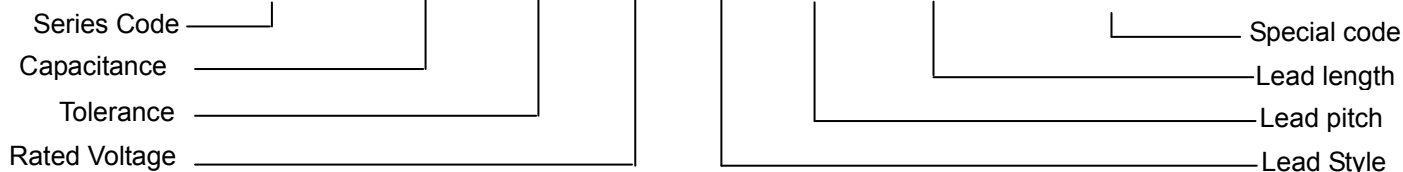


TYPE : MPK SPECIFICATION

ELECTRICAL CHARACTERISTICS

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18



| Digit 1-3 | Type | PEI | PEN | MEF | MEB | MET | MEA | MEM | MPX | EPI | MFT | MPM | MPC | MPL |
|-----------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | PPI | PPN | MPP | MPB | MPT | MPF | MPH | MPA | PPS | MFP | MPN | MPS | MPK |
| | | MFA | MFB | MPQ | MPR | MET | MES | MFC | | | | | | |

Digit 4-6: Digit 4-5 indicate the first two figures of the capacitance value and the 6th digit indicate the number of zero added to obtain the rated capacitance in pF. EX. 102=1000pF=1nF=0.001 μF

| Digit 7 | Code | | F | | G | | H | | J | | K | | M | |
|---------|-----------|--|-----|--|-----|--|-----|--|-----|--|------|--|------|--|
| | Tolerance | | ±1% | | ±2% | | ±3% | | ±5% | | ±10% | | ±20% | |

| Digit 8-9 | | | A | B | C | D | E | F | G | H | J | K | L | M | N | |
|-----------|---|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|
| | 1 | | | | | 20 | | | | | 50 | 63 | | | 1100 | 15 |
| | 2 | | 100 | 125 | 160 | 200 | 250 | 315 | 400 | 500 | 630 | 800 | 120 | | | 150 |
| | 3 | | 1000 | 1250 | 1600 | 2000 | 2500 | 3150 | 4000 | 5000 | 6300 | 8000 | 1200 | 1400 | 1500 | |
| | | | 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 | | | | | | | | | | | |

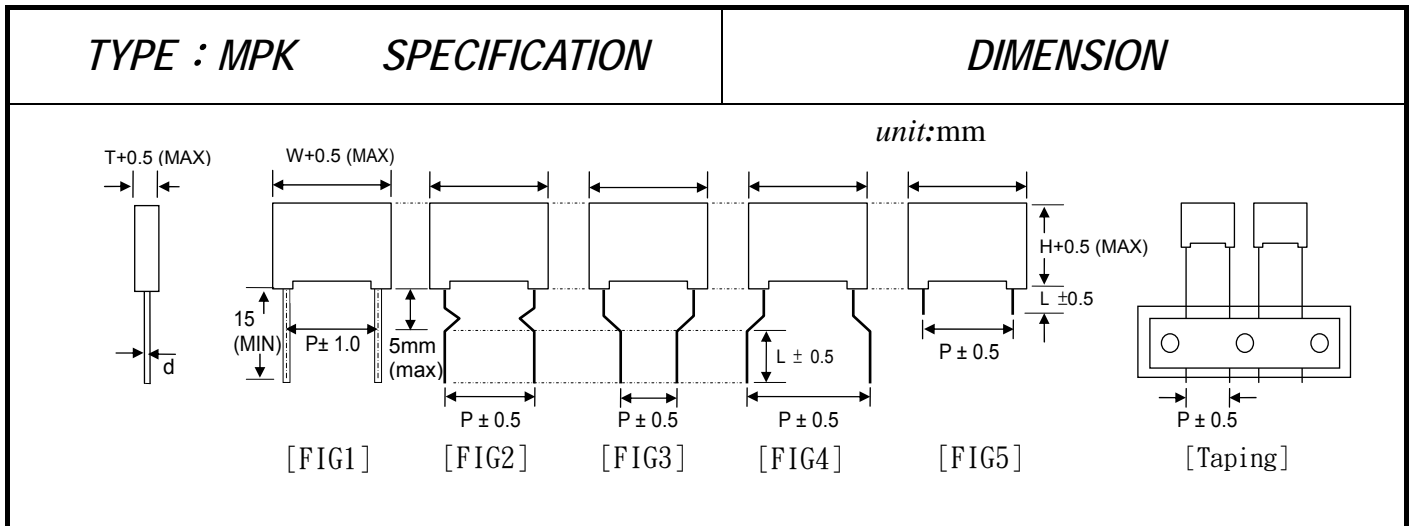
Letter and then number indicate AC, but number and then Letter indicate DC.
 EX. 2A=100VDC A2=100VAC

