

## UUX

Chip Type, Wide Temperature Range

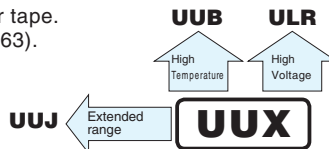


For SMD



Anti-Solvent  
Feature  
(Through  
100V only)

- Chip type, operating over wide temperature range of to -55 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 compliant. Please contact us for details.



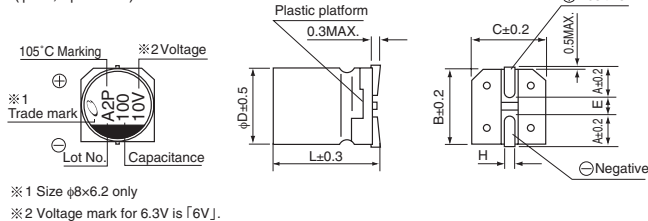
## Specifications

| Item                          | Performance Characteristics                                                                                                                                                                                                             |                                                                                                      |      |      |      |      |      |      |                    |                                                   |                                              |      |      |     |
|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|------|------|------|------|------|------|--------------------|---------------------------------------------------|----------------------------------------------|------|------|-----|
| Category Temperature Range    | -55 to +105°C (6.3 to 100V), -40 to +105°C (160 to 400V)                                                                                                                                                                                |                                                                                                      |      |      |      |      |      |      |                    |                                                   |                                              |      |      |     |
| Rated Voltage Range           | 6.3 to 400V                                                                                                                                                                                                                             |                                                                                                      |      |      |      |      |      |      |                    |                                                   |                                              |      |      |     |
| Rated Capacitance Range       | 1 to 1000μF                                                                                                                                                                                                                             |                                                                                                      |      |      |      |      |      |      |                    |                                                   |                                              |      |      |     |
| Capacitance Tolerance         | ±20% at 120Hz, 20°C                                                                                                                                                                                                                     |                                                                                                      |      |      |      |      |      |      |                    |                                                   |                                              |      |      |     |
| Leakage Current               | Rated voltage (V)                                                                                                                                                                                                                       | 6.3 to 100                                                                                           |      |      |      |      |      |      |                    | 160 to 400                                        |                                              |      |      |     |
|                               | Leakage Current                                                                                                                                                                                                                         | 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                                               | 200                                          | 250  | 400  |     |
|                               | tan δ (MAX.)                                                                                                                                                                                                                            | 0.22                                                                                                 | 0.19 | 0.16 | 0.14 | 0.12 | 0.10 | 0.10 | 0.08               | 0.20                                              | 0.20                                         | 0.20 | 0.25 |     |
| Stability at Low Temperature  | Measurement frequency: 120Hz                                                                                                                                                                                                            |                                                                                                      |      |      |      |      |      |      |                    |                                                   |                                              |      |      |     |
|                               | Rated voltage (V)                                                                                                                                                                                                                       |                                                                                                      | 6.3  | 10   | 16   | 25   | 35   | 50   | 63                 | 100                                               | 160                                          | 200  | 250  | 400 |
|                               | Impedance ratio<br>ZT / Z20 (MAX.)                                                                                                                                                                                                      | Z-55°C / Z+20°C                                                                                      | 4    | 4    | 3    | 3    | 3    | 2    | 3                  | 4                                                 | —                                            | —    | —    | —   |
|                               |                                                                                                                                                                                                                                         | Z-40°C / Z+20°C                                                                                      | —    | —    | —    | —    | —    | —    | —                  | —                                                 | 6                                            | 6    | 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 2000 hours (160 to 400V : 3000hours) at 105°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 105°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above. |                                                                                                      |      |      |      |      |      |      |                    |                                                   |                                              |      |      |     |
| Resistance to soldering heat  | The capacitors are kept on a hot plate for 30 seconds, which is maintained at 250°C. The capacitors shall meet the characteristic requirements listed at right when they are removed from the plate and restored to 20°C.               |                                                                                                      |      |      |      |      |      |      | Capacitance change | Within ±10% of the initial capacitance value      |                                              |      |      |     |
|                               |                                                                                                                                                                                                                                         |                                                                                                      |      |      |      |      |      |      | tan δ              | Less than or equal to the initial specified value |                                              |      |      |     |
|                               |                                                                                                                                                                                                                                         |                                                                                                      |      |      |      |      |      |      | Leakage current    | Less than or equal to the initial specified value |                                              |      |      |     |
| Marking                       | Black print on the case top.                                                                                                                                                                                                            |                                                                                                      |      |      |      |      |      |      |                    |                                                   |                                              |      |      |     |

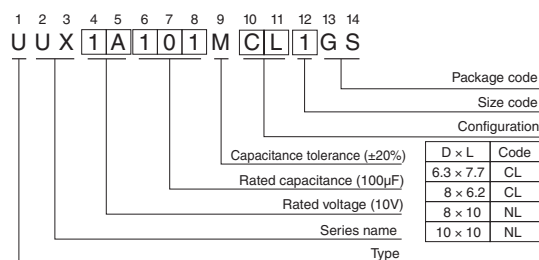
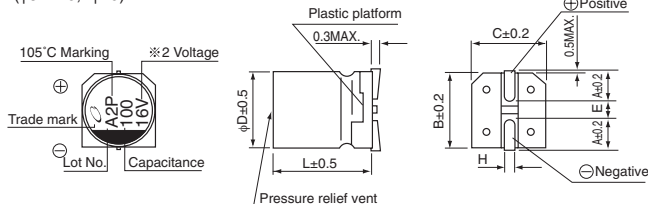
## Chip Type

