

# PRODUCT SPECIFICATION

Customer: \_\_\_\_\_

Product: Metallized Polypropylene Film Capacitor. Class X1 \_\_\_\_\_

P/N : \_\_\_\_\_

DOC.NO. : CC81823091815/CC81823090801/CC81823090802 \_\_\_\_\_

Edition: Ver. 5 \_\_\_\_\_

## Record of change

| Date         | Ver. | Description                   | Page |
|--------------|------|-------------------------------|------|
| 18-Mar-2016  | 1    |                               |      |
| 05-Jan.-2017 | 2    | Change part no. designation   | 3    |
| 11-Dec-2017  | 3    | Add safety approval CB report | 8    |
| 11-Jun-2020  | 4    | Revise sizes                  | 9~12 |
| 22-Nov-2023  | 5    |                               | All  |

### VENDOR:

#### **HITANO ENTERPRISE CORP.**

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### FACTORY:

#### **CHIEFCON ELECTRONICS CO. LTD.**

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TAOYUAN HSIEN, TAIWAN

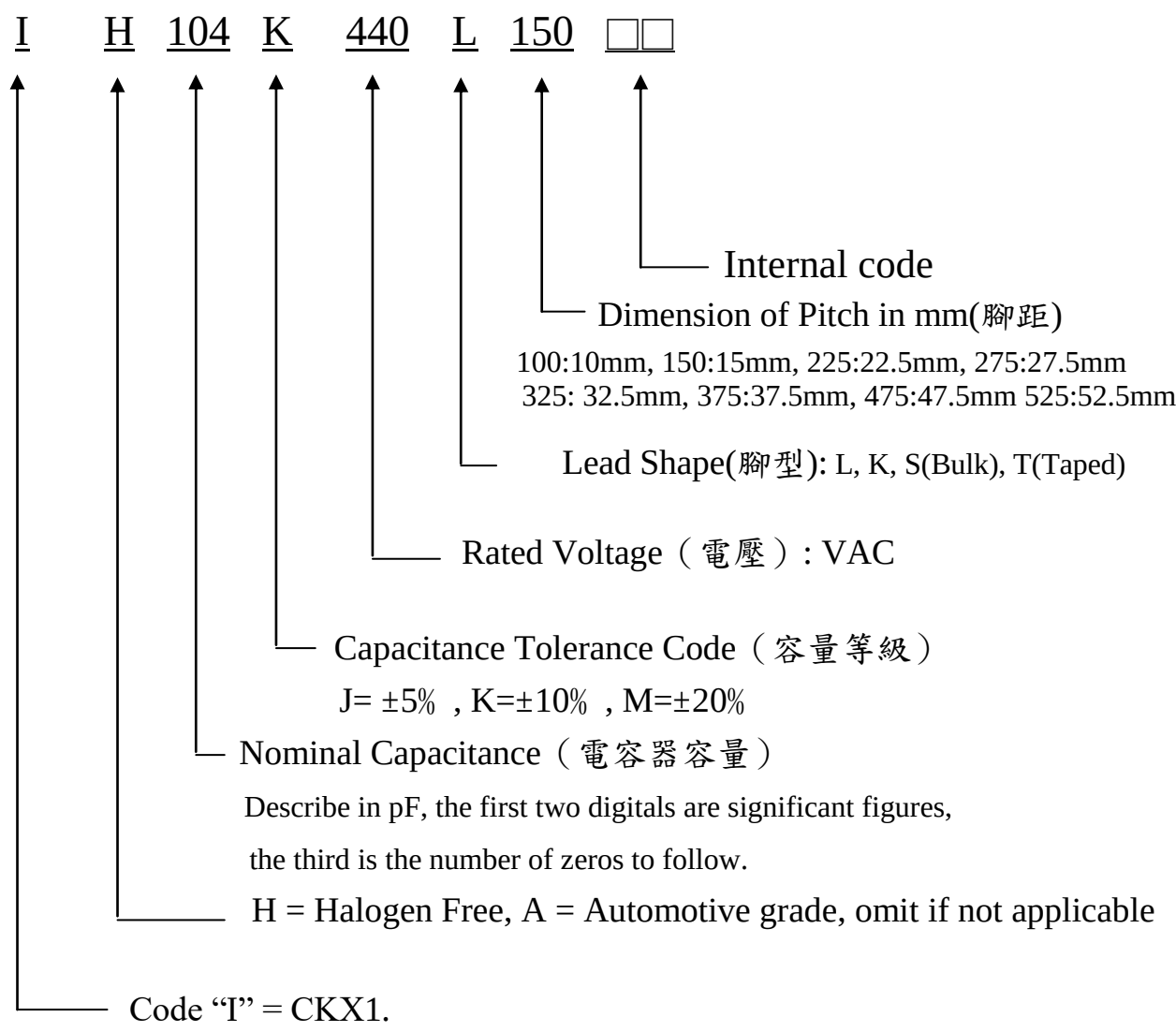
| Prepared by   | Checked by      | Approved by      | Accepted by (customer) |
|---------------|-----------------|------------------|------------------------|
| 22-Nov-2023   | 22-Nov-2023     | 22-Nov-2023      |                        |
| <i>Hwa Wu</i> | <i>Andy Hsu</i> | <i>Arthur Su</i> |                        |



產品編碼對照表    **PRODUCT CODE COMPARATIVE TABLE**

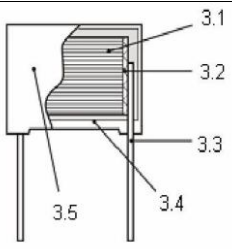
產品編碼    Product coding

型號:    **CKX1**  
TYPE:

