

- 125°C Long Life, Low Impedance
- 125°C長壽命、低阻抗

## ■ SPECIFICATIONS 規格表

| Item                                    | Performance Characteristics 特性                                                                                                                                                                                                                                                                                                     |                   |                        |      |                               |                                                   |      |                                                                                                                                           |                                                                                                                                                                            |         |         |         |         |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------------------|------|-------------------------------|---------------------------------------------------|------|-------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|---------|---------|---------|
| Operating Temperature Range<br>工作溫度範圍   | -40 ~ +125°C                                                                                                                                                                                                                                                                                                                       |                   |                        |      |                               |                                                   |      |                                                                                                                                           |                                                                                                                                                                            |         |         |         |         |
| Voltage Range<br>額定電壓範圍                 | 10 ~ 450V                                                                                                                                                                                                                                                                                                                          |                   |                        |      |                               |                                                   |      |                                                                                                                                           |                                                                                                                                                                            |         |         |         |         |
| Capacitance Tolerance<br>靜電容量容許差        | ±20% at 120Hz,20°C                                                                                                                                                                                                                                                                                                                 |                   |                        |      |                               |                                                   |      |                                                                                                                                           |                                                                                                                                                                            |         |         |         |         |
| Leakage Current<br>漏電流                  | 10V ~ 100V :<br>After 1 minute application of rated voltage, leakage current is lower than 0.03CV or 4(μA), whichever is greater.<br>I = 0.03CV或4 (μA) 以下(1分鐘)<br>160V ~ 450V :<br>CV≤1000 I=0.1CV+40(μA) MAX, CV>1000 I=0.04CV+100(μA) MAX, 1 minute<br>I = Leakage Current (漏電流) C = Capacitance (靜電容量) V = Rated Voltage (額定電壓) |                   |                        |      |                               |                                                   |      |                                                                                                                                           |                                                                                                                                                                            |         |         |         |         |
| Tangent of loss angle<br>損失角正切值         | For capacitance of more than 1000 μF, add 0.02 for every increase of 1000 μF<br>對於超過1000 μF產品，每增加1000 μF，其值增加0.02                                                                                                                                                                                                                  |                   |                        |      |                               |                                                   |      |                                                                                                                                           |                                                                                                                                                                            |         |         |         |         |
|                                         | Rated voltage (V)<br>額定電壓                                                                                                                                                                                                                                                                                                          | 10                | 16                     | 25   | 35                            | 50                                                | 63   | 80                                                                                                                                        | 100                                                                                                                                                                        | 160~250 | 350~450 |         |         |
|                                         | Tanδ (MAX)                                                                                                                                                                                                                                                                                                                         | 0.20              | 0.16                   | 0.14 | 0.12                          | 0.10                                              | 0.10 | 0.08                                                                                                                                      | 0.08                                                                                                                                                                       | 0.20    | 0.24    |         |         |
| (Frequency : 120Hz, Temperature : 20°C) |                                                                                                                                                                                                                                                                                                                                    |                   |                        |      |                               |                                                   |      |                                                                                                                                           |                                                                                                                                                                            |         |         |         |         |
| Stability at Low Temperature<br>溫度特性    | Rated voltage (V)                                                                                                                                                                                                                                                                                                                  |                   |                        | 10   | 16                            | 25                                                | 35   | 50                                                                                                                                        | 63                                                                                                                                                                         | 80      | 100     | 160~250 | 350~450 |
|                                         | Impedance Ratio<br>阻抗比                                                                                                                                                                                                                                                                                                             | Z-25°C/Z+20°C     |                        | 3    | 2                             | 2                                                 | 2    | 2                                                                                                                                         | 2                                                                                                                                                                          | 2       | 2       | 3       | 6       |
|                                         | ZT/Z 20 (MAX)                                                                                                                                                                                                                                                                                                                      | Z-40°C/Z+20°C     |                        | 4    | 4                             | 4                                                 | 4    | 4                                                                                                                                         | 4                                                                                                                                                                          | 4       | 4       | 6       | -       |
| (Frequency:120Hz)                       |                                                                                                                                                                                                                                                                                                                                    |                   |                        |      |                               |                                                   |      |                                                                                                                                           |                                                                                                                                                                            |         |         |         |         |
| Endurance<br>耐久性                        | After applying rated voltage with rated ripple current for specified time at 125°C, the capacitors shall meet the following requirements.<br>在125°C環境中，不超過額定電壓的範圍內疊加額定紋波電流，連續加載表內時間後，符合下列要求                                                                                                                                        |                   |                        |      |                               |                                                   |      |                                                                                                                                           |                                                                                                                                                                            |         |         |         |         |
|                                         | Case size<br>鋁殼尺寸                                                                                                                                                                                                                                                                                                                  | Rated voltage (V) |                        |      | Capacitance Change<br>靜電容量變化率 |                                                   |      | Within ±30% of initialValue(10V ~ 100V)<br>初期值的±30%以內(10V ~ 100V)<br>Within ±20% of initial Value(160V ~ 450V)<br>初期值的±20%以內(160V ~ 450V) |                                                                                                                                                                            |         |         |         |         |
|                                         |                                                                                                                                                                                                                                                                                                                                    | ≤50               | 63~100                 | ≥160 |                               |                                                   |      |                                                                                                                                           |                                                                                                                                                                            |         |         |         |         |
|                                         |                                                                                                                                                                                                                                                                                                                                    | ΦD=8              | 2000                   | 2000 | 2000                          | Tangent of loss angle(Tanδ)<br>損失角正切值             |      |                                                                                                                                           | Not exceeding 300% of initial specified value(10V ~ 100V)<br>規格值300%以下(10V ~ 100V)<br>Not exceeding 200% of initial specified value(160V ~ 450V)<br>規格值200%以下(160V ~ 450V) |         |         |         |         |
|                                         |                                                                                                                                                                                                                                                                                                                                    | ΦD=10             | 5000                   | 3000 |                               |                                                   |      |                                                                                                                                           |                                                                                                                                                                            |         |         |         |         |
|                                         |                                                                                                                                                                                                                                                                                                                                    | ΦD≥12.5           | 10000                  | 5000 |                               |                                                   |      |                                                                                                                                           |                                                                                                                                                                            |         |         |         |         |
|                                         |                                                                                                                                                                                                                                                                                                                                    |                   | Leakage current<br>漏電流 |      |                               | Not exceeding of initial specified value<br>規格值以下 |      |                                                                                                                                           |                                                                                                                                                                            |         |         |         |         |
| Shelf Life<br>高溫無負荷                     | After storing the capacitors under no load at 125 °C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20 °C, they shall meet the specified values for the endurance characteristics listed above.<br>在125°C下無負荷放置1000小時後，在20 °C下依據JIS C 5101-4 4.1項進行電壓處理後，將滿足以上耐久性的特性值                    |                   |                        |      |                               |                                                   |      |                                                                                                                                           |                                                                                                                                                                            |         |         |         |         |

