



## SPECIFICATION FOR APPROVAL

File No.: Q/FRK 0.GS.C43-W01

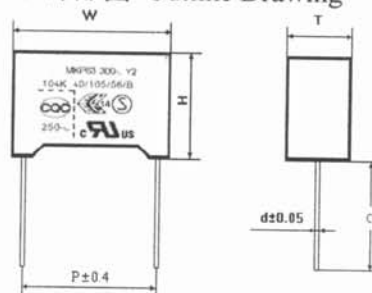
|               |   |
|---------------|---|
| Product Name  | Metallized Polypropylene Film Interference Suppression Capacitor<br>(Y2:300Vac/X1:440VAC) |
| Product Type: | C43(MKP63 Series)   |
| Product Code  |   |
| Customer      |   |
| Customer Code |   |
| Issue Date    | 2008-03   |

95 E. Jefryn Boulevard Deer Park, NY 11729  
Tel (631) 595-1818 Fax (631) 595-1283  
[www.surgecomponents.com](http://www.surgecomponents.com)

金属化聚丙烯膜抗干扰电容器 (Y2:300Vac, X1:440Vac)

Metallized polypropylene film interference suppression capacitor (Y2:300Vac, X1:440Vac)

■ 外形图 Outline Drawing



■ 特点

- 金属化聚丙烯
- 能承受过压冲击
- 塑料外壳 (UL94 V-0), 阻燃环氧填充
- 广泛用于电源跨线路、旁路、天线耦合等抗干扰场合

■ Features

- metallized polypropylene structure
- Withstanding overvoltage stressing
- Plastic case (UL94 V-0), Epoxy resin sealing.
- Widely used in across-the-line, line-by-pass, antenna Coupling interference suppression circuit

■ 安全认证 Safety Approvals

|   |                     |                 |   |
|---|---------------------|-----------------|---|
| ● |                     | CQC (中国)        | GB/T 14472-1998 Y2, 250VAC; X1, 440 VAC, 0.001μF~0.47μF<br>证书号(Certificate No.): CQC04001009958   |
| ● |                     | ENEC-SEMKO (欧盟) | EN/IEC 60384-14:2005 Y2, 300 VAC; X1, 440VAC, 0.001μF~0.47μF<br>证书号(Certificate No.): SE/0366-2A  |
| ● |                     | UL-CUL (美国/加拿大) | UL1414, CSA C22.2 No.1 250 VAC, 0.001μF to 1.0μF<br>证书号(Certificate No.): E186600<br>UL1283, CSA C22.2 No.8 480VAC, 0.001μF to 1.0μF<br>证书号(Certificate No.): E186662 |
| ● | CB TEST CERTIFICATE |                 | IEC 60384-14:2005 Y2, 300 VAC; X1, 440 VAC, 0.001μF~0.47μF, 40/105/56/B<br>证书号(Certificate No.):SE-50628  |

■ 技术要求 Specifications

|   |  |                                     |                                  |
|---|--|-------------------------------------|----------------------------------|
| 电容器类别 Class   | Y2 类/X1 类  |                                     |                                  |
| 气候类别/阻燃等级<br>Climatic Category/Passive Flammability Class | 40/105/56/B  |                                     |                                  |
| 工作温度范围<br>Operating Temperature Range                     | -40℃ ~ +105℃   |                                     |                                  |
| 额定电压 Rated Voltage  | Y2: 300VAC, 50/60Hz<br>X1: 440VAC, 50/60Hz   |                                     |                                  |
| 电容量范围 Capacitance Range                                   | 0.0010μF~1.0μF   |                                     |                                  |
| 电容量偏差 Capacitance Tolerance                               | ±10%(K), ±20%(M)   |                                     |                                  |
| 耐电压 Voltage Proof   | 引线之间 Between Terminals:  | Y2: 2 000VAC(2s) , X1: 3 400VDC(2s) |                                  |
|   | 极壳之间 Between Terminals To Case:  | 2 380VAC(1min)                      |                                  |
| 绝缘电阻 Insulation Resistance                                | ≥15 000MΩ, C <sub>R</sub> ≤0.33μF<br>≥5 000s, C <sub>R</sub> >0.33μF (20℃, 100V, 1min) |                                     |                                  |
| 损耗角正切 Dissipation Factor                                  | 1 000pF<C <sub>R</sub> ≤0.47μF   | ≤15×10 <sup>-4</sup> (1kHz,20℃)     | ≤20×10 <sup>-4</sup> (10kHz,20℃) |
|   | 0.47μF<C <sub>R</sub> ≤1.0μF   | ≤20×10 <sup>-4</sup> (1kHz,20℃)     | ≤40×10 <sup>-4</sup> (10kHz,20℃) |

## 产品编码说明 Part number code system

15 位产品代码如下:

The 15 digits part number is formed as follow:

|   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| C | 4 | 3 |   |   |   |   |   |   |    |    |    |    |    |    |

|           |   |                |  |
|-----------|---|----------------|--|
| 第 1~3 位   | 薄膜电容器系列代码<br>C43=MKP63                                      | Digit 1 to 3   | Series code of film capacitor<br>C43=MKP63                                 |
| 第 4~5 位   | 交流额定电压<br>Y2:Q1=300V X1:S1=440V                             | Digit 4 to 5   | A.C. rated voltage<br>Y2:Q1=300V X1:S1=440V                                |
| 第 6~8 位   | 标称容量<br>举例: 103=10×10 <sup>3</sup> pF= 0.01μF               | Digit 6 to 8   | Rated capacitance value<br>for example : 103=10×10 <sup>3</sup> pF= 0.01μF |
| 第 9 位     | 容量偏差<br>K=±10%, M=±20%                                      | Digit 9        | Capacitance tolerance<br>K=±10%, M=±20%                                    |
| 第 10 位    | 引线脚距<br>3=7.5mm 4=10mm 6=15mm<br>9=22.5mm B=27.5mm F=37.5mm | Digit 10       | Pitch<br>3=7.5mm 4=10mm 6=15mm<br>9=22.5mm B=27.5mm F=37.5mm               |
| 第 11 位    | 内部特征码   | Digit 11       | Internal use   |
| 第 12~15 位 | 引线加工和包装代码   | Digit 12 to 15 | Lead dimensions and packaging code   |

