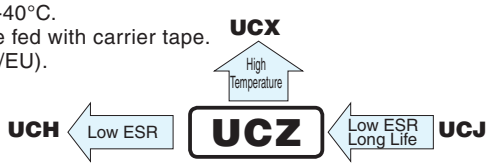
nichicon

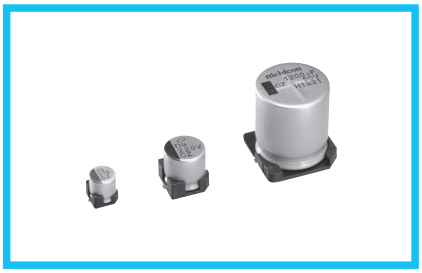
# UCZ

Chip Type, High Reliability.
Low temperature ESR specification.

For SMD | Long Life | Anti-Solvent Feature

- 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 (2011/65/EU).



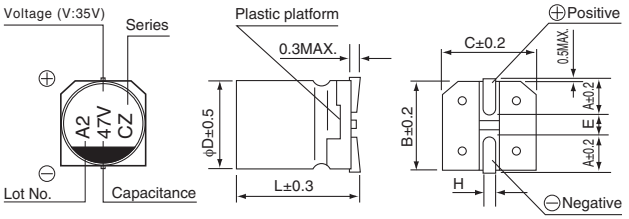



## ■Specifications

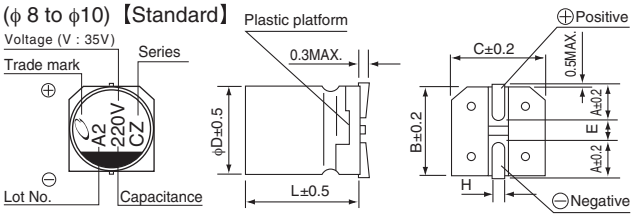
| Item | Performance Characteristics |
|---|---|
| Category Temperature Range | −40 to +125°C |
| Rated Voltage Range | 10 to 100V |
| Rated Capacitance Range | 10 to 3300μF |
| Capacitance Tolerance | ±20% at 120Hz, 20°C |
| Leakage Current | After 2 minutes' application of rated voltage, leakage current is not more than 0.01CV or 3μA, whichever is greater. |
| Tangent of loss angle (tan δ) | Measurement frequency : 120Hz at 20°C<br>Rated voltage (V): 10 / 16 / 25 / 35 / 50 / 63 / 80 / 100<br>tan δ (MAX.): 0.30 / 0.23 / 0.18 / 0.16 / 0.16 / 0.12 / 0.12 / 0.10<br>For capacitance of more than 1000μF, add 0.02 for every increase of 1000μF. |
| Stability at Low Temperature | Rated voltage (V): 10 / 16 / 25 / 35 / 50 / 63 / 80 / 100<br>Impedance ratio ZT / Z20 (MAX.) Z−40°C / Z+20°C: 12 / 8 / 6 / 4 / 4 / 3 / 3 / 3<br>Measurement frequency : 120Hz |
| Endurance | After continuous application of rated voltage at 125°C and then restoring down to 20°C, the readings of measurements shall meet below.<br>Case size: φ6.3 × 5.8L / φ6.3 × 7.7L / φ8 to φ12.5 / φ16,18 × 16.5L / φ16,18 × 21.5L<br>Endurance time: 1000hrs. / 2000hrs. / 3000hrs. / 3500hrs. / 4000hrs.<br>Capacitance change: Within ±30% of the initial capacitance value<br>tan δ: 300% or less than the initial specified value<br>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.<br>Capacitance change: Within ±10% of the initial capacitance value<br>tan δ: Less than or equal to the initial specified value<br>Leakage current: Less than or equal to the initial specified value |
| Marking | Black print on the case top. |

## ■Chip Type

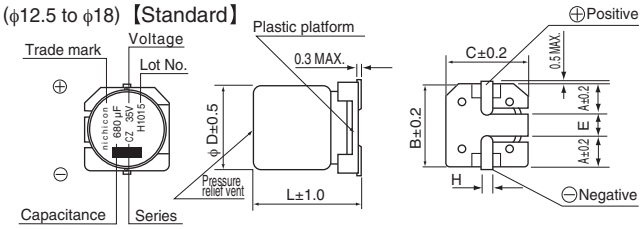
(φ 6.3)【Standard】※ φ6.3 × 5.8L : The vibration structure-resistant product can't support.
φ6.3 × 7.7L : The vibration structure-resistant product is available.




(φ 8 to φ10)【Standard】




(φ12.5 to φ18)【Standard】




※φ12.5 to φ18 :
The vibration structure-resistant product is also available upon request, please ask for details.

