

# ALUMINUM ELECTROLYTIC CAPACITORS

**KA**

For High Grade Audio Equipment, Wide Temperature Range.

series



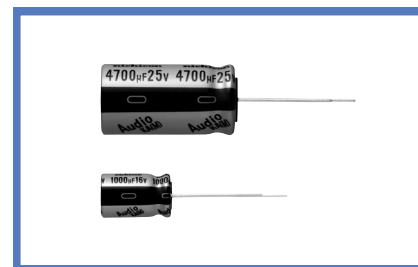
For Audio Use


Anti-Solvent  
Feature

**NEW**

- 105°C high quality capacitors for audio equipment.
- Selected materials to create superior acoustic sound.
- Compliant to the RoHS directive (2002/95/EC).

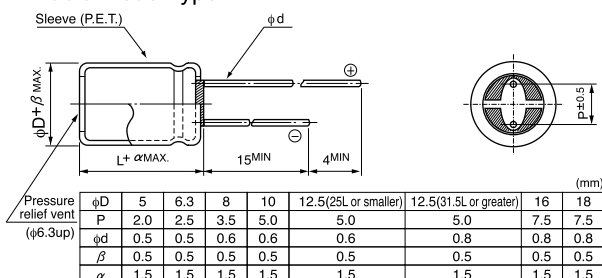
**KA**

**KT**


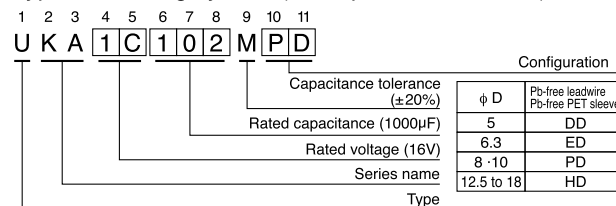
## Specifications

| Item                                                                         | Performance Characteristics                                                                                                                                                                                                                                                                                                                                   |                 |      |                    |      |                                                   |                   |     |     |    |    |    |    |              |              |                 |      |      |      |      |                                       |   |                 |    |   |   |   |   |   |                               |
|------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|------|--------------------|------|---------------------------------------------------|-------------------|-----|-----|----|----|----|----|--------------|--------------|-----------------|------|------|------|------|---------------------------------------|---|-----------------|----|---|---|---|---|---|-------------------------------|
| Category Temperature Range                                                   | − 55 to +105°C                                                                                                                                                                                                                                                                                                                                                |                 |      |                    |      |                                                   |                   |     |     |    |    |    |    |              |              |                 |      |      |      |      |                                       |   |                 |    |   |   |   |   |   |                               |
| Rated Voltage Range                                                          | 6.3 to 50V                                                                                                                                                                                                                                                                                                                                                    |                 |      |                    |      |                                                   |                   |     |     |    |    |    |    |              |              |                 |      |      |      |      |                                       |   |                 |    |   |   |   |   |   |                               |
| Rated Capacitance Range                                                      | 22 to 22000μF                                                                                                                                                                                                                                                                                                                                                 |                 |      |                    |      |                                                   |                   |     |     |    |    |    |    |              |              |                 |      |      |      |      |                                       |   |                 |    |   |   |   |   |   |                               |
| Capacitance Tolerance                                                        | ±20% at 120Hz, 20°C                                                                                                                                                                                                                                                                                                                                           |                 |      |                    |      |                                                   |                   |     |     |    |    |    |    |              |              |                 |      |      |      |      |                                       |   |                 |    |   |   |   |   |   |                               |
| Leakage Current                                                              | After 1 minute's application of rated voltage, leakage current is not more than 0.03CV or 4 (μA), whichever is greater.<br>After 2 minutes' application of rated voltage, leakage current is not more than 0.01CV or 3 (μA), whichever is greater.                                                                                                            |                 |      |                    |      |                                                   |                   |     |     |    |    |    |    |              |              |                 |      |      |      |      |                                       |   |                 |    |   |   |   |   |   |                               |
| Tangent of loss angle (tan δ)                                                | <table><tr><td>Rated voltage (V)</td><td>6.3</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50</td></tr><tr><td>tan δ (MAX.)</td><td>0.30</td><td>0.26</td><td>0.22</td><td>0.18</td><td>0.16</td><td>0.14</td></tr></table>                                                                                                                             |                 |      |                    |      |                                                   | Rated voltage (V) | 6.3 | 10  | 16 | 25 | 35 | 50 | tan δ (MAX.) | 0.30         | 0.26            | 0.22 | 0.18 | 0.16 | 0.14 | Measurement frequency : 120Hz at 20°C |   |                 |    |   |   |   |   |   |                               |
|                                                                              | Rated voltage (V)                                                                                                                                                                                                                                                                                                                                             | 6.3             | 10   | 16                 | 25   | 35                                                | 50                |     |     |    |    |    |    |              |              |                 |      |      |      |      |                                       |   |                 |    |   |   |   |   |   |                               |
|                                                                              | tan δ (MAX.)                                                                                                                                                                                                                                                                                                                                                  | 0.30            | 0.26 | 0.22               | 0.18 | 0.16                                              | 0.14              |     |     |    |    |    |    |              |              |                 |      |      |      |      |                                       |   |                 |    |   |   |   |   |   |                               |
| For capacitors with more than 1000μF, add 0.02 for every increase of 1000μF. |                                                                                                                                                                                                                                                                                                                                                               |                 |      |                    |      |                                                   |                   |     |     |    |    |    |    |              |              |                 |      |      |      |      |                                       |   |                 |    |   |   |   |   |   |                               |
|                                                                              |                                                                                                                                                                                                                                                                                                                                                               |                 |      |                    |      |                                                   |                   |     |     |    |    |    |    |              |              |                 |      |      |      |      |                                       |   |                 |    |   |   |   |   |   |                               |
| Stability at Low Temperature                                                 | <table><tr><td colspan="2">Rated voltage (V)</td><td>6.3</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50</td></tr><tr><td rowspan="2">tan δ (MAX.)</td><td>Z-25°C / Z+20°C</td><td>5</td><td>4</td><td>3</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>6</td><td>4</td><td>3</td><td>3</td></tr></table> |                 |      |                    |      |                                                   | Rated voltage (V) |     | 6.3 | 10 | 16 | 25 | 35 | 50           | tan δ (MAX.) | Z-25°C / Z+20°C | 5    | 4    | 3    | 2    | 2                                     | 2 | Z-40°C / Z+20°C | 10 | 8 | 6 | 4 | 3 | 3 | Measurement frequency : 120Hz |
|                                                                              | Rated voltage (V)                                                                                                                                                                                                                                                                                                                                             |                 | 6.3  | 10                 | 16   | 25                                                | 35                | 50  |     |    |    |    |    |              |              |                 |      |      |      |      |                                       |   |                 |    |   |   |   |   |   |                               |
|                                                                              | tan δ (MAX.)                                                                                                                                                                                                                                                                                                                                                  | Z-25°C / Z+20°C | 5    | 4                  | 3    | 2                                                 | 2                 | 2   |     |    |    |    |    |              |              |                 |      |      |      |      |                                       |   |                 |    |   |   |   |   |   |                               |
| Z-40°C / Z+20°C                                                              |                                                                                                                                                                                                                                                                                                                                                               | 10              | 8    | 6                  | 4    | 3                                                 | 3                 |     |     |    |    |    |    |              |              |                 |      |      |      |      |                                       |   |                 |    |   |   |   |   |   |                               |
|                                                                              |                                                                                                                                                                                                                                                                                                                                                               |                 |      |                    |      |                                                   |                   |     |     |    |    |    |    |              |              |                 |      |      |      |      |                                       |   |                 |    |   |   |   |   |   |                               |
|                                                                              |                                                                                                                                                                                                                                                                                                                                                               |                 |      |                    |      |                                                   |                   |     |     |    |    |    |    |              |              |                 |      |      |      |      |                                       |   |                 |    |   |   |   |   |   |                               |
| Endurance                                                                    | 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 105°C.                                                                                                                                                                                                          |                 |      | 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 105°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 black color letter on pearl blue sleeve.                                                                                                                                                                                                                                                                                                         |                 |      |                    |      |                                                   |                   |     |     |    |    |    |    |              |              |                 |      |      |      |      |                                       |   |                 |    |   |   |   |   |   |                               |

