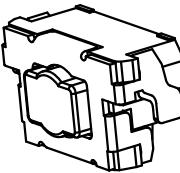
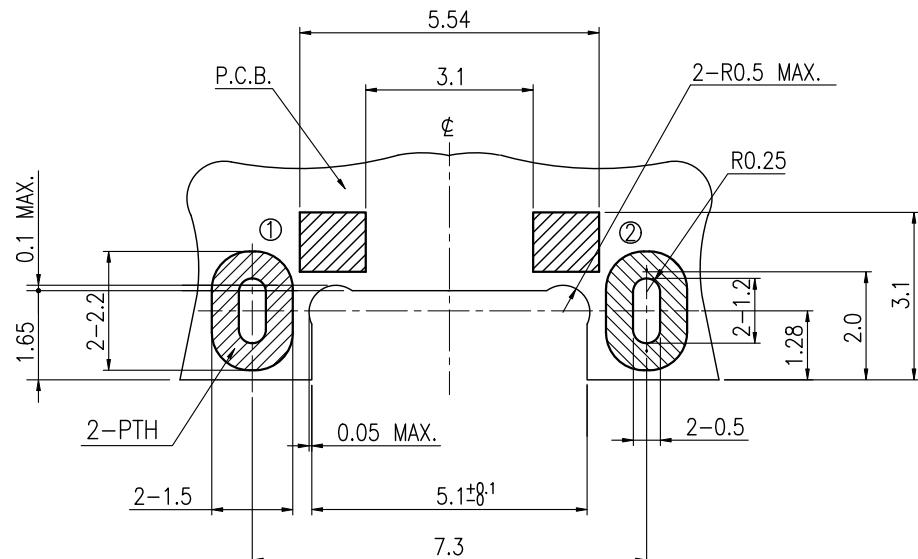
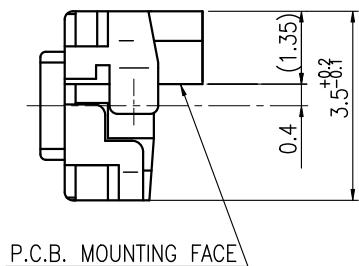
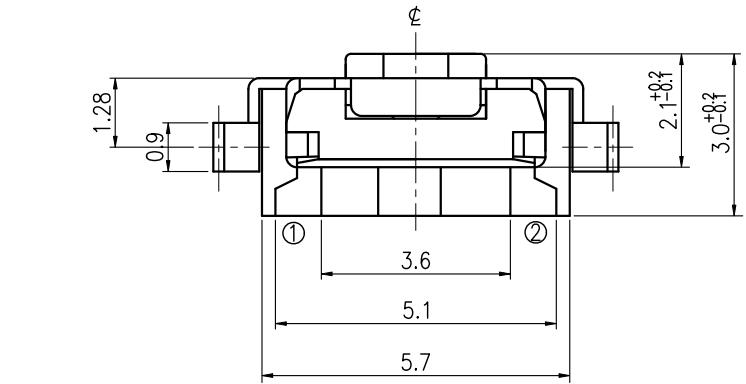
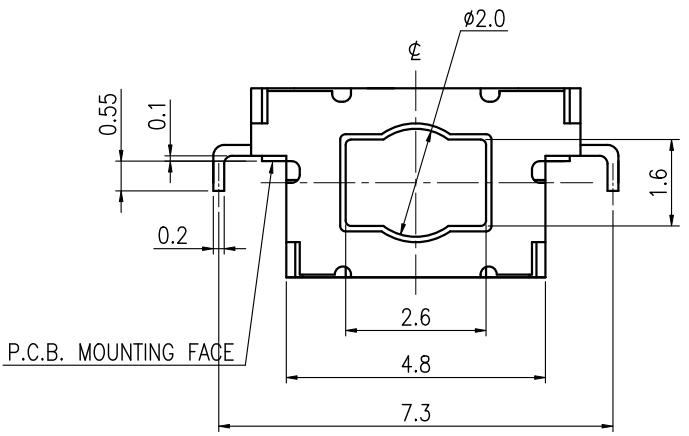


