# ALUMINUM ELECTROLYTIC CAPACITORS

nichicon

## CX

Chip Type, High Reliability
Low temperature ESR specification
series

For SMD | Low Impedance | Anti-Solvent Feature

- Chip type, high temperature range, for +135°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).

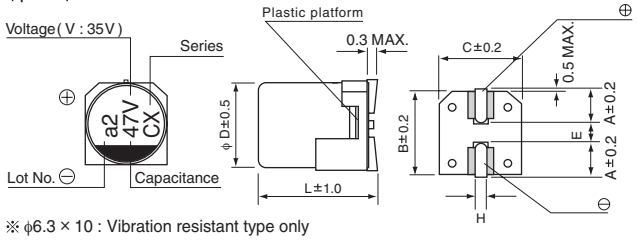
CX
High Temperature
cz

## Specifications

| Item | Performance Characteristics |
|---|---|
| Category Temperature Range | –40 to +135°C |
| Rated Voltage Range | 10 to 50V |
| Rated Capacitance Range | 47 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 3(μA), whichever is greater. |
| Tangent of loss angle (tan δ) | Rated voltage (V): 10 / 16 / 25 / 35 / 50<br>tan δ (MAX.): 0.30 / 0.23 / 0.18 / 0.16 / 0.16<br>Measurement frequency : 120Hz at 20°C |
| Stability at Low Temperature | Rated voltage (V): 10 / 16 / 25 / 35 / 50<br>Impedance ratio ZT / Z20 (MAX.) Z–40°C / Z+20°C: 12 / 8 / 6 / 4 / 4<br>Measurement frequency : 120Hz |
| 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 135°C.<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 135°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 shall be kept on the 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. |

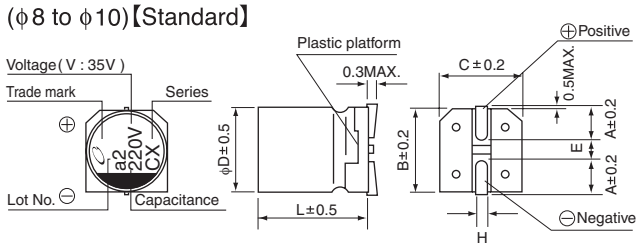
## Radial Lead Type

### (φ6.3)【Vibration Resistance】

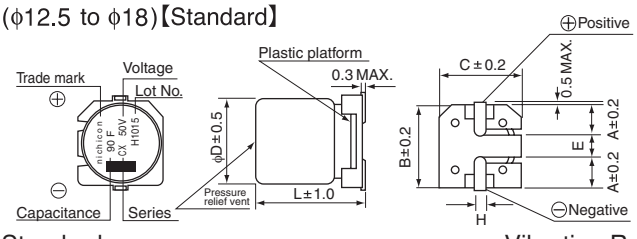



※ φ6.3 × 10 : Vibration resistant type only

### (φ8 to φ10)【Standard】




### (φ12.5 to φ18)【Standard】




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

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

Package code

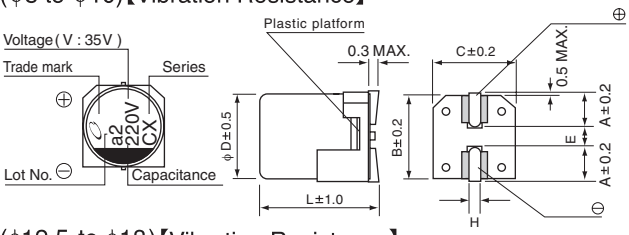
| | | |
|---|---|---|
| φ8 to 10 | Taping | GS |
| φ12.5 to 18 | Taping | MS |
| φ12.5 to 18 | Tray | ZD |

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

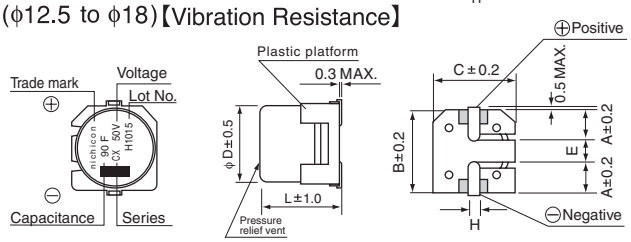
※ Configuration

| Configuration | Code |
|---|---|
| Standard | CL(φ10 or less)<br>NQ(φ12.5 or more) |
| Vibration Resistance | CS(φ10 or less)<br>NS(φ12.5 or more) |

### (φ8 to φ10)【Vibration Resistance】




### (φ12.5 to φ18)【Vibration Resistance】




### Standard

(mm)

| φDXL | 8X10 | 10X10 | 12.5X13.5 | 16X16.5, 21.5 | 18X16.5, 21.5 |
|---|---|---|---|---|---|
| A | 2.9 | 3.2 | 4.8 | 5.4 | 6.4 |
| B | 8.3 | 10.3 | 13.6 | 17.1 | 19.1 |
| C | 8.3 | 10.3 | 13.6 | 17.1 | 19.1 |
| E | 3.1 | 4.5 | 4 | 6.3 | 6.3 |
| L | 10 | 10 | 13.5 | 16.5, 21.5 | 16.5, 21.5 |
| H | 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 |

