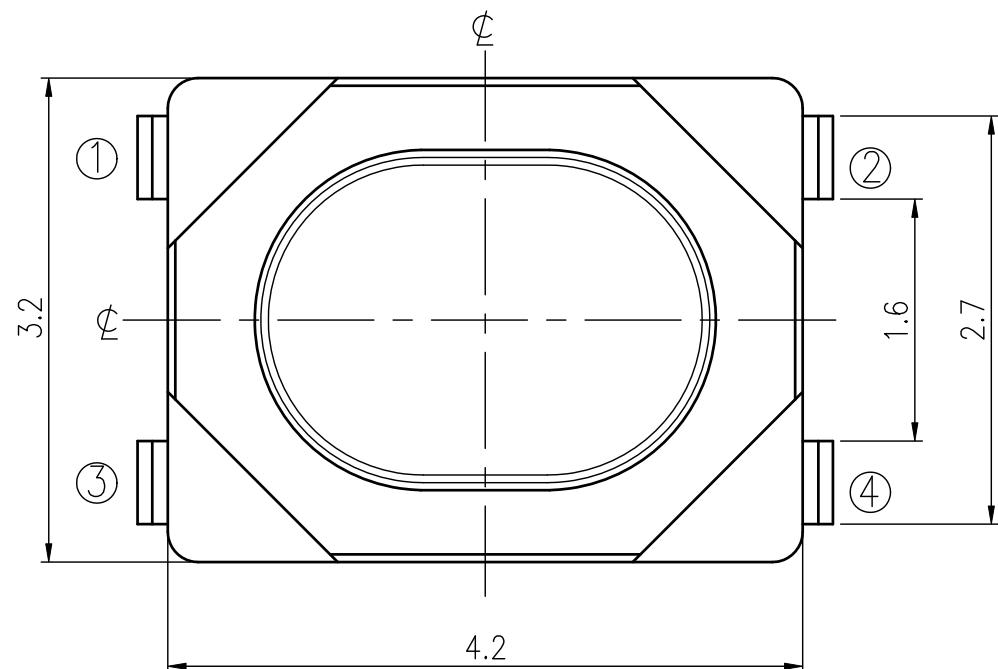
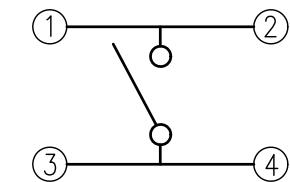