## RoHS Compliance



REVISIONS							
Rev	DESCRIPTION	DATE	DRAWER	Rev	DESCRIPTION	DATE	DRAWER
A	Initial Drawing	2010.10.15	Jane Shen	C			
B				D			
SPECIFICATIONS							
RATING	DC12V	50mA		TIMING			
CONTACT RESISTANCE	100mΩ	MAX.		OPERATION (TORQUE)	160±50 gf		
INSULATION RESISTANCE	DC500V	– 100MΩ	MIN.	STROKE (ANGLE)	0.15±0.1 mm		
WITHSTAND VOLTAGE	AC250V	– 1 MINUTE		CONTACT RESISTANCE	2Ω MAX.		
REMARKS:			(AFTER	200,000	CYCLES	LIFE TEST)	

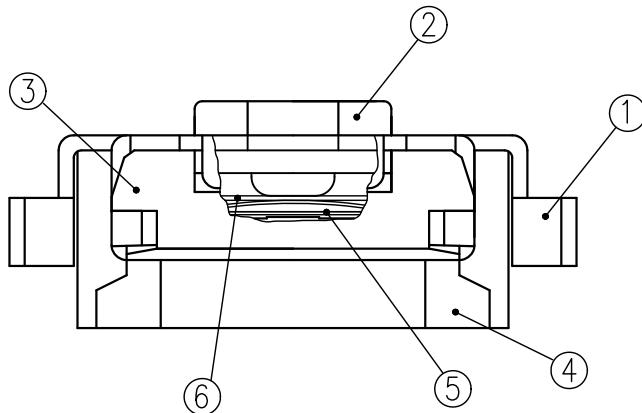
## SCHEMATIC



### Recommend P.C.B. Layout

TOLERANCES UNLESS OTHERWISE SPECIFIED ±0.1			SIGNATURES	DATE	MODEL
			DRAWER <i>Jane Shen</i>	2010.10.15	TITLE TACT SWITCH
			CHECKED <i>James Hung</i>	2010.10.18	
	UNIT mm	SCALE 10/1	REVIEWED <i>Dennis Hung</i>	2010.10.18	NO. NTC302-BA1G-A160T
			APPROVALS <i>W. J. Hung</i>	2010.10.18	
TAIWAN MISAKI ELECTRONICS CO., LTD.					

RoHS Compliance



NO.	PART NAME	Q'TY	MATERIAL		SPECIFICATION	
6	TAPE	1	POLYIMIDE			
5	CONTACT PLATE	1	STAINLESS STEEL PLATE		Ag-CLAD	
4	TERMINAL	2	COPPER ALLOY		Ag-PLATING or Ag-CLAD	
3	FRAME	1	LIQUID CRYSTAL POLYMER		NATURE COLOR	
2	STEM	1	LIQUID CRYSTAL POLYMER		BLACK COLOR	
1	COVER	1	STAINLESS STEEL PLATE		Ag-PLATING	
SYM	DESCRIPTION	DATE	APPROVED	SIGNATURES	DATE	MODEL
				DRAWN <b>Jane Shen</b>	2010.10.15	TITLE TACT SWITCH
				CHK'D		
				REV'D		NO. NTC302-BA1G-A160T
				APP'D <b>James Hung</b>	2010.10.15	
				DWG NO.		
TAIWAN MISAKI ELECTRONICS CO.,LTD.					TC302-03	

# SPECIFICATIONS FOR TACT SWITCH

RoHS Compliance

Model: NTC302-SERIES

1. Test condition:

Standard test conditions shall be 5~35°C in temperature, 45~85%RH in humidity and 86~106Kpa in atmospheric pressure. Should any doubt arise in judgment, tests shall be conducted at 20±2°C in temperature, 60~70% RH in Humidity and 86~106 kpa in atmospheric pressure.

