2EW-A02D	D2EW-B02D	
		SPST-NO	D2EW-A03D	D2EW-B03D	
	Solder terminals	SPST-NC	D2EW-A02H	D2EW-B02H	
		SPST-NO	D2EW-A03H	D2EW-B03H	
	Molded lead wires downwards	SPST-NC	—	D2EW-B02M	D2EW-SC02M
		SPST-NO	—	D2EW-B03M	D2EW-SC03M
	Molded lead wires on right-side	SPST-NC	—	D2EW-B02MR	
		SPST-NO	—	D2EW-B03MR	
	Molded lead wires on left-side	SPST-NC	—	D2EW-B02ML	
		SPST-NO	—	D2EW-B03ML	

If you have any desired model with a specification not in the above list, contact your OMRON sales representative. We will consider if a requested model can be manufactured by modifying existing models.

### ● Safety Standard Approved Models

Actuator	Terminals	Model Contact Form	Side Slot	Post	M3-screw mounting models
<b>Pin plunger</b> 	Short press-fit terminals	SPST-NC	—	—	
		SPST-NO	—	—	
	Long press-fit terminals	SPST-NC	—	—	
		SPST-NO	—	—	
	Straight PCB terminals	SPST-NC	D2EW-A02DS	—	
		SPST-NO	D2EW-A03DS	—	
	Solder terminals	SPST-NC	D2EW-A02HS	D2EW-B02HS	
		SPST-NO	D2EW-A03HS	D2EW-B03HS	
	Molded lead wires downwards	SPST-NC	—	D2EW-B02MS	D2EW-SC02MS
		SPST-NO	—	D2EW-B03MS	D2EW-SC03MS
	Molded lead wires on right-side	SPST-NC	—	D2EW-B02MRS	
		SPST-NO	—	D2EW-B03MRS	
	Molded lead wires on left-side	SPST-NC	—	D2EW-B02MLS	
		SPST-NO	—	D2EW-B03MLS	

## Contact Specifications

Contact	Specification	Slide
	Material	Gold plated
Minimum applicable load ( see note )		5 VDC 50 $\mu$ A

**Note:** For more information on the minimum applicable load, refer to *Using Micro Loads of Precautions*.

## Ratings

Rating voltage	Resistive load
12 VDC	100 mA
18 VDC	20 mA

**Note:** The rating values apply under the following test conditions.

1. Ambient temperature: 20  $\pm$  2°C
2. Ambient humidity: 65  $\pm$  5%
3. Operating frequency: 30 operations/min

## Approved Safety Standard

UL (UL 61058-1) /cUL (CSA C22.2 No.61058-1)  
 UL/cUL approved versions are available. In this case, a "S" will be added to the end of the model number. (example: DS, HS, MS, MLS, MRS)  
 Consult your OMRON sales representative for other safety certifications.

Rated voltage	Model	D2EW
	Item	Resistive load
12 VDC		100 mA

Testing conditions: 5E4 (50,000 operations) T75(0 to 75°C)

## Characteristics

Items	Model	UL/cUL Non approved versions	UL/cUL Approved versions
<b>Operating speed</b>		30 mm to 500 mm/s (pin plunger models)	
<b>Operating frequency</b>	Mechanical	30 operations/min Max.	
	Electrical	30 operations/min Max.	
<b>Insulation resistance</b>		100 M $\Omega$ Min. (at 500 VDC)	
<b>Contact resistance (initial value)</b>	Terminals	500 m $\Omega$ Max.	
	Molded lead wires	500 m $\Omega$ Max.	
<b>Dielectric strength</b>	Between same polarity	500 VAC 50/60 Hz 1 min	
	Between current carrying metal parts and ground	1,500 VAC 50/60 Hz 1 min	
<b>Vibration resistance</b> *1	Malfuction	10 to 55 Hz, 1.5 mm double amplitude	
<b>Shock resistance</b>	Destruction	1,000 m/s <sup>2</sup> Max.	
	Malfuction *1	300 m/s <sup>2</sup> Max.	
<b>Durability</b> *2	Mechanical (Vertical)	300,000 operations Min. (at 30 operations/min)	200,000 operations Min. (at 30 operations/min)
	Mechanical (Horizontal)	300,000 operations Min. (at 30 operations/min)	100,000 operations Min. (at 30 operations/min)
	Electrical (Vertical)	300,000 operations Min. (at 30 operations/min)	200,000 operations Min. (at 30 operations/min)
	Electrical (Horizontal)	300,000 operations Min. (at 30 operations/min)	100,000 operations Min. (at 30 operations/min)
<b>Degree of protection</b>	Terminals	IEC IP67 (excluding the terminals)	
	Molded lead wires	IEC IP67	
<b>Ambient operating temperature</b>		-40 to +85°C (at 60% RH Max.) (with no icing or condensation)	
<b>Ambient operation humidity</b>		95% RH Max. (for +5 to +35°C)	
<b>Heat resistance</b>		85°C 500 hours	
<b>Cold resistance</b>		-40°C 500 hours	
<b>Humidity resistance</b>		85°C 85% RH 500 hours	
<b>Temperature cycle resistance</b>		-40°C (0.5 hours) $\leftrightarrow$ 85°C (0.5 hours) 500 cycles	
<b>Weight</b>		Approx. 0.5 g (for pin plunger models with terminals)	

