Customer：

Attention：

Your ref No：

Your Part No：

No :

Date :

Plate： A

SPECIFICATION

MODEL: TACTING SWITCH A Type

Spec No：

Sample No.：

RECEIPT STATUS

RECEIVED

By Date

Signature

Name

Title

HUA JIE(TAIWAN)CORP

6F., No.25 Ji-Lin Road, Chung Li

Taiwan, ROC(Chung Li Industrial Zone)

E-mail:huajie@mail.hua-jie.com

SUZHOU HUAJIE ELECTRONICS CO.LTD

NO.7.Zhangzhuang Road Huangqiao

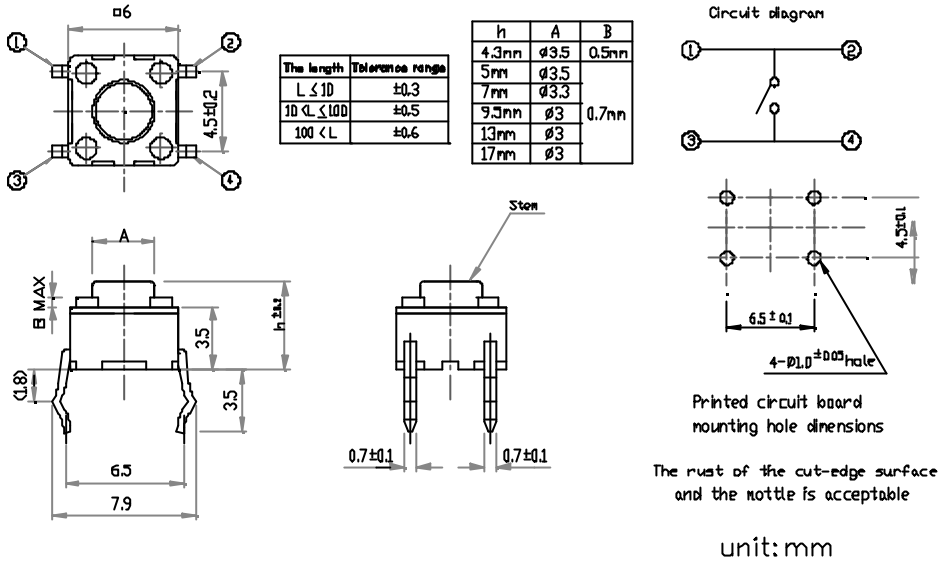
Town Suzhou.China

DSG'D 研發部 93.12.01 葉佳驊

APP'D 研發部 93.12.01 林萬來

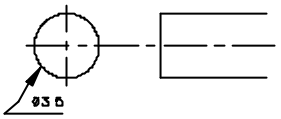
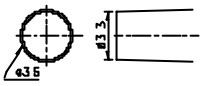
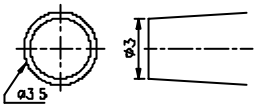
Sales

TACTING SWITCH SPECIFICATION



The length	Tolerance range
L ≤ 10	±0.3
10 < L ≤ 100	±0.5
100 < L	±0.6

h	A	B
4.3mm	ø3.5	0.5mm
5mm	ø3.5	0.7mm
7mm	ø3.3	
9.5mm	ø3	
13mm	ø3	
17mm	ø3	

MODEL	DIM-h	STEM COLOR	ACTUATING FORCE(gf)	RETURN FORCE(gf)	SHAPE
TSAA-1L	4.3	BLACK	100±50	10 Min	
TSAA-2L	4.3	DARK GRAY	160±50	50 Min	
TSAA-3L	4.3	RED	260±70	50 Min	
TSAB-1L	5.0	BLACK	100±50	10 Min	
TSAB-2L	5.0	DARK GRAY	160±50	50 Min	
TSAB-3L	5.0	RED	260±70	50 Min	
TSAC-1L	7.0	BLACK	100±50	10 Min	
TSAC-2L	7.0	DARK GRAY	160±50	50 Min	
TSAC-3L	7.0	RED	260±70	50 Min	
TSAD-1L	9.5	BLACK	100±50	10 Min	
TSAD-2L	9.5	DARK GRAY	160±50	50 Min	
TSAD-3L	9.5	RED	260±70	50 Min	
TSAE-1L	13	BLACK	100±50	10 Min	
TSAE-2L	13	DARK GRAY	160±50	50 Min	
TSAE-21L	13	BLACK	160±50	50 Min	
TSAE-3L	13	RED	260±70	50 Min	
TSAF-1L	17	BLACK	100±50	10 Min	
TSAF-2L	17	DARK GRAY	160±50	50 Min	
TSAF-21L	17	BLACK	160±50	50 Min	
TSAF-3L	17	RED	260±70	50 Min	

