WVQC 東莞市威慶電子有限公司

DONGGUAN WEIQING ELECTRONIC CO., LTD

SPEC NO.:2015102801

REV.:2015B

# 承 認 書

SPECIFICATION

客戶名稱(CUSTOMER):立创

產品名稱(PRODUUCT NAME):Y1 安规电容

威慶料號(WEIQING PART NO.):O11G2102M06EL23010

承認規格(APPROVE ITEM):102M/400V P=7.5MM L=23MM Y5V

客戶料號(CUSTOMER PART NO):C216497

送樣日期(SUBMIT THE SAMPLE DATE):

產品尺寸(PRODUUCT SIZE):D*T=6*3.7MM

樣品印字(SAMPLE PRINT):WQC 品牌

## 威 慶 確 認 表

WEIQING CONFIRM LIST

| APPROVED | CHECKED | PREPARED |
|---|---|---|
| Base | 陶贵能 | 陆丽 |

## 客 戶 承 認 結 果

CUSTOMER ACKNOWLEDGE THE RESULT

| |
|---|
| |

地址：中国东莞松山湖高新技术产业开发区科技十路 7 号 12 栋

Add: Building 12,No.7 Tenth Road of Science&Technology, DongGuan SongShan Loke High-tech Industrial

**Approved/Recognized Type**

| Related Standard | | Certificate NO | Approved Monogram |
|---|---|---|---|
| CQC (China) | GB/T6346.14-2015 | CQC18001201774(Y1)<br>CQC18001201460(Y2) | |
| UL(USA)<br>CSA(Canada) | IEC 60384-14 | E466405 | |
| ENEC (EU) | EN 60384-14 | ENEC-40049864 | |
| VDE (Germany) | EN 60384-14 | 40050021(Y1)<br>40049864(Y2) | |
| KC（South Korea） | KC60384-14(2015-09)<br>KC60384-1(2015-09) | SU03073-19002 (Y1)<br>SU03073-19001 (Y2) | |

Specifications

| | | | | |
|---|---|---|---|---|
| Operating Temp.Range | －40℃ to ＋85℃, －40℃ to ＋125℃ | | | |
| Applicable Standards | UL, CSA, CQC, ENEC, VDE | | X1 | Y1 |
| | | | 440VAC | 400VAC |
| Dielectric Withstanding Voltage | Rted Voltage | | Test Voltage | |
| | 400VAC | | 4000 VAC for 1 min.漏电流小于 5MA | |
| Dissipation Factor (D.F) | Y5P,Y5U | TANδ(DF) ≦2.5%,measured at 1KHz±10%,1.0 － 5.0 Vrms,25℃ | | |
| | Y5V | TANδ(DF) ≦5.0%,measured at 1KHz±10%,1.0 － 5.0 Vrms,25℃ | | |
| Capacitance(C) | Range | 10 pF to 4700 pF. measured at 1KHz±10%, 1.0 － 5.0 Vrms, 25℃ | | |
| | Tolerance | ±10% | Y5P | |
| | | ±20% | Y5U,Y5V | |
| Insulation Resiatance(IR) | 10000 MΩ , 1 min , 100 VDC | | | |
| Temperature Characteristics | Type Code | Temp. Coeff. | Temp. Range | |
| | Y5P,Y5U | ±10%, +22~－56% | －40℃ to ＋85℃,－40℃ to ＋125℃ | |
| | Y5V | +30%~－80% | －40℃ to ＋85℃,－40℃ to ＋125℃ | |

# Ceramic Capacitor Part number system

**The 18 digits part number is formed as follow:**

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| O | 1 | 1 | G | 2 | 1 | 0 | 2 | M | 0 | 6 | E | L | 2 | 3 | 0 | 1 | 0 |

**Digit 1~3 Type Code**

| Code | Type | Code | Type | Code | Type | Code | Type |
|---|---|---|---|---|---|---|---|
| O11 | Y1 Y5V | O21 | NPO | O25 | Y5V | O29 | |
| O12 | Y2 Y5V | O22 | SL | O26 | N750 | O30 | |
| O13 | Y1 Y5P | O23 | Y5P | O27 | N3300 | O31 | |
| O14 | Y2 Y5P | O24 | Y5U | O28 | Y5R | O32 | |

