



ISO 9001 國際品質認證  
ISO 9001 CERTIFICATE

松 暉 電 機 工 業 股 份 有 限 公 司  
SONG HUEI ELECTRIC CO., LTD.  
佛 山 市 松 暉 電 機 科 技 有 限 公 司  
FOSHAN SONG HUEI ELECTRIC CO., LTD.

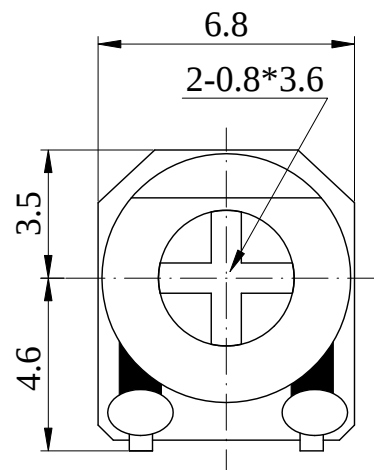
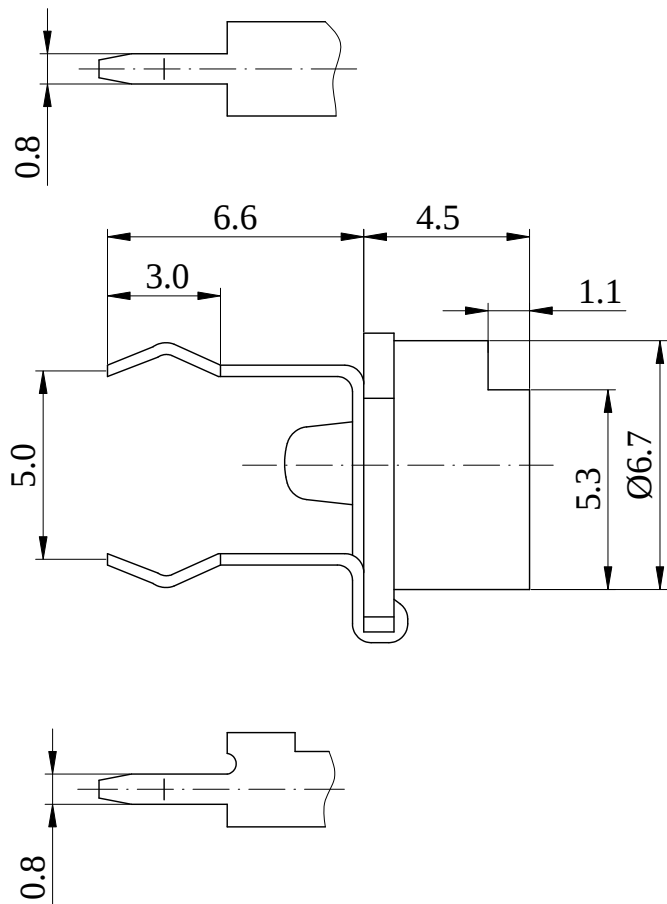
| 一般事項 General                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                       |           |          |   |    |    |    |    |    |    |    |    |    |    |    |    |   |     |   |
|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|-----------|----------|---|----|----|----|----|----|----|----|----|----|----|----|----|---|-----|---|
| 使用溫度範圍<br>Operating temperature       | -30 ℃ ~ +85 ℃                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                       |           |          |   |    |    |    |    |    |    |    |    |    |    |    |    |   |     |   |
| 手工焊接<br>Manual soldering              | 260 ℃ ± 10 ℃ max 2 sec                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                       |           |          |   |    |    |    |    |    |    |    |    |    |    |    |    |   |     |   |
| 電氣特性 Electrical Characteristics       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                       |           |          |   |    |    |    |    |    |    |    |    |    |    |    |    |   |     |   |
| 總阻值 (R)<br>Total resistance           | 100 Ω ~ 2 MΩ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                       |           |          |   |    |    |    |    |    |    |    |    |    |    |    |    |   |     |   |
| 總阻值容許誤差<br>Total resistance tolerance | ± 20 % ( Resistance value ≤ 100 Ω and ≥ 1 MΩ: ± 30 % )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                       |           |          |   |    |    |    |    |    |    |    |    |    |    |    |    |   |     |   |
| 阻值線性<br>Resistance taper              | B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                       |           |          |   |    |    |    |    |    |    |    |    |    |    |    |    |   |     |   |
| 殘留阻值<br>Residual resistance           | R ≤ 500 Ω: Less than 20 Ω<br>R > 500 Ω: Less than 2 % of total resistance value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                       |           |          |   |    |    |    |    |    |    |    |    |    |    |    |    |   |     |   |
| 定格電力<br>Rated power (W)               | <p>對於抵抗體全域,連續能載荷之電力的最大值為 0.3 W,但是周圍溫度超過 70 ℃ 時,依下圖以減之<br/>Rated power: 0.3 W, but when environment temperature is over 70 ℃, please refer to below diagram.</p> <div><div>定格電力<br/>(%)</div><div><table border="1"><caption>定格電力與周圍溫度關係圖</caption><thead><tr><th>周圍溫度 (°C)</th><th>定格電力 (%)</th></tr></thead><tbody><tr><td>0</td><td>50</td></tr><tr><td>20</td><td>50</td></tr><tr><td>40</td><td>50</td></tr><tr><td>60</td><td>50</td></tr><tr><td>70</td><td>50</td></tr><tr><td>80</td><td>25</td></tr><tr><td>85</td><td>0</td></tr><tr><td>100</td><td>0</td></tr></tbody></table></div><div>周圍溫度 (°C)</div></div> |                                                                       | 周圍溫度 (°C) | 定格電力 (%) | 0 | 50 | 20 | 50 | 40 | 50 | 60 | 50 | 70 | 50 | 80 | 25 | 85 | 0 | 100 | 0 |