| Digit 10 | Code | A | | | B | | | C | | | D | | X | |
|----------|------------|-------------------------------------|--|--|-------------------------------------|--|--|---------------------------|--|--|--------------------------|--|--------------------------|--|
| | Lead style | Straight lead | | | Kink-Cutted | | | Inward forming | | | outward forming | | straight lead Cutted | |
| | Code | E | | | L | | | T | | | F | | G | |
| | Lead style | Taping (Ammo) (直脚 TP, P0=12.7mm) | | | Taping (Ammo) (直脚 TP, P0=15.0mm) | | | Taping (Ammo) (同等彎 TP) | | | Taping (Ammo) (內彎 TP) | | Taping (Ammo) (外彎 TP) | |

| Digit 11-12 | Code | P2 | P3 | P4 | P5 | P6 | P8 | P9 | PA | PB | PC | PD | PE |
|-------------|--------|-----------------|-----------------|-----------------|-----------------|------|-----------------|-----------------|-------|-----------------|-----------------|-----------------|-----------------|
| | Pitch | 3.5 | 4.0 | 4.5 | 5.0 | 6.0 | 7.0 | 7.5 | 8.0 | 9.0 | 10.0 | 31.0 | 15.0 |
| | Code | PF | PG | PH | PJ | PK | PL | PM | PN | PP | PQ | PR | PS |
| | Pitch | 20.0 | 21.0 | 22.0 | 22.5 | 28.5 | 52.5 | 27.5 | 30.0 | 32.5 | 41.0 | 12.5 | 17.5 |
| | Code | PT | PU | PV | PW | PX | PY | PZ | PO | | | | |
| | Pitch | 51.0 | 27.0 | 37.5 | 25.0 | 12.0 | 35.0 | 16.0 | Axial | | | | |
| Digit 13-14 | Code | L1 [†] | L2 | L3 | L4 | L5 | L6 | L7 [†] | L8 | L9 | LA | LB | LC |
| | Length | 15.0 | 3.5 | 4.0 | 4.5 | 10.0 | 15.0 | 20.0 | TP | 2.7 | 8.0 | 5.0 | 6.0 |
| | Code | LD [†] | LE | LF | LG | LH | LJ [†] | LK | LL | LM | LN | LP | LQ [†] |
| | Length | 26.0 | 7.5 | 5.5 | 12.0 | 7.0 | 25.0 | 13.0 | 6.5 | 3.0 | 9.0 | 2.5 | 17.0 |
| | Code | LR | LS [*] | LU [*] | LW [*] | LX | LY [*] | LZ [*] | LV | LO [*] | LT [*] | VL [*] | |
| | Length | 3.8 | 24.0 | 27.0 | 40.0 | 16.0 | 30.0 | 32.0 | 3.2 | Axial | 22 | 33 | |