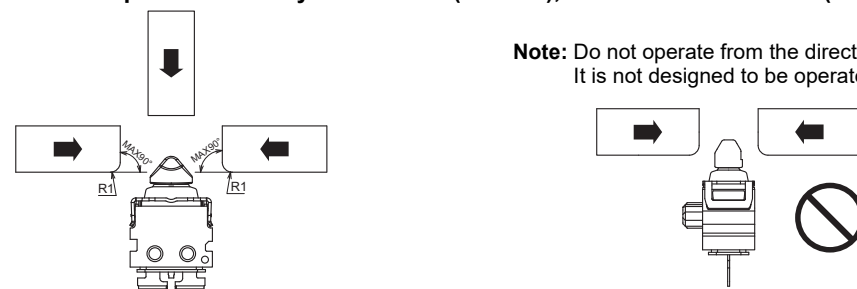
**Note:** The data given above are initial values.

\*1. For the pin plunger models, the above values apply for use at the free position, and total travel position. Close or open circuit of the contact is 1 ms Max.

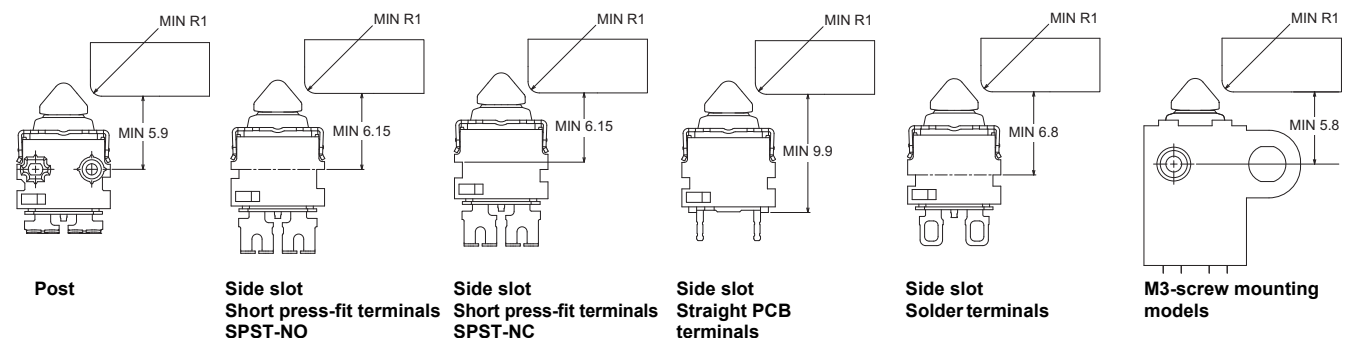
\*2. For testing conditions, consult your OMRON sales representative.

## Operation allowable angle

It can be operated not only from above (Vertical), but also from the side (Horizontal) up to 90 degrees.



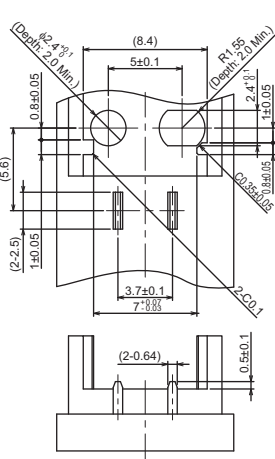
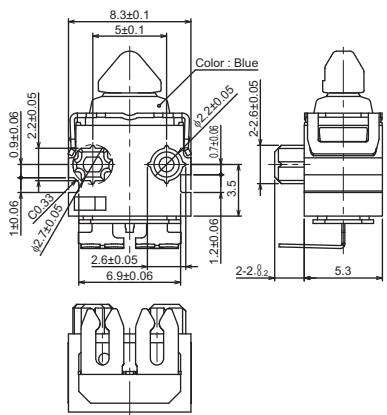
When operating from the side, position the operating body according to the following dimensions. This may cause damage or reduced performance.



