



**THE DATASHEET OF  
UKW1J470MED1TD**



# ALUMINUM ELECTROLYTIC CAPACITORS

# UKW

Standard, For Audio Equipment



- Realization of a harmonious balance of sound quality, made possible by the development of new electrolyte.
- Most suited for AV equipment.
- Compliant to the RoHS directive (2011/65/EU,(EU)2015/863).

## UKW

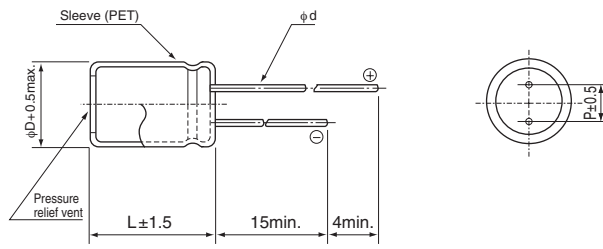


## Specifications

| Item                          | Performance Characteristics  |                    |  |       |   |                 |   |                                       |                               |                                       |                               |                        |                     |      |      |      |      |      |   |   |                     |    |   |   |   |   |   |   |
|-------------------------------|--|--------------------|--|-------|---|-----------------|---|---------------------------------------|-------------------------------|---------------------------------------|-------------------------------|------------------------|---------------------|------|------|------|------|------|---|---|---------------------|----|---|---|---|---|---|---|
| Category Temperature Range    | -40 to +85°C   |                    |  |       |   |                 |   |                                       |                               |                                       |                               |                        |                     |      |      |      |      |      |   |   |                     |    |   |   |   |   |   |   |
| Rated Voltage Range           | 10 to 100V   |                    |  |       |   |                 |   |                                       |                               |                                       |                               |                        |                     |      |      |      |      |      |   |   |                     |    |   |   |   |   |   |   |
| Rated Capacitance Range       | 33 to 15000μF  |                    |  |       |   |                 |   |                                       |                               |                                       |                               |                        |                     |      |      |      |      |      |   |   |                     |    |   |   |   |   |   |   |
| Capacitance Tolerance         | ±20% at 120Hz, 20°C  |                    |  |       |   |                 |   |                                       |                               |                                       |                               |                        |                     |      |      |      |      |      |   |   |                     |    |   |   |   |   |   |   |
| Leakage Current ※             | After 1 minute's application of rated voltage at 20°C, leakage current is not more than 0.03 CV (μA) .<br>After 2 minutes' application of rated voltage at 20°C, leakage current is not more than 0.01 CV (μA) .   |                    |  |       |   |                 |   |                                       |                               |                                       |                               |                        |                     |      |      |      |      |      |   |   |                     |    |   |   |   |   |   |   |
| Tangent of loss angle (tan δ) | <table border="1"> <tr> <td>Rated voltage (V)</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>100</td> <td rowspan="2">Measurement frequency : 120Hz at 20°C</td> </tr> <tr> <td>tan δ (max.)</td> <td>0.24</td> <td>0.20</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.10</td> <td>0.08</td> </tr> </table> <p>For capacitance of more than 1000μF, add 0.02 for every increase of 1000μF.</p>  | Rated voltage (V)  | 10   | 16    | 25  | 35              | 50  | 63                                    | 100                           | Measurement frequency : 120Hz at 20°C | tan δ (max.)                  | 0.24                   | 0.20                | 0.16 | 0.14 | 0.12 | 0.10 | 0.08 |   |   |                     |    |   |   |   |   |   |   |
| Rated voltage (V)             | 10   | 16                 | 25   | 35    | 50  | 63              | 100   | Measurement frequency : 120Hz at 20°C |                               |                                       |                               |                        |                     |      |      |      |      |      |   |   |                     |    |   |   |   |   |   |   |
| tan δ (max.)                  | 0.24   | 0.20               | 0.16   | 0.14  | 0.12  | 0.10            | 0.08  |                                       |                               |                                       |                               |                        |                     |      |      |      |      |      |   |   |                     |    |   |   |   |   |   |   |
| Stability at Low Temperature  | <table border="1"> <tr> <td colspan="2">Rated voltage (V)</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>100</td> <td rowspan="3">Measurement frequency : 120Hz</td> </tr> <tr> <td rowspan="2">Impedance ratio (max.)</td> <td>Z(-25°C) / Z(+20°C)</td> <td>4</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td>Z(-40°C) / Z(+20°C)</td> <td>10</td> <td>8</td> <td>5</td> <td>4</td> <td>3</td> <td>3</td> <td>3</td> </tr> </table> | Rated voltage (V)  |  | 10    | 16  | 25              | 35  | 50                                    | 63                            | 100                                   | Measurement frequency : 120Hz | Impedance ratio (max.) | Z(-25°C) / Z(+20°C) | 4    | 3    | 2    | 2    | 2    | 2 | 2 | Z(-40°C) / Z(+20°C) | 10 | 8 | 5 | 4 | 3 | 3 | 3 |
| Rated voltage (V)             |  | 10                 | 16   | 25    | 35  | 50              | 63  | 100                                   | Measurement frequency : 120Hz |                                       |                               |                        |                     |      |      |      |      |      |   |   |                     |    |   |   |   |   |   |   |
| Impedance ratio (max.)        | Z(-25°C) / Z(+20°C)  | 4                  | 3  | 2     | 2   | 2               | 2   | 2                                     |                               |                                       |                               |                        |                     |      |      |      |      |      |   |   |                     |    |   |   |   |   |   |   |
|                               | Z(-40°C) / Z(+20°C)  | 10                 | 8  | 5     | 4   | 3               | 3   | 3                                     |                               |                                       |                               |                        |                     |      |      |      |      |      |   |   |                     |    |   |   |   |   |   |   |
| Endurance                     | <p>The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 2000 hours at 85°C.</p> <table border="1"> <tr> <td>Capacitance change</td> <td>Within ±20% of the initial capacitance value</td> </tr> <tr> <td>tan δ</td> <td>200% or less than the initial specified value</td> </tr> <tr> <td>Leakage current</td> <td>Less than or equal to the initial specified value</td> </tr> </table>  | Capacitance change | Within ±20% of the initial capacitance value | tan δ | 200% or less than the initial specified value | Leakage current | Less than or equal to the initial specified value |                                       |                               |                                       |                               |                        |                     |      |      |      |      |      |   |   |                     |    |   |   |   |   |   |   |
| Capacitance change            | Within ±20% of the initial capacitance value   |                    |  |       |   |                 |   |                                       |                               |                                       |                               |                        |                     |      |      |      |      |      |   |   |                     |    |   |   |   |   |   |   |
| tan δ                         | 200% or less than the initial specified value  |                    |  |       |   |                 |   |                                       |                               |                                       |                               |                        |                     |      |      |      |      |      |   |   |                     |    |   |   |   |   |   |   |
| Leakage current               | Less than or equal to the initial specified value  |                    |  |       |   |                 |   |                                       |                               |                                       |                               |                        |                     |      |      |      |      |      |   |   |                     |    |   |   |   |   |   |   |
| Shelf Life                    | After storing the capacitors under no load at 85°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.   |                    |  |       |   |                 |   |                                       |                               |                                       |                               |                        |                     |      |      |      |      |      |   |   |                     |    |   |   |   |   |   |   |
| Marking                       | Printed with gold color letter on black sleeve.  |                    |  |       |   |                 |   |                                       |                               |                                       |                               |                        |                     |      |      |      |      |      |   |   |                     |    |   |   |   |   |   |   |