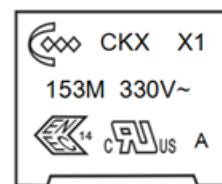


產品規格說明  
PRODUCT SPECIFICATIONS

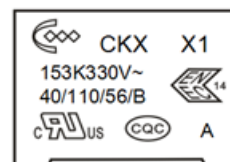
型號: CKX1  
TYPE:

| NO.                                                                                  | 項目 ITEM                                                              | 說明 DESCRIPTIONS                                                                                                                                                                                |
|--------------------------------------------------------------------------------------|----------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1                                                                                    | 承認範圍<br>SCOPE                                                        | 本規格適用於以下之要求<br>This specifications cover the requirements of<br>金屬化聚丙烯薄膜<br>Metallized Polypropylene Film<br>交流電容器 (抑制電源電磁干擾用固定電容器/等級 X1)<br>AC Capacitor (Interference Suppressors Class-X1). |
| 2                                                                                    | 各測量皆於標準大氣下進行 STANDARD ATMOSPHERIC CONDITIONS FOR MAKING MEASUREMENTS |                                                                                                                                                                                                |
| 2.1                                                                                  | 環境溫度 AMBIENT TEMPERATURE                                             | 15°C 至 35°C (如對結果有任何疑問, 該測量環境溫度應為+20 ± 5°C之間) 15°C to 35°C (If there is any doubt on the results, the measurements shall be made at +20 ± 5°C)                                                 |
| 2.2                                                                                  | 相對溼度 RELATIVE HUMIDITY(R.H.)                                         | 45%至 75% (如對結果有任何疑問, 該測量相對溼度應為 60% to 70%之間)<br>45%to 75% (If there is any doubt on the results, the measurements shall be made at 60% to 70%)                                                 |
| 2.3                                                                                  | 大氣壓力 AIR PRESSURE                                                    | 86 千帕至 106 千帕之<br>86 kpa to 106 kpa                                                                                                                                                            |
| 2.4                                                                                  | 工作溫度範圍<br>OPERATING TEMPERATURE RANGE                                | 於-40°C至+110°C間, 電容可在額定電壓下持續運作<br>-40°C to +110°C for which the capacitor can be operated continuously at rated voltage.                                                                        |
| 3                                                                                    | 結構 CONSTRUCTION                                                      |                                                                                                                                                                                                |
| 3.1                                                                                  | 電介質 DIELECTRIC                                                       | 金屬化聚丙烯薄膜 Metallized Polypropylene Film                                                                                                                                                         |
| 3.2                                                                                  | 噴金層 METAL SPRAY                                                      | 特殊焊料 Special Solder                                                                                                                                                                            |
| 3.3                                                                                  | 導線 LEAD WIRE                                                         | 鍍錫銅包鋼線 Copper-clad Steel Wire                                                                                                                                                                  |
| 3.4                                                                                  | 環氧樹脂 EPOXY RESIN                                                     | UL 94V-0 耐燃等級                                                                                                                                                                                  |
| 3.5                                                                                  | 塑料外殼 PLASTIC CASE                                                    | UL 94V-0 耐燃等級                                                                                                                                                                                  |
|  |                                                                      |                                                                                                                                                                                                |
| 4                                                                                    | 打印 MARKING                                                           |                                                                                                                                                                                                |
| 4.1                                                                                  | 製造商標誌 MANUFACTURER'S SYMBOL                                          |                                                                                                             |
| 4.2                                                                                  | 型號或材質 TYPE OR MATERIAL                                               | “CKX”代表“CKX”類型<br>“CKX” stands for “CKX” type                                                                                                                                                  |
| 4.3                                                                                  | 電容類別 CAPACITOR CLASS                                                 | “X1” 代表“X1”等級<br>“X1” stands for “X1” class                                                                                                                                                    |
| 4.4                                                                                  | 靜電容量 NOMINAL CAPACITANCE                                             | 容量用 EIA 三碼表示<br>Capacitance Expressed in 3-digit (EIA) code.                                                                                                                                   |
| 4.5                                                                                  | 容量容許差值 TOLERANCE                                                     | J (±5%) , K(±10%) , M(±20%)                                                                                                                                                                    |
| 4.6                                                                                  | 額定電壓 RATED VOLTAGE                                                   | 330/440/480VAC rating.<br>(50/60Hz)                                                                                                                                                            |
| 4.7                                                                                  | 電容氣候類別 / 阻燃等級<br>CLIMATIC CATEGORY                                   | 40/110/56/B or GLFB                                                                                                                                                                            |
| 4.8                                                                                  | 國際認證 APPROVAL MARKS                                                  | cULus / ENEC / CQC                                                                                                                                                                             |
| 4.9                                                                                  | 製造番號 MANUFACTURE CODE                                                |                                                                                                                                                                                                |

範例 example



P=7.5 時



P≥10 時

產品規格說明  
PRODUCT SPECIFICATIONS

型號: CKX1  
TYPE:

