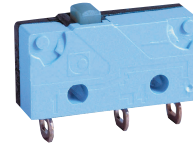


# SUBMINIATURE MICROSWITCHES - PREMIUM

## V4 - 83170

- › High precision flexible leaf snap-action mechanism
- › Operation without balance-point, even at extremely slow actuating speed
- › Ratings from 1 mA 4 V<sub>DC</sub> up to 12(6) A 250 V<sub>AC</sub> and 1/4 HP 125-250 V<sub>AC</sub>
- › ENEC and cURus approved up to +150 °C
- › Mechanical life up to 30 million cycles
- › High resistance to shock and vibration
- › Choice of connections with symmetric and asymmetric pinning
- › Wide choice of actuators on 2 possible fixing positions (pre-assembled or retrofittable)



### Main specifications

		Standard 831700	Low force 831704	Dual-current 831708	Dual-current Low force 831709
Function	Connections				
I (changeover)	W2	83170002	83170402	83170802	83170902
I (changeover)	W7A5	83170005	83170405	83170805	83170905
I (changeover)	X1	83170008	83170408	83170808	83170908
I (changeover)	X1S	83170009	83170409	83170809	83170909
I (changeover)	X2	83170010	83170410	83170810	83170910
I (changeover)	X2S	83170011	83170411	83170811	83170911
I (changeover)	X3	83170012	83170412	83170812	83170912
I (changeover)	X3S	83170013	83170413	83170813	83170913
R (normally closed)	W2	83170003	83170403	83170803	83170903
R (normally closed)	W7A5	83170006	83170406	83170806	83170906
C (normally open)	W2	83170004	83170404	83170804	83170904
C (normally open)	W7A5	83170007	83170407	83170807	83170907
Electrical characteristics					
Rating nominal / 250 V AC (A)		10	5	5**	5**
Rating thermal / 250 V AC (A)		12.5	6	6	6
Mechanical characteristics					
Maximum operating force (N)		1.5	0.6	1.5	0.6
Min. Release force (N)		0.3	0.1	0.3	0.1
Maximum total travel force (N)		1.8	1	1.8	1
Max. allowable overtravel force (N)		10	10	10	10
Rest position max. (mm)		9.2	9.2	9.2	9.2
Operating position (mm)		8.4±0.3	8.4±0.3	8.4±0.3	8.4±0.3
Maximum differential travel (mm)		0.15	0.15	0.15	0.15
Min. overtravel (mm)		0.5	0.5	0.5	0.5
Ambient operating temperature (°C)		-40 +125	-40 +125	-40 +125	-40 +125
Mechanical life (operations)		10 <sup>7*</sup>	3.10 <sup>7</sup>	10 <sup>7*</sup>	3.10 <sup>7</sup>
Contact gap (mm)		0.4	0.4	0.4	0.4
Weight (g)		1.7	1.7	1.7	1.7

\* For 2/3 of the overtravel

### Additional specifications

- Case: PBT GF (UL 94-V0 / GWFI 960 °C)
- Button: PA66 GF
- Moving blade: beryllium copper
- Contacts: silver alloy, micro-profile  
gold alloy on silver alloy, crossbar (dual-current)
- Terminals: copper nickel (except W7A5: brass)
- Levers: stainless steel or plastic, polyamide roller
- Degree of protection: IP40 (mechanism)
- Proof tracking index: PTI 250
- Protection against electric shock: button and actuators have reinforced insulation for Ui 250 V / Uimp 2,5kV / pollution 2
- Recommended min actuating speed: 0.001 mm/s
- Approvals: NF - ENEC - cURus

### Product adaptations



- › Special actuators: stainless steel or plastic, special shapes and lengths
- › Special connections: angled, screw, double tabs, ...
- › Special fastening pins
- › High operating temperature: +150 °C
- › NF 12(6) A and cURus 12 A approved version (831700 SP9765)
- › AgSnO2 contacts for very high inrush currents (lamp and capacitor loads)
- › Increased or reduced differential travel (SP4982: max 0.08 mm)
- › Specific operating force up to 2.2 N
- › Housing material according to IEC 60335-1 for unattended appliances: GWFI 850° C / GWIT 775° C
- › Telescopic plunger with 3 mm overtravel and adjustable fixing by threaded barrel
- › NC contacts with forced break action to prevent contact welding in case of accidental overcurrents

