

# ALUMINUM ELECTROLYTIC CAPACITORS

nichicon

**nichicon** **MUSE** **ES** series

Bi-Polarized, For Audio Equipment



- Bi-polarized “nichicon MUSE” acoustic series.
- Suited for audio signal circuits.
- Compliant to the RoHS directive (2002/95/EC).

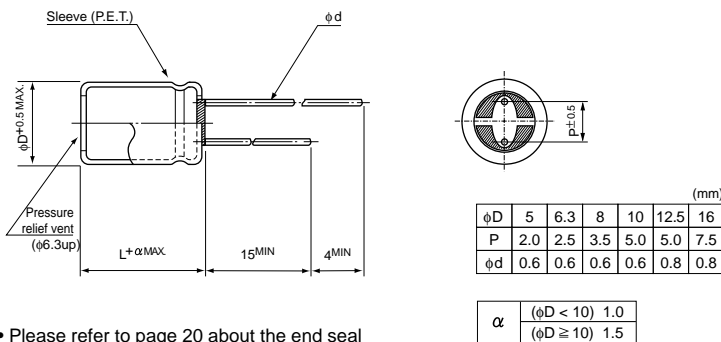
ES ← Bi-polarized → FW



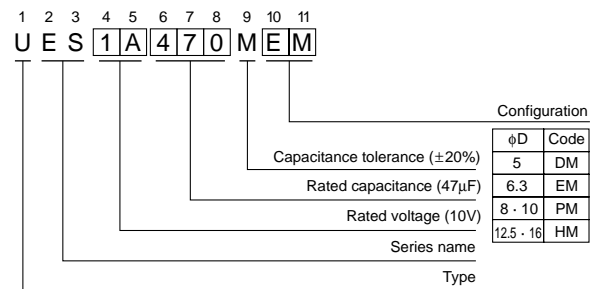
## Specifications

| Item                          | Performance Characteristics  |   |      |      |      |      |      |    |
|-------------------------------|--|---|------|------|------|------|------|----|
| Category Temperature Range    | -40 to +85°C   |   |      |      |      |      |      |    |
| Rated Voltage Range           | 6.3 to 50V   |   |      |      |      |      |      |    |
| Rated Capacitance Range       | 0.47 to 1000μF   |   |      |      |      |      |      |    |
| 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 3 (μA), whichever is greater.  |   |      |      |      |      |      |    |
| Tangent of loss angle (tan δ) | Measurement frequency : 120Hz, Temperature : 20°C  |   |      |      |      |      |      |    |
|                               | Rated voltage (V)  | 6.3   | 10   | 16   | 25   | 35   | 50   |    |
|                               | tan δ (MAX.)   | 0.24  | 0.20 | 0.16 | 0.16 | 0.14 | 0.12 |    |
| Stability at Low Temperature  | Measurement frequency : 120Hz  |   |      |      |      |      |      |    |
|                               | Rated voltage (V)  |   | 6.3  | 10   | 16   | 25   | 35   | 50 |
|                               | Impedance ratio  | Z-25°C / Z+20°C                                   | 4    | 3    | 2    | 2    | 2    | 2  |
|                               | ZT / Z20 (MAX.)  | Z-40°C / Z+20°C                                   | 8    | 6    | 4    | 4    | 4    | 4  |
| Endurance                     | The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 1000 hours at 85°C with the polarity inverted every 250 hours.   |   |      |      |      |      |      |    |
|                               | Capacitance change   | Within ±20% of the initial capacitance value      |      |      |      |      |      |    |
|                               | tan δ  | 150% 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 black color letter on clear green sleeve.   |   |      |      |      |      |      |    |

## Radial Lead Type



## Type numbering system (Example : 10V 47μF)



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

## Dimensions

| Cap.(μF) | Code | φD × L (mm) |           |           |           |           |           |           |
|----------|------|-------------|-----------|-----------|-----------|-----------|-----------|-----------|
|          |      | V           | 6.3       | 10        | 16        | 25        | 35        | 50        |
|          |      |             | 0J        | 1A        | 1C        | 1E        | 1V        | 1H        |
| 0.47     | R47  |             |           |           |           |           |           | 5 × 11    |
| 1        | 010  |             |           |           |           |           |           | 5 × 11    |
| 2.2      | 2R2  |             |           |           |           |           |           | 5 × 11    |
| 3.3      | 3R3  |             |           |           |           |           |           | 5 × 11    |
| 4.7      | 4R7  |             |           |           |           |           |           | 5 × 11    |
| 10       | 100  |             |           |           | 5 × 11    | 5 × 11    | 5 × 11    | 6.3 × 11  |
| 22       | 220  |             |           | 5 × 11    | 6.3 × 11  | 6.3 × 11  | 6.3 × 11  | 8 × 11.5  |
| 33       | 330  |             | 5 × 11    | 6.3 × 11  | 6.3 × 11  | 8 × 11.5  | 8 × 11.5  | 10 × 12.5 |
| 47       | 470  |             | 6.3 × 11  | 6.3 × 11  | 8 × 11.5  | 10 × 12.5 | 10 × 12.5 | 10 × 20   |
| 100      | 101  |             | 8 × 11.5  | 10 × 12.5 | 10 × 12.5 | 10 × 16   | 10 × 20   | 12.5 × 25 |
| 220      | 221  |             | 10 × 12.5 | 10 × 16   | 10 × 20   | 12.5 × 25 | 12.5 × 25 | 16 × 25   |
| 330      | 331  |             | 10 × 16   | 10 × 20   | 12.5 × 20 | 12.5 × 25 | 16 × 25   | 16 × 31.5 |
| 470      | 471  |             | 10 × 20   | 12.5 × 20 | 12.5 × 25 | 16 × 25   | 16 × 25   |           |
| 1000     | 102  |             | 12.5 × 25 | 16 × 25   | 16 × 25   | 16 × 31.5 |           |           |

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

CAT.8100Z