

# ALUMINUM ELECTROLYTIC CAPACITORS

# UUG

Chip Type, Higher Capacitance Range

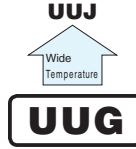


For SMD



Anti-Solvent Feature  
(Through 100V only)

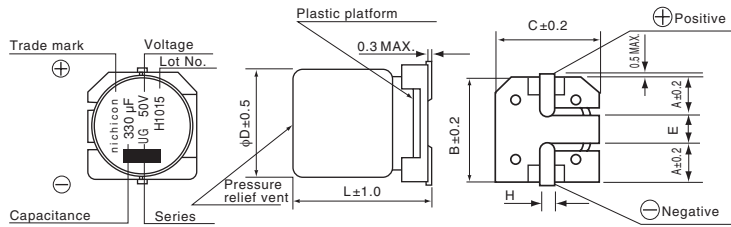
- Chip Type, higher capacitance in larger case sizes (φ12.5, φ16, φ18)
- Designed for surface mounting on high density PC board.
- Applicable to automatic mounting machine fed with carrier tape.
- Compliant to the RoHS directive (2011/65/EU,(EU)2015/863).
- AEC-Q200 compliant. Please contact us for details.



## 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 or 4 (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   | 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 |  |
|                                                                                            |                                                                                                                                                                                                                                        | Z-40°C / Z+20°C                                                                                                                 | 12                                                | 10   | 8    | 5    | 4    | 3          | 3    | 3          | 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 2000 hours at 85°C.                                                                                    |                                                                                                                                 |                                                   |      |      |      |      |            |      |            |           |   |  |
|                                                                                            | Capacitance change                                                                                                                                                                                                                     | Within ±20% 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 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.                                                                                                                                                                                                           |                                                                                                                                 |                                                   |      |      |      |      |            |      |            |           |   |  |

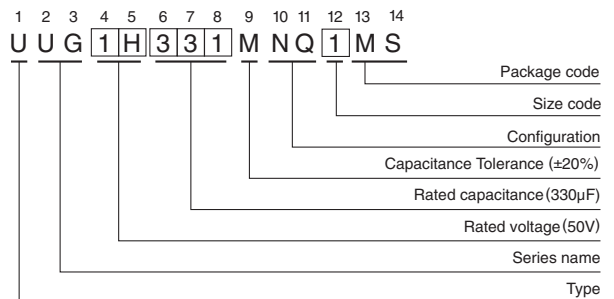
## Chip Type



(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  | 4.8        | 4.8        | 4.8        | 5.4        | 5.4        | 6.4        | 6.4        |
| 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  | 4.0        | 4.0        | 4.0        | 6.3        | 6.3        | 6.3        | 6.3        |
| 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 |

Type numbering system (Example : 50V 330μF)



※ The vibration structure-resistant product is also available upon request, please ask for details.