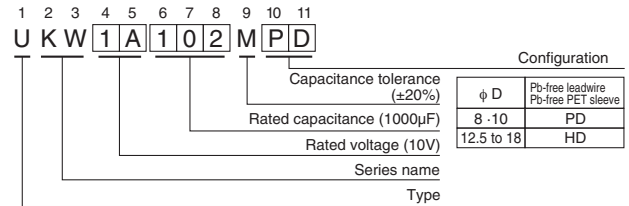
※ I : Leakage Current (μA), C : Rated Capacitance (μF), V : Rated Voltage (V)

## Radial Lead Type



|    | (mm) |     |      |     |     |
|----|------|-----|------|-----|-----|
| 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 |

## Type numbering system (Example : 10V 1000μF)



● Please refer to the Guidelines for Aluminum Electrolytic Capacitors for end seal configuration information.

## Frequency coefficient of rated ripple current

| Cap.(μF)      | Frequency |       |       |      |               |
|---------------|-----------|-------|-------|------|---------------|
|               | 50Hz      | 120Hz | 300Hz | 1kHz | 10kHz or more |
| 33 to 47      | 0.75      | 1.00  | 1.35  | 1.57 | 2.00          |
| 100 to 470    | 0.80      | 1.00  | 1.23  | 1.34 | 1.50          |
| 1000 to 15000 | 0.85      | 1.00  | 1.10  | 1.13 | 1.15          |

● Dimension table in next page.



