



**THE DATASHEET OF  
UUJ1H471MNQ1MS**



# ALUMINUM ELECTROLYTIC CAPACITORS



Chip Type, Higher Capacitance Range



- Chip Type, higher capacitance in larger case sizes ( $\phi 12.5$ ,  $\phi 16$ ,  $\phi 18$ )
- 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.

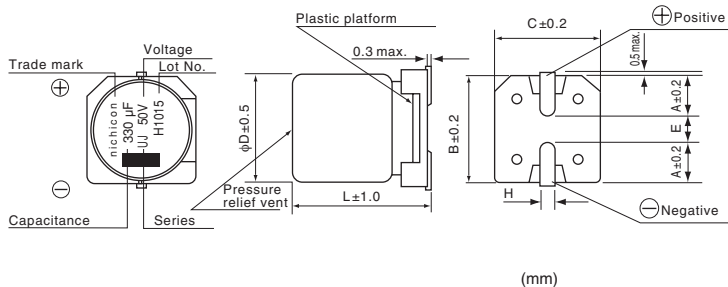


## Specifications

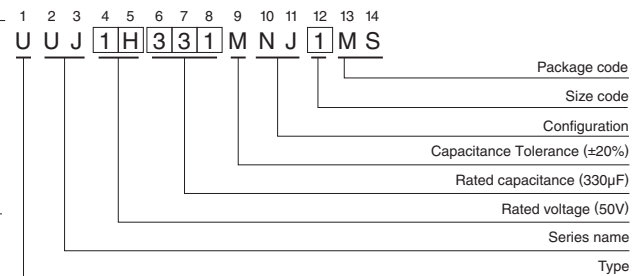
| Item                                  | Performance Characteristics   |  |      |      |      |      |      |      |   |           |  |
|---------------------------------------|---|--|------|------|------|------|------|------|---|-----------|--|
| Category Temperature Range            | -55 to +105°C (10 to 100V), -40 to +105°C (160 to 450V)   |  |      |      |      |      |      |      |   |           |  |
| Rated Voltage Range                   | 10 to 450V  |  |      |      |      |      |      |      |   |           |  |
| Rated Capacitance Range               | 3.3 to 6800 $\mu$ F   |  |      |      |      |      |      |      |   |           |  |
| Capacitance Tolerance                 | $\pm 20\%$ at 120Hz, 20°C   |  |      |      |      |      |      |      |   |           |  |
| Leakage Current ※                     | Rated voltage (V)   | 10 to 100  |      |      |      |      |      |      | 160 to 450  |           |  |
|                                       | —   | After 1 minute's application of rated voltage at 20°C, leakage current is not more than 0.03CV ( $\mu$ A). |      |      |      |      |      |      | I = 0.04CV+100 ( $\mu$ A) max. (1 minute's at 20°C) |           |  |
| Tangent of loss angle (tan $\delta$ ) | Measurement frequency : 120Hz at 20°C   |  |      |      |      |      |      |      |   |           |  |
|                                       | Rated voltage (V)   | 10   | 16   | 25   | 35   | 50   | 63   | 100  | 160 to 250  | 400 · 450 |  |
|                                       | tan $\delta$ (max.)   | 0.22   | 0.18 | 0.16 | 0.14 | 0.12 | 0.10 | 0.08 | 0.15  | 0.20      |  |
|                                       | For capacitance of more than 1000 $\mu$ F, add 0.02 for every increase of 1000 $\mu$ F. ( $\phi 12.5$ to $\phi 18$ )  |  |      |      |      |      |      |      |   |           |  |
| Stability at Low Temperature          | Measurement frequency: 120Hz  |  |      |      |      |      |      |      |   |           |  |
|                                       | Rated voltage (V)   | 10   | 16   | 25   | 35   | 50   | 63   | 100  | 160 to 250  | 400 · 450 |  |
|                                       | Impedance ratio Z(-25°C) / Z(+20°C) (max.)  | 4  | 3    | 2    | 2    | 2    | 2    | 2    | 3   | 6         |  |
|                                       | Z(-40°C) / Z(+20°C)   | 8  | 6    | 4    | 3    | 3    | 3    | 3    | 6   | 10        |  |
| 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 at 105°C.  |  |      |      |      |      |      |      |   |           |  |
|                                       | Capacitance change  | Within $\pm 20\%$ of the initial capacitance value   |      |      |      |      |      |      |   |           |  |
|                                       | 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. |  |      |      |      |      |      |      |   |           |  |
| Marking                               | Black print on the case top.  |  |      |      |      |      |      |      |   |           |  |

