

# Large Can Aluminum Electrolytic Capacitors

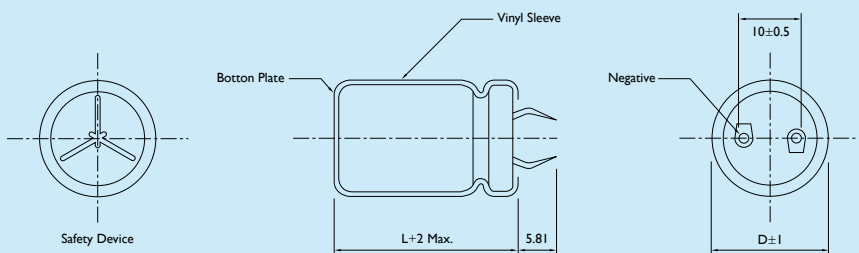
## LH [ For Miniature ]

For Printed Circuit Board High-Performance Aluminum Electrolytic Power Supply Input and Output Filter Capacitors

### ELECTRICAL CHARACTERISTICS

|                             |                                                                                                                                                                                                                                                                                                                                                                                                                |               |                  |        |       |         |        |         |         |        |                    |         |          |    |    |    |    |    |                    |    |    |    |   |   |   |   |
|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|------------------|--------|-------|---------|--------|---------|---------|--------|--------------------|---------|----------|----|----|----|----|----|--------------------|----|----|----|---|---|---|---|
| Operating Temperature Range | -40 to +85°C                                                                                                                                                                                                                                                                                                                                                                                                   | -25 to +85°C  |                  |        |       |         |        |         |         |        |                    |         |          |    |    |    |    |    |                    |    |    |    |   |   |   |   |
| Rated Voltage Range         | 6.3 ~ 100V                                                                                                                                                                                                                                                                                                                                                                                                     | 160 to 450VDC |                  |        |       |         |        |         |         |        |                    |         |          |    |    |    |    |    |                    |    |    |    |   |   |   |   |
| Rated Capacitance           | 820 ~ 120000μF                                                                                                                                                                                                                                                                                                                                                                                                 | 56 ~ 2200μF   |                  |        |       |         |        |         |         |        |                    |         |          |    |    |    |    |    |                    |    |    |    |   |   |   |   |
| Capacitance Tolerance       | ±20% at 120Hz, 20°C                                                                                                                                                                                                                                                                                                                                                                                            |               |                  |        |       |         |        |         |         |        |                    |         |          |    |    |    |    |    |                    |    |    |    |   |   |   |   |
| Leakage Current             | I = 0.02CV or 3mA Whichever is smaller.<br>(After 5 Minutes Application of DC Working Voltage at 20°C)                                                                                                                                                                                                                                                                                                         |               |                  |        |       |         |        |         |         |        |                    |         |          |    |    |    |    |    |                    |    |    |    |   |   |   |   |
| Dissipation Factor (tanδ)   | <table border="1"> <tr> <td>Rate Voltage (V)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63-100</td> <td>160-400</td> <td>450-500</td> </tr> <tr> <td>D.F. (%)</td> <td>60</td> <td>55</td> <td>55</td> <td>45</td> <td>35</td> <td>30</td> <td>25</td> <td>15</td> <td>20</td> </tr> </table>                                                                           |               | Rate Voltage (V) | 6.3    | 10    | 16      | 25     | 35      | 50      | 63-100 | 160-400            | 450-500 | D.F. (%) | 60 | 55 | 55 | 45 | 35 | 30                 | 25 | 15 | 20 |   |   |   |   |
| Rate Voltage (V)            | 6.3                                                                                                                                                                                                                                                                                                                                                                                                            | 10            | 16               | 25     | 35    | 50      | 63-100 | 160-400 | 450-500 |        |                    |         |          |    |    |    |    |    |                    |    |    |    |   |   |   |   |
| D.F. (%)                    | 60                                                                                                                                                                                                                                                                                                                                                                                                             | 55            | 55               | 45     | 35    | 30      | 25     | 15      | 20      |        |                    |         |          |    |    |    |    |    |                    |    |    |    |   |   |   |   |
| Low Temperature Stability   | Measurement frequency: 120Hz                                                                                                                                                                                                                                                                                                                                                                                   |               |                  |        |       |         |        |         |         |        |                    |         |          |    |    |    |    |    |                    |    |    |    |   |   |   |   |
| Impedance Ratio (Max.)      | <table border="1"> <tr> <td>Rate Voltage (V)</td> <td>6.3~16</td> <td>25</td> <td>35</td> <td>50~63</td> <td>80~10</td> <td>160~400</td> <td>450</td> </tr> <tr> <td>Z(-25°C) / Z(20°C)</td> <td>3</td> <td>3</td> <td>3</td> <td>2</td> <td>2</td> <td>4</td> <td>8</td> </tr> <tr> <td>Z(-40°C) / Z(20°C)</td> <td>12</td> <td>10</td> <td>8</td> <td>6</td> <td>5</td> <td>-</td> <td>-</td> </tr> </table> |               | Rate Voltage (V) | 6.3~16 | 25    | 35      | 50~63  | 80~10   | 160~400 | 450    | Z(-25°C) / Z(20°C) | 3       | 3        | 3  | 2  | 2  | 4  | 8  | Z(-40°C) / Z(20°C) | 12 | 10 | 8  | 6 | 5 | - | - |
| Rate Voltage (V)            | 6.3~16                                                                                                                                                                                                                                                                                                                                                                                                         | 25            | 35               | 50~63  | 80~10 | 160~400 | 450    |         |         |        |                    |         |          |    |    |    |    |    |                    |    |    |    |   |   |   |   |
| Z(-25°C) / Z(20°C)          | 3                                                                                                                                                                                                                                                                                                                                                                                                              | 3             | 3                | 2      | 2     | 4       | 8      |         |         |        |                    |         |          |    |    |    |    |    |                    |    |    |    |   |   |   |   |
| Z(-40°C) / Z(20°C)          | 12                                                                                                                                                                                                                                                                                                                                                                                                             | 10            | 8                | 6      | 5     | -       | -      |         |         |        |                    |         |          |    |    |    |    |    |                    |    |    |    |   |   |   |   |
| Endurance                   | After the rated voltage and rated ripple current have been applied at 85°C for 2000 hours, the capacitors shall meet the following requirements.<br>(a) Capacitance Change: Within 20% of the Initial Value<br>(b) Dissipation Factor: 200% or Less of Initial Specified Value<br>(c) Leakage Current: Initial Specified Value or Less                                                                         |               |                  |        |       |         |        |         |         |        |                    |         |          |    |    |    |    |    |                    |    |    |    |   |   |   |   |
| Shelf Life                  | After having been placed at 85°C without voltage applied for 1000 hours, the capacitors shall meet the same requirements as Endurance.                                                                                                                                                                                                                                                                         |               |                  |        |       |         |        |         |         |        |                    |         |          |    |    |    |    |    |                    |    |    |    |   |   |   |   |