Standard product

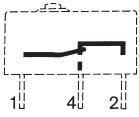
Product made to order



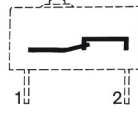
Contact us

Principles

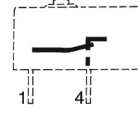
Single break snap-action switch  
Changeover - SPDT (form C)



Normally closed - SPST-NC (form B)

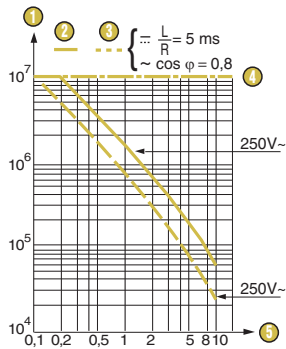


Normally open - SPST-NO (form A)



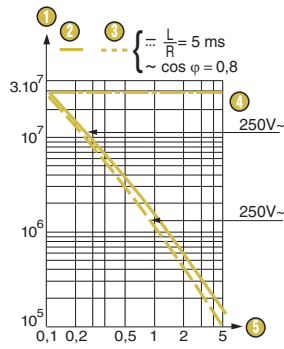
Curves

Operating curve for type 831700



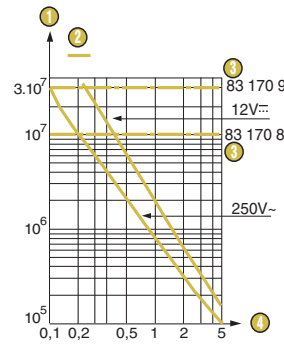
- 1 Number of cycles
- 2 Resistive circuit
- 3 Inductive circuit
- 4 Mechanical life limit
- 5 Current in Amps

Operating curve for type 831704



- 1 Number of cycles
- 2 Resistive circuit
- 3 Inductive circuit
- 4 Mechanical life limit
- 5 Current in Amps

Operating curve for types 831708/831709



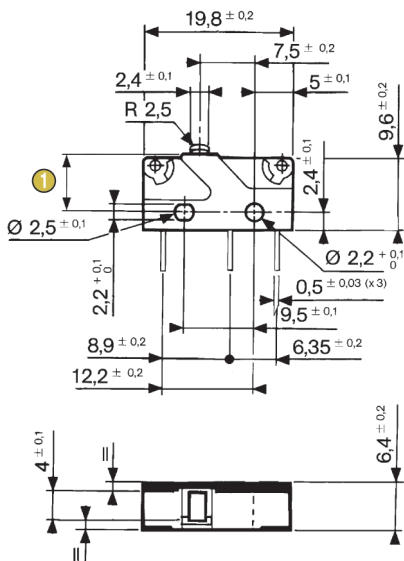
- 1 Number of cycles
- 2 Resistive circuit
- 3 Mechanical life limit
- 4 Current in Amps

\*\* Models 831708 and 831709 are designed to operate equally well on low-current (1 mA 4 V minimum recommended) or medium-current (5 A maximum) circuits. However, a given product should only be used to switch one type of circuit during its working life.

Dimensions

Product

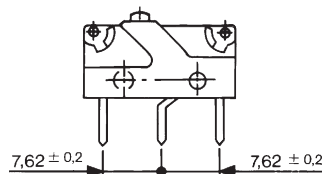
83170  
Asymmetrical version



1 Total travel position = max 7.6

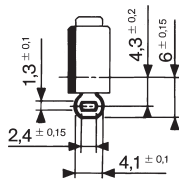
Fixing with M2 screws  
Recommended tightening torque: 0.2 N.m