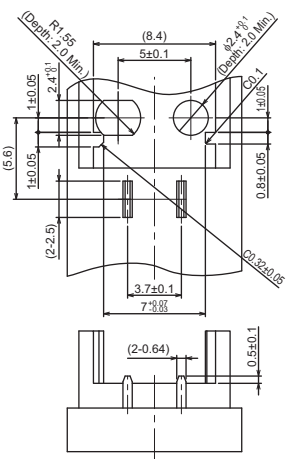
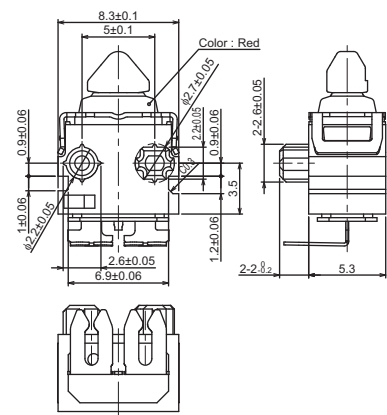
# D2EW

## Mounting Structure

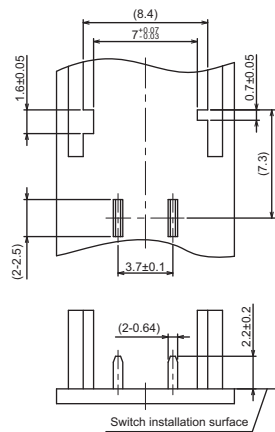
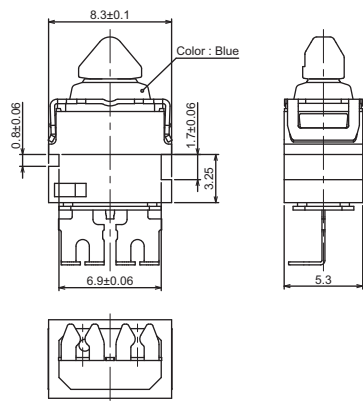
### ● Post/SPST-NO



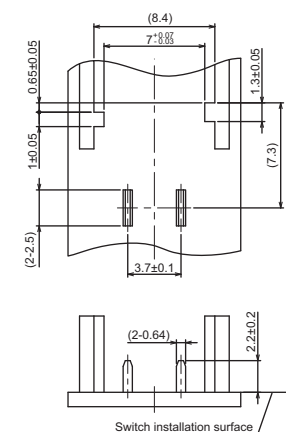
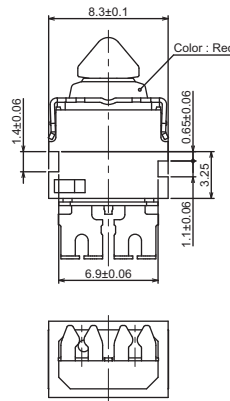
### ● Post/SPST-NC



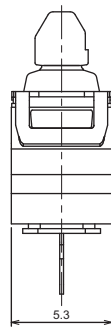
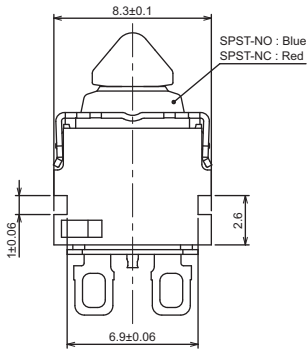
### ● Side slot Short / SPST-NO



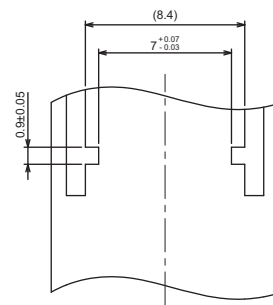
### Short / SPST-NC



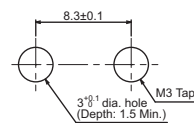
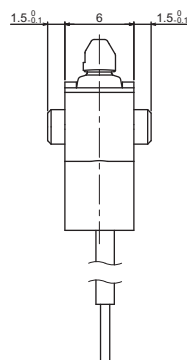
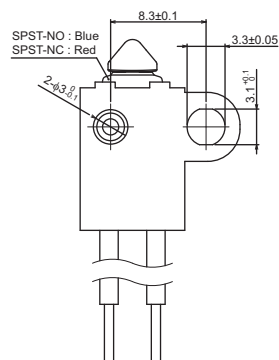
### Solder terminals Straight PCB terminals



