Customer:

No. TSW964068A

Date:

Attention:

Your ref. No. :

Your Part No. :

SPECIFICATION

ALPS' :

MODEL: SKQDAB

Spec. No. : KQD-902

G0723893M

Sample No. : SKQDAB0003

RECEIPT STATUS

RECEIVED

By. Date

Signature

Name

Title

ALPS ELECTRIC CO., LTD.

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

DSG' D Y Kumagai

APP' D M. Ezu

ENG. DEP.T. DIVISION

Sales

1MSE106 #02

CUSTOMER _____

No. TSW964068A
Date May. 11, '96

Request for change of ordering unit of
products supplied by means of tape or stickmagazine

Thank you very much for your continued cooperation.
This is to ask you to place your order by the minimum unit (or N times of the unit) shown below for the product: SKQDAB whose packing specifications for delivery is to be appended here.

☑ Taping ..... Minimum unit: 3000 pcs.

☐ Stickmagazine ..... Minimum unit: _____ pcs.

EINGEGANGEN
19. Juni 1996

Background of this request;
The social and economic environment in which we are living now is getting harder these days.
That is, we are seeing various activities to preserve good global environmental conditions all over the world.
And we think we must behave in accordance with these activities by making every effort to reduce production cost, logistic cost, and industrial waste.
Among others we have had difficulties with the increased waste especially from taping when it is packed in a small fraction.
Therefore we have to ask your cooperation to cope with this problem, because efforts only on our side are limited.

We hope you will understand this situation and let us know your response by answering the questions below;

Answers: Check the box of the answer you chose:

☒ We will place orders by the unit according to the packing specifications (N times the minimum packing unit).

☐ We will refrain ordering because it is impossible to follow this ordering system.
[Our affordable price or other conditions are:
]

Please sign here for your authorization:

DSG'D Y Kumagai

APP'D M. Yokoyama

MECHATRONIC DEVICES DIVISION 1

ALPS ELECTRIC CO., LTD

CLASS.NO.	TITLE	
	TACT SWITCH SPECIFICATION	

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 ℃ (normal humidity, normal press.)

1.3 Storage Temperature Range

-30 to 80 ℃ (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℃)
- 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 ℃)
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

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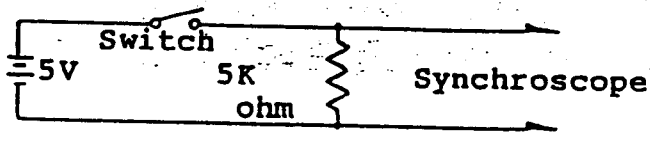
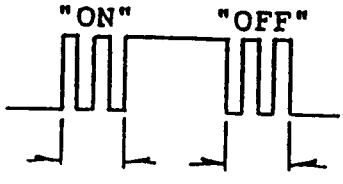
TACT SWITCH SPECIFICATION

DOCUMENT NO. KQD-902 (1/6)

CLASS.NO.	TITLE	
	TACT SWITCH SPECIFICATION	

6. PERFORMANCE

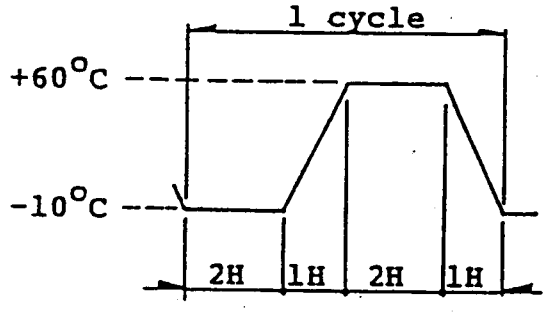
6.1 Electrical

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.	500 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 Voltage	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".  	10 m sec max.

