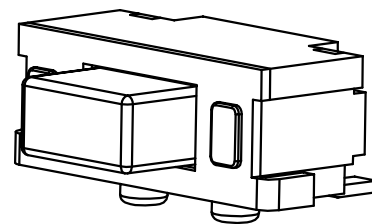
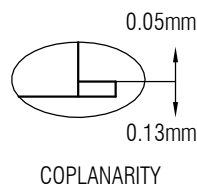
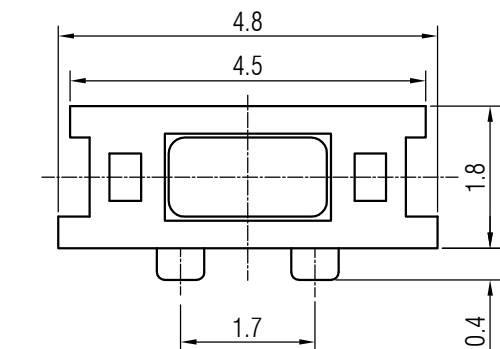
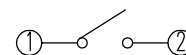
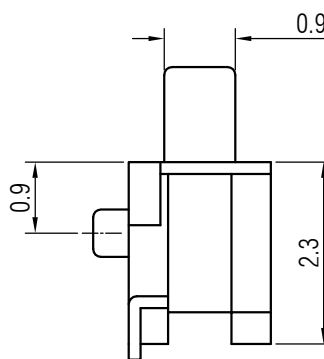
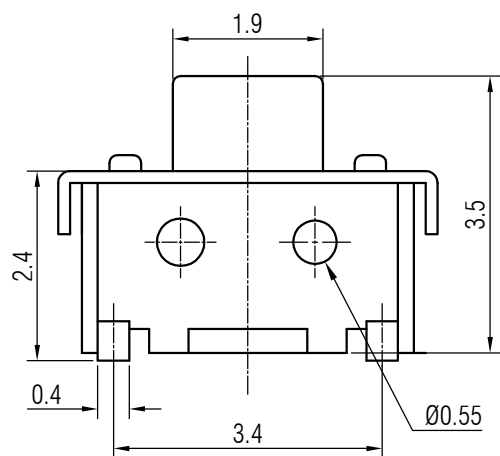


| SYMB | REVISION | DATE | APVD. | SYMB | REVISION | DATE | APVD. | VERSION: 3 | F2A-20-1/1       |
|------|----------|------|-------|------|----------|------|-------|------------|------------------|
|      |          |      |       |      |          |      |       | MODE       | Tactile Feedback |
|      |          |      |       |      |          |      |       | TIMING     |                  |
|      |          |      |       |      |          |      |       | LINE(S)    | CIRCUIT          |
|      |          |      |       |      |          |      |       | 1          | 1P1T             |
|      |          |      |       |      |          |      |       |            | STROKE           |
|      |          |      |       |      |          |      |       |            | 0.2              |

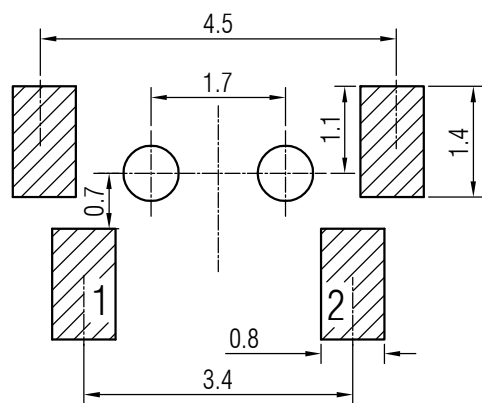
Without any banned substance! Compliance with RoHS!