### Insertion side unit mounting dimensions (for reference only)

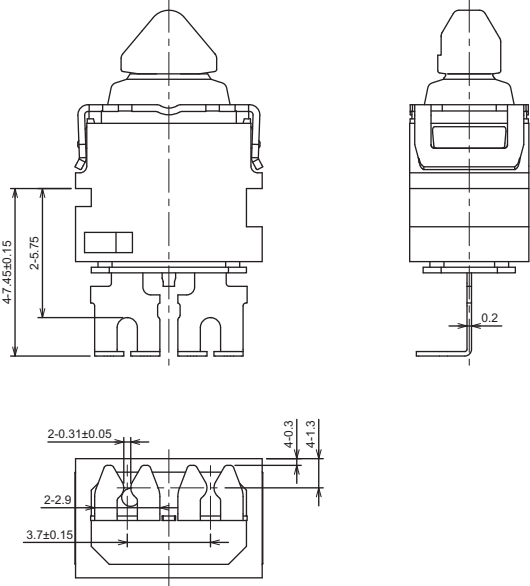


### ● M3-screw Mounting Models

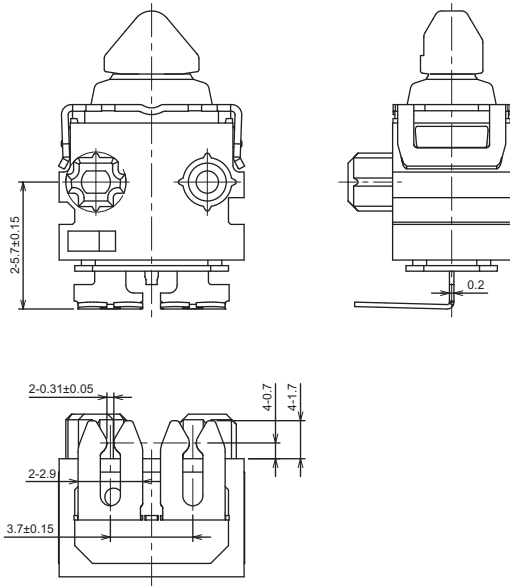


Terminals (Unit: mm)

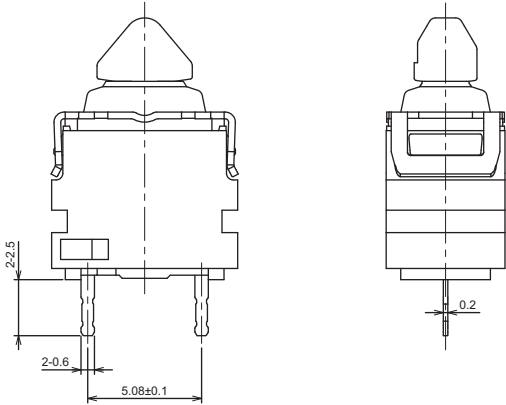
● Short press-fit terminals SPST-NO



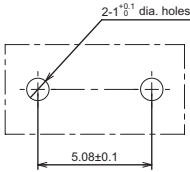
● Long press-fit terminals SPST-NO



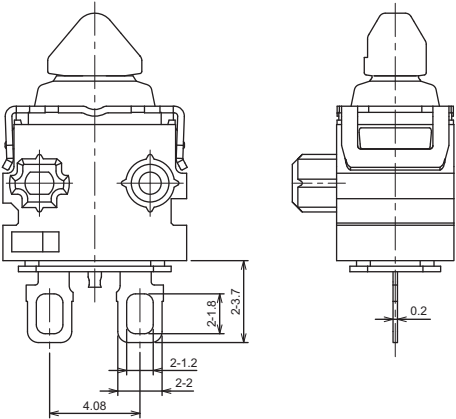
● Straight PCB terminals SPST-NO



PCB Mounting Dimensions (Reference)



