

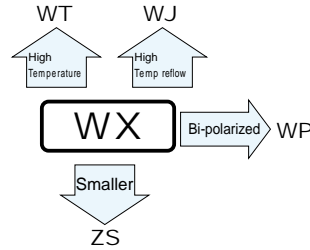
ALUMINUM ELECTROLYTIC CAPACITORS



WX 5.5mmL Chip Type
series



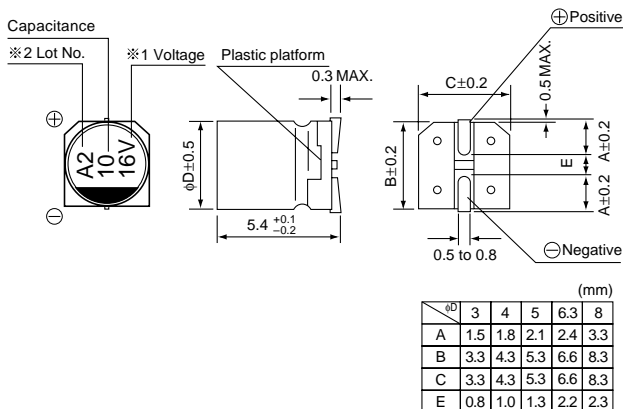
- Chip type with 5.5mm height.
- Designed for surface mounting on high density PC board.
- Applicable to automatic mounting machine fed with carrier tape.
- Load life of 2000 hours at 85°C.
- Compliant to the RoHS directive (2011/65/EU).



Specifications

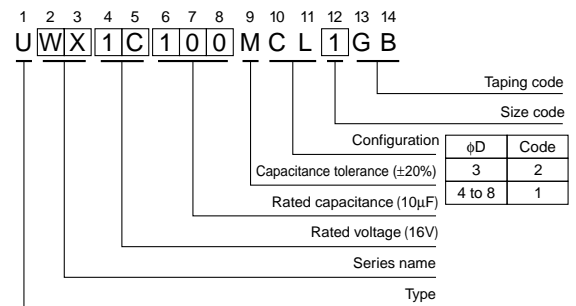
| Item | Performance Characteristics | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------------------|--|--------------------|--|-------------|---|-----------------|---|----|----|--------------|-----------------|-----------------|-------------|-------------|-------------|-------------|-------------|---|---|-----------------|-----------------|----|---|---|---|---|---|
| Category Temperature Range | -40 to +85°C | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rated Voltage Range | 4 to 50V | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rated Capacitance Range | 0.1 to 330μF | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 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 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <thead> <tr> <th>Rated voltage (V)</th> <th>4</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> </tr> </thead> <tbody> <tr> <td>tan δ (MAX.)</td> <td>0.35 (0.40)</td> <td>0.26 (0.30)</td> <td>0.20 (0.24)</td> <td>0.16 (0.19)</td> <td>0.14 (0.16)</td> <td>0.12 (0.14)</td> <td>0.12 (0.14)</td> </tr> </tbody> </table> <p>Values in () applicable to WR, φ3 case size.</p> | Rated voltage (V) | 4 | 6.3 | 10 | 16 | 25 | 35 | 50 | tan δ (MAX.) | 0.35 (0.40) | 0.26 (0.30) | 0.20 (0.24) | 0.16 (0.19) | 0.14 (0.16) | 0.12 (0.14) | 0.12 (0.14) | | | | | | | | | | |
| Rated voltage (V) | 4 | 6.3 | 10 | 16 | 25 | 35 | 50 | | | | | | | | | | | | | | | | | | | | |
| tan δ (MAX.) | 0.35 (0.40) | 0.26 (0.30) | 0.20 (0.24) | 0.16 (0.19) | 0.14 (0.16) | 0.12 (0.14) | 0.12 (0.14) | | | | | | | | | | | | | | | | | | | | |
| Stability at Low Temperature | Measurement frequency : 120Hz | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <thead> <tr> <th colspan="2">Rated voltage (V)</th> <th>4</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> </tr> </thead> <tbody> <tr> <td>Impedance ratio</td> <td>Z-25°C / Z+20°C</td> <td>7</td> <td>4</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td>ZT / Z20 (MAX.)</td> <td>Z-40°C / Z+20°C</td> <td>15</td> <td>8</td> <td>8</td> <td>4</td> <td>4</td> <td>3</td> <td>3</td> </tr> </tbody> </table> | Rated voltage (V) | | 4 | 6.3 | 10 | 16 | 25 | 35 | 50 | Impedance ratio | Z-25°C / Z+20°C | 7 | 4 | 3 | 2 | 2 | 2 | 2 | ZT / Z20 (MAX.) | Z-40°C / Z+20°C | 15 | 8 | 8 | 4 | 4 | 3 |
| Rated voltage (V) | | 4 | 6.3 | 10 | 16 | 25 | 35 | 50 | | | | | | | | | | | | | | | | | | | |
| Impedance ratio | Z-25°C / Z+20°C | 7 | 4 | 3 | 2 | 2 | 2 | 2 | | | | | | | | | | | | | | | | | | | |
| ZT / Z20 (MAX.) | Z-40°C / Z+20°C | 15 | 8 | 8 | 4 | 4 | 3 | 3 | | | | | | | | | | | | | | | | | | | |
| Endurance | <p>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.</p> <table border="1"> <tbody> <tr> <td>Capacitance change</td> <td>Within ±20% of the initial capacitance value (Within ±25% for 4V and φ3,WR series units)</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> </tbody> </table> | Capacitance change | Within ±20% of the initial capacitance value (Within ±25% for 4V and φ3,WR series units) | 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 (Within ±25% for 4V and φ3,WR series units) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 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 | <p>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.</p> <table border="1"> <tbody> <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> </tbody> </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



