Customer:

ALPS ELECTRIC EUROPA GMBH

No. SW945492 A

Date: Nov. 14 '94

Attention:

Your ref. No.:

Your Part No.: STSSS2122

SPECIFICATIONS

STÜCK ANGEBOTSMUSTER BEIGEFÜGT
PIECES QUOTATION SAMPLE(S) ATTACHED

ALPS' :

MODEL: SSSS21

Spec. No.:

Sample No.: F3710986M
SSSS21383A

RECEIPT STATUS

RECEIVED

By. Date

Signature

Name

Titie

ALPS ELECTRIC CO., LTD.

DSG' D M. Kishi

APP' D T.Maruyama
ENG. DEPT. DIVISION

Sales

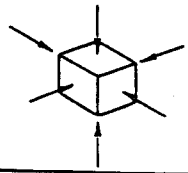
HEAD OFFICE
1-7, YUKIGAYA-OHTSUKA-CHO,
OHTA-KU, TOKYO 145 JAPAN

SSSS2-S-801	PRODUCT SPECIFICATIONS	SSSS212 Ⓢ

1. General
 1.1 Application This specification is applied to low current circuit (Secondary circuit) slide switch used for electronic equipment.
 1.2 Operating temperature range : -10 ~ 80℃
 1.3 Test conditions The standard test conditions shall be 5~35℃ in temperature, 45~85% RH and 86~106kPa {860~1060mbar} in atmospheric pressure. Should any doubt arise in judgement, tests shall be conducted at 20±2℃, 65±5% RH and 86~106kPa {860~1060mbar} .
2. Appearance, construction and dimensions
 2.1 Appearance Switch shall have good finishing, and shall have no rust, crack or plating failures.
 2.2 Construction and dimensions Per individual product drawing
 2.3 Markings Per individual product drawing
3. Rating 6 V DC 0.3 A (Resistive load)
4. Electrical performance

	Items	Test conditions	Criterion
4.1	Contact resistance	Shall be measured at 1kHz±200Hz (20mV MAX , 50mA MAX) or 1A, 5V DC by voltage drop method.	70 mΩ MAX
4.2	Insulation resistance	Test voltage : 500 V DC, measured after 1 minute±5 seconds. Applied position : Between all terminals Between terminals and ground (frame)	100 MΩ MIN
4.3	Voltage proof	Test voltage : 500 V AC (50~60Hz, cut-off current 2 mA) Applied position : Between all terminals Between terminals and ground (frame)	No dielectric breakdown shall occur.
4.4	~~Capacitance~~	~~Shall be measured at 1MHz ± 10kHz Between all terminals Between terminals and ground (frame) Between all circuits~~	~~___ pF MAX~~
4.5	Changeover timing		As per individual product drawing.

5. Mechanical performance

	Items	Test conditions	Criterion
5.1	Operating force	A static load shall be applied to the root of actuator in operating direction. The root of actuator 	As per individual product drawing.
5.2	Terminal strength	A static load of 3 N {306 gf} shall be applied to the tip of terminal in a desired direction for 1 minute. The number of test shall be once per terminal.	Shall be free from terminal looseness and damage and breakage of terminal holding portion. Terminals may be bent after test, electrical performance requirement specified in item 4 shall be satisfied.
5.3	~~Mounting strength of thread portion~~	~~Thread shall be mounted at ___ N·m { ___ kgf·cm} by normal mounting method.~~	~~Shall be free from damage of thread portion.~~
5.4	Control strength	(1) A static load of 20 N {2.04 kgf} shall be applied in the operating direction of actuator for 15 seconds. (2) A static load of 10 N {1.02 kgf} shall be applied in the pull direction of actuator for 15 seconds. (3) A static load of 10 N {1.02 kgf} shall be applied to the vertical direction of operation at the tip of actuator for 15 seconds.	Shall be free from pronounced wobble, bending and mechanical abnormalities.
5.5	Wobble of actuator	Run-out(P-P) shall be measured by applying a static load of 1N {102gf} in the vertical direction of operation at the tip of actuator.	P-P : 1 mm MAX
5.6	Vibration	Switch shall be secured to a testing machine by a regular mounting device and method. (1) Vibration frequency range : 10~55Hz (2) Total amplitude : 1.5mm (3) Sweep ratio : 10-55-10(Hz) Approx. 1 minute (4) Method of changing the sweep vibration frequency : Logarithmic or linear (5) Direction of vibration : Three vertical directions including actuator. (6) Time : 2 hours each (6 hours in total)	Contact resistance (Item 4.1) : 70 mΩ MAX Insulation resistance (Item 4.2) : 100 MΩ MIN Voltage proof (Item 4.3) : Apply 500 V AC for 1 minute. No dielectric breakdown shall occur. Operating force (Item 5.1) : Within specified value. No abnormalities shall be recognized in appearance and construction.
5.7	Mechanical shock	Switch shall be measured after following test. (1) Mounting method : Normal mounting method (2) Acceleration : 490m/s² { 50G } (3) Duration : 11ms (4) Test direction : 6 directions (5) Number of shock : 3 times per direction (18 times in total) 	Contact resistance (Item 4.1) : 70 mΩ MAX Operating force (Item 5.1) Within specified value. Shall be free from mechanical abnormalities.