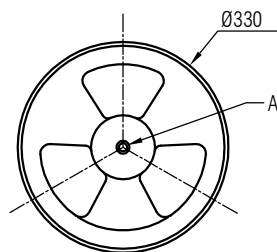
STEREOSCOPIC MODEL



CIRCUIT DIAGRAM

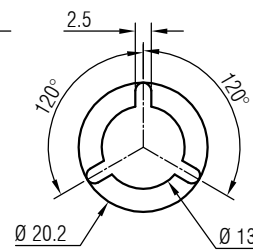


Recommended PAD Layout  $\Phi \pm 0.05$   
TOP VIEW

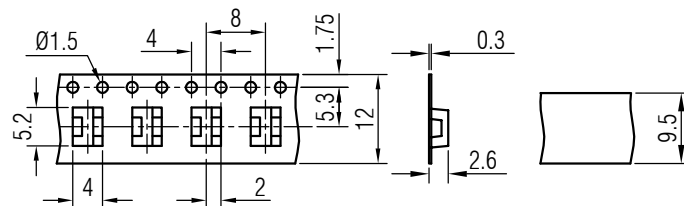


SCALE 1:10.2

REEL



"A" DETAIL



SCALE 1:2:1

CARRIER TAPE

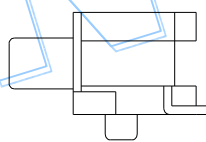
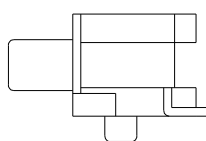
COVER TAPE

PACKING DETAIL

<QTY:3000PCS/REEL>

|                                       |                 |       |              |     |              |                 |      |           |
|---------------------------------------|-----------------|-------|--------------|-----|--------------|-----------------|------|-----------|
| TYPE                                  | TACT SWITCH     | UNIT  | mm           | 9   |              |                 |      |           |
| SERIES                                | TSMC-251211     | SCALE | 14:1         | 8   |              |                 |      |           |
| PART NO.                              | TSMC-251211-120 | DATE  | 13/09/27     | 7   |              |                 |      |           |
| SPEC. NO.                             | SETD01664-01    | PAGE  | 1/6          | 6   |              |                 |      |           |
| DRAWN                                 | CHECKED         | APVD. | TOLERANCE    | 5   | TERMINAL 1,2 | PHOSPHOR BRONZE | 2    | Ag PLATED |
| 李                                     | 任               | 梁     | ANGLE        | 4   | COVER        | PHOSPHOR BRONZE | 1    | Ag PLATED |
| 晓斌                                    | 明华              | 成元    | UP TO 1      | 3   | STEM         | LCP             | 1    | BLACK     |
|                                       |                 |       | ABOVE 1 ~ 5  | 2   | CONTACT      | SUS             | 2    | Ag CLAD   |
|                                       |                 |       | ABOVE 5 ~ 50 | 1   | CASE         | LCP             | 1    | WHITE     |
| SANWIN ELECTRONIC TECHNOLOGY CO. LTD. |                 |       |              | NO. | NAME         | MATERIAL        | QTY. | FINISHING |