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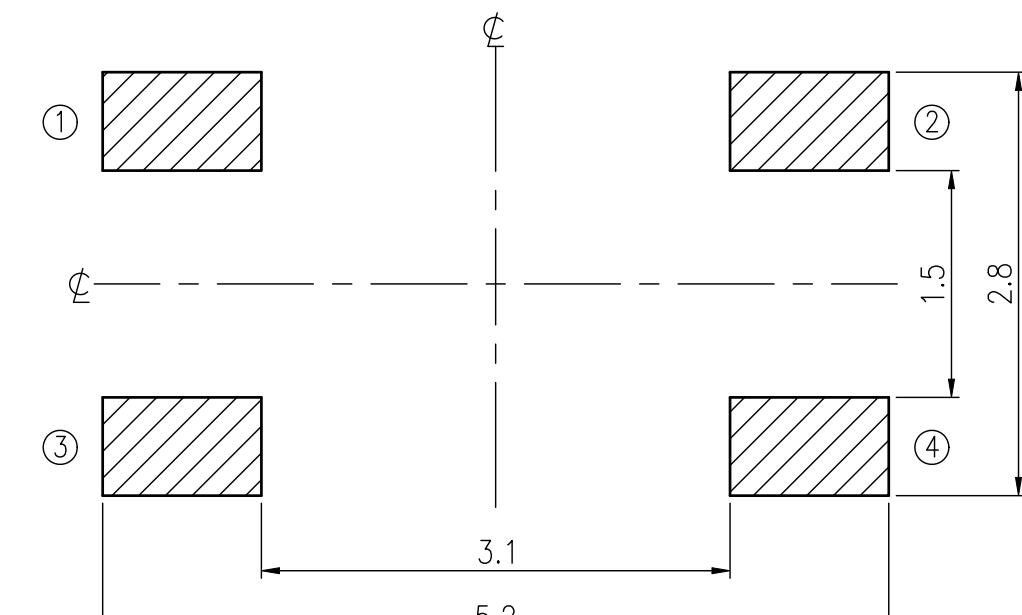
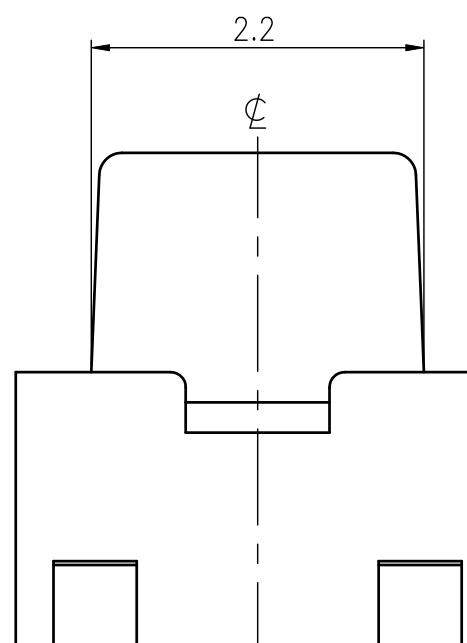
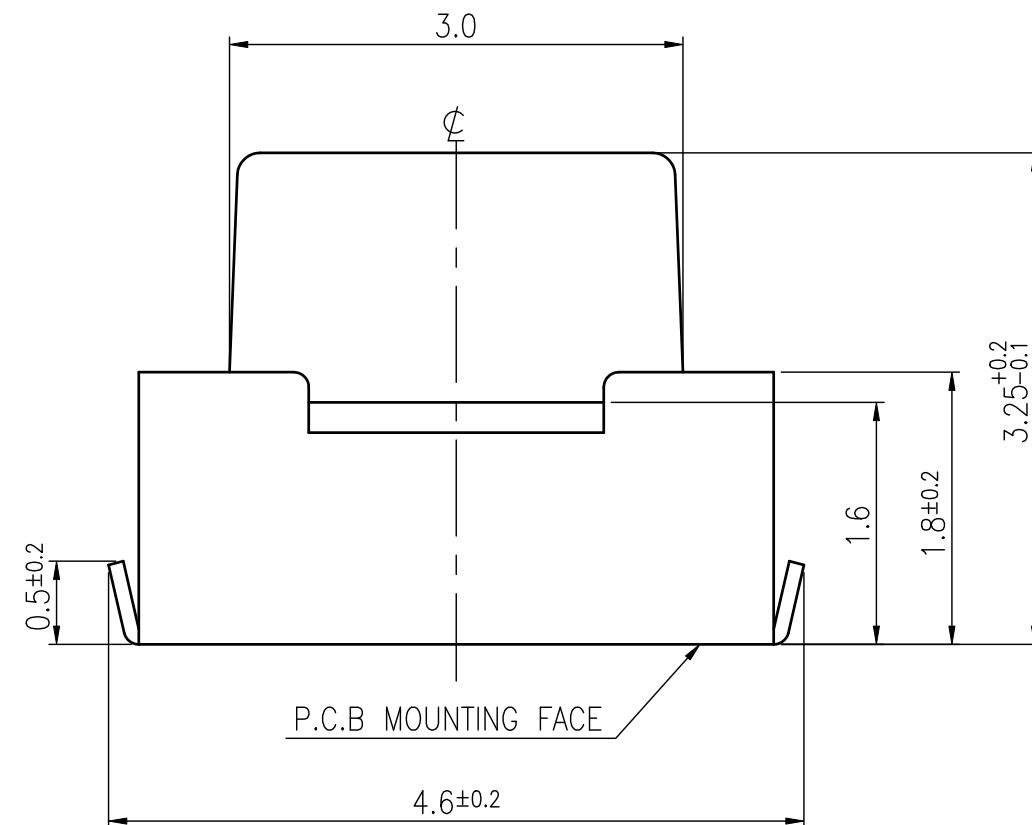


