

# Datasheet

## Aluminium Electrolytic Capacitor, LHK

RS Stock number 707-6388



### Specifications:

| Item                             | Performance Characteristics   |                |               |                |                             |                             |     |     |     |     |     |     |     |     |     |     |       |     |    |    |    |    |    |    |     |     |     |     |     |     |     |     |
|----------------------------------|---|----------------|---------------|----------------|-----------------------------|-----------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|-----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|
| Operating Temperature Range      | -40 to +105°C   | -25 to +105°C  |               |                |                             |                             |     |     |     |     |     |     |     |     |     |     |       |     |    |    |    |    |    |    |     |     |     |     |     |     |     |     |
| Rated Voltage Range              | 10 to 100 VDC   | 160 to 450 VDC |               |                |                             |                             |     |     |     |     |     |     |     |     |     |     |       |     |    |    |    |    |    |    |     |     |     |     |     |     |     |     |
| Capacitance Tolerance            | + 20% (120Hz, +20°C)  |                |               |                |                             |                             |     |     |     |     |     |     |     |     |     |     |       |     |    |    |    |    |    |    |     |     |     |     |     |     |     |     |
| Leakage Current (at 20°C)        | <table border="1"> <tr> <td>10V ~ 100V DC</td> <td>160V ~ 450V DC</td> </tr> <tr> <td><math>I \leq 0.02CV + 3 (\mu A)</math></td> <td><math>I \leq 0.05CV + 4 (\mu A)</math></td> </tr> </table> <p>I: Leakage current (μA)<br/>           C: Rated capacitance (μF)<br/>           V: Working voltage (V)<br/>           After 5 minutes applying the DC working voltage</p>   |                | 10V ~ 100V DC | 160V ~ 450V DC | $I \leq 0.02CV + 3 (\mu A)$ | $I \leq 0.05CV + 4 (\mu A)$ |     |     |     |     |     |     |     |     |     |     |       |     |    |    |    |    |    |    |     |     |     |     |     |     |     |     |
| 10V ~ 100V DC                    | 160V ~ 450V DC  |                |               |                |                             |                             |     |     |     |     |     |     |     |     |     |     |       |     |    |    |    |    |    |    |     |     |     |     |     |     |     |     |
| $I \leq 0.02CV + 3 (\mu A)$      | $I \leq 0.05CV + 4 (\mu A)$   |                |               |                |                             |                             |     |     |     |     |     |     |     |     |     |     |       |     |    |    |    |    |    |    |     |     |     |     |     |     |     |     |
| Surge Voltage (20°C)             | <table border="1"> <tr> <td>W.V</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>60</td> <td>100</td> <td>160</td> <td>160</td> <td>200</td> <td>250</td> <td>350</td> <td>400</td> <td>450</td> </tr> <tr> <td>S.V</td> <td>13</td> <td>20</td> <td>32</td> <td>44</td> <td>63</td> <td>79</td> <td>125</td> <td>200</td> <td>200</td> <td>250</td> <td>300</td> <td>400</td> <td>450</td> <td>500</td> </tr> </table>                       |                | W.V           | 10             | 16                          | 25                          | 35  | 50  | 60  | 100 | 160 | 160 | 200 | 250 | 350 | 400 | 450   | S.V | 13 | 20 | 32 | 44 | 63 | 79 | 125 | 200 | 200 | 250 | 300 | 400 | 450 | 500 |
| W.V                              | 10  | 16             | 25            | 35             | 50                          | 60                          | 100 | 160 | 160 | 200 | 250 | 350 | 400 | 450 |     |     |       |     |    |    |    |    |    |    |     |     |     |     |     |     |     |     |
| S.V                              | 13  | 20             | 32            | 44             | 63                          | 79                          | 125 | 200 | 200 | 250 | 300 | 400 | 450 | 500 |     |     |       |     |    |    |    |    |    |    |     |     |     |     |     |     |     |     |
| Dissipation Factor (120Hz, 20°C) | <table border="1"> <tr> <td>W.V</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>100</td> <td>160</td> <td>200</td> <td>250</td> <td>350</td> <td>400</td> <td>450</td> </tr> <tr> <td>Tan δ</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table> <p>For capacitance &gt; 1000μ F, add 2% per another 1000μ (+20°C at 120Hz)</p> |                | W.V           | 10             | 16                          | 25                          | 35  | 50  | 63  | 100 | 160 | 200 | 250 | 350 | 400 | 450 | Tan δ |     |    |    |    |    |    |    |     |     |     |     |     |     |     |     |
| W.V                              | 10  | 16             | 25            | 35             | 50                          | 63                          | 100 | 160 | 200 | 250 | 350 | 400 | 450 |     |     |     |       |     |    |    |    |    |    |    |     |     |     |     |     |     |     |     |
| Tan δ                            |   |                |               |                |                             |                             |     |     |     |     |     |     |     |     |     |     |       |     |    |    |    |    |    |    |     |     |     |     |     |     |     |     |

