

# ALUMINUM ELECTROLYTIC CAPACITORS

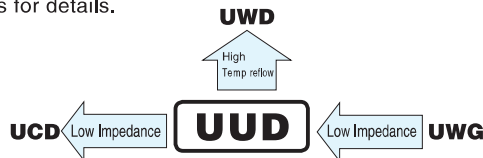
nichicon

# UUD

Chip Type, Low Impedance



- Chip type, low impedance temperature range up to +105°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 Qualified. Please contact us for details.



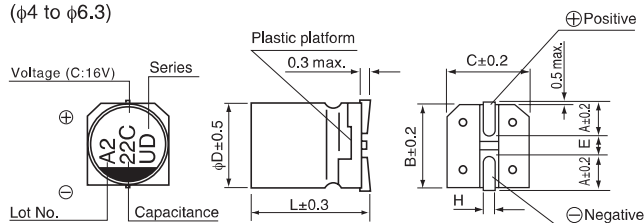
## Specifications

| Item                          | Performance Characteristics                                                                                                                                                                                                             |                     |             |             |                 |                                                   |    |                    |                                                   |  |  |  |  |  |
|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-------------|-------------|-----------------|---------------------------------------------------|----|--------------------|---------------------------------------------------|--|--|--|--|--|
| Category Temperature Range    | -55 to +105°C                                                                                                                                                                                                                           |                     |             |             |                 |                                                   |    |                    |                                                   |  |  |  |  |  |
| Rated Voltage Range           | 6.3 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 0.01 CV or 3 (μA), whichever is greater.                                                                                                        |                     |             |             |                 |                                                   |    |                    |                                                   |  |  |  |  |  |
| Tangent of loss angle (tan δ) | Measurement frequency : 120Hz at 20°C                                                                                                                                                                                                   |                     |             |             |                 |                                                   |    |                    |                                                   |  |  |  |  |  |
|                               | Rated voltage (V)                                                                                                                                                                                                                       | 6.3                 | 10          | 16          | 25              | 35                                                | 50 | ( ) is φ8 over     |                                                   |  |  |  |  |  |
| tan δ (max.)                  | 0.26 (0.28)                                                                                                                                                                                                                             | 0.20 (0.24)         | 0.16 (0.20) | 0.14 (0.16) | 0.12 (0.14)     | 0.12 (0.14)                                       |    |                    |                                                   |  |  |  |  |  |
| 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) | 3           | 2           | 2               | 2                                                 | 2  | 2                  |                                                   |  |  |  |  |  |
| ZT / Z20 (max.)               | Z(-55°C) / Z(+20°C)                                                                                                                                                                                                                     | 5                   | 4           | 4           | 3               | 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 5000 hours (2000 hours for φD = 4, 5 and 6.3) at 105°C.                                                 |                     |             |             |                 |                                                   |    |                    |                                                   |  |  |  |  |  |
|                               |                                                                                                                                                                                                                                         |                     |             |             |                 |                                                   |    | Capacitance change | Within ±30% 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 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.                                                                                                                                                                                                            |                     |             |             |                 |                                                   |    |                    |                                                   |  |  |  |  |  |

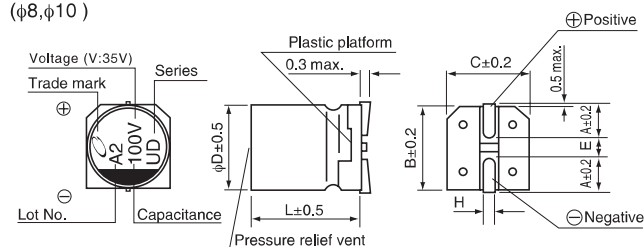
※ I : Leakage Current (μA), C : Rated Capacitance (μF), V : Rated Voltage (V)

## Chip Type

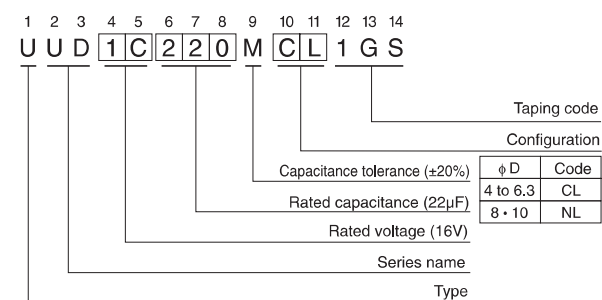
(φ4 to φ6.3)