REVISIONS							
Rev	DESCRIPTION	DATE	DRAWER	Rev	DESCRIPTION	DATE	DRAWER
A	<u>Initial Drawing</u>	2019.02.15	Jane Shen	C			
B				D			
SPECIFICATIONS							
RATING	DC16V 50mA			TIMING			
CONTACT RESISTANCE	500mΩ MAX.			OPERATION (TORQUE)	160±50gf		
INSULATION RESISTANCE	DC500V-100MΩ	MIN.		STROKE (ANGLE)	0.15±0.1mm		
WITHSTAND VOLTAGE	AC250V	1MINUTE		LIFE	50,000	CYCLES	
REMARKS:							

SCHEMATIC



P.C.B LAYOUT

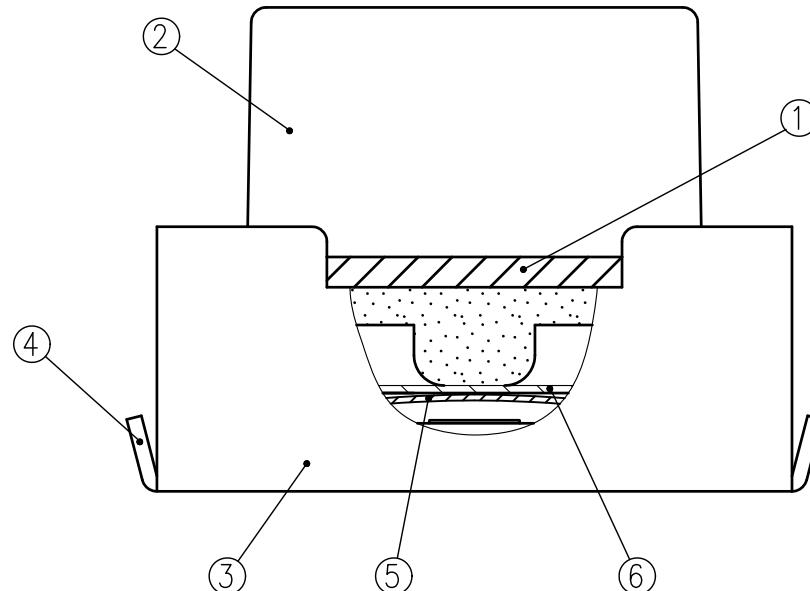


HATCHED AREA SHOWS SOLDERING LAND

TOLERANCES UNLESS OTHERWISE SPECIFIED ± 0.1			SIGNATURES	DATE	MODEL
			DRAWER Jane Shen	2019.02.15	TITLE TACT SWITCH
CHECKED <i>Landy Su</i>			2019.02.15		
∅ mm	UNIT mm	SCALE 20/1	REVIEWED		NO.
APPROVALS <i>Chun Chen</i>			2019.02.15	NTC013-AT1J-F160TX	

TAIWAN MISAKI ELECTRONICS CO., LTD.

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NO.	PART NAME	Q'TY	MATERIAL		SPECIFICATION		
6	TAPE	1	POLYIMIDE				
5	CONTACT PLATE	2	STAINLESS STEEL PLATE		Ag PLATING		
4	TERMINAL	4	COPPER ALLOY		Ag PLATING OVER Ni PLATING		
3	FRAME	1	POLYAMIDE RESIN		BLACK COLOR		
2	STEM	1	LIQUID CRYSTAL POLYMER		COLOR <input checked="" type="checkbox"/> 160:BLACK, <input type="checkbox"/> 260:NATURAL		
1	COVER	1	STAINLESS STEEL PLATE				
SYM	DESCRIPTION	DATE	APPROVED	SIGNATURES	DATE	M O D E L	
				DRAWN Jane Shen	2019.01.24	TITLE TACT SWITCH	
				CHK'D <i>Landry Su</i>	2019.01.24		
				REV'D		NO. NTC013-AT1J-E160TX	
				APP'D Qiyuan Chuang	2019.01.24		
						DWG NO. TC013-06	
	TAIWAN MISAKI ELECTRONICS CO.,LTD.						