| 5   | 電氣特性 ELECTRICAL CHARACTERISTICS      |                                            |                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----|--------------------------------------|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| NO. | 項目 ITEM                              |                                            | 說明 DESCRIPTIONS                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                      |
| 5.1 | 耐 壓<br>(TV)<br>Withstand<br>Voltage  | 端子之間<br>Between Terminals                  | 應無異常<br>Shall be no abnormality                                                                                                                                                                                                                                                   | 施加 4.3 倍額定直流電壓測試 60 秒(電壓應以不超過 150V/s 的速率從零升高到試驗電壓，時間應從達到電壓時計算，在結束時，電壓應減少到接近零，並且電容器應通過一個適當的電阻放電)<br>Apply 4.3*Ur (DC) for 60 sec (Should be no more than 150V/s rate increased from zero to the test voltage, testing time, meets the test voltage should be calculated at the end of the trial, the voltage should be reduced to zero and the capacitor through a resistor of appropriate discharge. |
|     |                                      | 端子與外殼之間<br>Between Terminals<br>&Enclosure | 應無異常<br>Shall be no abnormality                                                                                                                                                                                                                                                   | 2 倍額定電壓+1,500VAC，測試 2 到 5 秒<br>最小值 2,000VAC<br>Apply 2*Ur+1,500VAC for 2 to 5 sec. Min. 2,000VAC                                                                                                                                                                                                                                                                                                     |
| 5.2 | 介質損耗 (DF)<br>Dissipation             |                                            | 於 1KHz 時 $\leq 0.001(0.1\%)$<br>$\leq 0.001(0.1\%)$ at 1 KHz                                                                                                                                                                                                                      | 測量頻率: $\pm 2\%$ ; 測量電壓: $\leq 1$ rms<br>Measuring Frequency: $\pm 2\%$<br>Measuring Voltage: $\leq 1$ Vrms..                                                                                                                                                                                                                                                                                         |
| 5.3 | 容量 (CAP)<br>Capacitance              |                                            | 偏差值如標示(於 $+20 \pm 5^\circ\text{C}$ )。<br>Within the tolerance specified (at $+20 \pm 5^\circ\text{C}$ ).                                                                                                                                                                          | 測量頻率: $\pm 2\%$ ; 測量電壓: $\leq 1$ rms<br>Measuring Frequency: $\pm 2\%$<br>Measuring Voltage: $\leq 1$ Vrms..                                                                                                                                                                                                                                                                                         |
| 5.4 | 絕緣電阻 (I.R.)<br>Insulation Resistance |                                            | $\geq 15,000$ Mohm ( $C \leq 0.33\mu\text{f}$ )<br>容值 $\leq 0.33\mu\text{f}$ 時，絕緣電阻<br>$\geq 15,000\text{M}\Omega$<br>$\geq 5,000$ Mohm* $\mu\text{F}/\text{C}$ ( $C > 0.33\mu\text{f}$ )<br>容值 $> 0.33\mu\text{f}$ 時，絕緣電阻<br>$\geq 5,000\text{M}\Omega * \mu\text{F} / \text{C}$ | 印加電壓 100 伏 充<br>電時間 $60 \pm 5$ 秒。<br>$V_t = 100$ VDC<br>Charge Time : $60 \pm 5$ sec.                                                                                                                                                                                                                                                                                                                |
| 5.5 | 焊料附著性<br>Soldering Property          |                                            | 焊料覆蓋面積應超過導線表面<br>圓周 90%。<br>More than 90% of circumferential surface of lead wire shall be covered with new solder.                                                                                                                                                               | 焊接溫度為: $+235 \pm 5^\circ\text{C}$<br>浸焊時間為: $2 \pm 0.5$ 秒<br>Soldering temperature: $+235 \pm 5^\circ\text{C}$<br>Immersion duration: $2 \pm 0.5$ sec.                                                                                                                                                                                                                                               |
| 6   | 機械特性 MECHANICAL CHARACTERISTICS      |                                            |                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                      |
| 6.1 | 端子強度<br>Terminal<br>Strength         | 引張強度<br>Tensile Strength                   | 應無異常。<br>Shall be no abnormality                                                                                                                                                                                                                                                  | 沿著軸向和引出方向，施加 1 公斤力量，保持 $10 \pm 1$ 秒。<br>Apply 1.0Kg for $10 \pm 1$ sec. to the terminal in the axial direction and acting in a direction away from the body.                                                                                                                                                                                                                                         |

產品規格說明  
PRODUCT SPECIFICATIONS

型號: CKX1  
TYPE:

| 7   | 耐久特性 ENDURANCE CHARACTERISTICS  |                                                   |                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----|---------------------------------|---------------------------------------------------|----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| NO. | 項目 ITEM                         |                                                   | 說明 DESCRIPTIONS                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 7.1 | 溫度變化循環<br><br>Temperature Cycle | 外觀<br>Appearance                                  | 應當無顯著變化<br>Shall be no remarkable change                             | 共 5 次溫度循環測試，循環條件:<br>1. $+20 \pm 2^{\circ}\text{C}$ 持續 3 分鐘<br>2. $-40 \pm 3^{\circ}\text{C}$ 持續 30 分鐘<br>3. $+20 \pm 2^{\circ}\text{C}$ 持續 3 分鐘<br>4. $+110 \pm 2^{\circ}\text{C}$ 持續 30 分鐘<br>5. $+20 \pm 2^{\circ}\text{C}$ 持續 3 分鐘<br>試驗後放置於室內 $1.5 \pm 0.5$ 小時後再進行量測。<br>Test Temperature Cycle: Total 5 cycles.<br>Each cycle includes<br>1. $20 \pm 2^{\circ}\text{C}$ for 3 min.<br>2. $-40 \pm 3^{\circ}\text{C}$ for 30 min.<br>3. $+20 \pm 2^{\circ}\text{C}$ for 3 min.<br>4. $+110 \pm 2^{\circ}\text{C}$ for 30min.<br>5. $+20 \pm 2^{\circ}\text{C}$ for 3 min.<br>After test, allow it stay alone for $1.5 \pm 0.5$ Hrs. at ordinary condition before making measurements. |
|     |                                 | 耐壓<br>Withstand Voltage                           | 應滿足 NO.5.1 shall satisfy NO.5.1                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|     |                                 | 容值變化率 ( $\Delta C/C$ )<br>Capacitance Change Rate | 變化率小於 $\pm 5\%$<br>Within $\pm 5\%$ of the value before test         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|     |                                 | 介質損耗<br>Dissipation Factor                        | 於 1KHz 時: 最大值為 0.002 (0.2%)<br>@ 1KHz: 0.002 (0.2%) max.             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|     |                                 | 絕緣電阻 (I.R.)<br>Insulation Resistance              | $\geq 50\%$ 的限制值在 NO.5.4<br>$\geq 50\%$ of the limit value of NO.5.4 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 7.2 | 耐乾熱試驗<br>Dry Heat Resistance    | 外觀<br>Appearance                                  | 應當無顯著變化<br>Shall be no remarkable change                             | 試驗溫度: $+110 \pm 2^{\circ}\text{C}$<br>測試時間: $16 + 1/-0$ 小時<br>Test Temperature: $+110 \pm 2^{\circ}\text{C}$<br>Test Duration: $16 + 1/-0$ hrs.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|     |                                 | 耐壓<br>Withstand Voltage                           | 應滿足 NO.5.1 Shall satisfy NO.5.1                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|     |                                 | 容值變化率 ( $\Delta C/C$ )<br>Capacitance Change Rate | 變化率小於 $\pm 5\%$<br>Within $\pm 5\%$ of the value before test         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|     |                                 | 介質損耗<br>Dissipation Factor                        | 於 1KHz 時: 最大值為 0.002 (0.2%)<br>@ 1KHz: 0.002 (0.2%) max.             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|     |                                 | 絕緣電阻 (I.R.)<br>Insulation Resistance              | $\geq 50\%$ 的限制值在 NO.5.4<br>$\geq 50\%$ of the limit value of NO.5.4 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 7.3 | 耐乾寒試驗<br>Cold Resistance        | 外觀<br>Appearance                                  | 應當無顯著變化<br>Shall be no remarkable change                             | 試驗溫度: $-40 \pm 3^{\circ}\text{C}$<br>測試時間: $2 \pm 1$ 小時<br>Test Temperature: $-40 \pm 3^{\circ}\text{C}$<br>Test Duration: $2 \pm 1$ hrs.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|     |                                 | 耐壓<br>Withstand Voltage                           | 應滿足 NO.5.1 Shall satisfy NO.5.1                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|     |                                 | 容值變化率 ( $\Delta C/C$ )<br>Capacitance Change Rate | 變化率小於 $\pm 5\%$<br>Within $\pm 5\%$ of the value before test         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|     |                                 | 介質損耗<br>Dissipation Factor                        | 於 1KHz 時: 最大值為 0.002 (0.2%)<br>@ 1KHz: 0.002 (0.2%) max.             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|     |                                 | 絕緣電阻 (I.R.)<br>Insulation Resistance              | $\geq 50\%$ 的限制值在 NO.5.4<br>$\geq 50\%$ of the limit value of NO.5.4 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