83170  
Symmetrical version (X.S connections)

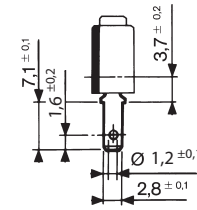


## Connections

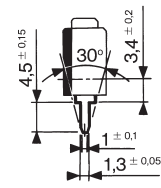
### W2 solder



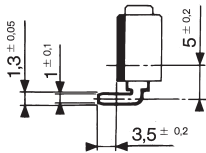
### W7A5 quick-connect 2.8 x 0.5



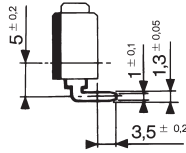
### X1 - X1S for PCB, straight output



### X2 - X2S for PCB, rear output

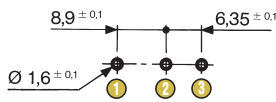


### X3 - X3S for PCB, front output



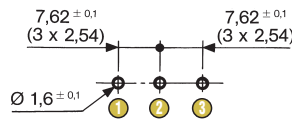
## Drilling

### Printed circuit board mounting Asymmetrical X1 - X2 - X3



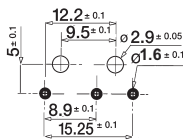
- 1 1.C
- 2 4.NO
- 3 2.NC

### Printed circuit board mounting Symmetrical X1S - X2S - X3S

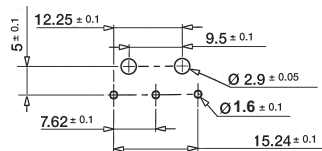


- 1 1.C
- 2 4.NO
- 3 2.NC

### Mounting on a printed circuit board with holding pins Asymmetrical

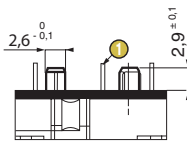


### Mounting on a printed circuit board with holding pins Symmetrical



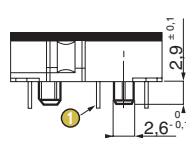
## Mounting accessories

### Locating pins 79219682



- 1 X2 - X2S connections

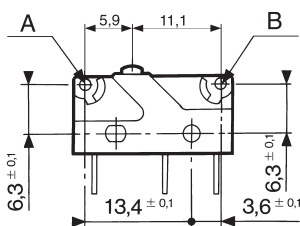
### Locating pins 79219682



- 1 X3 - X3S connections

Other shapes and dimensions:  
consult us

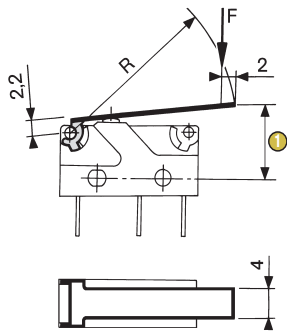
## Actuator mounting positions



**To calculate force :** divide the switch force by the coefficient in the table.  
**To calculate travel :** multiply the switch travel by the same coefficient.

