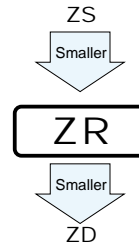


# ALUMINUM ELECTROLYTIC CAPACITORS

**ZR** series 3.95mmL MAX. Chip Type



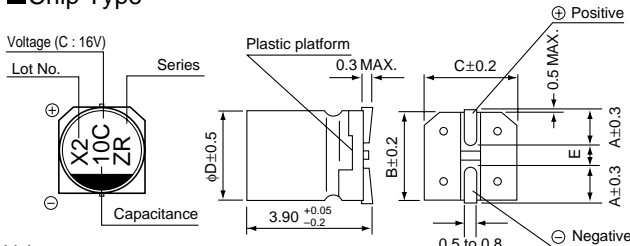
- Chip type with 3.95mmLMAX height.
- Designed for surface mounting on high density PC board.
- Applicable to automatic mounting machine using carrier tape.
- Adapted to the RoHS directive (2002/95/EC).



## Specifications

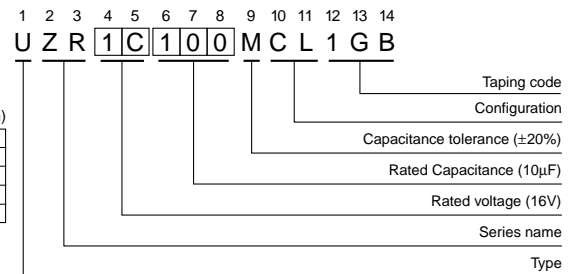
| Item                         | Performance Characteristics  |   |      |      |      |      |      |      |            |  |   |
|------------------------------|--|---|------|------|------|------|------|------|------------|--|---|
| Category Temperature Range   | -40 to +85°C   |   |      |      |      |      |      |      |            |  |   |
| Rated Voltage Range          | 4 to 50V   |   |      |      |      |      |      |      |            |  |   |
| Rated Capacitance Range      | 0.1 to 220μF   |   |      |      |      |      |      |      |            |  |   |
| Capacitance Tolerance        | ±20% at 120Hz, 20°C  |   |      |      |      |      |      |      |            |  |   |
| Leakage Current              | After 2 minutes' application of rated voltage, leakage current is not more than 0.01 CV or 3 (μA), whichever is greater.   |   |      |      |      |      |      |      |            |  |   |
| tan δ                        | Rated voltage (V)  | 4                                       | 6.3  | 10   | 16   | 25   | 35   | 50   | 120Hz 20°C |  |   |
|                              | tan δ (MAX.)   | 0.50                                    | 0.30 | 0.24 | 0.19 | 0.16 | 0.14 | 0.14 |            |  |   |
| Stability at Low Temperature | Rated voltage (V)  | 4                                       | 6.3  | 10   | 16   | 25   | 35   | 50   | 120Hz      |  |   |
|                              | Impedance ratio ZT / Z20 (MAX.)  | Z-25°C / Z+20°C                         | 7    | 4    | 3    | 2    | 2    | 2    |            |  | 2 |
|                              |  | Z-40°C / Z+20°C                         | 15   | 8    | 8    | 4    | 4    | 3    |            |  | 3 |
| Endurance                    | After 1000 hours' application of rated voltage at 85°C, capacitors meet the characteristic requirements listed at right.   |   |      |      |      |      |      |      |            |  |   |
|                              | Capacitance change   | Within ±30% of initial value            |      |      |      |      |      |      |            |  |   |
|                              | tan δ  | 300% or less of initial specified value |      |      |      |      |      |      |            |  |   |
| Shelf Life                   | After storing the capacitors under no load at 85°C for 1000 hours, and after performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they will meet the specified value for endurance characteristics listed above. |   |      |      |      |      |      |      |            |  |   |
|                              | Capacitance change   | Within ±10% of initial value            |      |      |      |      |      |      |            |  |   |
|                              | tan δ  | Initial specified value or less         |      |      |      |      |      |      |            |  |   |
| Resistance to soldering heat | The capacitors shall be kept on the hot plate maintained at 250°C for 30 seconds. After removing from the hot plate and restored at room temperature, they meet the characteristic requirements listed at right.                   |   |      |      |      |      |      |      |            |  |   |
|                              | Leakage current  | Initial specified value or less         |      |      |      |      |      |      |            |  |   |
|                              | Marking  | Black print on the case top.            |      |      |      |      |      |      |            |  |   |

## Chip Type



| Voltage | V | 4 | 6.3 | 10 | 16 | 25 | 35 | 50 |
|---------|---|---|-----|----|----|----|----|----|
| Code    | g | j | A   | C  | E  | V  | H  |    |

## Type numbering system (Example : 16V 10μF)



|    | (mm) |     |     |
|----|------|-----|-----|
| φD | 4    | 5   | 6.3 |
| A  | 1.8  | 2.1 | 2.4 |
| B  | 4.3  | 5.3 | 6.6 |
| C  | 4.3  | 5.3 | 6.6 |
| E  | 1.0  | 1.3 | 2.2 |

## Dimensions

| Cap. (μF) | Code | V    |    | 4   |    | 6.3 |    | 10  |    | 16  |    | 25  |    | 35  |    | 50 |     |
|-----------|------|------|----|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|----|-----|
|           |      | Code | 0G | 0J  | 1A | 1C  | 1E | 1V  | 1H |     |    |     |    |     |    |    |     |
| 0.1       | 0R1  |      |    |     |    |     |    |     |    |     |    |     |    |     |    | 4  | 1.0 |
| 0.22      | R22  |      |    |     |    |     |    |     |    |     |    |     |    |     |    | 4  | 2.0 |
| 0.33      | R33  |      |    |     |    |     |    |     |    |     |    |     |    |     |    | 4  | 2.8 |
| 0.47      | R47  |      |    |     |    |     |    |     |    |     |    |     |    |     |    | 4  | 4.0 |
| 1         | 010  |      |    |     |    |     |    |     |    |     |    |     |    |     |    | 4  | 8.4 |
| 2.2       | 2R2  |      |    |     |    |     |    |     |    |     |    |     |    |     |    | 4  | 13  |
| 3.3       | 3R3  |      |    |     |    |     |    |     |    |     |    |     |    |     |    | 4  | 17  |
| 4.7       | 4R7  |      |    |     |    |     |    |     |    |     |    |     |    |     |    | 4  | 20  |
| 10        | 100  |      |    |     |    |     |    |     |    |     |    |     |    |     |    | 4  | 33  |
| 22        | 220  |      |    |     |    |     |    |     |    |     |    |     |    |     |    | 4  | 33  |
| 33        | 330  | 4    | 28 | 5   | 37 | 5   | 41 | 6.3 | 49 | 6.3 | 52 | 6.3 | 42 | 6.3 | 46 |    |     |
| 47        | 470  | 4    | 33 | 5   | 45 | 6.3 | 52 | 6.3 | 58 |     |    |     |    |     |    |    |     |
| 100       | 101  | 5    | 56 | 6.3 | 70 |     |    |     |    |     |    |     |    |     |    |    |     |
| 220       | 221  | 6.3  | 96 |     |    |     |    |     |    |     |    |     |    |     |    |    |     |

Rated Ripple (mArms) at 85°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 are given in page 18.
- Please contact us for the soldering by reflow.
- Please refer to page 3 for the minimum order quantity.