### Specifications:

| Item                        | Performance Characteristics  |                    |                                  |      |   |                 |   |     |     |     |     |     |     |     |     |             |   |   |   |   |   |   |   |   |   |   |    |    |    |             |   |   |   |   |   |   |   |   |   |    |   |   |   |
|-----------------------------|--|--------------------|----------------------------------|------|---|-----------------|---|-----|-----|-----|-----|-----|-----|-----|-----|-------------|---|---|---|---|---|---|---|---|---|---|----|----|----|-------------|---|---|---|---|---|---|---|---|---|----|---|---|---|
| Temperature Characteristics | Impedance ratio max.   |                    |                                  |      |   |                 |   |     |     |     |     |     |     |     |     |             |   |   |   |   |   |   |   |   |   |   |    |    |    |             |   |   |   |   |   |   |   |   |   |    |   |   |   |
|                             | <table border="1"> <thead> <tr> <th>W.V</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>-25°C/+20°C</td> <td>4</td> <td>3</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>8</td> <td>8</td> <td>8</td> <td>12</td> <td>15</td> <td>16</td> </tr> <tr> <td>-40°C/+20°C</td> <td>8</td> <td>6</td> <td>4</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>6</td> <td>6</td> <td>10</td> <td>-</td> <td>-</td> <td>-</td> </tr> </tbody> </table> | W.V                | 10                               | 16   | 25  | 35              | 50  | 63  | 100 | 160 | 200 | 250 | 350 | 400 | 450 | -25°C/+20°C | 4 | 3 | 3 | 2 | 2 | 2 | 2 | 8 | 8 | 8 | 12 | 15 | 16 | -40°C/+20°C | 8 | 6 | 4 | 3 | 3 | 3 | 3 | 6 | 6 | 10 | - | - | - |
|                             | W.V  | 10                 | 16                               | 25   | 35  | 50              | 63  | 100 | 160 | 200 | 250 | 350 | 400 | 450 |     |             |   |   |   |   |   |   |   |   |   |   |    |    |    |             |   |   |   |   |   |   |   |   |   |    |   |   |   |
| -25°C/+20°C                 | 4  | 3                  | 3                                | 2    | 2   | 2               | 2   | 8   | 8   | 8   | 12  | 15  | 16  |     |     |             |   |   |   |   |   |   |   |   |   |   |    |    |    |             |   |   |   |   |   |   |   |   |   |    |   |   |   |
| -40°C/+20°C                 | 8  | 6                  | 4                                | 3    | 3   | 3               | 3   | 6   | 6   | 10  | -   | -   | -   |     |     |             |   |   |   |   |   |   |   |   |   |   |    |    |    |             |   |   |   |   |   |   |   |   |   |    |   |   |   |
| Load Test                   | After 1000 hours application of W.V at +105°C. The capacitor shall meet the following limits. <table border="1"> <tbody> <tr> <td>Capacitance Change</td> <td><math>\leq \pm 20\%</math> of initial value</td> </tr> <tr> <td>Tang</td> <td><math>\leq \pm 20\%</math> of initial specified value</td> </tr> <tr> <td>Leakage Current</td> <td><math>\leq \pm</math> initial specified value</td> </tr> </tbody> </table>  | Capacitance Change | $\leq \pm 20\%$ of initial value | Tang | $\leq \pm 20\%$ of initial specified value  | Leakage Current | $\leq \pm$ initial specified value          |     |     |     |     |     |     |     |     |             |   |   |   |   |   |   |   |   |   |   |    |    |    |             |   |   |   |   |   |   |   |   |   |    |   |   |   |
