OMRON

Watertight Miniature Basic Switch

D2SW

A High-quality Watertight Miniature Basic Switch Conforms to IP67

- Monoblock construction assures high sealing capability and is ideal for dusty places or where water is sprayed.
- A wide operating temperature range of –40°C to 85°C is ideal for any operating environment.
- Ideal for the automobile, agricultural machinery, automatic vending machine, refrigerator, ice-manufacturing, bath equipment, hot-water supply, air conditioner, and factory machine industries, which require highly environment-resistive capabilities.



Ordering Information

Actuator		Model	
		3 A	0.1A
Pin plunger	Solder terminals	D2SW-3H	D2SW-01H (see note 2)
	Tab terminals (#110)	D2SW-3T	D2SW-01T
	PCB terminals	D2SW-3D	D2SW-01D
	With lead wires	D2SW-3M (see note 3)	D2SW-01M (see note 3)
Hinge lever	Solder terminals	D2SW-3L1H	D2SW-01L1H (see note 2)
	Tab terminals (#110)	D2SW-3L1T	D2SW-01L1T
	PCB terminals	D2SW-3L1D	D2SW-01L1D
	With lead wires	D2SW-3L1M (see note 3)	D2SW-01L1M (see note 3)
Simulated hinge lever	Solder terminals	D2SW-3L3H	D2SW-01L3H (see note 2)
	Tab terminals (#110)	D2SW-3L3T	D2SW-01L3T
	PCB terminals	D2SW-3L3D	D2SW-01L3D
	With lead wires	D2SW-3L3M (see note 3)	D2SW-01L3M (see note 3)
Hinge roller lever	Solder terminals	D2SW-3L2H	D2SW-01L2H (see note 2)
	Tab terminals (#110)	D2SW-3L2T	D2SW-01L2T
	PCB terminals	D2SW-3L2D	D2SW-01L2D
	With lead wires	D2SW-3L2M (see note 3)	D2SW-01L2M (see note 3)

Note: 1. The standard lengths of the lead wires (AV0.5f) of models incorporating them are 30 cm.
2. EN61058-1 (IEC1058-1) approved by VDE.
3. UL/CSA approved lead-wired models use UL/CSA approved lead wire. Model name changes from D2SW-□M to D2SW-□MS.

Distributed by: Diamond Electronics Ltd
Tel: +44(0)1477 500450 Fax: +44(0)1477 500656 Mail: sales@diamondelec.co.uk
Web: www.diamondelec.co.uk

Specifications

■ Ratings

Model	Rated voltage	Non-inductive load				Inductive laod			
		Resistive load		Lamp load		Inductive load		Motor load	
		NC	NO	NC	NO	NC	NO	NC	NO
D2SW-3	125 VAC	3 A		1 A	0.5 A	1 A	0.5 A	1 A	0.5 A
	250 VAC	2 A		0.5 A	0.3 A	0.5 A	0.3 A	0.5 A	0.3 A
	30 VDC	3 A		1 A		1 A		1 A	
D2SW-01	125 VAC	0.1 A		---		---		---	
	30 VDC	0.1 A		---		---		---	

Note: 1. The above current ratings are the values of the steady-state current.
2. Inductive load has a power factor of 0.7 min. (AC) and a time constant of 7 ms max. (DC).
3. Lamp load has an inrush current of 10 times the steady-state current.
4. Motor load has an inrush current of 6 times the steady-state current.

■ Approved Standards

UL (File No. E32667)/CSA (File No. LR21642)

D2SW-3□: 3 A at 125 VAC, 2 A at 250 VAC
D2SW-01□: 0.1 A at 125 VAC, 0.1 A at 30 VDC

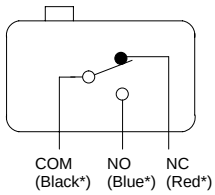
VDE (Licence No. 85002)/EN61058-1 (IEC1058-1) Approved

D2SW-01□H: 0.1 A at 125 VAC

■ Contact

Item	D2SW-3	D2SW-01
Specification	Rivet	Crossbar
Material	Silver	Gold alloy

Contact Form



*Indicates the color of the lead wire.