※ I : Leakage Current ( $\mu$ A), C : Rated Capacitance ( $\mu$ F), V : Rated Voltage (V)

## Chip Type



Type numbering system (Example : 50V 330 $\mu$ F)



| $\phi D$ | 12.5x13.5  | 12.5x16    | 12.5x21    | 16x16.5    | 16x21.5    | 18x16.5    | 18x21.5    |
|----------|------------|------------|------------|------------|------------|------------|------------|
| A        | 5.15       | 5.15       | 5.15       | 5.65       | 5.65       | 6.65       | 6.65       |
| B        | 13.6       | 13.6       | 13.6       | 17.1       | 17.1       | 19.1       | 19.1       |
| C        | 13.6       | 13.6       | 13.6       | 17.1       | 17.1       | 19.1       | 19.1       |
| E        | (3.3)      | (3.3)      | (3.3)      | (5.8)      | (5.8)      | (5.8)      | (5.8)      |
| L        | 13.5       | 16.0       | 21.0       | 16.5       | 21.5       | 16.5       | 21.5       |
| H        | 1.0 to 1.4 | 1.0 to 1.4 | 1.0 to 1.4 | 1.0 to 1.4 | 1.0 to 1.4 | 1.0 to 1.4 | 1.0 to 1.4 |

## Frequency coefficient of rated ripple current

| V          | Cap. ( $\mu$ F) | Frequency |       |       |      |               |
|------------|-----------------|-----------|-------|-------|------|---------------|
|            |                 | 50Hz      | 120Hz | 300Hz | 1kHz | 10kHz or more |
| 10 to 100  | 47 to 68        | 0.75      | 1.00  | 1.35  | 1.57 | 2.00          |
|            | 100 to 470      | 0.80      | 1.00  | 1.23  | 1.34 | 1.50          |
|            | 1000 to 6800    | 0.85      | 1.00  | 1.10  | 1.13 | 1.15          |
| 160 to 450 | 3.3 to 100      | 0.80      | 1.00  | 1.25  | 1.40 | 1.60          |

※ There are also some products that can be manufactured as vibration resistant products.

● Dimension table in next page.