PAGE	SYMB	DATE	APPD	CHKD	DSGD

APPD. K. Kimura CHKD. S. Takahashi DSGD. Jun 7. '93 M. Yumura

TITLE

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SSSS2-S-801 | PRODUCT SPECIFICATIONS

	Items	Test conditions	Criterion
5.8	Solderability	Switch shall be checked after following test. (1) Solder : H63A (JIS Z 3282) (2) Flux : Rosin flux (JIS K 5902) having a nominal composition of 25% solids by weight of water white rosin in methyl alcohol (JIS K 1501)solution. (3) Soldering temperature : 230±5℃ Immersing time : 3±0.5 s Flux immersing time shall be 5~10 seconds in normal temperature (4) Immersion depth : Immersion depth shall be at copper plating portion for P.C.B. terminal after mounting. Thickness of P.C. board : 1.6 mm Immersion depth shall be at wiring portion of lead wire for lead wire terminal.	More than 75% of immersed part shall be covered with solder. If frame is made of tin plate, cutting section shall not be applied.
5.9	Soldering heat resistance	Switch shall be measured after following test. (1) Solder : H63A (JIS Z 3282) (2) Flux : Rosin flux (JIS K 5902) having a nominal composition of 10% solids by weight of water white rosin in methyl alcohol (JIS K 1501)solution. (3) Temperature and immersing time Dip soldering: 260± 5 ℃, 5 s Manual soldering: 350±10 ℃, 4 MAX (4) Immersion depth : Immersion depth shall be at copper plating portion for P.C.B. terminal after mounting. Thickness of P.C. board (Single sided copper clad P.C.B.) : 1.6mm	No abnormalities shall be recognized in appearance. The electrical performance requirements specified in item 4 shall be satisfied. Soldering condition of each P.C. board thickness shall be according to paragraph 6 of precaution in use.

6. Durability

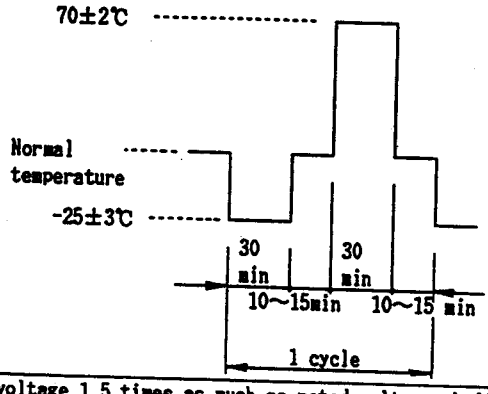
	Items	Test conditions	Criterion
6.1	Operating life without load	Switch shall be operated 10,000 cycles at 15~20 cycles/minute without load.	Contact resistance (Item 4.1) : 100 mΩ MAX Insulation resistance (Item 4.2) : 10 MΩ MIN (Measured at 100V DC) Voltage proof (Item 4.3) : Apply 100 V AC for 1 minute. No dielectric breakdown shall occur. Operating force (Item 5.1) : Within $^{+10}_{-30}$ % of specified value. No abnormalities shall be recognized in appearance and construction.
6.2	Operating life with load	Switch shall be operated 10,000 cycles at 15~20 cycles/minute with 6 V DC 0.3 A. (Resistive load)	Contact resistance (Item 4.1) : 130 mΩ MAX Insulation resistance (Item 4.2) : 10 MΩ MIN (Measured at 100V DC) Voltage proof (Item 4.3) : Apply 100 V AC for 1 minute. No dielectric breakdown shall occur. Operating force (Item 5.1) : Within $^{+10}_{-30}$ % of specified value. No abnormalities shall be recognized in appearance and construction.