SPECIFICATIONS FOR TACT SWITCH

RoHS Compliant

Model: NTC_013 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

Storage temperature range: -40 ~ +85°C

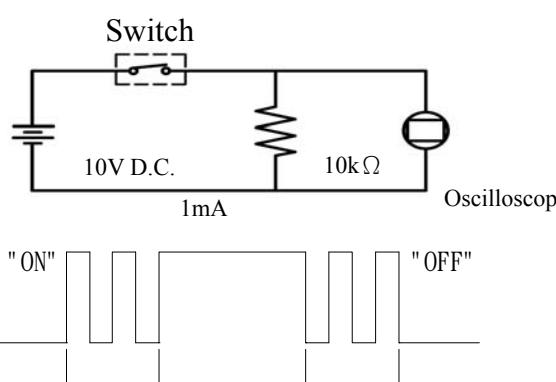
3. Construction:

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: 16V D.C. , 50mA.

5. Electrical Performance:

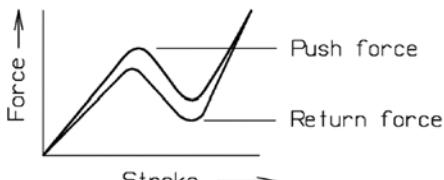
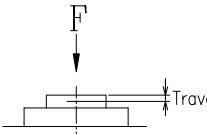
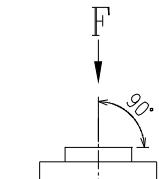
No.	Items	Test conditions	Specifications
5.1	Contact Resistance	Shall be measure at 1kHz±200Hz (MAX. 20mV, MAX. 50mA.) or 1 A, 5V D.C. By voltage drop method.	500mΩ Max.
5.2	Insulation Resistance	Shall be measured by applying 500V D.C. Between all terminals and between the terminals and the frame for 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.
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>ON: 10m sec Max. OFF:10m sec Max.</p>

			APPROVED BY	REVIEWED BY	CHECKED BY	DESIGNED BY	SPEC NO.
							SE-TC30N
							PAGINATE
A	NEW RELEASE						
SYM	DISCRIPTION	DATE					1/4

SPECIFICATIONS FOR TACT SWITCH

RoHS Compliant

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>160+/-50 gf 260+/-70 gf</p>
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>Travel (Stroke):</p> <p>0.2 +/-0.1 mm.</p>
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>3 kgf for 15 seconds.</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.
A	NEW RELEASE						
SYM	DISCRIPTION	DATE	Dennis	Hung		Jane Shen 2018.03.29	SE-TC30N PAGINATE 2/4

SPECIFICATIONS FOR TACT SWITCH

RoHS Compliant

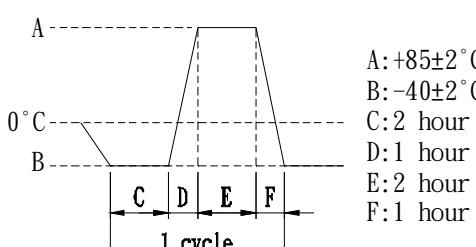
		<p>Test Temperature : $235 \pm 5^\circ\text{C}$ Immersion Angle : 90° Immersion Speed : 1 mm/sec. Immersion Depth : 0.1mm Dwell Time : 5 seconds</p>	Conform to the criteria in the left table.										
6.4	Solderability	<table border="1"> <thead> <tr> <th>Para.</th><th>Criteria</th></tr> </thead> <tbody> <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> </tbody> </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	
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												
6.5	Solder Heat Resistance	<p>(1) Manual soldering temperature: Temperature: 350°C 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.
							SE-TC30N
							PAGINATE
A	NEW RELEASE						
SYM	DISCRIPTION	DATE	Dennis Hung			Jane Shen 2018.03.29	3/4

SPECIFICATIONS FOR TACT SWITCH

RoHS Compliant

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 drop water. (5) 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.
7.2	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 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: $+85\pm2^{\circ}\text{C}$ B: $-40\pm2^{\circ}\text{C}$ C: 2 hour D: 1 hour E: 2 hour F: 1 hour 1 cycle </p>

