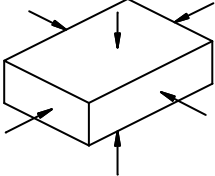


SFNHU-001		SFNHU SWITCHES SPECIFICATIONS SFNHU 觸壓式製品規格書			2011.11.10	
7.Mechanical performance 機械性能						
	Property 項目	Test conditions 試驗條件			Performance 判定基準	
7.1	Actuating force 動作力	Placing the switch such that the direction of switch operation is vertical and then gradually increasing the load applied to the center of the stem the maximum load required for the switch to come to a make shall be measured. 將開關之操作部置於垂直方向,並在把柄的中央逐漸增加荷重,直到柄不動為止,量取施力期間之最大荷重值。			160±50gf	
7.2	Travel 移動量	Placing the switch such that the direction of switch operation is vertical and then applying a static load twice the actuating force to the center of the stem the travel distance for the switch to come to a make shall be measured. 將開關之操作部置於垂直方向,並在把柄的中央加兩倍於動作力之靜負荷測量柄被壓到不動時之移動距離。			0.25 ^{+0.2} / _{-0.1} mm	
7.3	Return force 復歸力	The sample switch is installed such that the direction of switch operation is vertical and upon depression of the stem in its center the whole travel distance the force of the stem to return to its free position shall be measured. 將開關之操作部置於垂直方向,並在把柄的中央施力,使之移動全行程距離再測量其復歸至原來位置之力量。			As showing in assembly drawing. 依組立圖上規定。	
7.4	Stop strength 止動強度	Placing the switch such that the direction of switch operation is vertical a static load of 3 kgf shall be applied in the direction of stem operation for a period of 3 seconds. 將開關之操作部置於垂直方向,並沿操作方向加3kgf之靜負荷3秒。			There shall be no sign of damage mechanically and electrically. 不得有電氣及機構上之破壞現象	
7.5	Stem strength 操作部(柄)之強度	Placing the switch such that the direction of switch operation is vertical the maximum force to withstand a pull applied opposite to the direction of stem operation shall be measured. 將開關之操作部置於垂直方向,並在與柄之操作相反方向,施加拉力,測量其最大抗拉力。			500 gf.	
8.Weather-proof 耐候性能						
	Property 項目	Test conditions 試驗條件			Performance 判定基準	
8.1	Resistance to low temperatures 耐寒性能	Switch for testing being kept in the conditions at -30±2°C in temperature for 96 hours, and in a normal ambient condition for one hour, then to be measured within one hour. Drops of water being taken away. -30±2°C 放置 96 小時試驗後,置於常溫常溼中 1 小時,除去水滴後,在 1 小時內測定之。			Item 6 Item 7.1,7.2 同 6 項 同 7.1, 7.2 項	
8.2	Heat resistance 耐熱性能	Switch for testing being kept in the conditions at 80±2°C in temperature for 96 hours, and in a normal ambient condition for one hour, then to be measured within one hour. 80±2°C 放置 96 小時試驗後,置於常溫常溼中 1 小時,在 1 小時內測定之。			Item 6 Item 7.1,7.2 同 6 項 同 7.1, 7.2 項	
8.3	Moisture resistance 耐溼性能	Switch for testing being kept in the conditions at 60±2°C in temperature and 90~95% RH for 96 hours, and in a normal ambient condition for one hour then to be measured within one hour. 在溫度 60±2°C,相對溼度 90~95%放置 96 小時試驗後,置於常溫常溼中 1 小時,除去水滴後在 1 小時內測定之。			Contact resistance:500 m ohm max. Insulation resistance:10 M ohm min. Item 6.3, 6.4 Item 7.1, 7.2 接觸阻抗在 500 mΩ 以下 絕緣阻抗在 10 MΩ 以上 同 6.3, 6.4 項 同 7.1, 7.2 項	
				APPD	CHK	DSGD
				W M T	FU	L J H
				Nov,10' 2011	Nov,10' 2011	Nov,10' 2011
SYMB	DATE	APPD	CHKD	DSGD	TITLE: DOCUMENT NO. SFNHU-001 (2/8)	