### DIAGRAM OF DIMENSIONS



### DESCRIPTION

Endurance : 85°C, 2000 Hours

Ideally suitable for using in switching power supplies and other industrial / commercial applications

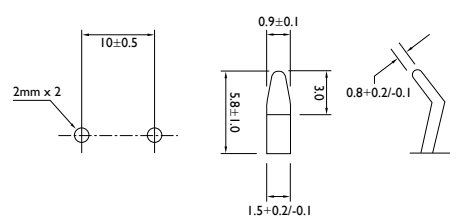
### MULTIPLIER FOR RIPPLE CURRENT

Frequency Coefficient

| FREQUENCY (Hz) | 50   | 60   | 120  | 1K   | 10K  |
|----------------|------|------|------|------|------|
| 6.3~100V       | 0.88 | 0.90 | 1.00 | 1.15 | 1.16 |
| 160~250V       | 0.75 | 0.78 | 1.00 | 1.16 | 1.23 |
| 350~450V       | 0.74 | 0.76 | 1.00 | 1.10 | 1.15 |
| 500V           | 0.72 | 0.74 | 1.00 | 1.05 | 1.10 |

Unit: mm

Location of P.C.B. Holes





## CASE SIZE & PERMISSIBLE RIPPLE CURRENT OF STANDARD PRODUCTS

D × L: mm

| CAP. (μF) | RATED VOLTAGE WV (SURGE VOLTAGE WV) |        |                 |        |                 |        |                 |        |
|-----------|-------------------------------------|--------|-----------------|--------|-----------------|--------|-----------------|--------|
|           | 6.3 (8)<br>SIZE                     |        | 10 (13)<br>SIZE |        | 16 (20)<br>SIZE |        | 25 (32)<br>SIZE |        |
|           |                                     | RIPPLE |                 | RIPPLE |                 | RIPPLE |                 | RIPPLE |
| 5600      |                                     |        |                 |        |                 |        | 22 × 25         | 2.20   |
| 6800      |                                     |        |                 |        |                 |        | 22 × 30         | 2.40   |
|           |                                     |        |                 |        |                 |        | 25 × 25         | 2.45   |
| 8200      |                                     |        |                 |        | 22 × 25         | 2.60   | 22 × 35         | 2.70   |
|           |                                     |        |                 |        |                 |        | 25 × 25         | 2.75   |
| 10000     |                                     |        |                 |        | 22 × 30         | 2.70   | 22 × 40         | 3.10   |
|           |                                     |        |                 |        | 25 × 25         | 2.75   | 25 × 30         | 3.15   |
|           |                                     |        |                 |        |                 |        | 30 × 25         | 3.20   |
| 12000     |                                     |        | 22 × 25         | 2.40   | 22 × 30         | 2.90   | 22 × 45         | 3.50   |
|           |                                     |        |                 |        | 25 × 25         | 2.95   | 25 × 35         | 3.45   |
|           |                                     |        |                 |        |                 |        | 30 × 30         | 3.50   |
|           |                                     |        |                 |        |                 |        | 35 × 25         | 3.55   |
| 15000     | 22 × 25                             | 2.44   | 22 × 30         | 2.75   | 22 × 35         | 3.30   | 22 × 50         | 4.00   |
|           |                                     |        | 25 × 25         | 2.75   | 25 × 30         | 3.45   | 25 × 40         | 3.95   |
|           |                                     |        |                 |        | 30 × 25         | 3.50   | 30 × 35         | 4.00   |
|           |                                     |        |                 |        |                 |        | 35 × 30         | 4.05   |
| 18000     | 22 × 30                             | 2.60   | 22 × 35         | 3.15   | 22 × 40         | 3.70   | 25 × 45         | 4.45   |
|           | 25 × 25                             | 2.62   | 25 × 25         | 3.05   | 25 × 35         | 3.75   | 30 × 35         | 4.45   |
|           |                                     |        |                 |        | 30 × 30         | 3.80   | 35 × 30         | 4.60   |
| 22000     | 22 × 30                             | 3.06   | 22 × 40         | 3.55   | 22 × 50         | 4.35   | 30 × 40         | 5.20   |
|           | 25 × 25                             | 3.07   | 25 × 30         | 3.50   | 25 × 40         | 4.30   | 35 × 35         | 5.15   |
