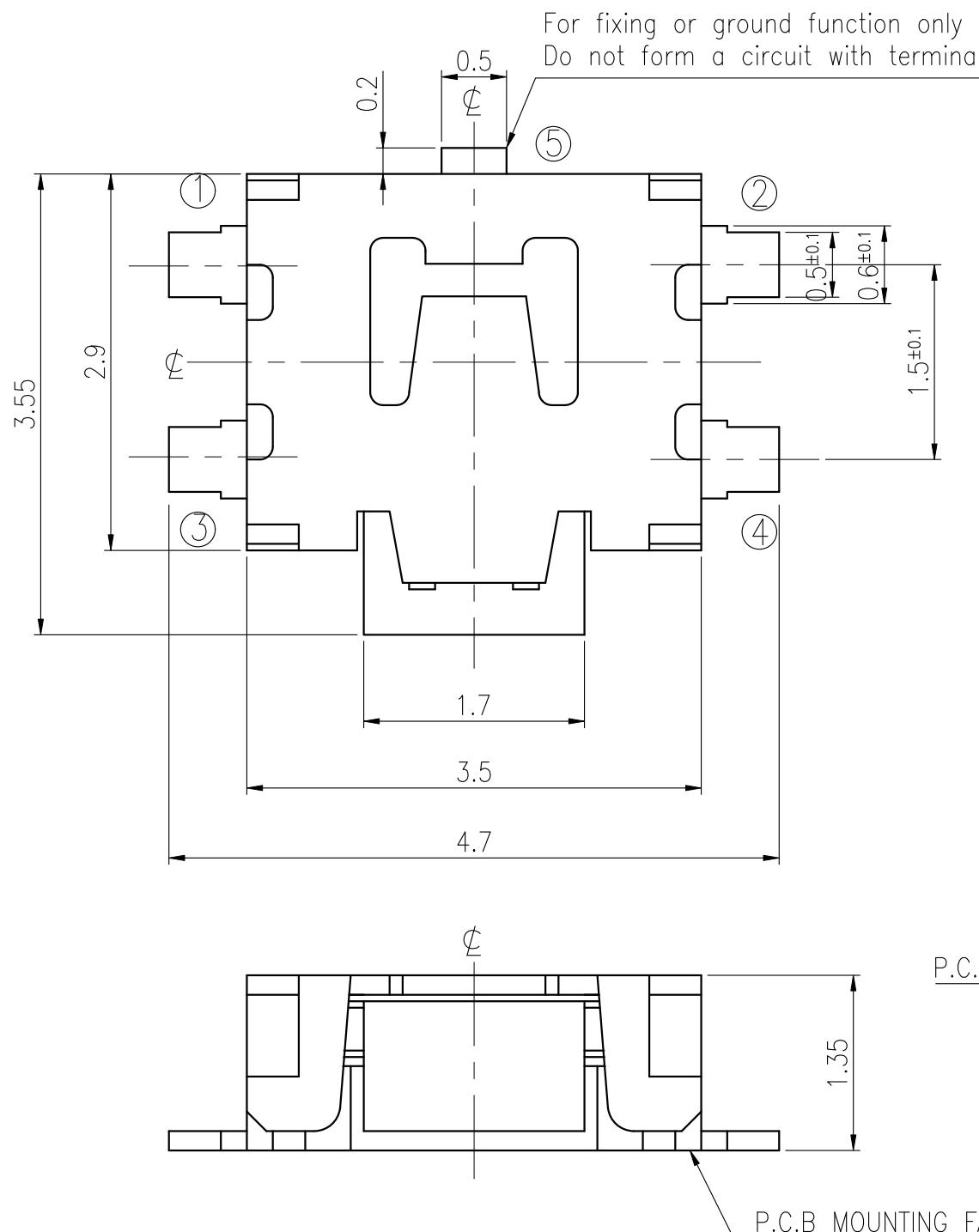
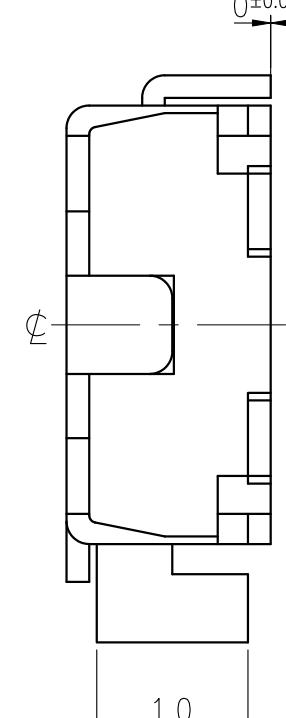
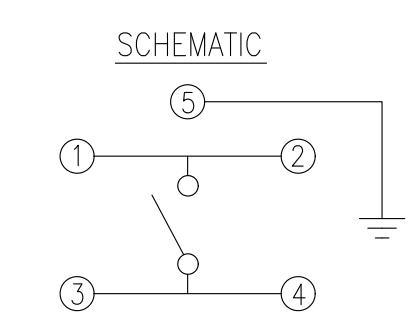
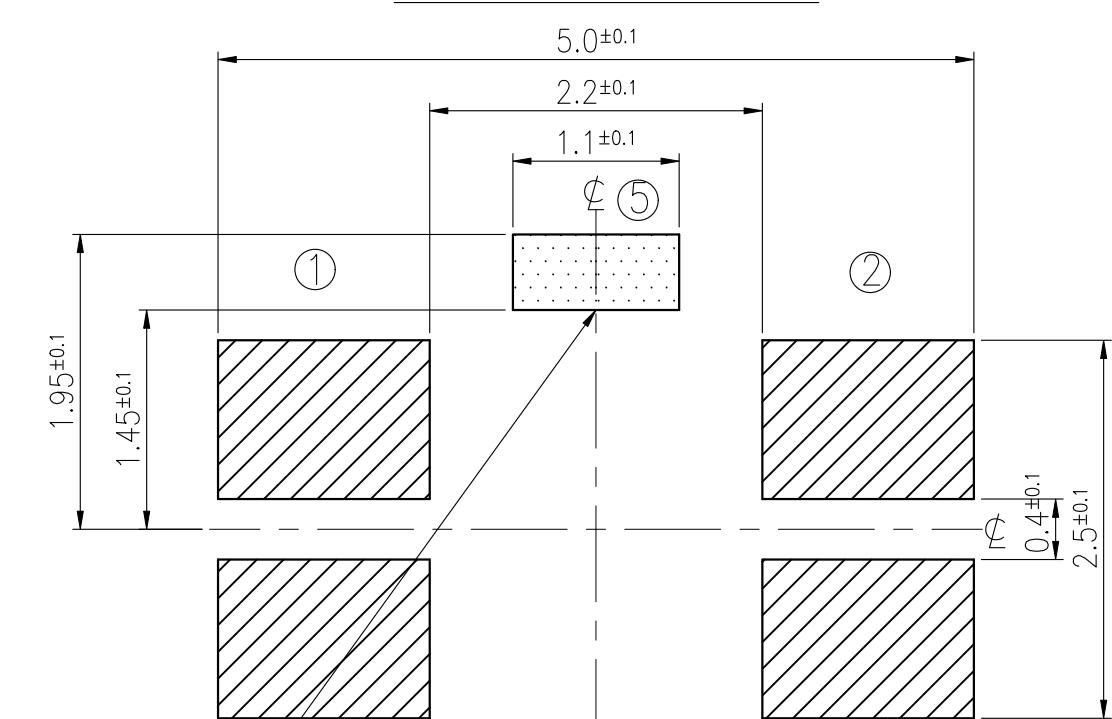
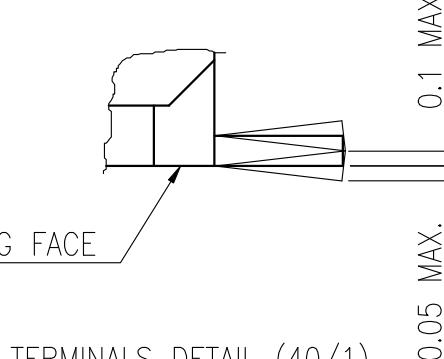