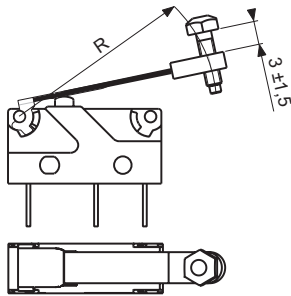
## Actuators

170A flat

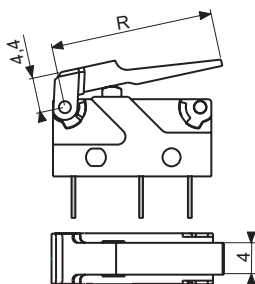


① Operating position

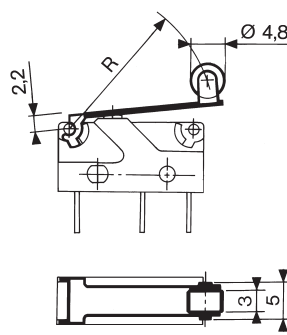
170D adjustable



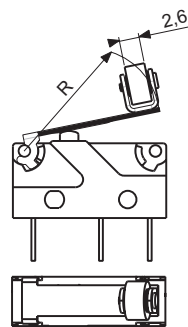
79257876 plastic



170E roller

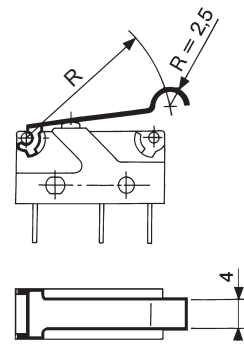


170EL transverse roller

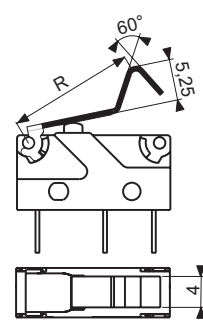


Other shapes and dimensions:  
consult us

170F dummy roller



79250004 folded



## Actuators and mounting accessories

### Part numbers for standard actuators

	79253327		79253326		79253328		79218454		79253329	
Actuators	Flat 170A R18.3		Flat 170A R24		Flat 170A R41		Roller 170E R20		Dummy roller 170F R19.5	
Fixing positions	A	B	A	B	A	B	A	B	A	B
Coefficient	3	1.5	4	2	7	3.5	3	1.5	3	1.5
Operating position	10 ±1	9.4 ±0.6	10.8 ±1.4	9.8 ±0.8	12.1 ±2.6	10.5 ±1.5	14.7 ±1.3	14.2 ±0.8	12.6 ±1.2	11.9 ±0.7

### Part numbers for standard actuators

	79218491		79218493		79250004		79257876	
Actuators	Adjustable 170D R26.5		Transverse roller 170EL R18		Folded R16.5		Plastic (PARA GF50) R20.5	
Fixing positions	A	B	A	B	A	B	A	B
Coefficient	4	2	3	1.5	2.5	1.2	3	-
Operating position	16.6 ±1.8*	15.5 ±1.1*	16.3 ±1.2	15.6 ±0.8	15 ±1	13.9 ±0.6	10.6 ±1.1	-

\* Factory setting. Adjustment range +/- 1.5 mm

Except where otherwise indicated, levers are supplied unmounted. For factory mounting, specify fixing position A or B.

V4 - 83170 microswitches with referenced actuators

Actuator	170A R18.3		170A R24		170E R20		170F R19.5		Folded R16,5		Plastic
	79253327		79253326		79218454		79253329		79250004		79257876
	Pos A	Pos B	Pos A	Pos B	Pos A	Pos B	Pos A	Pos B	Pos A	Pos B	Pos A
831700	I W2	83170162	83170185	83170182	●	●	●	83170028	83170032	●	83170176
	I W7A5	83170197	●	●	●	●	●	83170046	83170183	●	●
	I X1	●	●	●	●	83170121	83170049	●	83170184	●	●
	I X1S	●	●	●	●	●	●	●	●	●	●
	I X2	●	83170160	●	●	●	●	83170038	●	83170035	●
I X3	●	83170161	●	●	●	●	83170039	●	83170036	●	
831704	I W2	83170437	83170439	83170440	83170441	83170434	83170442	83170443	83170444	●	●
	I W7A5	83170445	83170446	83170447	83170448	83170449	83170450	83170451	83170433	●	●
	I X1	83170464	83170465	83170466	83170467	83170468	83170469	83170470	83170471	●	●
	I X1S	●	●	●	●	83170435	●	●	●	●	●
	I X2	●	●	●	●	●	●	●	●	83170427	●
I X3	●	●	●	●	●	●	●	●	83170428	●	
831708	I W2	83170848	●	83170832	●	●	●	●	●	83170833	●
	I W7A5	●	83170849	●	●	●	●	●	●	●	83170864
	I X1	●	●	●	●	●	●	83170850	83170851	●	●
	I X1S	●	●	●	●	●	●	●	●	●	●
	I X2	●	●	●	●	●	●	●	●	●	●
I X3	●	●	●	●	●	●	●	●	●	●	
831709	I W2	83170930	83170931	83170932	83170933	83170934	83170935	83170936	83170937	●	●
	I W7A5	83170938	83170939	83170929	83170940	83170941	83170942	83170943	83170944	●	●
	I X1	83170928	83170945	83170946	83170947	83170948	83170949	83170950	83170951	●	●
	I X1S	83170926	83170927	●	●	●	●	●	●	●	●
	I X2	●	●	●	●	●	●	●	●	●	●
I X3	●	●	●	●	●	●	●	●	●	●	

Installation recommendations

See "Basic technical concepts"