Table 1 引线加工和包装代码 lead dimensions and packaging code

| 第 12 位 Digit 12 |   | 第 13 位 Digit 13 |  | 第 14 位 Digit 14 |                                 | 第 15 位 Digit 15 |   |
|-----------------|---|-----------------|--|-----------------|---------------------------------|-----------------|---|
| 代码 code         | 说明 explanation                                  | 代码 code         | 说明 explanation                             | 代码 code         | 说明 explanation                  | 代码 code         | 说明 explanation  |
| A<br>R          | 弹带包装<br>ammo-pack<br>圆盘包装<br>reel-pack          | 4               | F=10.0mm                                   | 0               | 表示直脚<br>straight                | 1               | 产品在连续的两个载带孔之间<br>ach cap. among two consecutive holes<br>P3=12.7mm,H=18.5mm (For pitch=7.5mm) |
|                 |   | 6               | F=15.0mm                                   | 1               | 表示弯脚<br>kinked                  | 5               | P3=25.4mm;H=18.5mm (For pitch=10/15mm)  |
| F               | 引线成型<br>lead kinked                             | 3               | F=7.5mm                                    | 0               | B=4.5mm<br>(the length<br>of B) | 0               | B 的长度偏差 ±0.5mm<br>B Length tolerance ±0.5mm   |
|                 |   | 4               | F=10.0mm                                   |                 |                                 |                 |   |
|                 |   | 6               | F=15.0mm                                   |                 |                                 |                 |   |
| C               | 直脚<br>raight lead<br>"C" in the<br>figure above | 代码 code         | 说明 explanation                             |                 |                                 | 0               | 引线长度偏差 ±0.5mm 或标准长度<br>Length tolerance ±0.5mm<br>Or standard length                          |
|                 |   | 00              | 标准的引线长度(18mm~22mm)<br>standard lead length |                 |                                 |                 |   |
|                 |   | 45              | 引线长度 4.5mm<br>lead length 4.5mm            |                 |                                 |                 |   |

## ■ 外形尺寸 Dimensions(mm)

| Y2: 300VAC# |           |           |           |           |     |                     | Y2: 300VAC# |           |           |           |           |     |                     | Y2: 300VAC# |           |           |           |           |     |                     |
|-------------|-----------|-----------|-----------|-----------|-----|---------------------|-------------|-----------|-----------|-----------|-----------|-----|---------------------|-------------|-----------|-----------|-----------|-----------|-----|---------------------|
| 容量<br>(μF)  | W<br>±0.4 | H<br>±0.4 | T<br>±0.4 | P<br>±0.4 | d   | 产品代码<br>Part number | 容量<br>(μF)  | W<br>±0.4 | H<br>±0.4 | T<br>±0.4 | P<br>±0.4 | d   | 产品代码<br>Part number | 容量<br>(μF)  | W<br>±0.4 | H<br>±0.4 | T<br>±0.4 | P<br>±0.4 | d   | 产品代码<br>Part number |
| 0.0010      | 10.5      | 9.0       | 4.0       | 7.5       | 0.6 | C43Q1102+30****     | 0.0068      | 17.5      | 11.0      | 5.0       | 15.0      | 0.8 | C43Q1682+60****     | 0.10        | 32.0      | 18.0      | 9.0       | 27.5      | 0.8 | C43Q1104+B0****     |
| 0.0012      | 10.5      | 9.0       | 4.0       | 7.5       | 0.6 | C43Q1122+30****     | 0.0082      | 17.5      | 11.0      | 5.0       | 15.0      | 0.8 | C43Q1822+60****     | 0.12        | 32.0      | 18.0      | 9.0       | 27.5      | 0.8 | C43Q1124+B0****     |
| 0.0015      | 10.5      | 9.0       | 4.0       | 7.5       | 0.6 | C43Q1152+30****     | 0.01        | 17.5      | 11.0      | 5.0       | 15.0      | 0.8 | C43Q1103+60****     | 0.15        | 32.0      | 20.0      | 11.0      | 27.5      | 0.8 | C43Q1154+B0****     |
| 0.0018      | 10.5      | 9.0       | 4.0       | 7.5       | 0.6 | C43Q1182+30****     | 0.012       | 17.5      | 12.0      | 6.0       | 15.0      | 0.8 | C43Q1123+60****     | 0.18        | 32.0      | 20.0      | 11.0      | 27.5      | 0.8 | C43Q1184+B0****     |
| 0.0022      | 10.5      | 9.0       | 4.0       | 7.5       | 0.6 | C43Q1222+30****     | 0.015       | 17.5      | 12.0      | 6.0       | 15.0      | 0.8 | C43Q1153+60****     | 0.22        | 32.0      | 22.0      | 13.0      | 27.5      | 0.8 | C43Q1224+B0****     |
| 0.0027      | 10.5      | 9.0       | 4.0       | 7.5       | 0.6 | C43Q1272+30****     | 0.018       | 17.5      | 12.0      | 6.0       | 15.0      | 0.8 | C43Q1183+60****     | 0.27M       | 32.0      | 24.5      | 15.0      | 27.5      | 0.8 | C43Q1274MB0****     |