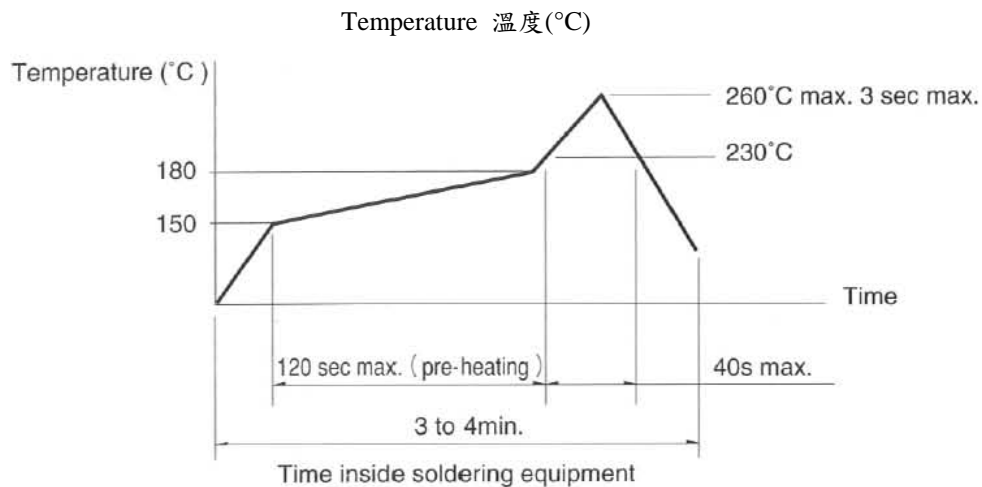
FORWARD ELECTRONICS CO.,LTD.

SFNHU-001		SFNHU SWITCHES SPECIFICATIONS SFNHU 觸壓式製品規格書			2011.11.10	
Property 項目		Test conditions 試驗條件			Performance 判定基準	
8.4	Temperature cycling 耐溫度循環試驗	After 5 cycles of following conditions, the switch shall be allowed to stand under room temperature and humidity conditions for 1 hour and measurement shall be made within 1 hour after that. Water drops shall be removed. 以下記條件做 5 個週期的試驗後放置 1 小時以內測試之但是水珠必須去除 			Item 6 Item 7.1, 7.2 同 6 項 同 7.1, 7.2 項	
9. Endurance 耐久性能						
Property 項目		Test conditions 試驗條件			Performance 判定基準	
9.1	Operating life 有負載壽命試驗	Measurements shall be made following the test set forth below: (1).DC 5V 5mA resistive load (2).Rate of operation 2 to 3 operations per second. (3). Depression : Upper limit of the actuating force. (4).Cycles of operation : 10×10^4 cycles. (1).DC 5V 5mA (阻抗負載) (2).動作速度:2~3 次/秒 (3).壓下力量:動作力之上限 (4).動作次數: 10×10^4 次			Contact resistance: <u>1000</u> m ohm max. Insulation resistance: <u>10</u> M ohm min. Bounce: <u>20</u> m sec max. Actuating force: $\pm 30\%$ of initial force. Item 6.3 Item 7.2 接觸阻抗 <u>1000mΩ</u> 以下 絕緣阻抗 <u>10 MΩ</u> 以上 接點之瞬間跳動時間 <u>20msec</u> 以下 動作力在初期值之 $\pm 30\%$ 以內 同 6.3, 7.2 項	
9.2	Vibration resistance 耐振動性	Measurements shall be made following the set forth below: (1).Range of oscillation : 10 to 55 Hz (2).Amplitude pk-to-pk : 1.5 mm (3).Cycle of sweep : 10-55-10 Hz in one minute approx. (4).Mode of sweep : Logarithmic sweep or uniform sweep. (5).Direction of oscillation : Three mutually perpendicular directions including the direction of stem travel . (6).Duration of testing : 2 hours each for a total of 6 hours (1).振動數範圍: 10~55 Hz (2).全振幅:1.5 mm (3).掃瞄週期:10-55-10 Hz 約 1 分鐘 (4).掃瞄振動之變化方式:近似對數或直線 (5).振幅方向:相互垂直之三個方向(含柄移動之方向) (6).試驗時間:各 2 小時(計 6 小時)			Item 6 Item 7.1, 7.2 同 6 項 同 7.1, 7.2 項	
			APPD	CHK	DSGD	TITLE:
			W M T	FU	L J H	DOCUMENT NO.
			Nov,10' 2011	Nov,10' 2011	Nov,10' 2011	SFNHU-001 (3/8)
SYMB	DATE	APPD	CHKD	DSGD		

