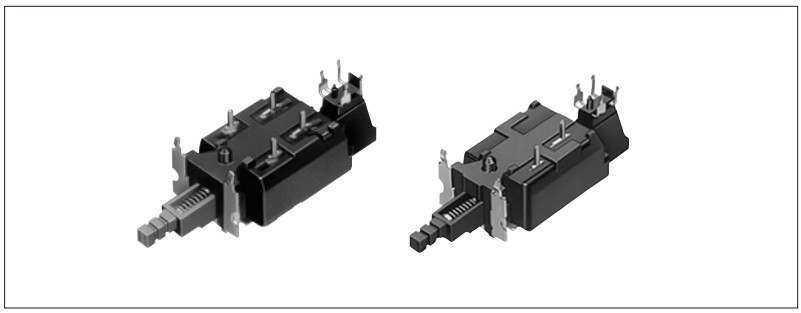
TV-8 Qualified With DC Switch Power Switch

SDDFE Series

With a TV-8 DC switch suitable for world-wide models.



Features

- Based on the SDDF Series, with a DC switch added.
- These TV-8 products are applicable to world-wide product models.
- They conform to the high-inrush rating (8A/128A 250V~μ).
- Standard knob are available.
- No cadmium used in contacts.

Applications

- Digital electronic devices, including CTVs, DVD home theatre systems, and mini component stereos, which require turn on/off noise elimination and microcomputer circuit protection

Ratings and Safety Standards

Items	Specifications
UL CSA	TV-8 5A 250V AC
SEMKO	8A/128A 250V～ μ
VDE	8A/128A 250V～ μ
Other approved safety standards	DEMKO NEMKO
Ratings satisfying local electrical appliance and material safety law	250V 10A≒ 125V 5A≒E

DC switch ratings：1mA 5V DC（Resistive load）"Microgap construction"defined in the IEC standard.

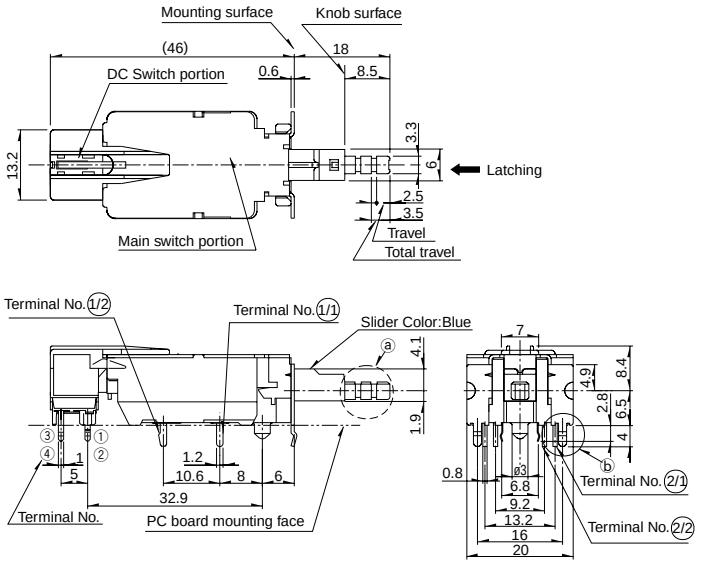
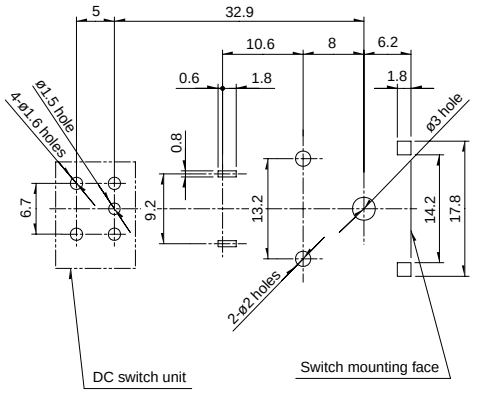
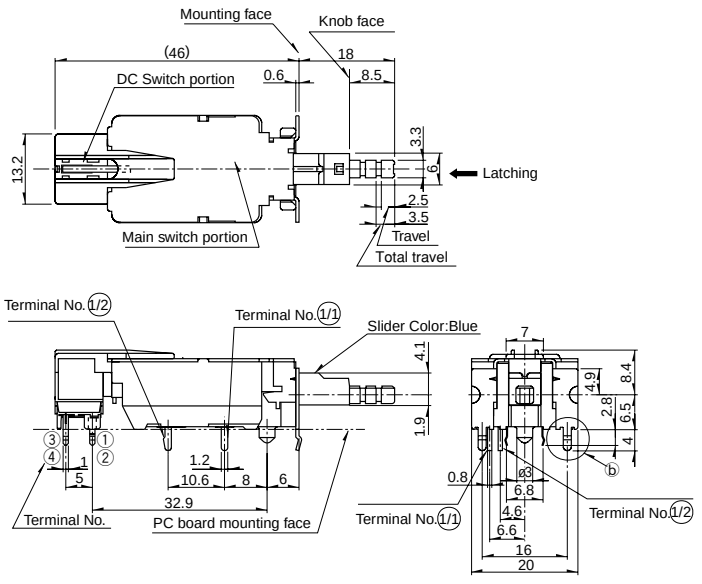
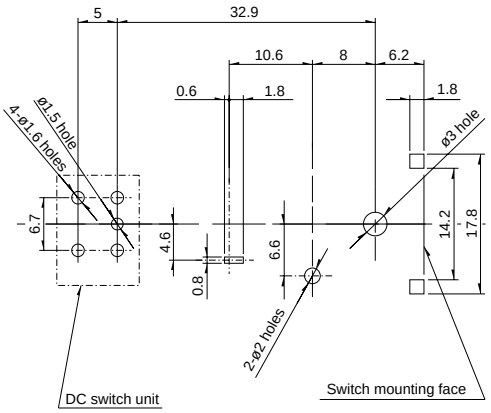
Products Line

