Customer：　　No :

Attention：　　Date :

Your ref No：　　Plate：

Your Part No：

SPECIFICATION

MODEL：TACTING SWITCH　S　TYPE

Spec No：

Sample No.：

RECEIPT STATUS

RECEIVED

By Date

Signature

Name

Title

HUA JIE(TAIWAN)CORP

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Taiwan, ROC(Chung Li Industrial Zone)

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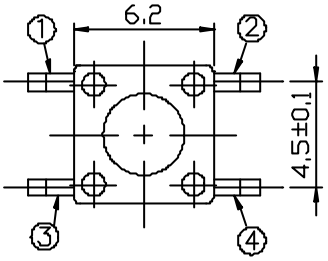
Town Suzhou.China

DSG'D　研發部 94.06.30 葉佳驊

APP'D　研發部 94.06.30 林萬來

Sales

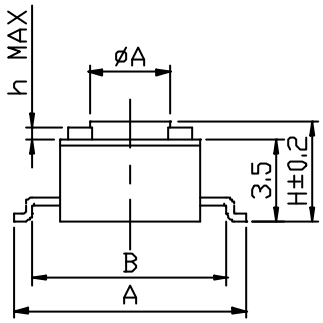
TACTING SWITCH SPECIFICATION

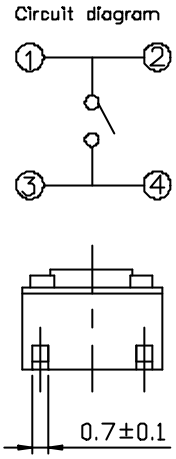


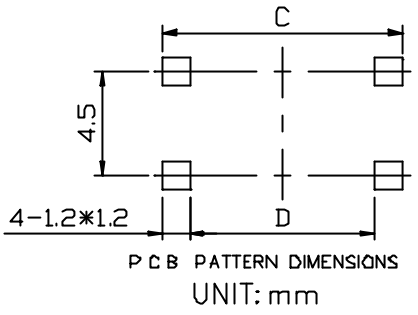
The length	Tolerance range
L≤10	±0.3
10<L≤100	±0.5
100<L	±0.6

H	øA	h
4.3	3.5	0.5
5.0	3.5	0.7
7.0	3.3	
8.5	3.0	
9.5	3.0	

尾碼	1	2	3
	10.0mm	9.0mm	8.0mm
A	10	9.0	8.0
B	8.4	7.4	6.4
C	10.4	9.4	8.4
D	8.0	7.0	6.0







MODEL	DIM-h	STEM COLOR	ACTUATING FORCE(gf)	RETURN FORCE(gf)	SHAPE
TSSA-1L	4.3	BLACK	100±50	10 Min	
TSSA-2L	4.3	DARK GRAY	160±50	50 Min	
TSSA-3L	4.3	RED	260±70	50 Min	
TSSB-1L	5.0	BLACK	100±50	10 Min	
TSSB-2L	5.0	DARK GRAY	160±50	50 Min	
TSSB-3L	5.0	RED	260±70	50 Min	
TSSC-1L	7.0	BLACK	100±50	10 Min	
TSSC-2L	7.0	DARK GRAY	160±50	50 Min	
TSSC-3L	7.0	RED	260±70	50 Min	
TSSD-1L	9.5	BLACK	100±50	10 Min	
TSSD-2L	9.5	DARK GRAY	160±50	50 Min	
TSSD-3L	9.5	RED	260±70	50 Min	
TSSI-1L	8.5	BLACK	100±50	10 Min	
TSSI-2L	8.5	DARK GRAY	160±50	50 Min	
TSSI-3L	8.5	RED	260±70	50 Min	