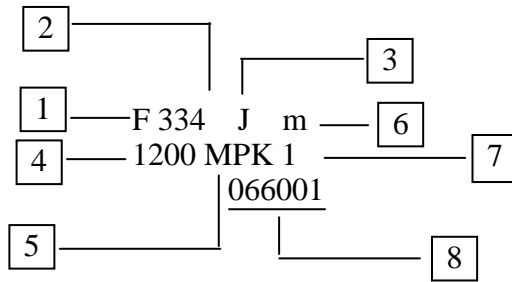
Notes: * Straight, length is minimum

| Digit 15-16 | Code | Explanation | | Code | Explanation | | Code | Explanation | | | | |
|-------------|-----------------|---|--|------|--|--|------|---------------------------------|--|--|--|--|
| | CT | The different color, The different size (T) | | CW | The different color & The different size (W) | | EL | Low noise | | | | |
| | HD | HF, The different color | | CH | The different color & The different size (H) | | EE | Low ESR | | | | |
| | TH | Humidity Bias Test | | EA | Low noise, The different color | | ED | Low ESR, The different size (H) | | | | |
| Digit 17-18 | Special Number. | | | | | | | | | | | |



| CAP. (<i>uF</i>) | VOLT. (VDC) | TOL. ±% | DIMENSION unit:mm | | | | | SCC P/N |
|-----------------------|----------------|------------|-------------------|----------|----------|----------|--------------------|--------------------|
| | | | <i>W</i> | <i>H</i> | <i>T</i> | <i>P</i> | <i>dφ</i> ±0.05 | |
| 0.01 | 1000 | 5 | 13.0 | 9.0 | 4.0 | 10.0 | 0.6 | MPK103J3A*PC**CT01 |
| 0.012 | 1000 | 5 | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 | MPK123J3A*PC**CT03 |
| 0.015 | 1000 | 5 | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 | MPK153J3A*PC**CT03 |
| 0.018 | 1000 | 5 | 13.0 | 11.0 | 5.0 | 10.0 | 0.6 | MPK183J3A*PC**CT03 |
| 0.022 | 1000 | 5 | 13.0 | 12.0 | 6.0 | 10.0 | 0.6 | MPK223J3A*PC**CT05 |
| 0.027 | 1000 | 5 | 13.0 | 12.0 | 6.0 | 10.0 | 0.6 | MPK273J3A*PC**CT05 |
| 0.033 | 1000 | 5 | 13.0 | 12.0 | 7.0 | 10.0 | 0.6 | MPK333J3A*PC**CT08 |
| 0.039 | 1000 | 5 | 13.0 | 13.0 | 7.0 | 10.0 | 0.6 | MPK393J3A*PC**CT08 |
| 0.047 | 1000 | 5 | 13.0 | 14.0 | 8.0 | 10.0 | 0.6 | MPK473J3A*PC**CT11 |
| 0.056 | 1000 | 5 | 18.0 | 13.0 | 7.0 | 15.0 | 0.6 | MPK563J3A*PE**ZT08 |
| 0.068 | 1000 | 5 | 18.0 | 13.0 | 7.0 | 15.0 | 0.6 | MPK683J3A*PE**ZT08 |
| 0.082 | 1000 | 5 | 18.0 | 13.5 | 7.5 | 15.0 | 0.8 | MPK823J3A*PE**CT09 |
| 0.1 | 1000 | 5 | 18.0 | 14.5 | 8.5 | 15.0 | 0.8 | MPK104J3A*PE**CT12 |
| 0.12 | 1000 | 5 | 18.0 | 15.0 | 9.0 | 15.0 | 0.8 | MPK124J3A*PE**CT14 |
| 0.15 | 1000 | 5 | 18.0 | 16.0 | 10.0 | 15.0 | 0.8 | MPK154J3A*PE**CT16 |
| 0.18 | 1000 | 5 | 18.0 | 18.0 | 10.0 | 15.0 | 0.8 | MPK184J3A*PE**CT16 |
| 0.22 | 1000 | 5 | 26.5 | 17.0 | 8.5 | 22.5 | 0.8 | MPK224J3A*PJ**CT12 |
| 0.27 | 1000 | 5 | 26.5 | 19.0 | 10.0 | 22.5 | 0.8 | MPK274J3A*PJ**CT16 |
| 0.33 | 1000 | 5 | 26.5 | 19.0 | 10.0 | 22.5 | 0.8 | MPK334J3A*PJ**CT16 |
| 0.39 | 1000 | 5 | 26.5 | 20.0 | 11.0 | 22.5 | 0.8 | MPK394J3A*PJ**CT18 |
| 0.47 | 1000 | 5 | 26.5 | 21.5 | 12.0 | 22.5 | 0.8 | MPK474J3A*PJ**CT23 |
| 0.56 | 1000 | 5 | 26.5 | 24.0 | 13.5 | 22.5 | 0.8 | MPK564J3A*PJ**CT21 |
| 0.68 | 1000 | 5 | 32.0 | 22.0 | 13.0 | 27.5 | 0.8 | MPK684J3A*PM**CT20 |
| 0.82 | 1000 | 5 | 32.0 | 25.0 | 14.0 | 27.5 | 0.8 | MPK824J3A*PM**CT24 |
| 1.0 | 1000 | 5 | 32.0 | 25.5 | 16.0 | 27.5 | 0.8 | MPK105J3A*PM**CT32 |
| | | | | | | | | |
| | | | | | | | | |

