



ENGLISH

# Datasheet

## Aluminium Electrolytic Capacitor

RS Stock number 711-2046



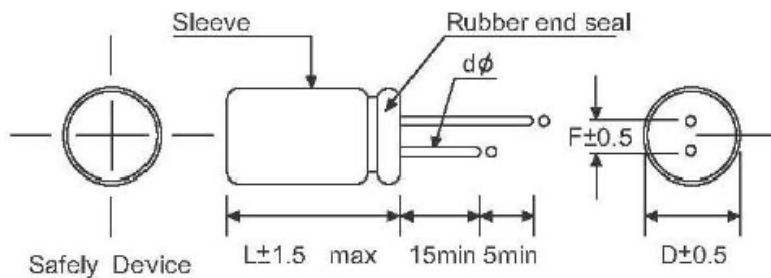
### Specifications:

| Item   | Performance Characteristics  |   |    |    |    |    |    |    |     |     |     |     |     |     |                       |     |    |    |    |    |    |    |     |     |     |     |     |     |     |              |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|--|--|---|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----------------------|-----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|--------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Operating Temperature Range  | -40 to +105°C  | -25 to +105°C   |    |    |    |    |    |    |     |     |     |     |     |     |                       |     |    |    |    |    |    |    |     |     |     |     |     |     |     |              |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Rated Voltage Range  | 6.3 to 100 VDC   | 160 to 450 VDC  |    |    |    |    |    |    |     |     |     |     |     |     |                       |     |    |    |    |    |    |    |     |     |     |     |     |     |     |              |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Capacitance Tolerance  | ± 20% (120Hz, +20°C)   |   |    |    |    |    |    |    |     |     |     |     |     |     |                       |     |    |    |    |    |    |    |     |     |     |     |     |     |     |              |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Leakage Current (at 20°C, max.)                                      | I < 0.01 CV or 3 (µA). After 1 minute whichever is greater measured with rated working voltage applied.  | I < 0.03 CV or 3 (µA). After 1 minute with rated working voltage applied. |    |    |    |    |    |    |     |     |     |     |     |     |                       |     |    |    |    |    |    |    |     |     |     |     |     |     |     |              |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Dissipation Factor (120Hz, 20°C)                                     | <table border="1"> <thead> <tr> <th>Working voltage (VDC)</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> <th>63</th> <th>100</th> <th>160</th> <th>200</th> <th>250</th> <th>350</th> <th>400</th> <th>450</th> </tr> </thead> <tbody> <tr> <td>D.F (%) Max.</td> <td>23</td> <td>20</td> <td>16</td> <td>14</td> <td>12</td> <td>10</td> <td>10</td> <td>10</td> <td>15</td> <td>15</td> <td>16</td> <td>20</td> <td>20</td> <td>20</td> </tr> </tbody> </table> |   |    |    |    |    |    |    |     |     |     |     |     |     | Working voltage (VDC) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 400 | 450 | D.F (%) Max. | 23 | 20 | 16 | 14 | 12 | 10 | 10 | 10 | 15 | 15 | 16 | 20 | 20 | 20 |
|  | Working voltage (VDC)  | 6.3   | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 400 | 450                   |     |    |    |    |    |    |    |     |     |     |     |     |     |     |              |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| D.F (%) Max.   | 23   | 20  | 16 | 14 | 12 | 10 | 10 | 10 | 15  | 15  | 16  | 20  | 20  | 20  |                       |     |    |    |    |    |    |    |     |     |     |     |     |     |     |              |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| For capacitance > 1000µ F, add 2% per another 1000µ (+20°C at 120Hz) |  |   |    |    |    |    |    |    |     |     |     |     |     |     |                       |     |    |    |    |    |    |    |     |     |     |     |     |     |     |              |    |    |    |    |    |    |    |    |    |    |    |    |    |    |