| 0.0033      | 10.5      | 11.0      | 5.0       | 7.5       | 0.6 | C43Q1332+30****     | 0.022       | 17.5      | 13.5      | 7.5       | 15.0      | 0.8 | C43Q1223+60****     | 0.27K       | 32.0      | 28.0      | 14.0      | 27.5      | 0.8 | C43Q1274KB0****     |
| 0.0039      | 10.5      | 11.0      | 5.0       | 7.5       | 0.6 | C43Q1392+30****     | 0.027M      | 17.5      | 13.5      | 7.5       | 15.0      | 0.8 | C43Q1273M60****     | 0.33        | 32.0      | 28.0      | 14.0      | 27.5      | 0.8 | C43Q1334+B0****     |
| 0.0047      | 10.5      | 12.0      | 6.0       | 7.5       | 0.6 | C43Q1472+30****     | 0.027K      | 17.5      | 14.5      | 8.5       | 15.0      | 0.8 | C43Q1273K60****     | 0.39        | 32.0      | 33.0      | 18.0      | 27.5      | 0.8 | C43Q1394+B0****     |
| 0.0056      | 10.5      | 12.0      | 6.0       | 7.5       | 0.6 | C43Q1562+30****     | 0.033       | 17.5      | 14.5      | 8.5       | 15.0      | 0.8 | C43Q1333+60****     | 0.47        | 32.0      | 33.0      | 18.0      | 27.5      | 0.8 | C43Q1474+B0****     |
| 0.0010      | 13.0      | 9.0       | 4.0       | 10.0      | 0.6 | C43Q1102+40****     | 0.039M      | 17.5      | 14.5      | 8.5       | 15.0      | 0.8 | C43Q1393M60****     | 0.56        | 32.0      | 33.0      | 18.0      | 27.5      | 0.8 | C43Q1564+B0****     |
| 0.0012      | 13.0      | 9.0       | 4.0       | 10.0      | 0.6 | C43Q1122+40****     | 0.039K      | 17.5      | 16.0      | 10.0      | 15.0      | 0.8 | C43Q1393K60****     | 0.68M       | 32.0      | 33.0      | 18.0      | 27.5      | 0.8 | C43Q1684MB0****     |
| 0.0015      | 13.0      | 9.0       | 4.0       | 10.0      | 0.6 | C43Q1152+40****     | 0.047       | 17.5      | 16.0      | 10.0      | 15.0      | 0.8 | C43Q1473+60****     | 0.68K       | 32.0      | 37.0      | 22.0      | 27.5      | 0.8 | C43Q1684KB0****     |
| 0.0018      | 13.0      | 9.0       | 4.0       | 10.0      | 0.6 | C43Q1182+40****     | 0.056       | 17.5      | 19.0      | 11.0      | 15.0      | 0.8 | C43Q1563+60****     | 0.33        | 41.0      | 24.0      | 13.0      | 37.5      | 1.0 | C43Q1334+F0****     |
| 0.0022      | 13.0      | 9.0       | 4.0       | 10.0      | 0.6 | C43Q1222+40****     | 0.047       | 26.5      | 15.0      | 6.0       | 22.5      | 0.8 | C43Q1473+90****     | 0.39        | 41.0      | 24.0      | 13.0      | 37.5      | 1.0 | C43Q1394+F0****     |
| 0.0027      | 13.0      | 9.0       | 4.0       | 10.0      | 0.6 | C43Q1272+40****     | 0.056       | 26.5      | 16.0      | 7.0       | 22.5      | 0.8 | C43Q1563+90****     | 0.47M       | 41.0      | 24.0      | 13.0      | 37.5      | 1.0 | C43Q1474MF0****     |
| 0.0033      | 13.0      | 9.0       | 4.0       | 10.0      | 0.6 | C43Q1332+40****     | 0.068       | 26.5      | 17.0      | 8.5       | 22.5      | 0.8 | C43Q1683+90****     | 0.47K       | 41.0      | 26.0      | 15.0      | 37.5      | 1.0 | C43Q1474KF0****     |
| 0.0039      | 13.0      | 9.0       | 4.0       | 10.0      | 0.6 | C43Q1392+40****     | 0.082       | 26.5      | 17.0      | 8.5       | 22.5      | 0.8 | C43Q1823+90****     | 0.56        | 41.0      | 30.0      | 16.0      | 37.5      | 1.0 | C43Q1564+F0****     |
| 0.0047      | 13.0      | 11.0      | 5.0       | 10.0      | 0.6 | C43Q1472+40****     | 0.10        | 26.5      | 18.5      | 10.0      | 22.5      | 0.8 | C43Q1104+90****     | 0.68M       | 41.0      | 30.0      | 16.0      | 37.5      | 1.0 | C43Q1684MF0****     |
| 0.0056      | 13.0      | 12.0      | 6.0       | 10.0      | 0.6 | C43Q1562+40****     | 0.12        | 26.5      | 18.5      | 10.0      | 22.5      | 0.8 | C43Q1124+90****     | 0.68K       | 41.0      | 30.0      | 16.0      | 37.5      | 1.0 | C43Q1684KF0****     |
| 0.0068      | 13.0      | 12.0      | 6.0       | 10.0      | 0.6 | C43Q1682+40****     | 0.15        | 26.5      | 22.0      | 12.0      | 22.5      | 0.8 | C43Q1154+90****     | 0.82        | 41.0      | 33.5      | 18.5      | 37.5      | 1.0 | C43Q1824+F0****     |
| 0.0082      | 13.0      | 12.0      | 6.0       | 10.0      | 0.6 | C43Q1822+40****     | 0.18        | 26.5      | 22.0      | 12.0      | 22.5      | 0.8 | C43Q1184+90****     | 1.0         | 41.0      | 37.0      | 22.0      | 37.5      | 1.0 | C43Q1105+F0****     |
| 0.01        | 13.0      | 12.0      | 6.0       | 10.0      | 0.6 | C43Q1103+40****     |             |           |           |           |           |     |                     |             |           |           |           |           |     |                     |