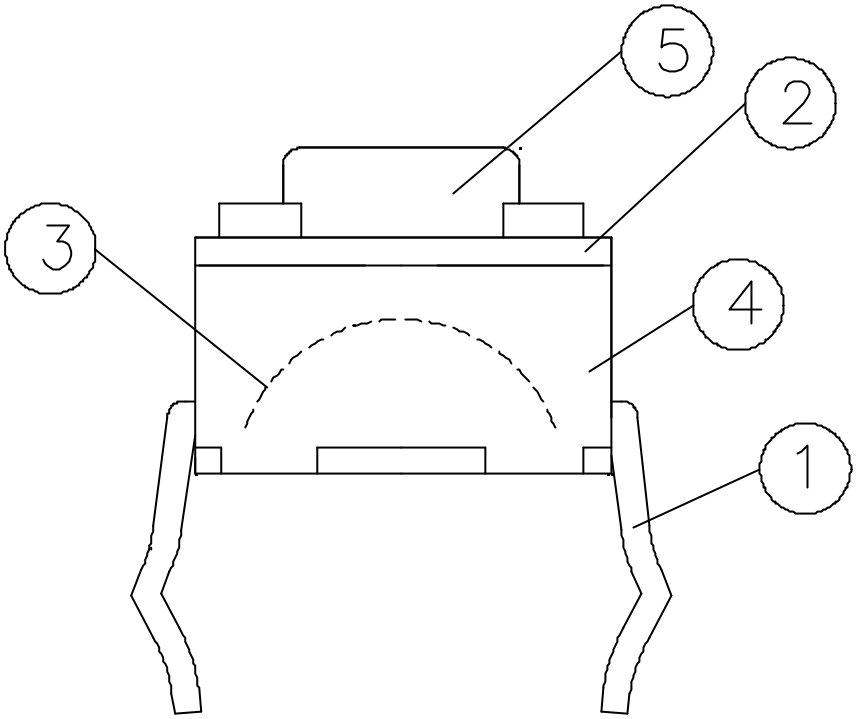
ZONE	SYMB	DATE	APPD	CHKD	DSGD

APPD	CHKD	DSGD
研發部 93.12.01 林萬來	研發部 93.12.01 林萬來	研發部 93.12.01 葉佳驊

PART NO: TSA_-___L

DOCUMENT NO:SPECTSA.DOC 1/9

TACTING SWITCH SPECIFICATION



ITEM	COMPONETS	MATERIAL ARTICLE
1	TERMINAL	BRASS STRIP SILVER CLOTHED
2	FRAME	STAINLESS STEEL OR TIN SHEET
3	CONTACT	SILVER PHOSPHOR BRONZE STRIP
4	HOUSING	PA
5	STEM	PA

ZONE	SYMB	DATE	APPD	CHKD	DSGD	APPD	CHKD	DSGD	PART NO: TSA_-___L	
						研發部 93.12.01 林萬來	研發部 93.12.01 林萬來	研發部 93.12.01 葉佳驊	DOCUMENT NO:SPECTSA.DOC	2/9

TACTING 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°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.)

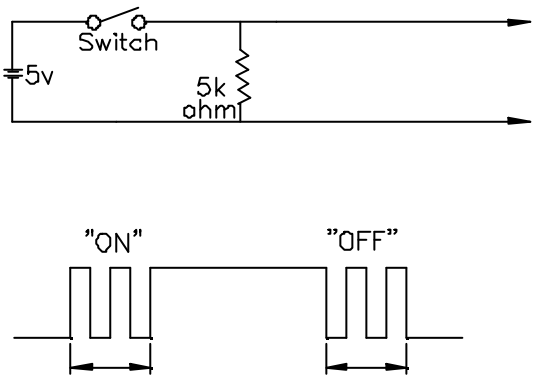
5. MAXIMUM RATINGS DC 12 V 50 mA

						APPD	CHKD	DSGD	PART NO: TSA_-___L	
						研發部 93.12.01 林萬來	研發部 93.12.01 林萬來	研發部 93.12.01 葉佳驊	DOCUMENT NO:SPECTSA.DOC	3/9
ZONE	SYMB	DATE	APPD	CHKD	DSGD					

TACTING 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.	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 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". 	5 m sec max.