How to order

Use the 8 digit part numbers when they are defined

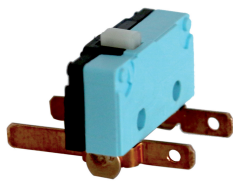
Other cases, precise: Type of microswitch - Function - Connection - Actuator\* - Fixing position\* - Mounting accessories\* - Adaptation\*  
\* if needed

Example: 831708 I X2 170A R24 B 79219682

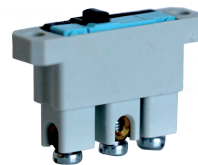
Examples of special adaptations



Angled W7A5 terminals



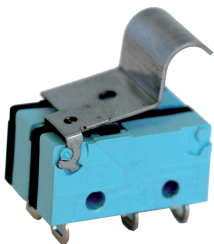
Double lateral 2.8 x 0.5 quick-connect terminals



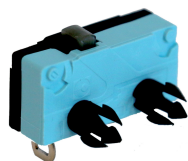
Top mounted bracket and screw terminals



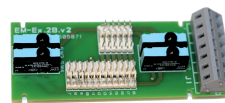
Telescopic plunger with 3 mm overtravel and with M6 x 0.75 threaded barrel



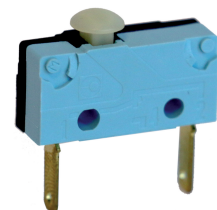
Two-pole assembly with single actuator



Fastening pins for 2.8 max thickness and Ø4mm holes (79253576)



PCB assembly with terminal block



Special buttons: see "V4 Mushroom-head button - 83170 BC"

Standard product

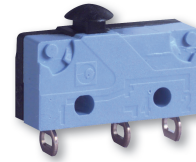
Product made to order

Contact us

# SUBMINIATURE MICROSWITCHES - PREMIUM

## V4 Mushroom-head button - 83170 BC

- › High precision flexible leaf snap-action mechanism
- › Suitable for lateral approach from any direction with angle up to 45°
- › Operation without balance-point, even at extremely slow actuating speed
- › Ratings from 1 mA 4 V<sub>DC</sub> up to 12(6) A 250 V<sub>AC</sub> and 1/4 HP 125-250 V<sub>AC</sub>
- › ENEC and cURus approved up to +150 °C
- › Mechanical life 1 million cycles
- › High resistance to shock and vibration
- › Choice of connections with symmetric and asymmetric pinning



### Main specifications

	Standard 831700 BC	Low force 831704 BC	Dual-current 831708 BC	Dual-current Low force 831709 BC
<b>Function</b>	<b>Connections</b>			
I (changeover)	W2	83170107	●	83170965
I (changeover)	W7A5	●	●	83170964
I (changeover)	X1	●	●	83170971
I (changeover)	X1S	●	83170481	●
I (changeover)	X2	●	●	83170919
I (changeover)	X2S	●	83170438	●
I (changeover)	X3	●	●	●
I (changeover)	X3S	●	83170486	●
R (normally closed)	W2	●	83170495	●
R (normally closed)	W7A5	●	●	●
C (normally open)	W2	●	●	●
C (normally open)	W7A5	83170114	83170475	●
<b>Electrical characteristics</b>				
Rating nominal / 250 V AC (A)	10	5	5**	5**
Rating thermal / 250 V AC (A)	12.5	6	6	6
<b>Mechanical characteristics</b>				
Maximum operating force (N)	1.5	0.6	1.5	0.6
Min. Release force (N)	0.3	0.1	0.3	0.1
Maximum total travel force (N)	1.8	1	1.8	1
Max. allowable overtravel force (N)	10	10	10	10
Rest position max. (mm)	10.8	10.8	10.8	10.8
Operating position (mm)	9.9±0.3	9.9±0.3	9.9±0.3	9.9±0.3
Maximum differential travel (mm)	0.15	0.15	0.15	0.15
Min. overtravel (mm)	0.5	0.5	0.5	0.5
Ambient operating temperature (°C)	-40 +125	-40 +125	-40 +125	-40 +125
Mechanical life at 45° (operations)	10 <sup>6</sup> *	10 <sup>6</sup>	10 <sup>6</sup> *	10 <sup>6</sup>
Contact gap (mm)	0.4	0.4	0.4	0.4
Weight (g)	1.7	1.7	1.7	1.7