Code explain:

| Code | TYPE | NOTS |
|---|---|---|
| Ceramic Safety Capacitors | | |
| O11 | Y1 | X1/440Vac Y1/400Vac |
| O12 | Y2 | X1/400Vac Y2/300Vac |
| Ceramic Capacitors | | |
| O21 | NPO | 0+/-60m\ppm/$^{0}$C |
| O22 | SL | +100~-1000ppm/$^{0}$C |
| O23 | Y5P | +/-10% |
| O24 | Y5U | +22%-56% |
| O25 | Y5V | +22%-82% |
| O26 | N750 | -750ppm/$^{0}$C |
| O27 | N3300 | -3300ppm/$^{0}$C |
| O28 | Y5R | +/-15% |

**Digit 4~5 Rated Voltage Code**

| | A | B | C | D | E | F | G | H | J | K | L | M | N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 12 | 16 | 20 | 25 | | | 50 | 63 | | | 1100 | |
| 2 | 100 | 125 | 160 | 200 | 250 | 315 | 400 | 500 | 630 | 800 | 120 | | |
| 3 | 1000 | 1250 | 1600 | 2000 | 2500 | 3000 | 4000 | 5000 | 6000 | 8000 | 1200 | 1400 | |
| | P | Q | R | S | T | U | V | W | X | Y | | | |
| 1 | 240 | 300 | 330 | 440 | 540 | 600 | 700 | 850 | 900 | | | | |
| 2 | 275 | 305 | 350 | 450 | 520 | | 760 | | | | | | |
| 3 | 280 | 310 | | 480 | | | | | | | | | |

Explanation:Refer to JIS standard,Letter and then number indicate AC,but number and then Letter indicate DC,for example,2A indicate 100VDC,A2 indicate 100VAC.

**Digit 6~8 Capacitance Expressed in 3-digit code 3 Code**

The first 2digits indicate significant figures,and the third digit specifies the number of zero to follow.

This gives the capacitance in picofarads.

For examples：

102=10*$10^2$PF=1,000PF=1.0nF=0.001uF 105=10*$10^5$PF=1,000,000PF=1000nF=1uF

**Digit 9 Capacitance Tolerance Code**

| Tolerance | ±0. 25PF | ±0. 5PF | ±5% | ±10% | ±20% | +50%/−20% | +80%/−20% | +100%/−0% |
|---|---|---|---|---|---|---|---|---|
| Code | C | D | J | K | M | S | Z | P |

**Digit 10~11 Diameter Size Code**

**Diameter Type**

| Diameter max(mm)徑 | 5.0 | 6.0 | 7.0 | 8.0 | 9.0 | 10.0 | 11.0 | 12.0 | 13.0 | … |
|---|---|---|---|---|---|---|---|---|---|---|
| Case No. | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | *** |

**Digit 12 Lead Spacing Code**

| Pitch | 2.5 | 5.0 | 7.5 | 10 | Special |
|---|---|---|---|---|---|
| Case No. | A | B | E | D | Z |

