

# ALUMINUM ELECTROLYTIC CAPACITORS

nichicon

**CZ**

Chip Type, High Reliability.  
Low temperature ESR specification.  
series



For SMD



Long Life



Anti-Solvent  
Feature

Upgrade

- Chip type, high temperature range, for +125°C use.
- Added ESR specification after the test at -40°C.
- Applicable to automatic mounting machine fed with carrier tape.
- Compliant to the RoHS directive (2002/95/EC).

CZ Low ESR Long Life CJ

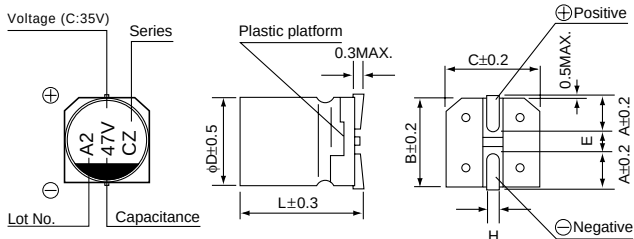


## Specifications

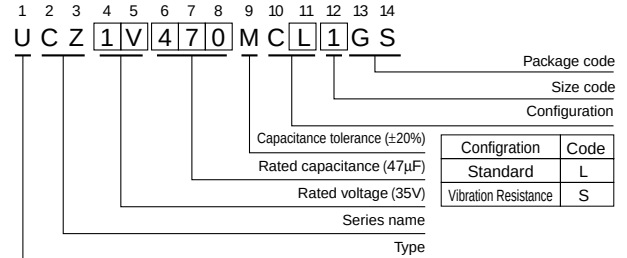
| Item                          | Performance Characteristics                                                                                                                                                                                                             |                 |      |      |      |                    |      |                                                   |      |   |
|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|------|------|------|--------------------|------|---------------------------------------------------|------|---|
| Category Temperature Range    | -40 to +125°C                                                                                                                                                                                                                           |                 |      |      |      |                    |      |                                                   |      |   |
| Rated Voltage Range           | 10 to 100V                                                                                                                                                                                                                              |                 |      |      |      |                    |      |                                                   |      |   |
| Rated Capacitance Range       | 10 to 470 μF                                                                                                                                                                                                                            |                 |      |      |      |                    |      |                                                   |      |   |
| Capacitance Tolerance         | ±20% at 120Hz, 20°C                                                                                                                                                                                                                     |                 |      |      |      |                    |      |                                                   |      |   |
| Leakage Current               | After 2 minutes' application of rated voltage, 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   | 50                 | 63   | 80                                                | 100  |   |
|                               | tan δ (MAX.)                                                                                                                                                                                                                            | 0.30            | 0.23 | 0.18 | 0.16 | 0.16               | 0.12 | 0.12                                              | 0.10 |   |
| Stability at Low Temperature  | Measurement frequency : 120Hz                                                                                                                                                                                                           |                 |      |      |      |                    |      |                                                   |      |   |
|                               | Rated voltage (V)                                                                                                                                                                                                                       | 10              | 16   | 25   | 35   | 50                 | 63   | 80                                                | 100  |   |
|                               | Impedance ratio ZT / Z20 (MAX.)                                                                                                                                                                                                         | Z-40°C / Z+20°C | 12   | 8    | 6    | 4                  | 4    | 3                                                 | 3    | 3 |
| Endurance                     | After 3000 hours (1000hours for φ6.3 × 5.8L, 2000hours for φD=6.3 × 7.7L) application of rated voltage at 125°C, capacitors meet the characteristics requirements listed below.                                                         |                 |      |      |      | Capacitance Change |      | Within ± 30% of the initial capacitance value     |      |   |
|                               |                                                                                                                                                                                                                                         |                 |      |      |      | tan δ              |      | 300% 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 125°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

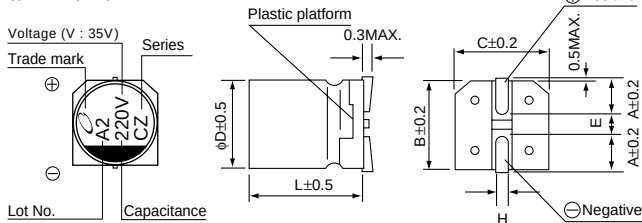
( $\phi 6.3$ ) 【Standard】 ※ please contact us for vibration resistance.



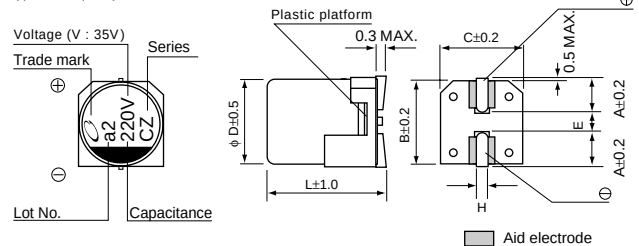
## Type numbering system (Example : 35V 47 $\mu$ F)



## ( $\phi 8$ to $\phi 10$ ) 【Standard】



## ( $\phi 8$ to $\phi 10$ ) 【Vibration Resistance】



| Standard          | (mm)       |            |            |            | Vibration Resistance (mm) | (mm)       |            |
|-------------------|------------|------------|------------|------------|---------------------------|------------|------------|
| $\phi D \times L$ | 6.3 × 5.8  | 6.3 × 7.7  | 8 × 10     | 10 × 10    | $\phi D \times L$         | 8 × 10     | 10 × 10    |
| A                 | 2.4        | 2.4        | 2.9        | 3.2        | A                         | 2.9        | 3.2        |
| B                 | 6.6        | 6.6        | 8.3        | 10.3       | B                         | 8.3        | 10.3       |
| C                 | 6.6        | 6.6        | 8.3        | 10.3       | C                         | 8.3        | 10.3       |
| E                 | 2.2        | 2.2        | 3.1        | 4.5        | E                         | 3.1        | 4.5        |
| L                 | 5.8        | 7.7        | 10         | 10         | L                         | 10         | 10         |
| H                 | 0.5 to 0.8 | 0.5 to 0.8 | 0.8 to 1.1 | 0.8 to 1.1 | H                         | 1.1 to 1.5 | 1.1 to 1.5 |

| Rated Voltage |    |    |    |    |    |    |    |     |  |
|---------------|----|----|----|----|----|----|----|-----|--|
| V             | 10 | 16 | 25 | 35 | 50 | 63 | 80 | 100 |  |
| Code          | A  | C  | E  | V  | H  | J  | K  | 2A  |  |