8. Durability:

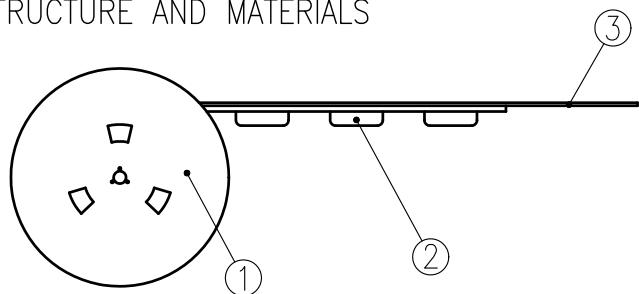
8.1	Life Test	(1) 5V D.C. , 5mA Resistance load. (2) Operating speed: 120 cycles/minute. (3) Push force: Maximum value of operation force. (3) Operation number: 0,000 times.	Contact Resistance: 2Ω MAX. Bounce: 20m sec Max.(ON,OFF) Operating Force: Within $\pm30\%$ of specifications. Item 5.2 shall be satisfied. Item 6.2 shall be satisfied.
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			APPROVED BY	REVIEWED BY	CHECKED BY	DESIGNED BY	SPEC NO.
							SE-TC30N
							PAGINATE
A	NEW RELEASE						
SYM	DISCRIPTION	DATE	Dennis Hung			Jane Shen 2018.03.29	4/4

THE PACKING SPECIFICATIONS

RoHS Compliant

1. STRUCTURE AND MATERIALS



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

2. PACKAGING QUANTITY : 2,000 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 RUNNING POCKETS SHORTAGE IS NOT ALLOWED.

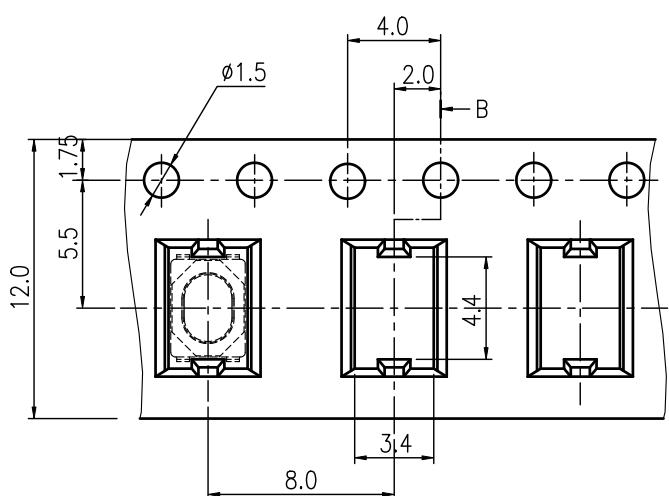
5. STRIPPING STRENGTH OF COVER TAPE IS BETWEEN 10 gf TO 130 gf AND STRIPPING ANGLE SHOULD BE WITHIN 165° ~ 180°.

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 :

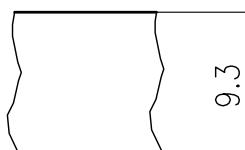
CARRIER TAPE



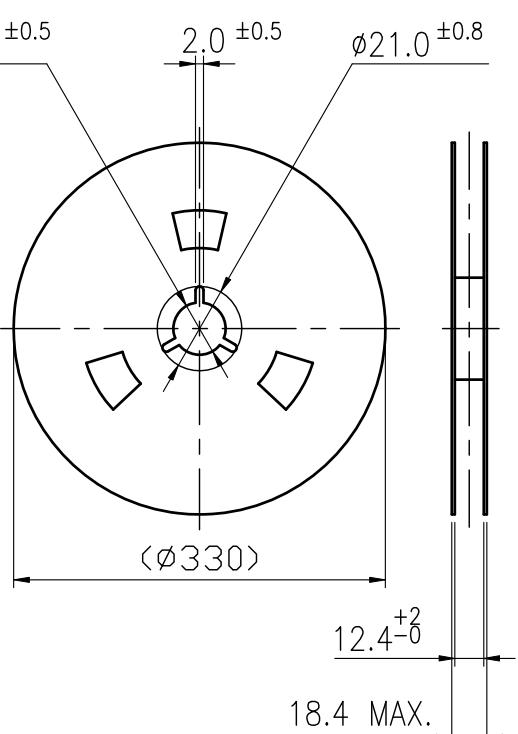
DRAWING DIRECTION

SECTION A A

COVER TAPE



REEL



SYM	DISCRIPTION	DATE	APPROVED	APPROVED BY	REVIEWED BY	CHECKED BY	DESIGNED BY	MODEL NO.
				Qiuyuan Chuang			Jane Shen	NTC013-AT1J-E160TX
								PAGINATE.
								SPEC NO.
								1/1 P-844