**Digit 13 Lead Form Code**

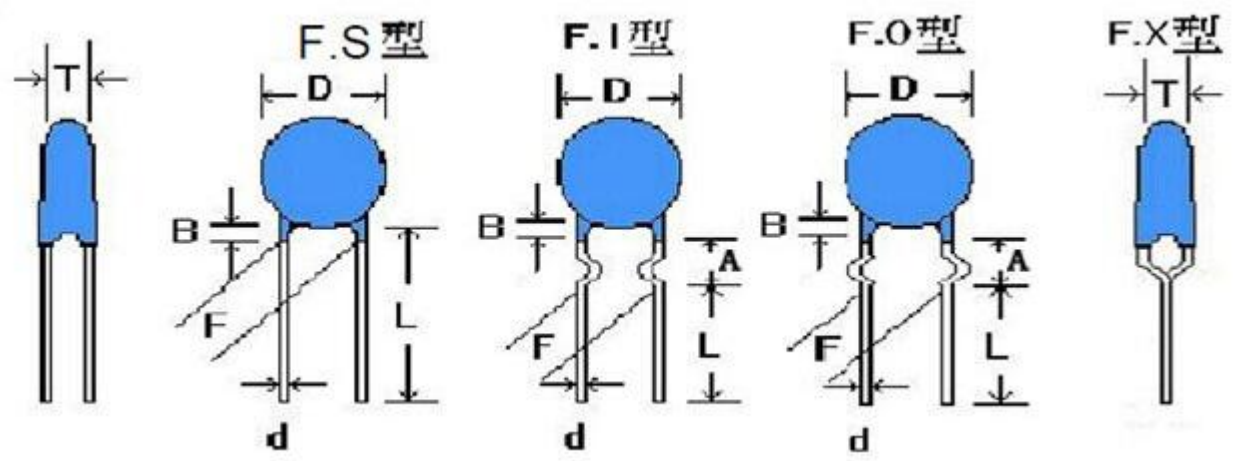
Lead Type

| Code | L | H | K | M | O | P | R | T | S |
|---|---|---|---|---|---|---|---|---|---|
| Lead Type | Long line | Short line | Inside of bending | Outside of bending | Double curved | Before and afterbecome warped line | The bending line | Taping | Customer Special Require |

**Digit 14~16 Lead Length(Straight) and Tolerance of Lead Length(straight) and Expreesed in 3-Letter Code**

Example：Code 035:35/10=3.5mm 230:230/10=23mm

**Digit 17~18 Internal use Color\material group\packing\ place of production**

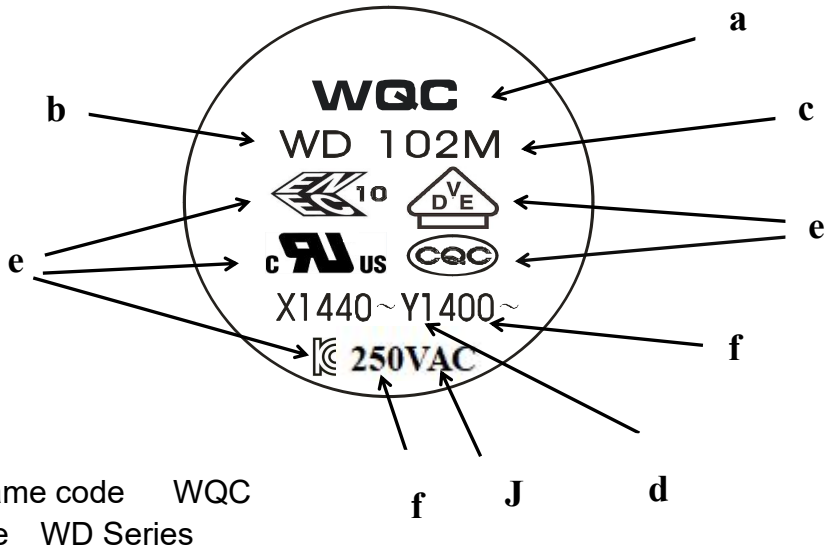



Dimensions and Tolerance
B=3.0mm max for AA
L=3-30mm

编带详细参数看 P11.

## Approved Spec. Data

| Name specification | D±0.5㎜ | F±0.5㎜ | L±0.5㎜ | T±0.5㎜ | d | B | A |
|---|---|---|---|---|---|---|---|
| Y5V 102M 400VAC | 6 | 7.5 | 23 | 3.7 | 0.55 | <2.5 | <3.0 |




Marking:
a. Company name code WQC
b. Product Type WD Series
c. Nominal Capacitance & Tolerance 102 = 1000pF, K= ±10%, M= ±20%
d. Safety Class such as Y1
e. Recognized Type
f. Rated Voltage
J.AC VOLTAGE

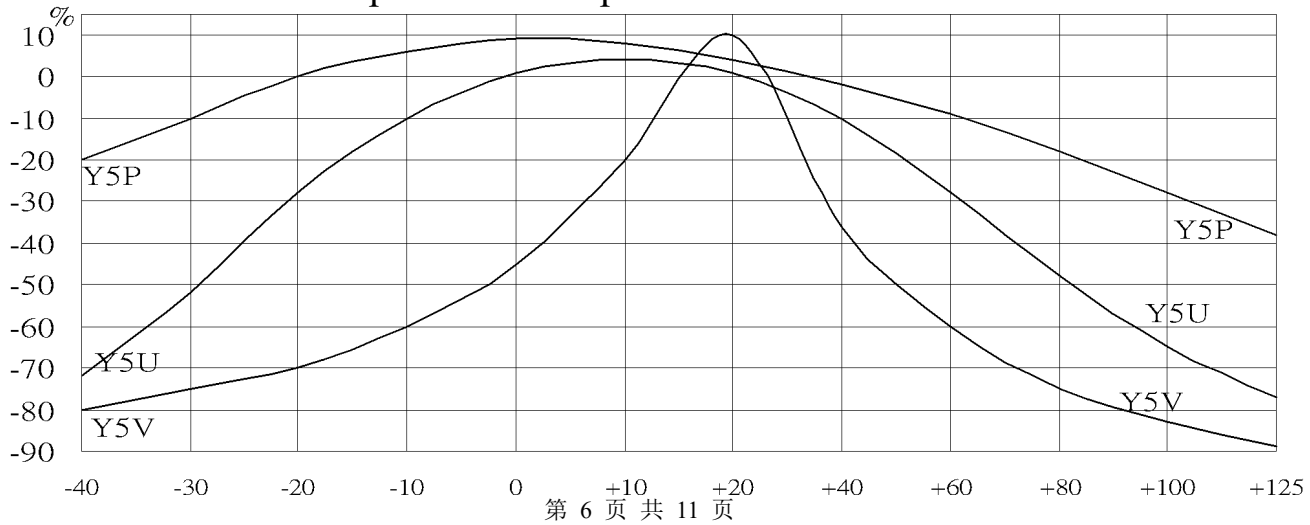
## Packing Quantity:

| Packing | Safety Capacitor | High Voltage Capacitor(Y1, Y2) | *Ceramic Capacitor DC* |
|---|---|---|---|
| Bulk | 1000Pcs | 1000Pcs | 1000Pcs |
| Tape Ammo | 2000Pcs | 1500Pcs | 2000Pcs |

ROHS Compliance , SVHC

| EIA TEMPERATURE CHARACTERISTIC CHART | | | |
|---|---|---|---|
| Firs Digit is low Temperature | Second Digit is High Temperature | Last Digit is Capacitance Change Over Temperature Range From + 25 C Reading | |
| X： - 55℃ | 4： + 65℃ | A | ± 1.0 % |
| Y： - 25℃ | 5： + 85℃ | B | ± 1.5 % |
| Z： + 10℃ | 6： + 105℃ | C | ± 2.2 % |
| | 7： + 125℃ | D | ± 3.3 % |
| | 8： + 150℃ | E | ± 4.7 % |
| | | F | ± 7.5 % |
| | | P | ± 10 % |
| | | R | ± 15 % |
| | | S | ± 22 % |
| | | T | + 22 % - 33 % |
| | | U | + 22 % - 56 % |
| | | V | + 22 % - 82 % |

Capacitance Temperature Characteristics



**Performance & Tests, draw up by IEC 60384-14:2005 and GB/T 14472**

"Note:(1) Is was defined according with IEC 60384-14:2005, when for qualification approval and periodic tests, the withstanding test must last to 1 minute, and it belong to destroyed test domain, therefore, after the test, capacitors should be scrap. Withstand voltage test should rise slowly at 150V/s, and test time is counted from when the voltage reaches to experiment requirement. (2) The test time is more than 1 second at production period, and the rated test voltage is applied.Capacitors may cause to damage when withstand voltage test repeated."

| NO. | Item | | Characteristic | Test Method | |
|---|---|---|---|---|---|
| 1 | Appearance and Dimensions | | Please refer to figures and tables on page 2, 3 and 4. | 1~1<br>1~2 | "Production line visual inspection must be done in full and remove the defective products."<br>"Dimensions measurement by micrometer and Caliper |
| 2 | Marks | | Must be clean and clear. | 2~1 | Label need to be able endure wiping with Isopropanol |
| 3 | Withstand voltage test (I) | Between terminal | Can not have exceptions. | 3~1 | Rated voltage: 300VAC for Y2, test voltage 2000 VAC or 2600 VAC, time 60s, frequency: 50Hz/60Hz.<br>**Rated voltage: 400VAC for Y1, test voltage 4000 VAC, Approval and period test: 60s, Lot inspection 100% and time 2s, dicharge current must ≦50 mA."** |
| | | Between terminal and coating. | Can not have exceptions. | 3~2 | Use metal foil test method: use metal foil wrap around the capacitor body, each end extending at least 5mm, and keep 1mm/1kV distance minimum, between metal foil and terminals. for Y2, test voltage 2300VAC; for Y1, test voltage 4000VAC, test time 60s. |
| 4 | Withstand voltage test(III) (For safety symbol A2) | | (1)Gauze shall not ignite. (2)Capacitors shall not in burned. | 4~1 | According to IEC 60384-14 and GB / T 14472 requirements. |
| 5 | Withstand voltage test (IV)(For safety symbol B2) | | (3)Elements and coating must not scattered. (4)Terminals can not be moved away from the mounting position than 3mm. | 5~1 | According to IEC 60384-14 and GB / T 14472 requirements. |
| 6 | IR | Between terminals | More than 10000MΩ. | 6~1 | Measured voltage is 100 ± 15V within 1 minute, and IR keeps within the specified value. |
| | | Between terminals and coating. | More than 10000MΩ. | | |
| 7 | Capacitance | | Within specified tolerance | 7~1 | The Capacitance shall be measured at 25℃, with 1±0.1kHz and 5Vrms max |
| 8 | Dissipation Factor(D.F) | | B(Y5P) tan ≦2.5%<br>E(Y5U) tan ≦2.5%<br>F(Y5V) tan ≦5.0% | 8~1 | "The Dissipation Factor shall be measured at 25℃ with 1±0.1kHz and 5Vrms max |