## ■ Dimensions

| Rated Voltage<br>(V)<br>(code) | Rated Capacitance<br>( $\mu$ F) | Case Size<br>$\phi$ D $\times$ L (mm) | tan $\delta$ | Leakage Current<br>( $\mu$ A) |                            | Rated Ripple<br>(mArms)<br>(85°C/120Hz) | Part Number |
|--------------------------------|---------------------------------|---------------------------------------|--------------|-------------------------------|----------------------------|---|-------------|
|                                |                                 |                                       |              | at 20°C after<br>1 minute     | at 20°C after<br>2 minutes |   |             |
| 10<br>(1A)                     | 1000                            | 10 $\times$ 12.5                      | 0.24         | 300                           | 100                        | 630                                     | UKW1A102MPD |
|                                | 2200                            | 10 $\times$ 20                        | 0.26         | 660                           | 220                        | 1050                                    | UKW1A222MPD |
|                                | 3300                            | 12.5 $\times$ 20                      | 0.28         | 990                           | 330                        | 1420                                    | UKW1A332MHD |
|                                | 4700                            | 12.5 $\times$ 25                      | 0.30         | 1410                          | 470                        | 1800                                    | UKW1A472MHD |
|                                | 6800                            | 16 $\times$ 25                        | 0.34         | 2040                          | 680                        | 2150                                    | UKW1A682MHD |
|                                | 10000                           | 16 $\times$ 35.5                      | 0.42         | 3000                          | 1000                       | 2500                                    | UKW1A103MHD |
|                                | 15000                           | 18 $\times$ 35.5                      | 0.52         | 4500                          | 1500                       | 2720                                    | UKW1A153MHD |
| 16<br>(1C)                     | 330                             | 8 $\times$ 11.5                       | 0.20         | 158.4                         | 52.8                       | 360                                     | UKW1C331MPD |
|                                | 470                             | 8 $\times$ 11.5                       | 0.20         | 225.6                         | 75.2                       | 420                                     | UKW1C471MPD |
|                                | 1000                            | 10 $\times$ 16                        | 0.20         | 480                           | 160                        | 770                                     | UKW1C102MPD |
|                                | 2200                            | 12.5 $\times$ 20                      | 0.22         | 1056                          | 352                        | 1250                                    | UKW1C222MHD |
|                                | 3300                            | 12.5 $\times$ 25                      | 0.24         | 1584                          | 528                        | 1700                                    | UKW1C332MHD |
|                                | 4700                            | 16 $\times$ 25                        | 0.26         | 2256                          | 752                        | 2100                                    | UKW1C472MHD |
|                                | 6800                            | 16 $\times$ 35.5                      | 0.30         | 3264                          | 1088                       | 2500                                    | UKW1C682MHD |
|                                | 10000                           | 18 $\times$ 35.5                      | 0.38         | 4800                          | 1600                       | 2640                                    | UKW1C103MHD |
| 25<br>(1E)                     | 220                             | 8 $\times$ 11.5                       | 0.16         | 165                           | 55                         | 320                                     | UKW1E221MPD |
|                                | 330                             | 10 $\times$ 12.5                      | 0.16         | 247.5                         | 82.5                       | 420                                     | UKW1E331MPD |
|                                | 470                             | 10 $\times$ 12.5                      | 0.16         | 352.5                         | 117.5                      | 530                                     | UKW1E471MPD |
|                                | 1000                            | 10 $\times$ 20                        | 0.16         | 750                           | 250                        | 950                                     | UKW1E102MPD |
|                                | 2200                            | 12.5 $\times$ 25                      | 0.18         | 1650                          | 550                        | 1550                                    | UKW1E222MHD |
|                                | 3300                            | 16 $\times$ 25                        | 0.20         | 2475                          | 825                        | 1950                                    | UKW1E332MHD |
|                                | 4700                            | 16 $\times$ 30.5                      | 0.22         | 3525                          | 1175                       | 2360                                    | UKW1E472MHD |
|                                | 6800                            | 18 $\times$ 35.5                      | 0.26         | 5100                          | 1700                       | 2590                                    | UKW1E682MHD |
| 35<br>(1V)                     | 220                             | 10 $\times$ 12.5                      | 0.14         | 231                           | 77                         | 370                                     | UKW1V221MPD |
|                                | 330                             | 10 $\times$ 12.5                      | 0.14         | 346.5                         | 115.5                      | 470                                     | UKW1V331MPD |
|                                | 470                             | 10 $\times$ 16                        | 0.14         | 493.5                         | 164.5                      | 630                                     | UKW1V471MPD |
|                                | 1000                            | 12.5 $\times$ 20                      | 0.14         | 1050                          | 350                        | 1100                                    | UKW1V102MHD |
|                                | 2200                            | 16 $\times$ 25                        | 0.16         | 2310                          | 770                        | 1800                                    | UKW1V222MHD |
|                                | 3300                            | 16 $\times$ 35.5                      | 0.18         | 3465                          | 1155                       | 2220                                    | UKW1V332MHD |
|                                | 4700                            | 18 $\times$ 35.5                      | 0.20         | 4935                          | 1645                       | 2490                                    | UKW1V472MHD |

For cut leads, formed leads or taped parts, please add the appropriate code after the size code (12th digit).  
If there is no size code in the part number, please add size code "1" and then add the appropriate code.