备注: 1."+"表示容量偏差。 "+"=capacitance tolerance code, M=±20%,K±10%

2."\*\*\*\*"表示引线加工和包装代码(见 table 1)。 "\*\*\*\*"=lead dimensions and packing mode code (refer to table 1)

3."#"当 X1 额定电压为 440VAC 时,第 4-5 位是 S1。 " #"when the X1 rated voltage is 440VAC, the digit 4-5 is S1.

4.当用于 X1 场合,推荐使用 MKP65 when used as X1, pls refer to MKP65

5.The products about P=7.5mm only have UL(300Vac),CUL(250Vac) approval.

The products about C>0.47uF only have UL/CUL approval.

## 2 测试方法及性能 Test Method And Performance:

| 序号<br>No. | 项目<br>Item                                 | 性能<br>Performance  | 试验方法<br>Test Method (IEC 60384-14)  |
|-----------|--|--|---|
| 1         | 可焊性:<br>Solderability                      | 镀锡良好<br>Good quality of tinning  | 焊料温度: 245°C±5°C<br>浸渍时间: 2.0s±0.5s<br>Solder temperature: 245°C±5°C<br>Immersion time: 2.0s±0.5s  |
| 2         | 引出端强度<br>Terminal strength                 | 外观无可见损伤<br>There shall be no visible damage  | 拉力: 0.50<d≤0.80, 10N<br>0.80<d≤1.25, 20N<br>弯曲: 0.50<d≤0.80, 5N<br>0.80<d≤1.25, 10N<br>每个方向上连续进行二次弯曲<br>Tense: 0.50<d≤0.80, 10N<br>0.80<d≤1.25, 20N<br>Bend: 0.50<d≤0.80, 5N<br>0.80<d≤1.25, 10N<br>The terminals shall be bent 2 times in each direction |
| 3         | 耐焊接热<br>Resistance to solder heat          | 外观无可见损伤, 标识清晰<br>电容量变化  ΔC /C: ≤5%<br>There shall be no visible damage<br>ΔC/C ≤±5%(relative to the initial value) | 焊料温度: 260°C±5°C<br>浸渍时间: 10s±1s<br>Solder temperature: 260°C±5°C<br>Immersion time: 10s±1s  |
| 4         | 标志耐溶剂<br>Solvent resistance of the marking | 标志应保持清晰<br>The marking shall be legible  | 使用的溶剂: 工业异丙醇<br>溶剂温度: 23°C±5°C<br>条件: 带摩擦<br>摩擦材料: 脱脂棉<br>恢复时间: 不采用<br>Solvent: Industrial isopropanol.<br>Solvent temperature: 23°C±5°C<br>Condition: scrub<br>Scrub material: absorbent cotton<br>Reverting time: No                                    |
| 5         | 初始测量<br>Initial measurement                | 电容量、损耗角正切<br>Capacitance、Tgδ   |   |
|           | 温度快速变化<br>Rapid change of temperature      | 外观无可见损伤<br>There shall be no evidence of deterioration.  | θ <sub>A</sub> =-40°C, θ <sub>B</sub> =+105°C, 5次循环,<br>持续时间: t=30min<br>θ <sub>A</sub> =-40°C, θ <sub>B</sub> =+105°C, 5 cycles,<br>Duration: t=30min  |
|           | 振动<br>Vibration                            | 外观无可见损伤<br>There shall be no evidence of deterioration.  | 振幅 0.75mm 或加速度 98m/s <sup>2</sup> (取严酷度较小者), 频率 10Hz~500Hz 三个方向, 每个方向 2h, 共 6h<br>Amplitude 0.75mm or acceleration 98m/s <sup>2</sup> (whichever is the smaller severity), f: 10Hz to 500Hz. Three directions, 2h for each direction, total 6h.           |
|           | 碰撞<br>Bump                                 | 外观无可见损伤<br>There shall be no evidence of deterioration.  | 4000次, 加速度 390m/s <sup>2</sup> , 脉冲持续时间: 6ms<br>4 000 times, Acceleration: 390m/s <sup>2</sup> , Pulse duration, 6ms  |
|           | 最后测量<br>Final measurement                  | 外观无可见损伤<br>电容量变化  ΔC /C: ≤5%<br>There shall be no visible damage<br>ΔC/C ≤±5%(relative to the initial value)       |   |

| 序号<br>No. | 项目<br>Item                        | 性能<br>Performance  | 试验方法<br>Test Method (IEC 60384-14)   |
|-----------|-----------------------------------|--|--|
| 6         | 气候顺序<br>climate<br>sequence       | 初始测量<br>Initial<br>measurement   |  |
|           |                                   | 干热<br>Dry heat   | +105°C, 16h  |
|           |                                   | 循环湿热<br>Damp<br>heat,Cyclic  | 试验 Db, 严酷度 b, 第一次循环<br>Test Db, Severity: b, the first cycle   |
|           |                                   | 寒冷<br>Cold   | -40°C, 2h  |
|           |                                   | 循环湿热<br>Damp<br>heat,<br>cyclic<br>other   | 试验 Db, 严酷度 b, 其余循环<br>Test Db, Severity b, the other cycles,   |
|           |                                   | 最后测量<br>Final<br>measurement   | 外观无可见损伤, 标志清晰,<br>电容量变化: $\Delta C/C \leq$ 初始测量值的 $\pm 5\%$ ,<br>损耗角正切增加:<br>$\leq 0.008$ (10kHz)<br>耐电压: 无永久性击穿或飞弧<br>绝缘电阻 IR: $\geq$ 额定值的 50%<br>There shall be no visible damage, legible<br>marking<br>$\Delta C/C \leq \pm 5\%$ (relative to the initial value)<br>Increase of $\text{tg}\delta: \leq 0.008$ (10kHz)<br>Dielectric strength : there shall be no<br>permanent breakdown or flashover<br>I.R.: $\geq 50\%$ of the rated value |
| 7         | 稳态湿热<br>Damp heat<br>steady state | 外观无可见损伤, 标志清晰,<br>电容量变化: $\Delta C/C \leq$ 初始测量值的 $\pm 5\%$ ,<br>损耗角正切增加:<br>$\leq 0.008$ (10kHz)<br>耐电压: 无永久性击穿或飞弧<br>绝缘电阻 IR: $\geq$ 额定值的 50%<br>There shall be no visible damage, legible<br>marking<br>$\Delta C/C \leq \pm 5\%$ (relative to the initial value)<br>Increase of $\text{tg}\delta: \leq 0.008$ (10kHz)<br>Dielectric strength : there shall be no<br>permanent breakdown or flashover<br>I.R.: $\geq 50\%$ of the rated value | 温度: $40^\circ\text{C} \pm 2^\circ\text{C}$<br>湿度: $93_{-3}^{+2} \% \text{RH}$<br>持续时间: 56 天<br><br>Temperature: $40^\circ\text{C} \pm 2^\circ\text{C}$<br>Humidity: $93_{-3}^{+2} \% \text{RH}$<br>Duration: 56 days   |
| 8         | 脉冲电压<br>Impulse voltage           | 用监视器监视, 有三次或更多次的<br>脉冲波形表示电容器未发生自<br>愈性击穿<br>There are three or more waveforms which<br>indicate that no self-heating breakdown<br>have occurred when it is monitored by the<br>monitor  | 每个电容器施加 24 次相同极性的<br>脉冲 (如果监视器显示有三次连<br>续的脉冲波形表示电容器未发生<br>自愈性击穿, 则可停止施加脉<br>冲), 脉冲间隔时间不少于 10s,<br>脉冲电压峰值:<br>5.0kV (适用于 $C_0 \leq 1\mu\text{F}$ , Y2),<br>4.0kV (适用于 $C_0 \leq 1\mu\text{F}$ , X1)。  |