Distributed by: Diamond Electronics Ltd
Tel: +44(0)1477 500450 Fax: +44(0)1477 500656 Mail: sales@diamondelec.co.uk
Web: www.diamondelec.co.uk

■ Characteristics

Item	D2SW-3	D2SW-01
Operating speed (see note)	0.1 mm to 1 m/s (at pin plunger)	
Operating frequency	Mechanical: 300 operations/min Electrical: 60 operations/min	
Insulation resistance	100 MΩ min. (at 500 VDC)	
Contact resistance	50 mΩ max. (initial value) for lead wire models	70 mΩ max. (initial value) for lead wire models
Dielectric strength	1,000 VAC, 50/60 Hz for 1 min between contacts of the same polarity 1,500 VAC, 50/60 Hz for 1 min between current-carrying metal parts and ground, and between each terminal and non-current-carrying metal part	600 VAC, 50/60 Hz for 1 min between contacts of the same polarity 1,500 VAC, 50/60 Hz for 1 min between current-carrying metal parts and ground, and between each terminal and non-current-carrying metal part
Inrush current	NO: 10 A NC: 20 A	NO: 1 A NC: 1 A
Vibration resistance	Malfunction: 10 to 55 Hz, 1.5-mm double amplitude	
Shock resistance	Malfunction: 300 m/s^2 (approx. 30G)	
Life expectancy	Mechanical: 5,000,000 operations min. (OT value) Electrical: 200,000 operations min. (3 A at 125 VAC), 100,000 operations min. (2 A at 250 VAC)	Mechanical: 5,000,000 operations min. (OT value) Electrical: 200,000 operations min.
Ambient temperature	Operating: –40°C to 85°C (with no icing)	
Ambient humidity	Operating: 95% max.	
Enclosure ratings	IP67 for lead wire models IP50 for terminal models	
Weight	Terminal model: 2 g, Lead wire model: 10 g	

Note: The operating speed value shown is for pin plunger models. For hinge lever models, this speed is for the plunger parts.

VDE-approved Characteristics (EN61058-1)

Degree of protection against electric shock	Class 1
Ambient temperature	0°C to 85°C
Operating cycles	50,000
Proof tracking index (PTI)	175 V
Switch category (IEC335-1)	A

■ Operating Characteristics

Type	Pin plunger	Hinge lever	Simulated hinge lever	Hinge roller lever
	D2SW-3□ D2SW-01□	**D2SW-3L1□ D2SW-01L1□**	**D2SW-3L3□ D2SW-01L3□**	**D2SW-3L2□ D2SW-01L2□**
OF max.	1.77 N (180 gf)	0.59 N (60 gf)	0.59 N (60 gf)	0.59 N (60 gf)
RF min.	0.29 N (30 gf)	0.06 N (6 gf)	0.06 N (6 gf)	0.06 N (6 gf)
PT max.	0.6 mm	---	---	---
OT min.	0.5 mm	1.0 mm	1.0 mm	1.0 mm
MD max.	0.1 mm	0.8 mm	0.8 mm	0.8 mm
FP max.	---	13.6 mm	15.5 mm	19.3 mm
OP	8.4±0.3 mm	8.8±0.8 mm	10.7±0.8 mm	14.5±0.8 mm

Distributed by: Diamond Electronics Ltd
Tel: +44(0)1477 500450 Fax: +44(0)1477 500656 Mail: sales@diamondelec.co.uk
Web: www.diamondelec.co.uk

Dimensions

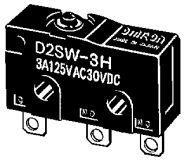
Note: 1. All units are in millimeters unless otherwise indicated.
2. Every actual model number includes the code instead of □ for the kind of terminals incorporated by the model.
3. Unless otherwise specified, a tolerance of ±0.4 mm applies to all dimensions.

