

## UWT

Chip Type, Wide Temperature Range



For SMD

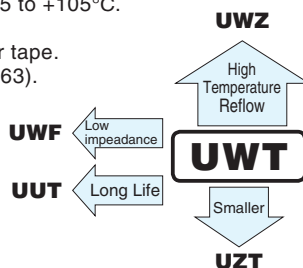


Smaller



Anti-Solvent Feature

- 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.

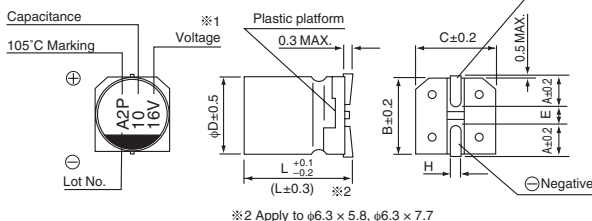


## Specifications

| Item                          | Performance Characteristics                                                                                                                                                                                                             |                 |      |      |                    |                                                                                                                                                         |                                                   |      |    |
|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|------|------|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|------|----|
| Category Temperature Range    | -55 to +105°C                                                                                                                                                                                                                           |                 |      |      |                    |                                                                                                                                                         |                                                   |      |    |
| Rated Voltage Range           | 4 to 50V                                                                                                                                                                                                                                |                 |      |      |                    |                                                                                                                                                         |                                                   |      |    |
| Rated Capacitance Range       | 1 to 1500μF                                                                                                                                                                                                                             |                 |      |      |                    |                                                                                                                                                         |                                                   |      |    |
| Capacitance Tolerance         | ±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 δ) | Measurement frequency : 120Hz at 20°C                                                                                                                                                                                                   |                 |      |      |                    |                                                                                                                                                         |                                                   |      |    |
|                               | Rated voltage (V)                                                                                                                                                                                                                       | 4               | 6.3  | 10   | 16                 | 25                                                                                                                                                      | 35                                                | 50   |    |
|                               | tan δ (MAX.)                                                                                                                                                                                                                            | 0.40            | 0.30 | 0.24 | 0.20               | 0.16                                                                                                                                                    | 0.14                                              | 0.14 |    |
| Stability at Low Temperature  | Measurement frequency : 120Hz                                                                                                                                                                                                           |                 |      |      |                    |                                                                                                                                                         |                                                   |      |    |
|                               | 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                     | 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.                                                                                    |                 |      |      | Capacitance change | Within ±25% of the initial capacitance value for capacitors of 16V or less. Within ±20% of the initial capacitance value for capacitors of 25V or more. |                                                   |      |    |
|                               |                                                                                                                                                                                                                                         |                 |      |      | 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 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.               |                 |      |      |                    | 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.                                                                                                                                                                                                            |                 |      |      |                    |                                                                                                                                                         |                                                   |      |    |

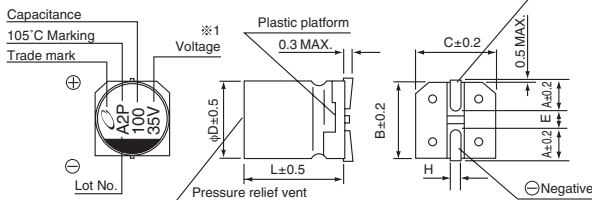
## Chip Type

( $\phi 4$  to  $\phi 8 \times 5.4$ )



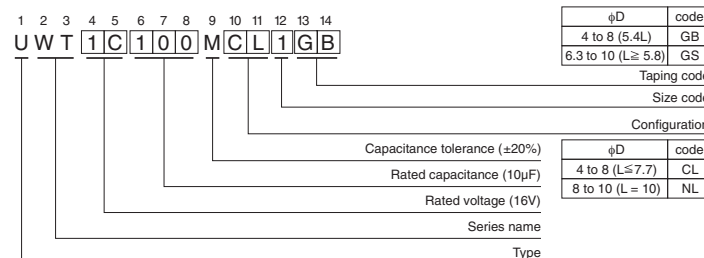
※2 Apply to  $\phi 6.3 \times 5.8$ ,  $\phi 6.3 \times 7.7$

( $\phi 8 \times 10$ ,  $\phi 10 \times 10$ )



※1. Voltage mark for 6.3V is 「6V」.

## Type numbering system (Example : 16V 10 $\mu\text{F}$ )



| $\phi D \times L$ | 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.

CAT.8100K

UWT

## ■ Dimensions

| Rated Voltage<br>(V)<br>(code) | Rated Capacitance<br>(μF) | Case Size<br>φD×L (mm) | tan δ | Leakage Current<br>(μA)<br>(at 20°C after<br>2 minutes) | Rated Ripple<br>(mA <sub>rms</sub> )<br>(105°C/120Hz) | Part Number    |
|--------------------------------|---------------------------|------------------------|-------|---------------------------------------------------------|-------------------------------------------------------|----------------|
| 4<br>(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<br>(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<br>(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<br>(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<br>(V)<br>(code) | Rated Capacitance<br>( $\mu$ F) | Case Size<br>$\phi$ D×L (mm) | $\tan \delta$ | Leakage Current<br>( $\mu$ A)<br>(at 20°C after<br>2 minutes) | Rated Ripple<br>(mA <sub>rms</sub> )<br>(105°C/120Hz) | Part Number    |
|--------------------------------|---------------------------------|------------------------------|---------------|---------------------------------------------------------------|-------------------------------------------------------|----------------|
| 25<br>(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<br>(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<br>(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.