| 周圍溫度 (°C)                             | 定格電力 (%)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                       |           |          |   |    |    |    |    |    |    |    |    |    |    |    |    |   |     |   |
| 0                                     | 50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                       |           |          |   |    |    |    |    |    |    |    |    |    |    |    |    |   |     |   |
| 20                                    | 50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                       |           |          |   |    |    |    |    |    |    |    |    |    |    |    |    |   |     |   |
| 40                                    | 50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                       |           |          |   |    |    |    |    |    |    |    |    |    |    |    |    |   |     |   |
| 60                                    | 50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                       |           |          |   |    |    |    |    |    |    |    |    |    |    |    |    |   |     |   |
| 70                                    | 50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                       |           |          |   |    |    |    |    |    |    |    |    |    |    |    |    |   |     |   |
| 80                                    | 25                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                       |           |          |   |    |    |    |    |    |    |    |    |    |    |    |    |   |     |   |
| 85                                    | 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                       |           |          |   |    |    |    |    |    |    |    |    |    |    |    |    |   |     |   |
| 100                                   | 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                       |           |          |   |    |    |    |    |    |    |    |    |    |    |    |    |   |     |   |
| 額定電壓<br>Rated voltage (V)             | <p><math>E=\sqrt{P * R}</math><br/>E: Rated voltage 額定電壓 (V)<br/>P: Power rating 額定電力 (W)<br/>R: Nominal total resistance 公稱全阻抗值 (Ω)<br/>當額定電壓超過最高使用電壓的時候, 最高使用電壓即為額定電壓。<br/>When the rated voltage exceeds the maximum operating voltage,the maximum operating voltage shall be the rated voltage.</p>                                                                                                                                                                                                                                                                                                                    |                                                                       |           |          |   |    |    |    |    |    |    |    |    |    |    |    |    |   |     |   |
| 最高使用電壓<br>Max operating voltage       | DC 100 V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                       |           |          |   |    |    |    |    |    |    |    |    |    |    |    |    |   |     |   |
| 機械特性 Mechanical Characteristics       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                       |           |          |   |    |    |    |    |    |    |    |    |    |    |    |    |   |     |   |