### ■ 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>1 minute) | Rated Ripple<br>(mArms)<br>(105°C/120Hz) | Part Number    |
|--------------------------------|---------------------------------|------------------------------|---------------|--|--|----------------|
| 10<br>(1A)                     | 1000                            | 12.5×16                      | 0.22          | 300  | 500                                      | UUJ1A102MNJ1MS |
|                                | 2200                            | 16×16.5                      | 0.24          | 660  | 810                                      | UUJ1A222MNJ1MS |
|                                | 2200                            | 12.5×21                      | 0.24          | 660  | 810                                      | UUJ1A222MNJ6MS |
|                                | 3300                            | 18×16.5                      | 0.26          | 990  | 1000                                     | UUJ1A332MNJ1MS |
|                                | 3300                            | 16×21.5                      | 0.26          | 990  | 1000                                     | UUJ1A332MNJ6MS |
|                                | 4700                            | 18×21.5                      | 0.28          | 1410   | 1200                                     | UUJ1A472MNJ1MS |
|                                | 6800                            | 18×21.5                      | 0.32          | 2040   | 1450                                     | UUJ1A682MNJ6MS |
| 16<br>(1C)                     | 470                             | 12.5×13.5                    | 0.18          | 225.6  | 360                                      | UUJ1C471MNJ1MS |
|                                | 1000                            | 16×16.5                      | 0.18          | 480  | 630                                      | UUJ1C102MNJ1MS |
|                                | 1000                            | 12.5×21                      | 0.18          | 480  | 630                                      | UUJ1C102MNJ6MS |
|                                | 2200                            | 18×16.5                      | 0.20          | 1056   | 930                                      | UUJ1C222MNJ1MS |
|                                | 2200                            | 16×21.5                      | 0.20          | 1056   | 930                                      | UUJ1C222MNJ6MS |
|                                | 3300                            | 18×21.5                      | 0.22          | 1584   | 1150                                     | UUJ1C332MNJ1MS |
| 25<br>(1E)                     | 330                             | 12.5×13.5                    | 0.16          | 247.5  | 320                                      | UUJ1E331MNJ1MS |
|                                | 470                             | 12.5×16                      | 0.16          | 352.5  | 400                                      | UUJ1E471MNJ1MS |
|                                | 1000                            | 18×16.5                      | 0.16          | 750  | 700                                      | UUJ1E102MNJ1MS |
|                                | 1000                            | 16×21.5                      | 0.16          | 750  | 700                                      | UUJ1E102MNJ6MS |
|                                | 2200                            | 18×21.5                      | 0.18          | 1650   | 1050                                     | UUJ1E222MNJ1MS |
| 35<br>(1V)                     | 220                             | 12.5×13.5                    | 0.14          | 231  | 280                                      | UUJ1V221MNJ1MS |
|                                | 330                             | 12.5×16                      | 0.14          | 346.5  | 360                                      | UUJ1V331MNJ1MS |
|                                | 470                             | 16×16.5                      | 0.14          | 493.5  | 490                                      | UUJ1V471MNJ1MS |
|                                | 470                             | 12.5×21                      | 0.14          | 493.5  | 490                                      | UUJ1V471MNJ6MS |
|                                | 1000                            | 18×16.5                      | 0.14          | 1050   | 750                                      | UUJ1V102MNJ1MS |
|                                | 1000                            | 16×21.5                      | 0.14          | 1050   | 750                                      | UUJ1V102MNJ6MS |
|                                | 2200                            | 18×21.5                      | 0.16          | 2310   | 1150                                     | UUJ1V222MNJ6MS |
| 50<br>(1H)                     | 220                             | 12.5×16                      | 0.12          | 330  | 320                                      | UUJ1H221MNJ1MS |
|                                | 330                             | 16×16.5                      | 0.12          | 495  | 440                                      | UUJ1H331MNJ1MS |
|                                | 330                             | 12.5×21                      | 0.12          | 495  | 440                                      | UUJ1H331MNJ6MS |
|                                | 470                             | 18×16.5                      | 0.12          | 705  | 550                                      | UUJ1H471MNJ1MS |
|                                | 470                             | 16×21.5                      | 0.12          | 705  | 550                                      | UUJ1H471MNJ6MS |
|                                | 1000                            | 18×21.5                      | 0.12          | 1500   | 820                                      | UUJ1H102MNJ1MS |
| 63<br>(1J)                     | 68                              | 12.5×13.5                    | 0.10          | 128.52   | 175                                      | UUJ1J680MNJ1MS |
|                                | 100                             | 12.5×16                      | 0.10          | 189  | 225                                      | UUJ1J101MNJ1MS |
|                                | 220                             | 16×16.5                      | 0.10          | 415.8  | 385                                      | UUJ1J221MNJ1MS |
|                                | 220                             | 12.5×21                      | 0.10          | 415.8  | 385                                      | UUJ1J221MNJ6MS |
|                                | 330                             | 18×16.5                      | 0.10          | 623.7  | 490                                      | UUJ1J331MNJ1MS |
|                                | 330                             | 16×21.5                      | 0.10          | 623.7  | 490                                      | UUJ1J331MNJ6MS |
|                                | 470                             | 18×21.5                      | 0.10          | 888.3  | 590                                      | UUJ1J471MNJ1MS |



