

# ALUMINUM ELECTROLYTIC CAPACITORS

nichicon

# UKW

Standard, For Audio Equipment



**UKW**



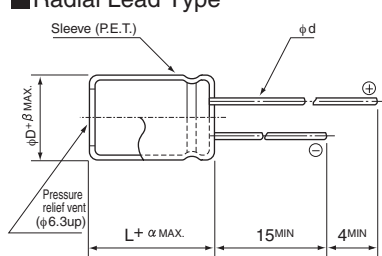
- Realization of a harmonious balance of sound quality, made possible by the development of new electrolyte.
- Most suited for AV equipment like DVD.
- Compliant to the RoHS directive (2011/65/EU).



## 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) | Rated voltage (V)                                                                                                                                                                                                                                                      | 6.3             | 10   | 16   | 25   | 35                 | 50   | 63                                                | 100  | Measurement frequency : 120Hz at 20°C |
|                               | 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.                                                                                                                    |                 |      |      |      | 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



| φD | 5                          | 6.3 | 8   | 10  | 12.5 | 16  | 18  | 20  | 22  | 25   |
|----|----------------------------|-----|-----|-----|------|-----|-----|-----|-----|------|
| P  | 2.0                        | 2.5 | 3.5 | 5.0 | 5.0  | 7.5 | 7.5 | 10  | 10  | 12.5 |
| φd | 0.5                        | 0.5 | 0.6 | 0.6 | 0.6  | 0.8 | 0.8 | 1.0 | 1.0 | 1.0  |
| β  | 0.5                        | 0.5 | 0.5 | 0.5 | 0.5  | 0.5 | 0.5 | 1.0 | 1.0 | 1.0  |
| α  | φD < 20 1.5<br>φD ≥ 20 2.0 |     |     |     |      |     |     |     |     |      |

## 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  |
| Series name |   |   | Rated capacitance (1000µF)   |   |   | Rated voltage (10V) |   |   | Configuration                          |    |
| Type        |   |   | Capacitance tolerance (±20%) |   |   | φD                  |   |   | Pb-free leadwire<br>Pb-free PET sleeve |    |
| 12.5 to 18  |   |   | 5                            |   |   | 6.3                 |   |   | DD                                     |    |
| 20 to 25    |   |   | 8 · 10                       |   |   | 10                  |   |   | ED                                     |    |
|             |   |   | 12.5 to 18                   |   |   | 10                  |   |   | PD                                     |    |
|             |   |   | 20 to 25                     |   |   | 10                  |   |   | HD                                     |    |
|             |   |   |                              |   |   | 10                  |   |   | RD                                     |    |

## 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.