

# ALUMINUM ELECTROLYTIC CAPACITORS



5.5mmL Chip Type  
High Temperature (260°C) Reflow  
series

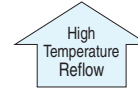


For SMD



Anti-Solvent  
Feature

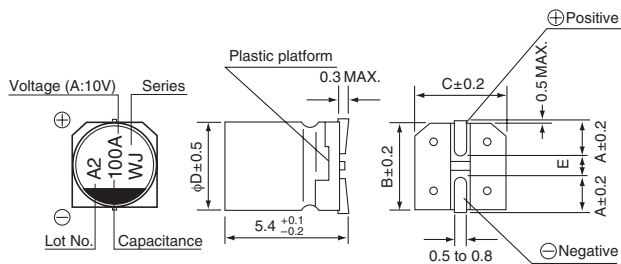
- Corresponding with 260°C peak reflow soldering  
Recommended reflow condition : 260°C peak 5 sec. 230°C over 60 sec. 2 times
- Chip type with 5.5mm height.
- Designed for surface mounting on high density PC board.
- Applicable to automatic mounting machine fed with carrier tape.
- Load life of 2000 hours at 85°C
- Compliant to the RoHS directive (2011/65/EU).



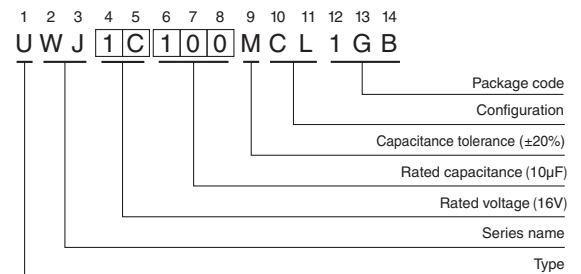
## Specifications

| Item                               | Performance Characteristics   |                    |  |       |   |                 |   |    |                                    |                 |      |      |      |      |      |                 |   |   |   |   |   |
|------------------------------------|---|--------------------|--|-------|---|-----------------|---|----|------------------------------------|-----------------|------|------|------|------|------|-----------------|---|---|---|---|---|
| Category Temperature Range         | -40 to +85°C  |                    |  |       |   |                 |   |    |                                    |                 |      |      |      |      |      |                 |   |   |   |   |   |
| Rated Voltage Range                | 6.3 to 50V  |                    |  |       |   |                 |   |    |                                    |                 |      |      |      |      |      |                 |   |   |   |   |   |
| Rated Capacitance Range            | 0.1 to 150μF  |                    |  |       |   |                 |   |    |                                    |                 |      |      |      |      |      |                 |   |   |   |   |   |
| Capacitance Tolerance              | ±20% at 120Hz, 20°C   |                    |  |       |   |                 |   |    |                                    |                 |      |      |      |      |      |                 |   |   |   |   |   |
| Leakage Current                    | 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)      | Measurement frequency : 120Hz at 20°C<br><table border="1"> <tr> <th>Rated voltage (V)</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> </tr> <tr> <td>tan δ (MAX.)</td> <td>0.26</td> <td>0.20</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.12</td> </tr> </table>  | Rated voltage (V)  | 6.3  | 10    | 16  | 25              | 35  | 50 | tan δ (MAX.)                       | 0.26            | 0.20 | 0.16 | 0.14 | 0.12 | 0.12 |                 |   |   |   |   |   |
| Rated voltage (V)                  | 6.3   | 10                 | 16   | 25    | 35  | 50              |   |    |                                    |                 |      |      |      |      |      |                 |   |   |   |   |   |
| tan δ (MAX.)                       | 0.26  | 0.20               | 0.16   | 0.14  | 0.12  | 0.12            |   |    |                                    |                 |      |      |      |      |      |                 |   |   |   |   |   |
| Stability at Low Temperature       | Measurement frequency : 120Hz<br><table border="1"> <tr> <th colspan="2">Rated voltage (V)</th> <th>6.3</th> <th>10</th> <th>25</th> <th>35</th> <th>50</th> </tr> <tr> <td rowspan="2">Impedance ratio<br/>ZT / Z20 (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> </tr> <tr> <td>Z-40°C / Z+20°C</td> <td>8</td> <td>8</td> <td>4</td> <td>4</td> <td>3</td> </tr> </table>  | Rated voltage (V)  |  | 6.3   | 10  | 25              | 35  | 50 | Impedance ratio<br>ZT / Z20 (MAX.) | Z-25°C / Z+20°C | 4    | 3    | 2    | 2    | 2    | Z-40°C / Z+20°C | 8 | 8 | 4 | 4 | 3 |
| Rated voltage (V)                  |   | 6.3                | 10   | 25    | 35  | 50              |   |    |                                    |                 |      |      |      |      |      |                 |   |   |   |   |   |
| Impedance ratio<br>ZT / Z20 (MAX.) | Z-25°C / Z+20°C   | 4                  | 3  | 2     | 2   | 2               |   |    |                                    |                 |      |      |      |      |      |                 |   |   |   |   |   |
|                                    | Z-40°C / Z+20°C   | 8                  | 8  | 4     | 4   | 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.<br><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.  |                    |  |       |   |                 |   |    |                                    |                 |      |      |      |      |      |                 |   |   |   |   |   |
| Resistance to soldering heat       | The capacitors are kept on a hot plate for 30 seconds, which is maintained at 250°C. The capacitors shall meet the characteristic requirements listed at right when they are removed from the plate and restored to 20°C.<br><table border="1"> <tr> <td>Capacitance change</td> <td>Within ±10% of the initial capacitance value</td> </tr> <tr> <td>tan δ</td> <td>Less than or equal to 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 ±10% of the initial capacitance value | tan δ | Less than or equal to the initial specified value | Leakage current | Less than or equal to the initial specified value |    |                                    |                 |      |      |      |      |      |                 |   |   |   |   |   |
| Capacitance change                 | Within ±10% of the initial capacitance value  |                    |  |       |   |                 |   |    |                                    |                 |      |      |      |      |      |                 |   |   |   |   |   |
| tan δ                              | Less than or equal to the initial specified value   |                    |  |       |   |                 |   |    |                                    |                 |      |      |      |      |      |                 |   |   |   |   |   |
| Leakage current                    | Less than or equal to the initial specified value   |                    |  |       |   |                 |   |    |                                    |                 |      |      |      |      |      |                 |   |   |   |   |   |
| Marking                            | Black print on the case top.  |                    |  |       |   |                 |   |    |                                    |                 |      |      |      |      |      |                 |   |   |   |   |   |

