TITLE	PRODUCT SPECIFICATIONS	
MODEL No.	TACT SWITCH (MT1170 TYPE)	PAGE 1/3

1. GENERAL MATTERS

1.1 Application : This specification is applied to low current circuit tactile switch for electronic equipment

1.2 Operating temperature range : -20 70℃, 45 85% RH

1.3 Storage temperature range : -30 80℃. However, 96 hours maximum for continuous storage over a range -20 -30℃ and a range 70 80℃.

1.4 Test conditions : The standard test conditions shall be 5 35℃ in temperature, 45 85% RH and 860~1060mbar in atmospheric pressure.
Should any doubt arise in judgement, tests shall be conducted at 20±2℃, 65±5% RH and 860 1060 mbar.

2. RATED VOLTAGE AND CURRENT.

15V DC, 50㎃

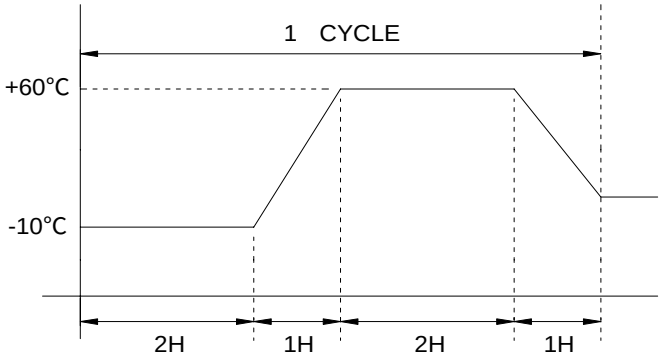
3. ELECTRICAL PERFORMANCE

	PROPERTY	TEST CONDITION	PERFORMANCE
3.1	Contact arrangement		* 1 pole, 1 throw
3.2	Contact resistance	Measured at DC 5V 10mA or by ohmmeter allowing a small current at 1 KHz with 250gf	* less than 100mΩ.
3.3	Insulation resistance	100V DC is applied between terminals and between terminals and earth for 1 minute ±5seconds.	* greater than 100㏁.
3.4	Dielectric strength	250V AC (50-60Hz) is applied between terminals and between terminals and earth for 1 minute.	* No insulation defect shall be observed.
3.5	Bounce	Measured by lightly striking the center of the button stem at a rate of 3 operations/sec..	* Less than 10m sec.

4. MECHANICAL PERFORMANCE

	PROPERTY	TEST CONDITION	PERFORMANCE
4.1	Actuating force	A gradually increasing load is applied to the center of the button stem.	* As per individual manufactured drawing
4.2	Return force	After actuating, the load is gradually decreased until the stem returns to its free position.	* greater than 50gf.
4.3	Stop strength	A static force of 3 Kgf shall be applied to the direction of operation for 3seconds.	* shall be free from mechanical and electrical abnormalities.

							APPD.	CHKD.	DSGE.
PAGE	MARK	REVISION	DATE	APPD	CHKD	DSGE			

	PROPERTY	TEST CONDITION	PERFORMANCE
4.4	Stem withdrawal force	A static load of 500gf is applied to the direction of pulling for 3 seconds.	* shall be free from mechanical and electrical degradation.
4.5	Travel		* 0.25 ±0.1mm
4.6	Arrangement of action		* Tactile feed-back.
5. DURABILITY			
	PROPERTY	TEST CONDITION	PERFORMANCE
5.1	Operating life	100,000 cycles operation with a load of 250gf at a rate of 2 cycles/sec. With a resistive load supplying 12V DC, 50㎃.	* Contact resistance : 500mΩ max. * Bounce : 20m sec max. * Actuating force : within ± 30% of the initial value.
6. WEATHER PROOF			
	PROPERTY	TEST CONDITION	PERFORMANCE
6.1	Cold heat proof	After testing at -30℃ for 96hrs, the sample is allowed to stand under normal temperature and humidity conditions for 1hour and measurement is performed within 1hour after that. Water drops should be wiped off.	* The requirement in Item 3 and 4 shall be satisfied.
6.2	Dry heat proof	After testing at 80℃ for 96hrs, the sample is allowed to stand under normal temperature for 1 hour and measurement is performed within 1 hour after that.	
6.3	Damp heat proof	After test at 60±2℃ and 90-95% in relative humidity for 96hrs, the sample is allowed to stand under normal temperature and humidity conditions for 1hour and measurement is peformed within 1hour after that. Water drops should be wiped off.	* Insulation resistance : 10㏁ minimum. * Dielectric strength : same as Item 3.4. * Contact resistance : same as Item 3.2.
		Ultrasonic cleaning is possible after-dipping	
6.4	Thermal cycling	 After the test conducted under 5 cycies the sample is allowed to stand under 1.normal temperature and humidity conditions for 1 hour, and the measurement is performed within 1hour.	* The requirement in Item 3 and 4 shal be met.

