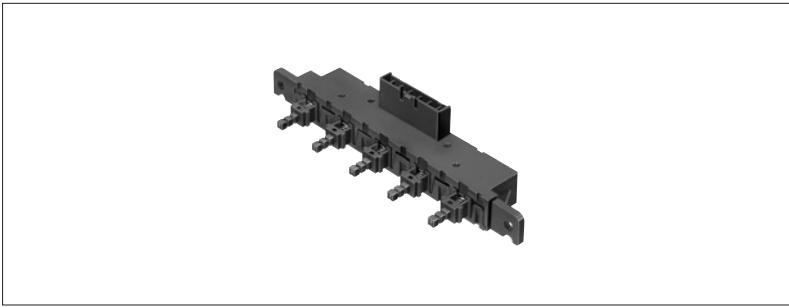


# Multi-Connection Type Power Switch

SDKQ Series

One-touch connectors help reduce the number of wiring operations.

<b>Power</b>
Push
Slide
Rotary
Encoders
Jog Shuttle
Telephone-hook
<b>Detector</b>
Vibration Sensors
Dual-in-line Package Type
Multi Control Devices
<b>TACT</b>



## Features

- Placing output terminals in one location enables one-touch connector wiring operation and contributes to a reduction in man-hours.
- UL safety approved.
- Miniaturized to an 18mm depth from the mounting surface.
- Varieties ranging from 3 to 5 keys with a 20 mm key pitch.
- Dust-proof structure that prevents foreign objects and insects from entering the switch by segregating each key contact with bulkheads.
- Cadmium-free contacts.

## Applications

- Microwave hood (switching the air flow/lighting)

## Ratings and Safety Standards

Items	Specifications
<b>UL CSA</b>	3A 125V AC 3A 125V AC L 6LRA 3FLA 125V AC
<b>Ratings satisfying local electrical appliance and material safety law</b>	AC 125V 3A≠

●For matching connector housings, consult Alps.

## Products Line

Travel (mm)	Total travel (mm)	Operating force	Mounting method	Key	Damper circuit	Operating life	Minimum packing unit (pcs.)	Products No.
2.5	3.5	5±2N	φ 4.2hole	5	With	12,000 cycles (3A 125V AC L)	80	SDKQ110100
					Without			SDKQ200100
				4	With			SDKQ310100
					Without			SDKQ400100
					With			SDKQ510100
				3	Without			SDKQ600100

For other detailed specifications, see P.62

Dimensions

Unit : mm

**Style**

**5 keys type**

Terminal No. ① ② ③ ④ ⑤

Position of cam For anti-double lock

Key No. Reset Inter lock Latching Switch mounting surface

130  
120  
104  
31.6

12  
R

SDKQ310100,400100 (4Keys Type)

SDKQ510100,600100 (4Keys Type)

SDKQ700100 (3Keys Type)