SFNHU-001		SFNHU SWITCHES SPECIFICATIONS SFNHU 觸壓式製品規格書		2011.11.10	
Property 項目		Test conditions 試驗條件		Performance 判定基準	
9.3 Impact shock resistance 耐衝擊性		Measurements shall be made following the test set forth below: (1) Acceleration : 80g (2) Cycle of test : 3 cycles a total of 18 cycle. (1) 用 80g 加速度 (2) 沿圖示 6 個方向, 每方向 3 次共 18 次.		Item 6 Item 7.1, 7.2 同 6 項 同 7.1, 7.2 項	
					

◆◆◆Switch Handling Precaution ◆◆◆使用上應注意事項

1. Reflow Soldering condition. Reflow 焊錫條件



Caution 注意事項

(1). The condition mentioned above is the temperature on the P.C board surface on which parts are mounted. There are cases where board's temperature greatly differs from switch's surface temperature. depending on the board's material, size, thickness, etc. Care, therefore, should be taken to prevent the switch's surface temperature from exceeding 250°C.
 上述條件為 P.C.B 組裝表面溫度, 部份基板因材質, 大小及厚度等引起基板溫度與 SW 表面溫度很大差異, SW 表面溫度勿超過 265°C 請確認

(2). As the conditions vary some how depending on the kind of reflow soldering equipment, please make sure you have the right one before use.
 因 REFLOW 爐的種類不同, 條件設定上亦有所差異, 使用前詳加確認.

2. Other precautions 其它注意事項

(1). Following the soldering process do not try to clean the switch with a solvent or the like.
 在焊錫過程中, 不可用溶劑或類似品清洗開關.

(2). Safeguard the switch assembly against flux penetration from its top side.
 焊錫時請注意防止助焊劑從開關頂部滲入.

(3). Please have the products keep in close status and the storage time is 90 days guaranty agter delivering the goods at most.
 為了避免保管場所的環境引起端子變色, 未到使用之前, 請勿拆封. TACT SW 的保存期限出貨後 3 個月內

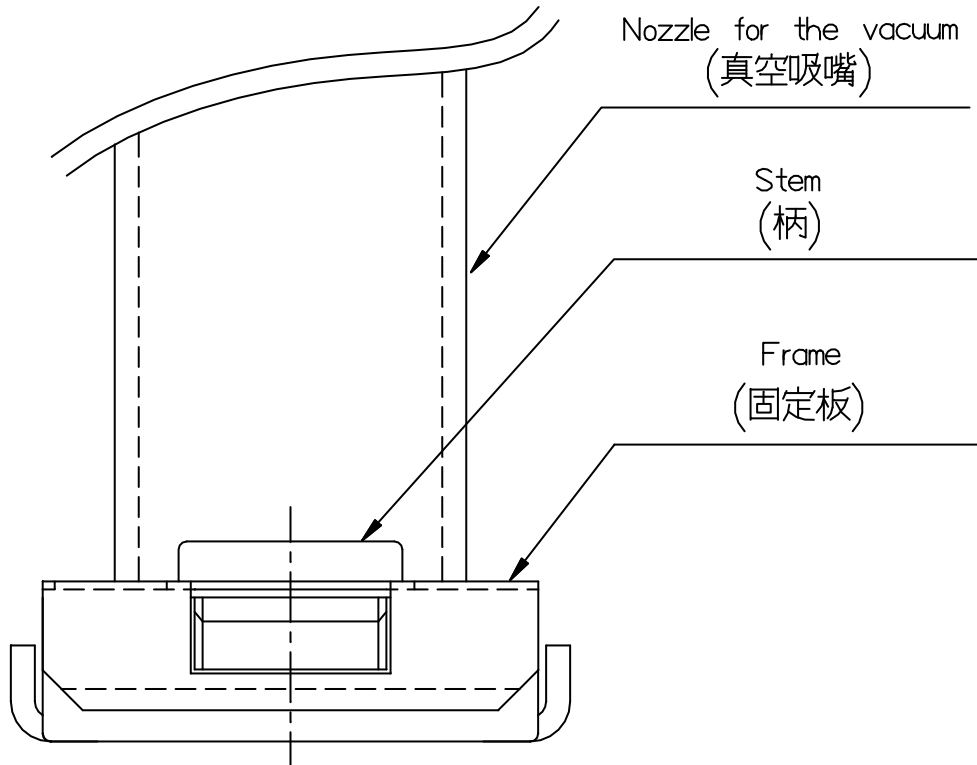
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					W M T	FU	L J H	
					Nov,10' 2011	Nov,10' 2011	Nov,10' 2011	DOCUMENT NO.
SYMB	DATE	APPD	CHKD	DSGD				SFNHU-001 (4/8)