| 產品規格書                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                              |            |           | 檔編號No. :                                                                                        | 頁數Page  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------|-------------------------------------------------------------------------------------------------|---------|
| SPECIFICATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                              |            |           | SETD01664                                                                                       | P2/6    |
| 產品類別Type:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 輕觸開關Tact Switch                                                                                                                                              |            |           | Prepared                                                                                        | Checked |
| 產品系列Series:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | TSMC-251211                                                                                                                                                  | 版本Version: | 1         | 李                                                                                               | 任       |
| 產品編號Part No.:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | TSMC-251211-160                                                                                                                                              | 日期Date:    | 2012/4/16 | 曉 斌                                                                                             | 明 華     |
| 梁 成 元                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                              |            |           |                                                                                                 |         |
| 1. 通則 General Characteristics:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                              |            |           |                                                                                                 |         |
| <p>1.1 應用範圍 Application range:</p> <p>此產品規格書適用於輕觸開關TSMC-251211。</p> <p>This product specification is applied to the TSMC-251211 Tact Switch.</p> <p>1.2 使用環境條件 Acclimatization:</p> <p>使用溫度範圍 Operating Temperature rang:-20°C ~ 70°C</p> <p>保存溫度範圍 Preservative Temperature:-30 ~ 80°C</p> <p>1.3 測試條件Test Conditions:</p> <p>若沒有特別說明，則試驗條件如下：</p> <p>Unless otherwise specified,the atmospheric for marking measurements and tests are as follows:</p> <p>溫 度 Temperature:20±2°C</p> <p>相對濕度 Relative Humidity:45 ~ 85%</p> <p>氣 壓 Air pressure:86 ~ 106Kpa</p> <p>如對判定產生疑義，則試驗按以下條件進行：</p> <p>However,if the decision based on the measurements suspicion conditions, the following conditions shall be employed:</p> <p>溫 度 Temperature:20±2°C</p> <p>相對濕度 Relative Humidity:65±5%</p> <p>氣 壓 Air pressure:86 ~ 106Kpa</p> |                                                                                                                                                              |            |           |                                                                                                 |         |
| 2. 外觀和安裝尺寸 Appearance & Mounting Dimensions:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                              |            |           |                                                                                                 |         |
| <p>2.1 外觀 Appearance:</p> <p>產品外觀良好，無破損、銹蝕、裂紋和鍍層缺陷。</p> <p>The switch shall have good finishing,and no rust,crack plating defects.</p> <p>2.2 安裝尺寸Mounting dimensions:</p> <p>應符合產品設計要求，詳見成品圖。</p> <p>Should comply with the design requirements of products, see the finished product drawing.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                              |            |           |                                                                                                 |         |
| 3. 驅動方式Operate Mode:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                              |            |           |                                                                                                 |         |
| <p>按鈕式：中間方向（如成品圖所示）</p> <p>Push Button:Center ( as assembly drawing shown).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                              |            |           |                                                                                                 |         |
| 4. 回路方式 Circuit Mode:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                              |            |           |                                                                                                 |         |
| 如成品圖所示 ( as assembly drawing ).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                              |            |           |                                                                                                 |         |
| 5. 額定負荷及壽命 Rating and Ooerating life.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                              |            |           |                                                                                                 |         |
| <p>額定負荷 Rating:DC 12V,50mA Max</p> <p>機械壽命 Mechanical life:100,000次</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                              |            |           |                                                                                                 |         |
| 6 電氣性能Electrical Characteristics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                              |            |           |                                                                                                 |         |
| 專案Item                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 測試條件Test Method                                                                                                                                              |            |           | 標準Criteria                                                                                      |         |
| 6.1<br>接觸電阻<br>Contact<br>Resistsnce<br>工程确认章                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 以10mA 5V DC 或者 1KHz±200Hz(20mV max , 50mA max)<br>下採用電壓降法測量。<br>Shall be measure at 1KHZ±200Hz ( 20mV max,50mA max)<br>or DC 5V 10mA by voltage drop method. |            |           | 常態 Normal<br>100mΩ以下 100mΩ max<br>氣候及壽命試以後<br>After climate and life test.<br>200mΩ以下 200mΩ max |         |