						APPD	CHKD	DSGD	PART NO: TSA_-___L	
						研發部 93.12.01 林萬來	研發部 93.12.01 林萬來	研發部 93.12.01 葉佳驊	DOCUMENT NO: SPECTSA.DOC	4/9
ZONE	SYMB	DATE	APPD	CHKD	DSGD					

TACTING SWITCH SPECIFICATION

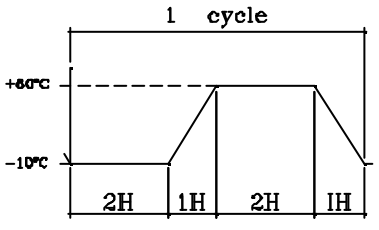
6.2 Mechanical

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.	__ ± __ g f
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** **0.1** m m
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.	_____ g f 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 k g f

ZONE	SYMB	DATE	APPD	CHKD	DSGD	APPD	CHKD	DSGD	PART NO: TSA_-___L	
						研發部 93.12.01 林萬來	研發部 93.12.01 林萬來	研發部 93.12.01 葉佳驊	DOCUMENT NO:SPECTSA.DOC	5/9

TACTING SWITCH SPECIFICATION

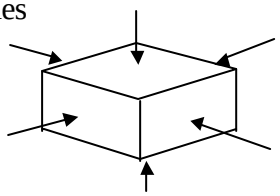
6.3 Environmental

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)Water drops 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)Water drops 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, water drops shall be removed. 	Item 6.1 Item 6.2.1 Item 6.2.2

ZONE	SYMB	DATE	APPD	CHKD	DSGD	APPD	CHKD	DSGD	PART NO: TSA_-___L	
						研發部 93.12.01 林萬來	研發部 93.12.01 林萬來	研發部 93.12.01 葉佳驊	DOCUMENT NO: SPECTSA.DOC	6/9

TACTING 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)Cycles of operation: 10 x10^4 cycles	Contact resistance: 200 m ohm max. Insulation resistance: 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: Logarithmically 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

						APPD	CHKD	DSGD	PART NO: TSA_-___L	
						研發部 93.12.01 林萬來	研發部 93.12.01 林萬來	研發部 93.12.01 葉佳驊	DOCUMENT NO: SPECTSA.DOC	7/9
ZONE	SYMB	DATE	APPD	CHKD	DSGD					

TACTING SWITCH SPECIFICATION

7. Switch Handling Precautions

7.1 In case an automatic flow soldering apparatus is used for soldering, adhere to the following conditions:

Item	Soldering condition
7.1.1. Preheat Temperature	100℃ max (Ambient temperature of printed circuit board on its soldering side)
7.1.2. Preheat Time	40 sec max.
7.1.3. Flux Foaming	To such an extent that fluxes will be kept flush with the printed circuit board‘ s top surface on which components are mounted. Preparatory flux must not be applied to that side of printed circuit board on which components are mounted and to the area where terminals located.
7.1.4. Soldering Temperature	260℃ max.
7.1.5. Duration of Solder Immersion	5 sec. max.
7.1.6. Allowable Frequency of Soldering process	2 times max.

7.2 Other precautions

7.2.1. Following the soldering process, do not try to clean the switch with a solvent or the like.

7.2.2. Safeguard the switch assembly against flux penetration from its topside.

7.2.3. Please have the products keep in close status and the storage time is 90 days guaranty after delivering the goods at most.

						APPD	CHKD	DSGD	PART NO: TSA_-___L	
						研發部 93.12.01 林萬來	研發部 93.12.01 林萬來	研發部 93.12.01 葉佳驊	DOCUMENT NO: SPECTSA.DOC	8/9
ZONE	SYMB	DATE	APPD	CHKD	DSGD					

TACTING SWITCH SPECIFICATION

8. PACKAGED CONDITION

8.1 SCOPE

This specification covers the requirements for TSA series type of tact switches.

8.2 PACKING MATERIAL

ITEM	SUBSTANCE
CARTON BOX	CORRUGATED PAPER
PACKING CTN	CORRUGATED PAPER
PLASTIC BAG	NORMAL PLASTIC

8.3 PACKING UNIT

8.3.1. Every carton box contains 4 packing ctn at most.
With a gross weight of 13.5 kgs around.

8.3.2. Every packing carton contains 10k pcs goods at most.
With a net weight of 3 kgs around.

8.3.3. Every plastic bag contains 2,000 pcs goods at most with a net weight of 600 g.

8.4 THE DIMENSION OF CARTON BOX.

Measurement:510×385×185mm.

ZONE	SYMB	DATE	APPD	CHKD	DSGD	APPD	CHKD	DSGD	PART NO: TSA_-___L	
						研發部 93.12.01 林萬來	研發部 93.12.01 林萬來	研發部 93.12.01 葉佳驊	DOCUMENT NO: SPECTSA.DOC	9/9