## 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                                  | UUG0J222MNQ1MS |
|                             | 3300                   | 16×16.5             | 0.32  | 623.7                                            | 1200                                 | UUG0J332MNQ1MS |
|                             | 3300                   | 12.5×21             | 0.32  | 623.7                                            | 1200                                 | UUG0J332MNQ6MS |
|                             | 4700                   | 16×16.5             | 0.34  | 888.3                                            | 1400                                 | UUG0J472MNQ1MS |
|                             | 6800                   | 18×16.5             | 0.38  | 1285.2                                           | 1650                                 | UUG0J682MNQ1MS |
|                             | 6800                   | 16×21.5             | 0.38  | 1285.2                                           | 1650                                 | UUG0J682MNQ6MS |
|                             | 10000                  | 18×21.5             | 0.46  | 1890                                             | 2000                                 | UUG0J103MNQ1MS |
| 10<br>(1A)                  | 1000                   | 12.5×13.5           | 0.24  | 300                                              | 620                                  | UUG1A102MNQ1MS |
|                             | 2200                   | 12.5×16             | 0.26  | 660                                              | 960                                  | UUG1A222MNQ1MS |
|                             | 3300                   | 16×16.5             | 0.28  | 990                                              | 1300                                 | UUG1A332MNQ1MS |
|                             | 4700                   | 18×16.5             | 0.30  | 1410                                             | 1500                                 | UUG1A472MNQ1MS |
|                             | 4700                   | 16×21.5             | 0.30  | 1410                                             | 1500                                 | UUG1A472MNQ6MS |
|                             | 6800                   | 18×21.5             | 0.34  | 2040                                             | 1850                                 | UUG1A682MNQ1MS |
|                             | 10000                  | 18×21.5             | 0.42  | 3000                                             | 2200                                 | UUG1A103MNQ6MS |
| 16<br>(1C)                  | 1000                   | 12.5×13.5           | 0.20  | 480                                              | 710                                  | UUG1C102MNQ1MS |
|                             | 2200                   | 16×16.5             | 0.22  | 1056                                             | 1150                                 | UUG1C222MNQ1MS |
|                             | 2200                   | 12.5×21             | 0.22  | 1056                                             | 1150                                 | UUG1C222MNQ6MS |
|                             | 3300                   | 18×16.5             | 0.24  | 1584                                             | 1450                                 | UUG1C332MNQ1MS |
|                             | 3300                   | 16×21.5             | 0.24  | 1584                                             | 1450                                 | UUG1C332MNQ6MS |
|                             | 4700                   | 18×21.5             | 0.26  | 2256                                             | 1750                                 | UUG1C472MNQ1MS |
| 25<br>(1E)                  | 470                    | 12.5×13.5           | 0.16  | 352.5                                            | 550                                  | UUG1E471MNQ1MS |
|                             | 1000                   | 12.5×16             | 0.16  | 750                                              | 820                                  | UUG1E102MNQ1MS |
|                             | 2200                   | 18×16.5             | 0.18  | 1650                                             | 1350                                 | UUG1E222MNQ1MS |
|                             | 2200                   | 16×21.5             | 0.18  | 1650                                             | 1350                                 | UUG1E222MNQ6MS |
|                             | 3300                   | 18×21.5             | 0.20  | 2475                                             | 1700                                 | UUG1E332MNQ1MS |
| 35<br>(1V)                  | 470                    | 12.5×13.5           | 0.14  | 493.5                                            | 580                                  | UUG1V471MNQ1MS |
|                             | 1000                   | 16×16.5             | 0.14  | 1050                                             | 1000                                 | UUG1V102MNQ1MS |
|                             | 1000                   | 12.5×21             | 0.14  | 1050                                             | 1000                                 | UUG1V102MNQ6MS |
|                             | 2200                   | 18×21.5             | 0.16  | 2310                                             | 1550                                 | UUG1V222MNQ1MS |
| 50<br>(1H)                  | 220                    | 12.5×13.5           | 0.12  | 330                                              | 450                                  | UUG1H221MNQ1MS |
|                             | 330                    | 12.5×13.5           | 0.12  | 495                                              | 520                                  | UUG1H331MNQ1MS |
|                             | 470                    | 16×16.5             | 0.12  | 705                                              | 740                                  | UUG1H471MNQ1MS |
|                             | 470                    | 12.5×21             | 0.12  | 705                                              | 740                                  | UUG1H471MNQ6MS |
|                             | 1000                   | 18×21.5             | 0.12  | 1500                                             | 1150                                 | UUG1H102MNQ1MS |
| 63<br>(1J)                  | 100                    | 12.5×13.5           | 0.10  | 189                                              | 370                                  | UUG1J101MNQ1MS |
|                             | 220                    | 12.5×16             | 0.10  | 415.8                                            | 580                                  | UUG1J221MNQ1MS |
|                             | 330                    | 16×16.5             | 0.10  | 623.7                                            | 680                                  | UUG1J331MNQ1MS |
|                             | 330                    | 12.5×21             | 0.10  | 623.7                                            | 680                                  | UUG1J331MNQ6MS |
|                             | 470                    | 18×16.5             | 0.10  | 888.3                                            | 850                                  | UUG1J471MNQ1MS |
|                             | 470                    | 16×21.5             | 0.10  | 888.3                                            | 850                                  | UUG1J471MNQ6MS |
| 100<br>(2A)                 | 68                     | 12.5×13.5           | 0.08  | 204                                              | 350                                  | UUG2A680MNQ1MS |
|                             | 100                    | 12.5×16             | 0.08  | 300                                              | 440                                  | UUG2A101MNQ1MS |
|                             | 220                    | 18×16.5             | 0.08  | 660                                              | 665                                  | UUG2A221MNQ1MS |
|                             | 220                    | 16×21.5             | 0.08  | 660                                              | 665                                  | UUG2A221MNQ6MS |
|                             | 330                    | 18×21.5             | 0.08  | 990                                              | 825                                  | UUG2A331MNQ1MS |