2. Operating temperature range: -40 ~ +85°C

Preservative temperature range: Single condition: -40 ~ +85°C ; Taping condition: -20 ~ +60°C

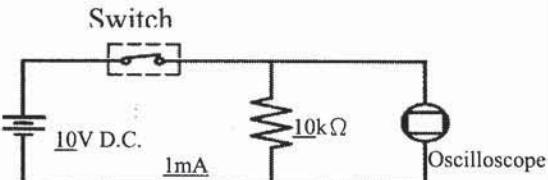
3. Construction:

3.1 Shape and dimension are subject to attached drawing regulation.

3.2 Appearance: Whole should be a good completion, no rust, no crack and good plating.

4. Rating: 15V D.C. , 20mA.

5. Electrical Performance:

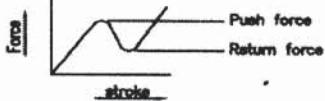
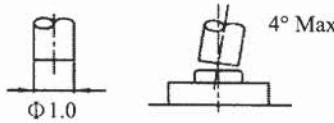
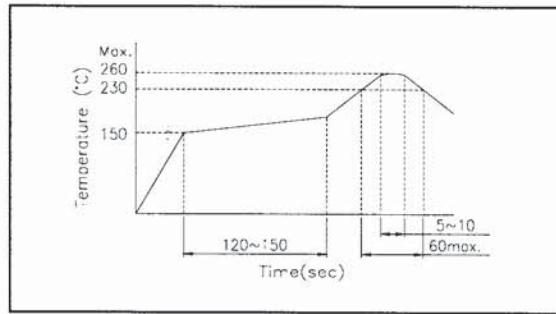
No.	Items	Test conditions	Specifications
5.1	Contact Resistance	Shall be measure at 1kHz±200Hz (MAX. 20mV, MAX. 50mA.) or 1A, 5V D.C. By voltage drop method.	<u>100mΩ</u> Max.
5.2	Insulation Resistance	Shall be measured by applying 500V D.C. Between all terminals and between the terminals and the frame for 1 minute ± 5 seconds.	<u>100MΩ</u> Min.
5.3	Withstand Voltage	250V A.C. (50~60Hz 2mA) shall be applied between all terminals and between the terminals and the frame for 1 minute.	No dielectric breakdown shall be occurred.
5.4	Bounce	Lightly striking the center of the stem at a rate encountered in normal use ( 3 to 4 operations per sec.)  	ON: <u>10m sec</u> Max. OFF: <u>10m sec</u> Max.

			APPROVED BY	REVIEWED BY	CHECKED BY	DESIGNED BY	SPEC NO.
							SE-TC49N
							PAGINATE
A	NEW RELEASE					Jnae Shen 2009.12.18	
SYM	DISCRIPTION	DATE					1/3

# SPECIFICATIONS FOR TACT SWITCH

RoHS Compliance

## 6. Mechanical Performance:

No.	Items	Test conditions	Specifications
6.1	Operating 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 to a stop shall be measured.  	$160 \pm 50$ gf.
6.2	Travel	Placing the switch such that the direction of switch operation is vertical and then applying a below static load to the center of the stem, the travel distance for the switch to come to a stop shall be measured.  	$0.15 \pm 0.1$ mm.
6.3	Control Strength	The static load of 3kgf shall be applied in the operating direction of the control unit for 15 seconds.	Shall be free from extreme wobble, vent or electrical and mechanical abnormality. Not deformation of the appearance.
6.4	Solderability	Soldering temperature: $235 \pm 5$ °C. Soldering time: $2 \pm 0.5$ seconds.	75% or more of surface area of the portion immersed in solder shall be satisfied.
6.4	Solder Heat Resistance	(1) Manual soldering temperature: Temperature: $350$ °C Max. Time: 3 Sec. Max. (2) Reflow Soldering: Number of reflow pass: 2 cycles.  	Shall be free from pronounced deforming in appearance. Of item 5.1~5.4 shall be satisfied. Of item 6.1~6.2 shall be satisfied.