## Specifications:

| Item   | Performance Characteristics   |     |    |    |    |    |    |    |     |     |     |     |     |     |     |
|--|---|-----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|
| Low Temperature Characteristics (at 120Hz)   | Impedance ratio max.  |     |    |    |    |    |    |    |     |     |     |     |     |     |     |
|  | W.V (VDC)   | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 400 | 450 |
|  | Z-25°C/+20°C  | 4   | 3  | 2  | 2  | 2  | 2  | 2  | 2   | 3   | 3   | 3   | 5   | 6   | 15  |
| Z-40°C/+20°C   | 9   | 6   | 4  | 4  | 3  | 3  | 3  | 3  | -   | -   | -   | -   | -   | -   |     |
| For capacitance value 1000µF, add 0.5 per another 1000µF for -25°C/+20°C<br>For capacitance value 1000µF, add 1 per another 1000µF for -40°C/+20°C |   |     |    |    |    |    |    |    |     |     |     |     |     |     |     |
| Load Life  | Test Conditions:<br>Duration time: 2000hrs<br>Ambient temperature: +105°C<br>Applied voltage: Rated DC working voltage<br>After test requirements: +20°C<br>After test requirements: ≤ ± 20% of initial measured value<br>Dissipation Factor: ≤ 200% of the initial specified value<br>Leakage Current: ≤ the initial specified value |     |    |    |    |    |    |    |     |     |     |     |     |     |     |
| Shelf Life   | Test Conditions:<br>Duration time: 1000hrs<br>Ambient temperature: +105°C<br>Applied Voltage: None<br>After test requirements at +20°C: Same limits as load life.<br>Pre-treatment for measurements shall be conducted after application of DC working voltage for 30 minutes.  |     |    |    |    |    |    |    |     |     |     |     |     |     |     |

### Diagram of Dimensions:



|           | (Unit: mm) |     |     |     |     |     |     |    |     |  |
|-----------|------------|-----|-----|-----|-----|-----|-----|----|-----|--|
| <b>D</b>  | 5          | 6   | 8   | 10  | 13  | 16  | 18  | 22 | 25  |  |
| <b>F</b>  | 2.0        | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 | 10 | 12  |  |
| <b>φd</b> | 0.5        |     | 0.6 |     |     | 0.8 |     |    | 1.0 |  |



## Features:

- Used in communication equipment's, switching power supply, etc.
- Safety vent construction design

## Ripple Current & Temperature

| Temperature (°C) | 45   | 60   | 70   | 85   | 105  |
|------------------|------|------|------|------|------|
| Multiplier       | 2.10 | 1.90 | 1.65 | 1.40 | 1.00 |

## Ripple Current & Frequency Multipliers

| CAP ( $\mu$ F)/Hz     | 50 (60) | 120 | 400  | 1K   | 10K  | 50 – 100K |
|-----------------------|---------|-----|------|------|------|-----------|
| $CAP \leq 10$         | 0.8     | 1.0 | 1.30 | 1.45 | 1.65 | 1.70      |
| $10 < CAP \leq 100$   | 0.8     | 1.0 | 1.23 | 1.36 | 1.48 | 1.53      |
| $100 < CAP \leq 1000$ | 0.8     | 1.0 | 1.16 | 1.25 | 1.35 | 1.38      |
| $1000 < CAP$          | 0.8     | 1.0 | 1.11 | 1.18 | 1.25 | 1.28      |

Case Size

Ø D x L (mm)

