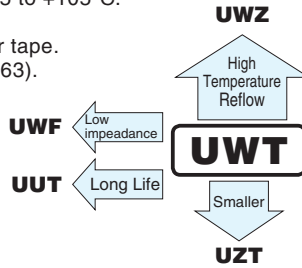


ALUMINUM ELECTROLYTIC CAPACITORS

UWT Chip Type, Wide Temperature Range



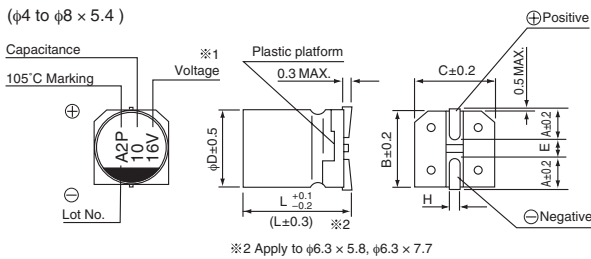
- Chip type operating over wide temperature range of to -55 to $+105^{\circ}\text{C}$.
- Designed for surface mounting on high density PC board.
- Applicable to automatic mounting machine fed with carrier tape.
- Compliant to the RoHS directive (2011/65/EU, (EU)2015/863).
- AEC-Q200 compliant. Please contact us for details.



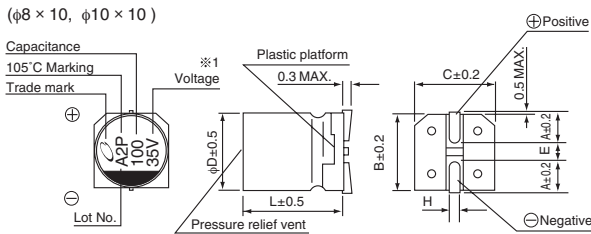
Specifications

| Item | Performance Characteristics | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------------------------------------------------|-----------------|---------------------------------------------------|----|----|----------------------|---------------------------------------------------|------|------|------|------|------|------|-----------------|---------------------------------------------------|----|---|---|---|---|---|
| Category Temperature Range | -55 to $+105^{\circ}\text{C}$ | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rated Voltage Range | 4 to 50V | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rated Capacitance Range | 1 to 1500 μF | | | | | | | | | | | | | | | | | | | | | | | | | |
| Capacitance Tolerance | $\pm 20\%$ at 120Hz, 20°C | | | | | | | | | | | | | | | | | | | | | | | | | |
| Leakage Current | After 2 minutes' application of rated voltage at 20°C , leakage current is not more than 0.01CV or 3 (μA), whichever is greater. | | | | | | | | | | | | | | | | | | | | | | | | | |
| Tangent of loss angle ($\tan \delta$) | <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>$\tan \delta$ (MAX.)</td> <td>0.40</td> <td>0.30</td> <td>0.24</td> <td>0.20</td> <td>0.16</td> <td>0.14</td> <td>0.14</td> </tr> </tbody> </table> <p>Measurement frequency : 120Hz at 20°C</p> | | Rated voltage (V) | 4 | 6.3 | 10 | 16 | 25 | 35 | 50 | $\tan \delta$ (MAX.) | 0.40 | 0.30 | 0.24 | 0.20 | 0.16 | 0.14 | 0.14 | | | | | | | | |
| Rated voltage (V) | 4 | 6.3 | 10 | 16 | 25 | 35 | 50 | | | | | | | | | | | | | | | | | | | |
| $\tan \delta$ (MAX.) | 0.40 | 0.30 | 0.24 | 0.20 | 0.16 | 0.14 | 0.14 | | | | | | | | | | | | | | | | | | | |
| Stability at Low Temperature | <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>Impedance ratio</td> <td>Z-25°C / Z$+20^{\circ}\text{C}$</td> <td>7</td> <td>4</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td>ZT / Z20 (MAX.)</td> <td>Z-40°C / Z$+20^{\circ}\text{C}$</td> <td>15</td> <td>8</td> <td>8</td> <td>4</td> <td>4</td> <td>3</td> </tr> </tbody> </table> <p>Measurement frequency : 120Hz</p> | | Rated voltage (V) | 4 | 6.3 | 10 | 16 | 25 | 35 | 50 | Impedance ratio | Z -25°C / Z $+20^{\circ}\text{C}$ | 7 | 4 | 3 | 2 | 2 | 2 | ZT / Z20 (MAX.) | Z -40°C / Z $+20^{\circ}\text{C}$ | 15 | 8 | 8 | 4 | 4 | 3 |
| Rated voltage (V) | 4 | 6.3 | 10 | 16 | 25 | 35 | 50 | | | | | | | | | | | | | | | | | | | |
| Impedance ratio | Z -25°C / Z $+20^{\circ}\text{C}$ | 7 | 4 | 3 | 2 | 2 | 2 | | | | | | | | | | | | | | | | | | | |
| ZT / Z20 (MAX.) | Z -40°C / Z $+20^{\circ}\text{C}$ | 15 | 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 1000 hours at 105°C . | <table border="1"> <tbody> <tr> <td>Capacitance change</td> <td>Within $\pm 25\%$ of the initial capacitance value for capacitors of 16V or less. Within $\pm 20\%$ of the initial capacitance value for capacitors of 25V or more.</td> </tr> <tr> <td>$\tan \delta$</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 $\pm 25\%$ of the initial capacitance value for capacitors of 16V or less. Within $\pm 20\%$ of the initial capacitance value for capacitors of 25V or more. | $\tan \delta$ | 200% or less than the initial specified value | Leakage current | Less than or equal to the initial specified value | | | | | | | | | | | | | | | | | | |
| Capacitance change | Within $\pm 25\%$ of the initial capacitance value for capacitors of 16V or less. Within $\pm 20\%$ of the initial capacitance value for capacitors of 25V or more. | | | | | | | | | | | | | | | | | | | | | | | | | |
| $\tan \delta$ | 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 105°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 . | <table border="1"> <tbody> <tr> <td>Capacitance change</td> <td>Within $\pm 10\%$ of the initial capacitance value</td> </tr> <tr> <td>$\tan \delta$</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 $\pm 10\%$ of the initial capacitance value | $\tan \delta$ | Less than or equal to the initial specified value | Leakage current | Less than or equal to the initial specified value | | | | | | | | | | | | | | | | | | |
| Capacitance change | Within $\pm 10\%$ of the initial capacitance value | | | | | | | | | | | | | | | | | | | | | | | | | |
| $\tan \delta$ | 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