|           |                                     |        | 30 × 25         | 3.55   | 30 × 30         | 4.25   | 30 × 45         | 5.95   |
|           |                                     |        |                 |        | 35 × 25         | 4.20   | 35 × 40         | 5.90   |
| 27000     | 22 × 35                             | 3.49   | 22 × 45         | 4.05   | 25 × 45         | 4.70   | 30 × 50         | 6.70   |
|           | 25 × 30                             | 3.52   | 25 × 35         | 4.00   | 30 × 35         | 4.65   | 35 × 45         | 6.75   |
|           | 30 × 25                             | 3.57   | 30 × 30         | 4.05   | 35 × 30         | 4.65   |                 |        |
| 33000     | 22 × 40                             | 3.97   | 22 × 50         | 4.60   | 30 × 40         | 5.35   | 35 × 50         | 7.55   |
|           | 25 × 35                             | 4.02   | 25 × 40         | 4.55   | 35 × 30         | 5.40   |                 |        |
|           | 30 × 30                             | 4.05   | 30 × 30         | 4.50   |                 |        |                 |        |
|           | 35 × 25                             | 4.10   | 35 × 25         | 4.50   |                 |        |                 |        |

Note: I. Ripple Current: (A/rms) 85°C, 120Hz

**CASE SIZE & PERMISSIBLE RIPPLE CURRENT OF STANDARD PRODUCTS**

D x L: mm

| CAP. (μF) | RATED VOLTAGE WV (SURGE VOLTAGE WV) |        |                 |        |                 |        |                 |        |
|-----------|-------------------------------------|--------|-----------------|--------|-----------------|--------|-----------------|--------|
|           | 6.3 (8)<br>SIZE                     |        | 10 (13)<br>SIZE |        | 16 (20)<br>SIZE |        | 25 (32)<br>SIZE |        |
|           |                                     | RIPPLE |                 | RIPPLE |                 | RIPPLE |                 | RIPPLE |
| 39000     | 22 x 50                             | 4.56   | 25 x 45         | 5.10   | 30 x 45         | 6.00   |                 |        |
|           | 25 x 40                             | 4.50   | 30 x 35         | 5.05   | 35 x 35         | 5.95   |                 |        |
|           | 30 x 30                             | 4.46   | 35 x 30         | 5.05   |                 |        |                 |        |
|           | 35 x 25                             | 4.51   |                 |        |                 |        |                 |        |
| 47000     | 25 x 45                             | 5.09   | 25 x 50         | 5.75   | 30 x 50         | 6.80   |                 |        |
|           | 30 x 35                             | 5.06   | 30 x 40         | 5.70   | 35 x 40         | 6.75   |                 |        |
|           | 35 x 30                             | 5.03   | 35 x 30         | 5.65   |                 |        |                 |        |
| 56000     | 25 x 50                             | 5.71   | 30 x 45         | 6.45   | 35 x 45         | 7.60   |                 |        |
|           | 30 x 40                             | 5.70   | 35 x 35         | 6.40   |                 |        |                 |        |
|           | 35 x 30                             | 5.75   |                 |        |                 |        |                 |        |
| 68000     | 30 x 45                             | 6.48   | 30 x 50         | 7.05   | 35 x 50         | 8.00   |                 |        |
|           | 35 x 35                             | 6.42   | 35 x 40         | 7.10   |                 |        |                 |        |
| 82000     | 30 x 50                             | 7.32   | 35 x 50         | 7.50   |                 |        |                 |        |
|           | 35 x 40                             | 7.29   |                 |        |                 |        |                 |        |
| 100000    | 35 x 45                             | 8.31   |                 |        |                 |        |                 |        |
| 120000    | 35 x 50                             | 8.60   |                 |        |                 |        |                 |        |