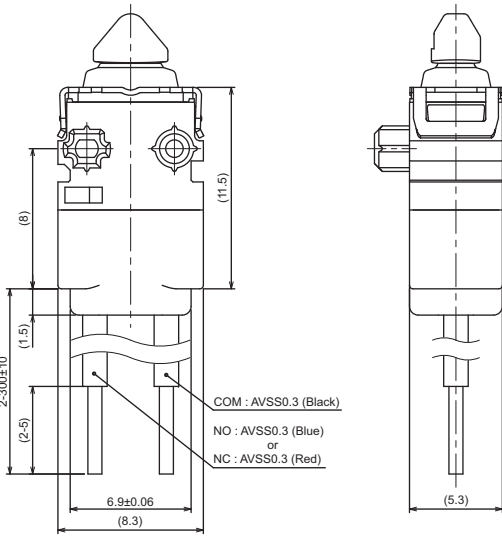
● Solder terminals SPST-NO



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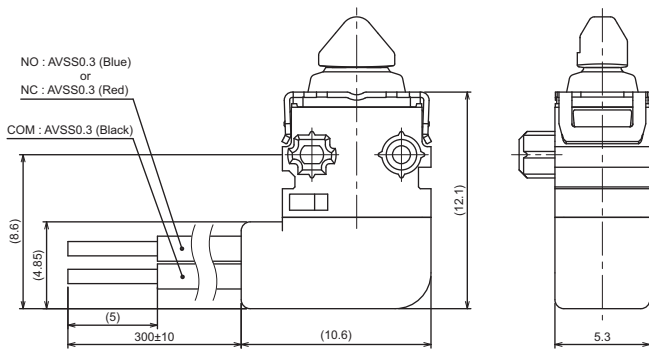
## Terminals (Unit: mm)

### ● Molded lead wires downwards



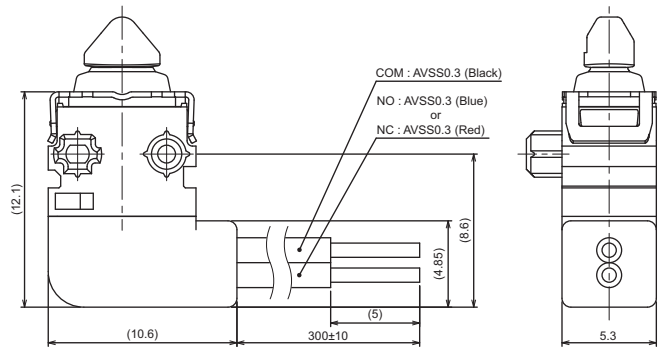
**Note:** UL approved wires (AWG24, UL1007) are used for UL/cUL standard approved items.

### ● Molded Lead Wires on Left-side



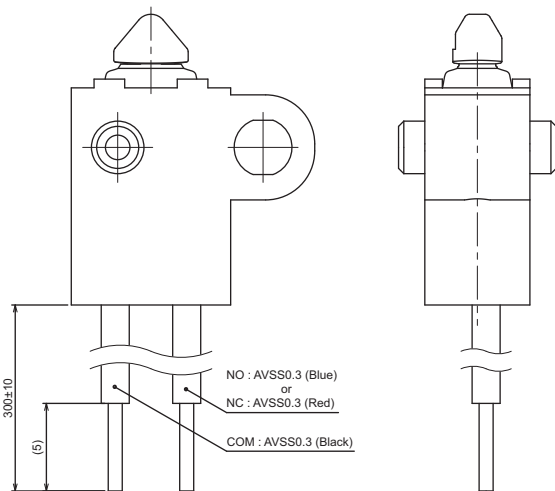
**Note:** UL approved wires (AWG24, UL1007) are used for UL/cUL standard approved items.

### ● Molded Lead Wires on Right-side



**Note:** UL approved wires (AWG24, UL1007) are used for UL/cUL standard approved items.

### ● M3-screw Mounting Models



**Note:** UL approved wires (AWG24, UL1007) are used for UL/cUL standard approved items.

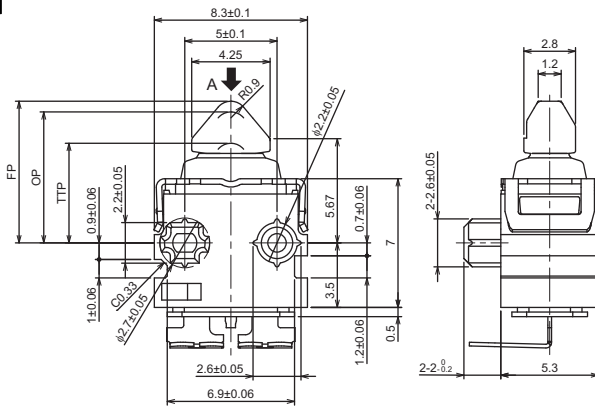
Dimensions / Operating Characteristics and Reference Positions (Unit: mm)

**CAD Data** Please visit our website, which is noted on the last page.

The following drawing is for example model. When ordering, replace □ with the code for the rating that you need. For the combination of models, refer to *List of Models*.