6.2 Mechanical

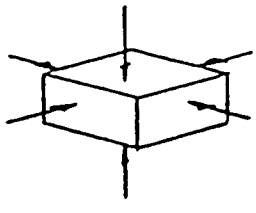
Item	Test Conditions	Requirements
6.2.1 Actuating Force	Placing the switch such that the direction of switch operation is vertical and then gradually increasing the load applied to the center of the stem, the maximum load required for the switch to come a make shall be measured.	$260^{\pm 70}$ gf
6.2.2 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 switch to come to a make shall be measured.	$0.25^{+0.2}_{-0.1}$ 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 3 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.	0.5 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℃ (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℃ (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℃ (2) Time : 96 hours (3) Relative humidity: 90 to 95 % (4) Waterdrops shall be removed.	Contact resistance: 500 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

CLASS.NO.	TITLE	
	TACT SWITCH **SPECIFICATION**	

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: 330 gf max. (4) Cycles of operation: 3 × 10^4 cycles	Contact resistance: 1000 m ohm max Insulation resistance: 10 M ohm min. Bounce: 20 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: 1.5mm (3) Cycle of sweep: 10-55-10Hz 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: 80 G (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

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TACT SWITCH **SPECIFICATION**

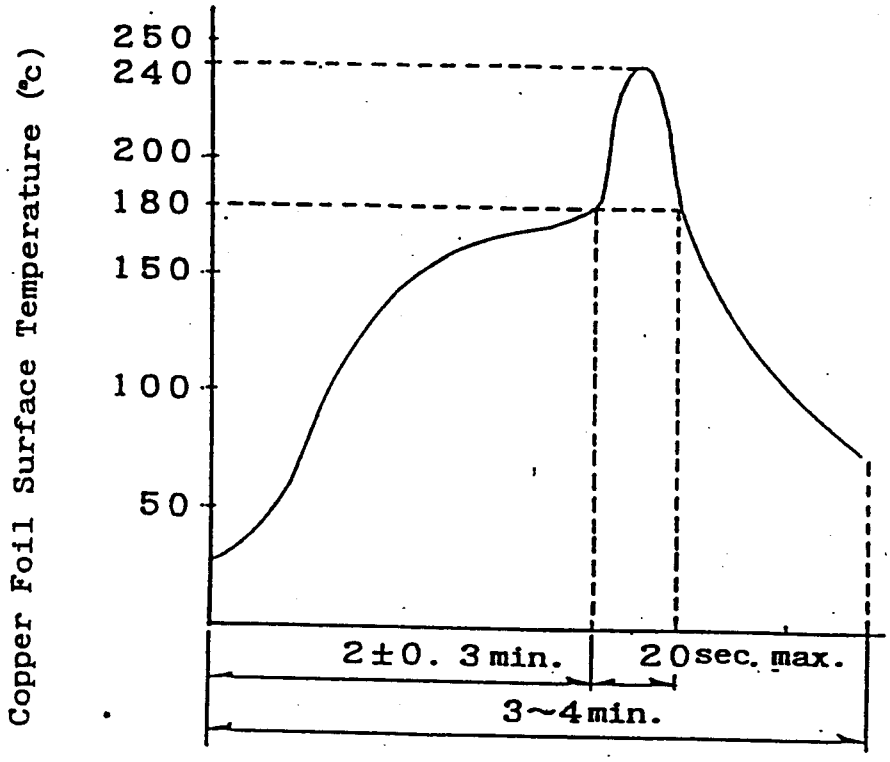
DOCUMENT NO. KQD-902 (5/6)

7. REFLOW SOLDERING

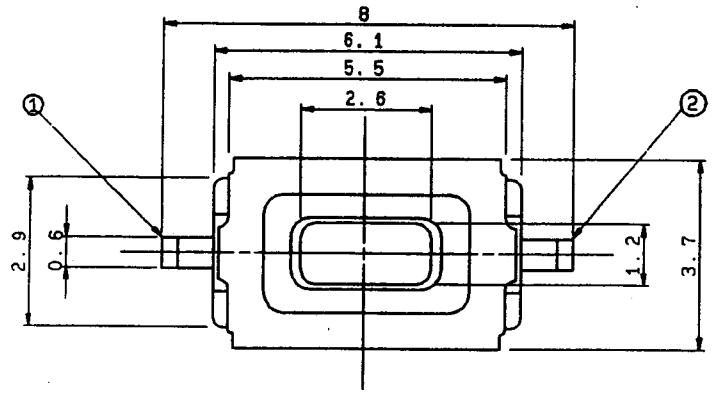
7.1 Reflow Soldering Conditions

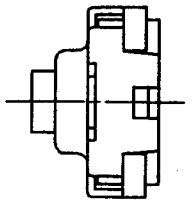
Preheat ---- Temperature on the copper foil surface should reach 180℃, 2±0.3 minutes after the PWB entered into the soldring equipment.