### ■ Dimensions

| Rated Voltage (V) (code) | Rated Capacitance (μF) | Case Size φD×L (mm) | tan δ | Leakage Current (μA) (at 20°C after 1 minute) | Rated Ripple (mArms) (105°C/120Hz) | Part Number    |
|--------------------------|------------------------|---------------------|-------|---|------------------------------------|----------------|
| 100 (2A)                 | 47                     | 12.5×13.5           | 0.08  | 141   | 160                                | UUJ2A470MNJ1MS |
|                          | 68                     | 12.5×16             | 0.08  | 204   | 205                                | UUJ2A680MNJ1MS |
|                          | 100                    | 16×16.5             | 0.08  | 300   | 285                                | UUJ2A101MNJ1MS |
|                          | 100                    | 12.5×21             | 0.08  | 300   | 285                                | UUJ2A101MNJ6MS |
|                          | 220                    | 18×16.5             | 0.08  | 660   | 440                                | UUJ2A221MNJ1MS |
|                          | 220                    | 16×21.5             | 0.08  | 660   | 440                                | UUJ2A221MNJ6MS |
|                          | 330                    | 18×21.5             | 0.08  | 990   | 500                                | UUJ2A331MNJ6MS |
| 160 (2C)                 | 33                     | 12.5×13.5           | 0.15  | 311.2   | 95                                 | UUJ2C330MNJ1MS |
|                          | 47                     | 16×16.5             | 0.15  | 400.8   | 260                                | UUJ2C470MNJ1MS |
|                          | 47                     | 12.5×21             | 0.15  | 400.8   | 260                                | UUJ2C470MNJ6MS |
|                          | 68                     | 18×16.5             | 0.15  | 535.2   | 320                                | UUJ2C680MNJ1MS |
|                          | 68                     | 16×21.5             | 0.15  | 535.2   | 320                                | UUJ2C680MNJ6MS |
|                          | 100                    | 16×21.5             | 0.15  | 740   | 380                                | UUJ2C101MNJ1MS |
| 200 (2D)                 | 10                     | 12.5×13.5           | 0.15  | 180   | 80                                 | UUJ2D100MNJ1MS |
|                          | 22                     | 12.5×16             | 0.15  | 276   | 105                                | UUJ2D220MNJ1MS |
|                          | 33                     | 16×16.5             | 0.15  | 364   | 220                                | UUJ2D330MNJ1MS |
|                          | 33                     | 12.5×21             | 0.15  | 364   | 220                                | UUJ2D330MNJ6MS |
|                          | 47                     | 18×16.5             | 0.15  | 476   | 270                                | UUJ2D470MNJ1MS |
|                          | 47                     | 16×21.5             | 0.15  | 476   | 270                                | UUJ2D470MNJ6MS |
|                          | 68                     | 18×21.5             | 0.15  | 644   | 330                                | UUJ2D680MNJ1MS |
|                          | 100                    | 18×21.5             | 0.15  | 900   | 410                                | UUJ2D101MNJ6MS |
| 250 (2E)                 | 4.7                    | 12.5×13.5           | 0.15  | 147   | 65                                 | UUJ2E4R7MNJ1MS |
|                          | 10                     | 12.5×16             | 0.15  | 200   | 105                                | UUJ2E100MNJ1MS |
|                          | 22                     | 16×16.5             | 0.15  | 320   | 180                                | UUJ2E220MNJ1MS |
|                          | 22                     | 12.5×21             | 0.15  | 320   | 180                                | UUJ2E220MNJ6MS |
|                          | 33                     | 18×16.5             | 0.15  | 430   | 230                                | UUJ2E330MNJ1MS |
|                          | 33                     | 16×21.5             | 0.15  | 430   | 230                                | UUJ2E330MNJ6MS |
|                          | 47                     | 18×21.5             | 0.15  | 570   | 280                                | UUJ2E470MNJ1MS |
|                          | 68                     | 18×21.5             | 0.15  | 780   | 340                                | UUJ2E680MNJ6MS |
| 400 (2G)                 | 4.7                    | 12.5×16             | 0.20  | 175.2   | 50                                 | UUJ2G4R7MNJ1MS |
|                          | 10                     | 16×16.5             | 0.20  | 260   | 85                                 | UUJ2G100MNJ1MS |
|                          | 22                     | 18×21.5             | 0.20  | 452   | 130                                | UUJ2G220MNJ1MS |
|                          | 33                     | 18×21.5             | 0.20  | 628   | 160                                | UUJ2G330MNJ6MS |
| 450 (2W)                 | 3.3                    | 12.5×13.5           | 0.20  | 159.4   | 40                                 | UUJ2W3R3MNJ1MS |
|                          | 4.7                    | 12.5×16             | 0.20  | 184.6   | 50                                 | UUJ2W4R7MNJ1MS |
|                          | 10                     | 16×16.5             | 0.20  | 280   | 85                                 | UUJ2W100MNJ1MS |
|                          | 22                     | 18×21.5             | 0.20  | 496   | 130                                | UUJ2W220MNJ1MS |
|                          | 33                     | 18×21.5             | 0.20  | 694   | 160                                | UUJ2W330MNJ6MS |

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

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