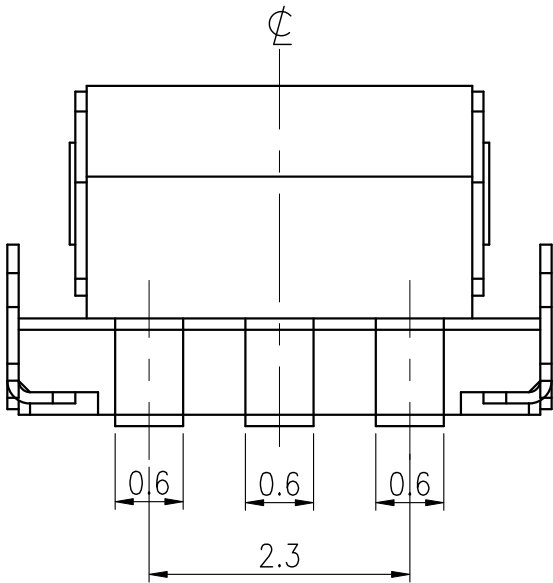
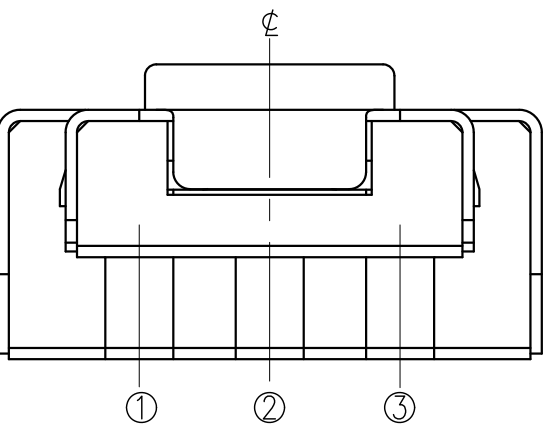
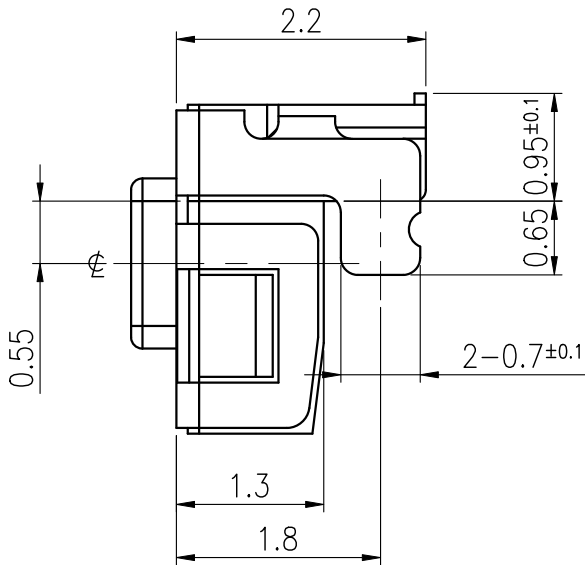