● Post

Press-fit terminals  
Straight PCB terminals  
Solder terminals  
Molded lead wires downwards  
on right-side/ on left-side  
D2EW-B0□□



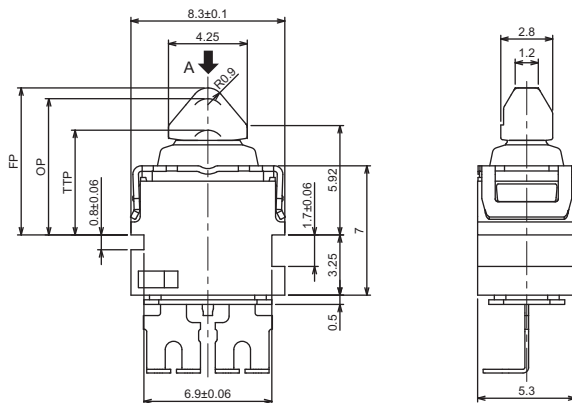
Operating characteristics	Type	Post
Operating Force	OF Max.	1.2 N {122 gf}
Releasing Force	RF Min.	0.1 N {10 gf}
Overtravel	OT	1.7 mm (reference value)
Movement Differential	MD Max.	
Free Position	FP Max.	7.8 mm
Operating Position	OP	7.1±0.2 mm
Total Travel Position	TTP	5.4 mm

**CAD Data**

Note: 1. Unless otherwise specified, a tolerance of ±0.2 mm applies to all dimensions.  
2. The operating characteristics are for operation in the A direction (↓).

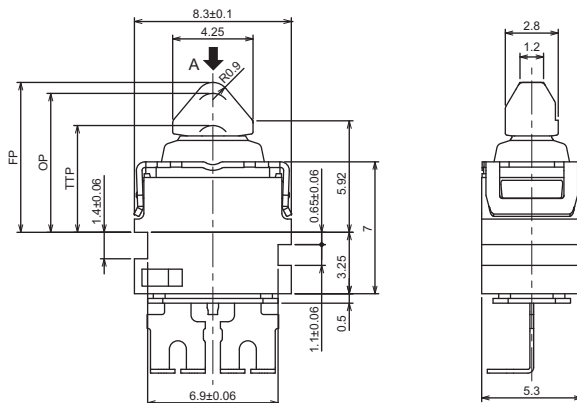
● Side slot

Press-fit terminals  
D2EW-A0□S  
SPST-NO



Operating characteristics	Type	Press-fit terminals
Operating Force	OF Max.	1.2 N {122 gf}
Releasing Force	RF Min.	0.1 N {10 gf}
Overtravel	OT	1.7 mm (reference value)
Movement Differential	MD Max.	
Free Position	FP Max.	8.05 mm
Operating Position	OP	7.35±0.2 mm
Total Travel Position	TTP	5.65 mm

SPST-NC

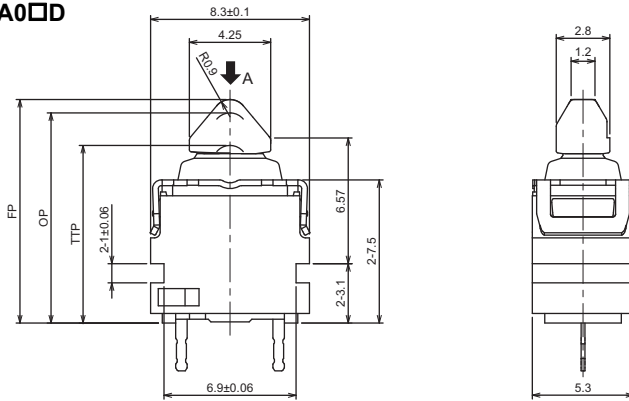


Note: 1. Unless otherwise specified, a tolerance of ±0.2 mm applies to all dimensions.  
2. The operating characteristics are for operation in the A direction (↓).