7. Weather proof

	Items	Test conditions	Criterion
7.1	Cold proof	After testing at -10±2℃ for 96 hours, the switch shall be allowed to stand under normal temperature and humidity conditions for 1 hour, and then measurement shall be made within 1 hour. Water drops shall be removed.	Contact resistance (Item 4.1) : 100 mΩ MAX Insulation resistance (Item 4.2) : 10 MΩ MIN Voltage proof (Item 4.3) : Apply 500 V AC for 1 minute. No dielectric breakdown shall occur. Operating force (Item 5.1) : Within $^{+10}_{-30}$ % of specified value. No abnormalities shall be recognized in appearance and construction.

PAGE	SYMB	DATE	APPD	CHKD	DSGD	APPD.	CHKD.	DSGD.	TITLE
						M. Kiya	S. Takahashi	Jun 7. '93 M. Yumura	DRAWING NO. (2/4)

SSSS2-S-801 PRODUCT SPECIFICATIONS

	Items	Test conditions	Criterion
7.2	Dry heat	After testing at 65±2℃ for 96 hours, the switch shall be allowed to stand under normal temperature and humidity conditions for 1 hour, and then measurement shall be made within 1 hour.	Contact resistance (Item 4.1) : 100 mΩ MAX Insulation resistance (Item 4.2) : 10 MΩ MIN Voltage proof (Item 4.3) : Apply 500 V AC for 1 minute. No dielectric breakdown shall occur. Operating force (Item 5.1) : Within $^{+10}_{-30}$ % of specified value. No abnormalities shall be recognized in appearance and construction.
7.3	Damp heat	After testing at 40±2℃ and 90~95%RH for 96 hours, the switch shall be allowed to stand under normal temperature and humidity conditions for 1 hour, and measurement shall be made within 1 hour after that. Water drops shall be removed.	Contact resistance (Item 4.1) : 100 mΩ MAX Insulation resistance (Item 4.2) : 10 MΩ MIN Voltage proof (Item 4.3) : Apply 100 V AC for 1 minute. No dielectric breakdown shall occur. Operating force (Item 5.1) : Within $^{+10}_{-30}$ % of specified value. No abnormalities shall be recognized in appearance and construction.
7.4	Salt mist	Switch shall be checked after following test. (1) Temperature : 35±2℃ (2) Salt solution : 5±1% (Solids by weight) (3) Duration : 24±1 h After the test, salt deposit shall be removed in running water.	No remarkable corrosion shall be recognized in metal part.
7.5	Temperature cycling	After 5 cycles of following conditions, the switch shall be allowed to stand under normal temperature and humidity conditions for 1 hour, and measurement shall be made within 1 hour after that. Water drops shall be removed. 	Contact resistance (Item 4.1) : 100 mΩ MAX Insulation resistance (Item 4.2) : 10 MΩ MIN Voltage proof (Item 4.3) : Apply 100 V AC for 1 minute. No dielectric breakdown shall occur. Operating force (Item 5.1) : Within $^{+10}_{-30}$ % of specified value. No abnormalities shall be recognized in appearance and construction.
7.6	~~Damp heat with~~ load (Silver migration)	DC voltage 1.5 times as much as rated voltage shall be applied ~~continuously between~~ adjacent terminal at 60±2℃ and 90~95%RH. After 500 hours testing, ~~switch shall be allowed to stand~~ under normal temperature ~~and humidity condition~~ for 1 hour, and ~~measurement shall be made~~ within 1 hour after that. Water drops shall be removed.	Insulation resistance ~~(50V DC)~~ : 10 MΩ min. Voltage proof : Apply 100V AC for 1 minute. No dielectric breakdown shall occur.

PAGE	SYMB	DATE	APPD	CHKD	DSGD

APPD. M. Kitai | CHKD. S. Takahashi | DSGD. Jun 7. '93 M. Yamamura

TITLE

DRAWING NO.

Precaution in use

1. **Note that if the load is applied to the terminals during soldering they might suffer deformation and defects in electrical performance.**
2. **Use of water-soluble soldering flux shall be avoided because it may cause corrosion of the switch.**
3. For series SSSS212, operation may be heavy if the switch is used with a case fixed or 2 pcs. in a line. When 2 pcs of switches are used in a line, please detach them 1 mm. at least.
4. For series SSSS212, Knob horizontal type, soldering flux might be flowed in the switch in case of auto-dip soldering. Therefore manual soldering shall be available.
5. The knob of slider shall be moved to first contact or second contact completely when soldering.
6. The soldering condition of series SSSS shall be as follows. The deformation or defects in electrical performance might be occured if the time or temperature exceed this specification.