			APPROVED BY	REVIEWED BY	CHECKED BY	DESIGNED BY	SPEC NO.
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SYM	DISCRIPTION	DATE					2/3

# SPECIFICATIONS FOR TACT SWITCH

RoHS Compliance

## 7. Weather Performance:

No.	Items	Test conditions	Specifications												
7.1	Humidity Test	(1) Temperature: $60\pm2^{\circ}\text{C}$ . (2) Relative humidity: 90~95% (3) Duration of test: 500 Hour. (4) Take off a drop water. (5) Standard conditions after test: 1 Hour.	Contact resistance: <u>500m<math>\Omega</math></u> Max Of item 5.2~5.4 shall be satisfied. Of item 6.1~6.2 shall be satisfied.												
7.2	Heat Test	(1) Temperature: $85\pm2^{\circ}\text{C}$ . (2) Duration of test: 500 Hour. (3) Standard conditions after test: 1 Hour.													
7.3	Cold Test	(1) Temperature: $-40\pm2^{\circ}\text{C}$ . (2) Duration of test: 500 Hour. (3) Take off a drop water. (4) Standard conditions after test: 1 Hour.													
7.4	Temperature cycle	(1) Test cycle: <u>20</u> cycles. (2) Standard conditions after test: 1 Hour.	<table border="1"> <thead> <tr> <th></th> <th>Temperature</th> <th>Duration of test</th> </tr> </thead> <tbody> <tr> <td rowspan="4">1 cycles</td> <td><math>20\pm5^{\circ}\text{C}</math></td> <td>1 Hour</td> </tr> <tr> <td><math>-40\pm2^{\circ}\text{C}</math></td> <td>1 Hour</td> </tr> <tr> <td><math>20\pm5^{\circ}\text{C}</math></td> <td>1 Hour</td> </tr> <tr> <td><math>85\pm2^{\circ}\text{C}</math></td> <td>1 Hour</td> </tr> </tbody> </table>		Temperature	Duration of test	1 cycles	$20\pm5^{\circ}\text{C}$	1 Hour	$-40\pm2^{\circ}\text{C}$	1 Hour	$20\pm5^{\circ}\text{C}$	1 Hour	$85\pm2^{\circ}\text{C}$	1 Hour
	Temperature	Duration of test													
1 cycles	$20\pm5^{\circ}\text{C}$	1 Hour													
	$-40\pm2^{\circ}\text{C}$	1 Hour													
	$20\pm5^{\circ}\text{C}$	1 Hour													
	$85\pm2^{\circ}\text{C}$	1 Hour													

## 8. Durability:

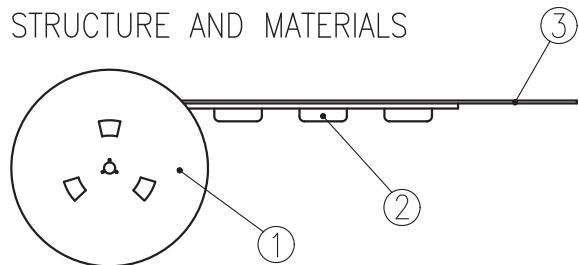
No.	Items	Test conditions	Specifications
8.1	Life Test (Without Load)	(1) Operating speed: 120~180 cycles/minute. (2) Push force: Maximum value of operation force. (3) Operation number: 200,000 times.	Contact Resistance: <u>2<math>\Omega</math></u> MAX.  Operating Force: Within $\pm30\%$ of specifications. Of item 5.2 shall be satisfied. Of item 6.2 shall be satisfied.