# D2EW

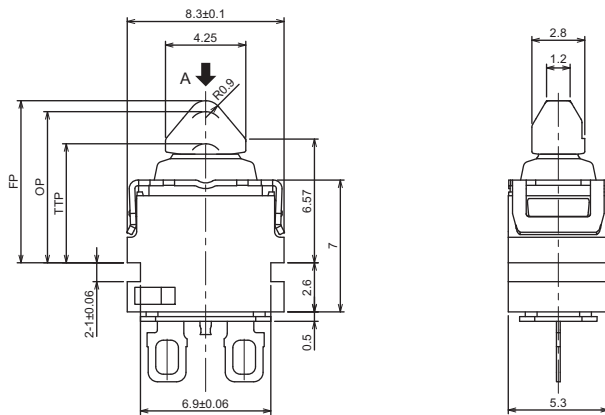
## Dimensions / Operating Characteristics and Reference Positions (Unit: mm)

### ● Side slot Straight PCB terminals D2EW-A0□□



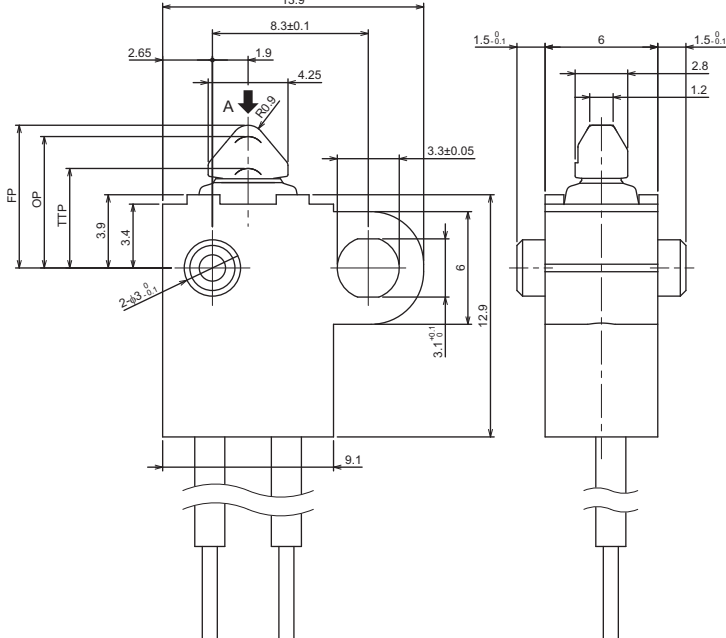
Operating characteristics	Type	Straight PCB terminals
Operating Force	OF Max.	1.2 N {122 gf}
Releasing Force	RF Min.	0.1 N {10 gf}
Overtravel	OT	1.7 mm (reference value)
Movement Differential	MD Max.	0.25 mm
Free Position	FP Max.	11.8 mm
Operating Position	OP	11.1±0.2 mm
Total Travel Position	TTP	9.4 mm

### Solder terminals D2EW-A0□H



Operating characteristics	Type	Solder terminals
Operating Force	OF Max.	1.2 N {122 gf}
Releasing Force	RF Min.	0.1 N {10 gf}
Overtravel	OT	1.7 mm (reference value)
Movement Differential	MD Max.	0.25 mm
Free Position	FP Max.	8.7 mm
Operating Position	OP	8.0±0.2 mm
Total Travel Position	TTP	6.3 mm

### M3-screw mounting models D2EW-SC0□M



Operating characteristics	Type	M3-screw Mounting Models
Operating Force	OF Max.	1.2 N {122 gf}
Releasing Force	RF Min.	0.1 N {10 gf}
Overtravel	OT	1.7 mm (reference value)
Movement Differential	MD Max.	0.25 mm
Free Position	FP Max.	7.7 mm
Operating Position	OP	7.0±0.25 mm
Total Travel Position	TTP	5.3 mm

**Note:** 1. Unless otherwise specified, a tolerance of  $\pm 0.2$  mm applies to all dimensions.  
2. The operating characteristics are for operation in the A direction (↓).



## Precautions

Please refer to "Safety Precautions for All Detection Switches" for correct use.

### Cautions

#### ● Degree of Protection

- Do not use this product underwater.  
Satisfy the test conditions for the standard given below, this test is to check the ingress of water into the switch enclosure after submerging the Switch in water for a given time. Satisfying this test condition does not mean that the Switch can be used underwater.  
JIS C0920:  
Degrees of protection provided by enclosures of electrical apparatus (IP Code)  
IEC 60529:  
Degrees of protection provided by enclosures (IP Code)  
Degree of protection: IP67  
(check water intrusion after immersion for 30 min. submerged 1m underwater)
- Do not operate the Switch when it is exposed to water spray, or when water drops adhere to the Switch surface, or during sudden temperature changes, otherwise water may intrude into the interior of the Switch due to a suction effect.
- Prevent the Switch from coming into contact with oil and chemicals.  
Otherwise, damage to or deterioration of Switch materials may result.
- Do not use the Switch in areas where it is exposed to silicon adhesives, oil, or grease. Otherwise faulty contact may result due to the generation of silicon oxide.