| 序号<br>No. | 项目<br>Item                        | 性能<br>Performance   | 试验方法<br>Test Method (IEC 60384-14)   |
|-----------|-----------------------------------|---|--|
| 8         |                                   |   | Each individual capacitor shall be subjected to 24 impulses of the same polarity (when any three successive impulses are shown by the monitor to have a wave form indicating that no self-healing breakdown have taken place the impulses can be stopped), the time between impulses shall not be less than 10s, and the peak value of the voltage impulse: 5.0kV(suitable for $C_R \leq 1\mu\text{F}, Y2$ )<br><br>4.0kV(suitable for $C_R \leq 1\mu\text{F}, X1$ )   |
| 9         | 耐久性<br>Endurance                  | 外观无可见损伤, 标志清晰<br>电容量变化 $ \Delta C /C$ : $\leq 10\%$<br>$\text{tg}\delta$ 的增加:<br>$\leq 0.008$ (10kHz)<br>耐电压: 无永久性击穿或飞弧<br>绝缘电阻 IR: $\geq$ 额定值的 50%<br>There shall be no visible damage, legible marking<br>$\Delta C/C \leq \pm 10\%$ (relative to the initial value)<br>Increase of $\text{tg}\delta$ : $\leq 0.008$ (10kHz)<br>Dielectric strength : There shall be no breakdown or flashover<br>I.R. : $\geq 50\%$ of the rated value | +105°C,<br>Y2: $1.7U_R$ Va.c.,<br>X1: $1.25U_R$ Va.c.,<br>1000h<br>期间, 每隔一小时将电压升高到 1000Vrms, 持续时间 0.1s<br><br>+105°C,<br>$1.7U_R$ Va.c.(Y2),<br>$1.25U_R$ Va.c.(X1),<br>1 000h<br>The voltage shall be subjected to 1 000Vrms for 0.1s every one hour during test.   |
| 10        | 充电和放电<br>Charging and discharging | 电容量变化 $ \Delta C /C$ : $\leq 10\%$<br>$\text{tg}\delta$ 的增加:<br>$\leq 0.008$ (10kHz)<br>绝缘电阻 IR: $\geq$ 额定值的 50%<br><br>$\Delta C/C \leq \pm 10\%$ (relative to the initial value)<br>Increase of $\text{tg}\delta$ : $\leq 0.008$ (10kHz)<br>I.R.: $\geq 50\%$ of the rated value  | 次数: 10 000 次<br>充电持续时间: 0.5s<br>放电持续时间: 0.5s<br>充电电压: $\sqrt{2}U_R$ Vd.c.<br>充电电阻: $220/C_R(\Omega)$ 或电流 $\leq 1\text{A}$<br>(取电流较小者)<br>放电电阻:<br>$R = \frac{\sqrt{2}U_R}{C_R \times \frac{dU}{dt}} (\Omega)$ $C_R$ 为标称电容量( $\mu\text{F}$ )<br>$\frac{dU}{dt}$ (V/ $\mu\text{s}$ )为 100 V/ $\mu\text{s}$<br><br>Times: 10 000<br>Duration of charging: 0.5s<br>Duration of discharging: 0.5s<br>Charging voltage: $\sqrt{2}U_R$ Vd.c.<br>Charging resistance: $220/C_R(\Omega)$ or the current $\leq 1.0\text{A}$ (whichever is the minor)<br>Discharging resistance:<br>$R = \frac{\sqrt{2}U_R}{C_R \times \frac{dU}{dt}} (\Omega)$ $C_R$ : Capacitance ( $\mu\text{F}$ )<br>$dU/dt$ (V/us) : 100V/ $\mu\text{s}$ |


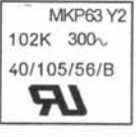
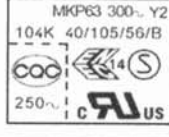
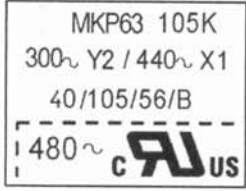
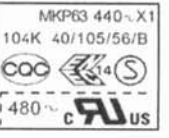
| 序号<br>No. | 项目<br>Item                    | 性能<br>Performance  | 试验方法<br>Test Method (IEC 60384-14)  |
|-----------|-------------------------------|--|---|
| 11        | 阻燃性试验<br>Passive flammability | <p>离开火焰后,任一电容器继续燃烧的时间不超过 10s,且电容器燃烧的滴落物不应引燃在其下铺设的棉纸</p> <p>The flaming time of each capacitor shall not go beyond 10s after it is taken apart from the flame.</p> <p>Drop of each capacitor caused by flame shall not fire the tissue below.</p> | <p>针焰试验,耐燃性类别 B,在火焰上暴露一次</p> <p>电容器体积: <math>250 &lt; V(\text{mm}^3) \leq 500</math>, 在火焰上暴露时间为 20s</p> <p>电容器体积: <math>500 &lt; V(\text{mm}^3) \leq 1750</math>, 在火焰上暴露时间为 30s</p> <p>电容器体积: <math>V(\text{mm}^3) &gt; 1750</math>, 在火焰上暴露时间为 60s</p> <p>Needle flame test<br/>The category of flammability: B<br/>Expose time: 1 time<br/>Capacitor Volume Exposing time<br/><math>250 &lt; V(\text{mm}^3) \leq 500</math> 20s<br/><math>500 &lt; V(\text{mm}^3) \leq 1750</math> 30s<br/><math>V(\text{mm}^3) &gt; 1750</math> 60s</p>   |
| 12        | 自燃性<br>Active flammability    | <p>缠绕在电容器上的纱布应不被火焰燃烧</p> <p>The cheesecloth around the capacitor shall not burn with a flame.</p>  | <p>样品用未处理过的纯棉布缠绕至少一层,但不能多于两层。</p> <p>每一样品应能承受贮能电容器放电 20 次;每两次放电之间的间隔应为 <math>5_0^{+1}</math> s。</p> <p><math>U_i = 5.0 \text{kV}_0^{+7} \%</math> (Y2)</p> <p><math>U_i = 4.0 \text{kV}_0^{+7} \%</math> (X1)</p> <p>试验中样品两端一直施加 <math>U_R \pm 5\%</math> 电压,并在最后一次放电后保持 <math>120_0^{+10}</math> s,除非熔断保险丝使电路开路。</p> <p>The specimens shall be individually wrapped in at least 1, but not more than 2, complete layers of cheesecloth, the cheesecloth shall be untreated pure cotton.</p> <p>Each sample shall be subjected to 20 discharged, the interval between successive discharges shall be <math>5_0^{+1}</math> s.</p> <p><math>U_i = 5.0 \text{kV}_0^{+7} \%</math> (Y2)</p> <p><math>U_i = 4.0 \text{kV}_0^{+7} \%</math> (X1)</p> <p>Throughout the test, the <math>U_R \pm 5\%</math> shall be applied across the capacitor under test and shall be maintained for <math>120_0^{+10}</math> s after the last discharge, unless a blown fuse cause an open circuit.</p> |