Marking

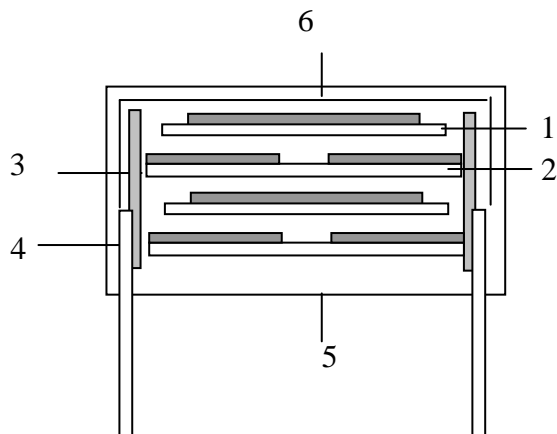


- 1 : Company symbol
- 2 : Capacitance
- 3 : Tolerance
- 4 : Rated voltage
- 5 : Type name
- 6 : Year / Month
- 7 : Week
- 8 : Production batch number (P ≥ 10mm)

| Year | Month | Mark | Year | Month | Mark | Year | Month | Mark | Year | Month | Mark |
|-----------------------------|-------|------|-----------------------------|-------|------|-----------------------------|-------|------|-----------------------------|-------|------|
| 2017 2021 2025 ... | 1 | A | 2018 2022 2026 ... | 1 | N | 2019 2023 2027 ... | 1 | a | 2020 2024 2028 ... | 1 | n |
| | 2 | B | | 2 | P | | 2 | b | | 2 | p |
| | 3 | C | | 3 | Q | | 3 | c | | 3 | q |
| | 4 | D | | 4 | R | | 4 | d | | 4 | r |
| | 5 | E | | 5 | S | | 5 | e | | 5 | s |
| | 6 | F | | 6 | T | | 6 | f | | 6 | t |
| | 7 | G | | 7 | U | | 7 | g | | 7 | u |
| | 8 | H | | 8 | V | | 8 | h | | 8 | v |
| | 9 | J | | 9 | W | | 9 | j | | 9 | w |
| | 10 | K | | 10 | X | | 10 | k | | 10 | x |
| | 11 | L | | 11 | Y | | 11 | l | | 11 | y |
| | 12 | M | | 12 | Z | | 12 | m | | 12 | z |

周期 4 年一個輪迴, 如 CODE:A, 代表:2017 年 1 月, 2021 年 1 月, 2025 年 1 月, 2029 年 1 月, 2033 年 1 月...
 CODE:B, 代表:2017 年 2 月, 2021 年 2 月, 2025 年 2 月, 2029 年 2 月, 2033 年 2 月...

