

# ALUMINUM ELECTROLYTIC CAPACITORS

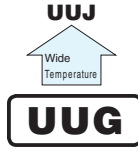
# UUG

Chip Type, Higher Capacitance Range



For SMD

- Chip Type, higher capacitance in larger case sizes (φ12.5, φ16, φ18)
- 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.



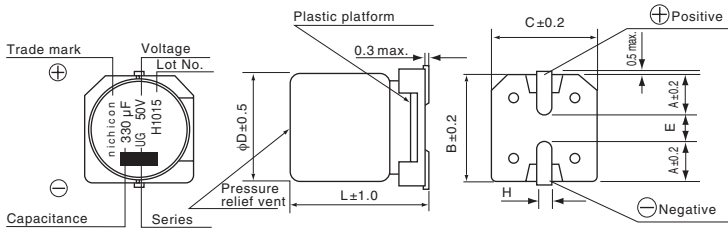
Valued marked with an ※ in the dimension table are scheduled to be discontinued and are not recommended for new designs.

## Specifications

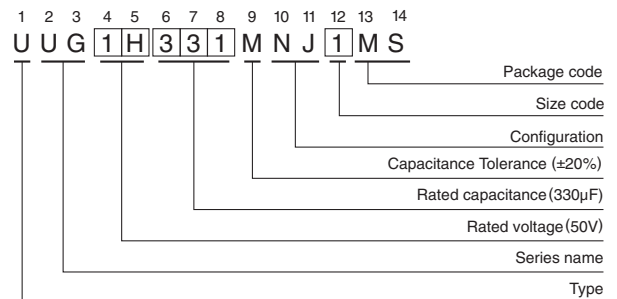
| Item   | Performance Characteristics  |   |      |      |      |      |      |                    |   |            |           |   |
|--|--|---|------|------|------|------|------|--------------------|---|------------|-----------|---|
| Category Temperature Range   | -40 to +85°C   |   |      |      |      |      |      |                    |   |            |           |   |
| Rated Voltage Range  | 6.3 to 450V  |   |      |      |      |      |      |                    |   |            |           |   |
| Rated Capacitance Range  | 4.7 to 10000μF   |   |      |      |      |      |      |                    |   |            |           |   |
| Capacitance Tolerance  | ±20% at 120Hz, 20°C  |   |      |      |      |      |      |                    |   |            |           |   |
| Leakage Current ※  | Rated voltage (V)  | 6.3 to 100  |      |      |      |      |      |                    | 160 to 450                                    |            |           |   |
|  | —  | After 1 minute's application of rated voltage at 20°C, leakage current is not more than 0.03CV(μA). |      |      |      |      |      |                    | I = 0.04CV+100 (μA) max. (1 minute's at 20°C) |            |           |   |
| Tangent of loss angle (tan δ)  | Measurement frequency : 120Hz at 20°C  |   |      |      |      |      |      |                    |   |            |           |   |
|  | Rated voltage (V)  | 6.3   | 10   | 16   | 25   | 35   | 50   | 63                 | 100   | 160 to 250 | 400 · 450 |   |
|  | tan δ (max.)   | 0.28  | 0.24 | 0.20 | 0.16 | 0.14 | 0.12 | 0.10               | 0.08  | 0.20       | 0.25      |   |
| For capacitance of more than 1000μF, add 0.02 for every increase of 1000μF. (φ12.5 to φ18) |  |   |      |      |      |      |      |                    |   |            |           |   |
| Stability at Low Temperature   | Measurement frequency: 120Hz   |   |      |      |      |      |      |                    |   |            |           |   |
|  | Rated voltage (V)  | 6.3   | 10   | 16   | 25   | 35   | 50   | 63                 | 100   | 160 to 250 | 400 · 450 |   |
|  | Impedance ratio (max.)   | Z(-25°C) / Z(+20°C)   | 5    | 4    | 3    | 2    | 2    | 2                  | 2   | 2          | 3         | 6   |
| Endurance  | The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 2000 hours at 85°C.  |   |      |      |      |      |      | Capacitance change |   |            |           | Within ±20% of the initial capacitance value      |
|  |  |   |      |      |      |      |      | tan δ              |   |            |           | 200% or less than the initial specified value     |
| Shelf Life   |  |   |      |      |      |      |      | Leakage current    |   |            |           | Less than or equal to the initial specified value |
|  | After storing the capacitors under no load at 85°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above. |   |      |      |      |      |      |                    |   |            |           |   |
| Marking  | Black print on the case top.   |   |      |      |      |      |      |                    |   |            |           |   |

