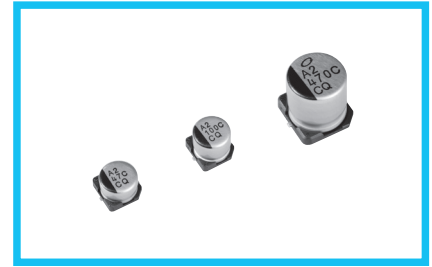




Chip Type, For Audio Equipment  
Wide Temperature Range



- Chip type acoustic series within the wide temperature range.
- 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.

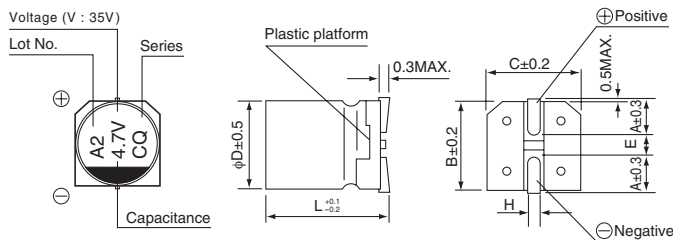


## Specifications

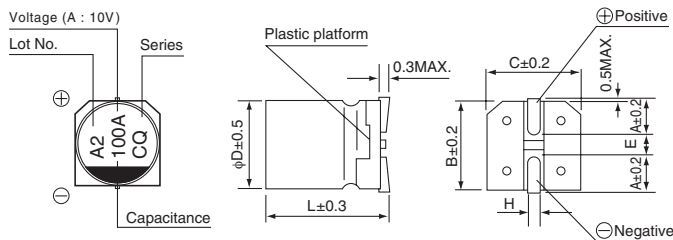
| Item                          | Performance Characteristics                                                                                                                                                                                                             |                 |      |      |      |                    |                                                   |  |  |  |
|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|------|------|------|--------------------|---------------------------------------------------|--|--|--|
| Category Temperature Range    | -55 to +105°C                                                                                                                                                                                                                           |                 |      |      |      |                    |                                                   |  |  |  |
| Rated Voltage Range           | 10 to 35V                                                                                                                                                                                                                               |                 |      |      |      |                    |                                                   |  |  |  |
| Rated Capacitance Range       | 4.7 to 680μF                                                                                                                                                                                                                            |                 |      |      |      |                    |                                                   |  |  |  |
| Capacitance Tolerance         | ±20% (120Hz, 20°C)                                                                                                                                                                                                                      |                 |      |      |      |                    |                                                   |  |  |  |
| Leakage Current               | After 2 minutes' application of rated voltage at 20°C, leakage current is not more than 0.01CV or 3 (μA), whichever is greater.                                                                                                         |                 |      |      |      |                    |                                                   |  |  |  |
| Tangent of loss angle (tan δ) | Measurement frequency : 120Hz at 20°C                                                                                                                                                                                                   |                 |      |      |      |                    |                                                   |  |  |  |
|                               | Rated voltage (V)                                                                                                                                                                                                                       | 10              | 16   | 25   | 35   |                    |                                                   |  |  |  |
|                               | tan δ (MAX.)                                                                                                                                                                                                                            | 0.26            | 0.22 | 0.16 | 0.13 |                    |                                                   |  |  |  |
| Stability at Low Temperature  | Measurement frequency : 120Hz                                                                                                                                                                                                           |                 |      |      |      |                    |                                                   |  |  |  |
|                               | Rated voltage (V)                                                                                                                                                                                                                       |                 | 10   | 16   | 25   | 35                 |                                                   |  |  |  |
|                               | Impedance ratio (MAX.)                                                                                                                                                                                                                  | Z-25°C / Z+20°C | 3    | 2    | 2    | 2                  |                                                   |  |  |  |
|                               |                                                                                                                                                                                                                                         | Z-40°C / Z+20°C | 5    | 4    | 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 2000 hours (1000 hours for 4.5L) at 105°C.                                                              |                 |      |      |      |                    |                                                   |  |  |  |
|                               |                                                                                                                                                                                                                                         |                 |      |      |      | Capacitance change | Within ±30% of the initial capacitance value      |  |  |  |
|                               |                                                                                                                                                                                                                                         |                 |      |      |      | tan δ              | 300% or less than 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. |                 |      |      |      |                    |                                                   |  |  |  |
|                               |                                                                                                                                                                                                                                         |                 |      |      |      | Leakage current    | Less than or equal to the initial specified value |  |  |  |
|                               |                                                                                                                                                                                                                                         |                 |      |      |      |                    |                                                   |  |  |  |
| 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