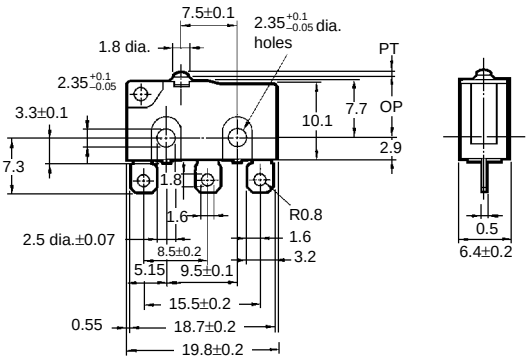
■ Terminal Model

Note: The following illustrations and dimensions are for models with soldered terminals. Refer to *Terminals* for models with tab (#110) and PCB terminals. The dimensions not described are the same as those of models with pin plungers.

Pin Plunger

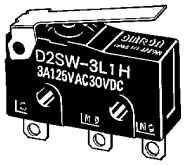
D2SW-3□
D2SW-01□

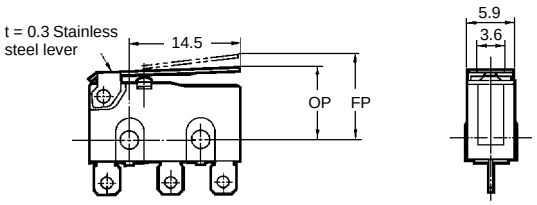




Hinge Lever

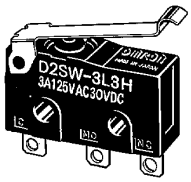
D2SW-3L1□
D2SW-01L1□

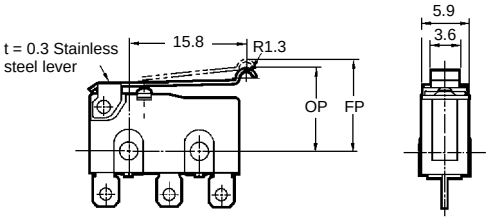




Simulated Hinge Lever

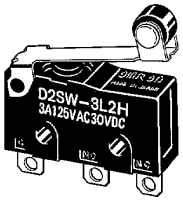
D2SW-3L3□
D2SW-01L3□

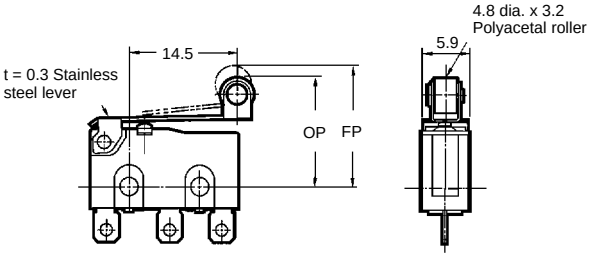




Hinge Roller Lever

D2SW-3L2□
D2SW-01L2□

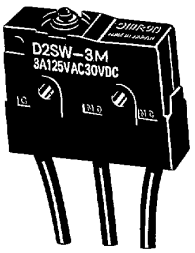


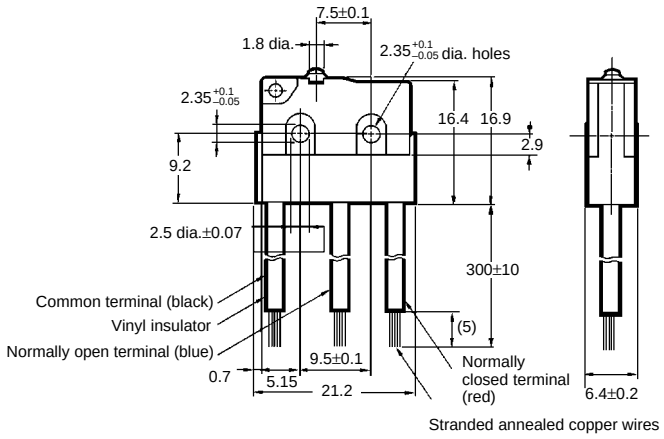


Distributed by: Diamond Electronics Ltd
Tel: +44(0)1477 500450 Fax: +44(0)1477 500656 Mail: sales@diamondelec.co.uk
Web: www.diamondelec.co.uk

■ Lead Wire Model

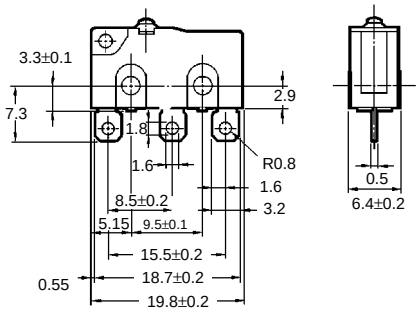
Note: The following illustration and dimensions are for models with pin plungers. The dimensions and operating characteristics of the actuators of models incorporating them are the same as those of the actuators of models with both actuators and terminals.