Note: I. Ripple Current: (A/rms) 85°C, 120Hz



## CASE SIZE & PERMISSIBLE RIPPLE CURRENT OF STANDARD PRODUCTS

D × L: mm

| CAP. (μF) | RATED VOLTAGE WV (SURGE VOLTAGE WV) |        |                 |        |                 |        |                  |        |
|-----------|-------------------------------------|--------|-----------------|--------|-----------------|--------|------------------|--------|
|           | 35 (44)<br>SIZE                     |        | 50 (63)<br>SIZE |        | 63 (79)<br>SIZE |        | 80 (100)<br>SIZE |        |
|           |                                     | RIPPLE |                 | RIPPLE |                 | RIPPLE |                  | RIPPLE |
| 1200      |                                     |        |                 |        |                 |        | 22 × 25          | 1.65   |
| 1500      |                                     |        |                 |        |                 |        | 22 × 30          | 1.90   |
|           |                                     |        |                 |        |                 |        | 25 × 25          | 1.90   |
| 1800      |                                     |        |                 |        | 22 × 25         | 1.85   | 22 × 35          | 2.20   |
|           |                                     |        |                 |        |                 |        | 25 × 30          | 2.20   |
|           |                                     |        |                 |        |                 |        | 30 × 25          | 2.20   |
| 2200      |                                     |        | 22 × 25         | 1.90   | 22 × 30         | 2.30   | 22 × 40          | 2.45   |
|           |                                     |        |                 |        | 25 × 25         | 2.30   | 25 × 30          | 2.45   |
|           |                                     |        |                 |        |                 |        | 30 × 25          | 2.50   |
| 2700      |                                     |        | 22 × 30         | 2.10   | 22 × 35         | 2.45   | 22 × 45          | 2.80   |
|           |                                     |        | 25 × 25         | 2.20   | 25 × 30         | 2.45   | 25 × 35          | 2.80   |
|           |                                     |        |                 |        | 30 × 25         | 2.50   | 30 × 30          | 2.85   |
|           |                                     |        |                 |        |                 |        | 35 × 25          | 2.85   |
| 3300      |                                     |        | 22 × 30         | 2.35   | 22 × 40         | 2.60   | 22 × 50          | 3.15   |
|           |                                     |        | 25 × 25         | 2.35   | 25 × 30         | 2.65   | 25 × 40          | 3.20   |
|           |                                     |        |                 |        | 30 × 25         | 2.70   | 30 × 30          | 3.20   |
|           |                                     |        |                 |        |                 |        | 35 × 25          | 3.20   |
| 3900      | 22 × 25                             | 2.20   | 22 × 35         | 2.65   | 22 × 45         | 2.95   | 25 × 45          | 3.60   |
|           |                                     |        | 25 × 30         | 2.65   | 25 × 35         | 2.95   | 30 × 35          | 3.60   |
|           |                                     |        | 30 × 25         | 2.65   | 30 × 30         | 3.00   | 35 × 30          | 3.60   |
| 4700      | 22 × 30                             | 2.40   | 22 × 40         | 3.00   | 22 × 50         | 3.40   | 25 × 50          | 4.05   |
|           | 25 × 25                             | 2.40   | 25 × 35         | 3.00   | 25 × 40         | 3.35   | 30 × 40          | 4.05   |
|           |                                     |        | 30 × 25         | 2.95   | 30 × 30         | 3.35   | 35 × 35          | 4.10   |
|           |                                     |        |                 |        | 35 × 25         | 3.40   |                  |        |
| 5600      | 22 × 35                             | 2.75   | 22 × 45         | 3.35   | 25 × 45         | 3.70   | 30 × 45          | 4.55   |
|           | 25 × 25                             | 2.75   | 25 × 40         | 3.35   | 30 × 35         | 3.75   | 35 × 35          | 4.50   |
|           |                                     |        | 30 × 30         | 3.35   | 35 × 30         | 3.75   |                  |        |
|           |                                     |        | 35 × 25         | 3.40   |                 |        |                  |        |

