

# ALUMINUM ELECTROLYTIC CAPACITORS

nichicon

# UKW

Standard, For Audio Equipment



**UKW**



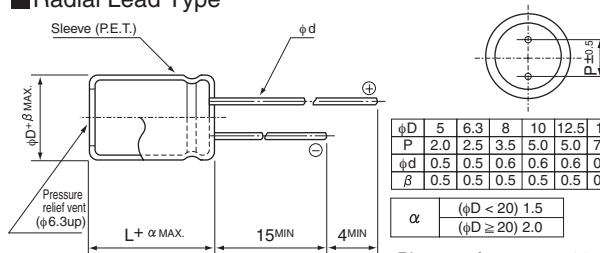
- Realization of a harmonious balance of sound quality, made possible by the development of new electrolyte.
- Most suited for AV equipment like DVD.
- Compliant to the RoHS directive (2011/65/EU).



## Specifications

| Item                                                                        | Performance Characteristics                                                                                                                                                                                                                                                        |                 |      |      |      |                                                                                                                                                                                                                                                                                                                      |                                               |      |      |                   |                    |                                              |    |    |    |       |                                               |     |              |      |                 |                                                   |      |      |      |      |      |                                       |
|-----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|------|------|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|------|------|-------------------|--------------------|----------------------------------------------|----|----|----|-------|-----------------------------------------------|-----|--------------|------|-----------------|---------------------------------------------------|------|------|------|------|------|---------------------------------------|
| Category Temperature Range                                                  | -40 to +85°C                                                                                                                                                                                                                                                                       |                 |      |      |      |                                                                                                                                                                                                                                                                                                                      |                                               |      |      |                   |                    |                                              |    |    |    |       |                                               |     |              |      |                 |                                                   |      |      |      |      |      |                                       |
| Rated Voltage Range                                                         | 6.3 to 100V                                                                                                                                                                                                                                                                        |                 |      |      |      |                                                                                                                                                                                                                                                                                                                      |                                               |      |      |                   |                    |                                              |    |    |    |       |                                               |     |              |      |                 |                                                   |      |      |      |      |      |                                       |
| Rated Capacitance Range                                                     | 2.2 to 33000μF                                                                                                                                                                                                                                                                     |                 |      |      |      |                                                                                                                                                                                                                                                                                                                      |                                               |      |      |                   |                    |                                              |    |    |    |       |                                               |     |              |      |                 |                                                   |      |      |      |      |      |                                       |
| 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 or 4 (μA) , whichever is greater.<br>After 2 minutes' application of rated voltage at 20°C, leakage current is not more than 0.01 CV 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><td>63</td><td>100</td></tr><tr><td>tan δ (MAX.)</td><td>0.28</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> |                 |      |      |      |                                                                                                                                                                                                                                                                                                                      |                                               |      |      | Rated voltage (V) | 6.3                | 10                                           | 16 | 25 | 35 | 50    | 63                                            | 100 | tan δ (MAX.) | 0.28 | 0.24            | 0.20                                              | 0.16 | 0.14 | 0.12 | 0.10 | 0.08 | Measurement frequency : 120Hz at 20°C |
|                                                                             | Rated voltage (V)                                                                                                                                                                                                                                                                  | 6.3             | 10   | 16   | 25   | 35                                                                                                                                                                                                                                                                                                                   | 50                                            | 63   | 100  |                   |                    |                                              |    |    |    |       |                                               |     |              |      |                 |                                                   |      |      |      |      |      |                                       |
|                                                                             | tan δ (MAX.)                                                                                                                                                                                                                                                                       | 0.28            | 0.24 | 0.20 | 0.16 | 0.14                                                                                                                                                                                                                                                                                                                 | 0.12                                          | 0.10 | 0.08 |                   |                    |                                              |    |    |    |       |                                               |     |              |      |                 |                                                   |      |      |      |      |      |                                       |
| For capacitance of more than 1000μF, add 0.02 for every increase of 1000μF. |                                                                                                                                                                                                                                                                                    |                 |      |      |      |                                                                                                                                                                                                                                                                                                                      |                                               |      |      |                   |                    |                                              |    |    |    |       |                                               |     |              |      |                 |                                                   |      |      |      |      |      |                                       |
|                                                                             |                                                                                                                                                                                                                                                                                    |                 |      |      |      |                                                                                                                                                                                                                                                                                                                      |                                               |      |      |                   |                    |                                              |    |    |    |       |                                               |     |              |      |                 |                                                   |      |      |      |      |      |                                       |
| Stability at Low Temperature                                                | Measurement frequency : 120Hz                                                                                                                                                                                                                                                      |                 |      |      |      |                                                                                                                                                                                                                                                                                                                      |                                               |      |      |                   |                    |                                              |    |    |    |       |                                               |     |              |      |                 |                                                   |      |      |      |      |      |                                       |
|                                                                             | Rated voltage (V)                                                                                                                                                                                                                                                                  |                 | 6.3  | 10   | 16   | 25                                                                                                                                                                                                                                                                                                                   | 35                                            | 50   | 63   | 100               |                    |                                              |    |    |    |       |                                               |     |              |      |                 |                                                   |      |      |      |      |      |                                       |
|                                                                             | Impedance ratio<br>ZT / Z20 (MAX.)                                                                                                                                                                                                                                                 | Z-25°C / Z+20°C | 5    | 4    | 3    | 2                                                                                                                                                                                                                                                                                                                    | 2                                             | 2    | 2    | 2                 |                    |                                              |    |    |    |       |                                               |     |              |      |                 |                                                   |      |      |      |      |      |                                       |
|                                                                             |                                                                                                                                                                                                                                                                                    | Z-40°C / Z+20°C | 12   | 10   | 8    | 5                                                                                                                                                                                                                                                                                                                    | 4                                             | 3    | 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 85°C.                                                                                                                                |                 |      |      |      | <table><tr><td>Capacitance change</td><td colspan="4">Within ±20% of the initial capacitance value</td></tr><tr><td>tan δ</td><td colspan="4">200% or less than the initial specified value</td></tr><tr><td>Leakage current</td><td colspan="4">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.                                                                                                                                                                                                                                    |                 |      |      |      |                                                                                                                                                                                                                                                                                                                      |                                               |      |      |                   |                    |                                              |    |    |    |       |                                               |     |              |      |                 |                                                   |      |      |      |      |      |                                       |