Construction



- 1. Metallized polypropylene film
- 2. Metallized polypropylene film
- 3. Metal spray.
- 4. Lead wire
- 5. Epoxy resin. (UL94V-0、B)
- 6. PBT Case. (UL94V-0、B)

TYPE : MPK SPECIFICATION

ELECTRICAL CHARACTERISTICS

| No | 項目 Item | | 性能 Performance | | 條件 Test Conditions | 參考標準 Reference Standard |
|----|---------------------------------------|---|---|---|--|-------------------------------|
| 1 | 使用溫度範圍 Operating Temperature Range | | -40°C ~ +110°C (+85°C to 110°C:decreasing Factor 1.25%per°C for VR(DC) | | | IEC 60384-16 2.1.12.2.5 |
| 2 | 額定電壓 Rated Voltage | | 1000VDC,1200VDC,1600VDC, 2000VDC | | | IEC 60384-14 2.2.3 |
| 3 | 耐電壓 Withstand Voltage | 端子間 Between Terminals | 無 Short 現象. | | Rated voltage x 160% 10 sec Charge and discharge current shall not exceed 10 mA | IEC 60384-16 4.2.1 |
| | | 端子外裝間 Between Terminals & Enclosure | | | | |
| 5 | 絕緣阻抗 Insulation Resistance | | C≤0.33 μF | VR≤100V 50,000 MΩ VR>100V 100,000 MΩ | Charge time: 60 ±5sec. Charge voltage: VR < 100VDC: 50VDC VR < 500VDC: 100VDC VR ≥ 500VDC: 500VDC Test Temp: 20°C | IEC 60384-16 4.2.4 |
| | | | C>0.33 μF | VR≤100V 15,000 S VR>100V 30,000 S | | |
| 6 | 靜電容量 Capacitance | | 於指定範圍內 Within specified tolerance | | at 1 KHz ±10% Measure voltage at 1 Vrms Test temp: 20°C | IEC 60384-16 4.2.2 |
| 7 | 散逸因數 Dissipation Factor | | 0.1 %max at 1KHz | | Measure voltage at 1 Vrms Test temp: 20°C | IEC 60384-16 4.2.3 |
| 8 | 端子強度 Terminal Strength | 抗拉強度 Pull Strength | 端子不鬆斷 No cutting or slack of terminals | | Wire diameter: 0.6&0.8mm Load: 1 kg, time: 10 sec. Wire diameter: 1.0 mm Load: 2 kg, time: 20 sec. | IEC 60384-16 4.3 |
| | | 扭轉強度 Bending Strength | | | Wire diameter:0.6&0.8 mm 1.0&1.2 mm 90° x 4 time | |
| 9 | 耐震性 Vibration Proof | | 無明顯異常 No abnormality of the appearance | | Frequency range 10-55-10-55 Hz Amplitude: 0.75 mm, 2 hrs/direction for 3 directions | IEC 60384-16 4.7 |
| 10 | 焊錫附著性 Solder ability | | 導線浸入後的表面至少需附著 95% 的新焊錫 At least 95% of the surface of the lead wire dipped into is covered with new solder. | | Solder temp: 245°C ±5°C Immersion time: 2±0.5sec. Solder: SnAgCu (Sn:96.5% Ag:3% Cu:0.5%) | IEC 60384-16 4.5 |
| 11 | 耐寒性 Cold Resistance | 靜電容量化率 Capacitance Change | △C/C≤±5% Within ±5% | | Temperature: -40 ±2°C Duration: 96±4 hrs | IEC 60384-16 4.10.4 |