### 3 品质保证 (产品出厂检查) 试验: Quality ensuring test (before shipment):

| 检查项目 (每批)<br>Inspection item (each batch) | 检查水平 Inspection level (GB 2828) |       |
|---|---------------------------------|-------|
|   | IL                              | AQL   |
| 外观检查 Appearance inspection                | II                              | 1.5%  |
| 外形尺寸 Dimensions                           |                                 |       |
| 电容量 Capacitance                           | II                              | 0.25% |
| 损耗角正切<br>Tangent of the loss angle        |                                 |       |
| 耐电压 Dielectric strength                   |                                 |       |
| 绝缘电阻 Insulation resistance                |                                 |       |
| 可焊性 Solderability                         | S-3                             | 2.5%  |

### 4 印章 Marking:

| P              | P=7.5   | 10.0mm≤P≤27.5mm   | P=27.5  | P=37.5                  |
|----------------|---|---|---|-------------------------|
| C <sub>R</sub> | 102≤C <sub>R</sub> ≤562   | 102≤C <sub>R</sub> ≤474   | 564≤C <sub>R</sub> ≤684   | 334≤C <sub>R</sub> ≤105 |
| Y2             |   |   |  |                         |
| X1             | -----   |  |   |                         |

### 符号说明 Marking Introduction:

| 符号 Marking     | 说明 Introduction                              | 符号 Marking  | 说明 Introduction   |
|----------------|--|---|---|
|                | 商标 Marking                                   |  | ENEC-SEMKO 认证<br>ENEC-SEMKO Approved                          |
| MKP63          | 型号 Type                                      |  | CQC 认证<br>CQC Approved  |
| Y2/X1          | 抗干扰类别 Class                                  |  | UL & CUL 认证<br>UL & CUL Approved                              |
| 300~           | 额定电压 (Y2)<br>Rated Voltage for Y2            | 40/105/56/B   | 气候类别及阻燃等级<br>Climate category /<br>Passive Flammability Class |
| 440~           | 额定电压(X1)<br>Rated Voltage for X1             | 102K/104K/105K  | 标称电容量及偏差<br>Capacitance and Capacitance<br>Tolerance          |
| 250~/300~/480~ | 额定电压(UL & CUL)<br>Rated Voltage for UL & CUL |  | UL 认证<br>UL Approved  |

## 5 散装包装 Packaging in bulk

5.1 电容先用塑料袋包装，每袋若干百只（最小包装数），袋内放有合格证。然后将若干袋塑料袋电容装入一小包装箱中，用胶带纸封口。每四个小包装箱再装入一大包装箱中包装。此外，根据客户订货数量，确定使用大或小包装箱进行包装。

A certain quantity of capacitors and the qualified bill shall be packed with a plastic bag . Then put several plastic bags into one small packing box, sealed with adhesive paper. One big packing box contains four small packing box. Packing with small or big box depends on the customer's purchase quantity.

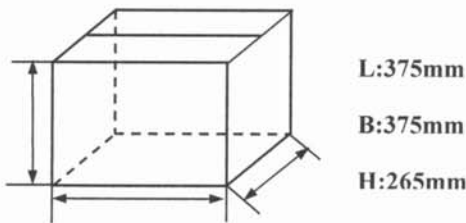
5.2 内、外包装箱尺寸见附图。

The dimensions of packing boxes refer to the drawing .

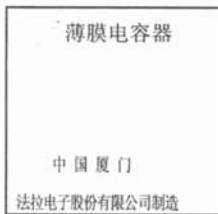
5.3 装有电容器的包装箱允许以任何方式运输，但应避免雨雪的直接淋浇和机械损伤。

For the packing box with capacitors, all kinds of shipments are permitted, but the sprinkle of rain or snow and mechanical damage must be avoided.

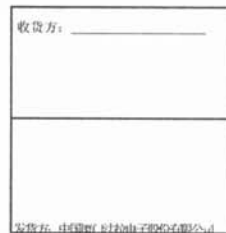
外包装箱尺寸 (Out packing box)



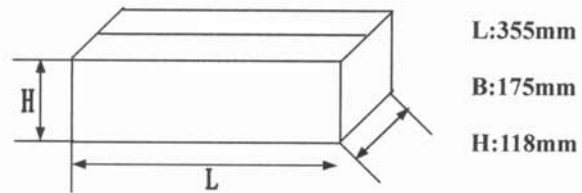
主视图 Plane drawing



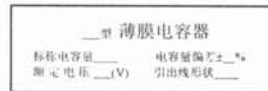
俯视图 Overlooking Drawing



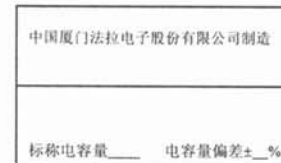
内包装箱尺寸 (Inner packing box)



主视图 Plane drawing



俯视图 Overlooking Drawing



## 6 径向编带包装 Taping &amp; Packaging

## 6.1 编带方式及尺寸 Taping specification

6.2 编带类型及编带尺寸 Taping Dimensions: 见表 1(Refer to table 1).

6.3 径向编带图 Outline Drawing: 见图 1~ 图 5(Refer to Fig 1 ~ Fig 5).