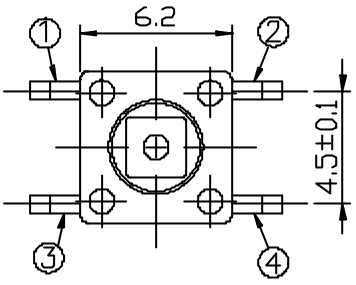
ZONE	SYMB	DATE	APPD	CHKD	DSGD

APPD	CHKD	DSGD
研發部 94.06.30 林萬來	研發部 94.06.30 林萬來	研發部 94.06.30 葉佳驊

PART NO: TSS__—___L

DOCUMENT NO:SPECTSS.DOC 1/13

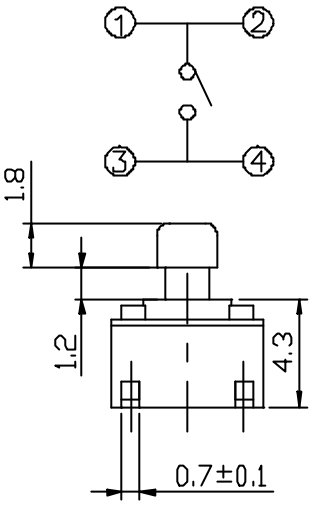
TACTING SWITCH SPECIFICATION

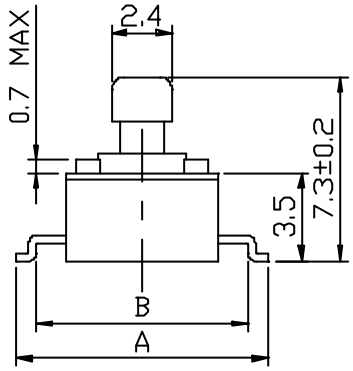


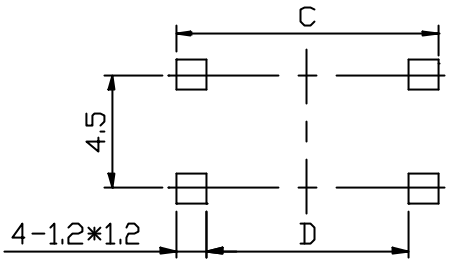
The length	Tolerance range
L≤10	±0.3
10<L≤100	±0.5
100<L	±0.6

尾碼	1	2	3
	10.0mm	9.0mm	8.0mm
A	10	9.0	8.0
B	8.4	7.4	6.4
C	10.4	9.4	8.4
D	8.0	7.0	6.0

Circuit diagram







P.C.B. PATTERN DIMENSIONS
UNIT: mm

MODEL	DIM-h	STEM COLOR	ACTUATING FORCE(gf)	RETURN FORCE(gf)	SHAPE
TSSG-1L	7.3	BLACK	100±50	10 Min	
TSSG-2L	7.3	DARK GRAY	160±50	50 Min	
TSSG-3L	7.3	RED	260±70	50 Min	