\* for 2/3 of the overtravel

### Additional specifications

- Case: PBT GF (UL 94-V0 / GWFI 960 °C)
- Button: PA66 GF
- Moving blade: beryllium copper
- Contacts: silver alloy, micro-profile  
gold alloy on silver alloy, crossbar (dual-current)
- Terminals: copper nickel (except W7A5: brass)
- Degree of protection: IP40 (mechanism)
- Proof tracking index: PTI 250
- Protection against electric shock: button has reinforced insulation for Ui 250V / Uimp 2,5kV / pollution 2
- Recommended min actuating speed: 0.001 mm/s
- Approvals: NF - ENEC - cURus

### Product adaptations



- › Special buttons: cylindrical radius, specific width and height
- › Special connections: angled, screw, double tabs ...
- › Special fastening pins
- › High operating temperature: +150 °C
- › 12 A 250 V<sub>AC</sub> version
- › AgSnO2 contacts for very high inrush currents (lamp and capacitor loads)
- › Increased or reduced differential travel (eg: max. 0.08 mm)
- › Specific operating force up to 2.2 N
- › Housing material according to IEC 60335-1 for unattended appliances: GWFI 850 °C / GWIT 775 °C

Standard product

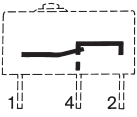
Product made to order



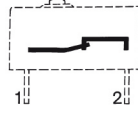
Contact us

**Principles**

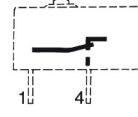
**Single break snap-action switch  
Changeover - SPDT (form C)**



**Normally closed - SPST-NC (form B)**

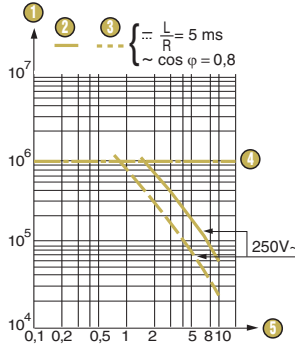


**Normally open - SPST-NO (form A)**



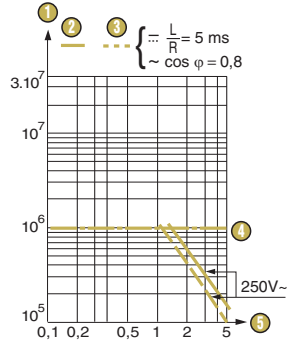
**Curves**

**Operating curve for type  
831700 BC**



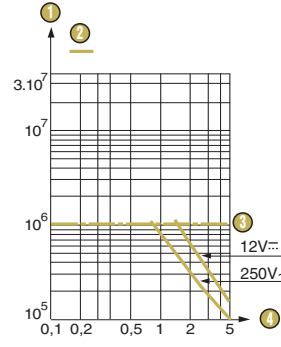
- 1 Number of cycles
- 2 Resistive circuit
- 3 Inductive circuit
- 4 Mechanical life limit
- 5 Current in Amps

**Operating curve for type  
831704 BC**



- 1 Number of cycles
- 2 Resistive circuit
- 3 Inductive circuit
- 4 Mechanical life limit
- 5 Current in Amps

**Operating curve for types  
831708 BC/831709 BC**



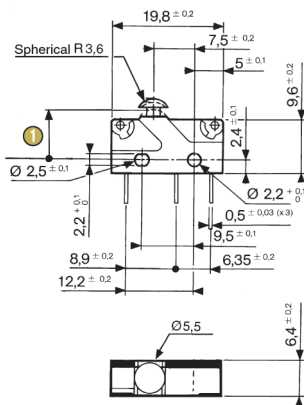
- 1 Number of cycles
- 2 Resistive circuit
- 3 Mechanical life limit
- 4 Current in Amps

\*\*Models 831708 and 831709 are designed to operate equally well on low-current (1 mA 4 V minimum recommended) or medium-current (5 A maximum) circuits. However, a given product should only be used to switch one type of circuit during its working life.