表 1 盒式电容器径向编带尺寸表

Table 1 Taping Dimensions for box type capacitor

Unit:mm

| 技术指标名称<br>Specification                                   | 代号<br>Code     | 尺寸 Dimensions  |      |                 |                                 |              |                 |              | 误差<br>Tolerance | 注释<br>Note                         |
|---|----------------|----------------|------|-----------------|---------------------------------|--------------|-----------------|--------------|-----------------|------------------------------------|
|   |                | 引出线间距<br>P=7.5 |      | 引出线间距<br>P=10.0 |                                 |              | 引出线间距<br>P=15.0 |              |                 |                                    |
| 弹带包装代码<br>Code of Ammo Tapped                             | —              | A301           | A303 | A405            | A315                            | A313         | A315            | A316         |                 | 产品代码后 4 位<br>Digit 12 to 15 of P/N |
| 圆盘包装代码<br>Code of Rell Tapped                             | —              | R301           | R303 | R405            | R315                            | R313         | R315            | R316         |                 | 产品代码后 4 位<br>Digit 12 to 15 of P/N |
| 编带类型<br>Taping type                                       | —              | 图 1<br>Fig 1   |      | 图 2<br>Fig 2    | 图 3<br>Fig 3                    | 图 4<br>Fig 4 | 图 3<br>Fig 3    | 图 5<br>Fig 5 | —               | —                                  |
| 电容器间距<br>Taping pitch                                     | P <sub>3</sub> | 12.7           | 15.0 | 25.4            | 25.4                            | 15.0         | 25.4            | 30.0         | ±1.0            | —                                  |
| 送带孔距<br>Feed hole pitch                                   | P <sub>0</sub> | 12.7           | 15.0 | 12.7            | 12.7                            | 15.0         | 12.7            | 15.0         | ±0.3            | 1mm(max)/20×P <sub>0</sub>         |
| 引出线位置<br>Center of wire                                   | P <sub>1</sub> | 2.60           | 3.75 | 7.70            | 8.95                            | 3.75         | 8.95            | 3.75         | ±0.70           | —                                  |
| 电容器本体位置<br>Center of body                                 | P <sub>2</sub> | 6.35           | 7.50 | 12.70           | 12.70                           | 7.50         | 12.70           | 7.50         | ±1.30           | —                                  |
| 成型间距<br>Pitch of taping wire                              | F              | /              |      | /               | 7.5                             |              | 7.5             |              | +0.6<br>-0.1    | —                                  |
| 电容器侧面倾斜<br>Component alignment                            | △S             | 0              |      |                 |                                 |              |                 |              | ±2.0            | —                                  |
| 成型高度<br>Height of component<br>from tape center           | H <sub>0</sub> | /              |      | /               | 16.5                            |              | 16.5            |              | ±0.5            | —                                  |
| 电容器底部至<br>带孔中心距离<br>Height of crangle from<br>tape center | H              | 18.5           |      |                 | 18.5<br>(H-H <sub>0</sub> ≤2.5) |              |                 | ±0.5         |                 |                                    |
| 纸带宽度<br>Carrier tape width                                | W              | 18.0           |      |                 |                                 |              |                 |              | +1.0<br>-0.5    | —                                  |
| 胶带纸宽度<br>Hold down tape width                             | W <sub>0</sub> | 12min          |      | 12min           |                                 |              | 12min           |              | —               | —                                  |
| 送带孔位置<br>Hole position                                    | W <sub>1</sub> | 9.0            |      |                 |                                 |              |                 |              | ±0.5            | —                                  |
| 胶带纸位置<br>Hold down tape sition                            | W <sub>2</sub> | 3.0max         |      |                 |                                 |              |                 |              | —               | —                                  |
| 送带孔直径<br>Feed hole dia.                                   | D <sub>0</sub> | 4.0            |      |                 |                                 |              |                 |              | ±0.2            | —                                  |
| 编带总厚度<br>Tape thickness                                   | t              | 0.7            |      | 0.7             |                                 |              | 0.7             |              | ±0.2            | —                                  |

注: 非客户特殊要求,一律采用孔距 P0=12.7 方式编带。  
Note: Usually use P0=12.7.

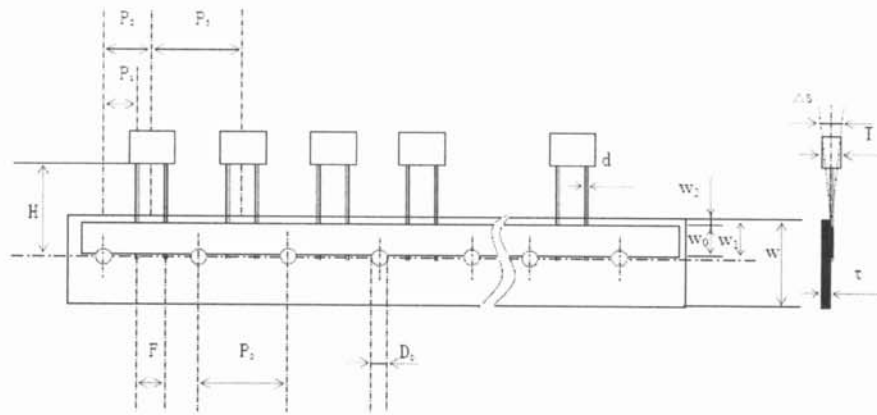


图 1 Fig 1

| 技术指标名称 Specification                                     | 引出线间距 P=7.5mm | 引出线间距 P=7.5mm |
|--|---------------|---------------|
| 弹带（圆盘）包装代码<br>Code of Ammo & Rell Tapped                 | A301 (R301)   | A303 (R303)   |
| 送带孔距 Feed hole pitch<br>P0 (mm)                          | 12.7          | 15.0          |
| 成型间距 Pitch of taping wire<br>F(mm)                       | /             | /             |
| 电容器底部至带孔中心距离 Height<br>of crangle from tape center H(mm) | 18.5          | 18.5          |

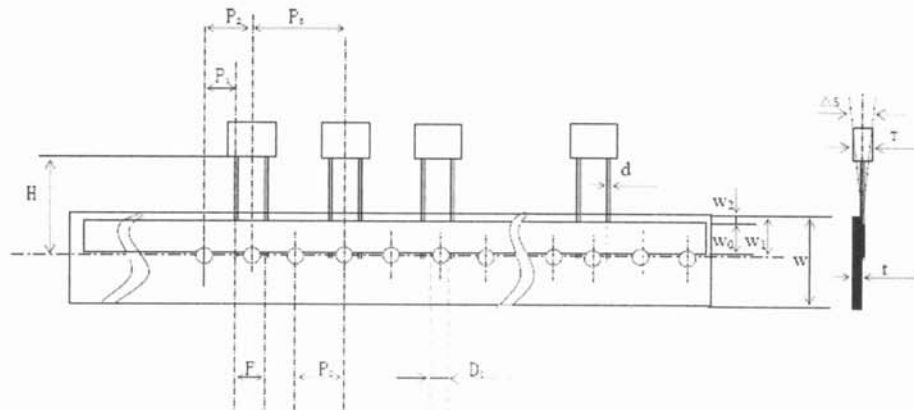


图 2 Fig 2

| 技术指标名称 Specification                                  | 引出线间距 P=10.0mm |
|---|----------------|
| 弹带（圆盘）包装代码<br>Code of Ammo & Rell Tapped              | A405(R405)     |
| 送带孔距 Feed hole pitch P0 (mm)                          | 12.7           |
| 成型间距 Pitch of taping wire F(mm)                       | /              |
| 电容器底部至带孔中心距离 Height of crangle from tape center H(mm) | 18.5           |