			APPROVED BY	REVIEWED BY	CHECKED BY	DESIGNED BY	SPEC NO.
						Jnae Shen	SE-TC49N
						2009.12.18	PAGINATE
A	NEW RELEASE						
SYM	DISCRIPTION	DATE					3/3

## THE PACKING SPECIFICATIONS

## RoHS Compliance

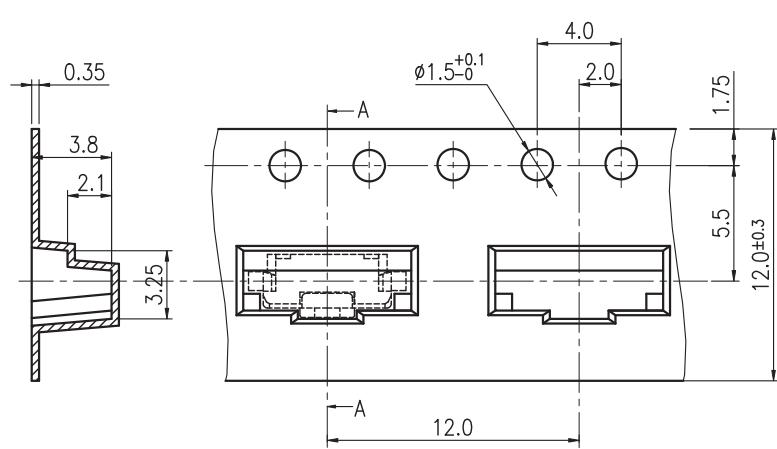
## 1. STRUCTURE AND MATERIALS



③	COVER TAPE	POLYESTER
②	CARRIER TAPE	POLYSTYRENE
①	REEL	POLYSTYRENE
NO.	PARTS NAME	MATERIALS

2. PACKAGE QUANTITY : 1200 PCS/REEL.
3. MORE THAN 10 EMPTY POCKETS SHOULD BE REMAINED AT BOTH ENDS OF THE CARRIER TAPE FOR EACH REEL.
4. SHORTAGE LESS THAN 10 PCS A REEL IS ACCEPTABLE BUT MORE THAN 3 RUNNIGE POCKETS SHORTAGE IS NOT ALLOWED.
5. STRIPPING STRENGTH OF COVER TAPE IS BETWEEN 10 gf TO 70 gf AND STRIPPING ANGLE SHOULD BE WITHIN  $165^\circ \sim 180^\circ$ .
6. THE PRODUCT IN THE POCKET OF CARRIER TAPE SHOULD BE PLACED IN A SPECIFIED CORRECT POSITION.
7. TAPE AND REEL PER EIA-481.
8. DIMENSIONS :

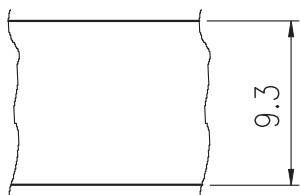
## CARRIER TAPE



## SECTION A A

## DRAWING DIRECTION

## COVER TAPE



Technical drawing of a reel component, labeled "REEL" at the top. The drawing includes the following dimensions:

- Outer diameter:  $\phi 21.0 \pm 0.8$
- Inner diameter:  $\phi 330$
- Thickness:  $2.0 \pm 0.5$
- Width:  $12.4 \frac{+2}{-0}$  (18.4 MAX)
- Side wall thickness:  $\pm 0.5$
- Bottom thickness:  $\pm 0.5$
- Bottom hole diameter:  $\phi 12.4$
- Bottom hole depth:  $12.4 \frac{+2}{-0}$
- Bottom hole side wall thickness:  $\pm 0.5$
- Bottom hole bottom thickness:  $\pm 0.5$

				APPROVED BY <i>Fred Chen</i> 2008.12.16	REVIEWED BY <i>Ken Lin</i> 2008.12.15	CHECKED BY Max Chen 2008.12.15	DESIGNED BY Jane Shen 2008.12.15	MODEL NO. NTC302-BA1G-A16OT	
SYM	DESCRIPTION	DATE	APPROVED					PAGINATE. 1/1	SPEC NO. P-494