10.其它 Others

ㄨ. When chip components is soldered on the back side of P.C.B by DIP soldering, after switch soldered by reflow soldering, flux will possibly creep up at the exterior wall of the housing and penetrate into the housing due to flux ejection
Therefore, When the P.C.B is designed, please do not locate through holes adjacent to the switch mounted area.
P.C.B 設計時貫穿孔位置請勿鄰近於此開關固定位置，以避免助焊劑噴流滲入開關造成不良。

ㄨ. When this switch is mounted by the chip, it can be dispositioned because the body turns on the way to the P.C.B if you Vacuum the top side of the stem.
Therefore we recommend that the stem should be vacuumed by the called " escape part the frame ".
本開關如以 CHIP MOUNT 機器自動裝著時,如由把柄先端直接吸取至基板裝著過程中,可能由 SW 本體旋轉而發生黏著偏移,建議吸嘴部逃孔大於把柄外徑後真空吸取確保黏著精度。

Example which dose a switch in the vacuum.
真空吸取範例



					APPD	CHK	DSGD	TITLE:
					W M T	FU	L J H	DOCUMENT NO.
					Nov,10' 2011	Nov,10' 2011	Nov,10' 2011	SFNHU-001 (5/8)
SYMB	DATE	APPD	CHKD	DSGD				

1.Scope 適用範圍

This specification covers the requirements of the taping packaging for SFKHM standard type of TACT switches.
本規範適用於 TACT switches SFKHUM 之承載帶包裝方式。

2.Packaging Materials 包裝材料

Item 項目	Material 材料
Package 包裝箱	Cartons.
Reel 捲盤	Antistatic Polystyrene.
Carrier Tape 承載帶	Conductive Polystyrene.
Cover Tape 封口帶	Polyster heat active.

3.Aging Quantity 包裝數量

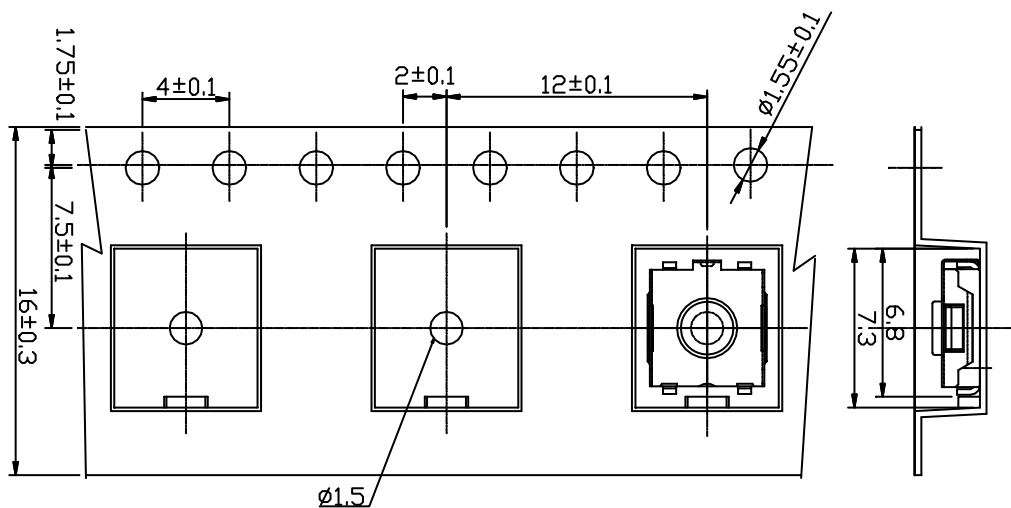
3.1.The number of the reels. 捲盤數量

Fourteen(14)reels at maximum, which contain 21,000 switches, shall be packed in a package.
每個包裝箱可裝 14 捲, 計 21,000 個開關。