## Type numbering system (Example : 35V 47μF)

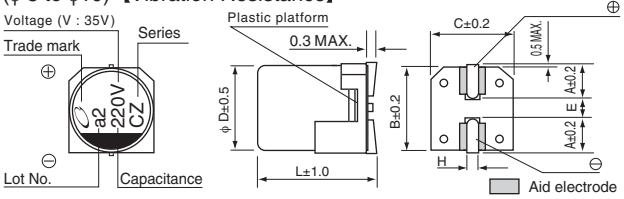
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| U | C | Z | 1 | V | 4 | 7 | 0 | M | C | L | 1 | G | S |

- Package code
- Size code
- Configuration
- Capacitance tolerance (±20%)
- Rated capacitance (47μF)
- Rated voltage (35V)
- Series name
- Type

| Size | Package | Code |
|---|---|---|
| φ4 to 10 | Taping | GS |
| φ12.5 to 18 | Taping | MS |
| φ12.5 to 18 | Tray | ZD |

| φd | Configuration | Code |
|---|---|---|
| 6.3 to 10 | Standard | CL |
| | Vibration Resistance | CS |
| 12.5 or more | Standard | NQ |

(φ 8 to φ10)【Vibration Resistance】




Standard (mm)

| φDXL | 6.3X5.8 | 6.3X7.7 | 8X10 | 10X10 | 12.5X13.5 | 16X16.5 | 16X21.5 | 18X16.5 | 18X21.5 |
|---|---|---|---|---|---|---|---|---|---|
| A | 2.4 | 2.4 | 2.9 | 3.2 | 4.8 | 5.4 | 5.4 | 6.4 | 6.4 |
| B | 6.6 | 6.6 | 8.3 | 10.3 | 13.6 | 17.1 | 17.1 | 19.1 | 19.1 |
| C | 6.6 | 6.6 | 8.3 | 10.3 | 13.6 | 17.1 | 17.1 | 19.1 | 19.1 |
| E | 2.2 | 2.2 | 3.1 | 4.5 | 4 | 6.3 | 6.3 | 6.3 | 6.3 |
| L | 5.8 | 7.7 | 10 | 10 | 13.5 | 16.5 | 21.5 | 16.5 | 21.5 |
| H | 0.5 to 0.8 | 0.5 to 0.8 | 0.8 to 1.1 | 0.8 to 1.1 | 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 |

Vibration Resistance (mm)

| φDXL | 8X10 | 10X10 |
|---|---|---|
| A | 2.9 | 3.2 |
| B | 8.3 | 10.3 |
| C | 8.3 | 10.3 |
| E | 3.1 | 4.5 |
| L | 10 | 10 |
| 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 |

# UCZ

■Dimensions

| Cap. (μF) \ V | Code | 10 | 16 | 25 | 35 | 50 |
|---|---|---|---|---|---|---|
| | | 1A | 1C | 1E | 1V | 1H |
| 10 | 100 | | | | 6.3 x 5.8 1.60 24 – 69 | 6.3 x 5.8 2.80 42 – 51 |
| 22 | 220 | | | | 6.3 x 5.8 1.60 24 – 69 | 6.3 x 7.7 0.50 5 40 197 |
| 33 | 330 | | | 6.3 x 5.8 1.60 24 – 69 | 6.3 x 7.7 0.45 5 40 197 | ●6.3 x 7.7 0.50 5 40 197<br>8 x 10 0.25 3.5 6 270 |
| 47 | 470 | | 6.3 x 5.8 1.60 24 – 69 | Recommend 35V ⇨ | ●6.3 x 7.7 0.45 5 40 197<br>8 x 10 0.20 3 4.5 270 | ●6.3 x 7.7 0.50 5 40 197<br>8 x 10 0.25 3.5 6 270 |
| 68 | 680 | | | | 8 x 10 0.20 3 4.5 270 | |
| 100 | 101 | Recommend 16V ⇨ | ●6.3 x 7.7 0.45 5 40 197<br>8 x 10 0.20 3 4.5 270 | ●6.3 x 7.7 0.45 5 40 197<br>8 x 10 0.20 3 4.5 270 | 8 x 10 0.20 3 4.5 270 | 10 x 10 0.20 2.5 4.5 500 |
| 220 | 221 | 8 x 10 0.20 3 4.5 270 | 8 x 10 0.20 3 4.5 270 | ●8 x 10 0.20 3 4.5 270<br>10 x 10 0.15 2 3.5 500 | 10 x 10 0.15 2 3.5 500 | |
| 330 | 331 | ●8 x 10 0.20 3 4.5 270<br>10 x 10 0.15 2 3.5 500 | 10 x 10 0.15 2 3.5 500 | 10 x 10 0.15 2 3.5 500 | | |
| 390 | 391 | | | | | 12.5 x 13.5 0.100 0.44 4.0 1300 |
| 470 | 471 | 10 x 10 0.15 2 3.5 500 | 10 x 10 0.15 2 3.5 500 | | 12.5 x 13.5 0.060 0.40 3.0 1700 | 16 x 16.5 0.080 0.34 2.6 2000 |
| 560 | 561 | | | | 12.5 x 13.5 0.060 0.40 3.0 1700 | 16 x 16.5 0.080 0.34 2.6 2000 |
| 680 | 681 | | | | 12.5 x 13.5 0.060 0.40 3.0 1700 | 18 x 16.5 0.078 0.32 2.6 2100 |
| 820 | 821 | | | 12.5 x 13.5 0.060 0.40 3.0 1700 | 16 x 16.5 0.047 0.28 1.4 2400 | 18 x 16.5 0.078 0.32 2.6 2100 |
| 1000 | 102 | | | 12.5 x 13.5 0.060 0.40 3.0 1700 | 16 x 16.5 0.047 0.28 1.4 2400 | 16 x 21.5 0.040 0.22 1.5 2800 |
| 1200 | 122 | | | 16 x 16.5 0.047 0.28 1.4 1700 | 18 x 16.5 0.045 0.28 1.4 2600 | 18 x 21.5 0.038 0.20 1.5 2900 |
| 1400 | 142 | | | | 18 x 16.5 0.045 0.28 1.4 2600 | |
| 1600 | 162 | | | 16 x 16.5 0.047 0.28 1.4 2400 | 16 x 21.5 0.034 0.20 0.6 3000 | |
| 2200 | 222 | | | 18 x 16.5 0.045 0.23 1.3 2600 | 18 x 21.5 0.032 0.16 0.5 3250 | Case size φD x L (mm) / Initial ESR 20°C / Initial ESR -40°C / ESR after endurance test -40°C※ / Rated ripple |
| 2700 | 272 | | | 16 x 21.5 0.034 0.20 0.6 3000 | | |
| 3300 | 332 | | | 18 x 21.5 0.032 0.16 0.5 3250 | | |