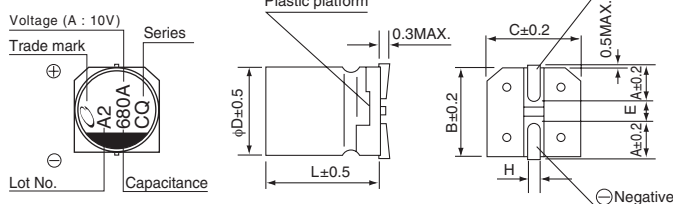
(φ4 × 4.5L, φ5 × 4.5L, φ6.3 × 4.5L)



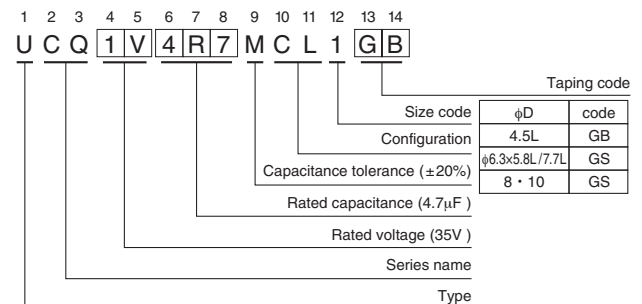
(φ6.3 × 5.8L, φ6.3 × 7.7L)



(φ8 × 10L, φ10 × 10L)



## Type numbering system (Example : 35V 4.7μF)



| φD × L | 4 × 4.5    | 5 × 4.5    | 6.3 × 4.5  | 6.3 × 5.8  | 6.3 × 7.7  | 8 × 10     | 10 × 10    |
|--------|------------|------------|------------|------------|------------|------------|------------|
| A      | 1.8        | 2.1        | 2.4        | 2.4        | 2.4        | 2.9        | 3.2        |
| B      | 4.3        | 5.3        | 6.6        | 6.6        | 6.6        | 8.3        | 10.3       |
| C      | 4.3        | 5.3        | 6.6        | 6.6        | 6.6        | 8.3        | 10.3       |
| E      | 1.0        | 1.3        | 2.2        | 2.2        | 2.2        | 3.1        | 4.5        |
| L      | 4.5        | 4.5        | 4.5        | 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 | 0.5 to 0.8 | 0.8 to 1.1 | 0.8 to 1.1 |

## Rated voltage

| V    | 10 | 16 | 25 | 35 |
|------|----|----|----|----|
| Code | A  | C  | E  | V  |

UCQ

## ■ Dimensions

| Cap.(μF) | V<br>Code | 10        |     | 16        |     | 25        |     | 35                       |                 |
|----------|-----------|-----------|-----|-----------|-----|-----------|-----|--------------------------|-----------------|
|          |           | 1A        |     | 1C        |     | 1E        |     | 1V                       |                 |
| 4.7      | 4R7       |           |     |           |     | 4 × 4.5   | 15  | 4 × 4.5                  | 15              |
| 10       | 100       |           |     | 4 × 4.5   | 15  | 5 × 4.5   | 30  | 5 × 4.5                  | 30              |
| 22       | 220       | 5 × 4.5   | 30  | 5 × 4.5   | 30  | 6.3 × 4.5 | 40  | 6.3 × 4.5                | 40              |
| 33       | 330       | 5 × 4.5   | 30  | 6.3 × 4.5 | 40  | 6.3 × 4.5 | 40  | 6.3 × 5.8                | 100             |
| 47       | 470       | 6.3 × 4.5 | 40  | 6.3 × 4.5 | 40  | 6.3 × 5.8 | 100 | 6.3 × 7.7                | 120             |
| 100      | 101       | 6.3 × 5.8 | 100 | 6.3 × 5.8 | 100 | 6.3 × 7.7 | 120 | 8 × 10                   | 250             |
| 220      | 221       | 6.3 × 7.7 | 120 | 8 × 10    | 250 | 8 × 10    | 250 | 10 × 10                  | 400             |
| 330      | 331       | 8 × 10    | 250 | 8 × 10    | 250 | 10 × 10   | 400 | 10 × 10                  | 400             |
| 470      | 471       | 8 × 10    | 250 | 10 × 10   | 400 | 10 × 10   | 400 | Case size<br>φD × L (mm) | Rated<br>ripple |
| 680      | 681       | 10 × 10   | 400 |           |     |           |     |                          |                 |

Rated ripple current (mA rms) at 105°C 120Hz

## ● Frequency coefficient of rated ripple current

| Frequency   | 50 Hz | 120 Hz | 300 Hz | 1 kHz | 10 kHz or more |
|-------------|-------|--------|--------|-------|----------------|
| Coefficient | 0.70  | 1.00   | 1.17   | 1.36  | 1.50           |

- Taping specifications are given in page 23.
- Recommended land size, soldering by reflow are given in page 18, 19.
- Please refer to page 3 for the minimum order quantity.

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