Type numbering system (Example : 10V 100μF)

(φ6.3, φ8 × 6.2)



(φ8 × 10, φ10)



|        | (mm)       |            |            |            |
|--------|------------|------------|------------|------------|
| φD × L | 6.3 × 7.7  | 8 × 6.2    | 8 × 10     | 10 × 10    |
| A      | 2.4        | 3.3        | 2.9        | 3.2        |
| B      | 6.6        | 8.3        | 8.3        | 10.3       |
| C      | 6.6        | 8.3        | 8.3        | 10.3       |
| E      | 2.2        | 2.3        | 3.1        | 4.5        |
| L      | 7.7        | 6.2        | 10         | 10         |
| H      | 0.5 to 0.8 | 0.5 to 0.8 | 0.8 to 1.1 | 0.8 to 1.1 |

● Dimension table in next page.

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## ■ Dimensions

| Cap.<br>(μF) | V    | 6.3              | 10               | 16               | 25               | 35               | 50               | 63               | 100                                      |
|--------------|------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------------------------------|
|              | Code | 0J               | 1A               | 1C               | 1E               | 1V               | 1H               | 1J               | 2A                                       |
| 4.7          | 4R7  |                  |                  |                  |                  |                  |                  |                  | 8×6.2 42                                 |
| 10           | 100  |                  |                  |                  |                  |                  |                  | 8×6.2 51         | 8×10 75                                  |
| 22           | 220  |                  |                  |                  |                  |                  | ○ 8×6.2 67(64)   | 8×10 108         | ■ 10×10 150(121)                         |
| 33           | 330  |                  |                  |                  |                  | ○ 8×6.2 76(75)   | 8×10 133         | ■ 10×10 185(179) | 10×10 180                                |
| 47           | 470  |                  |                  |                  | ○ 8×6.2 79(78)   | 8×10 124         | ■ 10×10 180(167) | 10×10 220        | 10×10 230                                |
| 100          | 101  |                  | 8×6.2 90         | ○ 8×10 148(111)  | 8×10 181         | ■ 10×10 304(283) | 10×10 310        | 10×10 320        |                                          |
| 220          | 221  | ○ 8×10 161(121)  | 8×10 173         | ■ 10×10 330(307) | ■ 10×10 351(283) | 10×10 450        |                  |                  |                                          |
| 330          | 331  | 8×10 288         | ■ 10×10 318(296) | ■ 10×10 441(410) | 10×10 372        |                  |                  |                  |                                          |
| 470          | 471  | ■ 10×10 340(316) | ■ 10×10 351(326) | 10×10 489        |                  |                  |                  |                  |                                          |
| 680          | 681  | 10×10 408        | 10×10 392        |                  |                  |                  |                  |                  |                                          |
| 1000         | 102  | 10×10 495        |                  |                  |                  |                  |                  |                  | Case size<br>φD × L (mm) Rated<br>ripple |

| Cap.<br>(μF) | V    | 160      | 200      | 250      | 400      |
|--------------|------|----------|----------|----------|----------|
|              | Code | 2C       | 2D       | 2E       | 2G       |
| 1            | 010  |          |          |          | 8×10 25  |
| 1.8          | 1R8  |          |          |          | 8×10 26  |
| 2.2          | 2R2  |          |          |          | 8×10 27  |
| 3.3          | 3R3  |          | 8×10 31  | 8×10 31  | 10×10 38 |
| 3.9          | 3R9  |          | 8×10 34  | 8×10 34  | 10×10 39 |
| 4.7          | 4R7  |          | 8×10 37  | 8×10 37  | 10×10 40 |
| 6.8          | 6R8  |          | 8×10 44  | 8×10 44  |          |
| 10           | 100  | 8×10 57  | 10×10 64 | 10×10 64 |          |
| 18           | 180  | 10×10 64 |          |          |          |

Rated ripple current (mArms) at 105°C 120Hz

Size φ6.3 × 7.7 is available for capacitors marked. "○" / Size φ8 × 10 is available for capacitors marked. "■"  
 ※ In this case, [6] will be put at 12th digit of type numbering system.

## ● Frequency coefficient of rated ripple current

| Cap.(μF)    | Frequency | 50 Hz | 120 Hz | 300 Hz | 1 kHz | 10 kHz or more |
|-------------|-----------|-------|--------|--------|-------|----------------|
| 1 to 47     |           | 0.80  | 1.00   | 1.15   | 1.40  | 1.67           |
| 100 to 1000 |           | 0.85  | 1.00   | 1.08   | 1.20  | 1.30           |

- Taping specifications are given in page 23.
- Recommended land size, soldering by reflow are given in page 18, 19.
- Please select UUX(p.176) if high C/V products are required.
- Please refer to page 3 for the minimum order quantity.