Detail of ③

13.5  
6  
6.7  
3.3  
2.5

3.3  
2.5  
2  
1  
8.5

Terminal

8.3  
12.6

Inserting side of connector

**Travel**

	Reset key	Interlock key	Latching key
Travel	—	2.5	2.5
Total travel	3.5	3.5	3.5

Circuit Diagram

**5 keys type With damper circuit**

KEY No.1 RESET   KEY No.2   KEY No.3   KEY No.4   KEY No.5 LATCHING

TERMINAL No. ① ② ③ ④ ⑤

**5 keys type Without damper circuit**

KEY No.1 RESET   KEY No.2   KEY No.3   KEY No.4   KEY No.5 LATCHING

TERMINAL No. ① ② ③ ④ ⑤

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## Products Specifications

Items	Type	Push													
	Series	SDDL	SDKL	SDKVB	SDDF SDDFD SDDFE	SDKEA	SDKVA	SDKVC	SDKVD	SDKN	SDKS	SDKQ	SDKR		
Power	Operating temperature range	-10°C to +60°C							-20°C to +60°C	-30°C to +60°C	-10°C to +60°C	-10°C to +85°C			
Push	Rating	TV-3	TV-5	TV-8	8A /128A 250V	TV-5	TV-8	0.25A 250V AC 0.5A 125V AC	2A 250V AC 4A 125V AC	3A 125V AC L	0.5A 250V AC 1A 125V AC				
Slide	Electrical performance	Contact resistance							100mΩ max.		50mΩ max.	100mΩ max.			
Rotary		Insulation resistance							500MΩ min. 500V DC		100MΩ min. 500V DC	500MΩ min. 500V DC			
Encoders		Voltage proof		1,000V AC for 1 min.	1,500V AC for 1 min.	2,000V AC for 1 min.	1,500V AC for 1 min.	1,000V AC for 1 min.	1,500V AC for 1 min.	1,000V AC for 1 min.					
Jog Shuttle	Mechanical performance	Robustness of terminal							10N for 1 min.	50N for 1 min.	70N for 1 min.	—	5N for 1 min.		
Telephone-hook		Robustness of actuator	Operating direction		100N			20N		100N					
Detector			Perpendicular direction		20N				30N		20N				
Vibration Sensors	Durability	Vibration											10 to 55 to 10Hz/min., the amplitude is 1.5mm for all the frequencies, in the 3 direction of X, Y and Z for 2 hours respectively		
Dual-in-line Package Type		Solderability											230±5°C, 3±0.5s	—	230±5°C, 3±0.5s
Multi Control Devices		Resistance to soldering heat	Manual soldering		350±10°C, 3±0.5s	360±10°C, 3±0.5s (SDDFD, SDDFE: 300±10°C, 3±0.5s)	300±10°C, 3±0.5s	350±10°C, 3±0.5s	—	300±10°C, 3±0.5s					
TACT	Dip soldering		260±5°C, 10±1s			260±5°C, 5±1s	260±5°C, 10±1s	—	260±5°C, 10±1s						
Push Type	Operating life	25,000 cycles			10,000 cycles	25,000 cycles	6,000 cycles	12,000 cycles	100,000 cycles						
Rocker Type		Load =as ratings								refer to individual product spec.					
Slide Type	Environmental performance	Cold							-20±2°C for 96h	-30±2°C for 96h	-40±2°C for 96h	-25±2°C for 240h	-20±2°C for 240h		
		Dry heat							85±2°C for 96h				85±2°C for 240h		
		Damp heat							40±2°C, 90 to 95%RH for 96h				40±2°C, 90 to 95%RH for 240h	60±2°C, 90 to 95%RH for 1000h	

## Safety Standards

### 1. Safety Standards Outline

Safety standards are established by a country or an organization representing it to protect general users from electrical shock and fire hazards. It establishes standards for electrical devices and components. For electrical equipment manufacturers, utilizing switches that have been safety-approved ensures the safety of the switch. The use of a safety-approved switch also simplifies at least one part of the process of obtaining certification by safety testing.

### 2. Major Safety Standards

#### (1) Electrical Appliance and Material Safety Law

The conventional [Electrical Appliance and Material Control Law] has changed to [Electrical Appliance and Material Safety Law] and has been enforced since April 1, 2001. Electrical appliances are categorized into special electric appliances and parts (formerly Class A) and Electrical appliances other than the special electric appliances (formerly Class B). Special electric appliances are required to receive goodness of fit test at a certified test agency and to store the certificate. Also, penal provisions have been reinforced.

#### (2) UL (Underwriters Laboratories Inc.)

Underwriters Laboratories Inc. (UL) is the American safety approving organization. Its purpose is to ensure consumer safety and protect them from fire hazards. State law requires that equipment to be exported to the United States utilize UL approved power switches or power switches meeting UL standards and capable of passing UL tests.

#### (3) CSA (Canadian Standards Association)

Canadian Standards Association (CSA) is the Canadian safety testing association and tests electrical and other equipment to ensure the safety of individuals and prevent fire hazards. Provincial law requires that the power switches used in equipment for export to Canada be CSA approved or meet CSA standards.

#### (4) SEMKO (Svenska Elektriska Materielkontrollanstalten)

Svenska Elektriska Materielkontrollanstalten (SEMKO) is the Swedish safety testing organization. Its purpose is to prevent electrical shock and fires due to home electrical appliances. Nearly all electrical appliances sold in Sweden must be approved by SEMKO.

#### (5) BS (British Standard)

British Standard (BS) is the industrial and safety standards of Great Britain. It is made up of such organizations as the BSI and BEAB. It conducts investigations of electrical equipment for verification of safety. Electrical devices do not have to conform to this standard but those that do have a competitive advantage in the marketplace.

#### (6) VDE (Verband Deutscher Electrotechniker)

Verband Deutscher Electrotechniker (VDE) is the German safety testing organization. It is particularly concerned with preventing hazards to human life and fires. Approval is not mandatory but fines are levied against those companies whose unapproved products cause accidents. Therefore, in reality, conformity is a necessity.