| | |
|---------------------------------|-----------------------------------|
| TYPE : MPK SPECIFICATION | ELECTRICAL CHARACTERISTICS |
|---------------------------------|-----------------------------------|

| No | 項目 Item | 性能 Performance | 條件 Test Conditions | 參考標準 Reference Standard | | | | | | | | | | | | | | | | |
|-----------------------------------|---------------------------------------|--------------------------------------|---|---|---------------------------|------|------|---|---------|----------|---|---------|----------|---|----------|----------|---|---------|----------|-------------------------------|
| 12 | 焊錫耐熱性 Resistance to Soldering heat | 外觀 Appearance | 無明顯異常 No abnormality on appearance | Solder temp: 265 ±5°C Immersion time: 10±0.5sec. | IEC 60384-16 4.4 | | | | | | | | | | | | | | | |
| | | 耐電壓 Withstand Voltage | 依項目3 Comply with item 3 | | | | | | | | | | | | | | | | | |
| | | 靜電容量變化率 Capacitance Change | $\Delta C/C \leq \pm 3\%$ Within ±3% | | | | | | | | | | | | | | | | | |
| | | 散逸因數 Dissipation Factor | 於項目7範圍以內 Within spec of item 7 above. | | | | | | | | | | | | | | | | | |
| | | 絕緣阻抗 Insulation Resistance | Same as the spec of item 5 above | | | | | | | | | | | | | | | | | |
| 13 | 耐熱性 Dry Heat Resistance | 絕緣阻抗 Insulation Resistance | 50% of minimum specified value | Temperature: +110 ±2°C Duration: 96±4 hrs | IEC 60384-16 4.10.2 | | | | | | | | | | | | | | | |
| | | 靜電容量變化率 Capacitance Change | $\Delta C/C \leq \pm 5\%$ Within±5% | | | | | | | | | | | | | | | | | |
| 14 | 溫度循環 Temperature Cycle | 外觀 Appearance | 無明顯異常 No abnormality on appearance | Total: 5 cycle <table border="1" style="width:100%; border-collapse: collapse; margin-top: 5px;"> <thead> <tr> <th>Step</th> <th>Temp</th> <th>Time</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">-40±2°C</td> <td style="text-align: center;">30 ±1min</td> </tr> <tr> <td style="text-align: center;">2</td> <td style="text-align: center;">+25±2°C</td> <td style="text-align: center;">3min max</td> </tr> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">+110±2°C</td> <td style="text-align: center;">30 ±1min</td> </tr> <tr> <td style="text-align: center;">4</td> <td style="text-align: center;">+25±2°C</td> <td style="text-align: center;">3min max</td> </tr> </tbody> </table> | Step | Temp | Time | 1 | -40±2°C | 30 ±1min | 2 | +25±2°C | 3min max | 3 | +110±2°C | 30 ±1min | 4 | +25±2°C | 3min max | IEC 60384-16 4.6 |
| | | Step | Temp | | Time | | | | | | | | | | | | | | | |
| | | 1 | -40±2°C | | 30 ±1min | | | | | | | | | | | | | | | |
| | | 2 | +25±2°C | | 3min max | | | | | | | | | | | | | | | |
| | | 3 | +110±2°C | | 30 ±1min | | | | | | | | | | | | | | | |
| 4 | +25±2°C | 3min max | | | | | | | | | | | | | | | | | | |
| 耐電壓 Withstand Voltage | 依項目3 Comply with item 3 | | | | | | | | | | | | | | | | | | | |
| 絕緣阻抗 Insulation Resistance | 50% of minimum specified value | | | | | | | | | | | | | | | | | | | |
| 散逸因數 Dissipation Factor Change | $\Delta DF \leq 0.3\%$ at 1KHz(20°C) | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| 15 | 穩態濕熱試驗 Damp heat , Steady state | 外觀 Appearance | 無明顯異常 No abnormality on appearance 印字可辨識 Marking to be legible | Humidity: 90~95% RH Temperature: +40 ±2°C Duration: 56Days +48/-0hrs Measure after exposing at normal state for 1.5±0.5hrs. | IEC 60384-16 4.11 | | | | | | | | | | | | | | | |
| | | 耐電壓 Withstand Voltage | 依項目3 Comply with item 3 | | | | | | | | | | | | | | | | | |
| | | 絕緣阻抗 Insulation Resistance | 50% of minimum specified value | | | | | | | | | | | | | | | | | |
| | | 靜電容量變化率 Capacitance Change | $\Delta C/C \leq \pm 5\%$ Within ±5% | | | | | | | | | | | | | | | | | |
| | | 散逸因數變化量 Dissipation Factor Change | $\Delta DF \leq 0.1\%$ at 1KHz(20°C) | | | | | | | | | | | | | | | | | |