| Capacitance Change          | $\leq \pm 20\%$ of initial value   |                    |                                  |      |   |                 |   |     |     |     |     |     |     |     |     |             |   |   |   |   |   |   |   |   |   |   |    |    |    |             |   |   |   |   |   |   |   |   |   |    |   |   |   |
| Tang                        | $\leq \pm 20\%$ of initial specified value   |                    |                                  |      |   |                 |   |     |     |     |     |     |     |     |     |             |   |   |   |   |   |   |   |   |   |   |    |    |    |             |   |   |   |   |   |   |   |   |   |    |   |   |   |
| Leakage Current             | $\leq \pm$ initial specified value   |                    |                                  |      |   |                 |   |     |     |     |     |     |     |     |     |             |   |   |   |   |   |   |   |   |   |   |    |    |    |             |   |   |   |   |   |   |   |   |   |    |   |   |   |
| Shelf Test                  | After 500 hours application of W.V AT +105°C. This capacitor shall meet the following limits. <table border="1"> <tbody> <tr> <td>Capacitance Change</td> <td><math>\leq \pm 20\%</math> of initial value</td> </tr> <tr> <td>Tang</td> <td><math>\leq \pm 200\%</math> of initial specified value</td> </tr> <tr> <td>Leakage Current</td> <td><math>\leq \pm 200\%</math> of initial specified value</td> </tr> </tbody> </table>  | Capacitance Change | $\leq \pm 20\%$ of initial value | Tang | $\leq \pm 200\%$ of initial specified value | Leakage Current | $\leq \pm 200\%$ of initial specified value |     |     |     |     |     |     |     |     |             |   |   |   |   |   |   |   |   |   |   |    |    |    |             |   |   |   |   |   |   |   |   |   |    |   |   |   |
| Capacitance Change          | $\leq \pm 20\%$ of initial value   |                    |                                  |      |   |                 |   |     |     |     |     |     |     |     |     |             |   |   |   |   |   |   |   |   |   |   |    |    |    |             |   |   |   |   |   |   |   |   |   |    |   |   |   |
| Tang                        | $\leq \pm 200\%$ of initial specified value  |                    |                                  |      |   |                 |   |     |     |     |     |     |     |     |     |             |   |   |   |   |   |   |   |   |   |   |    |    |    |             |   |   |   |   |   |   |   |   |   |    |   |   |   |
| Leakage Current             | $\leq \pm 200\%$ of initial specified value  |                    |                                  |      |   |                 |   |     |     |     |     |     |     |     |     |             |   |   |   |   |   |   |   |   |   |   |    |    |    |             |   |   |   |   |   |   |   |   |   |    |   |   |   |