#### ● Soldering

When soldering the lead wire to the terminal, first insert the lead wire conductor through the terminal hole and then conduct soldering.  
Make sure that the temperature of the soldering iron tip does not exceed 300°C, and complete the soldering within 3 seconds. Do not apply any external force for 1 minute after soldering.  
Soldering at an excessively high temperature or soldering for more than 3 seconds may deteriorate the characteristics of the Switch.  
In case of automatic soldering, please do not apply the heat beyond 260°C within 5 seconds. Pay careful attention so that flux or solder liquid does not flow over the edge of the PCB panel.

#### ● Horizontal and rotational operations

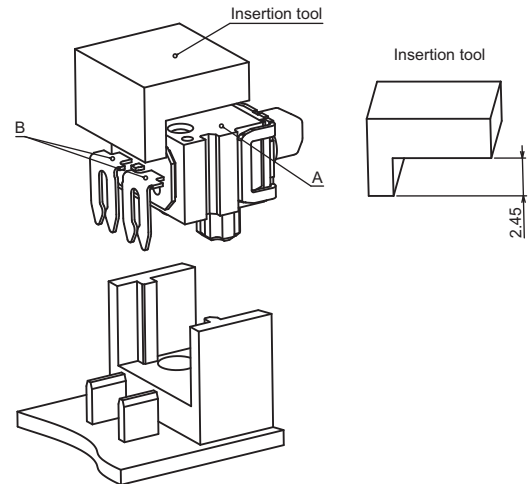
- Factors such as the operating speed, operating frequency, push-button indentation, and material and shape will affect the durability of the Switch. Confirm performance specifications under actual operating conditions before using the Switch in applications.

### Correct Use

#### ● Mounting

- Turn OFF the power supply before mounting or removing the Switch, wiring, or performing maintenance or inspection. Failure to do so may result in electric shock or burning.
- For models with posts, secure the posts by pressing into an attached device. Provide guides on the opposite ends of the posts to ensure that they do not fall out or rattle.
- For M3-screw mounting models, use M3 mounting screws with plane washers or spring washers to securely mount the Switch. Tighten the screws to a torque of 0.27 to 0.29 N·m {27.5 to 29.5 gf}. Exceeding the specified torque may result in deterioration of the sealing or damage.

- When mounting a Press-fit terminals, press in A (body) and B (terminal) in the drawing below at the same time. If A (body) only is pressed in, the Press-fit terminals will be deformed and will not be properly inserted. Also, ensure that the Press-fit terminals is facing down when it is inserted. Mold the terminal part with urethane resin, etc., and use it in a state where the terminal part does not come into contact with outside air. Avoid connecting soldered or laser-welded terminals. Avoid mounting in conditions exposed to corrosive gases, high temperature and humidity, and dust.

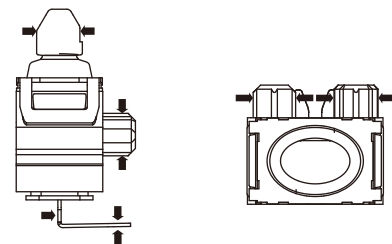


#### ● Operating Body

- Use an operating body with low frictional resistance and of a shape that will not interfere with the sealing rubber, otherwise the plunger may be damaged or the sealing may deteriorate.

#### ● Handling

- Do not handle the Switch in a way that may cause damage to the sealing rubber.
- When handling the Switch, ensure that pressure is not applied to the Pin plunger, Posts and Terminal in the directions shown in the following diagram. Otherwise, Switch may be damaged, or be reduced performance.



#### ● Wiring Molded Lead Wire Models

- When wiring molded lead wire models, ensure that there is no weight applied on the wire or that there are no sharp bends near the parts where the wire is drawn out. Otherwise, damage to the Switch or deterioration in the sealing may result.

#### ● Using Micro Loads

- Even when using micro load models within the specification range, if inrush/surge current occurs, it may increase the contact wear and so decrease durability. Therefore, insert a contact protection circuit where necessary.

Please check each region's Terms & Conditions by region website.

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Device & Module Solutions Company

**Regional Contact**

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