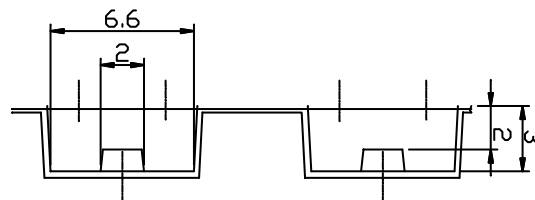
3.2.The number of the switches. 開關數量

1,500 switches shall be packed in a reel.每捲包裝數量 1,500 個。

4.Carrier Tape Form and Dimensions 承載帶形狀及尺寸

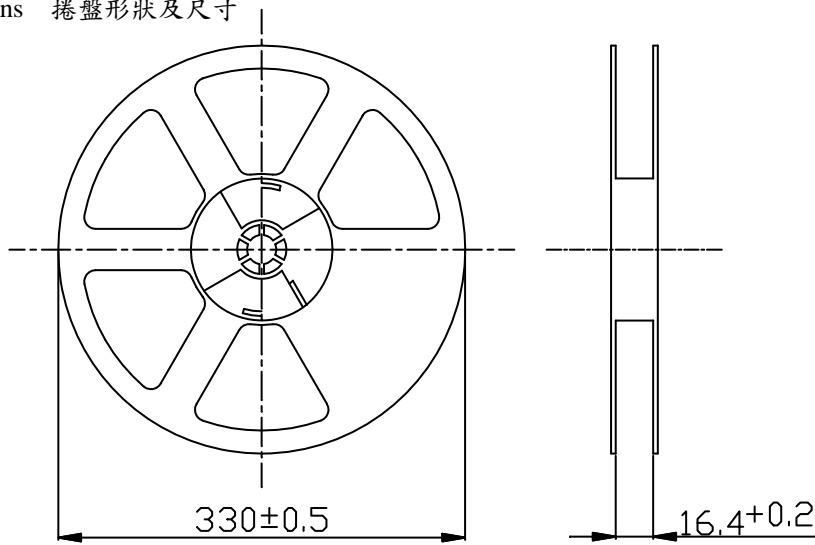


→ Pulling-out direction of the tape
(承載帶拉出方向)



					APPD	CHK	DSGD	TITLE:
					W M T	FU	L J H	
					Nov,10' 2011	Nov,10' 2011	Nov,10' 2011	DOCUMENT NO.
SYMB	DATE	APPD	CHKD	DSGD				SFNHU-001 (6/8)

5.Reel Form and Dimensions 捲盤形狀及尺寸



(mm)

6.Packaging Procedure 包裝方式

- 6.1.At the beginning of reeling, the end of the tape,200mm or more, shall be empty and fit into the groove in the reel core.
料捲起點約 200 mm (或更多) 承載帶須空出並固定於蕊心.
- 6.2.After reeling , the end of the tape 130 ± 4 mm, shall be empty and the tape edge shall be cut in 45° .
料捲終點承載帶須空出約 130 ± 4 mm 尾端並裁成 45° 角.
The cover tape shall be extended 250 ± 10 mm from the tape edge and fixed with tape.
封口帶須從承載帶終點延伸約 250 ± 10 mm 並與承載帶固定.
- 6.3.Total number of missing switches shall be less than 3 in one reel.
每捲漏裝數不可超過 3PCS.

7.Storage Condition 保存狀態

- 7.1.Storage Environment 儲存環境
-20 to 50°C , 20 to 85%RH.
溫度-20~ 50°C , 溼度 20~85%RH.
(Storage in high temperature and high humidity shall be avoided).
(儲存時避免放置於高濕高溫下).

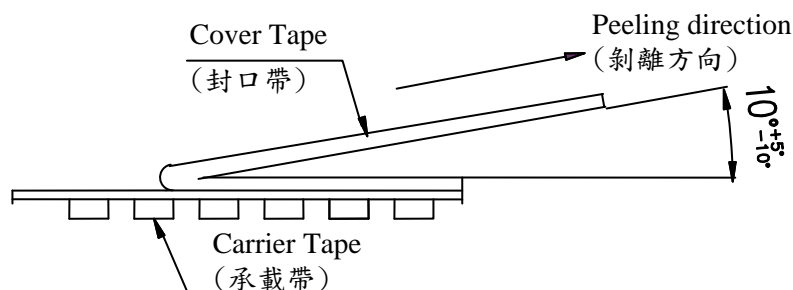
					APPD	CHK	DSGD	TITLE:
					W M T	FU	L J H	
					Nov,10' 2011	Nov,10' 2011	Nov,10' 2011	DOCUMENT NO.
SYMB	DATE	APPD	CHKD	DSGD				SFNHU-001 (7/8)

8. Performance 性能

(1) Peeling strength of cover tape 封口帶之剝離強度

Peeling strength of cover tape shall be 20.2~71.4gf (0.2~0.7N) and tested as follows.