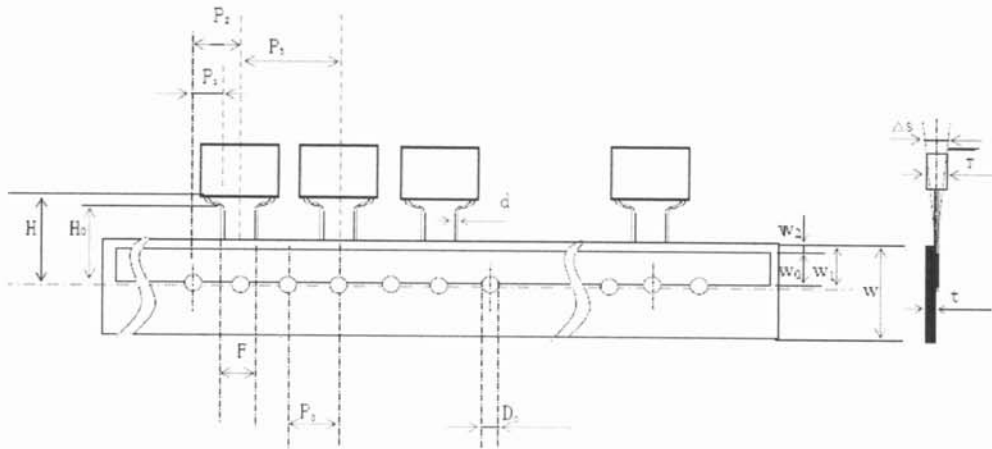


图 3 Fig3

| 技术指标名称 Specification  | 引出线间距 P=10.0mm | 引出线间距 P=15.0mm |
|---|----------------|----------------|
| 弹带（圆盘）包装代码<br>Code of Ammo & Reel Tapped                    | A315(R315)     | A315(R315)     |
| 送带孔距 Feed hole pitch<br>P0 (mm)                             | 12.7           | 12.7           |
| 成型间距 Pitch of taping wire<br>F(mm)                          | 7.5            | 7.5            |
| 电容器底部至带孔中心距离<br>Height of crangle<br>from tape center H(mm) | 18.5           | 18.5           |

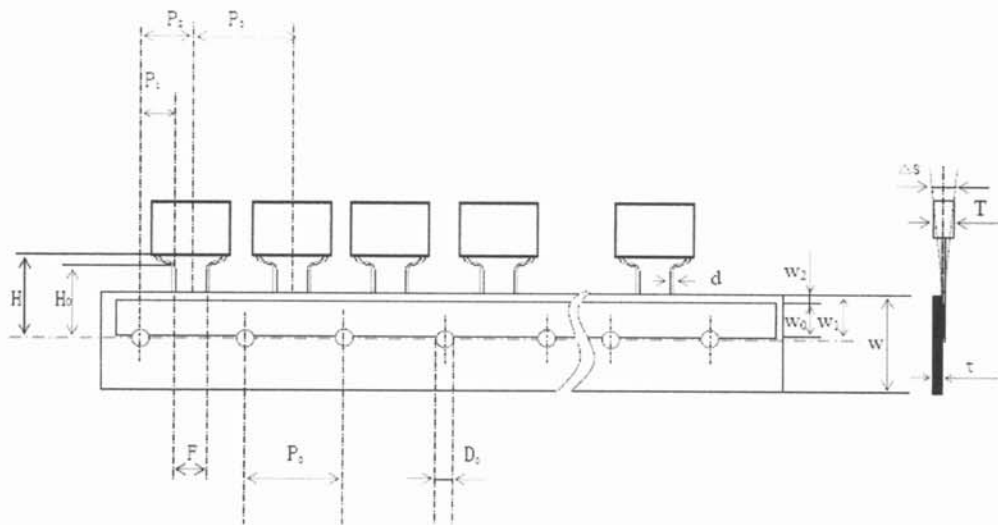


图 4 Fig4

| 技术指标名称 Specification  | 引出线间距 P=10.0mm |
|---|----------------|
| 弹带（圆盘）包装代码<br>Code of Ammo & Reel Tapped                    | A313(R313)     |
| 送带孔距 Feed hole pitch P0 (mm)                                | 15.0           |
| 成型间距 Pitch of taping wire F(mm)                             | 7.5            |
| 电容器底部至带孔中心距离<br>Height of crangle<br>from tape center H(mm) | 18.5           |

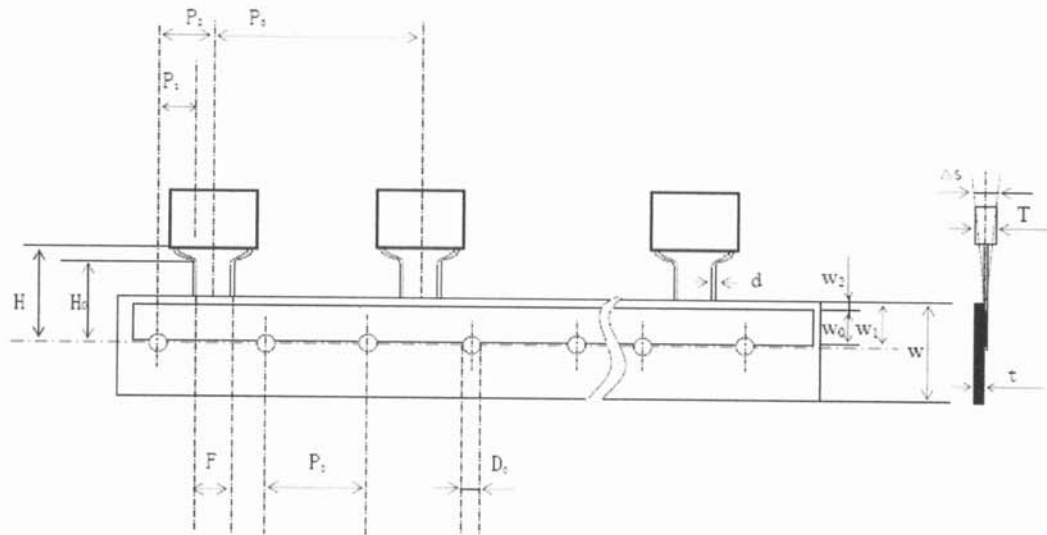


图 5 Fig 5

| 技术指标名称 Specification                                     | 引出线间距 P=15.0mm |
|--|----------------|
| 弹带（圆盘）包装代码<br>Code of Ammo & Reel Tapped                 | A316(R316)     |
| 送带孔距 Feed hole pitch P0 (mm)                             | 15.0           |
| 成型间距 Pitch of taping wire F(mm)                          | 7.5            |
| 电容器底部至带孔中心距离 Height of crangle from<br>tape center H(mm) | 18.5           |