Customer:
AEE-DS

No. 394K5149

Date:

Attention:

Your ref.No:

Your Part No: Albs Alltronic

SPECIFICATION

ALPS';

MODEL: SKHHDG

Spec.NO.: KHH-906

Sample No:F3857251M

RECEIPT STATUS

RECEIVED

By. Date

Signature

Name

Title

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M. odashima

DSG'D M. ODASHIMA

Y. Ono

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Sales

1MSME111 #02

1. GENERAL

1.1 Scope — This specification covers the requirements for single key switches which have no keytop (TACT SWITCHES: MECHANICAL CONTACT).

1.2 Operating Temperature Range
-20 to 70°C (normal humidity, normal press.)

1.3 Storage Temperature Range
-30 to 80°C (normal humidity, normal press.)

1.4 Test Conditions
Tests and measurements shall be made in the following standard conditions unless otherwise specified:
- Normal temperature (temperature 5 to 35°C)
- Normal humidity (relative humidity 45 to 85%)
- Normal pressure (pressure 860 to 1060 m bars)

In case any question arises from the judgement made, tests shall be conducted in the following conditions:

Temperature	(20±2°C)
Relative humidity	(65±5%)
Pressure	(860 to 1060 m bars)

2. APPEARANCE, STYLE, AND DIMENSIONS

2.1 Appearance — There shall be no defects that affect the serviceability of the product.

2.2 Style and Dimensions
Shall conform to the assembly drawings.

3. TYPE OF ACTUATION

Tactile feedback

4. CONTACT ARRANGEMENT

1 poles 1 throws
(Details of contact arrangement are given in the assembly drawings.)

5. MAXIMUM RATINGS

DC 12 V 50 mA

NE	SYMS	DATE	APPD	CHKD	DSGD
6/6	△-1	6.15.93	[illegible]	[illegible]	[illegible]
5/6	△-2	Apr.5.87	[illegible]	[illegible]	[illegible]

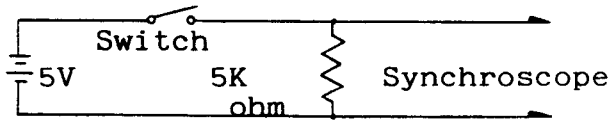
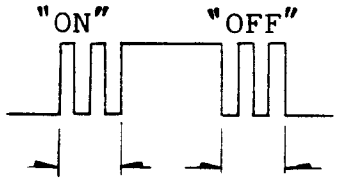
APPD	CHKD	DSGD
May 18 '84 [illegible]		May 18 '84 T. Tomita

TITLE: SPECIFICATION

DOCUMENT NO. KHH-906 (1/6)

6. PERFORMANCE

6.1 Electrical

Item	Test Conditions	Requirements
6.1.1. Contact Resistance	Applying a static load twice the actuating force to the center of the stem, measurements shall be made with a 1 kHz small-current contact resistance meter.	100 m ohm max.
6.1.2. Insulation Resistance	Measurements shall be made following application of DC 100 V potential across terminals and across terminals and frame for one minute.	100 M ohm min.
6.1.3. Dielectric With-standing Volatge	AC 250 V (50Hz or 60Hz) shall be applied across terminals and across terminals and frame for one minute.	There shall be no breakdown.
6.1.4. Bounce	Lightly striking the center of the stem at a rate encountered in normal use (3 to 4 operations per sec.), bounce shall be tested at "ON" and "OFF".  	5 m sec max.

ZONE	SYMB	DATE	APPD	CHKD	DSGD
			May. 18. '84		May. 18 '84

APPD: Y. Matsui | CHKD: | DSGD: T. Tomita

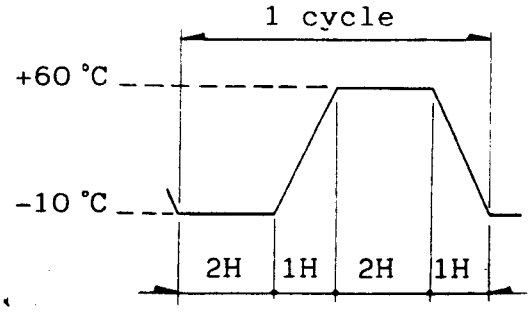
TITLE: SPECIFICATION

DOCUMENT NO.: KHH-906 (2/6)

6.2 Mechanical

Item	Test Conditions	Requirements
6.2.1 Actuating Force	Placing the switch such that the direction of switch operation is vertical and then gradually increasing the load applied to the center of the stem, the maximum load required for the stem to come to a stop shall be measured.	260 ± 70 gf
6.2.2 Travel	Placing the switch such that the direction of switch operation is vertical and then applying a static load twice the actuating force to the center of the stem, the travel distance for the stem to come to a stop shall be measured.	0.25 $^{0.2}_{\pm 0.1}$ mm
6.2.3 Return Force	The sample switch is installed such that the direction of switch operation is vertical and, upon depression of the stem in its center the whole travel distance, the force of the stem to return to its free position shall be measured.	50 gf min.
6.2.4 Stop Strength	Placing the switch such that the direction of switch operation is vertical, a static load of 3 kgf shall be applied in the direction of stem operation for a period of 60 seconds.	There shall be no sign of damage mechanically and electrically.
6.2.5 Stem Strength	Placing the switch such that the direction of switch operation is vertical, the maximum force to withstand a pull applied opposite to the direction of stem operation shall be measured.	3 kgf