| 產品規格書                                   |  |                                                                                                                                                                                                                                                                          |            | 檔編號No. :                                                                                     | 頁數Page        |               |
|-----------------------------------------|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|----------------------------------------------------------------------------------------------|---------------|---------------|
| SPECIFICATION                           |  |                                                                                                                                                                                                                                                                          |            | SETD01664                                                                                    | P3/6          |               |
| 產品類別Type:                               |  | 輕觸開關Tact Switch                                                                                                                                                                                                                                                          |            | Prepared                                                                                     | Checked       | Approved      |
| 產品系列Series:                             |  | TSMC-251211                                                                                                                                                                                                                                                              | 版本Version: | 1                                                                                            | <div>李</div>  | <div>任</div>  |
| 產品編號Part No.:                           |  | TSMC-251211-160                                                                                                                                                                                                                                                          | 日期Date:    | 2012/4/16                                                                                    | <div>晓斌</div> | <div>明华</div> |
| 6.2<br>絕緣阻抗<br>Insulation<br>Resistance |  | 在相互絕緣的所有端子之間及各接線端子與外露 的非載流金屬零件之間加載100V DC ,持續時間60±5S.<br>DC 100V voltage is applied between each pair of terminals andbetween the terminal and the metalframefor 60±5S.                                                                                                  |            | 常態 Normal<br>100MΩ以上 100MΩ Min<br>氣候及壽命試以後<br>After climate and life test.<br>10MΩ以上 10MΩmin |               |               |
| 6.3<br>抗電強度<br>Dielectric<br>Strength   |  | 在相互絕緣的所有接線端子之間加載250V (50 ~ 60Hz洩漏電流10mA ) 的交流電 , 各接線端子與外殼或非載流金屬零件之間加載250V(50 ~ 60Hz)電流 洩漏2mA交流電 , 持續時間60±5S。<br>AC 250V(50-60Hz)2mA alternate current load is applied between open terminals connected with wires or250V (50-60Hz),2mA Alternate current load for 60±5S. |            | 無擊穿和飛弧現象<br>The switch without dielectric breakdown and fly arc phenomenon.                  |               |               |
| 7 機械性能 Mechanical Charateristics        |  |                                                                                                                                                                                                                                                                          |            |                                                                                              |               |               |
| 專案Item                                  |  | 測試條件Test Method                                                                                                                                                                                                                                                          |            | 標準 Criteria                                                                                  |               |               |
| 7.1<br>操作力<br>Operating Force           |  | 按規定的操作方法給操作柄施加壓力<br>Push by recommended operating condition.<br><div><div>PUSH TRAVEL 0.2</div></div>                                                                                 |            | 中間方向center:<br>160±40gf.                                                                     |               |               |
| 7.2<br>行程<br>Travels                    |  | 開關發生轉換後, 操作元件末端之間與初始位置之間的距離。<br>Distance from the end of operating component to the start position when switch is being transformed.<br><div><div>PUSH TRAVEL 0.2</div></div>         |            | 中心正按Center push:<br>0.2±0.1mm                                                                |               |               |

| 產品規格書                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |           | 檔編號No. :                                                                     | 頁數Page  |
|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------|------------------------------------------------------------------------------|---------|
| SPECIFICATION                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |           | SETD01664                                                                    | P4/6    |
| 產品類別Type:                                   | 輕觸開關Tact Switch                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |           | Prepared                                                                     | Checked |
| 產品系列Series:                                 | TSMC-251211                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 版本Version: | 1         | 李                                                                            | 任       |
| 產品編號Part No.:                               | TSMC-251211-160                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 日期Date:    | 2012/4/16 | 曉斌                                                                           | 明華      |
| 梁成元                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |           |                                                                              |         |
| 7.3<br>操作件強度<br>Operating Part<br>Strength  | 置開關於正常安裝位置，在操作件中心施加與操作件動作相同方向的1kg靜負荷，時間為60 ±5S。<br>Put the switch in the normal gearing position,Bring 1kgf pressure which direction is similar to the actuator operates direction in the tip of the actuator center ,time is 60±5S.                                                                                                                                                                                                                                                                                                                                           |            |           | 無機械和電氣損傷。<br>The switch shall be free from mechanical and electrical damage. |         |
| 7.4<br>振動<br>Vibration<br>Proof             | 開關採用常規安裝方法牢固地安裝在實驗設備上，按下述參數進行實驗：<br>1) 振頻：10-55Hz<br>2) 振幅：1.5mm<br>3) 振動變化速率：10 ~ 55 ~ 10Hz 大約1分鐘<br>4) 變頻方法：線形方式<br>5) 振動方向：三個互相垂直的方向，其中一個方向為 操作元件運動的方向。<br>Switch shall be secured to a testing machine by a normal mountingdevice and method, Switch shall be measured after following test:<br>1)Vibration frequency range:10 ~ 55Hz.<br>2) Total amplitude:1.5mm<br>3)Sweep ratio:10 ~ 55 ~ 10Hz,Approx 1 minute<br>4)Method of changing the sweep vibration frequency linear.<br>5)Direction of vibration:Three perpendicular directions including actuating direction. |            |           | 符合第6.1、6.2、6.3第7.1條要求。<br>According to item 6.1、6.2、6.3 and 7.1 to examine.  |         |
| <b>8 耐候試驗 Weather Proof Characteristics</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |           |                                                                              |         |
| 專案Item                                      | 測試條件 Test method                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |           | 標準Criteria                                                                   |         |
| 8.1<br>高溫<br>Hot Proof                      | 試件在80±2℃的溫控箱內保持48小時，然後在正常溫度和濕度下恢復1小時，並在此後的1小時內對試件進行測量，水滴應消失。<br>After testing at 80±2℃ for 48 hours,the switch shall be allowed to stand under normal temperature and humidity conditions for 1 hour and measurement shall be made with 1 hour after that,water drops shall be eliminated.                                                                                                                                                                                                                                                                                     |            |           | 符合第6.1、6.2、6.3第7.1條要求。<br>According to item 6.1、6.2、6.3 and 7.1to examine.   |         |