## Radial Lead Type



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

|   |   |   |   |   |   |   |   |   |    |    |
|---|---|---|---|---|---|---|---|---|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| U | K | W | 1 | A | 1 | 0 | 2 | M | P  | D  |

Configuration

| φ D        | Pb-free leadwire<br>Pb-free PET sleeve |
|------------|----------------------------------------|
| 5          | DD                                     |
| 6.3        | ED                                     |
| 8 · 10     | PD                                     |
| 12.5 to 18 | HD                                     |
| 20 to 25   | RD                                     |

Capacitance tolerance (±20%)  
 Rated capacitance (1000µF)  
 Rated voltage (10V)  
 Series name  
 Type

## Dimensions

• Please refer to page 20 about the end seal configuration.

| Cap. (µF) | V   | 6.3       | 10       | 16        | 25       | 35        | 50       | 63        | 100       |
|-----------|-----|-----------|----------|-----------|----------|-----------|----------|-----------|-----------|
| Code      |     | 0J        | 1A       | 1C        | 1E       | 1V        | 1H       | 1J        | 2A        |
| 2.2       | 2R2 |           |          |           |          |           | 5 × 11   | 23        | 5 × 11    |
| 3.3       | 3R3 |           |          |           |          |           | 5 × 11   | 35        | 5 × 11    |
| 4.7       | 4R7 |           |          |           |          |           | 5 × 11   | 40        | 5 × 11    |
| 10        | 100 |           |          |           |          |           | 5 × 11   | 65        | 6.3 × 11  |
| 22        | 220 |           |          |           |          |           | 5 × 11   | 95        | 6.3 × 11  |
| 33        | 330 |           |          |           |          | 5 × 11    | 105      | 5 × 11    | 120       |
| 47        | 470 |           |          |           |          | 5 × 11    | 120      | 6.3 × 11  | 150       |
| 100       | 101 |           | 5 × 11   | 145       | 5 × 11   | 155       | 6.3 × 11 | 200       | 8 × 11.5  |
| 220       | 221 |           | 6.3 × 11 | 230       | 6.3 × 11 | 250       | 8 × 11.5 | 320       | 10 × 12.5 |
| 330       | 331 | 6.3 × 11  | 265      | 6.3 × 11  | 270      | 8 × 11.5  | 360      | 10 × 12.5 | 420       |
| 470       | 471 | 6.3 × 11  | 310      | 6.3 × 11  | 330      | 8 × 11.5  | 420      | 10 × 12.5 | 530       |
| 1000      | 102 | 8 × 11.5  | 530      | 10 × 12.5 | 630      | 10 × 16   | 770      | 10 × 20   | 950       |
| 2200      | 222 | 10 × 20   | 980      | 10 × 20   | 1050     | 12.5 × 20 | 1250     | 12.5 × 25 | 1550      |
| 3300      | 332 | 10 × 20   | 1170     | 12.5 × 20 | 1420     | 12.5 × 25 | 1700     | 16 × 25   | 1950      |
| 4700      | 472 | 12.5 × 20 | 1350     | 12.5 × 25 | 1800     | 16 × 25   | 2100     | 16 × 31.5 | 2360      |
| 6800      | 682 | 12.5 × 25 | 1600     | 16 × 25   | 2150     | 16 × 35.5 | 2500     | 18 × 35.5 | 2590      |
| 10000     | 103 | 16 × 25   | 2000     | 16 × 35.5 | 2500     | 18 × 35.5 | 2640     | 20 × 40   | 3000      |
| 15000     | 153 | 16 × 35.5 | 2550     | 18 × 35.5 | 2720     | 20 × 40   | 3400     | 22 × 50   | 3800      |
| 22000     | 223 | 18 × 40   | 3200     | 20 × 40   | 3700     | 22 × 50   | 4200     | 25 × 50   | 4500      |
| 33000     | 333 | 22 × 50   | 3900     | 22 × 50   | 4500     | 25 × 50   | 4800     |           |           |

Case size φD × L (mm) ; Rated ripple

## Frequency coefficient of rated ripple current

| Cap. (µF)     | Frequency | 50Hz | 120Hz | 300Hz | 1kHz | 10kHz or more |
|---------------|-----------|------|-------|-------|------|---------------|
| 2.2 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 33000 |           | 0.85 | 1.00  | 1.10  | 1.13 | 1.15          |

Rated ripple current (mArms) at 85°C 120Hz

Please refer to page 20, 21, 22 about the formed or taped product spec.  
 Please refer to page 4 for the minimum order quantity.