| 全回轉角度<br>Total rotational angle       | 240 ° ± 20 °                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                       |           |          |   |    |    |    |    |    |    |    |    |    |    |    |    |   |     |   |
| 回轉力矩<br>Rotational torque             | 30 ~ 300 gf.cm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                       |           |          |   |    |    |    |    |    |    |    |    |    |    |    |    |   |     |   |
| 回轉止強度<br>Rotational stopper strength  | 0.3 Kgf.cm max                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                       |           |          |   |    |    |    |    |    |    |    |    |    |    |    |    |   |     |   |
| 耐候性 Weather Performance               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                       |           |          |   |    |    |    |    |    |    |    |    |    |    |    |    |   |     |   |
| 項目 Item                               | 測試條件 Test Conditions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 規格 Performance                                                        |           |          |   |    |    |    |    |    |    |    |    |    |    |    |    |   |     |   |
| 溫度特性<br>Temperature characteristics   | 無負荷時, 在 70 ℃ ± 3 ℃ 之槽內, 放置 5 小時後。<br>5 hours without load and in temperature 70 ℃ ± 3 ℃。                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 抵抗值的變化為 ± 5 % 以內。<br>The change of resistance value is within ± 5 % 。 |           |          |   |    |    |    |    |    |    |    |    |    |    |    |    |   |     |   |
| 溫度回圈<br>Temperature cycles            | 無負荷 -30 ℃ (30 分) → 常溫常濕 (15 分) → 85 ℃ (30分) → 常溫常濕 (15 分) 迴圈放置, 重複做 5 次迴圈後, 在常溫常濕之室內, 以無負荷放置 2 小時以上。<br>Without load and after rotation, putting under temperature -30 ℃ (30 mins) → Room temperature / humidity (15 mins) → 85 ℃ (30 mins) → Room temperature / humidity (15 mins). Reapting for 5 times, place under room temperature and humidity without load for 2 hours。                                                                                                                                                                                                                                             | 抵抗值的變化為 ± 5 % 以內。<br>The change of resistance value is within ± 5 %。  |           |          |   |    |    |    |    |    |    |    |    |    |    |    |    |   |     |   |
| 長時間耐熱性<br>Long time heat test         | 無負荷時, 在 70 ℃ ± 3 ℃ 之槽內, 放置 500 ± 10 小時後, 以無負荷放置在常溫常濕之室內 2 小時以上。<br>Without load, place under 70 ℃ ± 3 ℃ for 500 ± 10 hours, then further without load place under room temperature / humidity for 2 hours。                                                                                                                                                                                                                                                                                                                                                                                                                 | 抵抗值的變化為 ± 5 % 以內。<br>The change of resistance value is within ± 5 % 。 |           |          |   |    |    |    |    |    |    |    |    |    |    |    |    |   |     |   |