| 產品規格書                                     |                                                                                                                                                                                                                                                                                                                                                                                                |            |           | 檔編號No. :                                                                                                                                                                                                                                          | 頁數Page  |
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| SPECIFICATION                             |                                                                                                                                                                                                                                                                                                                                                                                                |            |           | SETD01664                                                                                                                                                                                                                                         | P5/6    |
| 產品類別Type:                                 | 輕觸開關Tact Switch                                                                                                                                                                                                                                                                                                                                                                                |            |           | Prepared                                                                                                                                                                                                                                          | Checked |
| 產品系列Series:                               | TSMC-251211                                                                                                                                                                                                                                                                                                                                                                                    | 版本Version: | 1         | 李                                                                                                                                                                                                                                                 | 任       |
| 產品編號Part No.:                             | TSMC-251211-160                                                                                                                                                                                                                                                                                                                                                                                | 日期Date:    | 2012/4/16 | 曉斌                                                                                                                                                                                                                                                | 明華      |
| 梁成元                                       |                                                                                                                                                                                                                                                                                                                                                                                                |            |           |                                                                                                                                                                                                                                                   |         |
| 8.2<br>恒定濕熱<br>Moisture<br>Resistance     | <p>試件在<math>60\pm 2^{\circ}\text{C}</math>, 90 ~ 95%RH的溫控箱內保持48小時，然後在正常溫度和濕度下恢復1小時，並在此後的1小時內對試件進行測量，水滴應消失。</p> <p>After testing at <math>60\pm 2^{\circ}\text{C}</math>, 90 ~ 95%RH for 48 hours, the switch shall be allowed to stand under normal temperature and humidity conditions for 1 hour and measurement shall be made with 1 hour after that, Water drops shall be eliminated.</p>  |            |           |                                                                                                                                                                                                                                                   |         |
| 8.3<br>低溫<br>Cold Proof                   | <p>試件在<math>-40\pm 2^{\circ}\text{C}</math>的溫控箱內保持48小時，然後在正常溫度和濕度下恢復1小時，並在此後的1小時內對試件進行測量，水滴應消失。</p> <p>After testing at <math>-40\pm 2^{\circ}\text{C}</math> for 48 hours, the switch shall be allowed to stand under normal temperature and humidity conditions for 1 hour and measurement shall be made with 1 hour after that, water drops shall be eliminated.</p>                        |            |           |                                                                                                                                                                                                                                                   |         |
| 8.4<br>溫度轉換<br>Temperature<br>Cycling     | <p>試件按下述試驗條件試驗5個迴圈，然後在正常溫度和濕度下恢復1小時，並在此後的1小時內對試件進行測量，水滴應消失。</p> <p>After 5 cycles of following conditions, the switch shall be allowed to stand under normal temperature and humidity conditions for 1 hour after that, Water drops shall be eliminated.</p> <p>符合第6.1、6.2、6.3第7.1條要求。<br/>According to item 6.1、6.2、6.3 and 7.1 to examine.</p> <p style="text-align: center;">time (MIN)</p> |            |           |                                                                                                                                                                                                                                                   |         |
| <b>9 耐久性試驗 Durability Characteristics</b> |                                                                                                                                                                                                                                                                                                                                                                                                |            |           |                                                                                                                                                                                                                                                   |         |
| 專案Item                                    | 測試條件 Test method                                                                                                                                                                                                                                                                                                                                                                               |            |           | 標準Criteria                                                                                                                                                                                                                                        |         |
| 9.1<br>壽命試驗<br>Operating Life             | <p>1)在不帶負荷的條件下，在壽命測試設備上連續轉換100,000次，頻率：120-160次/分鐘。</p> <p>1)100,000 cycles of operation shall be performed continuously cycles without load at a rate of 120-160 cycles per minute.</p>                                                                                                                                                                                                       |            |           | <p>動作力：初始值的<math>\pm 30\%</math><br/>Operating force: within <math>\pm 30\%</math> initialization value.</p> <p>彈跳 10 ms Max<br/>Bounce 10 ms Max</p> <p>其餘符合第6.1、6.2、6.3、7.1條<br/>Etceteras according to item 6.1, 6.2, 6.3, 7.1 to examine.</p> |         |