| WV<br>[SV] | 6.3            |      | {8}    |      | 10     |      | {13}   |      | 16     |      | {20}   |      | 25     |      | {32}   |      | 35     |      | {44}   |  |
|------------|----------------|------|--------|------|--------|------|--------|------|--------|------|--------|------|--------|------|--------|------|--------|------|--------|--|
|            | uF             | Size | Ripple | Size | Ripple | Size | Ripple | Size | Ripple | Size | Ripple | Size | Ripple | Size | Ripple | Size | Ripple | Size | Ripple |  |
| 4.7        |                |      |        |      |        |      |        |      |        |      |        |      | 5x11   | 27   | 5x11   | 29   |        |      |        |  |
| 6.8        |                |      |        |      |        |      |        |      |        |      |        |      | 5x11   | 35   | 5x11   | 38   |        |      |        |  |
| 10         |                |      |        |      |        |      |        | 5x11 | 38     | 5x11 | 40     | 5x11 | 42     |      |        |      |        |      |        |  |
| 22         |                |      |        | 5x11 | 50     | 5x11 | 56     | 5x11 | 56     | 5x11 | 60     | 5x11 | 62     |      |        |      |        |      |        |  |
| 33         | 5x11           | 56   | 5x11   | 56   | 5x11   | 60   | 5x11   | 65   | 5x11   | 70   | 5x11   | 78   |        |      |        |      |        |      |        |  |
| 47         | 5x11           | 68   | 5x11   | 72   | 5x11   | 72   | 5x11   | 100  | 5x11   | 105  | 5x11   | 110  | 115    | 5x11 | 115    | 5x11 | 115    |      |        |  |
| 68         | 5x11           | 77   | 5x11   | 82   | 5x11   | 82   | 5x11   | 105  | 5x11   | 105  | 6.3x11 | 120  | 6.3x11 | 140  | 6.3x11 | 140  |        |      |        |  |
| 100        | 5x11           | 98   | 5x11   | 110  | 5x11   | 110  | 5x11   | 115  | 5x11   | 115  | 6.3x11 | 150  | 6.3x11 | 165  | 6.3x11 | 165  | 8x11   | 180  |        |  |
| 220        | 5x11<br>6.3x11 | 180  | 6.3x11 | 180  | 6.3x11 | 180  | 6.3x11 | 220  | 6.3x11 | 220  | 8x11   | 240  | 8x11   | 300  | 8x11   | 300  | 8x11   | 330  |        |  |
| 330        | 6.3x11         | 200  | 6.3x11 | 280  | 6.3x11 | 280  | 8x11   | 300  | 8x11   | 300  | 8x11   | 350  | 8x11   | 410  | 8x11   | 410  | 10x12  | 420  |        |  |
| 470        | 6.3x11<br>8x11 | 280  | 6.3x11 | 300  | 6.3x11 | 300  | 8x11   | 380  | 8x11   | 380  | 8x14   | 415  | 8x14   | 480  | 8x14   | 480  | 10x12  | 520  |        |  |
| 560        | 8x11           | 320  | 8x11   | 330  | 8x11   | 330  | 10x12  | 410  | 10x12  | 410  | 10x15  | 460  | 10x15  | 540  | 10x15  | 540  | 10x17  | 540  |        |  |
| 680        | 8x11           | 360  | 10x12  | 420  | 10x12  | 420  | 10x12  | 480  | 10x12  | 480  | 10x15  | 520  | 10x15  | 650  | 10x15  | 650  | 10x20  | 650  |        |  |
| 820        | 8x11           | 390  | 10x12  | 480  | 10x12  | 480  | 10x15  | 550  | 10x15  | 550  | 10x15  | 640  | 10x15  | 760  | 10x15  | 760  | 10x20  | 760  |        |  |
| 1000       | 8x11           | 420  | 10x12  | 530  | 10x12  | 530  | 8x16   | 570  | 10x15  | 570  | 10x15  | 600  | 10x15  | 680  | 10x15  | 680  | 10x17  | 880  |        |  |
| 1200       | 10x15          | 480  | 10x15  | 650  | 10x15  | 650  | 10x20  | 710  | 10x20  | 710  | 10x20  | 850  | 10x20  | 880  | 10x20  | 880  | 10x25  | 880  |        |  |
| 1500       | 10x15          | 620  | 10x17  | 770  | 10x17  | 770  | 10x20  | 820  | 10x20  | 820  | 13x21  | 910  | 13x21  | 970  | 13x21  | 970  | 13x26  | 970  |        |  |
| 2200       | 10x17<br>10x20 | 780  | 10x17  | 870  | 10x17  | 870  | 13x21  | 1020 | 13x21  | 1020 | 13x21  | 1210 | 13x21  | 1300 | 13x21  | 1300 | 16x26  | 1400 |        |  |
| 2700       | 10x20          | 850  | 13x21  | 920  | 13x21  | 920  | 13x21  | 1100 | 13x21  | 1100 | 16x26  | 1330 | 16x26  | 1500 | 16x26  | 1500 | 16x31  | 1500 |        |  |
| 3300       | 10x20<br>13x21 | 970  | 10x25  | 1110 | 10x25  | 1110 | 13x21  | 1220 | 13x21  | 1220 | 16x26  | 1480 | 16x26  | 1680 | 16x26  | 1680 | 16x31  | 1680 |        |  |
| 4700       | 10x25<br>13x21 | 1160 | 13x21  | 1380 | 13x21  | 1380 | 16x26  | 1620 | 16x26  | 1620 | 16x31  | 1800 | 16x31  | 1900 | 16x31  | 1900 | 18x36  | 1900 |        |  |
| 5600       | 13x26          | 1320 | 16x26  | 1510 | 16x26  | 1510 | 16x31  | 1720 | 16x31  | 1720 | 16x36  | 1890 | 16x36  | 2000 | 16x36  | 2000 | 18x36  | 2000 |        |  |
| 6800       | 16x26          | 1470 | 16x26  | 1680 | 16x26  | 1680 | 16x31  | 1880 | 16x31  | 1880 | 18x36  | 2040 | 18x36  | 2090 | 18x36  | 2090 | 18x41  | 2090 |        |  |
| 8200       | 16x26          | 1520 | 16x31  | 1840 | 16x31  | 1840 | 16x36  | 1950 | 16x36  | 1950 | 18x36  | 2090 | 18x36  | 2180 | 18x36  | 2180 | 22x42  | 2180 |        |  |
| 10000      | 16x26<br>16x31 | 1690 | 16x36  | 1900 | 16x36  | 1900 | 18x36  | 2060 | 18x36  | 2060 | 22x42  | 2200 | 22x42  | 2300 | 22x42  | 2300 | 25x44  | 2300 |        |  |
| 15000      | 16x36<br>18x36 | 2080 | 18x36  | 2230 | 18x36  | 2230 | 22x40  | 2300 | 22x40  | 2300 | 22x42  | 2500 | 22x42  | -    | 2500   | -    | -      | -    |        |  |