Circuit arrangement	Travel (mm)	Total travel (mm)	Operating force	Mounting method	Terminal style	Minimum packing unit (pcs.)	Products No.	Drawing No.
SPST	2.5	3.5	3.5±1.5N	Snap-in	For PC board	100	SDDFE10100	2
DPST			4.5±1.5N				SDDFE30100	1

For knobs, see **P.68**
For other detailed specifications, see **P.62**

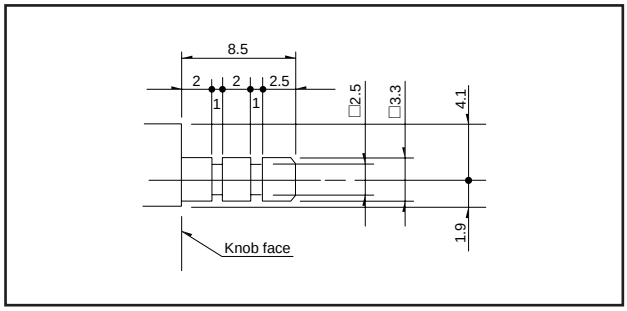
Dimensions

Unit : mm

No.	Style	PC board mounting hole dimensions
1	**DPST**  **Only for 1.6mm PC board**	
2	**SPST**  **Only for 1.6mm PC board**	