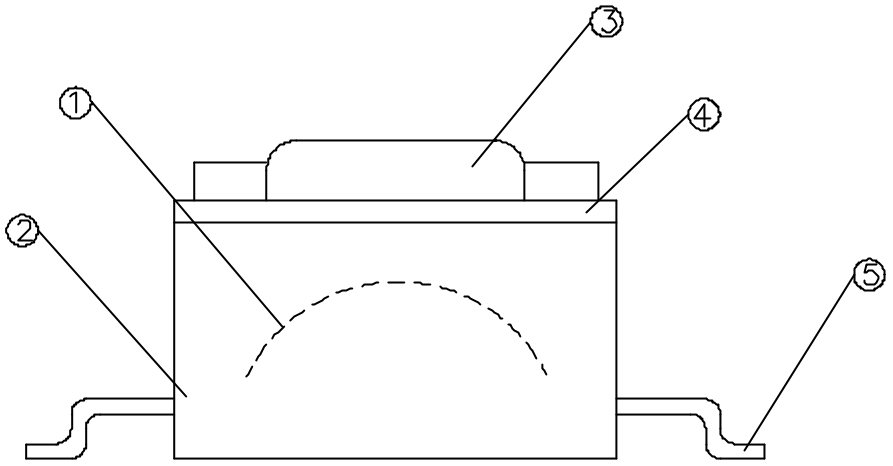
ZONE	SYMB	DATE	APPD	CHKD	DSGD

APPD	CHKD	DSGD
研發部 94.06.30 林萬來	研發部 94.06.30 林萬來	研發部 94.06.30 葉佳驊

PART NO: TSS_－___L

DOCUMENT NO:SPECTSS.DOC 2/13

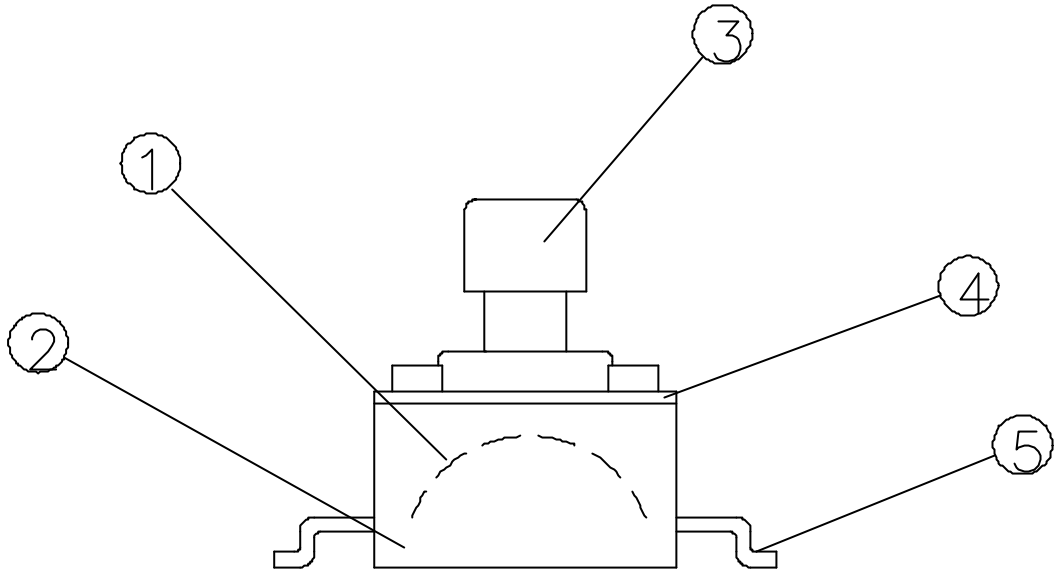
TACTING SWITCH SPECIFICATION



ITEM	COMPONETS	MATERIAL ARTICLE	SPECIFICATION
1	CONTACT	STAINLESS STEEL STRIP SILVER	SUS301-EH Ag 0.5μm
2	HOUSING	HIGH TEMPERATURE NYLON RESIN	PA46
3	STEM	HIGH TEMPERATURE NYLON RESIN	PA46
4	FRAME	STAINLESS STEEL OR TIN SHEET	JIS G3303 SPTE
5	TERMINAL	BRASS STRIP SILVER CLOTHED	JIS C2680R-H Ag 0.5μm

ZONE	SYMB	DATE	APPD	CHKD	DSGD	APPD	CHKD	DSGD	PART NO: TSS___－___L	
						研發部 94.06.30 林萬來	研發部 94.06.30 林萬來	研發部 94.06.30 葉佳驊	DOCUMENT NO:SPECTSS.DOC	3/13

TACTING SWITCH SPECIFICATION



ITEM	COMPONETS	MATERIAL ARTICLE	SPECIFICATION
1	CONTACT	STAINLESS STEEL STRIP SILVER	SUS301-EH
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5	TERMINAL	BRASS STRIP SILVER CLOTHED	JIS C2680R-H Ag 0.5μm

ZONE	SYMB	DATE	APPD	CHKD	DSGD	APPD	CHKD	DSGD	PART NO: TSS_－___L	
						研發部 94.06.30 林萬來	研發部 94.06.30 林萬來	研發部 94.06.30 葉佳驊	DOCUMENT NO:SPECTSS.DOC	4/13

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

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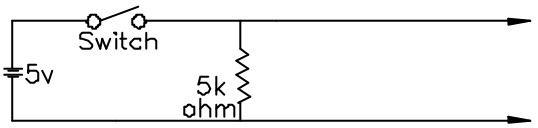
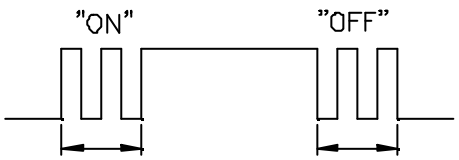
ZONE	SYMB	DATE	APPD	CHKD	DSGD				DOCUMENT NO:SPECTSS.DOC	5/13

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.

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

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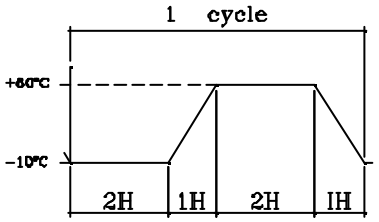
TACTING SWITCH SPECIFICATION

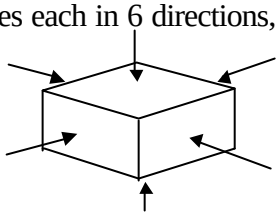
6.3 Environmental

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: TSS_－___L
						研發部 94.06.30 林萬來	研發部 94.06.30 林萬來	研發部 94.06.30 葉佳驊	DOCUMENT NO: SPECTSS.DOC 8/13