**Dimensions**

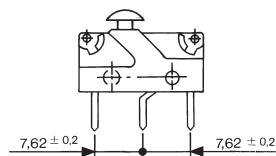
**Product**

**83170 BC  
Asymmetrical version**

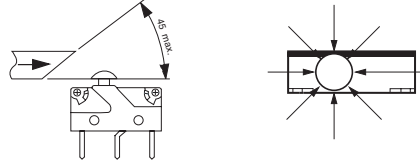


1 Total travel position: max 9.1

**83170 BC  
Symmetrical version (X.S connections)**



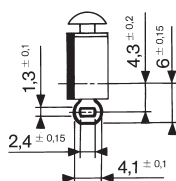
**Recommendations for lateral approach**



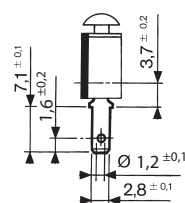
In order to reduce friction and wear, the actuating ramp shall preferably be of POM, PA, PBT or steel, and also be as smooth as possible. As a general rule, the use of any lubricant substance is not needed nor recommended. For particular cases, please consult us.

**Connections**

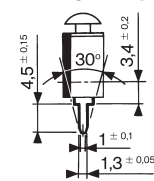
**W2 solder**



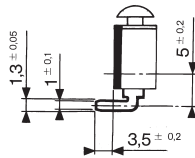
**W7A5 quick-connect 2.8 x 0.5**



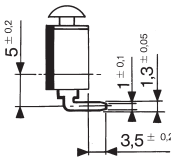
**X1 - X1S for PCB, straight output**



**X2 - X2S for PCB, rear output**

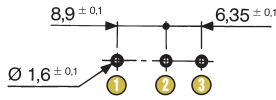


**X3 - X3S for PCB, front output**



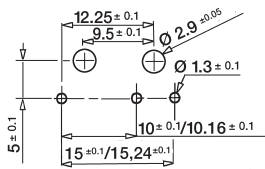
**Drilling**

**Printed circuit board mounting  
Asymmetrical X1 - X2 - X3**

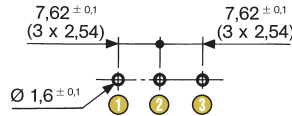


- 1 1.C
- 2 4.NO
- 3 2.NC

**Mounting on a printed circuit board  
with holding pins  
Asymmetrical**

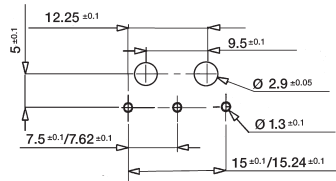


**Printed circuit board mounting  
Symmetrical X1S - X2S - X3S**



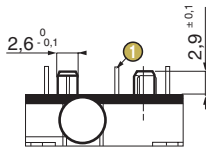
- 1 1.C
- 2 4.NO
- 3 2.NC

**Mounting on a printed circuit board  
with holding pins  
Symmetrical**



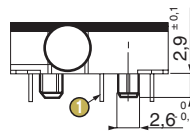
**Mounting accessories**

**Locating pins 79219682**



- 1 X2 - X2S connections

**Locating pins 79219682**



- 1 X3 - X3S connections

**Installation recommendations**

See "Basic technical concepts"

**How to order**

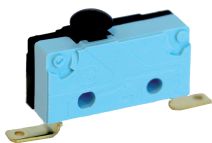
Use the 8 digit part numbers when they are defined

Other cases, precise: Type of microswitch - Function - Connection - Mounting accessories\* - Adaptation\*

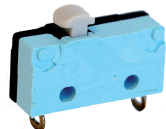
\* if needed

Example: 831700 BC | X3 79219682

**Examples of special adaptations**



Angled W7A5 terminals



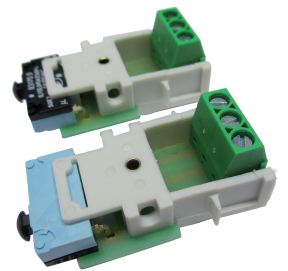
Button head with cylindrical radius - 4 mm width



Button head with cylindrical radius - 5.5 mm width



Fastening pins for 2.8 max thickness and Ø 4mm holes (79253576)



PCB assembly with terminal block





Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

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**Факс:** 8 (812) 320-02-42

**Электронная почта:** [org@eplast1.ru](mailto:org@eplast1.ru)

**Адрес:** 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.