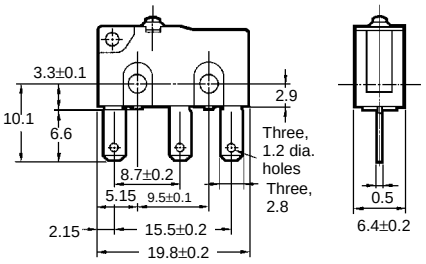


■ Kind of Terminals

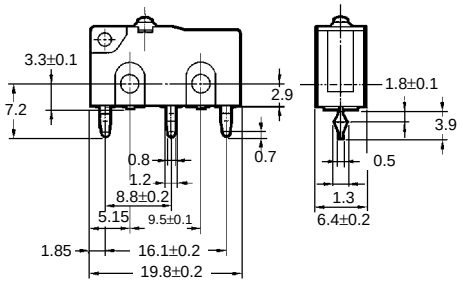
Solder Terminals



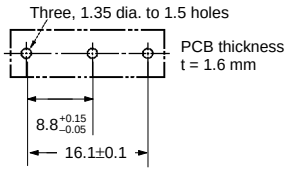
Tab Terminals (#110)



PCB Terminals



PCB Mounting



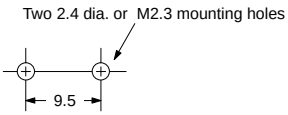
Distributed by: Diamond Electronics Ltd
Tel: +44(0)1477 500450 Fax: +44(0)1477 500656 Mail: sales@diamondelec.co.uk
Web: www.diamondelec.co.uk

Precautions

Mounting

Use two M3 mounting screws with spring washers to mount the switch. Tighten the screws to a torque of 0.23 to 0.26 N • m (2.3 to 2.7 kgf • cm).

Mounting Holes



When soldering a lead wire to a terminal of the D2SW, use a soldering iron with a maximum capacity of 60 W and do not take more than 5 s to solder the lead wire, otherwise the characteristics of the D2SW may be altered.

Make sure that there is no icing when using the D2SW at low ambient temperatures.

Operations

Make sure that the switching object is perfectly separated from the actuator when the switch is not operated and the actuator is pressed appropriately by the switching object when the switch is operated.

The switch should be set so that its stroke will be within the rated OT when the switch is operated.

Install the switching object so that its moving direction is the same as that of the actuator.

Handle D2SW models with pin plungers with care so that the sealing rubber parts around the pin plungers will not be damaged.

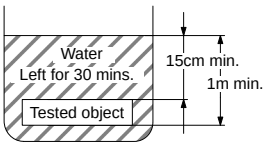
Recommended conductor size for the 0.1 A-series solder terminal is AWG26 to 18 (0.13 to 0.83 mm^2).

Enclosure Ratings

The D2SW was tested underwater and passed the following watertightness tests, which however, does not mean that the D2SW can be used in the water.

JIS C0920 (rules for testing the watertightness of electrical devices and materials), class 7 (watertightness test). Refer to the following illustration for the test method.

IEC Publication 529, class IP67. Refer to the following illustration for the test method.



Note: The object to be tested is left in the water for 30 minutes on condition that the distance between the surface of the water and the top of the object be 15 cm minimum and the distance between the surface of the water and the bottom of the object be 1 m minimum.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Cat. No. C97-E1-1

Distributed by: Diamond Electronics Ltd
Tel: +44(0)1477 500450 Fax: +44(0)1477 500656 Mail: sales@diamondelec.co.uk
Web: www.diamondelec.co.uk