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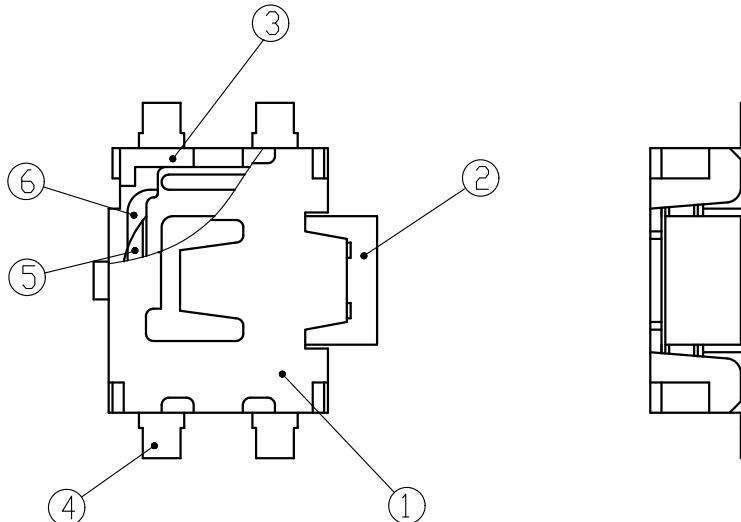
T-MEC  
ISSUED  
RD DCC