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

## Chip Type



Type numbering system (Example : 50V 330μF)



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

|    | (mm)       |            |            |            |            |            |            |  |
|----|------------|------------|------------|------------|------------|------------|------------|--|
| φD | 12.5×13.5  | 12.5×16    | 12.5×21    | 16×16.5    | 16×21.5    | 18×16.5    | 18×21.5    |  |
| 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 |  |

Please contact us for the dimensions for NQ.

## Frequency coefficient of rated ripple current

| V          | Frequency     |      |       |       |      |               |
|------------|---------------|------|-------|-------|------|---------------|
|            | Cap.(μF)      | 50Hz | 120Hz | 300Hz | 1kHz | 10kHz or more |
| 6.3 to 100 | 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 10000 | 0.85 | 1.00  | 1.10  | 1.13 | 1.15          |
| 160 to 450 | 4.7 to 100    | 0.80 | 1.00  | 1.25  | 1.40 | 1.60          |

● Dimension table in next page.

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## ■ Dimensions

| Rated Voltage (V)<br>(code) | Rated Capacitance (μF) | Case Size φD×L (mm) | tan δ | Leakage Current (μA)<br>(at 20°C after 1 minute) | Rated Ripple (mArms)<br>(85°C/120Hz) | Part Number     |
|-----------------------------|------------------------|---------------------|-------|--|--------------------------------------|-----------------|
| 6.3<br>(0J)                 | 2200                   | 12.5×16             | 0.30  | 415.8  | 890                                  | ※UUG0J222MNJ1MS |
|                             | 3300                   | 16×16.5             | 0.32  | 623.7  | 1200                                 | ※UUG0J332MNJ1MS |
|                             | 3300                   | 12.5×21             | 0.32  | 623.7  | 1200                                 | ※UUG0J332MNJ6MS |
|                             | 4700                   | 16×16.5             | 0.34  | 888.3  | 1400                                 | ※UUG0J472MNJ1MS |
|                             | 6800                   | 18×16.5             | 0.38  | 1285.2   | 1650                                 | ※UUG0J682MNJ1MS |
|                             | 6800                   | 16×21.5             | 0.38  | 1285.2   | 1650                                 | ※UUG0J682MNJ6MS |
|                             | 10000                  | 18×21.5             | 0.46  | 1890   | 2000                                 | ※UUG0J103MNJ1MS |
| 10<br>(1A)                  | 1000                   | 12.5×13.5           | 0.24  | 300  | 620                                  | UUG1A102MNJ1MS  |
|                             | 2200                   | 12.5×16             | 0.26  | 660  | 960                                  | UUG1A222MNJ1MS  |
|                             | 3300                   | 16×16.5             | 0.28  | 990  | 1300                                 | UUG1A332MNJ1MS  |
|                             | 4700                   | 18×16.5             | 0.30  | 1410   | 1500                                 | UUG1A472MNJ1MS  |
|                             | 4700                   | 16×21.5             | 0.30  | 1410   | 1500                                 | UUG1A472MNJ6MS  |
|                             | 6800                   | 18×21.5             | 0.34  | 2040   | 1850                                 | UUG1A682MNJ1MS  |
|                             | 10000                  | 18×21.5             | 0.42  | 3000   | 2200                                 | UUG1A103MNJ6MS  |
| 16<br>(1C)                  | 1000                   | 12.5×13.5           | 0.20  | 480  | 710                                  | UUG1C102MNJ1MS  |
|                             | 2200                   | 16×16.5             | 0.22  | 1056   | 1150                                 | UUG1C222MNJ1MS  |
|                             | 2200                   | 12.5×21             | 0.22  | 1056   | 1150                                 | UUG1C222MNJ6MS  |
|                             | 3300                   | 18×16.5             | 0.24  | 1584   | 1450                                 | UUG1C332MNJ1MS  |