### ■ Frequency Coefficient of Allowable Ripple Current (10V~100V) 容許紋波電流的頻率係數

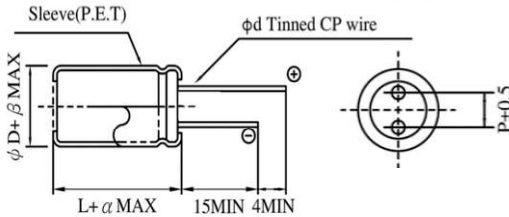
| Frequency<br>Cap(μF) | 120Hz | 300Hz | 1KHz | 10KHz ~ |
|----------------------|-------|-------|------|---------|
| CV<1000              | 0.50  | 0.64  | 0.83 | 1.00    |
| CV≥1000              | 0.67  | 0.79  | 0.91 | 1.00    |

### ■ Frequency Coefficient of Allowable Ripple Current (160V~450V) 容許紋波電流的頻率係數

| Frequency<br>Cap(μF) | 50Hz | 120Hz | 300Hz | 1KHz | 10KHz | 100KHz ~ |
|----------------------|------|-------|-------|------|-------|----------|
| CV<1000              | 0.75 | 1.00  | 1.25  | 1.50 | 1.75  | 1.80     |
| CV≥1000              | 0.80 | 1.00  | 1.15  | 1.30 | 1.40  | 1.50     |

- 125°C Long Life, Low Impedance
- 125°C長壽命、低阻抗

### ■ RADIAL LEAD TYPE 尺寸圖



| ΦD | 8            | 10  | 12.5 | 16  | 18  |
|----|--------------|-----|------|-----|-----|
| P  | 3.5          | 5.0 | 5.0  | 7.5 | 7.5 |
| Φd | 0.6          | 0.6 | ※0.6 | 0.8 | 0.8 |
| β  | 0.5          | 0.5 | 0.5  | 0.5 | 0.5 |
| α  | L < 20 : 1.5 |     |      |     |     |
|    | L ≥ 20 : 2.0 |     |      |     |     |