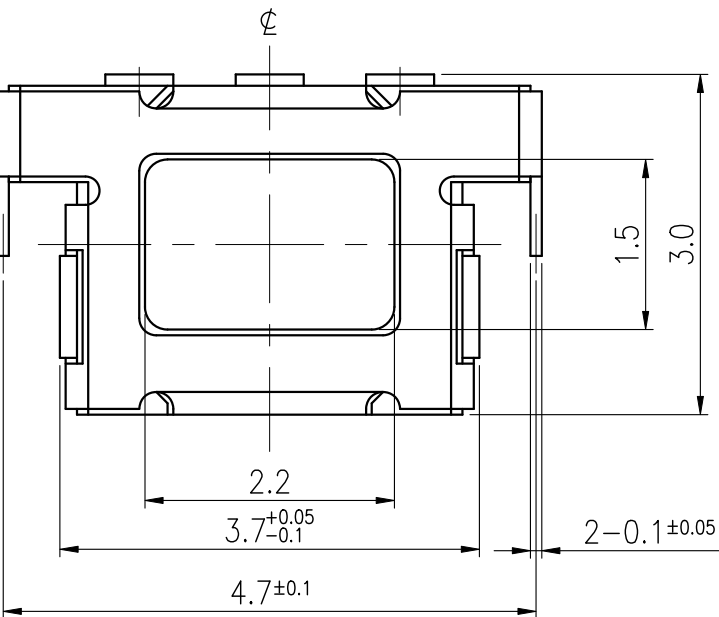
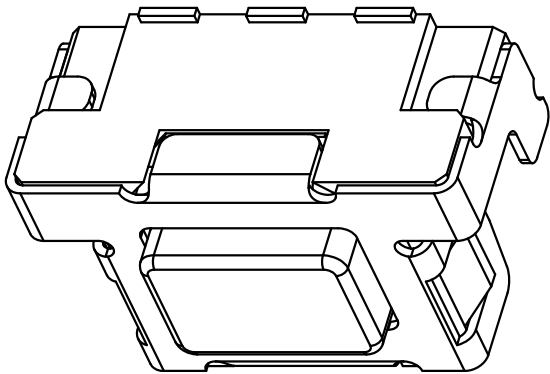
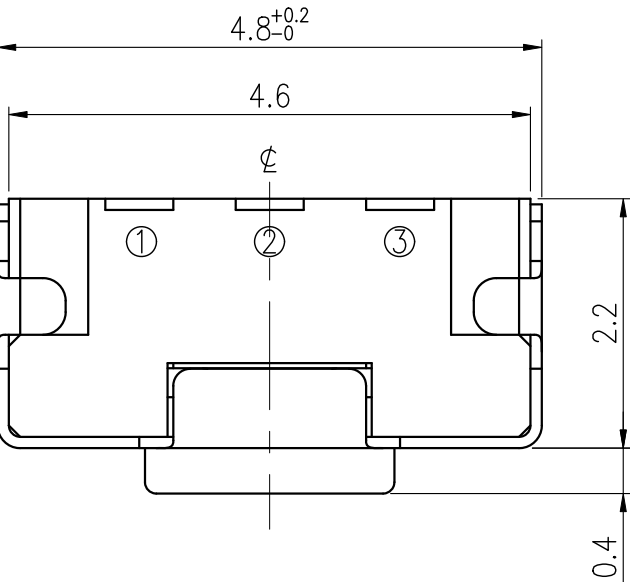