下圖是測試封口帶之剝離強度 20.2~71.4gf (0.2~0.7N) 之方法。



※封口帶之剝離速度是 300mm/分。

(2) Minimum bending radius of taping package

Taping 包裝之最小彎曲半徑

Falling off of the switch or breakage of taping package shall not occur at minimum bending radius of 25mm, minimum bending shall performed one time at on position.

在最小彎曲半徑 25mm 時、將不會發生 Taping 包裝之開關脫離或破損，最小彎曲半徑在適當的位置上將被執行一次。

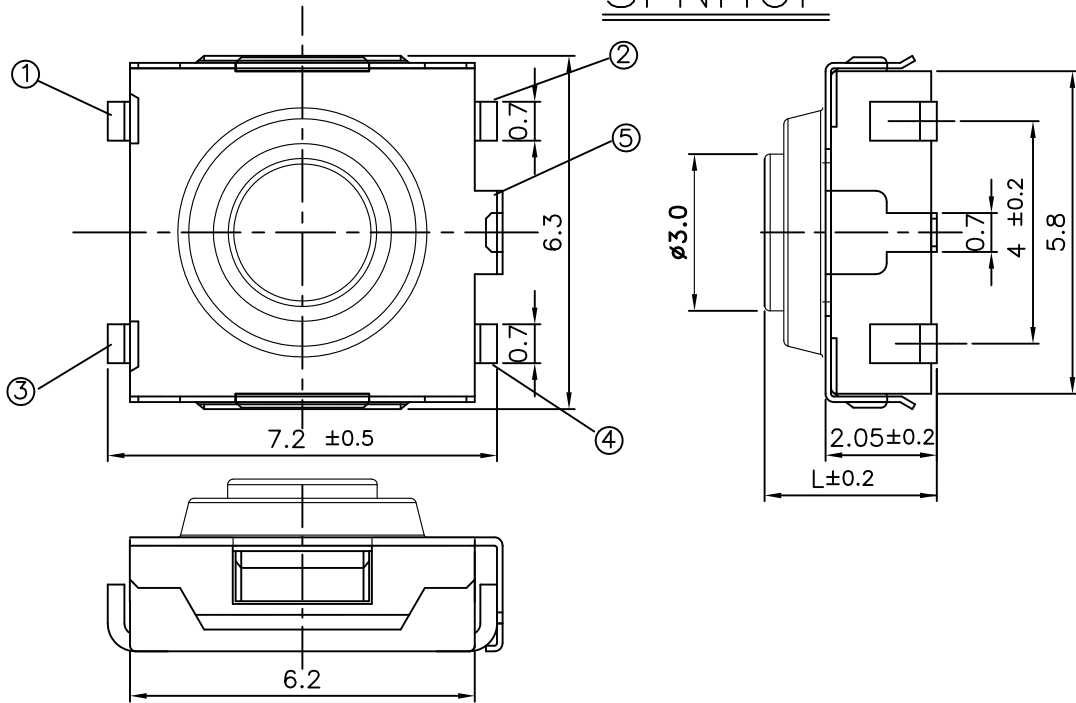
(3) Adhesion of the switch on cover tape 封口帶之黏著

Switch shall not adhere to the cover tape this test.