6.3 Environmental

Item	Test Conditions	Requirements
6.3.1 Resistance to Low Temperatures	Following the test set forth below the sample shall be left in normal temperature and humidity conditions for one hour before measurements are made: (1)Temperature: -30±2°C (2) Time: 96 hours (3)Waterdrops shall be removed.	Item 6.1 Item 6.2.1 Item 6.2.2
6.3.2 Heat Resistance	Following the test set forth below the sample shall be left in normal temperature and humidity conditions for one hour before measurements are made: (1)Temperature: 80±2°C (2) Time: 96 hours	Item 6.1 Item 6.2.1 Item 6.2.2
6.3.3 Moisture Resistance	Following the test set forth below the sample shall be left in normal temperature and humidity conditions for one hour before measurements are made: (1) Temperature: 60±2°C (2)Relative humidity: 90 to 95% (3) Time: 96 hours (4)Waterdrops shall be removed.	Contact resistance: 200 m ohm max. Insulation resistance: 10 M ohm min. Item 6.1.3 Item 6.1.4 Item 6.2.1 Item 6.2.2
6.3.4 Temperature Cycling	Following five cycles of the temperature cycling test set forth below the sample shall be left in normal temperature and humidity conditions for one hour before measurements are made. During this test, waterdrops shall be removed. 	Item 6.1 Item 6.2.1 Item 6.2.2

ZONE	SYMB	DATE	APPD	CHKD	DSGD	APPD	CHKD	DSGD	TITLE
						May.18.'84		May-18'84	SPECIFICATION
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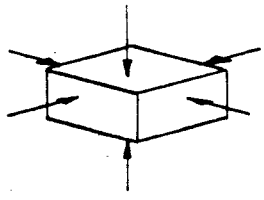
6.4 Endurance

Item	Test Conditions	Requirements
6.4.1 Operating Life	Measurements shall be made following the test set forth below: (1)DC 5V 5mA resistive load (2)Rate of operation: 2 to 3 operations per second (3)Depression: ~~350gf~~ max. ⚠330 gf (4)Cycles of operation: ⚠~~10~~ 20 x 10^4 cycles	Contact resistance: 200 m ohm max. Insulation resistanoe: 10 M ohm min. Bounce: 10 m sec max. Actuating force: + 30 % or - 30 % of initial force Item 6.1.3 Item 6.2.2
6.4.2 Vibration Resistance	Measurements shall be made following the test set forth below: (1)Range of oscillation: 10 to 55 Hz (2)Amplitude, pk-to-pk: 1.5 mm (3)Cycle of sweep: 10 - 55 - 10 Hz in one minute, approx. (4)Mode of sweep: Logarithmical sweep or uniform sweep (5)Direction of oscillation: Three mutually perpendicular directions, including the direction of stem travel (6)Duration of testing: 2 hours each, for a total of 6 hours	Item 6.1 Item 6.2.1 Item 6.2.2
6.4.3 Impact Shock Resistance	Measurements shall be made following the test set forth below: (1)Acceleration: 80g (2)Cycles of test: 3 cycles each in 6 directions, for a total of 18 cycles 	Item 6.1 Item 6.2.1 Item 6.2.2

ZONE	SYMB	DATE	APPD	CHKD	DSGD	APPD	CHKD	DSGD	TITLE
						May.18.'84		May.18'84	SPECIFICATION
								T.Tomita	DOCUMENT NO. KHH-906

【SWITCH HANDLING PRECAUTIONS】

1. CONDITIONS OF SOLDERING

① Use the flux with specific gravity of 0.83 at min.
(MH-820V or CF220V by TAMURA Corporation, or their equivalents)

② Dip the switch under the following conditions:

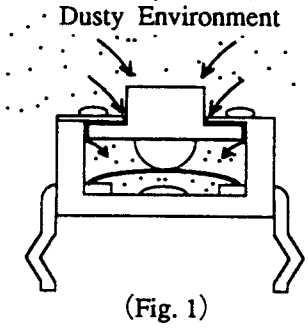
- Pre-heat : 110℃ at max. 60sec. at max. (The temperature:around the solderd side of the PC board.)
- Quantity of flux foam : Do not exceed the height of adjoining parts on the parts mounted side of the PC board. Do not apply the extra flux to the terminals of the switch on the parts mounted side.
- Soldering : 255℃ at max. 5sec. at max. (For manual soldering, 360℃ at max. 3sec. at max.)
- Frequency : 2 times at max. (The second time should be done after the switch returns to the normal temperature.)