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## ■ Dimensions

| Rated Voltage<br>(V)<br>(code) | Rated Capacitance<br>( $\mu$ F) | Case Size<br>$\phi$ D $\times$ L (mm) | tan $\delta$ | Leakage Current<br>( $\mu$ A) |                            | Rated Ripple<br>(mArms)<br>(85°C/120Hz) | Part Number |
|--------------------------------|---------------------------------|---------------------------------------|--------------|-------------------------------|----------------------------|---|-------------|
|                                |                                 |                                       |              | at 20°C after<br>1 minute     | at 20°C after<br>2 minutes |   |             |
| 50<br>(1H)                     | 100                             | 8 $\times$ 11.5                       | 0.12         | 150                           | 50                         | 250                                     | UKW1H101MPD |
|                                | 220                             | 10 $\times$ 12.5                      | 0.12         | 330                           | 110                        | 410                                     | UKW1H221MPD |
|                                | 330                             | 10 $\times$ 16                        | 0.12         | 495                           | 165                        | 570                                     | UKW1H331MPD |
|                                | 470                             | 12.5 $\times$ 20                      | 0.12         | 705                           | 235                        | 760                                     | UKW1H471MHD |
|                                | 1000                            | 12.5 $\times$ 25                      | 0.12         | 1500                          | 500                        | 1300                                    | UKW1H102MHD |
|                                | 2200                            | 16 $\times$ 35.5                      | 0.14         | 3300                          | 1100                       | 2090                                    | UKW1H222MHD |
|                                | 3300                            | 18 $\times$ 35.5                      | 0.16         | 4950                          | 1650                       | 2360                                    | UKW1H332MHD |
| 63<br>(1J)                     | 100                             | 10 $\times$ 12.5                      | 0.10         | 189                           | 63                         | 300                                     | UKW1J101MPD |
|                                | 220                             | 10 $\times$ 16                        | 0.10         | 415.8                         | 138.6                      | 470                                     | UKW1J221MPD |
|                                | 330                             | 10 $\times$ 20                        | 0.10         | 623.7                         | 207.9                      | 650                                     | UKW1J331MPD |
|                                | 470                             | 12.5 $\times$ 20                      | 0.10         | 888.3                         | 296.1                      | 880                                     | UKW1J471MHD |
|                                | 1000                            | 16 $\times$ 25                        | 0.10         | 1890                          | 630                        | 1300                                    | UKW1J102MHD |
|                                | 2200                            | 18 $\times$ 35.5                      | 0.12         | 4158                          | 1386                       | 2200                                    | UKW1J222MHD |
| 100<br>(2A)                    | 33                              | 8 $\times$ 11.5                       | 0.08         | 99                            | 33                         | 160                                     | UKW2A330MPD |
|                                | 47                              | 10 $\times$ 12.5                      | 0.08         | 141                           | 47                         | 210                                     | UKW2A470MPD |
|                                | 100                             | 10 $\times$ 20                        | 0.08         | 300                           | 100                        | 350                                     | UKW2A101MPD |
|                                | 220                             | 12.5 $\times$ 25                      | 0.08         | 660                           | 220                        | 600                                     | UKW2A221MHD |
|                                | 330                             | 12.5 $\times$ 25                      | 0.08         | 990                           | 330                        | 750                                     | UKW2A331MHD |
|                                | 470                             | 16 $\times$ 25                        | 0.08         | 1410                          | 470                        | 1000                                    | UKW2A471MHD |
|                                | 1000                            | 18 $\times$ 40                        | 0.08         | 3000                          | 1000                       | 1370                                    | UKW2A102MHD |

For cut leads, formed leads or taped parts, please add the appropriate code after the size code (12th digit).  
If there is no size code in the part number, please add size code "1" and then add the appropriate code.

- For formed lead or taped product specifications and minimum order quantity, please refer to the Guidelines for Aluminum Electrolytic Capacitors.

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