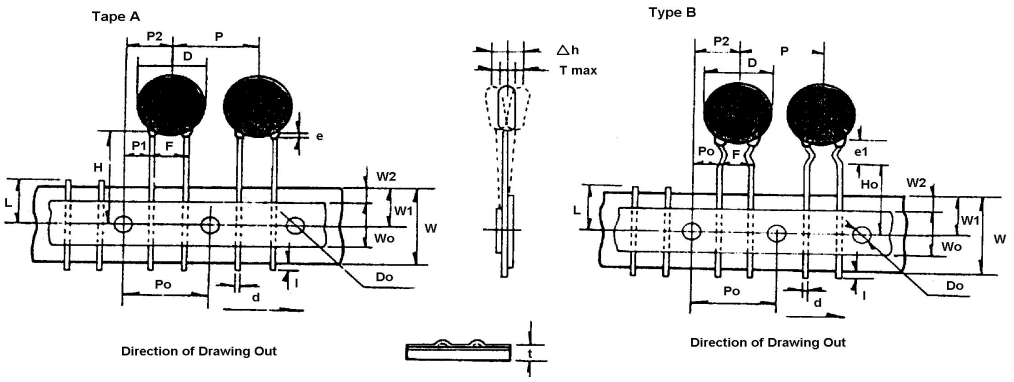
<table>
<tr><th>NO</th><th>Item</th><th colspan="4">Characteristic</th><th colspan="4">Test Method</th></tr>
<tr><td rowspan="3">9</td><td rowspan="3">Temperature Characteristic</td><td colspan="4">Temperature Coefficient<br>(T.C. category applicable):</td><td>9~1</td><td colspan="3">Temperature Coefficient (T.C. category applicable):</td></tr>
<tr><td>TYPE<br>Temp.Range</td><td colspan="2">SL</td><td>YN</td><td>9~2</td><td colspan="3">PPM/℃＝(Ct2－ Ct1)<br>/Ct1*(t2－t1)<br>Ct2：the capacitance of t2<br>Ct1：the capacitance of t1<br>t2：85℃±3℃<br>t1：20℃±2℃</td></tr>
<tr><td>20~85℃</td><td colspan="2">+ 350~ -1000ppm/℃</td><td>- 800~ -5800 ppm/℃</td><td></td><td colspan="3"></td></tr>
<tr><td colspan="4">Temperature characteristics: (High Dielectric applicable)<br>Capacitance change rate within the range:<br><br>Type B Within ±10%<br>Type E Within ＋22% －56%<br>Type F Within ＋30% －80%</td><td>9~3</td><td colspan="3">Temperature phase<br>1) 20±2℃ → 2) -25±2℃ → 3) 20±2℃ →4) 85±2℃ →5) 20±2℃<br>Capacitance change: (High Dielectric Category applicable)<br>C .C(%)＝(Ctx－Ct20)/Ct20*100<br>Ctx： Except Temp. phase 1、3、5, The capacitance of any temperature between phase 2 to phase 4.<br>Ct20： The capacitance of phase 3 temp.</td></tr>
<tr><td rowspan="3">10</td><td rowspan="3">Robustness of terminations</td><td>Tensile</td><td colspan="3">Lead wires not be snapped<br><br>Capacitors not be damaged</td><td>10~1</td><td>Diameter (mm)</td><td>Load(kgs)</td><td>Time(sec)</td></tr>
<tr><td colspan="4"></td><td></td><td>0.5Φ</td><td>0.5</td><td>10</td></tr>
<tr><td colspan="4"></td><td>10~2</td><td>0.6Φ~0.8Φ</td><td>1</td><td>10</td></tr>
<tr><td></td><td></td><td colspan="4"></td><td colspan="3">Fix the capacitor's body and apply a tensile weight gradually to each lead wire in the radial direction</td></tr>
<tr><td></td><td></td><td>Bending</td><td colspan="3">Lead wires not be fractured<br>Capacitors not be damaged</td><td>10~3</td><td>Diameter (mm)</td><td>Load(kgs)</td><td rowspan="3">Bending angle is 90 more than twice.</td></tr>
<tr><td></td><td></td><td colspan="4"></td><td></td><td>0.5Φ</td><td>0.25</td></tr>
<tr><td></td><td></td><td colspan="4"></td><td></td><td>0.6Φ~0.8Φ</td><td>0.5</td></tr>
<tr><td rowspan="3">11</td><td rowspan="3">Vibration resistance</td><td>Appearance</td><td colspan="3">No significant abnormal</td><td rowspan="3">11~1</td><td colspan="3" rowspan="3">Vibration frequency from 10Hz to 55Hz and back to 10Hz, amplitude 1.5mm, period time within 1 minute。</td></tr>
<tr><td>Cap. Change</td><td colspan="3">Within specification</td></tr>
<tr><td>Q or DF</td><td colspan="3">Within initial specification</td></tr>
<tr><td rowspan="3">12</td><td rowspan="3">Soldering Heat Resistance</td><td>Appearance</td><td colspan="3">No significant abnormal</td><td>12~1</td><td colspan="3" rowspan="2">Solder temperature 350±10℃<br><br>Immersion time 3.0± 0.5sec<br><br>Placed at room condition for 4~24 hours, and then to measure.</td></tr>
<tr><td>Dielectric StrengthI</td><td colspan="3">compliance with the characteristic as No.3</td><td>12~2</td></tr>
<tr><td>Capacitance change rate</td><td colspan="3">B: within ±10%<br>E: within ±15%<br>F: within ±20%</td><td>12~3</td><td colspan="3"></td></tr>
</table>