Note: I. Ripple Current: (A/rms) 85°C, 120Hz

**CASE SIZE & PERMISSIBLE RIPPLE CURRENT OF STANDARD PRODUCTS**

D x L: mm

| CAP. (μF) | RATED VOLTAGE WV (SURGE VOLTAGE WV) |        |                 |        |                 |        |                  |        |
|-----------|-------------------------------------|--------|-----------------|--------|-----------------|--------|------------------|--------|
|           | 35 (44)<br>SIZE                     |        | 50 (63)<br>SIZE |        | 63 (79)<br>SIZE |        | 80 (100)<br>SIZE |        |
|           |                                     | RIPPLE |                 | RIPPLE |                 | RIPPLE |                  | RIPPLE |
| 6800      | 22 x 40                             | 2.85   | 22 x 50         | 3.80   | 30 x 40         | 4.25   | 30 x 50          | 5.15   |
|           | 25 x 30                             | 2.85   | 25 x 40         | 3.80   | 35 x 30         | 4.20   | 35 x 40          | 5.15   |
|           | 30 x 25                             | 2.90   | 30 x 30         | 3.80   |                 |        |                  |        |
|           |                                     |        | 30 x 35         | 3.85   |                 |        |                  |        |
|           |                                     |        | 35 x 30         | 3.85   |                 |        |                  |        |
| 8200      | 22 x 45                             | 3.15   | 25 x 50         | 4.35   | 30 x 45         | 4.80   | 35 x 45          | 5.85   |
|           | 25 x 35                             | 3.10   | 30 x 40         | 4.35   | 35 x 35         | 4.80   |                  |        |
|           | 30 x 30                             | 3.15   | 35 x 30         | 4.40   |                 |        |                  |        |
| 10000     | 22 x 50                             | 3.55   | 30 x 45         | 5.00   | 30 x 50         | 5.50   | 35 x 50          | 6.60   |
|           | 25 x 40                             | 3.50   | 35 x 35         | 4.95   | 35 x 40         | 5.45   |                  |        |
|           | 30 x 30                             | 3.45   |                 |        |                 |        |                  |        |
|           | 35 x 25                             | 3.40   |                 |        |                 |        |                  |        |
| 12000     | 25 x 45                             | 3.95   | 30 x 50         | 5.60   | 35 x 45         | 6.20   |                  |        |
|           | 30 x 35                             | 4.00   | 35 x 40         | 5.55   |                 |        |                  |        |
|           | 35 x 30                             | 4.05   |                 |        |                 |        |                  |        |
| 15000     | 25 x 50                             | 4.95   | 35 x 45         | 6.45   |                 |        |                  |        |
|           | 30 x 40                             | 4.95   |                 |        |                 |        |                  |        |
|           | 35 x 35                             | 5.00   |                 |        |                 |        |                  |        |
| 18000     | 30 x 45                             | 5.50   | 35 x 50         | 6.70   |                 |        |                  |        |
|           | 35 x 40                             | 5.55   |                 |        |                 |        |                  |        |
| 22000     | 30 x 50                             | 6.00   |                 |        |                 |        |                  |        |
|           | 35 x 45                             | 6.05   |                 |        |                 |        |                  |        |
| 27000     | 35 x 50                             | 6.90   |                 |        |                 |        |                  |        |

Note: I. Ripple Current: (A/rms) 85°C, 120Hz



## CASE SIZE & PERMISSIBLE RIPPLE CURRENT OF STANDARD PRODUCTS

D × L: mm

| CAP. (μF) | RATED VOLTAGE WV (SURGE VOLTAGE WV) |        |                   |        |                   |        |                   |        |
|-----------|-------------------------------------|--------|-------------------|--------|-------------------|--------|-------------------|--------|
|           | 100 (125)<br>SIZE                   |        | 160 (200)<br>SIZE |        | 180 (225)<br>SIZE |        | 200 (250)<br>SIZE |        |
|           |                                     | RIPPLE |                   | RIPPLE |                   | RIPPLE |                   | RIPPLE |
| 180       |                                     |        |                   |        | 22 × 20           | 1.00   | 22 × 25           | 0.95   |
| 220       |                                     |        |                   |        | 22 × 25           | 1.10   | 22 × 25           | 1.10   |
| 270       |                                     |        | 22 × 25           | 1.15   | 22 × 25           | 1.25   | 22 × 25           | 1.25   |
|           |                                     |        |                   |        | 25 × 20           | 1.25   | 22 × 30           | 1.25   |
|           |                                     |        |                   |        |                   |        | 25 × 25           | 1.25   |
| 330       |                                     |        | 22 × 25           | 1.40   | 22 × 25           | 1.40   | 22 × 25           | 1.45   |
|           |                                     |        | 25 × 20           | 1.35   | 22 × 30           | 1.40   | 22 × 30           | 1.45   |
|           |                                     |        |                   |        | 25 × 25           | 1.40   | 25 × 25           | 1.45   |
| 390       |                                     |        | 22 × 30           | 1.55   | 22 × 30           | 1.60   | 22 × 30           | 1.60   |
|           |                                     |        | 25 × 25           | 1.55   | 25 × 25           | 1.60   | 25 × 25           | 1.55   |
|           |                                     |        | 30 × 25           | 1.50   |                   |        |                   |        |
| 470       |                                     |        | 22 × 30           | 1.75   | 22 × 35           | 1.80   | 22 × 35           | 1.80   |
|           |                                     |        | 25 × 25           | 1.75   | 25 × 30           | 1.80   | 25 × 30           | 1.80   |
|           |                                     |        | 30 × 25           | 1.70   | 30 × 25           | 1.80   | 30 × 25           | 1.80   |
| 560       |                                     |        | 22 × 30           | 1.95   | 22 × 35           | 2.00   | 22 × 40           | 2.00   |
|           |                                     |        | 25 × 30           | 1.95   | 22 × 40           | 2.00   | 25 × 35           | 2.00   |
|           |                                     |        | 30 × 25           | 1.90   | 25 × 30           | 1.95   | 30 × 25           | 2.00   |
|           |                                     |        |                   |        | 30 × 25           | 2.00   |                   |        |
| 680       |                                     |        | 22 × 40           | 2.20   | 22 × 45           | 2.25   | 22 × 45           | 2.35   |
|           |                                     |        | 25 × 30           | 2.20   | 25 × 35           | 2.20   | 25 × 35           | 2.30   |
|           |                                     |        | 30 × 25           | 2.15   | 30 × 30           | 2.20   | 30 × 30           | 2.30   |
|           |                                     |        |                   |        | 35 × 25           | 2.20   | 35 × 25           | 2.30   |
| 820       | 22 × 25                             | 1.85   | 22 × 45           | 2.50   | 22 × 50           | 2.55   | 25 × 40           | 2.60   |
|           |                                     |        | 25 × 35           | 2.55   | 25 × 40           | 2.55   | 25 × 45           | 2.60   |
|           |                                     |        | 30 × 30           | 2.50   | 30 × 30           | 2.60   | 30 × 30           | 2.60   |
|           |                                     |        | 35 × 25           | 2.50   | 30 × 35           | 2.60   | 30 × 35           | 2.60   |
|           |                                     |        |                   |        | 35 × 25           | 2.60   | 35 × 30           | 2.60   |
| 1000      | 22 × 30                             | 2.10   | 22 × 50           | 2.85   | 25 × 45           | 2.85   | 25 × 45           | 3.00   |
|           | 25 × 25                             | 2.10   | 25 × 40           | 2.80   | 30 × 35           | 2.85   | 25 × 50           | 3.00   |
|           |                                     |        | 30 × 35           | 2.80   | 35 × 30           | 2.90   | 30 × 35           | 3.05   |
|           |                                     |        | 35 × 25           | 2.80   |                   |        | 30 × 40           | 3.05   |
|           |                                     |        |                   |        |                   |        | 35 × 30           | 3.00   |