(φ8, φ10)



## Type numbering system (Example : 16V 22μF)



| φD × L | 4 × 5.8    | 5 × 5.8    | 6.3 × 5.8  | 6.3 × 7.7  | 8 × 10     | 10 × 10    |
|--------|------------|------------|------------|------------|------------|------------|
| A      | 1.8        | 2.1        | 2.4        | 2.4        | 2.9        | 3.2        |
| B      | 4.3        | 5.3        | 6.6        | 6.6        | 8.3        | 10.3       |
| C      | 4.3        | 5.3        | 6.6        | 6.6        | 8.3        | 10.3       |
| E      | 1.0        | 1.3        | 2.2        | 2.2        | 3.1        | 4.5        |
| L      | 5.8        | 5.8        | 5.8        | 7.7        | 10         | 10         |
| H      | 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 |

Voltage

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

●Dimension table in next page.

## Frequency coefficient of rated ripple current

| Frequency   | 50 Hz | 120 Hz | 300 Hz | 1 kHz | 10 kHz or more |
|-------------|-------|--------|--------|-------|----------------|
| Coefficient | 0.35  | 0.50   | 0.64   | 0.83  | 1.00           |

CAT.8100M

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## ■ Dimensions

| Rated Voltage<br>(V)<br>(code) | Rated<br>Capacitance<br>( $\mu$ F) | Case Size<br>$\phi$ D $\times$ L (mm) | $\tan \delta$ | Leakage Current<br>( $\mu$ A)<br>(at 20°C after<br>2 minutes) | Impedance ( $\Omega$ )<br>max.<br>(20°C/100kHz) | Rated Ripple<br>(mA <sub>rms</sub> )<br>(105°C/100kHz) | Part Number    |
|--------------------------------|------------------------------------|---------------------------------------|---------------|---------------------------------------------------------------|-------------------------------------------------|--------------------------------------------------------|----------------|
| 6.3<br>(0J)                    | 27                                 | 4 $\times$ 5.8                        | 0.26          | 3                                                             | 1.80                                            | 80                                                     | UUD0J270MCL1GS |
|                                | 33                                 | 5 $\times$ 5.8                        | 0.26          | 3                                                             | 0.76                                            | 150                                                    | UUD0J330MCL1GS |
|                                | 47                                 | 5 $\times$ 5.8                        | 0.26          | 3                                                             | 0.76                                            | 150                                                    | UUD0J470MCL1GS |
|                                | 56                                 | 5 $\times$ 5.8                        | 0.26          | 3.528                                                         | 0.76                                            | 150                                                    | UUD0J560MCL1GS |
|                                | 68                                 | 6.3 $\times$ 5.8                      | 0.26          | 4.284                                                         | 0.44                                            | 230                                                    | UUD0J680MCL1GS |
|                                | 100                                | 6.3 $\times$ 5.8                      | 0.26          | 6.3                                                           | 0.44                                            | 230                                                    | UUD0J101MCL1GS |
|                                | 150                                | 6.3 $\times$ 5.8                      | 0.26          | 9.45                                                          | 0.44                                            | 230                                                    | UUD0J151MCL1GS |
|                                | 220                                | 6.3 $\times$ 5.8                      | 0.26          | 13.86                                                         | 0.44                                            | 230                                                    | UUD0J221MCL1GS |
|                                | 330                                | 6.3 $\times$ 7.7                      | 0.26          | 20.79                                                         | 0.34                                            | 280                                                    | UUD0J331MCL1GS |
|                                | 470                                | 8 $\times$ 10                         | 0.28          | 29.61                                                         | 0.17                                            | 450                                                    | UUD0J471MNL1GS |
|                                | 680                                | 8 $\times$ 10                         | 0.28          | 42.84                                                         | 0.17                                            | 450                                                    | UUD0J681MNL1GS |
|                                | 1000                               | 8 $\times$ 10                         | 0.28          | 63                                                            | 0.17                                            | 450                                                    | UUD0J102MNL1GS |
|                                | 1500                               | 10 $\times$ 10                        | 0.28          | 94.5                                                          | 0.09                                            | 670                                                    | UUD0J152MNL1GS |
| 10<br>(1A)                     | 22                                 | 4 $\times$ 5.8                        | 0.20          | 3                                                             | 1.80                                            | 80                                                     | UUD1A220MCL1GS |
|                                | 27                                 | 5 $\times$ 5.8                        | 0.20          | 3                                                             | 0.76                                            | 150                                                    | UUD1A270MCL1GS |
|                                | 33                                 | 5 $\times$ 5.8                        | 0.20          | 3.3                                                           | 0.76                                            | 150                                                    | UUD1A330MCL1GS |
|                                | 47                                 | 6.3 $\times$ 5.8                      | 0.20          | 4.7                                                           | 0.44                                            | 230                                                    | UUD1A470MCL1GS |