## Radial Lead Type



Type numbering system (Example : 16V 1000μF)



## Dimensions

| Cap (μF) | V   | 6.3         | 10   | 16          | 25   | 35                       | 50           |
|----------|-----|-------------|------|-------------|------|--------------------------|--------------|
| Code     | 0J  | 1A          | 1C   | 1E          | 1V   | 1H                       |              |
| 22       | 220 | 5 × 11      | 45   | 5 × 11      | 45   | 5 × 11                   | 58           |
| 33       | 330 | 5 × 11      | 55   | 5 × 11      | 58   | 5 × 11                   | 65           |
| 47       | 470 | 5 × 11      | 65   | 5 × 11      | 68   | 5 × 11                   | 79           |
| 100      | 101 | 5 × 11      | 95   | 5 × 11      | 105  | 5 × 11                   | 115          |
| 220      | 221 | 6.3 × 11    | 160  | 6.3 × 11    | 175  | 6.3 × 11                 | 190          |
| 330      | 331 | 6.3 × 11    | 195  | 8 × 11.5    | 240  | 8 × 11.5                 | 265          |
| 470      | 471 | 8 × 11.5    | 270  | 8 × 11.5    | 280  | 8 × 11.5                 | 315          |
| 1000     | 102 | 10 × 12.5   | 420  | 10 × 16     | 500  | 10 × 16                  | 560          |
| 2200     | 222 | 10 × 20     | 710  | 12.5 × 20   | 810  | 12.5 × 20                | 920          |
| 3300     | 332 | 12.5 × 20   | 910  | 12.5 × 25   | 1050 | 12.5 × 31.5              | 1270         |
| 4700     | 472 | 12.5 × 25   | 1120 | 12.5 × 35.5 | 1300 | 12.5 × 35.5              | 1480         |
| 6800     | 682 | 12.5 × 35.5 | 1360 | 12.5 × 40   | 1570 | 16 × 31.5                | 1780         |
| 10000    | 103 | 12.5 × 40   | 1650 | 16 × 35.5   | 1890 | 18 × 35.5                | 2060         |
| 15000    | 153 | 16 × 35.5   | 2010 | 18 × 40     | 2400 |                          |              |
| 22000    | 223 | 18 × 40     | 2350 |             |      |                          |              |
|          |     |             |      |             |      | Case size<br>φD × L (mm) | Rated ripple |

## Frequency coefficient of rated ripple current

| Cap. (μF)     | Frequency | 50Hz | 120Hz | 300Hz | 1kHz | 10kHz or more |
|---------------|-----------|------|-------|-------|------|---------------|
| 22 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 22000 |           | 0.85 | 1.00  | 1.10  | 1.13 | 1.15          |

Rated ripple current (mA rms) at 105°C 120Hz

Design, Specifications are subject to change without notice.

**NICHICON CORPORATION**

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