| 產品規格書                                    |                                                                                                                                                                                                                                                                                                                                                                    |            |           | 檔編號No. :                                                                                                                               | 頁數Page  |
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| SPECIFICATION                            |                                                                                                                                                                                                                                                                                                                                                                    |            |           | SETD01664                                                                                                                              | P6/6    |
| 產品類別Type:                                | 輕觸開關Tact Switch                                                                                                                                                                                                                                                                                                                                                    |            |           | Prepared                                                                                                                               | Checked |
| 產品系列Series:                              | TSMC-251211                                                                                                                                                                                                                                                                                                                                                        | 版本Version: | 1         | 李                                                                                                                                      | 任       |
| 產品編號Part No.:                            | TSMC-251211-160                                                                                                                                                                                                                                                                                                                                                    | 日期Date:    | 2012/4/16 | 曉斌                                                                                                                                     | 明華      |
| 梁成元                                      |                                                                                                                                                                                                                                                                                                                                                                    |            |           |                                                                                                                                        |         |
| 10. 焊接Soldering                          |                                                                                                                                                                                                                                                                                                                                                                    |            |           |                                                                                                                                        |         |
| 專案Item                                   | 測試條件 Test method                                                                                                                                                                                                                                                                                                                                                   |            |           | 標準Criteria                                                                                                                             |         |
| 101<br>耐焊接熱<br>Solder Heat<br>Resistance | 試件在下述條件下進行試驗：<br>1) 焊接溫度: $260 \pm 5^\circ\text{C}$ ;<br>2) 焊接時間: $5 \pm 1\text{S}$ ;<br>3) 熔錫面積: PCB板厚度的一半 (PCB: $t=1.6$ ) 。<br>Specimen shall be checked in the following conditions test:<br>1) Soldering temperature: $260 \pm 5^\circ\text{C}$ ;<br>2) Soldering time: $5 \pm 1\text{S}$ ;<br>3) Soldering area : 1/2 of PCB board thickness (PCB: $t=1.6$ ). |            |           | 無機械和電氣損傷。<br>The switch shall be free from mechanical and electrical damage.                                                           |         |
| 10.2<br>回流焊<br>Reflow<br>Soldering       |                                                                                                                                                                                                                                                                                                                                                                    |            |           | 外觀無裂開、鬆動等異常現象，滿足於電氣性能。<br>Without deformation of frame or excessive looseness of terminals, Electrical performance shall be satisfied. |         |
| 10.3<br>可焊性<br>Solderbilty               | 焊接溫度: $245 \pm 5^\circ\text{C}$<br>Solder temperature: $245 \pm 5^\circ\text{C}$ .<br>浸漬時間: $3 \pm 0.5\text{S}$<br>Dipping time: $3 \pm 0.5$ second.                                                                                                                                                                                                               |            |           | 超過90%的浸漬覆蓋焊接。<br>More than 90% of the dipping covered by solder.                                                                       |         |