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VIEW A

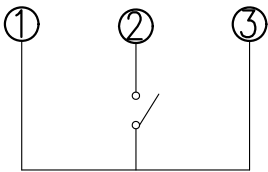
REVISIONS

Rev	DESCRIPTION	DATE	DRAWER	REV	DESCRIPTION	DATE	DRAWER
A	Initial Drawing	2011.03.23	Jamie Li	C			
B				D			

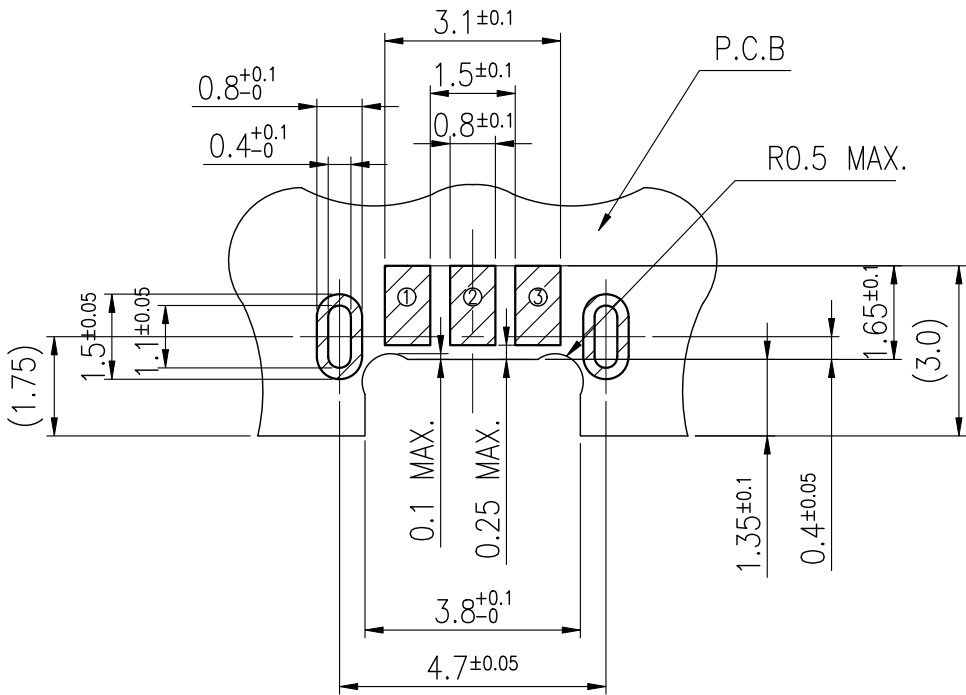
SPECIFICATIONS

RATING	DC12V 50mA	TIMING	
CONTACT RESISTANCE	1Ω MAX.	OPERATION (TORQUE)	160±50gf
INSULATION RESISTANCE	DC500V - 100MΩ MIN.	STROKE (ANGLE)	0.15±0.1mm
WITHSTAND VOLTAGE	AC250V - 1 MINUTE	CONTACT RESISTANCE	2Ω MAX.
REMARKS:		(AFTER 200,000 CYCLES LIFE TEST)	

SCHEMATIC



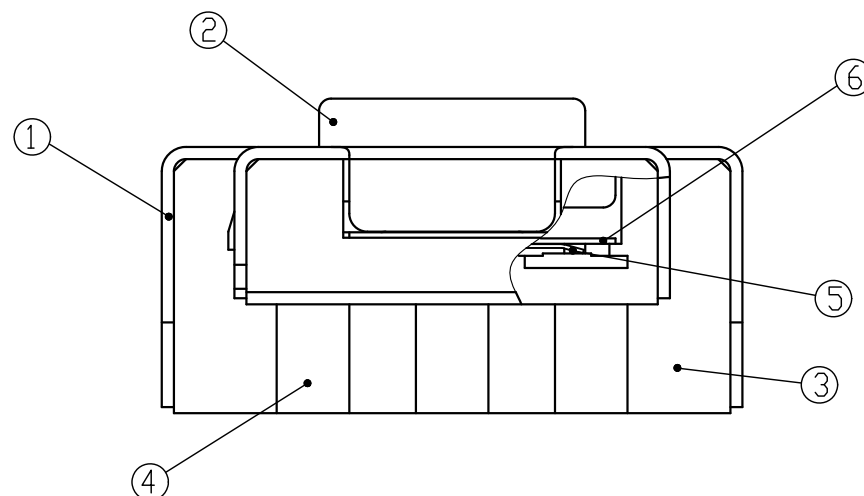
P.C.B LAYOUT (15/2)

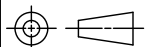


TOLERANCES UNLESS OTHERWISE SPECIFIED ±0.2		SIGNATURES		DATE	MODEL
		DRAWN	Jamie Li	2011.03.23	TACT SWITCH
		CHECKED	Ken Lin	2011.03.23	
	UNIT mm	SCALE 15/1	REVIEWED	James Hung	NO. NTC313-BA1G-A160T
			APPROVALS	Dennis Hung	

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6	TAPE	1	POLYIMIDE			
5	CONTACT PLATE	1	STAINLESS STEEL PLATE	Ag-CLAD		
4	TERMINAL	3	COPPER ALLOY	Ag-PLATING or Ag-CLAD		
3	FRAME	1	LIQUID CRYSTAL POLYMER	BLACK COLOR		
2	STEM	1	LIQUID CRYSTAL POLYMER	BLACK COLOR		
1	COVER	1	STAINLESS STEEL PLATE	Ag-CLAD		
NO.	PART NAME	Q'TY	MATERIAL	SPECIFICATION		
				SIGNATURES	DATE	M O D E L
				DRAWN Jamie Li	2011.03.23	TITLE TACT SWITCH
				CHK'D Ken Lin	2011.03.25	
				REV'D James_Hung	2011.03.25	NO. NTC313-BA1G-A160T
				APP'D Dennis Hung	2011.03.24	
SYM	DESCRIPTION	DATE	APPROVED			
TAIWAN MISAKI ELECTRONICS CO.,LTD.						DWG NO. NTC313-02

SPECIFICATIONS FOR TACT SWITCH

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Model: NTC313 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: -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.