|                                | 56                                 | 6.3 $\times$ 5.8                      | 0.20          | 5.6                                                           | 0.44                                            | 230                                                    | UUD1A560MCL1GS |
|                                | 68                                 | 6.3 $\times$ 5.8                      | 0.20          | 6.8                                                           | 0.44                                            | 230                                                    | UUD1A680MCL1GS |
|                                | 100                                | 6.3 $\times$ 5.8                      | 0.20          | 10                                                            | 0.44                                            | 230                                                    | UUD1A101MCL1GS |
|                                | 150                                | 6.3 $\times$ 5.8                      | 0.20          | 15                                                            | 0.44                                            | 230                                                    | UUD1A151MCL1GS |
|                                | 220                                | 6.3 $\times$ 7.7                      | 0.20          | 22                                                            | 0.34                                            | 280                                                    | UUD1A221MCL1GS |
|                                | 330                                | 8 $\times$ 10                         | 0.24          | 33                                                            | 0.17                                            | 450                                                    | UUD1A331MNL1GS |
|                                | 470                                | 8 $\times$ 10                         | 0.24          | 47                                                            | 0.17                                            | 450                                                    | UUD1A471MNL1GS |
|                                | 680                                | 10 $\times$ 10                        | 0.24          | 68                                                            | 0.09                                            | 670                                                    | UUD1A681MNL1GS |
|                                | 1000                               | 10 $\times$ 10                        | 0.24          | 100                                                           | 0.09                                            | 670                                                    | UUD1A102MNL1GS |
| 16<br>(1C)                     | 15                                 | 4 $\times$ 5.8                        | 0.16          | 3                                                             | 1.80                                            | 80                                                     | UUD1C150MCL1GS |
|                                | 22                                 | 5 $\times$ 5.8                        | 0.16          | 3.52                                                          | 0.76                                            | 150                                                    | UUD1C220MCL1GS |
|                                | 27                                 | 5 $\times$ 5.8                        | 0.16          | 4.32                                                          | 0.76                                            | 150                                                    | UUD1C270MCL1GS |
|                                | 33                                 | 6.3 $\times$ 5.8                      | 0.16          | 5.28                                                          | 0.44                                            | 230                                                    | UUD1C330MCL1GS |
|                                | 47                                 | 6.3 $\times$ 5.8                      | 0.16          | 7.52                                                          | 0.44                                            | 230                                                    | UUD1C470MCL1GS |
|                                | 56                                 | 6.3 $\times$ 5.8                      | 0.16          | 8.96                                                          | 0.44                                            | 230                                                    | UUD1C560MCL1GS |
|                                | 68                                 | 6.3 $\times$ 5.8                      | 0.16          | 10.88                                                         | 0.44                                            | 230                                                    | UUD1C680MCL1GS |
|                                | 100                                | 6.3 $\times$ 5.8                      | 0.16          | 16                                                            | 0.44                                            | 230                                                    | UUD1C101MCL1GS |
|                                | 150                                | 6.3 $\times$ 7.7                      | 0.16          | 24                                                            | 0.34                                            | 280                                                    | UUD1C151MCL1GS |
|                                | 220                                | 6.3 $\times$ 7.7                      | 0.16          | 35.2                                                          | 0.34                                            | 280                                                    | UUD1C221MCL1GS |
|                                | 330                                | 8 $\times$ 10                         | 0.20          | 52.8                                                          | 0.17                                            | 450                                                    | UUD1C331MNL1GS |
|                                | 470                                | 8 $\times$ 10                         | 0.20          | 75.2                                                          | 0.17                                            | 450                                                    | UUD1C471MNL1GS |
|                                | 680                                | 10 $\times$ 10                        | 0.20          | 108.8                                                         | 0.09                                            | 670                                                    | UUD1C681MNL1GS |