Note: I. Ripple Current: (A/rms) 85°C, 120Hz

**CASE SIZE & PERMISSIBLE RIPPLE CURRENT OF STANDARD PRODUCTS**

D x L: mm

| CAP. (μF) | RATED VOLTAGE WV (SURGE VOLTAGE WV) |        |                   |        |                   |        |                   |        |
|-----------|-------------------------------------|--------|-------------------|--------|-------------------|--------|-------------------|--------|
|           | 100 (125)<br>SIZE                   |        | 160 (200)<br>SIZE |        | 180 (225)<br>SIZE |        | 200 (250)<br>SIZE |        |
|           |                                     | RIPPLE |                   | RIPPLE |                   | RIPPLE |                   | RIPPLE |
| 1200      | 22 x 35                             | 2.40   | 25 x 45           | 3.15   | 30 x 40           | 3.25   | 25 x 50           | 3.30   |
|           | 25 x 30                             | 2.45   | 30 x 35           | 3.15   | 35 x 30           | 3.30   | 30 x 40           | 3.30   |
|           |                                     |        | 35 x 30           | 3.20   | 35 x 35           | 3.30   | 30 x 45           | 3.30   |
|           |                                     |        |                   |        |                   |        | 35 x 30           | 3.30   |
|           |                                     |        |                   |        |                   |        | 35 x 35           | 3.30   |
| 1500      | 22 x 40                             | 2.70   | 30 x 45           | 3.75   | 30 x 45           | 3.85   | 30 x 45           | 3.80   |
|           | 25 x 30                             | 2.75   | 35 x 30           | 3.70   | 35 x 35           | 3.80   | 30 x 50           | 3.80   |
|           | 30 x 25                             | 2.75   | 35 x 35           | 3.70   | 35 x 40           | 3.80   | 35 x 35           | 3.80   |
|           |                                     |        |                   |        |                   |        | 35 x 40           | 3.80   |
| 1800      | 22 x 45                             | 3.10   | 30 x 50           | 4.20   | 35 x 40           | 4.30   | 35 x 40           | 4.35   |
|           | 25 x 35                             | 3.15   | 35 x 40           | 4.20   | 35 x 45           | 4.30   | 35 x 45           | 4.35   |
|           | 30 x 30                             | 3.15   |                   |        |                   |        |                   |        |
|           | 35 x 25                             | 3.15   |                   |        |                   |        |                   |        |
| 2200      | 22 x 50                             | 3.50   | 35 x 40           | 4.60   | 35 x 45           | 4.90   | 35 x 45           | 4.95   |
|           | 25 x 40                             | 3.55   | 35 x 45           | 4.80   | 35 x 50           | 4.90   | 35 x 50           | 4.95   |
|           | 30 x 30                             | 3.55   |                   |        |                   |        |                   |        |
|           | 35 x 25                             | 3.60   |                   |        |                   |        |                   |        |
| 2700      | 25 x 45                             | 4.10   | 35 x 50           | 5.45   |                   |        |                   |        |
|           | 30 x 35                             | 4.05   |                   |        |                   |        |                   |        |
|           | 35 x 30                             | 4.05   |                   |        |                   |        |                   |        |
| 3300      | 25 x 50                             | 4.50   |                   |        |                   |        |                   |        |
|           | 30 x 40                             | 4.55   |                   |        |                   |        |                   |        |
|           | 35 x 30                             | 4.50   |                   |        |                   |        |                   |        |
| 3900      | 30 x 45                             | 5.15   |                   |        |                   |        |                   |        |
|           | 35 x 35                             | 5.10   |                   |        |                   |        |                   |        |
| 4700      | 35 x 40                             | 5.75   |                   |        |                   |        |                   |        |
| 5600      | 35 x 50                             | 6.20   |                   |        |                   |        |                   |        |