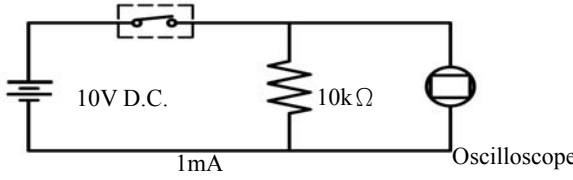
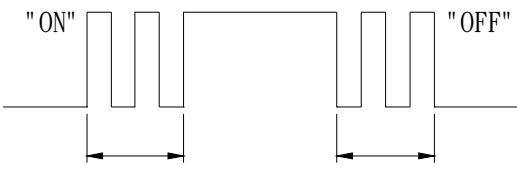
5. Electrical Performance:

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.	1Ω 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.

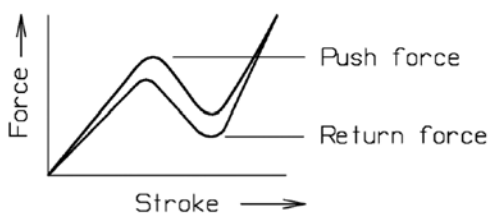
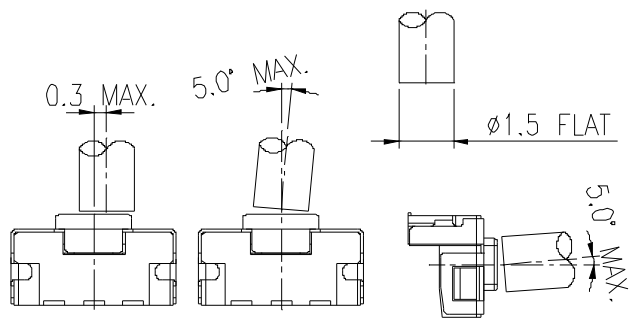
			APPROVED BY	REVIEWED BY	CHECKED BY	DESIGNED BY	SPEC NO.
			Dennis Hung 2011.03.09	James_Hung 2011.03.08	Catherine Lee 2011.03.08	Jamie Li 2010.12.29	SE-TC77N
							PAGINATE
A	NEW RELEASE						
SYM	DISCRIPTION	DATE					1/5

SPECIFICATIONS FOR TACT SWITCH

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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>10V D.C. 10kΩ 1mA Oscilloscope</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>Force → Push force Return force Stroke →</p>  <p>0.3 MAX. 5.0° MAX. ø1.5 FLAT</p>	<p>Push force: 160 ⁺⁵⁰/₋₅₀ gf</p> <p>Return force: 10 gf min.</p>

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2011.03.09

James_Hung
2011.03.08

Catherine Lee
2011.03.08

Jamie Li
2010.12.29

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SYM DISCRIPTION

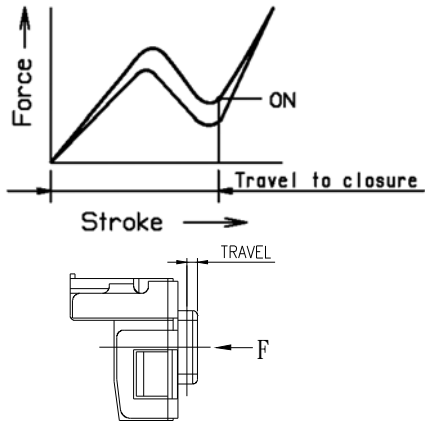
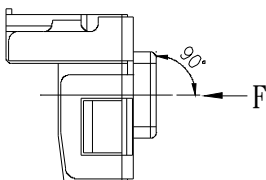
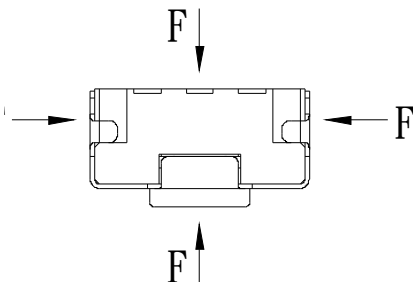
DATE

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TAIWAN MISAKI ELECTRONICS CO., LTD.

SPECIFICATIONS FOR TACT SWITCH

RoHS Compliant

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> 	$0.15^{+0.1}_{-0.1}$ mm.
6.3	Push Strength	<p>Placing the switch such that the direction of switch operation is vertical and then a below station load shall be applied in the direction of stem operation.</p> <p>3kgf for 1 minute.</p> 	<p>No damage. (Electrical and mechanical)</p>
6.4	Side Push Strength	<p>Mount the switch on P.C.B. and apply a static force 3kg to each direction for 15seconds Test direction : 4 directions as shown in the following fig.</p> 	<p>The terminals must not fall off and no structure is damaged.</p> <p>Item 5.1~5.4 shall be satisfied. Item 6.1~6.2 shall be satisfied.</p>

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SPEC NO.