- Auto-dip soldering

  Temperature : 260 ± 5°C, Time 5-0 sec.
  Thickness of P.C. board : 0.8, 1.0
  1.2, 1.6

- Manual soldering

(Sec. max.)

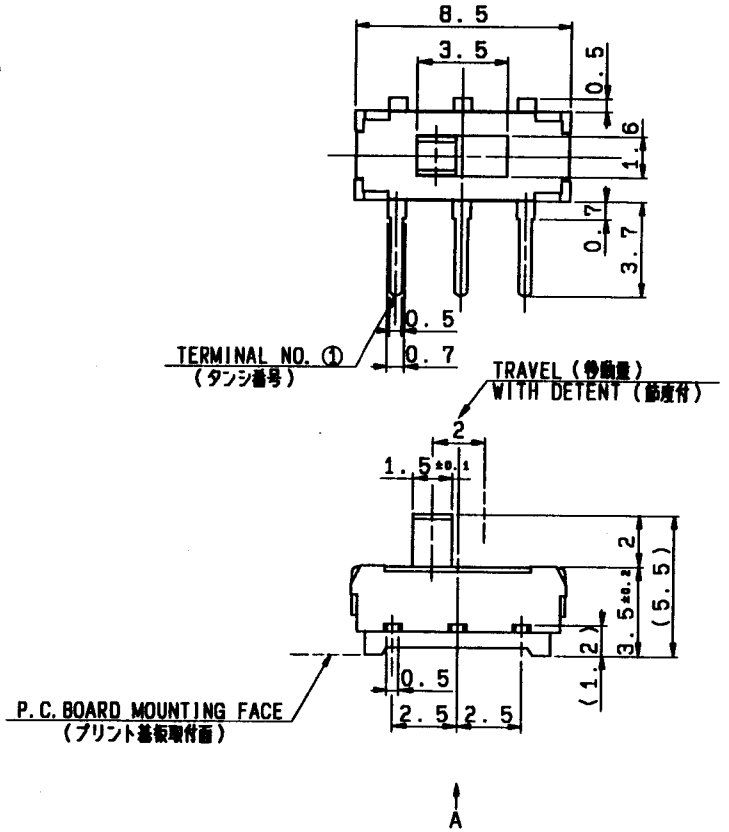
Temperature of iron tip (°C) / Thickness of P.C. board (mm)	260±10	300±10	350±10
0.8	5	5	3
1.0	5	5	3
1.2	5	5	4
1.6	5	5	4

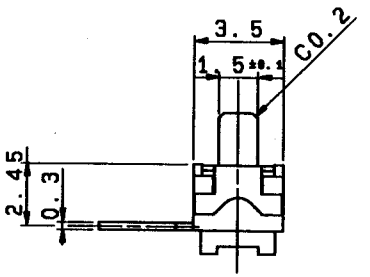
※ Abnormal pressure shall not be applied to the terminal.

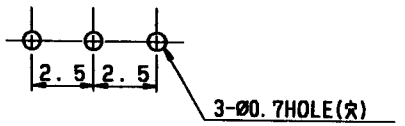
Notes) (1) P.C. board shall be single sided copper clad P.W.B.

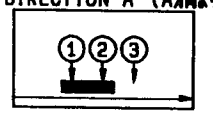
(2) This test shall be performed up to twice.
After first test, temperature shall be back to normal.

背景 BACK GROUND
293JC017









3. OPERATING FORCE: 2±1.5N{204±153gf}
(作動力)
(MEASURE AT THE BOTTOM OF KNOB)
(但しツマミ根本にて測定する)
2. CHANGEOVER TIMING OF CONTACTS: NONSHORTING
(接点の切換タイミング: ノンショーティング)

NOTES (注記) 1. PRODUCT SPECIFICATIONS No. SSSS2-S-801
(適用製品仕様書番号)

TOLERANCES UNLESS OTHERWISE SPEC.	
BASIC DIMENSIONS	TOLERANCES
UP TO 10	±0.3
ABOVE 10 TO 100	±0.5
ABOVE 100	±0.8
ANGULAR DIMENSIONS	±3°

ZONE	SYMB	DATE	APPD	CHKD	DSGD
	INITIAL DESIGN	Jul. 28 '93	H.Y	M.k	M.Y

ALPS ELECTRIC CO., LTD.

UNIT	SCALE	MODEL NO. (機種名)
mm	½	SSSS21

APPD.	CHKD.	DSGD.
Dec 27'93 T. Maruyama	Dec 27'93 M. Kise	Dec 27'93 F. Umezaki

TITLE: PRODUCT DRAWING (製品図)

DOCUMENT NO.: SSSS21383A