Note: I. Ripple Current: (A/rms) 85°C, 120Hz



## CASE SIZE & PERMISSIBLE RIPPLE CURRENT OF STANDARD PRODUCTS

D x L: mm

| CAP. (μF) | RATED VOLTAGE WV (SURGE VOLTAGE WV) |      |                             |      |                             |      |                             |      |                             |      |                             |      |
|-----------|-------------------------------------|------|-----------------------------|------|-----------------------------|------|-----------------------------|------|-----------------------------|------|-----------------------------|------|
|           | 250 (300)<br>SIZE    RIPPLE         |      | 350 (400)<br>SIZE    RIPPLE |      | 400 (450)<br>SIZE    RIPPLE |      | 420 (470)<br>SIZE    RIPPLE |      | 450 (500)<br>SIZE    RIPPLE |      | 500 (550)<br>SIZE    RIPPLE |      |
| 47        |                                     |      |                             |      |                             |      |                             |      | 22 x 25                     | 0.50 |                             |      |
| 56        |                                     |      |                             |      | 22 x 20                     | 0.55 |                             |      | 22 x 25                     | 0.65 |                             |      |
| 68        |                                     |      | 22 x 20                     | 0.55 | 22 x 25                     | 0.60 |                             |      | 22 x 25                     | 0.67 |                             |      |
|           |                                     |      |                             |      | 25 x 20                     | 0.60 |                             |      | 22 x 30                     | 0.70 |                             |      |
|           |                                     |      |                             |      |                             |      |                             |      | 25 x 25                     | 0.70 |                             |      |
| 82        |                                     |      | 22 x 25                     | 0.65 | 22 x 25                     | 0.80 |                             |      | 22 x 30                     | 0.80 |                             |      |
|           |                                     |      | 25 x 20                     | 0.65 | 25 x 20                     | 0.80 |                             |      | 25 x 25                     | 0.80 |                             |      |
| 100       |                                     |      | 22 x 30                     | 0.90 | 22 x 30                     | 0.90 |                             |      | 22 x 30                     | 0.85 | 22 x 40                     | 1.00 |
|           |                                     |      | 25 x 20                     | 0.90 | 25 x 25                     | 0.90 |                             |      | 22 x 35                     | 0.95 | 30 x 25                     | 0.90 |
|           |                                     |      |                             |      |                             |      |                             |      | 25 x 30                     | 0.95 |                             |      |
|           |                                     |      |                             |      |                             |      |                             |      | 30 x 25                     | 0.95 |                             |      |
| 120       | 22 x 20                             | 0.78 | 22 x 30                     | 1.00 | 22 x 30                     | 0.95 | 22 x 30                     | 0.95 | 22 x 30                     | 0.95 | 30 x 30                     | 1.00 |
|           |                                     |      | 25 x 25                     | 1.00 | 22 x 35                     | 1.05 |                             |      | 22 x 40                     | 1.05 | 35 x 25                     | 1.00 |
|           |                                     |      |                             |      | 25 x 25                     | 1.05 |                             |      | 25 x 30                     | 1.05 |                             |      |
|           |                                     |      |                             |      |                             |      |                             |      | 30 x 25                     | 1.05 |                             |      |
| 150       | 22 x 25                             | 0.90 | 22 x 35                     | 1.15 | 22 x 35                     | 1.15 | 22 x 35                     | 1.05 | 22 x 35                     | 1.05 | 22 x 50                     | 1.40 |
|           |                                     |      | 25 x 30                     | 1.15 | 25 x 30                     | 1.15 | 25 x 30                     | 1.05 | 22 x 45                     | 1.20 | 30 x 35                     | 1.20 |
|           |                                     |      | 30 x 25                     | 1.15 | 30 x 25                     | 1.15 | 30 x 25                     | 1.05 | 25 x 35                     | 1.20 |                             |      |
|           |                                     |      |                             |      |                             |      |                             |      | 30 x 30                     | 1.20 |                             |      |
| 180       | 22 x 25                             | 1.05 | 22 x 40                     | 1.30 | 22 x 40                     | 1.20 | 22 x 40                     | 1.35 | 25 x 40                     | 1.35 | 30 x 40                     | 1.40 |
|           | 25 x 20                             | 1.00 | 25 x 30                     | 1.25 | 22 x 45                     | 1.30 |                             |      | 30 x 35                     | 1.35 | 35 x 30                     | 1.30 |
|           |                                     |      | 30 x 25                     | 1.25 | 25 x 35                     | 1.30 |                             |      | 35 x 25                     | 1.35 |                             |      |
|           |                                     |      |                             |      | 30 x 30                     | 1.35 |                             |      |                             |      |                             |      |
| 220       | 22 x 30                             | 1.15 | 22 x 45                     | 1.45 | 22 x 50                     | 1.50 | 22 x 45                     | 1.40 | 22 x 45                     | 1.40 | 30 x 45                     | 1.60 |
|           | 22 x 35                             | 1.15 | 25 x 35                     | 1.45 | 25 x 40                     | 1.50 | 22 x 50                     | 1.55 | 25 x 50                     | 1.55 | 35 x 35                     | 1.50 |
|           | 25 x 25                             | 1.15 | 30 x 30                     | 1.45 | 30 x 30                     | 1.50 | 25 x 40                     | 1.50 | 30 x 40                     | 1.55 |                             |      |
|           |                                     |      | 35 x 25                     | 1.45 | 35 x 25                     | 1.50 | 25 x 45                     | 1.60 | 35 x 30                     | 1.55 |                             |      |
| 270       | 22 x 30                             | 1.30 | 25 x 40                     | 1.65 | 22 x 50                     | 1.60 | 25 x 40                     | 1.50 | 25 x 50                     | 1.55 | 30 x 50                     | 1.80 |
|           | 25 x 25                             | 1.30 | 30 x 35                     | 1.65 | 25 x 40                     | 1.65 | 30 x 40                     | 1.60 | 30 x 45                     | 1.75 | 35 x 40                     | 1.70 |
|           |                                     |      | 35 x 25                     | 1.65 | 30 x 35                     | 1.65 |                             |      | 35 x 35                     | 1.70 |                             |      |
|           |                                     |      |                             |      | 35 x 30                     | 1.65 |                             |      |                             |      |                             |      |