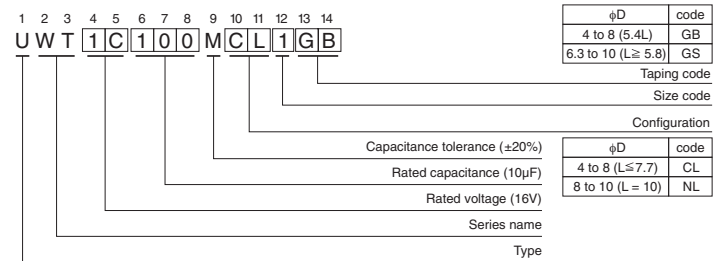


※2 Apply to $\phi 6.3 \times 5.8$, $\phi 6.3 \times 7.7$



※1. Voltage mark for 6.3V is '6V'.

Type numbering system (Example : 16V 10 μF)



| $\phi D \times L$ | (mm) | | | | | | | |
|-------------------|------------|------------|------------|------------|------------|------------|------------|------------|
| | 4 × 5.4 | 5 × 5.4 | 6.3 × 5.4 | 6.3 × 5.8 | 6.3 × 7.7 | 8 × 5.4 | 8 × 10 | 10 × 10 |
| A | 1.8 | 2.1 | 2.4 | 2.4 | 2.4 | 3.3 | 2.9 | 3.2 |
| B | 4.3 | 5.3 | 6.6 | 6.6 | 6.6 | 8.3 | 8.3 | 10.3 |
| C | 4.3 | 5.3 | 6.6 | 6.6 | 6.6 | 8.3 | 8.3 | 10.3 |
| E | 1.0 | 1.3 | 2.2 | 2.2 | 2.2 | 2.3 | 3.1 | 4.5 |
| L | 5.4 | 5.4 | 5.4 | 5.8 | 7.7 | 5.4 | 10 | 10 |
| H | 0.5 to 0.8 | 0.5 to 0.8 | 0.5 to 0.8 | 0.5 to 0.8 | 0.5 to 0.8 | 0.5 to 0.8 | 0.8 to 1.1 | 0.8 to 1.1 |

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 |

● Dimension table in next page.