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## Safety Standards

### 3. Standard Certification System

#### (1) CB Scheme

This is the international system to simplify the safety certification processes of each country for the purpose of using a safety test certificate (CB Scheme) based on the IEC standard issued by the certification test agency. This system can be used for the power switch to acquire the certificates of European countries and China because the IEC and EN standards conform.

#### (2) Mutual authentication system of the North American nations

A mutual authentication system is effective with the UL (in the U.S.A.) and CSA (in Canada) and the "C-UL-US" makes UL approved goods sellable in Canada, while the "NRTL/C" makes CSA approved goods sellable in the U.S.A.

### 4. Explanation of Safety Standard Terms

#### 1. Three insulation classes of the safety standards of IEC standards

Switches are classed according to their type of insulation.

##### (a) Switches for Class I Appliances

Switches for use with appliances utilizing power plugs with ground pins having a normal level of insulation.

##### (b) Switches for Class II Appliances

Switches for use with appliances having no ground pin and utilizing double or reinforced insulation.

#### 2. Micro-gap Construction

This construction is one of the classifications of switches under the IEC standard. Switches in this class have a contact gap of less than 3mm. These switches bear the  $\mu$  mark. In some case, use of Micro-gap switches may be limited in IEC standard. (Can not be utilized with outdoor electrical implements or computer equipment without power plugs.)

#### 3. Switches not covered in the Electrical Appliance and Material Safety Law

Switches with [structure specialized for building into machines] are precluded from the special electric appliances and parts, and are not required to undergo a goodness of fit test. However, the technology standard must satisfy no less than the special electric appliances and parts. The major reasons for preclusion from the Electrical Appliance and Material Safety Law are as follows: All of our power switches are precluded.

(1) All except for unipolar/single-throw, unipolar/double-throw, bipolar/single-throw.

(2) All with signal changing-over switch attached.

(3) All with lead, fasten, wire-wrapping and printed terminals.

(4) All without knobs and handles for manual operation.

#### 4. Approval type number

The approval type number means the type number on the safety standard described in the safety standard approval certificate or approval list. Therefore, the approval type number is different from the product number. There are cases where the approval type number varies with the acquired standard, rating, etc. even in the same series of products. When the set manufacturer applies for the set safety standard, the application must be made with the approval type number for the switch to be used.

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# Safety Standards

## 5. Meaning of the Marking of Power Switch Ratings

Safety standard name Classification of rating	Electrical appliance and material safety law	UL, CSA	IEC standard
For electronic appliances	All Alps power switches are not governed by the electrical appliance and material safety law.	<p><b>TV rating</b></p> <p>TV - 5</p> <p>Rated current</p> <p>Symbol on TV rating</p> <p>NOTE : When not indicated rated voltage is 120V AC</p> <p>SDKL, SDDF, etc</p>	<p><b>Rating for electronic appliances</b></p> <p>5A / 80A 250V ~</p> <p>Rated surge current</p> <p>Rated normal current</p> <p>Rated voltage</p> <p>Alternating current</p> <p>SDKL, SDDF, etc</p>
For general appliances		<p><b>Ampere rating</b></p> <p>AC 125V 5A</p> <p>Rated current</p> <p>Rated voltage</p> <p>Alternating current</p> <p>SDDJE, etc</p>	<p><b>Rating for resistive appliance</b></p> <p>5A / 250V ~</p> <p>Rated current</p> <p>Rated voltage</p> <p>Alternating current</p>
For motors		<p><b>Horsepower rating</b></p> <p>AC 125V 1/2 HP</p> <p>Output of applicable motor</p> <p>Rated voltage</p> <p>Alternating current</p>	<p><b>Rating for resistance and motor load</b></p> <p>3 (2) / 250 ~</p> <p>Rated current under resistive load</p> <p>Rated current of applicable motor</p> <p>Rating voltage</p> <p>Alternating current</p>

**Power switches for electronic appliances:** Mainly power switches for electronic appliances such as TV sets, radios and amplifiers. However, if the voltage and current levels are below the ratings, they may be used in other electric appliances.

**Power switches for general appliances:** These switches are for use in appliances other than electronic appliances or motor appliances that have current surges. However, if the rating of the switch is  $1/\sqrt{2}$  or above the surge current of the circuit and meets construction requirements, it may be used in other devices.

**Power switches for motor appliances:** Mainly for appliances that are motor driven, such as copiers, vacuum cleaners, etc.

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