產品規格說明

PRODUCT SPECIFICATIONS

型號: CKX1  
TYPE:

| NO. | 項目 ITEM                           |                                                                | 說明 DESCRIPTIONS                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----|-----------------------------------|----------------------------------------------------------------|----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7.4 | 耐濕絕緣<br>Damp Heat                 | 外觀<br>Appearance                                               | 應當無顯著變化<br>Shall be no remarkable change                                                           | 試驗溫度: $+40 \pm 2^{\circ}\text{C}$<br>試驗濕度: 90%至 95%相對濕度<br>試驗時間: 56 天<br>試驗後放置於室內 $1.5 \pm 0.5$ 小時後再進行量測。<br>Test Temperature: $+40 \pm 2^{\circ}\text{C}$ .<br>Test Humidity: 90% to 95% R.H.<br>Test Duration: 56 days.<br>After test, allow it stay alone for $1.5 \pm 0.5$ Hrs. at ordinary condition before making measurements.                                                                                                                                                                                                                                                                                                            |
|     |                                   | 耐壓<br>Withstand Voltage                                        | 應滿足 NO.5.1 Shall satisfy NO.5.1                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|     |                                   | 容值變化率 ( $\Delta\text{C}/\text{C}$ )<br>Capacitance Change Rate | 變化率小於 $\pm 5\%$<br>Within $\pm 5\%$ of the value before test                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|     |                                   | 介質損耗<br>Dissipation Factor                                     | 於 1KHz 時: 最大值為 0.002 (0.2%)<br>@ 1KHz: 0.002 (0.2%) max.                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|     |                                   | 絕緣電阻 (I.R.)<br>Insulation Resistance                           | $\geq 50\%$ 的限制值在 NO.5.4<br>$\geq 50\%$ of the limit value of NO.5.4                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 7.5 | 振動試驗<br>Vibration Resistance      | 外觀<br>Appearance                                               | 應無機械性損傷<br>Shall be no mechanical damage.                                                          | 頻率變化: 10-55-10Hz<br>振動距離: 1.5 毫米.<br>試驗方向: X,Y,Z<br>試驗時間:每個方向 $2+1/-0$ 小時<br>Frequency Change : 10-55-10 Hz<br>Vibration Distance:1.5 mm.<br>Test Direction : X,Y,Z<br>Test Duration : $2+1/-0$ hrs each direction                                                                                                                                                                                                                                                                                                                                                                                                                               |
|     |                                   | 連接強度<br>Connection strength                                    | 不得為短路或開路連接。<br>連接點應穩定。<br>Shall be no short-circuiting or open.<br>The connection shall be stable. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 7.6 | 焊接耐熱<br>Soldering Heat Resistance | 外觀<br>Appearance                                               | 應當無顯著變化<br>印字標誌應清晰<br>Shall be no remarkable change.<br>The marking shall be legible.              | 預熱溫度: $100 \sim 120^{\circ}\text{C}$<br>預熱時間:最大為 60 秒<br>溫度升高:最大為 $3^{\circ}\text{C}/\text{秒}$<br>錫爐溫度: $+260 \pm 5^{\circ}\text{C}$<br>浸焊時間: $5 \pm 1$ 秒<br>浸焊深度:導線根部 $4 \pm 0.8$ 毫米<br>試驗後放置於室內 $1.5 \pm 0.5$ 小時後再進行量測。<br>Preheat Temp. : $100 \sim 120^{\circ}\text{C}$<br>Preheat Duration : 60 sec. max.<br>Temperature Increase by $3^{\circ}\text{C}/\text{sec}$ . max.<br>Soldering Temperature : $+260 \pm 5^{\circ}\text{C}$<br>Immersion Duration : $5 \pm 1$ sec.<br>Immersion Depth : $4 \pm 0.8\text{mm}$ from roots.<br>After test, allow it stay alone for $1.5 \pm 0.5$ Hrs. at ordinary condition before making measurements. |
|     |                                   | 端子間的耐電壓值<br>Withstand Voltage Between Terminals                | 應滿足 NO.5.1 Shall satisfy NO.5.1                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|     |                                   | 容值變化率 ( $\Delta\text{C}/\text{C}$ )<br>Capacitance Change Rate | 變化率小於 $\pm 3\%$<br>Within $\pm 3\%$ of the value before test                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|     |                                   | 介質損耗<br>Dissipation Factor                                     | 於 1KHz 時: 最大值為 0.002 (0.2%)<br>@ 1KHz: 0.002 (0.2%) max.                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|     |                                   | 絕緣電阻 (I.R.)<br>Insulation Resistance                           | $\geq 50\%$ 的限制值在 NO.5.4<br>$\geq 50\%$ of the limit value of NO.5.4                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|     |                                   | 連接元件<br>Connection of Element                                  | 應穩定<br>Shall be stable                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