※In case L ≥ 35 for the φ12.5 dia. unit, lead dia. φd = 0.8mm

### ■ DIMENSIONS 尺寸

Rated Ripple Current(mA r.m.s. at 125°C,100KHz)

| Item<br>Cap(μF) | W.V<br>S.V | 10V<br>13V        |        | 16V<br>20V                     |                   |                                |
|-----------------|------------|-------------------|--------|--------------------------------|-------------------|--------------------------------|
|                 |            | Size<br>D x L(mm) | Ripple | Impedance(ΩMAX)<br>20°C/100KHz | Size<br>D x L(mm) | Impedance(ΩMAX)<br>20°C/100KHz |
| 100             |            |                   |        |                                | 8 x 11.5          | 0.32                           |
| 220             |            | 8 x 11.5          | 340    | 0.26                           | 10 x 12.5         | 0.15                           |
| 330             |            | 10 x 12.5         | 620    | 0.15                           | 10 x 12.5         | 0.10                           |
| 470             |            | 10 x 12.5         | 680    | 0.10                           | 10 x 16           | 0.075                          |
| 1000            |            | 10 x 20           | 1100   | 0.057                          | 12.5 x 20         | 0.042                          |
| 2200            |            | 12.5 x 25         | 1750   | 0.033                          | 16 x 25           | 0.024                          |
| 3300            |            | 16 x 25           | 2300   | 0.024                          | 16 x 30.5         | 0.020                          |
| 4700            |            | 16 x 30.5         | 2710   | 0.020                          | 18 x 30.5         | 0.018                          |

### ■ DIMENSIONS 尺寸

Rated Ripple Current(mA r.m.s. at 125°C,100KHz)

| Item<br>Cap(μF) | W.V<br>S.V | 25V<br>32V        |        | 35V<br>44V                     |                   |                                |
|-----------------|------------|-------------------|--------|--------------------------------|-------------------|--------------------------------|
|                 |            | Size<br>D x L(mm) | Ripple | Impedance(ΩMAX)<br>20°C/100KHz | Size<br>D x L(mm) | Impedance(ΩMAX)<br>20°C/100KHz |
| 100             |            | 8 x 11.5          | 500    | 0.13                           | 10 x 12.5         | 0.15                           |
| 220             |            | 10 x 12.5         | 680    | 0.10                           | 10 x 16           | 0.094                          |
| 330             |            | 10 x 16           | 945    | 0.075                          | 10 x 20           | 0.075                          |
| 470             |            | 10 x 20           | 1100   | 0.057                          | 12.5 x 20         | 0.058                          |
| 1000            |            | 12.5 x 25         | 1750   | 0.033                          | 16 x 25           | 0.031                          |
| 2200            |            | 16 x 30.5         | 2710   | 0.020                          | 18 x 35.5         | 0.025                          |
| 3300            |            | 18 x 30.5         | 3310   | 0.017                          |                   |                                |

- 125°C Long Life, Low Impedance
- 125°C長壽命、低阻抗

### ■ DIMENSIONS 尺寸

Rated Ripple Current(mA r.m.s. at 125°C,100KHz)

| W.V     |      | 50V               |        |                                | 63V               |        |                                |
|---------|------|-------------------|--------|--------------------------------|-------------------|--------|--------------------------------|
| S.V     |      | 63V               |        |                                | 79V               |        |                                |
| Cap(μF) | Item | Size<br>D x L(mm) | Ripple | Impedance(ΩMAX)<br>20°C/100KHz | Size<br>D x L(mm) | Ripple | Impedance(ΩMAX)<br>20°C/100KHz |
| 1       |      | 8 x 11.5          | 35     | 2.0                            |                   |        |                                |
| 2.2     |      | 8 x 11.5          | 50     | 1.8                            |                   |        |                                |
| 3.3     |      | 8 x 11.5          | 60     | 1.5                            |                   |        |                                |
| 4.7     |      | 8 x 11.5          | 85     | 1.15                           |                   |        |                                |
| 10      |      | 8 x 11.5          | 180    | 0.75                           |                   |        |                                |
| 22      |      | 8 x 11.5          | 250    | 0.50                           | 8 x 11.5          | 130    | 2.00                           |
| 33      |      | 8 x 11.5          | 300    | 0.45                           | 8 x 11.5          | 150    | 1.50                           |
| 47      |      | 8 x 11.5          | 440    | 0.35                           | 10 x 12.5         | 530    | 0.59                           |
| 100     |      | 10 x 12.5         | 555    | 0.18                           | 10 x 16           | 690    | 0.41                           |
| 220     |      | 10 x 20           | 930    | 0.098                          | 12.5 x 20         | 1050   | 0.16                           |
| 330     |      | 12.5 x 20         | 1330   | 0.070                          | 12.5 x 25         | 1290   | 0.12                           |
| 470     |      | 12.5 x 25         | 1650   | 0.055                          | 12.5 x 25         | 1290   | 0.12                           |
|         |      |                   |        |                                | 12.5 x 30.5       | 1460   | 0.097                          |
| 1000    |      | 16 x 30.5         | 2430   | 0.031                          |                   |        |                                |