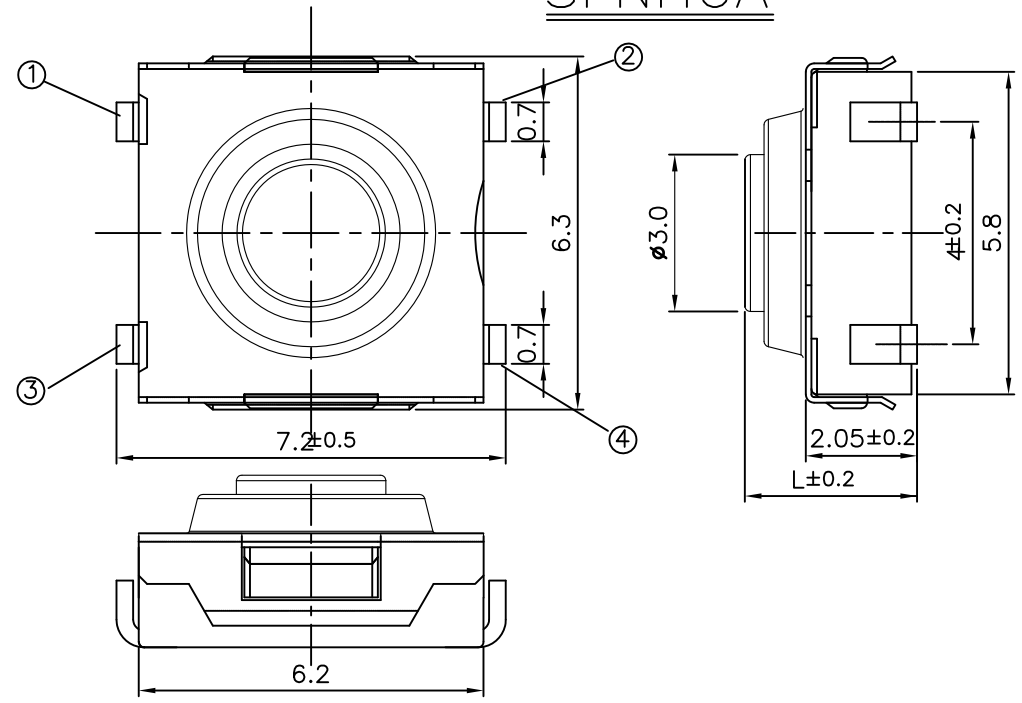
封口帶之剝離(黏著)強度試驗。

					APPD	CHK	DSGD	TITLE:
					W M T	FU	L J H	
					Nov,10' 2011	Nov,10' 2011	Nov,10' 2011	DOCUMENT NO.
SYMB	DATE	APPD	CHKD					SFNHU-001 (8/8)

SFNHUP



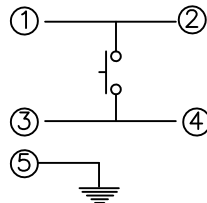
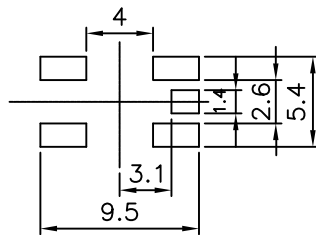
SFNHUA



Printed circuit board land dimensions 回路圖 : (CIRCUIT DIAGRAM)

P.C.B固定尺寸

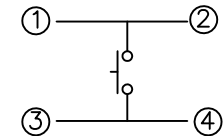
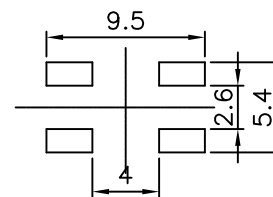
(When viewed from switch mounting face)



Printed circuit board land dimensions 回路圖 : (CIRCUIT DIAGRAM)

P.C.B固定尺寸

(When viewed from switch mounting face)



SFNHUP2331T	3.1	WHITE(白)	260±70	50Min
SFNHUP2321T	3.1	GRAY(灰)	160±50	50Min
SFNHUP2311T	3.1	PURPLE(紫)	100±50	10Min
SFNHUA2331T	3.1	WHITE(白)	260±70	50Min
SFNHUA2321T	3.1	GRAY(灰)	160±50	50Min
SFNHUA2311T	3.1	PURPLE(紫)	100±50	10Min
TYPE OF MODEL	DIM L	STEM COLOR	ACTUATING FORCE (gf)	RETURN FORCE (gf)

TOLERANCE UNLESS OTHERWISE SPEC. (未指定容許差尺寸之公差)	
BASIC DIMENSIONS	TOLERANCE
UP TO 10	±0.3
ABOVE 10 TO 100	±0.5
ABOVE 100	±0.8
ANGULAR DIMENSIONS	±3°

零件號碼	名稱	材料	規格	處理	數量
		三角法	單位 mm	SFNHU	
		承認	校對	設計	圖名 組立圖
		圖號			
記號	年月日	承認	校對	設計	