| No. | Item | Characteristic | | Test Method | |
|---|---|---|---|---|---|
| 13 | Solder ability | The round surface of lead wires, there must be 3/4 area welding with the solder.。 | | 13~1 13~2 | Solder temperature 275±10℃<br>Immersion time 2.0± 0.5sec |
| 14 | Humidity (Under Steady State) | Appearance | | No significant abnormal | 14~1 Temperature：40±2℃<br>14~2 Humidity：90~95%RH<br>14~3 Time：500±12 Hrs<br>14~4 Remove & placed at room condition for 1~2 hours, and then to measure. |
| | | Dielectric StrengthI | | Must meet the requirements of No.3 | |
| | | I R | Between terminals | More than the 1/2 value of No.6 requirements. | |
| | | | Between terminal& coating | | |
| | | Capacitance change rate | | Type B within ±15%<br>Type E within ±20%<br>Type F within ±30% | |
| | | Dissipation Factor (D.F) | | Type B & E, under 5%.<br>Type F, under 7.5% | |
| 15 | Damp heat loading | Appearance | | No significant abnormal | 15~1 Temperature：40±2℃<br>15~2 Humidity：90~95%RH<br>15~3 Time：500±12 Hrs<br>15~4 Voltage: AC 180Vrms<br>15~5 Current：Less than 50mA<br>15~6 Remove & placed at room condition for 1~2 hours, and then to measure. |
| | | Dielectric StrengthI | | Must meet the requirements of No.3 | |
| | | IR | Between terminals Between terminal& coating | More than the 1/2 value of No.6 requirements. | |
| | | Capacitance change rate | | Type B within ±15%<br>Type E within ±20%<br>Type F within ±30% | |
| | | Dissipation Factor (D.F) | | Type B & E, under 5%<br>Type F, under 7.5%. | |