## ■Dimensions

| Cap. (μF) | V<br>Code | 10             |      |   |     | 16        |       |      |    | 25      |                |        |      | 35      |           |      |       | 50   |         |           |       |      |     |     |     |
|-----------|-----------|----------------|------|---|-----|-----------|-------|------|----|---------|----------------|--------|------|---------|-----------|------|-------|------|---------|-----------|-------|------|-----|-----|-----|
|           |           | 1A             |      |   |     | 1C        |       |      |    | 1E      |                |        |      | 1V      |           |      |       | 1H   |         |           |       |      |     |     |     |
| 10        | 100       |                |      |   |     |           |       |      |    |         |                |        |      | 6.3×5.8 | 1.60      | 24   | —     | 69   | 6.3×5.8 | 2.80      | 42    | —    | 51  |     |     |
| 22        | 220       |                |      |   |     |           |       |      |    |         |                |        |      | 6.3×5.8 | 1.60      | 24   | —     | 69   | 6.3×7.7 | 0.50      | 5     | 40   | 197 |     |     |
| 33        | 330       |                |      |   |     |           |       |      |    | 6.3×5.8 | 1.60           | 24     | —    | 69      | 6.3×7.7   | 0.45 | 5     | 40   | 197     | ● 6.3×7.7 | 0.50  | 5    | 40  | 197 |     |
| 47        | 470       |                |      |   |     | 6.3×5.8   | 1.60  | 24   | —  | 69      | Recommend 35V➡ |        |      |         | ● 6.3×7.7 | 0.45 | 5     | 40   | 197     | ● 6.3×7.7 | 0.50  | 5    | 40  | 197 |     |
| 68        | 680       |                |      |   |     |           |       |      |    |         |                |        |      | 8×10    | 0.20      | 3    | 4.5   | 270  | 8×10    | 0.25      | 3.5   | 6    | 270 |     |     |
| 100       | 101       | Recommend 16V➡ |      |   |     | ● 6.3×7.7 | 0.45  | 5    | 40 | 197     | ● 6.3×7.7      | 0.45   | 5    | 40      | 197       | 8×10 | 0.20  | 3    | 4.5     | 270       | 10×10 | 0.20 | 2.5 | 4.5 | 500 |
| 220       | 221       | 8×10           | 0.20 | 3 | 4.5 | 270       | 10×10 | 0.15 | 2  | 3.5     | 500            | ● 8×10 | 0.20 | 3       | 4.5       | 270  | 10×10 | 0.15 | 2       | 3.5       | 500   |      |     |     |     |
| 330       | 331       | ● 8×10         | 0.20 | 3 | 4.5 | 270       | 10×10 | 0.15 | 2  | 3.5     | 500            | 10×10  | 0.15 | 2       | 3.5       | 500  |       |      |         |           |       |      |     |     |     |
| 470       | 471       | 10×10          | 0.15 | 2 | 3.5 | 500       | 10×10 | 0.15 | 2  | 3.5     | 500            |        |      |         |           |      |       |      |         |           |       |      |     |     |     |

| Cap. (μF) | V   | Code | 63                                                          | 80                                                         | 100                                                                                                                                                  |
|-----------|-----|------|-------------------------------------------------------------|------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
|           |     |      | 1J                                                          | 1K                                                         | 2A                                                                                                                                                   |
| 10        | 100 |      | 6.3×7.7   2.00   100   —   60                               | 8×10   0.75   50   —   70                                  | 8×10   0.75   50   —   70                                                                                                                            |
| 22        | 220 |      | 8×10   0.70   35   —   100                                  | ● 8×10   0.75   50   —   70<br>10×10   0.55   35   —   115 | ● 8×10   0.75   50   —   70<br>10×10   0.55   35   —   115                                                                                           |
| 33        | 330 |      | ● 8×10   0.70   35   —   100<br>10×10   0.50   25   —   170 | ● 8×10   0.75   50   —   70<br>10×10   0.55   35   —   115 | 10×10   0.55   35   —   115                                                                                                                          |
| 47        | 470 |      | ● 8×10   0.70   35   —   160<br>10×10   0.50   25   —   170 | 10×10   0.55   35   —   115                                | Case size<br>φD × L<br>(mm)<br>Initial<br>20°C<br>Initial<br>-40°C<br>after<br>endurance<br>test<br>2000<br>hours<br>-40°C<br>Rated<br>ripple<br>ESR |

Max. ESR (Ω) at 20°C / -40°C 100kHz, Rated ripple Current (mA<sub>rms</sub>) at 125°C 100kHz  
 ● : In this case, ⑥ will be put at 12th digit of type numbering system.

## ●Frequency coefficient of rated ripple current

| Frequency   | 50Hz | 120Hz | 300Hz | 1kHz | 10kHz or more |
|-------------|------|-------|-------|------|---------------|
| Coefficient | 0.35 | 0.50  | 0.64  | 0.83 | 1.00          |

- 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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Электрон  
Связь**

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