③ Prevent the flux from getting into the switch from the top of it by scattering of flux.

④ Do not cleanse with solvent after soldering.

2. FOREIGN MATTER INVADED FROM OUTSIDE

Since this switch does not have perfectly sealed structure, if it is used in a severe environment with plenty of dust, it may have contact failure caused by the dust which invades through the clearance between the stem and the housing. (Refer to the Fig. 1)



(Fig. 1)

"→" indicates the route of invasion.

When you use this switch, precaution must be taken against the dust.

The followings are examples of dust invasion:

① Debris from the cut or hole of PCB in process, or wastes from the PCB protection material (e.g. newspaper, foamed polystyrene etc.) invaded the switch.

② Flux or powdered flux produced by stacking PCB's or excess foaming invaded the switch.

※When you need higher dust-proof,we have dust-proof type of this switch. Please contact us.

3. SIDE-FORCE RESISTANCE

Do not apply load from the side. If the tip of the stem receives force of more than 4.9N [500gf] from the side, the stem strength may be affected.

4. AREA TO PRESS

Press the center of the stem. Click feel may be changed if the edge of the stem is pressed because of out-of-center caused by improper structure of hinge or comulative tolerance on the set.

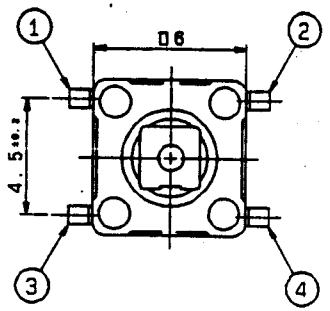
5. CONDITIONS FOR THERMOSETTING OVEN

When the board on which the switch is mounted has to be put in the oven so as to harden adhesive for other parts, the conditions shall be 160℃ at max. (on the parts mounted side of PCB), and not longer than 2 minutes.

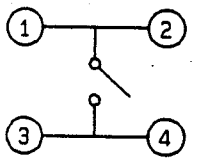
6. STORAGE

① Try to seal the container for the switches after use.

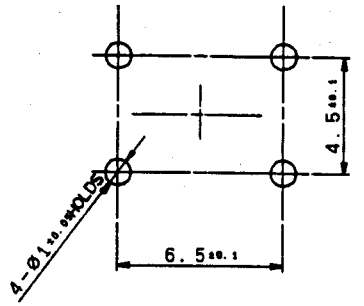
② Do not store the switches in the place of high temperature or high humidity. Do not stack too many switches for storage.

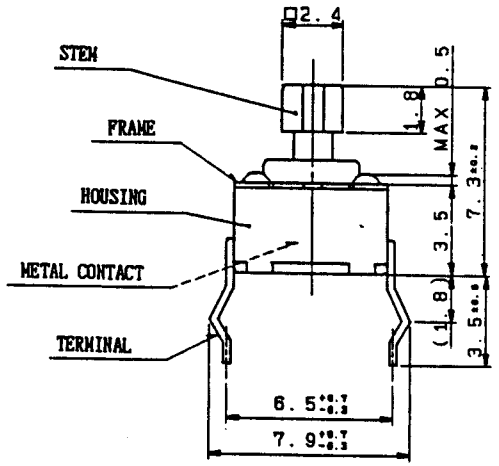


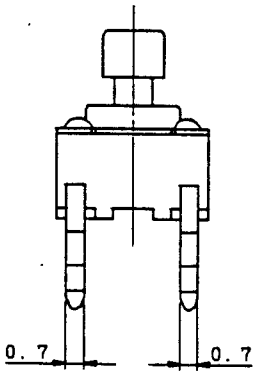
CIRCUIT DIAGRAM

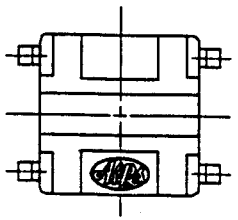


PRINTED CIRCUIT BOARD MOUNTING HOLE DIMENSIONS
(WHEN VIEWED FROM SWITCH MOUNTING FACE)









NOTE
1. MANUFACTURING SPECIFICATION TO BE ACCORDANCE WITH KHH-906
2. STEM COLOR TO BE RED , HOUSING COLOR TO BE BLACK.
3. THE RECOMMENDABLE THICKNESS OF A P.W.BOARD SHALL BE 1.6mm.

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°

PART NO.	NAME	MATERIAL	SPEC	FINISH	NUMBER

ALPS ELECTRIC CO., LTD.

ZONE	SYMB	DATE	APPD	CHKD	DSGD

DSGD. 5 Oct. '89 T. Enel
CHKD. Oct 5 '89 K. KAGAWA
APPD. 10/6 '89 S. Suzuki

SCALE 5 :1
UNIT mm
SKHHDG
TITLE TACT SWITCH
DOCUMENT NO.