<table>
<tr><th>No</th><th>Item</th><th colspan="3">Characteristic</th><th colspan="2">Test Method</th></tr>
<tr><td rowspan="5">16</td><td rowspan="5">Endurance</td><td colspan="2">Appearance</td><td>No significant abnormal</td><td rowspan="5">16~1<br><br>16~2<br><br>16~3<br><br>16~4<br><br>16~5</td><td rowspan="5">Temperature：85±3℃; 125±5℃<br><br>Time： 1000±12 Hrs<br><br>Voltage: rated voltage of 1.7UR<br><br>Current： less than 50mA<br><br>Remove & placed at room condition for 1~2 hours, and then to measure.</td></tr>
<tr><td colspan="2">Dielectric StrengthI</td><td>"Must meet the requirements of No.3</td></tr>
<tr><td rowspan="2">I<br>R</td><td>Between terminals</td><td rowspan="2">More than the 1/2 value of No.6 requirements.</td></tr>
<tr><td>Between terminal&coating</td></tr>
<tr><td colspan="2">Capacitance change rate</td><td>Type B within ±15%<br>Type E within ±20%<br>Type F within ±30%</td></tr>
<tr><td colspan="2">Dissipation Factor (D.F)</td><td>Type B & E, under 5%<br>Type F, under 7.5%</td></tr>
<tr><td>17</td><td colspan="3">Flame Test</td><td>Applicable<br>safety symbols A2, B2.</td><td></td><td>The capacitor should be subjected to applied flame for 15 sec, and then removed for 15 sec, until 3 cycles are completed. And then continued to flame a minute and never to explode.</td></tr>
<tr><td>18</td><td colspan="3">Solvent Resistance (Body)</td><td>After the test must meet the standards of its electrical properties</td><td></td><td>The capacitor should be immersed into a isopropyl alcohol for 5±0.5 minutes, then removed and placed for 48 hrs. at room condition before post measurements.</td></tr>
<tr><td>19</td><td colspan="3">Solvent Resistance (Mark)</td><td>Marks should be legible</td><td></td><td>Use cotton yarn dips isopropyl alcohol, by force 5±0.5 N/1 cm^2, 1 second round trip twice to wipe mark on the body, and run 5 cycles.</td></tr>
</table>

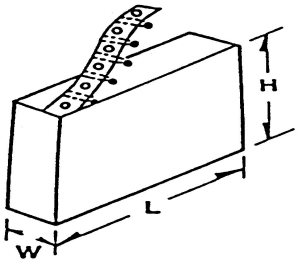
# TAPING SPECIFICATIONS

## Taping (Radial)--Lead Spacing F=7.5±0.8 or 10.0±0.8




| Item | | Code | Dimensions (mm) | Item | Code | Dimensions (mm) |
|---|---|---|---|---|---|---|
| Taping Pitch | | P | 12.7±1.0 | Lead Protrusion | l | +0.5~1.0 |
| Guide Pitch | | Po | 12.7±1.0 | Diameter of Feed Hole | Do | 4.0±0.3 |
| Lead Spacing | | F | 5.0±0.8<br>7.5±0.8<br>9.5±0.8 | Diameter of Lead | d | 0.55+0.06-0.05 |
| Feed Hole Position Capacitor Body | | P2 | 6.35±1.3 | Total Thickness of Tape | t | 0.7±0.2 |
| Feed Hole Position Capacitor Lead | | P1 | 3.85±0.7 | Thickness of Capacitor Body | T | Differ in each product |
| Diameter Of ISO | | D | See table of each series | Alignment to FR. Direction | Δh | 0±2.0 |
| | | | | Length of snipped Lead | L | 3.5±0.3mm |
| Width Of Base Tape | | W | 18.0±0.5 | Width of Hold-down Tape | Wo | 12.5 |
| Feed Hole Vertical Position | | W1 | 9.0 +0.75 -0.05 | Hold-down Tape Position | W2 | 1.5±1.5 |
| Taping Height | For Straight | Ho | 16.0±0.5 | Coating Extention | e | 3.0 以下 |
| | For Crimp | H | 20 +1.5 -1.0 | | e1 | up to center of crimp |

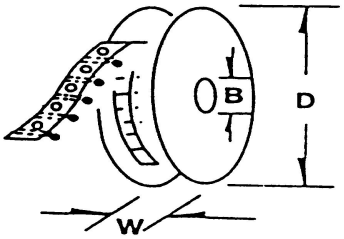
### AMMO PACK




H =241±5 mm
L = 332±5 mm
W = 42 ±3 mm

Acceptable to standard radial type cartridge.

### REE




D ≦ 354(13.93)
B ≧ 21(.83")but
≦ 30(1.18")
W ≦ 55(2.16)

Acceptable to standard radial type cartridge with a few extra accessories. Reeled axials are also acceptable to standard axial type cartridge with a few accessories.