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2011.03.09

James_Hung
2011.03.08

Catherine Lee
2011.03.08

Jamie Li
2010.12.29

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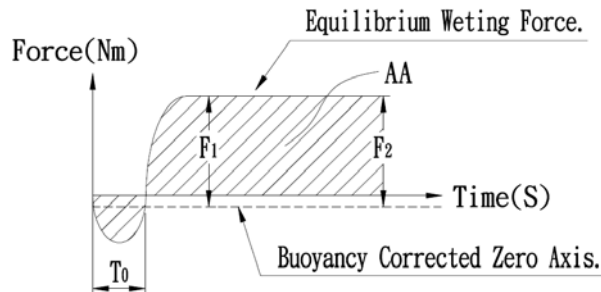
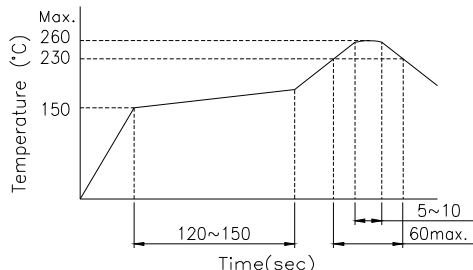
SYM DISCRIPTION

DATE

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SPECIFICATIONS FOR TACT SWITCH

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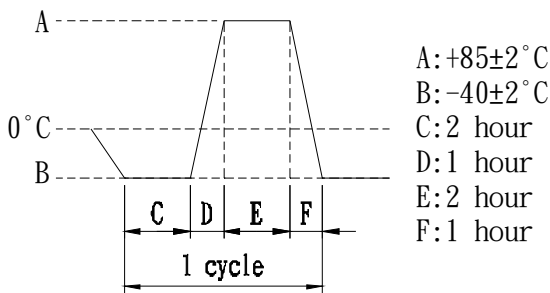
No.	Items	Test conditions	Specifications										
6.5	Solderability	<p>Test Temperature : 235 ± 5℃ Immersion Angle : 90° Immersion Speed : 1 mm/sec. Immersion Depth : 0.1mm Dwell Time : 5 seconds</p>  <table><tr><th>Para.</th><th>Criteria</th></tr><tr><td>Tb</td><td>≤ 1 second</td></tr><tr><td>F1</td><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></table>	Para.	Criteria	Tb	≤ 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	≤ 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												
6.6	Solder Heat Resistance	<p>(1) Manual soldering temperature: Temperature: 350℃ Max. Time: 3 Sec. Max.</p> <p>(2) Reflow Soldering: Number of reflow pass: 2 cycles.</p> 	Shall be free form pronounced deforming in appearance. Item 5.1~5.4 shall be satisfied. Item 6.1~6.2 shall be satisfied.										

			APPROVED BY	REVIEWED BY	CHECKED BY	DESIGNED BY	SPEC NO.
			<i>Dennis Hung</i>	<i>James_Hung</i>	<i>Catherine Lee</i>	<i>Jamie Li</i>	SE-TC77N
			2011.03.09	2011.03.08	2011.03.08	2010.12.29	PAGINATE
A	NEW RELEASE						
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.	Contact resistance: 1Ω Max Item 5.2~5.4 shall be satisfied. Item 6.1~6.2 shall be satisfied.
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: 1Ω 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: $+85\pm 2^{\circ}\text{C}$ B: $-40\pm 2^{\circ}\text{C}$ C: 2 hour D: 1 hour E: 2 hour F: 1 hour</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. (2) Push force: Maximum value of operation force. (3) Operation number: 200,000 times.	Contact Resistance: 2Ω 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.
			<i>Dennis Hung</i> 2011.03.09	James_Hung 2011.03.08	<i>Catherine Lee</i> 2011.03.08	Jamie Li 2010.12.29	SE-TC77N
A	NEW RELEASE						PAGINATE
SYM	DISCRIPTION	DATE					5/5