### Diagram of Dimensions:



Unit (mm)

| D  | 5   | 6   | 8   | 10  | 13  | 16  | 18  | 20  | 22  | 25  |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| φd | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |

(Unit: mm)

**Features:**

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

**Ripple Current & Frequency Multipliers**

| Freq.(Hz)<br>Cap.(µF) | 50(60) | 120  | 500  | 1K   | 10KUP |
|-----------------------|--------|------|------|------|-------|
| Under 100             | 0.70   | 1.00 | 1.30 | 1.40 | 1.50  |
| 100 < C ≤ 1000        | 0.75   | 1.00 | 1.20 | 1.30 | 1.35  |
| 1000 up above         | 0.80   | 1.00 | 1.10 | 1.12 | 1.15  |

**Case Size**

Ø D x L (mm)

| WV<br>µF | 10    |        | 16    |        | 25    |        | 35    |        | 50    |        | 63    |        | 100   |        |
|----------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|
|          | Size  | Ripple | Size  | Ripple | Size  | Ripple | Size  | Ripple | Size  | Ripple | Size  | Ripple | Size  | Ripple |
| 0.47     |       |        |       |        |       |        |       | ▶      | 6x13  | 8      | 6x13  | 8      | 6x13  | 10     |
| 1        |       |        |       |        |       |        |       | ▶      | 6x13  | 12     | 6x13  | 12     | 6x13  | 14     |
| 2.2      |       |        |       |        |       |        |       | ▶      | 6x13  | 18     | 6x13  | 20     | 6x13  | 22     |
| 3.3      |       |        |       |        |       |        |       | ▶      | 6x13  | 23     | 6x13  | 24     | 6x13  | 27     |
| 4.7      |       |        |       |        |       |        |       | ▶      | 6x13  | 27     | 6x13  | 29     | 6x13  | 34     |
| 10       |       |        |       | ▶      | 6x13  | 40     | 6x13  | 40     | 6x13  | 40     | 6x13  | 48     | 8x16  | 58     |
| 22       |       |        |       | ▶      | 6x13  | 48     | 6x13  | 59     | 6x13  | 62     | 6x13  | 81     | 8x20  | 100    |
| 33       |       | ▶      | 6x13  | 58     | 6x13  | 65     | 6x13  | 69     | 8x16  | 88     | 8x16  | 99     | 8x20  | 135    |
| 47       | 6x13  | 60     | 6x13  | 73     | 6x13  | 77     | 6x13  | 105    | 8x16  | 115    | 8x16  | 138    | 10x21 | 150    |
| 100      | 6x13  | 98     | 6x16  | 102    | 8x16  | 140    | 8x16  | 205    | 8x16  | 252    | 10x21 | 280    | 13x22 | 300    |
| 220      | 8x16  | 170    | 8x16  | 220    | 8x16  | 260    | 8x16  | 305    | 10x20 | 320    | 13x22 | 394    | 16x28 | 505    |
| 330      | 8x16  | 243    | 8x16  | 250    | 10x21 | 320    | 10x21 | 350    | 13x22 | 415    | 13x26 | 505    | 16x33 | 660    |
| 470      | 8x16  | 315    | 10x17 | 385    | 10x21 | 420    | 13x22 | 530    | 13x26 | 640    | 16x26 | 715    | 18x36 | 875    |
| 1000     | 10x21 | 480    | 13x22 | 615    | 13x26 | 760    | 13x26 | 820    | 16x33 | 955    | 16x36 | 1150   |       |        |
| 2200     | 13x22 | 940    | 13x26 | 1000   | 16x28 | 1050   | 16x36 | 1165   | 18x36 | 1680   | 22x42 | 1980   |       |        |
| 3300     | 13x26 | 1150   | 16x33 | 1340   | 16x36 | 1500   | 18x36 | 1800   | 22x42 | 2080   |       |        |       |        |
| 4700     | 16x28 | 1400   | 16x36 | 1580   | 18x36 | 1980   | 22x42 | 2100   |       |        |       |        |       |        |

Ripple Current(mA, rms)at 105□ 120Hz

**Case size:**

| uF \ WV | 160   |        | 200   |        | 250   |        | 350   |        | 400   |        | 450   |        |
|---------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|
|         | Size  | Ripple | Size  | Ripple | Size  | Ripple | Size  | Ripple | Size  | Ripple | Size  | Ripple |
| 0.47    | 6x13  | 10     | 6x13  | 10     | 6x13  | 10     | 6x13  | 10     | 6x16  | 10     | 6x16  | 10     |
| 1       | 6x13  | 10     | 6x16  | 10     | 6x16  | 11     | 8x16  | 11     | 8x16  | 13     | 8x16  | 13     |
| 2.2     | 8x16  | 16     | 8x16  | 16     | 8x16  | 21     | 10x17 | 26     | 10x17 | 32     | 10x17 | 32     |
| 3.3     | 8x16  | 26     | 10x17 | 26     | 10x17 | 26     | 10x17 | 30     | 10x21 | 33     | 10x21 | 33     |
| 4.7     | 8x16  | 36     | 10x17 | 38     | 10x17 | 40     | 10x21 | 49     | 13x22 | 52     | 13x22 | 52     |
| 10      | 10x21 | 60     | 10x21 | 68     | 10x21 | 78     | 13x22 | 84     | 13x24 | 86     | 16x28 | 90     |
| 22      | 13x22 | 82     | 13x22 | 92     | 13x27 | 92     | 16x33 | 86     | 16x33 | 86     | 16x33 | 91     |
| 33      | 13x22 | 105    | 16x28 | 116    | 16x33 | 116    | 16x36 | 116    | 18x36 | 135    |       |        |
| 47      | 16x28 | 175    | 16x33 | 238    | 16x33 | 238    | 16x36 | 238    |       |        |       |        |
| 100     | 16x33 | 410    | 18x36 | 460    | 18x36 | 460    |       |        |       |        |       |        |
| 220     | 22x42 | 515    | 22x42 | 585    |       |        |       |        |       |        |       |        |

Ripple Current(mA, rms)at 105□ 120Hz