產品規格說明  
PRODUCT SPECIFICATIONS

型號: CKX1  
TYPE:

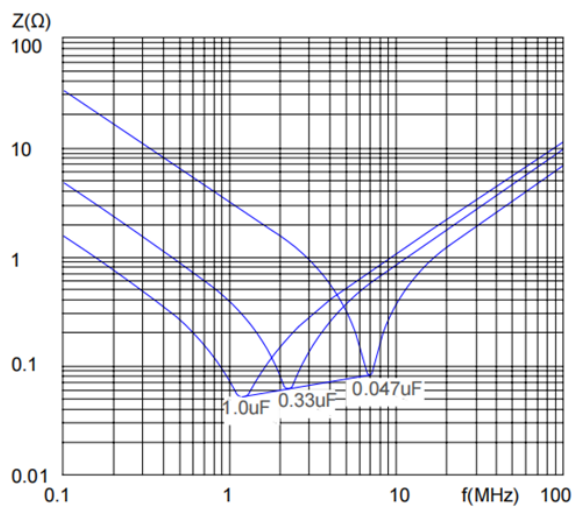
| NO. | 項目 ITEM                            |                                                   | 性能 PERFORMANCE                                                                                                                  | 測試條件 TEST CONDITIONS                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----|------------------------------------|---------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7.7 | 耐久壽命<br>Endurance                  | 外觀<br>Appearance                                  | 應當無顯著變化<br>Shall be no remarkable change                                                                                        | 試驗溫度: $+110 \pm 2^{\circ}\text{C}$ 測試電壓: 1.25 倍的額定電壓 試驗時間: 1,000 小時<br>每小時將電壓升至 1,000VAC, 持續 0.1 秒 每個電容分別通過一個 $47\Omega \pm 5\%$ 電阻。 Test Temperature: $+110 \pm 2^{\circ}\text{C}$<br>Test Voltage: 125% * rated voltage. Test Duration: 1,000 Hrs.<br>Once every hour the voltage is increased to 1000 V rms. For 0.1 sec. The test voltage is applied to each capacitor individually through a resistor of $47\Omega \pm 5\%$ . |
|     |                                    | 耐壓<br>Withstand Voltage                           | 應滿足 NO.5.1 Shall satisfy NO.5.1                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|     |                                    | 容值變化率 ( $\Delta C/C$ )<br>Capacitance Change Rate | 變化率小於 $\pm 10\%$<br>Within $\pm 10\%$ of the value before test                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|     |                                    | 介質損耗<br>Dissipation Factor                        | 於 1KHz 時: 最大值為 @ 1KHz $C_r \leq 1\mu\text{F} : 0.008 (0.8\%) \text{ max.}$<br>$C_r > 1\mu\text{F} : 0.005 (0.5\%) \text{ max.}$ |                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|     |                                    | 絕緣電阻 (I.R.)<br>Insulation Resistance              | $\geq 50\%$ 的限制值在 NO.5.4<br>$\geq 50\%$ of the limit value of NO.5.4                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 7.8 | 耐濕負荷<br>Moisture Resistant Loading | 外觀<br>Appearance                                  | 應當無顯著變化<br>Shall be no remarkable change                                                                                        | 試驗溫度: $+40 \pm 2^{\circ}\text{C}$ .<br>試驗濕度: 87%至 93%相對濕度 測試電壓: 額定電壓<br>試驗時間: 500 小時<br>試驗後放置於室內 $1.5 \pm 0.5$ 小時後再進行量測。<br>Test Temperature: $+40 \pm 2^{\circ}\text{C}$ .<br>Test Humidity: 87% to 93% R.H. Test Voltage: rated voltage.<br>Test Duration: 500 Hrs.<br>After test, allow it stay alone for $1.5 \pm 0.5$ Hrs. at ordinary condition before making measurements.                                                  |
|     |                                    | 耐壓<br>Withstand Voltage                           | 應滿足 NO.5.1 Shall satisfy NO.5.1                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|     |                                    | 容值變化率 ( $\Delta C/C$ )<br>Capacitance Change Rate | 變化率小於 $\pm 5\%$<br>Within $\pm 5\%$ of the value before test                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|     |                                    | 介質損耗<br>Dissipation Factor                        | 於 1KHz 時: 最大值為 0.002 (0.2%)<br>@ 1KHz: 0.002 (0.2%) max.                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|     |                                    | 絕緣電阻 (I.R.)<br>Insulation Resistance              | $\geq 50\%$ 的限制值在 NO.5.4<br>$\geq 50\%$ of the limit value of NO.5.4                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                    |