| Cap. (μF) \ V | Code | 63 | 80 | 100 |
|---|---|---|---|---|
| | | 1J | 1K | 2A |
| 10 | 100 | 6.3 x 7.7 2.00 100 – 60 | 8 x 10 0.75 50 – 70 | 8 x 10 0.75 50 – 70 |
| 22 | 220 | 8 x 10 0.70 35 – 100 | ●8 x 10 0.75 50 – 70<br>10 x 10 0.55 35 – 115 | ●8 x 10 0.75 50 – 70<br>10 x 10 0.55 35 – 115 |
| 33 | 330 | ●8 x 10 0.70 35 – 100<br>10 x 10 0.50 25 – 170 | ●8 x 10 0.75 50 – 70<br>10 x 10 0.55 35 – 115 | 10 x 10 0.55 35 – 115 |
| 47 | 470 | ●8 x 10 0.70 35 – 100<br>10 x 10 0.50 25 – 170 | 10 x 10 0.55 35 – 115 | |
| 82 | 820 | | | 12.5x13.5 0.28 1.9 22 700 |
| 150 | 151 | 12.5 x 13.5 0.20 1.3 14 1000 | 12.5 x 13.5 0.28 1.9 14 700 | 16x16.5 0.19 1.4 4.8 1000 |
| 180 | 181 | 12.5 x 13.5 0.20 1.3 14 1000 | | 18x16.5 0.17 1.1 3.9 1100 |
| 220 | 221 | 12.5 x 13.5 0.20 1.3 14 1000 | | 16x21.5 0.12 0.8 2.6 1600 |
| 270 | 271 | | 16 x 16.5 0.19 1.4 4.8 1000 | |
| 300 | 301 | | | 18x21.5 0.11 0.7 2.4 1700 |
| 330 | 331 | | 18 x 16.5 0.17 1.1 3.9 1100 | |
| 390 | 391 | 16 x 16.5 0.13 0.9 4.8 1900 | 16 x 21.5 0.12 0.8 2.6 1600 | |
| 470 | 471 | 18 x 16.5 0.11 0.82 3.9 2000 | | |
| 520 | 521 | | 18 x 21.5 0.11 0.7 2.4 1700 | Case size φD x L (mm) / Initial ESR 20°C / Initial ESR -40°C / ESR after endurance test -40°C※ / Rated ripple |
| 560 | 561 | 16 x 21.5 0.07 0.46 2.0 2500 | | |
| 750 | 751 | 18 x 21.5 0.068 0.44 1.8 2600 | | |

※Guaranteed time of ESR after endurance test

| Size | Guaranteed time | |
|---|---|---|
| φ6.3 x 5.8L | – | |
| φ6.3 x 7.7L, φ8 x 10L φ10 x 10L | 10 to 50V | 2000hrs. |
| | 63 to 100V | – |
| φ12.5 | 2000hrs. | |
| φ16,18 x 16.5L | 2000hrs. | |
| φ16,18 x 21.5L | 3000hrs. | |

Max. ESR (Ω) at 20°C / -40°C 100kHz, Rated ripple Current (mArms) 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.