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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                                  | UUG2C470MNQ1MS |
|                             | 68                     | 16×16.5             | 0.20  | 535.2                                            | 500                                  | UUG2C680MNQ1MS |
|                             | 68                     | 12.5×21             | 0.20  | 535.2                                            | 500                                  | UUG2C680MNQ6MS |
|                             | 100                    | 18×16.5             | 0.20  | 740                                              | 590                                  | UUG2C101MNQ1MS |
|                             | 100                    | 16×21.5             | 0.20  | 740                                              | 590                                  | UUG2C101MNQ6MS |
| 200<br>(2D)                 | 22                     | 12.5×13.5           | 0.20  | 276                                              | 235                                  | UUG2D220MNQ1MS |
|                             | 33                     | 12.5×16             | 0.20  | 364                                              | 310                                  | UUG2D330MNQ1MS |
|                             | 47                     | 16×16.5             | 0.20  | 476                                              | 415                                  | UUG2D470MNQ1MS |
|                             | 47                     | 12.5×21             | 0.20  | 476                                              | 415                                  | UUG2D470MNQ6MS |
|                             | 68                     | 18×16.5             | 0.20  | 644                                              | 505                                  | UUG2D680MNQ1MS |
|                             | 68                     | 16×21.5             | 0.20  | 644                                              | 505                                  | UUG2D680MNQ6MS |
|                             | 100                    | 18×21.5             | 0.20  | 900                                              | 590                                  | UUG2D101MNQ1MS |
| 250<br>(2E)                 | 10                     | 12.5×13.5           | 0.20  | 200                                              | 150                                  | UUG2E100MNQ1MS |
|                             | 22                     | 12.5×16             | 0.20  | 320                                              | 240                                  | UUG2E220MNQ1MS |
|                             | 33                     | 16×16.5             | 0.20  | 430                                              | 340                                  | UUG2E330MNQ1MS |
|                             | 33                     | 12.5×21             | 0.20  | 430                                              | 340                                  | UUG2E330MNQ6MS |
|                             | 47                     | 18×16.5             | 0.20  | 570                                              | 415                                  | UUG2E470MNQ1MS |
|                             | 47                     | 16×21.5             | 0.20  | 570                                              | 415                                  | UUG2E470MNQ6MS |
|                             | 68                     | 18×21.5             | 0.20  | 780                                              | 490                                  | UUG2E680MNQ1MS |
| 400<br>(2G)                 | 4.7                    | 12.5×13.5           | 0.25  | 175.2                                            | 115                                  | UUG2G4R7MNQ1MS |
|                             | 10                     | 16×16.5             | 0.25  | 260                                              | 140                                  | UUG2G100MNQ1MS |
|                             | 10                     | 12.5×21             | 0.25  | 260                                              | 140                                  | UUG2G100MNQ6MS |
|                             | 22                     | 18×16.5             | 0.25  | 452                                              | 280                                  | UUG2G220MNQ1MS |
|                             | 22                     | 16×21.5             | 0.25  | 452                                              | 280                                  | UUG2G220MNQ6MS |
|                             | 33                     | 18×21.5             | 0.25  | 628                                              | 350                                  | UUG2G330MNQ1MS |
|                             | 47                     | 18×21.5             | 0.25  | 852                                              | 430                                  | UUG2G470MNQ6MS |
| 450<br>(2W)                 | 4.7                    | 12.5×13.5           | 0.25  | 184.6                                            | 115                                  | UUG2W4R7MNQ1MS |
|                             | 10                     | 16×16.5             | 0.25  | 280                                              | 140                                  | UUG2W100MNQ1MS |
|                             | 10                     | 12.5×21             | 0.25  | 280                                              | 140                                  | UUG2W100MNQ6MS |
|                             | 22                     | 16×21.5             | 0.25  | 496                                              | 275                                  | UUG2W220MNQ1MS |
|                             | 33                     | 18×21.5             | 0.25  | 694                                              | 345                                  | UUG2W330MNQ1MS |

- Taping specifications are given in page 20.
- Recommended land size, soldering by reflow are given in page 16, 17.
- Please refer to page 3 for the minimum order quantity.

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