## Chip Type



## Type numbering system (Example : 16V 10μF)



## Voltage

| V    | 6.3 | 10 | 16 | 25 | 35 | 50 |
|------|-----|----|----|----|----|----|
| Code | j   | A  | C  | E  | V  | H  |

|   | φD | (mm) |     |     |
|---|----|------|-----|-----|
|   |    | 4    | 5   | 6.3 |
| A |    | 1.8  | 2.1 | 2.4 |
| B |    | 4.3  | 5.3 | 6.6 |
| C |    | 4.3  | 5.3 | 6.6 |
| E |    | 1.0  | 1.3 | 2.2 |

● Dimension table in next page.

## ■ Dimensions

| V<br>Cap. (μF) Code |     | 6.3 |    | 10  |    | 16  |    | 25  |    | 35  |    | 50                    |                 |
|---------------------|-----|-----|----|-----|----|-----|----|-----|----|-----|----|-----------------------|-----------------|
|                     |     | 0J  |    | 1A  |    | 1C  |    | 1E  |    | 1V  |    | 1H                    |                 |
| 0.1                 | 0R1 |     |    |     |    |     |    |     |    |     |    | 4                     | 1.0             |
| 0.22                | R22 |     |    |     |    |     |    |     |    |     |    | 4                     | 2.0             |
| 0.33                | R33 |     |    |     |    |     |    |     |    |     |    | 4                     | 2.8             |
| 0.47                | R47 |     |    |     |    |     |    |     |    |     |    | 4                     | 4.0             |
| 1                   | 010 |     |    |     |    |     |    |     |    |     |    | 4                     | 8.4             |
| 2.2                 | 2R2 |     |    |     |    |     |    |     |    |     |    | 4                     | 13              |
| 3.3                 | 3R3 |     |    |     |    |     |    |     |    |     |    | 4                     | 17              |
| 4.7                 | 4R7 |     |    |     |    |     |    | 4   | 16 | 4   | 18 | 5                     | 20              |
| 10                  | 100 |     |    |     |    | 4   | 23 | 5   | 27 | 5   | 29 | 6.3                   | 33              |
| 22                  | 220 | 4   | 28 | 5   | 33 | 5   | 37 | 6.3 | 42 | 6.3 | 45 |                       |                 |
| 33                  | 330 | 5   | 37 | 5   | 41 | 6.3 | 49 | 6.3 | 52 |     |    |                       |                 |
| 47                  | 470 | 5   | 45 | 6.3 | 52 | 6.3 | 58 |     |    |     |    |                       |                 |
| 100                 | 101 | 6.3 | 70 | 6.3 | 76 | 6.3 | 86 |     |    |     |    |                       |                 |
| 150                 | 151 | 6.3 | 71 |     |    |     |    |     |    |     |    | Case size<br>φ D (mm) | Rated<br>ripple |

Rated ripple current (mA<sub>rms</sub>) at 85°C 120Hz

### ● Frequency coefficient of rated ripple current

| Frequency   | 50 Hz | 120 Hz | 300 Hz | 1 kHz | 10 kHz or more |
|-------------|-------|--------|--------|-------|----------------|
| Coefficient | 0.70  | 1.00   | 1.17   | 1.36  | 1.50           |

- Taping specifications are given in page 23.
- Recommended land size, soldering by reflow are given in page 18, 19.
- Please refer to page 3 for the minimum order quantity.

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