### ■ DIMENSIONS 尺寸

Rated Ripple Current(mA r.m.s. at 125°C,100KHz)

| W.V     |      | 80V               |        |                                | 100V              |        |                                |
|---------|------|-------------------|--------|--------------------------------|-------------------|--------|--------------------------------|
| S.V     |      | 100V              |        |                                | 125V              |        |                                |
| Cap(μF) | Item | Size<br>D x L(mm) | Ripple | Impedance(ΩMAX)<br>20°C/100KHz | Size<br>D x L(mm) | Ripple | Impedance(ΩMAX)<br>20°C/100KHz |
| 4.7     |      |                   |        |                                | 8 x 11.5          | 130    | 2.00                           |
| 10      |      |                   |        |                                | 8 x 11.5          | 150    | 1.50                           |
| 22      |      | 8 x 11.5          | 150    | 1.50                           | 10 x 12.5         | 480    | 0.80                           |
| 33      |      | 10 x 12.5         | 480    | 0.80                           | 10 x 12.5         | 480    | 0.80                           |
| 47      |      | 10 x 12.5         | 480    | 0.80                           | 10 x 16           | 630    | 0.55                           |
| 100     |      | 10 x 20           | 790    | 0.39                           | 12.5 x 20         | 990    | 0.25                           |
| 220     |      | 12.5 x 25         | 1240   | 0.18                           | 16 x 25           | 1500   | 0.11                           |
| 330     |      | 12.5 x 30.5       | 1390   | 0.16                           | 16 x 30.5         | 1790   | 0.079                          |
| 470     |      | 16 x 25           | 1500   | 0.11                           |                   |        |                                |

- 125°C Long Life, Low Impedance
- 125°C長壽命、低阻抗

### ■ DIMENSIONS 尺寸

Rated Ripple Current(mA r.m.s. at 125°C,120Hz)

| W.V     |      | 160V              |        | 200V              |        | 250V              |        |
|---------|------|-------------------|--------|-------------------|--------|-------------------|--------|
| S.V     |      | 200V              |        | 250V              |        | 300V              |        |
| Cap(μF) | Item | Size<br>D x L(mm) | Ripple | Size<br>D x L(mm) | Ripple | Size<br>D x L(mm) | Ripple |
| 10      |      |                   |        | 10 x 20           | 78     | 10 x 20           | 78     |
| 22      |      | 10 x 20           | 115    | 10 x 25           | 126    | 12.5 x 20         | 128    |
| 33      |      | 10 x 25           | 154    | 12.5 x 20         | 157    | 12.5 x 25         | 171    |
| 47      |      | 12.5 x 20         | 187    | 12.5 x 25         | 204    | 16 x 25           | 225    |
| 68      |      | 12.5 x 25         | 245    | 16 x 20           | 250    | 16 x 30.5         | 292    |
| 100     |      | 16 x 25           | 329    | 16 x 25           | 329    | 18 x 30.5         | 380    |
| 120     |      | 16 x 25           | 345    | 16 x 30.5         | 380    | 18 x 35.5         | 445    |
| 150     |      | 16 x 30.5         | 434    | 16 x 35.5         | 475    | 18 x 40           | 520    |

### ■ DIMENSIONS 尺寸

Rated Ripple Current(mA r.m.s. at 125°C,120Hz)

| W.V     |      | 350V              |        | 400V              |        | 450V              |        |
|---------|------|-------------------|--------|-------------------|--------|-------------------|--------|
| S.V     |      | 400V              |        | 450V              |        | 500V              |        |
| Cap(μF) | Item | Size<br>D x L(mm) | Ripple | Size<br>D x L(mm) | Ripple | Size<br>D x L(mm) | Ripple |
| 4.7     |      | 10 x 20           | 53     | 10 x 20           | 53     | 10 x 25           | 58     |
| 10      |      | 10 x 25           | 85     | 10 x 25           | 86     | 12.5 x 20         | 86     |
| 22      |      | 12.5 x 25         | 139    | 12.5 x 30.5       | 142    | 16 x 25           | 154    |
| 33      |      | 16 x 25           | 189    | 16 x 25           | 189    | 16 x 30.5         | 203    |
| 47      |      | 16 x 30.5         | 243    | 16 x 30.5         | 243    | 16 x 30.5         | 225    |
| 68      |      | 18 x 20           | 285    | 18 x 25           | 300    | 18 x 30.5         | 335    |
| 100     |      | 18 x 25           | 310    | 18 x 30.5         | 475    | 18 x 35.5         | 490    |
| 120     |      | 18 x 30.5         | 335    | 18 x 35.5         | 500    | 18 x 40           | 520    |