Ripple Current(mA,rms)at105□120Hz

| Case Size<br>uF | 50<br>{63}     |             | 63<br>{79}              |                   | 100<br>{125}   |            | 160<br>{200}   |            | 200<br>{250}   |            |
|-----------------|----------------|-------------|-------------------------|-------------------|----------------|------------|----------------|------------|----------------|------------|
|                 | Size           | Ripple      | Size                    | Ripple            | Size           | Ripple     | Size           | Ripple     | Size           | Ripple     |
| 0.1             | 5x11           | 1.3         | 5x11                    | 1.3               | 5x11           | 1.3        | -              | -          | -              | -          |
| 0.22            | 5x11           | 2.9         | 5x11                    | 2.9               | 5x11           | 2.9        | -              | -          | -              | -          |
| 0.33            | 5x11           | 4.2         | 5x11                    | 4.2               | 5x11           | 4.2        | -              | -          | -              | -          |
| 0.47            | 5x11           | 8           | 5x11                    | 8                 | 5x11           | 8          | 5x11           | 12         | 5x11           | 12         |
| 1               | 5x11           | 14          | 5x11                    | 14                | 5x11           | 15         | 5x11           | 17         | 6.3x11         | 17         |
| 2.2             | 5x11           | 20          | 5x11                    | 21                | 5x11           | 22         | 6.3x11         | 26         | 6.3x11         | 33         |
| 3.3             | 5x11           | 26          | 5x11                    | 28                | 5x11           | 30         | 6.3x11         | 32         | 6.3x11         | 43         |
| 4.7             | 5x11           | 32          | 5x11                    | 34                | 5x11           | 36         | 6.3x11<br>8x11 | 36<br>42   | 8x11           | 51         |
| 6.8             | 5x11           | 40          | 5x11                    | 42                | 6.3x11         | 47         | 8x11           | 56         | 10x12          | 63         |
| 10              | 5x11           | 50          | 5x11                    | 51                | 6.3x11         | 60         | 8x11<br>10x12  | 75<br>78   | 10x12<br>10x15 | 83<br>90   |
| 22              | 5x11           | 75          | 5x11<br>6.3x11          | 75<br>85          | 6.3x11<br>8x11 | 98<br>105  | 10x15          | 105        | 10x20          | 135        |
| 33              | 5x11<br>6.3x11 | 90<br>95    | 6.3x11<br>8x11          | 105<br>115        | 8x11<br>10x12  | 145<br>155 | 10x20          | 170        | 13x21          | 180        |
| 47              | 6.3x11         | 120         | 6.3x11<br>8x11          | 145<br>155        | 10x12<br>10x15 | 170<br>180 | 13x21          | 210        | 13x21<br>13x26 | 220<br>230 |
| 68              | 8x11           | 155         | 8x11                    | 185               | 10x15          | 240        | 13x26          | 280        | 16x26          | 300        |
| 100             | 8x11           | 200         | 10x12                   | 240               | 10x20          | 290        | 13x26<br>16x26 | 320<br>330 | 16x26          | 360        |
| 220             | 10x12<br>10x15 | 350<br>380  | 10x17<br>10x20          | 400<br>430        | 13x26<br>16x26 | 530<br>560 | 16x36          | 580        | 18x36          | 590        |
| 330             | 10x17<br>10x20 | 450<br>470  | 13x21                   | 570               | 16x26          | 680        | 18x31          | 710        | 18x36          | 740        |
| 470             | 13x21          | 610         | 13x21<br>13x26<br>16x26 | 640<br>700<br>720 | 16x26<br>16x31 | 840<br>860 | 18x41          | 880        | 22x42          | 890        |
| 560             | 13x21          | 660         | 13x26                   | 770               | 16x36          | 880        | -              | -          | -              | -          |
| 680             | 13x26          | 770         | 16x26                   | 880               | 16x36          | 920        | -              | -          | -              | -          |
| 820             | 13x26          | 850         | 16x26                   | 920               | 18x31          | 970        | -              | -          | -              | -          |
| 1000            | 13x26<br>16x26 | 900<br>1010 | 16x32<br>16x36          | 1190<br>1220      | 18x41          | 1250       | -              | -          | -              | -          |
| 1500            | 16x31          | 1300        | 18x31                   | 1350              | 22x42          | 1500       | -              | -          | -              | -          |
| 2200            | 18x36          | 1550        | 18x36                   | 1590              | 25x44          | 1880       | -              | -          | -              | -          |
| 2700            | 18x36          | 1610        | 22x42                   | 1720              | -              | -          | -              | -          | -              | -          |
| 3300            | 18x36          | 1780        | 22x42                   | 1900              | -              | -          | -              | -          | -              | -          |
| 4700            | 22x42          | 2050        | 25x44                   | 2200              | -              | -          | -              | -          | -              | -          |
| 5600            | 25x42          | 2160        | -                       | -                 | -              | -          | -              | -          | -              | -          |
| 6800            | 25x44          | 2280        | -                       | -                 | -              | -          | -              | -          | -              | -          |