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## ■ Dimensions

| Rated Voltage<br>(V)<br>(code) | Rated<br>Capacitance<br>( $\mu\text{F}$ ) | Case Size<br>$\phi\text{D}\times\text{L}$ (mm) | $\tan \delta$ | Leakage Current<br>( $\mu\text{A}$ )<br>(at 20°C after<br>2 minutes) | Impedance ( $\Omega$ )<br>max.<br>(20°C/100kHz) | Rated Ripple<br>(mA <sub>rms</sub> )<br>(105°C/100kHz) | Part Number    |
|--------------------------------|-------------------------------------------|------------------------------------------------|---------------|----------------------------------------------------------------------|-------------------------------------------------|--------------------------------------------------------|----------------|
| 25<br>(1E)                     | 10                                        | 4×5.8                                          | 0.14          | 3                                                                    | 1.80                                            | 80                                                     | UUD1E100MCL1GS |
|                                | 15                                        | 5×5.8                                          | 0.14          | 3.75                                                                 | 0.76                                            | 150                                                    | UUD1E150MCL1GS |
|                                | 22                                        | 5×5.8                                          | 0.14          | 5.5                                                                  | 0.76                                            | 150                                                    | UUD1E220MCL1GS |
|                                | 27                                        | 6.3×5.8                                        | 0.14          | 6.75                                                                 | 0.44                                            | 230                                                    | UUD1E270MCL1GS |
|                                | 33                                        | 6.3×5.8                                        | 0.14          | 8.25                                                                 | 0.44                                            | 230                                                    | UUD1E330MCL1GS |
|                                | 47                                        | 6.3×5.8                                        | 0.14          | 11.75                                                                | 0.44                                            | 230                                                    | UUD1E470MCL1GS |
|                                | 56                                        | 6.3×5.8                                        | 0.14          | 14                                                                   | 0.44                                            | 230                                                    | UUD1E560MCL1GS |
|                                | 68                                        | 6.3×5.8                                        | 0.14          | 17                                                                   | 0.44                                            | 230                                                    | UUD1E680MCL1GS |
|                                | 100                                       | 6.3×7.7                                        | 0.14          | 25                                                                   | 0.34                                            | 280                                                    | UUD1E101MCL1GS |
|                                | 150                                       | 8×10                                           | 0.16          | 37.5                                                                 | 0.17                                            | 450                                                    | UUD1E151MNL1GS |
|                                | 220                                       | 8×10                                           | 0.16          | 55                                                                   | 0.17                                            | 450                                                    | UUD1E221MNL1GS |
|                                | 330                                       | 8×10                                           | 0.16          | 82.5                                                                 | 0.17                                            | 450                                                    | UUD1E331MNL1GS |
|                                | 470                                       | 10×10                                          | 0.16          | 117.5                                                                | 0.09                                            | 670                                                    | UUD1E471MNL1GS |
| 35<br>(1V)                     | 4.7                                       | 4×5.8                                          | 0.12          | 3                                                                    | 1.80                                            | 80                                                     | UUD1V4R7MCL1GS |
|                                | 10                                        | 5×5.8                                          | 0.12          | 3.5                                                                  | 0.76                                            | 150                                                    | UUD1V100MCL1GS |
|                                | 15                                        | 5×5.8                                          | 0.12          | 5.25                                                                 | 0.76                                            | 150                                                    | UUD1V150MCL1GS |
|                                | 22                                        | 5×5.8                                          | 0.12          | 7.7                                                                  | 0.76                                            | 150                                                    | UUD1V220MCL1GS |
|                                | 27                                        | 6.3×5.8                                        | 0.12          | 9.45                                                                 | 0.44                                            | 230                                                    | UUD1V270MCL1GS |
|                                | 33                                        | 6.3×5.8                                        | 0.12          | 11.55                                                                | 0.44                                            | 230                                                    | UUD1V330MCL1GS |
|                                | 47                                        | 6.3×5.8                                        | 0.12          | 16.45                                                                | 0.44                                            | 230                                                    | UUD1V470MCL1GS |