Soldring Heat --- Temperature on the copper foil surface should reach the peak temperature of 240℃ within 20 seconds after the PWB entered into soldering heat zone.

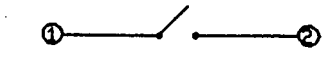


Temperature Profile

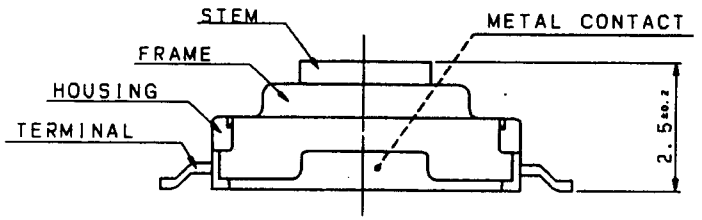


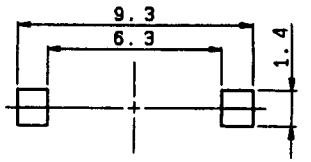


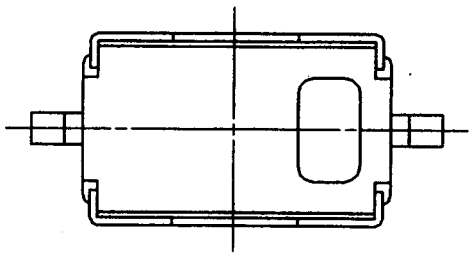
CIRCUIT DIAGRAM



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







4. TAPING SPECIFICATION TO BE ACCORDANCE WITH TQD-901

3. SWITCHES TO BE SUPPLIED IN TAPING PACKAGING

2. STEM COLOR TO BE RED

NOTE 1. MANUFACTURING SPECIFICASION TO BE ACCORDANCE WITH KQD-902

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

ZONE	SYMB	DATE	APPD	CHKD	DSGD

ALPS ELECTRIC CO., LTD.

DSGD. H. KOUZUMA '00.6.26	SCALE 10:1	SKQDA B	
CHKD. '00.P.21 J. Tatsumi		TITLE TACT-SWITCH	
APPD. 00/6/24	UNIT mm	DOCUMENT NO.	

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CLASS.NO.	TITLE	
	TAPE PACKAGING SPECIFICATION	

1. Scope

This specification covers the requirments of the taping packaging for SKQD standerd type of TACT switches.

2. Packaging Materials

Item	Description
Package	Cartons
Reel	~~Core:Foamed Polyethylene~~ ~~Sideboard~~:Cartons (△2) Delete
Carrier Tape	Polypropylene

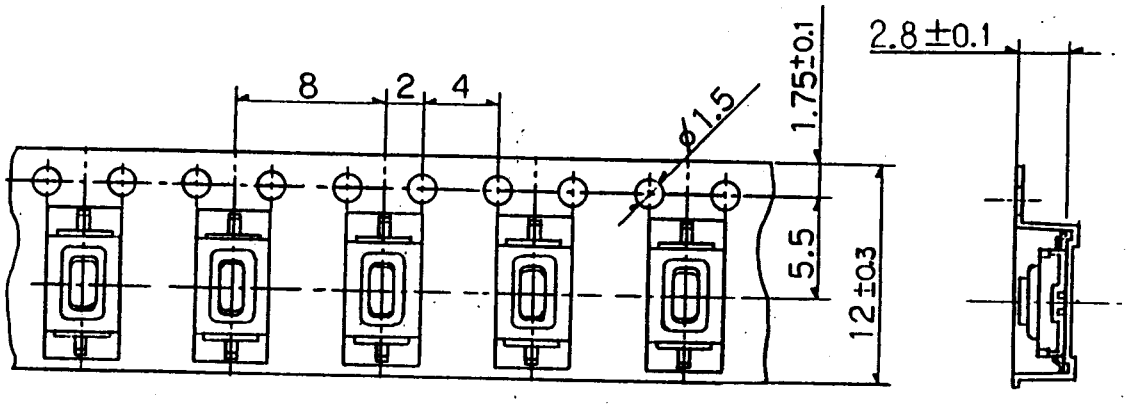
3. Packaging Quantity

3.1. The number of the reels.
Ten(10) reels at maximum, which contain 30000 switchs, shall be packed in a package.

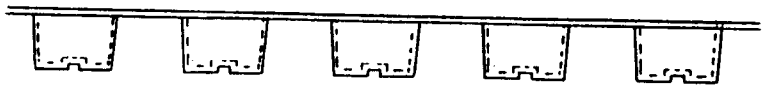
3.2. The number of the switches.
3000 switches shall be packed in a reel.