Note: I. Ripple Current: (A/rms) 85°C, 120Hz



## CASE SIZE & PERMISSIBLE RIPPLE CURRENT OF STANDARD PRODUCTS

D x L: mm

| CAP. (μF) | RATED VOLTAGE WV (SURGE VOLTAGE WV) |        |           |        |           |        |           |        |           |        |           |        |
|-----------|-------------------------------------|--------|-----------|--------|-----------|--------|-----------|--------|-----------|--------|-----------|--------|
|           | 250 (300)                           |        | 350 (400) |        | 400 (450) |        | 420 (470) |        | 450 (500) |        | 500 (550) |        |
|           | SIZE                                | RIPPLE | SIZE      | RIPPLE | SIZE      | RIPPLE | SIZE      | RIPPLE | SIZE      | RIPPLE | SIZE      | RIPPLE |
| 330       | 22 x 30                             | 1.50   | 25 x 50   | 1.80   | 25 x 45   | 1.75   | 25 x 45   | 1.75   | 30 x 40   | 1.75   | 35 x 45   | 2.00   |
|           | 25 x 25                             | 1.50   | 30 x 40   | 1.80   | 25 x 50   | 1.90   | 25 x 50   | 1.85   | 30 x 50   | 2.00   |           |        |
|           | 30 x 25                             | 1.50   | 35 x 30   | 1.80   | 30 x 40   | 1.90   | 30 x 40   | 1.75   | 35 x 40   | 2.00   |           |        |
|           |                                     |        |           |        | 35 x 30   | 1.85   | 30 x 45   | 1.90   |           |        |           |        |
| 390       | 22 x 35                             | 1.65   | 30 x 40   | 2.00   | 30 x 40   | 1.95   | 35 x 45   | 1.90   | 30 x 45   | 2.00   | 35 x 50   | 2.30   |
|           | 25 x 35                             | 1.65   | 35 x 30   | 2.00   | 30 x 45   | 2.15   |           |        | 35 x 45   | 2.25   |           |        |
|           | 30 x 25                             | 1.65   |           |        | 35 x 35   | 2.10   |           |        |           |        |           |        |
| 470       | 22 x 40                             | 1.85   | 30 x 45   | 2.25   | 30 x 45   | 2.20   | 30 x 45   | 2.10   | 30 x 50   | 2.30   |           |        |
|           | 25 x 35                             | 1.85   | 35 x 35   | 2.25   | 30 x 50   | 2.40   | 30 x 50   | 2.20   | 35 x 50   | 2.50   |           |        |
|           | 30 x 30                             | 1.90   | 35 x 40   | 2.40   | 35 x 40   | 2.40   |           |        |           |        |           |        |
|           | 35 x 25                             | 1.90   |           |        |           |        |           |        |           |        |           |        |
| 560       | 22 x 45                             | 2.10   | 30 x 50   | 2.45   | 30 x 50   | 2.45   | 30 x 50   | 2.30   | 35 x 50   | 2.70   |           |        |
|           | 25 x 40                             | 2.10   | 35 x 40   | 2.50   | 35 x 45   | 2.70   | 35 x 45   | 2.30   |           |        |           |        |
|           | 30 x 30                             | 2.10   |           |        |           |        |           |        |           |        |           |        |
|           | 35 x 25                             | 2.10   |           |        |           |        |           |        |           |        |           |        |
| 680       | 25 x 45                             | 2.45   | 35 x 45   | 2.90   | 35 x 50   | 2.90   |           |        | 35 x 60   | 2.90   |           |        |
|           | 30 x 35                             | 2.45   |           |        |           |        |           |        |           |        |           |        |
|           | 35 x 25                             | 2.45   |           |        |           |        |           |        |           |        |           |        |
| 820       | 30 x 45                             | 2.75   |           |        |           |        |           |        |           |        |           |        |
|           | 35 x 30                             | 2.75   |           |        |           |        |           |        |           |        |           |        |
| 1000      | 30 x 45                             | 3.30   |           |        |           |        |           |        |           |        |           |        |
|           | 35 x 35                             | 3.30   |           |        |           |        |           |        |           |        |           |        |
| 1200      | 35 x 40                             | 3.55   |           |        |           |        |           |        |           |        |           |        |
| 1500      | 35 x 45                             | 4.05   |           |        |           |        |           |        |           |        |           |        |

Note: I. Ripple Current: (A/rms) 85°C, 120Hz