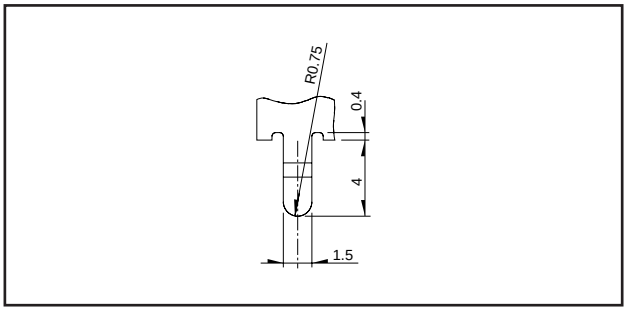
Detail of ⓐ

Unit : mm



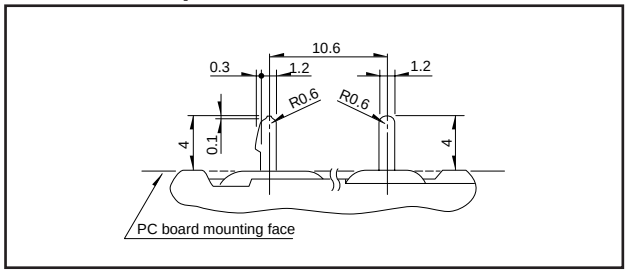
Detail of ⓑ

Unit : mm

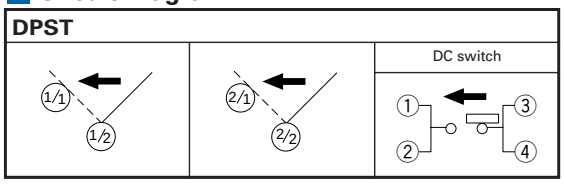


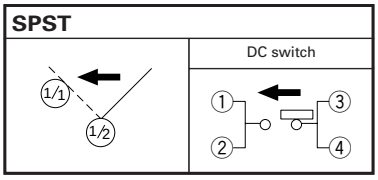
Terminal Style

Unit : mm

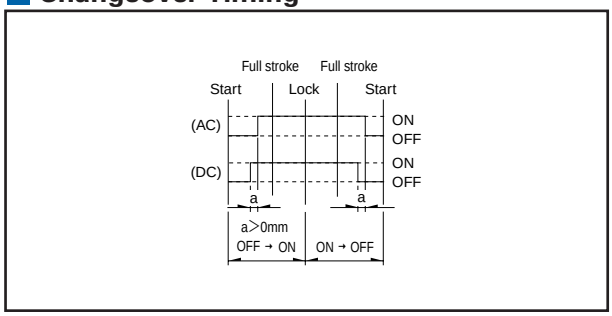


Circuit Diagram





Changeover Timing



Note

AC and DC timing may be reversed when turning off at 10 ms or lower.

Products Specifications

Items \ Type / Series			Push										
			SDDL	SDKL	SDKVB	SDDF SDDFD SDDFE	SDKEA	SDKVA	SDKVC	SDKVD	SDKN	SDKS	SDKQ	SDKR
Operating temperature range			−10℃ to +60℃								−20℃ to +60℃	−30℃ to +60℃	−10℃ to +60℃	−10℃ to +85℃
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 4A125V AC	3A 125V AC L	0.5A 250V AC 1A 125V AC
Electrical performance	Contact resistance		100mΩ max.									50mΩ max.	100mΩ max.	
	Insulation resistance		500MΩ min. 500V DC									100MΩ min. 500V DC	500MΩ min. 500V DC	
	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.
Mechanical performance	Robustness of terminal		10N for 1 min.								50N for 1 min.	70N for 1 min.	—	5N for 1 min.
	Robustness of actuator	Operating direction	100N								20N		100N	
		Perpendicular direction	20N									30N	20N	
	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											
	Solderability		230±5℃,3±0.5s								—			230±5℃, 3±0.5s
	Resistance to soldering heat	Manual soldering	350±10℃, 3±0.5s			350±10℃, 3±0.5s (SDDFD, SDDFE: 300±10℃, 3±0.5s)	300±10℃, 3±0.5s		350±10℃, 3±0.5s		—			300±10℃, 3±0.5s
		Dip soldering	260±5℃,10±1s					260±5℃, 5±1s	260±5℃, 10±1s		—			260±5℃, 10±1s
Durability	Operating life		25,000 cycles				10,000 cycles		25,000 cycles		6,000 cycles		12,000 cycles	100,000 cycles
			Load =as ratings											refer to individual product spec.
Environmental performance	Cold		−20±2℃ for 96h								−30±2℃ for 96h	−40±2℃ for 96h	−25±2℃ for 240h	−20±2℃ for 240h
	Dry heat		85±2℃ for 96h										85±2℃ for 240h	
	Damp heat		40±2℃, 90 to 95%RH for 96h										40±2℃, 90 to 95%RH for 240h	60±2℃, 90 to 95%RH for 1000h

Attached Parts

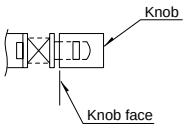
Specify the desired knob.

Unit : mm

Knob outline drawing	Variety		Series
	Color	Model	
Key pitch 10mm Square knob	Black Red White	4093-1 4093-2 4093-3	SDKVA SDKVB SDKVC SDKVD SDKEA SDKL SDDL SDDF SDDFD SDDFE
Key pitch 12.5mm Square knob	Black Red White	UE201011 UE201012 UE201013	
Key pitch 15mm Square knob	Black Red White	UE202011 UE202012 UE202013	
Key pitch 17.5mm Square knob	Black Red White	UE203011 UE203012 UE203013	
Key pitch 20mm Square knob	Black Red White	UE204011 UE204012 UE204013	
Round knob	Black Red White	UE200011 UE200012 UE200013	

Note

When mounting the switch, it is recommended to secure the knob with an adhesive agent.



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 Electriska Materielkontrollanstalten)

Svenska Electriska 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.

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 authentification system of the North American nations

A mutual authentification 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 μ 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.

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.	TV rating TV - 5 Rated current Symbol on TV rating NOTE : When not indicated rated voltage is 120V AC SDKL, SDDF, etc	Rating for electronic appliances 5A / 80A 250V ~ Alternating current Rated voltage Rated surge current Rated normal current SDKL, SDDF, etc
For general appliances		Ampere rating AC 125V 5A Rated current Rated voltage Alternationg current SDDJE, etc	Rating for resistive appliance 5A / 250V ~ Alternating current Rated voltage Rated current
For motors		Horsepower rating AC 125V ½ HP Output of applicable motor Rated voltage Alternarig current	Rating for resistance and motor load 3 (2) / 250 ~ Alternating current Rating voltage Rated current of applicable motor Rated current under resistive load

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.