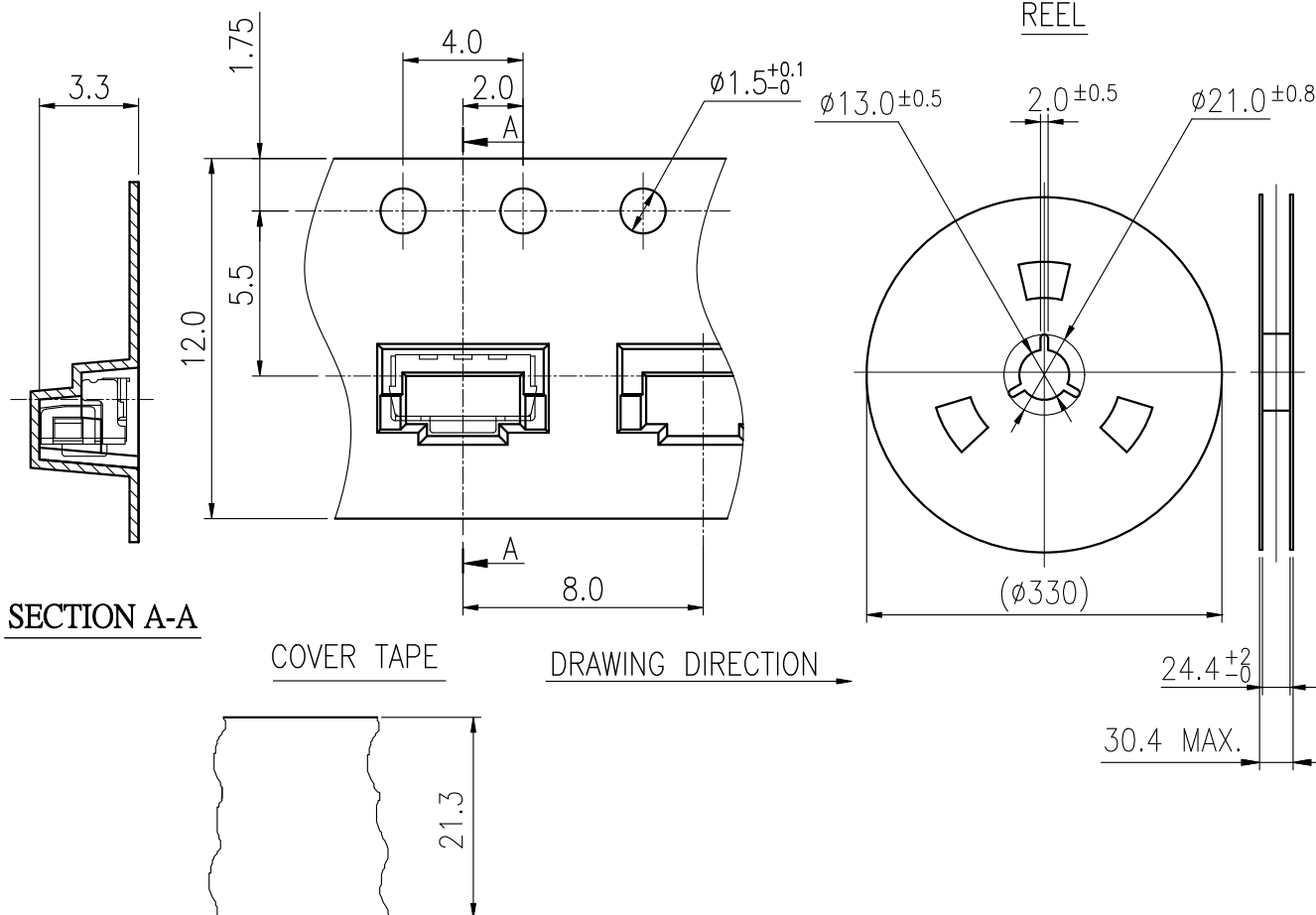
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STRUCTURE AND MATERIALS

The diagram illustrates the structure and materials of a composite beam. On the left, a circular cross-section shows a central core (1) surrounded by three trapezoidal layers (2). On the right, a side view shows the beam's profile with three rectangular layers (2) and a top layer (3). Numbered circles 1, 2, and 3 point to their respective components.

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

- CARRIER TAPE



				APPROVED BY	REVIEWED BY	CHECKED BY	DESIGNED BY	MODEL NO.	
				James_Hung 2011.03.24		Ken Lin 2011.03.23	Jamie Li 2011.03.23	NTC313-BA1G-A160T	
								PAGINATE.	SPEC NO.
								1/1	P-626
SYM	DESCRIPTION	DATE	APPROVED						

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