TACTING SWITCH SPECIFICATION

6.4 Endurance

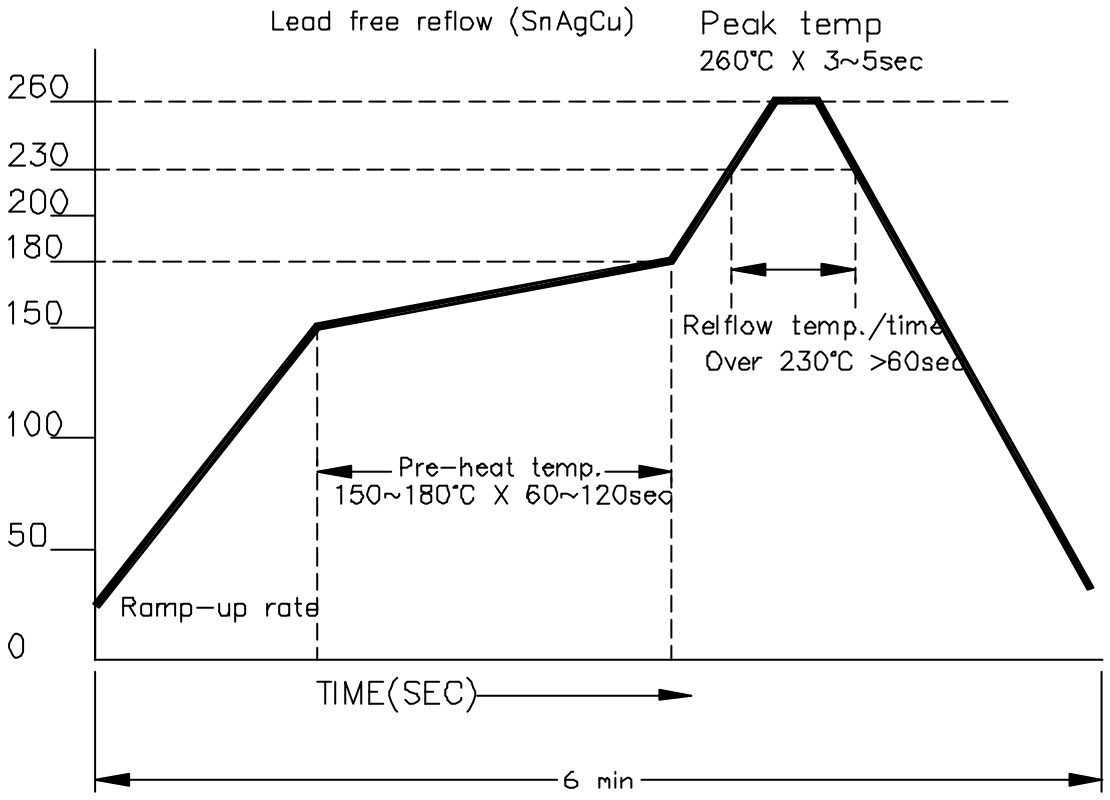
Item	Test Conditions	Requirements
6.4.1. Operating Life	Measurements shall be made following the test set forth below: (1)DC 5V 5mA resistive load (2)Rate of operation: 2 to 3 operations per second (3)Cycles of operation: $30x10^4$ cycles	Contact resistance: 200 m ohm max. Insulation resistance: 10 M 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

7. Conditions for soldering

Reflow soldering conditions

Preheat: Temperature on the copper foil surface should reach 180°C,2±0.3 minutes after The P.W.B entered into the soldering equipment.

Soldering heat: Temperature on the copper foil surface should reach the peak temperature of 260°C within 3~5 seconds after the P.W.B entered into soldering heat zone.



						APPD	CHKD	DSGD	PART NO: TSS_－___L	
						研發部 94.06.30 林萬來	研發部 94.06.30 林萬來	研發部 94.06.30 葉佳驊	DOCUMENT NO:SPECTSS.DOC	10/13
ZONE	SYMB	DATE	APPD	CHKD	DSGD					

TACTING SWITCH SPECIFICATION

7.1 Other precautions

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

(2) Safeguard the switch assembly against flux penetration from its topside.

(3) Please have the products keep in close status and the storage time is 90 days guaranty after delivering the good

8.REEL PACKAGING

8.1 Scope

This specification covers the requirements of the reel packaging for SMD standard type of TACT switches.