|                             | 3300                   | 16×21.5             | 0.24  | 1584   | 1450                                 | UUG1C332MNJ6MS  |
|                             | 4700                   | 18×21.5             | 0.26  | 2256   | 1750                                 | UUG1C472MNJ1MS  |
| 25<br>(1E)                  | 470                    | 12.5×13.5           | 0.16  | 352.5  | 550                                  | UUG1E471MNJ1MS  |
|                             | 1000                   | 12.5×16             | 0.16  | 750  | 820                                  | UUG1E102MNJ1MS  |
|                             | 2200                   | 18×16.5             | 0.18  | 1650   | 1350                                 | UUG1E222MNJ1MS  |
|                             | 2200                   | 16×21.5             | 0.18  | 1650   | 1350                                 | UUG1E222MNJ6MS  |
|                             | 3300                   | 18×21.5             | 0.20  | 2475   | 1700                                 | UUG1E332MNJ1MS  |
| 35<br>(1V)                  | 470                    | 12.5×13.5           | 0.14  | 493.5  | 580                                  | UUG1V471MNJ1MS  |
|                             | 1000                   | 16×16.5             | 0.14  | 1050   | 1000                                 | UUG1V102MNJ1MS  |
|                             | 1000                   | 12.5×21             | 0.14  | 1050   | 1000                                 | UUG1V102MNJ6MS  |
|                             | 2200                   | 18×21.5             | 0.16  | 2310   | 1550                                 | UUG1V222MNJ1MS  |
| 50<br>(1H)                  | 220                    | 12.5×13.5           | 0.12  | 330  | 450                                  | UUG1H221MNJ1MS  |
|                             | 330                    | 12.5×13.5           | 0.12  | 495  | 520                                  | UUG1H331MNJ1MS  |
|                             | 470                    | 16×16.5             | 0.12  | 705  | 740                                  | UUG1H471MNJ1MS  |
|                             | 470                    | 12.5×21             | 0.12  | 705  | 740                                  | UUG1H471MNJ6MS  |
|                             | 1000                   | 18×21.5             | 0.12  | 1500   | 1150                                 | UUG1H102MNJ1MS  |
| 63<br>(1J)                  | 100                    | 12.5×13.5           | 0.10  | 189  | 370                                  | UUG1J101MNJ1MS  |
|                             | 220                    | 12.5×16             | 0.10  | 415.8  | 580                                  | UUG1J221MNJ1MS  |
|                             | 330                    | 16×16.5             | 0.10  | 623.7  | 680                                  | UUG1J331MNJ1MS  |
|                             | 330                    | 12.5×21             | 0.10  | 623.7  | 680                                  | UUG1J331MNJ6MS  |
|                             | 470                    | 18×16.5             | 0.10  | 888.3  | 850                                  | UUG1J471MNJ1MS  |
|                             | 470                    | 16×21.5             | 0.10  | 888.3  | 850                                  | UUG1J471MNJ6MS  |
| 100<br>(2A)                 | 68                     | 12.5×13.5           | 0.08  | 204  | 350                                  | UUG2A680MNJ1MS  |
|                             | 100                    | 12.5×16             | 0.08  | 300  | 440                                  | UUG2A101MNJ1MS  |
|                             | 220                    | 18×16.5             | 0.08  | 660  | 665                                  | UUG2A221MNJ1MS  |
|                             | 220                    | 16×21.5             | 0.08  | 660  | 665                                  | UUG2A221MNJ6MS  |
|                             | 330                    | 18×21.5             | 0.08  | 990  | 825                                  | UUG2A331MNJ1MS  |