MODEL NO.	OPERATION
NTC311-FC1G-A160T	160 <sup>+70</sup> <sub>-40</sub> gf
NTC311-FC1G-A220T	220 <sup>+80</sup> <sub>-70</sub> gf

REVISIONS													
Rev	DESCRIPTION	DATE	DRAWER	Rev	DESCRIPTION	DATE	DRAWER						
A	Initial Drawing	2013.04.24	Max Chen	C									
B				D									
SPECIFICATIONS													
RATING	DC12V 50mA	TIMING											
CONTACT RESISTANCE	500mΩ MAX.	OPERATION (TORQUE)											
INSULATION RESISTANCE	DC500V – 100MΩ MIN.	STROKE (ANGLE)	0.2 <sup>+0.2</sup> <sub>-0.1</sub> mm										
WITHSTAND VOLTAGE	AC250V – 1 MINUTE.	CONTACT RESISTANCE	1Ω MAX.										
REMARKS:	(AFTER 100,000 CYCLES LIFE TEST)												
													
													
RECOMMENDED P.C.B LAYOUT													
													
													
													
													
													
													
													
													
													
													
													
													
													
													
													
													
													
													
													
													
													
													
													
													
													
													
													
													
													
													
													
													
													
													
													
													
													
													
													
													
													
													
													
													
													
													
													
													
													
													
													
													
<img alt="Cross-sectional view of the tact switch showing the internal structure													

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NO.	PART NAME	Q'TY	MATERIAL		SPECIFICATION		
6	TAPE	1	POLYIMIDE				
5	CONTACT PLATE	1	STAINLESS STEEL PLATE		Ag-PLATING		
4	TERMINAL	4	COPPER ALLOY				
3	FRAME	1	POLYAMIDE RESIN		BLACK COLOR		
2	STEM	1	POLYAMIDE RESIN		COLOR: <input checked="" type="checkbox"/> BLACK, <input type="checkbox"/> NATURAL		
1	COVER	1	STAINLESS STEEL PLATE				
SYM	DESCRIPTION	DATE	APPROVED	SIGNATURES	DATE	M O D E L	
				DRAWN Max Chen	2013.04.24	TITLE	TACT SWITCH
				CHK'D			
				REV'D			
				APP'D Dennis Hung	2013.04.24	NO.	NTC311-FC1G-A OT
	TAIWAN MISAKI ELECTRONICS CO.,LTD.				DWG NO.	TC311-26	

# SPECIFICATIONS FOR TACT SWITCH

RoHS Compliant

## Model:

### 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: -40 ~ +85°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: 12V D.C. , 50mA.