△3.3 It should be noted that we regard two cartons mentioned above as on package for export.

4. Tape Form and Dimensions



Pulling-out direction of the tape



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1/3	△-1	94.8.29	Y.Ono	Y.Ono	Takei

ALPS ELECTRIC CO., LTD.

APPD.	CHKD.	DSGD.
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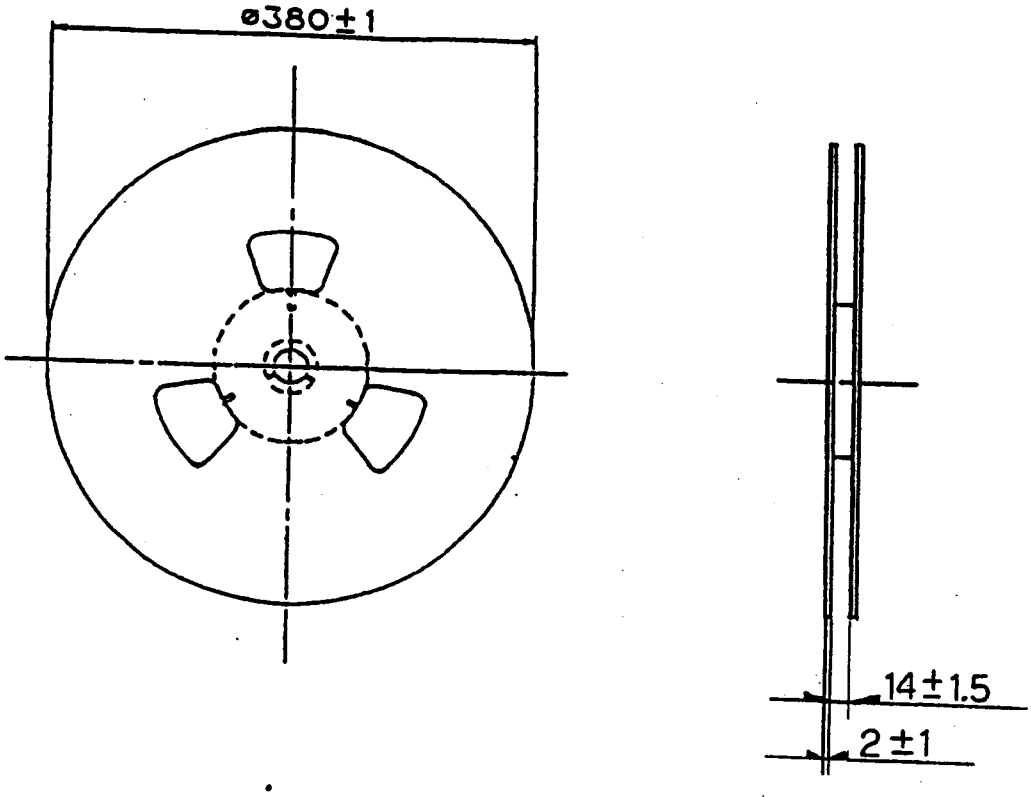
TAPE PACKAGING SPECIFICATION

DOCUMENT NO. TQD-901 (1/2)

(規格・仕様用紙) A4. 89.7. 8,000. 33K YA

CLASS.NO.	TITLE	
	TAPE PACKAGING SPECIFICATION	

5. Reel Form and Dimensions



6. Packaging Procedure

6-1. At the beginning of reeling, the end of the tape, 200mm or more, shall be empty and fit into the groove in the reel core.

6-2. After reeling, the end of the tape, 130±4mm, shall be empty and the tape edge shall be cut in 45°.
The cover tape shall be extended 250 ±10mm from the tape edge and fixed with tape.

6-3. Total number of missing switches shall be less than 10 in one reel.
(Three consecutive switches may be missing.)

7. Storage Condition

7-1. Storage Environment
-20 to 50 ℃, 20 to 85 %RH.
(Storage in high temperature and high humidity shall be avoided.)

7-2. Storage Period
Maximum of 6 months after the date of deliery.

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ALPS ELECTRIC CO., LTD.

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TAPE PACKAGING SPECIFICATION

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