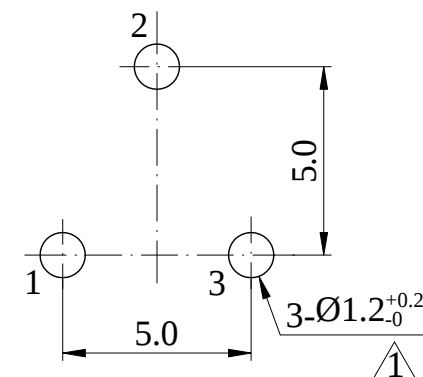
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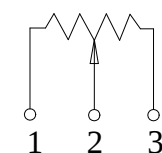
|                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                 |
|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| 耐濕特性<br>Humidity characteristics | 以無負荷在 $40^{\circ}\text{C} \pm 2^{\circ}\text{C}$ ，濕度 $90 \sim 95\%$ 之槽內，放置 $500 \pm 10$ 小時後，以無負荷放置在常溫常濕之室內 5 小時以上。<br>Without load, place under temperature $40^{\circ}\text{C} \pm 2^{\circ}\text{C}$ and humidity $90 \sim 95\%$ for $500 \pm 10$ hours, then further without load place under room temperature / humidity for 5 hours.                                                                                                                                                              | 抵抗值的變化為 $\pm 5\%$ 以內。<br>The change of resistance value is within $\pm 5\%$ 。   |
| 焊錫耐熱性<br>Soldering head test     | 在 $260^{\circ}\text{C} \pm 10^{\circ}\text{C}$ 之焊錫槽，將端子之前端（由端子 $1.5 \sim 2.0\text{mm}$ ）浸漬 $3 \pm 0.5$ 秒後在常溫常濕之室內，以無負荷放置 1 小時以上。<br>The top of the terminal shall be dipped $1.5 \sim 2.0\text{mm}$ in the solder bath of $260^{\circ}\text{C} \pm 10^{\circ}\text{C}$ for $3 \pm 0.5$ seconds, then place under room temperature / humidity without load for 1 hours.                                                                                                                                 | 抵抗值的變化為 $\pm 2\%$ 以內。<br>The change of resistance value is within $\pm 2\%$ 。   |
| 耐久特性 Durability                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                 |
| 項目 Item                          | 測試條件 Test Conditions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 規格 Performance                                                                  |
| 回轉壽命特性<br>Life test              | 無負荷時，將摺動片以 6 秒一次來回之速度，有效回轉角度在 $90\%$ 以上回轉 $50 \pm 2$ 次。<br>$50 \pm 2$ cycles of more than $90\%$ total rotation angle operation shall be performed continuously at the rate of 6 cycles/minute without load.                                                                                                                                                                                                                                                                                           | 抵抗值的變化為 $\pm 10\%$ 以內。<br>The change of resistance value is within $\pm 10\%$ 。 |
| 負荷壽命特性<br>Life load              | 在 $70^{\circ}\text{C} \pm 3^{\circ}\text{C}$ 之溫度槽內，加上 1.5 小時工作電壓後，再關閉 0.5 小時，如此迴圈連續重複做 $500 \pm 10$ 小時，在常溫常濕之室內，以無負荷放置在常溫常濕之室內 5 小時以上。<br>Place under temperature $70^{\circ}\text{C} \pm 3^{\circ}\text{C}$ , and apply working voltage for 1.5 hours, then stop for 0.5 hours, repeating above for $500 \pm 10$ hours. After it, place under room temperature / humidity without load for 5 hours.                                                                                                   | 抵抗值的變化為 $\pm 5\%$ 以內。<br>The change of resistance value is within $\pm 5\%$ 。   |
| 耐濕負荷壽命<br>Humidity load life     | 在 $40^{\circ}\text{C} \pm 2^{\circ}\text{C}$ ，濕度 $90 \sim 95\%$ 之槽內，加上 1.5 小時工作電壓後，再關閉 0.5 小時，如此迴圈連續重複做 $500 \pm 10$ 小時，在常溫常濕之室內，以無負荷放置在常溫常濕之室內 5 小時以上後。<br>Place under temperature $40^{\circ}\text{C} \pm 2^{\circ}\text{C}$ & humidity $90 \sim 95\%$ , and apply working voltage for 1.5 hours, then stop for 0.5 hours, repeating above for $500 \pm 10$ hours. After it, place under room temperature / humidity without load for 5 hours.                                                       | 抵抗值的變化為 $\pm 5\%$ 以內。<br>The change of resistance value is within $\pm 5\%$ 。   |
| 溫度係數<br>Temperature coefficient  | 以無載荷 $25^{\circ}\text{C}$ (30 分) $\rightarrow -30^{\circ}\text{C}$ (30 分) $\rightarrow 25^{\circ}\text{C}$ (30 分) $\rightarrow 85^{\circ}\text{C}$ (30 分) 放置時之溫度係數是 $\pm 250\text{ppm}/^{\circ}\text{C}$ 以內。<br>Without load, putting under temperature $25^{\circ}\text{C}$ (30 mins) $\rightarrow -30^{\circ}\text{C}$ (30 mins) $\rightarrow 25^{\circ}\text{C}$ (30 mins) $\rightarrow 85^{\circ}\text{C}$ (30 mins), the temperature coefficient is within $\pm 250\text{ppm}/^{\circ}\text{C}$ . |                                                                                 |



### Mounting Hole



### CIRCUIT



| Non notation tolerance |      |
|------------------------|------|
| < 10                   | ±0.3 |
| 10 ~ 100               | ±0.5 |
| > 100                  | ±0.8 |



SONG HUEI ELECTRIC CO., LTD.  
FOSHAN SONG HUEI ELECTRIC CO., LTD.

MODEL: TK655MCL/0049

Approval



Checked



Projected



UNIT

mm

SCALE

5:1

VERSION

1.2

DATE

2013.04.26

DRAWING NO.

SH-6Ø-005



4

3

2

1

整理图元

增加公差<sup>+0.2</sup><sub>-0</sub>

ISSUE

SUBJECT

NAME

DATE

RECORD

何鴻根

2018. 12. 18

邝俊华

2015. 12. 25