| TYPE : MPK SPECIFICATION | | ELECTRICAL CHARACTERISTICS | | | |
|--------------------------|-----------------------------------|--------------------------------------|---|---|-------------------------|
| No | 項目 Item | 性能 Performance | 條件 Test Conditions | 參考標準 Reference Standard | |
| 16 | 高溫負荷 Endurance Test | 外觀 Appearance | 無明顯異常 No abnormality on appearance 印字可辨識 Marking to be legible | Temperature: +85 ±2°C Duration:1,000 +48/-0 hrs Applied Voltage 125% x V _R through series resistor of 20~1000Ω /V to the Capacitor Measure after exposing at normal state for 4 hrs. | IEC 60384-16 4.12 |
| | | 耐電壓 Withstand Voltage | 依項目 3 Comply with item 3 | | |
| | | 絕緣阻抗 Insulation Resistance | 50% of minimum specified value | | |
| | | 靜電容量變化率 Capacitance Change | $\Delta C/C \leq \pm 5\%$ Within ±5% | | |
| | | 散逸因數變化量 Dissipation Factor Change | $\Delta DF \leq 0.2\%$ at 10KHz(20°C) | | |
| 17 | 充放電 Charging and discharging | 靜電容量變化率 Capacitance Change | $\Delta C/C \leq \pm 5\%$ (relative to the initial value) | Times:10 000 Duration of charging:0.5s Duration of discharging : 0.5s Charging voltage: rated voltage Charging resistance:220/CR(Ω) Discharging resistance: R=10/ CR(Ω) or 20(whichever is the greater) CR: rated capacitance (μF) | IEC 60384-16 4.13 |
| | | 散逸因數變化量 Dissipation Factor Change | Increase of: $\Delta DF \leq 0.5\%$ (1KHZ) | | |
| | | 絕緣阻抗 Insulation Resistance | IR: $\geq 50\%$ of rated value | | |
| 18 | 高濕/負荷 試驗 Humidity Bias Test | 耐電壓 Withstand Voltage | 依項目 3 Comply with item 3 | Humidity:90~95%RH Temperature:40±2°C Applied Voltage100%×VRDC Duration:1000±24hrs Through series resistor of 20~1000Ω /V to the Capacitor Measure after exposing at Normal state for 4 hrs | AEC- Q200 |
| | | 絕緣阻抗 Insulation Resistance | 50% of minimum specified value | | |
| | | 靜電容量變化率 Capacitance Change | $\Delta C/C \leq \pm 10\%$ Within ±10% | | |
| | | 散逸因數變化量 Dissipation Factor Change | $\Delta DF \leq 0.5\%$ at 1KHz(20°C) | | |

電容儲存條件:

溫度: +5 ~ +35°C

濕度: $\leq 75\%$ RH

電容儲存時間:

依周期計算有效期: 兩年. (超出兩年產品電氣特性需重新選別及檢查產品外觀)