7. SEALED TEST

7.1. Immersion test :

This test codition of successive cycles of immersions. each cycle consisting of immersion in a hot bath of fresh(tap) water at a temperature of 65 ℃ fllowed by immersion

Number of cycles	Duration of each immersion	Immersion bath(cold)	Temperature of cold bath(℃)
2	15Min	Frash(tap) water	25

7.2. Measurement

Measurement is performed with in 1hour after completion of the final cycle.

After completion of the final cycle, specimens shall be thorqughly and quicky washed and all surfaces wiped or air-blasted clean and dry.

7.3. Performance

7.3.1. Contact resistence : 500mΩ max

7.3.2. Bounce : 20m sec max

7.3.3. Insulation resistance : 10mΩ min

7.3.4. Dielectric strength : No insulation defect shall be observed.

7.4. Reference

: Method 104A, MIL-STD-202F.

8. MACHINE SOLDERING CONDITIONS (in case the automatic flow soldering is to be used.)

8.1. Soldering temperature

: less than 260℃

8.2. Soldering time

: Continuous dipping duration shall not exceed 5 seconds.

8.3. Permissible soldering times

: less than twice.

(The second soldering would be conducted after the temperature goes down to a normal temperature.)

8.4. Preheat temperature

: less than 100℃

(Circumferential temperature of the printed wiring board)

8.5. Preheat time

: less than 45 seconds.

8.6. Flux streaming

: Flux streaming shall be controlled so that it shall not swell beyond the printed wiring board where components are installed.

Item	Sealed switch	Test	Bubble test	DSGD	CHKD	APPD
Model						
Start	2007-07-10	Condition	85℃ 1min			
Finish	2007-07-10					

* 목 적 :

Bubble test proecdure : MIL-STD-202F, Method 112, Test condition D
ⓐFluorocarbon liquid
ⓑTemperature of liquid : 85℃
ⓒImmersion time : 60 sec.

The higher temperature, the more inside gases will be expand so that the increased pressure will cause a steady stream of bubbles.

2. After (85℃ 1min)

No	Item	Bubble occur	Withstand voltage	Remark
	Spec		AC 250V 1 min	
	Unit			
1		o.k	o.k	
2		o.k	o.k	
3		o.k	o.k	
4		o.k	o.k	
5		o.k	o.k	
6		o.k	o.k	
7		o.k	o.k	
8		o.k	o.k	
9		o.k	o.k	
10		o.k	o.k	
Max				
Min				
R				
Aver				

Result	o.k
Remark	

TITLE	PRODUCT SPECIFICATIONS	
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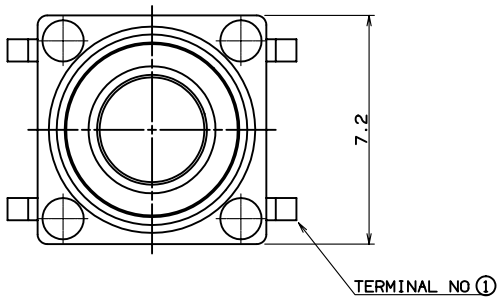
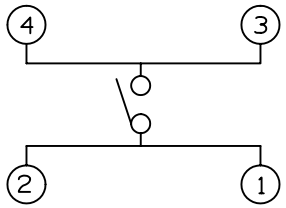
Caution