UWT

■ Dimensions

| Rated Voltage (V) (code) | Rated Capacitance (μF) | Case Size φD×L (mm) | tan δ | Leakage Current (μA) (at 20°C after 2 minutes) | Rated Ripple (mArms) (105°C/120Hz) | Part Number |
|--------------------------|------------------------|---------------------|-------|------------------------------------------------|------------------------------------|----------------|
| 4 (0G) | 22 | 4×5.4 | 0.40 | 3 | 22 | UWT0G220MCL1GB |
| | 33 | 5×5.4 | 0.40 | 3 | 30 | UWT0G330MCL1GB |
| | 47 | 5×5.4 | 0.40 | 3 | 36 | UWT0G470MCL1GB |
| | 100 | 6.3×5.4 | 0.40 | 4 | 60 | UWT0G101MCL1GB |
| | 150 | 6.3×5.8 | 0.40 | 6 | 86 | UWT0G151MCL1GS |
| | 220 | 8×5.4 | 0.40 | 8.8 | 102 | UWT0G221MCL1GB |
| | 220 | 6.3×5.8 | 0.40 | 8.8 | 91 | UWT0G221MCL6GS |
| | 330 | 6.3×7.7 | 0.40 | 13.2 | 105 | UWT0G331MCL1GS |
| | 470 | 8×10 | 0.40 | 18.8 | 210 | UWT0G471MNL1GS |
| | 680 | 8×10 | 0.40 | 27.2 | 210 | UWT0G681MNL1GS |
| | 1000 | 8×10 | 0.40 | 40 | 230 | UWT0G102MNL1GS |
| 1500 | 10×10 | 0.40 | 60 | 310 | UWT0G152MNL1GS | |
| 6.3 (0J) | 22 | 4×5.4 | 0.30 | 3 | 22 | UWT0J220MCL1GB |
| | 33 | 5×5.4 | 0.30 | 3 | 30 | UWT0J330MCL1GB |
| | 47 | 5×5.4 | 0.30 | 3 | 36 | UWT0J470MCL1GB |
| | 100 | 6.3×5.4 | 0.30 | 6.3 | 60 | UWT0J101MCL1GB |
| | 150 | 6.3×5.8 | 0.30 | 9.45 | 86 | UWT0J151MCL1GS |
| | 220 | 8×5.4 | 0.30 | 13.86 | 102 | UWT0J221MCL1GB |
| | 220 | 6.3×5.8 | 0.30 | 13.86 | 91 | UWT0J221MCL6GS |
| | 330 | 6.3×7.7 | 0.30 | 20.79 | 105 | UWT0J331MCL1GS |
| | 470 | 8×10 | 0.30 | 29.61 | 210 | UWT0J471MNL1GS |
| | 680 | 8×10 | 0.30 | 42.84 | 210 | UWT0J681MNL1GS |
| | 1000 | 8×10 | 0.30 | 63 | 230 | UWT0J102MNL1GS |
| 1500 | 10×10 | 0.30 | 94.5 | 310 | UWT0J152MNL1GS | |
| 10 (1A) | 22 | 5×5.4 | 0.24 | 3 | 27 | UWT1A220MCL1GB |
| | 33 | 5×5.4 | 0.24 | 3.3 | 35 | UWT1A330MCL1GB |
| | 47 | 6.3×5.4 | 0.24 | 4.7 | 46 | UWT1A470MCL1GB |
| | 100 | 6.3×5.4 | 0.24 | 10 | 60 | UWT1A101MCL1GB |
| | 150 | 6.3×5.8 | 0.24 | 15 | 86 | UWT1A151MCL1GS |
| | 220 | 6.3×7.7 | 0.24 | 22 | 105 | UWT1A221MCL1GS |
| | 330 | 8×10 | 0.24 | 33 | 195 | UWT1A331MNL1GS |
| | 470 | 8×10 | 0.24 | 47 | 210 | UWT1A471MNL1GS |
| | 680 | 10×10 | 0.24 | 68 | 310 | UWT1A681MNL1GS |
| 1000 | 10×10 | 0.24 | 100 | 310 | UWT1A102MNL1GS | |
| 16 (1C) | 10 | 4×5.4 | 0.20 | 3 | 18 | UWT1C100MCL1GB |
| | 22 | 5×5.4 | 0.20 | 3.52 | 30 | UWT1C220MCL1GB |
| | 33 | 6.3×5.4 | 0.20 | 5.28 | 40 | UWT1C330MCL1GB |
| | 47 | 6.3×5.4 | 0.20 | 7.52 | 50 | UWT1C470MCL1GB |
| | 100 | 6.3×5.4 | 0.20 | 16 | 60 | UWT1C101MCL1GB |
| | 150 | 6.3×7.7 | 0.20 | 24 | 95 | UWT1C151MCL1GS |
| | 220 | 6.3×7.7 | 0.20 | 35.2 | 105 | UWT1C221MCL1GS |
| | 330 | 8×10 | 0.20 | 52.8 | 195 | UWT1C331MNL1GS |
| | 470 | 8×10 | 0.20 | 75.2 | 230 | UWT1C471MNL1GS |
| 680 | 10×10 | 0.20 | 108.8 | 310 | UWT1C681MNL1GS | |