### Vibration Resistance

(mm)

| φDXL | 6.3X10 | 8X10 | 10X10 | 12.5X13.5 | 16X16.5, 21.5 | 18X16.5, 21.5 |
|---|---|---|---|---|---|---|
| A | 2.4 | 2.9 | 3.2 | 4.8 | 5.4 | 6.4 |
| B | 6.6 | 8.3 | 10.3 | 13.6 | 17.1 | 19.1 |
| C | 6.6 | 8.3 | 10.3 | 13.6 | 17.1 | 19.1 |
| E | 2.2 | 3.1 | 4.5 | 4 | 6.3 | 6.3 |
| L | 10 | 10 | 10 | 13.5 | 16.5, 21.5 | 16.5, 21.5 |
| H | 0.5 to 0.8 | 1.1 to 1.5 | 1.1 to 1.5 | 1.0 to 1.4 | 1.0 to 1.4 | 1.0 to 1.4 |

Aid electrode

### Rated Voltage

| V | 10 | 16 | 25 | 35 | 50 |
|---|---|---|---|---|---|
| Code | A | C | E | V | H |

● Dimension table in next page.

# CX series

## ■Dimensions

| Cap.(μF) \ V | Code | 10 | 16 | 25 | 35 | 50 |
|---|---|---|---|---|---|---|
| | | 1A | 1C | 1E | 1V | 1H |
| 47 | 470 | | | | ●6.3 X 10 0.25 4 15 197<br>8 X 10 0.20 3 12 270 | 8 X 10 0.25 3.5 15 270 |
| 68 | 680 | | | | 8 X 10 0.20 3 12 270 | |
| 100 | 101 | | ●6.3 X 10 0.25 4 15 197<br>8 X 10 0.20 3 12 270 | 8 X 10 0.20 3 12 270 | ●6.3 X 10 0.25 4 15 197<br>8 X 10 0.20 3 12 270 | 10 X 10 0.2 2.5 12 500 |
| 220 | 221 | 8 X 10 0.20 3 12 270 | 8 X 10 0.20 3 12 270 | 10 X 10 0.15 2 10 500 | 10 X 10 0.15 2 10 500 | |
| 330 | 331 | ●8 X 10 0.20 3 12 270<br>10 X 10 0.15 2 10 500 | 10 X 10 0.15 2 10 500 | 10 X 10 0.15 2 10 500 | | |
| 390 | 391 | | | | | 12.5 X 13.5 0.09 1.3 6.5 750 |
| 470 | 471 | 10 X 10 0.15 2 10 500 | 10 X 10 0.15 2 10 500 | | 12.5 X 13.5 0.07 1.0 5.0 750 | 16 X 16.5 0.07 0.70 3.5 1000 |
| 560 | 561 | | | | 12.5 X 13.5 0.07 1.0 5.0 750 | 16 X 16.5 0.07 0.70 3.5 1000 |
| 680 | 681 | | | | 12.5 X 13.5 0.07 1.0 5.0 750 | 18 X 16.5 0.07 0.70 3.5 1200 |
| 820 | 821 | | | 12.5 X 13.5 0.07 1.0 5.0 750 | 16 X 16.5 0.05 0.50 2.5 1200 | 18 X 16.5 0.07 0.70 3.5 1200 |
| 1000 | 102 | | | 12.5 X 13.5 0.07 1.0 5.0 750 | 16 X 16.5 0.05 0.50 2.5 1200 | 16 X 21.5 0.05 0.40 2.0 1600 |
| 1200 | 122 | | | 16 X 16.5 0.05 0.50 2.5 1200 | 18 X 16.5 0.05 0.50 2.5 1400 | 18 X 21.5 0.04 0.32 1.6 1900 |
| 1500 | 152 | | | 16 X 16.5 0.05 0.50 2.5 1200 | ●16 X 21.5 0.04 0.32 1.6 1900<br>18 X 16.5 0.05 0.50 2.5 1400 | |
| 1800 | 182 | | | 16 X 16.5 0.05 0.50 2.5 1200 | 18 X 21.5 0.035 0.28 1.4 2200 | |
| 2200 | 222 | | | 18 X 16.5 0.05 0.50 2.5 1400 | 18 X21.5 0.035 0.28 1.4 2200 | |
| 2700 | 272 | | | 16 X 21.5 0.04 0.32 1.6 1900 | | Case size ΦDXL (mm) / Initial ESR 20℃ / Initial ESR -40℃ / After endurance test 1000hours -40℃ / Rated ripple |
| 3300 | 332 | | | 18 X 21.5 0.035 0.28 1.4 2200 | | |

MAX. ESR (Ω) at 20℃ / -40℃ 100kHz, Rated ripple current(mArms) at 135℃ 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 refrow are given in page 18, 19.
- Please refer to page 3 for the minimum order quantity.

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Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

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