8.2 Packaging Materials

Item	Description
Package	Cartons
Reel	Delete Cartons
Carrier Tape	Polypropylene

8.3 Packaging Quantity

8.3.1. The number of the reels.

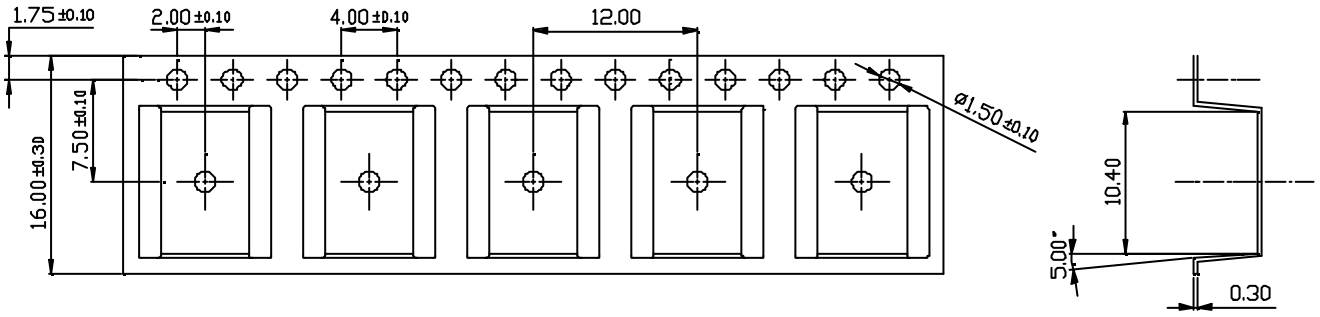
TSSA、TSSB Fourteen (14) reels at maximum. Which contain 14kpcs switches. Shall be packed in a package.

8.3.2. The number of the switches.

TSSA、TSSB:1kpcs switches shall be packed in a reel.

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

8.4 Reel Form and Dimensions



						APPD	CHKD	DSGD	PART NO: TSS_－___L	
						研發部 94.06.30 林萬來	研發部 94.06.30 林萬來	研發部 94.06.30 葉佳驊	DOCUMENT NO:SPECTSS.DOC	12/13
ZONE	SYMB	DATE	APPD	CHKD	DSGD					

8.REEL PACKAGING

8.1 Scope

This specification covers the requirements of the reel packaging for SMD standard type of TACT switches.

8.2 Packaging Materials

Item	Description
Package	Cartons
Reel	Delete Cartons
Carrier Tape	Polypropylene

8.3 Packaging Quantity

8.3.1. The number of the reels.

TSSC、TSSG Ten (10) reels at maximum. Which contain 7.5kpcs switches.

TSSD、TSSI Ten (10) reels at maximum. Which contain 5kpcs switches.

Shall be packed in a package.

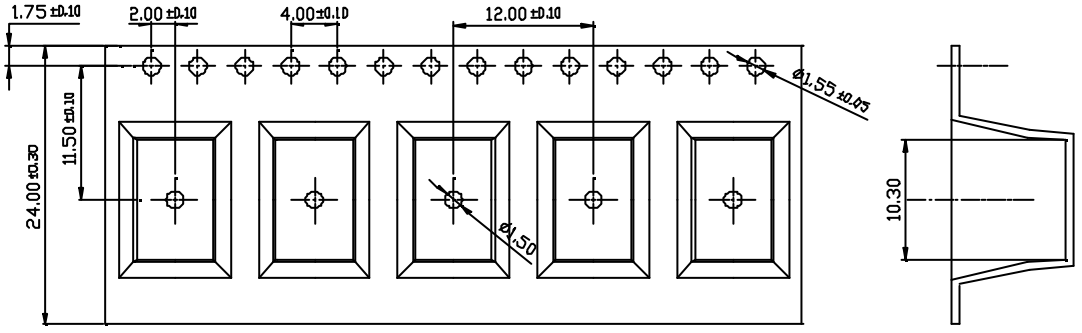
8.3.2. The number of the switches.

TSSC、TSSG:0.75kpcs switches shall be packed in a reel.

TSSD、TSSI:0.5kpcs switches shall be packed in a reel.

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

8.4 Reel Form and Dimensions



						APPD	CHKD	DSGD	PART NO: TSS_－___L	
						研發部 94.06.30 林萬來	研發部 94.06.30 林萬來	研發部 94.06.30 葉佳驊	DOCUMENT NO:SPECTSS.DOC	13/13
ZONE	SYMB	DATE	APPD	CHKD	DSGD					