Ripple Current(mA,rms)at105□120Hz

| Case Size |            | Ø D x L (mm)   |         |                |        |                         |                   |                |            |
|-----------|------------|----------------|---------|----------------|--------|-------------------------|-------------------|----------------|------------|
| uF        | WV<br>{SV} | {300}          |         | {400}          |        | {450}                   |                   | {500}          |            |
|           |            | Size           | Ripple  | Size           | Ripple | Size                    | Ripple            | Size           | Ripple     |
| 0.47      |            | 5x11           | 12      | 6.3x11         | 15     | 6.3x11                  | 15                | 6.3x11         | 15         |
| 1         |            | 6.3x11         | 17      | 6.3x11         | 20     | 8x11                    | 22                | 8x11           | 22         |
| 2.2       |            | 8x11           | 36      | 10x12          | 39     | 10x12                   | 39                | 10x12          | 39         |
| 3.3       |            | 8x11           | 43      | 10x12          | 53     | 10x12<br>10x15          | 53 55             | 10x15<br>10x20 | 53 55      |
| 4.7       |            | 10x12          | 51      | 10x12<br>10x15 | 63 66  | 10x15                   | 69                | 10x20          | 64         |
| 6.8       |            | 10x12          | 70      | 10x15          | 79     | 10x15                   | 85                | 10x20          | 75         |
| 10        |            | 10x15          | 90      | 10x20          | 110    | 10x15<br>10x20<br>13x21 | 100<br>112<br>115 | 13x21<br>13x26 | 92 98      |
| 22        |            | 10x20          | 160     | 13x26          | 180    | 13x21<br>16x26          | 170<br>190        | 16x26<br>16x31 | 175<br>180 |
| 33        |            | 13x21<br>13x26 | 175 180 | 16x26          | 190    | 16x26                   | 220               | 16x36          | 210        |
| 47        |            | 13x26          | 240     | 16x31          | 250    | 16x31                   | 300               | 16x36          | 280        |
| 68        |            | 16x26          | 320     | 16x31          | 330    | 16x36                   | 355               | 18x36          | 330        |
| 100       |            | 16x31          | 400     | 18x36          | 420    | 18x36                   | 450               | -              | -          |
| 120       |            |                |         |                |        | 18x31                   | 440               |                |            |

Ripple Current(mA,rms)at105□120Hz