產品安規認證

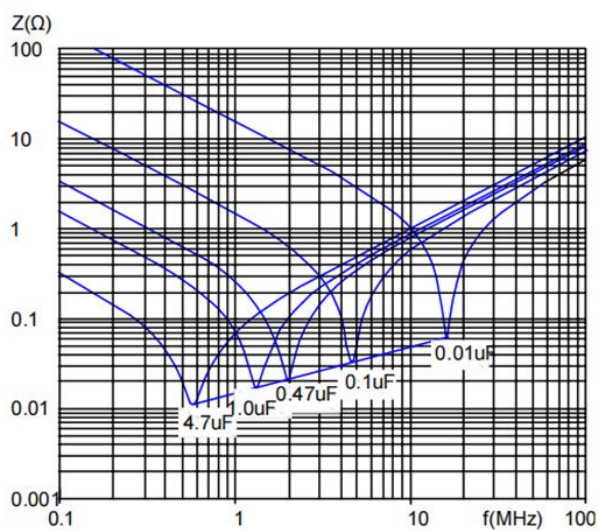
PRODUCT SAFETY APPROVAL

| 標誌 Mark                                                                             | 認證單位 Agent           | 應用標準 Standard                | 規格範圍 Specification                                                                                            | 證書號碼 Certificate No.                                     |
|-------------------------------------------------------------------------------------|----------------------|------------------------------|---------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|
|  | 美國 / 加拿大<br>UL / CUL | UL 60384-14<br>CSA E60384-14 | X1/ X2, 275/ 300/310/<br>330/440/480 VAC/1500VDC<br>0.001uF to 10.0uF<br>X2/<br>275/300/310/330VAC/1500VDC    | E209251                                                  |
|  | 歐盟<br>ENEC-SEMKO     | EN 60384-14:2013 (ed.4)      | X1/ X2, 275/ 300/310/<br>330/440/480 VAC/1500VDC<br>0.001uF to 10.0uF<br>X1/<br>X2,275/300/310/330VAC/1500VDC | SE/12059-1B                                              |
|  | 中國<br>CQC            | IEC 60384-14: 2005           | X1/ X2, 275/ 300/310/<br>330/440/480 VAC<br>0.001uF to 10.0uF<br>X2/<br>275/300/310/330VAC                    | CQC13001099627                                           |
| CB report                                                                           | 美國<br>UL             | IEC 60384-14: (ed.3)         | X1/ X2, 275/300/310/330/440<br>480 VAC<br>0.001uF to 10.0uF<br>X2, 275/300/310/330VAC<br>0.001uF to 55.0uF    | US-20087-UL<br>US-20088-UL<br>US-20089-UL<br>US-20090-UL |

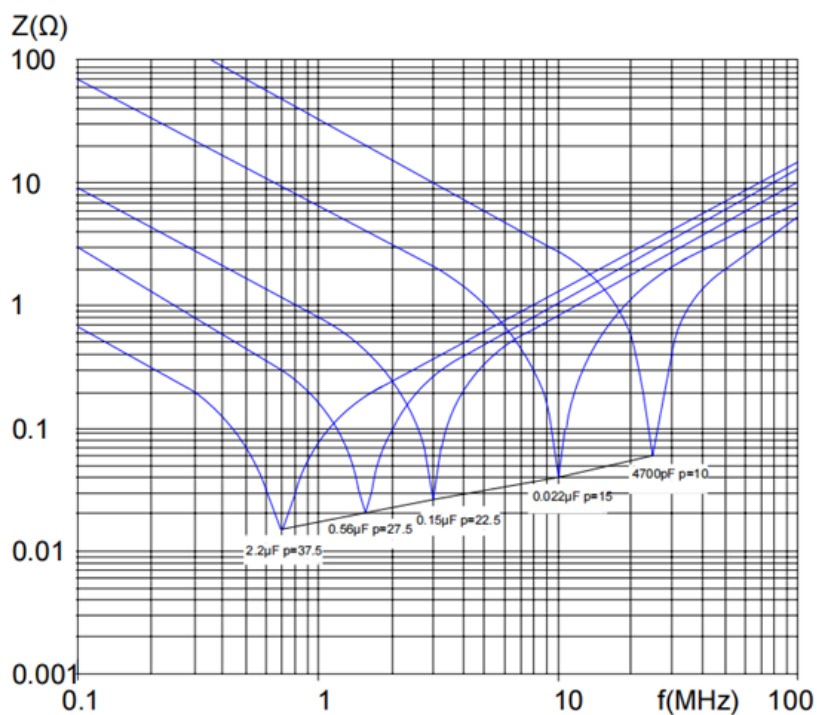




330V



440V



480V

產品尺寸表  
PRODUCT SIZE TABLE

型號: CKX1  
TYPE:

| 容量<br>Capacitance | 電壓<br>Voltage  | 尺寸以毫米為單位<br>Dimensions in mm |        |             | 腳距 Pitch | 線徑 d |
|-------------------|----------------|------------------------------|--------|-------------|----------|------|
|                   |                | 寬 Width                      | 高 High | 厚 Thickness |          |      |
| 0.015             | 330V/440V/480V | 10.5                         | 12.0   | 6.0         | 7.5      | 0.6  |
| 0.015             | 330V/440V/480V | 13.0                         | 11.0   | 5.0         | 10.0     | 0.6  |
| 0.015             | 330V/440V/480V | 18.0                         | 11.0   | 5.0         | 15.0     | 0.6  |
| 0.018             | 330V/440V/480V | 13.0                         | 11.0   | 5.0         | 10.0     | 0.6  |
| 0.018             | 330V/440V/480V | 18.0                         | 11.0   | 5.0         | 15.0     | 0.6  |
| 0.022             | 330V/440V/480V | 13.0                         | 11.0   | 5.0         | 10.0     | 0.6  |
| 0.022             | 330V/440V/480V | 18.0                         | 11.0   | 5.0         | 15.0     | 0.6  |
| 0.027             | 330V/440V/480V | 13.0                         | 12.0   | 6.0         | 10.0     | 0.6  |
| 0.027             | 330V/440V/480V | 18.0                         | 11.0   | 5.0         | 15.0     | 0.6  |
| 0.033             | 330V/440V/480V | 13.0                         | 12.0   | 6.0         | 10.0     | 0.6  |
| 0.033             | 330V/440V/480V | 18.0                         | 11.0   | 5.0         | 15.0     | 0.6  |
| 0.047             | 330V/440V/480V | 13.0                         | 14.0   | 8.0         | 10.0     | 0.6  |
| 0.047             | 330V/440V/480V | 18.0                         | 12.0   | 6.0         | 15.0     | 0.8  |
| 0.056             | 330V/440V/480V | 13.0                         | 14.0   | 8.0         | 10.0     | 0.6  |
| 0.056             | 330V/440V/480V | 18.0                         | 13.5   | 6.0         | 15.0     | 0.8  |
| 0.068             | 330V/440V/480V | 17.0                         | 15.5   | 7.5         | 15.0     | 0.8  |
| 0.082             | 330V/440V/480V | 17.0                         | 15.5   | 7.5         | 15.0     | 0.8  |
| 0.1               | 330V           | 13.0                         | 14.0   | 8.0         | 10.0     | 0.6  |
| 0.1               | 330V/440V/480V | 17.0                         | 15.5   | 7.5         | 15.0     | 0.8  |
| 0.1               | 330V/440V/480V | 25.0                         | 14.5   | 6.0         | 22.5     | 0.8  |
| 0.15              | 330V/440V/480V | 18.0                         | 15.0   | 9.0         | 15.0     | 0.6  |
| 0.15              | 330V/440V/480V | 26.5                         | 16.5   | 7.0         | 22.5     | 0.8  |
| 0.22              | 330V/440V/480V | 26.0                         | 17.0   | 8.5         | 22.5     | 0.8  |
| 0.22              | 330V/440V/480V | 32.0                         | 18.0   | 9.0         | 27.5     | 0.8  |
| 0.27              | 330V/440V/480V | 26.5                         | 19.0   | 10.0        | 22.5     | 0.8  |
| 0.27              | 330V/440V/480V | 32.0                         | 18.0   | 9.0         | 27.5     | 0.8  |
| 0.33              | 330V/440V/480V | 26.0                         | 20.0   | 11.0        | 22.5     | 0.8  |
| 0.39              | 330V/440V/480V | 26.0                         | 21.5   | 12.0        | 22.5     | 0.8  |
| 0.47              | 330V/440V/480V | 26.0                         | 21.5   | 12.0        | 22.5     | 0.8  |
| 0.47              | 330V/440V/480V | 32.0                         | 20.0   | 11.0        | 27.5     | 0.8  |
| 0.56              | 330V/440V/480V | 26.0                         | 21.5   | 12.0        | 22.5     | 0.8  |
| 0.56              | 330V/440V/480V | 26.5                         | 23.0   | 13.0        | 22.5     | 0.8  |
| 0.56              | 330V/440V/480V | 30.0                         | 21.0   | 11.8        | 27.5     | 0.8  |
| 0.68              | 330V/440V/480V | 26.0                         | 25.0   | 15.0        | 22.5     | 0.8  |
| 0.68              | 330V/440V/480V | 31.5                         | 25.0   | 14.0        | 27.5     | 0.8  |

產品尺寸表  
PRODUCT SIZE TABLE

型號: CKX1  
TYPE:

| 容量<br>Capacitance | 電壓<br>Voltage  | 尺寸以毫米為單位<br>Dimensions in mm |        |             | 腳距 Pitch | 線徑 d |
|-------------------|----------------|------------------------------|--------|-------------|----------|------|
|                   |                | 寬 Width                      | 高 High | 厚 Thickness |          |      |
| 0.82              | 330V/440V/480V | 31.0                         | 25.0   | 14.0        | 27.5     | 0.8  |
| 1.0               | 330V/440V/480V | 32.0                         | 25.5   | 16.0        | 27.5     | 0.8  |
| 1.0               | 330V/440V/480V | 41.0                         | 24.0   | 13.0        | 37.5     | 1.0  |
| 1.2               | 330V/440V/480V | 32.0                         | 28.0   | 18.0        | 27.5     | 0.8  |
| 1.5               | 330V/440V/480V | 32.0                         | 28.0   | 18.0        | 27.5     | 0.8  |
| 1.5               | 330V/440V/480V | 31.0                         | 31.0   | 22.0        | 27.5     | 0.8  |
| 1.5               | 330V/440V/480V | 41.5                         | 30.0   | 17.0        | 37.5     | 1.0  |
| 1.8               | 330V/440V/480V | 32.0                         | 37.0   | 22.0        | 27.5     | 0.8  |
| 1.8               | 330V/440V/480V | 41.5                         | 30.0   | 17.0        | 37.5     | 1.0  |
| 2.2               | 330V/440V/480V | 32.0                         | 37.0   | 22.0        | 27.5     | 0.8  |
| 2.2               | 330V/440V/480V | 42.0                         | 33.5   | 18.5        | 37.5     | 1.0  |
| 2.7               | 330V/440V/480V | 42.5                         | 37.0   | 22.0        | 37.5     | 1.0  |
| 3.3               | 330V/440V/480V | 42.5                         | 37.0   | 22.0        | 37.5     | 1.0  |
| 3.9               | 330V/440V/480V | 41.5                         | 41.0   | 27.5        | 37.5     | 1.0  |
| 4.4               | 330V/440V/480V | 41.5                         | 41.0   | 27.5        | 37.5     | 1.0  |
| 4.7               | 330V/440V/480V | 41.5                         | 45.0   | 30.0        | 37.5     | 1.0  |
| 6.8               | 330V/440V/480V | 57.5                         | 45.5   | 30.0        | 52.5     | 1.2  |
| 8.2               | 330V/440V/480V | 57.5                         | 45.0   | 30.0        | 52.5     | 1.2  |
| 10                | 330V/440V/480V | 57.5                         | 55.00  | 35.0        | 52.5     | 1.2  |

# Guideline of notabilia for the usage of plastic film capacitors

## 塑膠薄膜電容器的使用上注意事項及指導

Plastic film capacitors use organic films for their dielectrics, thus the capacitors may fume or flame, depending on the circuit conditions they are in, when they are damaged by applying over-voltage or over-current. 塑膠薄膜電容器使用有機薄膜為介質，當使用超過額定電壓及額定電流，可能產生火焰，導致電容損壞，故請使用於正確的迴路。