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## ■ Dimensions

| Rated Voltage (V)<br>(code) | Rated Capacitance (μF) | Case Size φD×L (mm) | tan δ | Leakage Current (μA)<br>(at 20°C after 1 minute) | Rated Ripple (mArms)<br>(85°C/120Hz) | Part Number     |
|-----------------------------|------------------------|---------------------|-------|--|--------------------------------------|-----------------|
| 160<br>(2C)                 | 47                     | 12.5×16             | 0.20  | 400.8  | 370                                  | ※UUG2C470MNJ1MS |
|                             | 68                     | 16×16.5             | 0.20  | 535.2  | 500                                  | ※UUG2C680MNJ1MS |
|                             | 68                     | 12.5×21             | 0.20  | 535.2  | 500                                  | ※UUG2C680MNJ6MS |
|                             | 100                    | 18×16.5             | 0.20  | 740  | 590                                  | ※UUG2C101MNJ1MS |
|                             | 100                    | 16×21.5             | 0.20  | 740  | 590                                  | ※UUG2C101MNJ6MS |
| 200<br>(2D)                 | 22                     | 12.5×13.5           | 0.20  | 276  | 235                                  | ※UUG2D220MNJ1MS |
|                             | 33                     | 12.5×16             | 0.20  | 364  | 310                                  | ※UUG2D330MNJ1MS |
|                             | 47                     | 16×16.5             | 0.20  | 476  | 415                                  | ※UUG2D470MNJ1MS |
|                             | 47                     | 12.5×21             | 0.20  | 476  | 415                                  | ※UUG2D470MNJ6MS |
|                             | 68                     | 18×16.5             | 0.20  | 644  | 505                                  | ※UUG2D680MNJ1MS |
|                             | 68                     | 16×21.5             | 0.20  | 644  | 505                                  | ※UUG2D680MNJ6MS |
|                             | 100                    | 18×21.5             | 0.20  | 900  | 590                                  | ※UUG2D101MNJ1MS |
| 250<br>(2E)                 | 10                     | 12.5×13.5           | 0.20  | 200  | 150                                  | ※UUG2E100MNJ1MS |
|                             | 22                     | 12.5×16             | 0.20  | 320  | 240                                  | ※UUG2E220MNJ1MS |
|                             | 33                     | 16×16.5             | 0.20  | 430  | 340                                  | ※UUG2E330MNJ1MS |
|                             | 33                     | 12.5×21             | 0.20  | 430  | 340                                  | ※UUG2E330MNJ6MS |
|                             | 47                     | 18×16.5             | 0.20  | 570  | 415                                  | ※UUG2E470MNJ1MS |
|                             | 47                     | 16×21.5             | 0.20  | 570  | 415                                  | ※UUG2E470MNJ6MS |
|                             | 68                     | 18×21.5             | 0.20  | 780  | 490                                  | ※UUG2E680MNJ1MS |
| 400<br>(2G)                 | 4.7                    | 12.5×13.5           | 0.25  | 175.2  | 115                                  | ※UUG2G4R7MNJ1MS |
|                             | 10                     | 16×16.5             | 0.25  | 260  | 140                                  | ※UUG2G100MNJ1MS |
|                             | 10                     | 12.5×21             | 0.25  | 260  | 140                                  | ※UUG2G100MNJ6MS |
|                             | 22                     | 18×16.5             | 0.25  | 452  | 280                                  | ※UUG2G220MNJ1MS |
|                             | 22                     | 16×21.5             | 0.25  | 452  | 280                                  | ※UUG2G220MNJ6MS |
|                             | 33                     | 18×21.5             | 0.25  | 628  | 350                                  | ※UUG2G330MNJ1MS |
|                             | 47                     | 18×21.5             | 0.25  | 852  | 430                                  | ※UUG2G470MNJ6MS |
| 450<br>(2W)                 | 4.7                    | 12.5×13.5           | 0.25  | 184.6  | 115                                  | ※UUG2W4R7MNJ1MS |
|                             | 10                     | 16×16.5             | 0.25  | 280  | 140                                  | ※UUG2W100MNJ1MS |
|                             | 10                     | 12.5×21             | 0.25  | 280  | 140                                  | ※UUG2W100MNJ6MS |
|                             | 22                     | 16×21.5             | 0.25  | 496  | 275                                  | ※UUG2W220MNJ1MS |
|                             | 33                     | 18×21.5             | 0.25  | 694  | 345                                  | ※UUG2W330MNJ1MS |

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