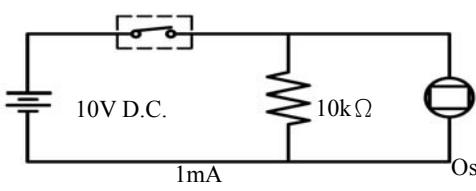
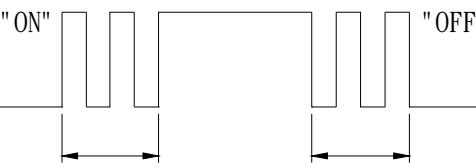
### 5. Electrical Performance:

No.	Items	Test conditions	Specifications
5.1	Contact Resistance	Shall be measure at 1kHz±200Hz (MAX. 20mV, MAX. 40mA.) or 1 A, 5V D.C. By voltage drop method.	500mΩ 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.	100 MΩ 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.

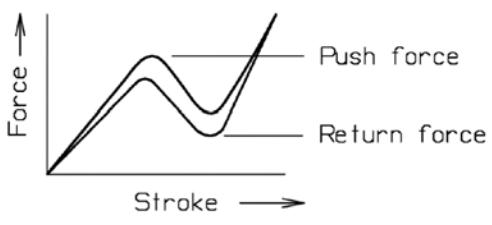
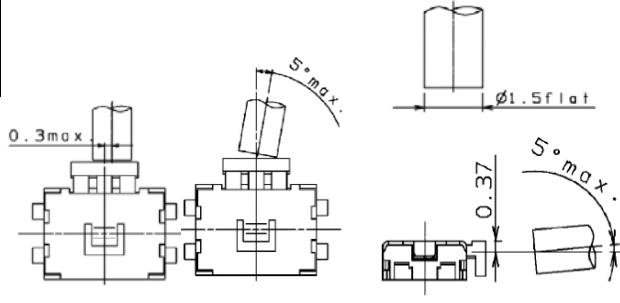
			APPROVED BY	REVIEWED BY	CHECKED BY	DESIGNED BY	SPEC NO.
			James_Hung		<i>Catherine Lee</i> 2011.04.19	Max Chen 2011.04.19	SE-TC14N
A	NEW RELEASE						PAGINATE
SYM	DISCRIPTION	DATE					1/5

# SPECIFICATIONS FOR TACT SWITCH

RoHS Compliant

No.	Items	Test conditions	Specifications
5.4	Bounce	<p>Lightly striking the center of the stem at a rate Encountered in normal use ( 3 to 4 operations per sec.)</p> <p>Switch</p>  <p>"ON"  "OFF"</p>	<p>ON: 10m sec Max. OFF:10m sec Max.</p>

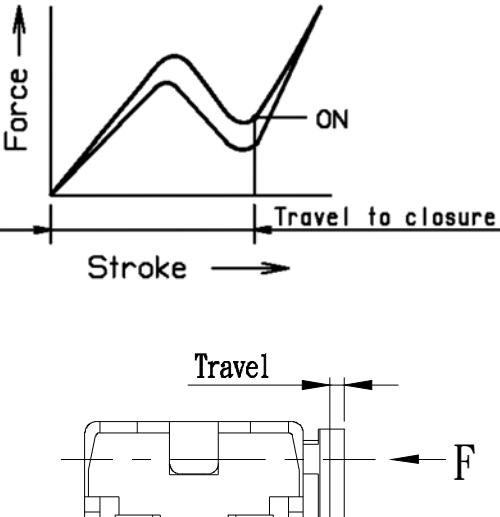
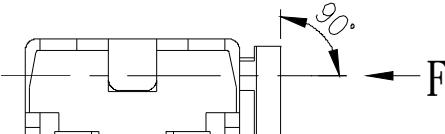
## 6. Mechanical Performance:

No.	Items	Test conditions	Specifications
6.1	Operating Force	<p>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.</p>  <p>Push force</p> <p>Return force</p> <p>Stroke</p> 	<p>NTC311-____-A160T</p> <p>Push force: 160 <sup>+70</sup> <sub>-40</sub> gf</p> <p>Return force: 10 gf min.</p> <p>NTC311-____-A220T</p> <p>Push force: 220 <sup>+80</sup> <sub>-70</sub> gf</p> <p>Return force: 20 gf min.</p>

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			James_Hung		Catherine Lee 2011.04.19	Max Chen 2011.04.19	SE-TC14N
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SYM	DISCRIPTION	DATE					2/5

# SPECIFICATIONS FOR TACT SWITCH

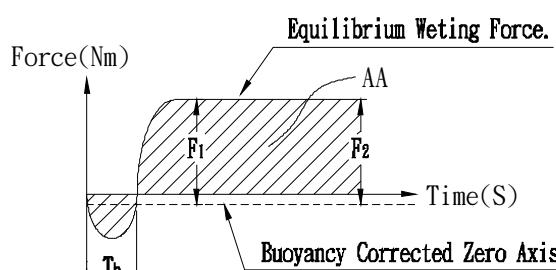
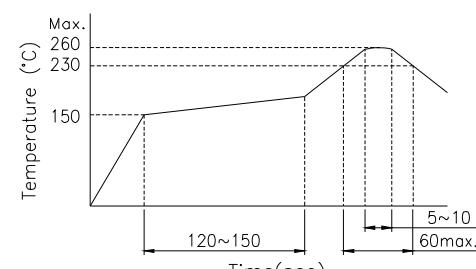
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No.	Items	Test conditions	Specifications
6.2	Travel	<p>Placing the switch such that the direction of switch operation is vertical and then applying a below static load to the center of the stem, the travel distance for the switch to come to a stop shall be measured.</p> 	<p>0.2 <math>^{+0.2}_{-0.1}</math> mm.</p>
6.3	Push Strength	<p>Placing the switch such that the direction of switch operation is vertical and then a below static load shall be applied in the direction of stem operation.</p> <p>3kgf for 1 minute.</p> 	<p>The terminals must not fall off and no structure is damaged.</p> <p>Item 5.1~5.4 shall be satisfied.</p> <p>Item 6.1~6.2 shall be satisfied.</p>

			APPROVED BY	REVIEWED BY	CHECKED BY	DESIGNED BY	SPEC NO.
			James_Hung		Catherine Lee 2011.04.19	Max Chen 2011.04.19	SE-TC14N
A	NEW RELEASE						PAGINATE
SYM	DISCRIPTION	DATE					3/5

# SPECIFICATIONS FOR TACT SWITCH

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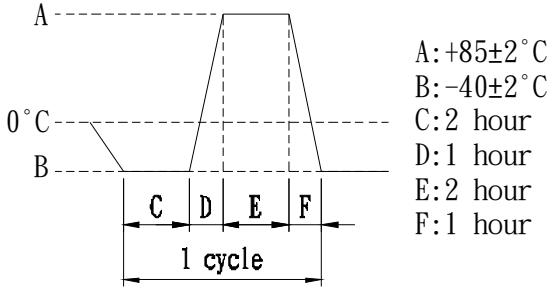
No.	Items	Test conditions	Specifications										
6.4	Solderability	<p>Test Temperature : <math>235 \pm 5^\circ\text{C}</math>      Immersion Angle : <math>90^\circ</math>      Immersion Speed : 1 mm/sec.      Immersion Depth : 0.1mm      Dwell Time : 5 seconds</p>  <table border="1"> <thead> <tr> <th>Para.</th><th>Criteria</th></tr> </thead> <tbody> <tr> <td>Tb</td><td><math>\leq 1</math> second</td></tr> <tr> <td>F1</td><td>50% of maximum theoretical wetting force at or before two seconds</td></tr> <tr> <td>F2</td><td>No less than 90% of the F1 Value</td></tr> <tr> <td>AA</td><td>Area calculated using sample buoyancy and 50% maximum theoretical force</td></tr> </tbody> </table>	Para.	Criteria	Tb	$\leq 1$ second	F1	50% of maximum theoretical wetting force at or before two seconds	F2	No less than 90% of the F1 Value	AA	Area calculated using sample buoyancy and 50% maximum theoretical force	Conform to the criteria in the left table.
Para.	Criteria												
Tb	$\leq 1$ second												
F1	50% of maximum theoretical wetting force at or before two seconds												
F2	No less than 90% of the F1 Value												
AA	Area calculated using sample buoyancy and 50% maximum theoretical force												
6.5	Solder Heat Resistance	<p>(1) Manual soldering temperature:      Temperature: <math>350^\circ\text{C}</math> Max.      Time: 3 Sec. Max.  (2) Reflow Soldering:      Number of reflow pass: 2 cycles.</p> 	<p>Shall be free from pronounced deforming in appearance.      Item 5.1~5.4 shall be satisfied.      Item 6.1~6.2 shall be satisfied.</p>										