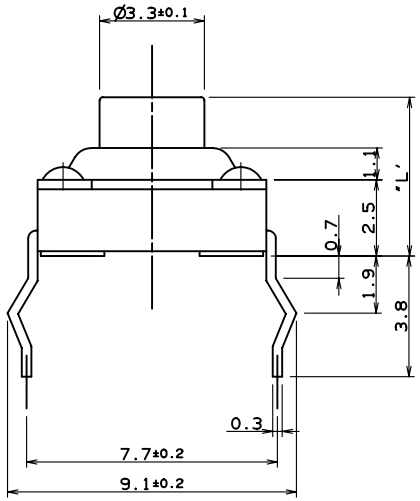
1. When terminals are exposed to mechanical stress during soldering, it may cause degradation in deformation and electrical property.
2. Through-hole PC board, or a PC board thickness other than the recommendation may cause larger heat stress. Prior verification is highly recommended.
3. In prior to the 2nd soldering switch shall be stable with normal temperature. It may cause deformation of switch, loose terminals, terminal removed from PCB, and / or degradation of electric property.
4. Verify samples with actual mass production conditions.
5. The products are designed and manufactured for direct current resistance. Individual consultation is recommended for use of other resistances such as inductive (L) or capacitive (C) .
6. The sizes of holes and patterns on a PC board for mounting a switch, be as per the recommended dimensions in the product drawings.
7. This switch is designed for manually operated units. Must not use this switch for a mechanical detection unit. For detection purposes, please use our detection switch.
8. The switch will be break if impact force or a greater stress than that specified is applied. Take great care not to let the switch be subject to greater stress than specified.
9. Do not apply a force from the side of the stem
10. Be sure to push the center of switch for "without-stem" type. Extreme care is required for a hinge structure type. as the activation point may shift when it is pressed down.
11. The circuit setting (software setting) shall be ensured for error-free operations, caused by bounce and chattering as specified by each model of the switches.
12. Prior verification is needed to ensure that no corrosive gas-generating components are used near our switch. It may give negative influence such as contact failure.
13. Contact resistance of a carbon contact type may very depending on push force. Confirm that it functions sufficiently in using TACT switch with a voltage divider circuit.
14. Be aware of dust intrusion into a non dust-proof TACT switch.
15. Storage
    - ① Storage the products as delivered, at a normal temperature and humidity, without direct sunshine and corrosive gas ambient. Use them at an earliest possible timing, not later than six months upon receipt.
    - ② After breaking the seal, keep the products in a plastic bag to prevent out ambient air, store them in the same environment as above, and use all as soon as possible.
    - ③ Do not stack too many switches.
    - ④ Store the key switches in released position.
16. All specification can be changed to improve performance without any notice.

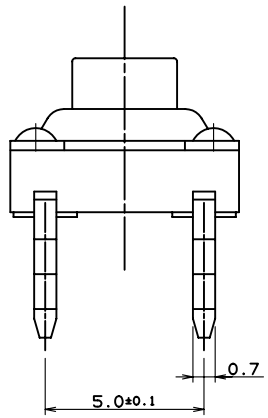


CIRCUIT DIAGRAM

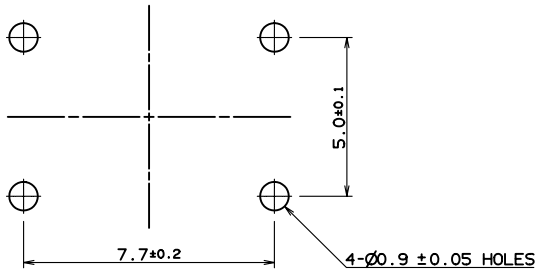


MODEL	"L"
MT 1170	4.3mm
MT 1170A	5.0mm
MT 1170B	9.0mm
MT 1170F	7.0mm





P.C.B DIMENSION



NOTE

1. OPERATING FORCE : 200 ± 50gf
2. GENERAL TOLERANCE : ± 0.3
3. TRAVEL : 0.25 ± 0.1mm
4. CONTACT RESISTANCE : 100mΩ Max
5. MOISTURE PROOF TYPE

No.	PART NAME	Q'TY	MATERIAL	S I Z E	TREAT.	REMARKS

⑤				3RD ANGLE PROJECTION	UNIT m/m	SCALE 1	MODEL	MT 1170 TYPE
④								
③				APPROVED	CHECKED	DESIGNED	DWG.NAME	ASS'Y DIAGRAM
②								
①							DWG.NO.	
NO.	DATE	NOTE	SIGN					

MYUNG DO SYSTEM