|                                | 56                                        | 6.3×7.7                                        | 0.12          | 19.6                                                                 | 0.34                                            | 280                                                    | UUD1V560MCL1GS |
|                                | 68                                        | 6.3×7.7                                        | 0.12          | 23.8                                                                 | 0.34                                            | 280                                                    | UUD1V680MCL1GS |
|                                | 100                                       | 8×10                                           | 0.14          | 35                                                                   | 0.17                                            | 450                                                    | UUD1V101MNL1GS |
|                                | 150                                       | 8×10                                           | 0.14          | 52.5                                                                 | 0.17                                            | 450                                                    | UUD1V151MNL1GS |
|                                | 220                                       | 8×10                                           | 0.14          | 77                                                                   | 0.17                                            | 450                                                    | UUD1V221MNL1GS |
|                                | 330                                       | 10×10                                          | 0.14          | 115.5                                                                | 0.09                                            | 670                                                    | UUD1V331MNL1GS |
| 50<br>(1H)                     | 1                                         | 4×5.8                                          | 0.12          | 3                                                                    | 5.00                                            | 30                                                     | UUD1H010MCL1GS |
|                                | 2.2                                       | 4×5.8                                          | 0.12          | 3                                                                    | 5.00                                            | 30                                                     | UUD1H2R2MCL1GS |
|                                | 3.3                                       | 4×5.8                                          | 0.12          | 3                                                                    | 5.00                                            | 30                                                     | UUD1H3R3MCL1GS |
|                                | 4.7                                       | 5×5.8                                          | 0.12          | 3                                                                    | 1.52                                            | 85                                                     | UUD1H4R7MCL1GS |
|                                | 10                                        | 6.3×5.8                                        | 0.12          | 5                                                                    | 0.88                                            | 165                                                    | UUD1H100MCL1GS |
|                                | 15                                        | 6.3×5.8                                        | 0.12          | 7.5                                                                  | 0.88                                            | 165                                                    | UUD1H150MCL1GS |
|                                | 22                                        | 6.3×5.8                                        | 0.12          | 11                                                                   | 0.88                                            | 165                                                    | UUD1H220MCL1GS |
|                                | 27                                        | 6.3×7.7                                        | 0.12          | 13.5                                                                 | 0.68                                            | 185                                                    | UUD1H270MCL1GS |
|                                | 33                                        | 6.3×7.7                                        | 0.12          | 16.5                                                                 | 0.68                                            | 185                                                    | UUD1H330MCL1GS |
|                                | 47                                        | 6.3×7.7                                        | 0.12          | 23.5                                                                 | 0.68                                            | 185                                                    | UUD1H470MCL1GS |
|                                | 56                                        | 8×10                                           | 0.14          | 28                                                                   | 0.34                                            | 300                                                    | UUD1H560MNL1GS |
|                                | 68                                        | 8×10                                           | 0.14          | 34                                                                   | 0.34                                            | 300                                                    | UUD1H680MNL1GS |
|                                | 100                                       | 8×10                                           | 0.14          | 50                                                                   | 0.34                                            | 300                                                    | UUD1H101MNL1GS |
|                                | 150                                       | 10×10                                          | 0.14          | 75                                                                   | 0.18                                            | 670                                                    | UUD1H151MNL1GS |
|                                | 220                                       | 10×10                                          | 0.14          | 110                                                                  | 0.18                                            | 670                                                    | UUD1H221MNL1GS |

• For taping specifications, recommended land size/soldering by reflow and minimum order quantity, please refer to the Guidelines for Aluminum Electrolytic Capacitors.