		APPROVED BY	REVIEWED BY	CHECKED BY	DESIGNED BY	SPEC NO.
		James_Hung		Catherine Lee 2011.04.19	Max Chen 2011.04.19	SE-TC14N
A	NEW RELEASE					PAGINATE
SYM	DISCRIPTION	DATE				4/5

# SPECIFICATIONS FOR TACT SWITCH

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## 7. Weather Performance:

No.	Items	Test conditions	Specifications
7.1	Humidity Test	(1) Temperature: $60 \pm 2^\circ\text{C}$ . (2) Relative humidity: 90~95% (3) Duration of test: 500 Hour. (4) Take off drop water. (5) Standard conditions after test: 1 Hour.	
7.2	Heat Test	(1) Temperature: $85 \pm 2^\circ\text{C}$ . (2) Duration of test: 500 Hour. (3) Standard conditions after test: 1 Hour.	
7.3	Cold Test	(1) Temperature: $-40 \pm 2^\circ\text{C}$ . (2) Duration of test: 500 Hour. (3) Take off drop water. (4) Standard conditions after test: 1 Hour.	Contact resistance: 500mΩ Max Item 5.2~5.4 shall be satisfied. Item 6.1~6.2 shall be satisfied.
7.4	Temperature cycle	(1) Test cycle: 20 cycles. (2) Standard conditions after test: 1 Hour.	 <p> A: <math>+85 \pm 2^\circ\text{C}</math>  B: <math>-40 \pm 2^\circ\text{C}</math>  C: 2 hour  D: 1 hour  E: 2 hour  F: 1 hour  1 cycle </p>

## 8. Durability:

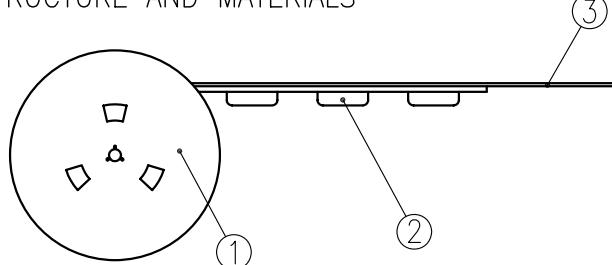
No.	Items	Test conditions	Specifications
8.1	Life Test	(1) 5V D.C. , 5mA Resistance load. (2) Operating speed:120 cycles/minute. (3) Push force: Maximum value of operation force. (3) Operation number: 100,000 times.	Contact Resistance: $1\Omega$ MAX.  Bounce: 20m sec Max.(ON,OFF)  Operating Force: Within $\pm 30\%$ of specifications. Item 5.2 shall be satisfied. Item 6.2 shall be satisfied.