### 1. Circuit Design 迴路設計

- ① Please use capacitors within the range of their characteristic ratings, only after confirming their operating and mounting environments.  
請確認電容器的使用範圍僅止於明定之額定特性規範，請先確認電容器使用之環境是否符合規範。
- ② In case of selecting a capacitor, please select the most suitable one which fits to your operating conditions.  
請依照適合的作業條件選擇相對應的電容器使用。
- ③ Capacitors used for Across-The-Line, Line-By-Pass and Antenna-Coupling to suppress noises in an equipment, the capacitors need to be approved by overseas Safety Standards or 'Electric Appliance and Material Control' by Ministry of international Trade and Industry.  
電容器用於跨接，旁路迴路及天線耦合等抑制噪音的裝置，需通過海外安全標準或日本通商產業省之電器用品安全法。
- ④ An applying voltage to a capacitor, including the peak of surge and ripple voltage (D.C. voltage + A.C. Peak), cannot be exceeded the rating voltage.  
電容器之應用電壓，包括突波和紋波電壓的峰值(直流電壓+交流峰值)不可超過額定電壓。
- ⑤ Do not apply a current over its permissible level. Also, make sure to check the surrounding temperature and inherent temperature rise of a capacitor since a permissible current can be restricted by those factors. 切勿使用超出電容器可承載之電流並檢查電容器周圍之溫度，因有許多因素會影響電流之變化，進而造成電容器之溫度上升。
- ⑥ Please contact us for further details, if mechanical resonance (hum) occurs to a capacitor.  
如電容器的發出共振(嗡嗡)之噪音時，請與我們聯繫。
- ⑦ Do not conduct a rapid charge and discharge to a capacitor which may lead to characteristics degradations or break down of the capacitor.  
請不要對電容器進行快速的充電和放電，此可能會導致電容器之特性退化或損壞。

### 2. Mounting 安裝

- ① Do not apply any exceeding tension or torsion to lead wires of a capacitor, during the mounting process.  
請不要使用任何超過電容導線可承受之張力進行插件。
- ② Please mount a capacitor where it does not contact any other heating parts, high voltage parts and other parts.  
請確認電容器使用環境，避免接觸任何其他升溫熱物件、高壓和其他部分料件。
- ③ Please conduct soldering process by strictly following the specified conditions.  
進行焊接過程實，請嚴格遵循指定之焊接條件。

### 3. Case of an emergency 緊急情況

- ① If a fuming, a flaming or an usual smell occurs from an equipment during its usage, please cut off the power supply by switching it off, pulling the plug out or other methods. 如使用設備有冒煙，火花或冒出不尋常之氣味，請切斷電源，拔掉插頭或以其它方法關閉設備。

### 4. Storing and handling 儲存和處理

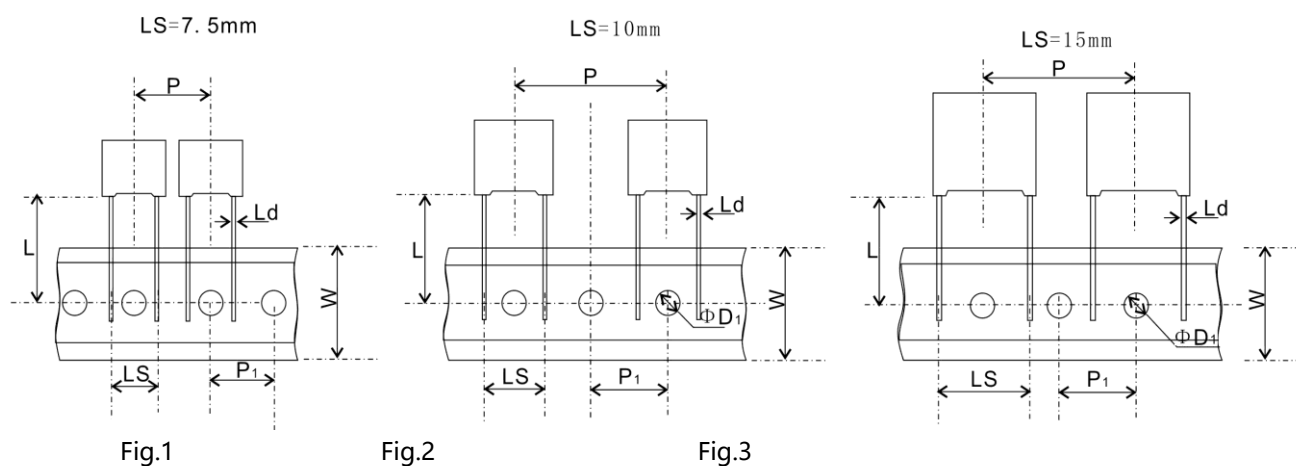
- ① A storage needs to be kept indoors at -10~+40°C and relative humidity of under 75% without any sudden temperature changes, direct sunlight and corrosive gas around.  
需保存於-10 ~ 40°C，相對濕度低於 75%並確保沒有任何突然的溫度變化，避免直接陽光之曝曬及接觸腐蝕性氣體之環境。
- ② Do not apply and exceeding vibration, shock (dropping) and pressure.  
不應過度震動、碰撞和及外力的衝擊。

### 5. Rejection 報廢

- ① In case of rejecting capacitors, please seek for professionals who deal with the industrial wastes treatments.  
對於報廢電容器，請找處理工業廢品之專業人士處理。

# TAPIING SPECIFICATION

## 編帶規格書



| Description                          | Symbol          | 7.5mm | 10mm  | 15mm    | Tol. |
|--------------------------------------|-----------------|-------|-------|---------|------|
|                                      |                 | Fig.1 | Fig.2 | Fig.3   |      |
| Lead wire diameter                   | Ld              | 0.6   | 0.6   | 0.6/0.8 | ±0.1 |
| taping pitch                         | P               | 12.7  | 25.4  | 25.4    | ±1.5 |
| feed hole pitch                      | P <sub>1</sub>  | 12.7  | 12.7  | 12.7    | ±0.3 |
| lead spacing(pitch)                  | LS              | 7.5   | 10    | 15      | ±1.0 |
| height of component from tape center | L               | 18.5  | 18.5  | 18.5    | ±1.0 |
| carrier tape width                   | W               | 18    | 18    | 18      | ±1.0 |
| feed hole diameter                   | ΦD <sub>1</sub> | 4     | 4     | 4       | ±0.3 |