- ※1. Voltage mark for 6.3V is 「6V」.
In case of marking for φ3 units, 「V」 for rated voltage is omitted.
- ※2. In case of marking for φ3 units, Lot No. is expressed by a digit (month code).

Type numbering system (Example : 16V 10μF)



- In the case of size φ3 in (), parentheses, use WX in the 2nd and 3rd digit and put a 2 in the 12th digit of type numbering system.

● Dimension table in next page.

■Dimensions

| Cap. (μF) | Code | V | | 4 | | 6.3 | | 10 | | 16 | | 25 | | 35 | | 50 | | | |
|-----------|------|-----|-----|-------|----------|-------|----------|-------|---------|-------|---------|-------|---------|---------|---------|-------|---------|----------------------|-----------------|
| | | 0G | 0J | 1A | 1C | 1E | 1V | 1H | | | | | | | | | | | |
| 0.1 | 0R1 | | | | | | | | | | | | | | | | 4 (3) | 1.0 | |
| 0.22 | R22 | | | | | | | | | | | | | | | | 4 (3) | 2.0 | |
| 0.33 | R33 | | | | | | | | | | | | | | | | 4 (3) | 2.8 | |
| 0.47 | R47 | | | | | | | | | | | | | | | | 4 (3) | 4.0 | |
| 1 | 010 | | | | | | | | | | | | | | | | 4 (3) | 8.4 (8.0) | |
| 2.2 | 2R2 | | | | | | | | | | | | | 3 | 8.4 | | 4 (3) | 13 (10) | |
| 3.3 | 3R3 | | | | | | | | | | | | | 3 | 10 | | 4 | 17 | |
| 4.7 | 4R7 | | | | | | | | | | | | 4 (3) | 16 (12) | 4 | 18 | ● 5 | 20 (18) | |
| 10 | 100 | | | | | | | | | 4 (3) | 23 (18) | ● 5 | 27 (24) | ● 5 | 29 (24) | ○ 6.3 | 33 (30) | | |
| 22 | 220 | 3 | 19 | 4 (3) | 28 (21) | ● 5 | 33 (30) | ● 5 | 37 (30) | ○ 6.3 | 42 (38) | ○ 6.3 | 46 (39) | □ 8 | 52 (43) | | | | |
| 33 | 330 | 4 | 28 | ● 5 | 37 (34) | ● 5 | 41 (34) | ○ 6.3 | 49 (44) | ○ 6.3 | 52 (46) | □ 8 | 62 (53) | 8 | 71 | | | | |
| 47 | 470 | 4 | 33 | ● 5 | 45 (40) | ○ 6.3 | 52 (47) | ○ 6.3 | 58 (52) | □ 8 | 70 (60) | 8 | 80 | | | | | | |
| 56 | 560 | 5 | 42 | ○ 6.3 | 52 (46) | ○ 6.3 | 57 (50) | ○ 6.3 | 63 (57) | □ 8 | 76 (65) | | | | | | | | |
| 100 | 101 | 5 | 56 | ○ 6.3 | 70 (47) | ○ 6.3 | 76 (54) | 6.3 | 86 | 8 | 110 | | | | | | | | |
| 150 | 151 | 6.3 | 79 | 6.3 | 71 | □ 8 | 111 (76) | | | | | | | | | | | | |
| 220 | 221 | 6.3 | 96 | □ 8 | 110 (74) | 8 | 135 | | | | | | | | | | | | |
| 330 | 331 | 8 | 145 | 8 | 170 | | | | | | | | | | | | | Case size φD (mm) | Rated ripple |

() is also available with φ3mm upon request.

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

• In the case of size φ3 in (), parentheses, use WX at 2nd and 3rd digit and put [2] at the 12th digit of type numbering system. () = φ3 units and WR Series

Size φ4 is available for capacitors marked. " ● "

Size φ5 is available for capacitors marked. " ○ "

Size φ6.3 is available for capacitors marked. " □ "

In such a case, [WR] will be put at 2nd and 3rd digit of type numbering system.

●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 select UR(p.154), UG(p.162) series if high C/V products are required.
- Please refer to page 3 for the minimum order quantity.