			APPROVED BY	REVIEWED BY	CHECKED BY	DESIGNED BY	SPEC NO.
			James_Hung		Catherine Lee 2011.04.19	Max Chen 2011.04.19	SE-TC14N
A	NEW RELEASE						PAGINATE
SYM	DISCRIPTION	DATE					5/5

# THE PACKING SPECIFICATIONS

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## 1. STRUCTURE AND MATERIALS

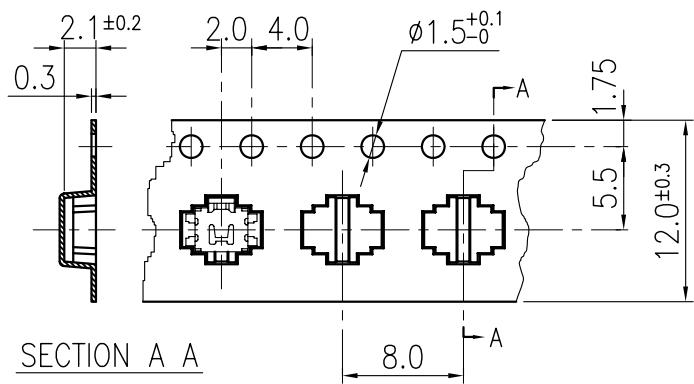


NO.	PARTS NAME	MATERIALS
③	COVER TAPE	POLYESTER
②	CARRIER TAPE	POLYSTYRENE
①	REEL	POLYSTYRENE

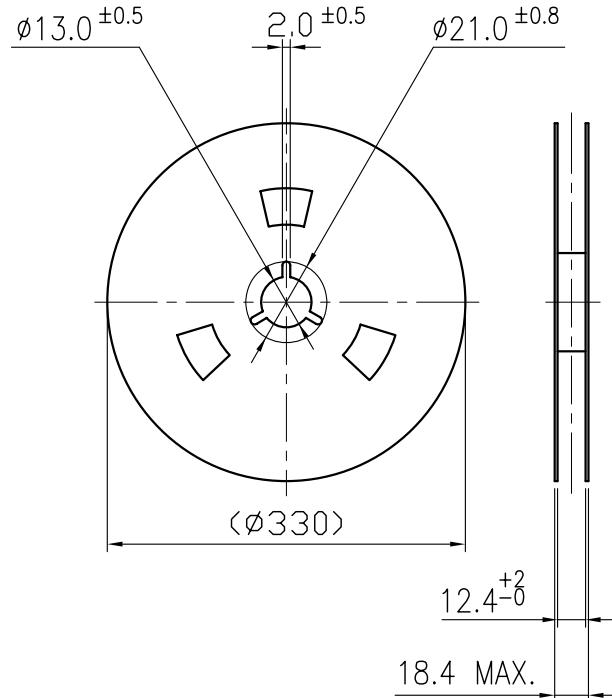
- PACKAGING QUANTITY : 3,500 PCS/REEL
- MORE THAN 10 EMPTY POCKETS SHOULD BE REMAINED AT BOTH ENDS OF THE CARRIER TAPE FOR EACH REEL.
- SHORTAGE LESS THAN 10 PCS A REEL IS ACCEPTABLE BUT MORE THAN 3 RUNNING POCKETS SHORTAGE IS NOT ALLOWED.
- STRIPPING STRENGTH OF COVER TAPE IS BETWEEN 10 gf TO **130** gf AND STRIPPING ANGLE SHOULD BE WITHIN 165° ~ 180°.
- THE SWITCH SHOULD NOT BE STAYED IN CARRIER TAPE WHEN CARRIER TAPE UPSIDE DOWN.
- END OF CARRIER TAPE IS APART FROM REEL EASILY.
- THE DIRECTION OF MARK IS FREE.
- DIMENSIONS :



### CARRIER TAPE



### REEL



### DRAWING DIRECTION

### COVER TAPE



SYN	DESCRIPTION	DATE	APPROVED	APPROVED BY	REVIEWED BY	CHECKED BY	DESIGNED BY	MODEL NO.
					Ken Lin	2007.05.18	Max Chen	NTC311-FC1G-A160T
								PAGINATE. 1/1
								SPEC NO. P-380