UWT

■ Dimensions

| Rated Voltage (V) (code) | Rated Capacitance (μF) | Case Size φD×L (mm) | tan δ | Leakage Current (μA) (at 20°C after 2 minutes) | Rated Ripple (mArms) (105°C/120Hz) | Part Number |
|--------------------------|------------------------|---------------------|-------|------------------------------------------------|------------------------------------|----------------|
| 25 (1E) | 4.7 | 4×5.4 | 0.16 | 3 | 13 | UWT1E4R7MCL1GB |
| | 10 | 5×5.4 | 0.16 | 3 | 23 | UWT1E100MCL1GB |
| | 22 | 6.3×5.4 | 0.16 | 5.5 | 38 | UWT1E220MCL1GB |
| | 33 | 6.3×5.4 | 0.16 | 8.25 | 48 | UWT1E330MCL1GB |
| | 47 | 8×5.4 | 0.16 | 11.75 | 66 | UWT1E470MCL1GB |
| | 47 | 6.3×5.8 | 0.16 | 11.75 | 59 | UWT1E470MCL6GS |
| | 100 | 6.3×7.7 | 0.16 | 25 | 91 | UWT1E101MCL1GS |
| | 150 | 8×10 | 0.16 | 37.5 | 140 | UWT1E151MNL1GS |
| | 220 | 8×10 | 0.16 | 55 | 155 | UWT1E221MNL1GS |
| | 330 | 8×10 | 0.16 | 82.5 | 190 | UWT1E331MNL1GS |
| 470 | 10×10 | 0.16 | 117.5 | 300 | UWT1E471MNL1GS | |
| 35 (1V) | 4.7 | 4×5.4 | 0.14 | 3 | 15 | UWT1V4R7MCL1GB |
| | 10 | 5×5.4 | 0.14 | 3.5 | 25 | UWT1V100MCL1GB |
| | 22 | 6.3×5.4 | 0.14 | 7.7 | 42 | UWT1V220MCL1GB |
| | 33 | 8×5.4 | 0.14 | 11.55 | 59 | UWT1V330MCL1GB |
| | 33 | 6.3×5.8 | 0.14 | 11.55 | 52 | UWT1V330MCL6GS |
| | 47 | 6.3×5.8 | 0.14 | 16.45 | 63 | UWT1V470MCL1GS |
| | 100 | 6.3×7.7 | 0.14 | 35 | 84 | UWT1V101MCL1GS |
| | 150 | 8×10 | 0.14 | 52.5 | 155 | UWT1V151MNL1GS |
| | 220 | 8×10 | 0.14 | 77 | 190 | UWT1V221MNL1GS |
| | 330 | 10×10 | 0.14 | 115.5 | 300 | UWT1V331MNL1GS |
| 50 (1H) | 1 | 4×5.4 | 0.14 | 3 | 6.2 | UWT1H010MCL1GB |
| | 2.2 | 4×5.4 | 0.14 | 3 | 11 | UWT1H2R2MCL1GB |
| | 3.3 | 4×5.4 | 0.14 | 3 | 14 | UWT1H3R3MCL1GB |
| | 4.7 | 5×5.4 | 0.14 | 3 | 19 | UWT1H4R7MCL1GB |
| | 10 | 6.3×5.4 | 0.14 | 5 | 30 | UWT1H100MCL1GB |
| | 22 | 8×5.4 | 0.14 | 11 | 51 | UWT1H220MCL1GB |
| | 22 | 6.3×5.8 | 0.14 | 11 | 45 | UWT1H220MCL6GS |
| | 33 | 6.3×7.7 | 0.14 | 16.5 | 60 | UWT1H330MCL1GS |
| | 47 | 6.3×7.7 | 0.14 | 23.5 | 63 | UWT1H470MCL1GS |
| | 100 | 8×10 | 0.14 | 50 | 140 | UWT1H101MNL1GS |
| | 150 | 10×10 | 0.14 | 75 | 180 | UWT1H151MNL1GS |
| | 220 | 10×10 | 0.14 | 110 | 220 | UWT1H221MNL1GS |

- For taping specifications, recommended land size/soldering by reflow and minimum order quantity, please refer to the Guidelines for Aluminum Electrolytic Capacitors.
- Please select UUX, UUU series if high C/V products are required.

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