# **ALUMINUM ELECTROLYTIC CAPACITORS**









- ◆ Chip type with 3.95mmLMAX height. Operating over wide temperature range of -40 to +105°C.
- Designed for surface mounting on high density PC board.
- Applicable to automatic mounting machine fed with carrier tape.
- Compliant to the RoHS directive (2011/65/EU).

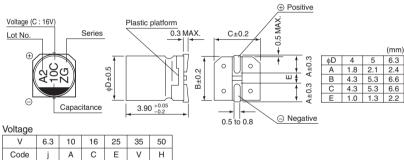




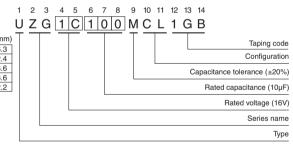
### ■ Specifications

| Item                                  | Performance Characteristics  |                 |      |      |      |     |   |                                |                 |      |            |  |
|---------------------------------------|--|-----------------|------|------|------|-----|---|--------------------------------|-----------------|------|------------|--|
| Category Temperature Range            | -40 to +105°C  |                 |      |      |      |     |   |                                |                 |      |            |  |
| Rated Voltage Range                   | 6.3 to 50V   |                 |      |      |      |     |   |                                |                 |      |            |  |
| Rated Capacitance Range               | 0.1 to 100μF   |                 |      |      |      |     |   |                                |                 |      |            |  |
| 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.   |                 |      |      |      |     |   |                                | ver is greater. |      |            |  |
| Tangent of loss angle (tan $\delta$ ) | Rated voltage (V)  |                 | 6.3  | 10   | 16   | 25  | 5   | 35                             |                 | 50   | 120Hz 20°C |  |
|                                       | tan δ (MAX.)   |                 | 0.38 | 0.32 | 0.20 | 0.1 | 6 0.14  |                                |                 | 0.14 |            |  |
|                                       | Rated voltage (V)  |                 | 6.3  | 10   | 16   | 25  | 5   | 35                             |                 | 50   | 120Hz      |  |
| Stability at Low Temperature          | Impedance ratio<br>ZT / Z20 (MAX.)   | Z-25°C / Z+20°C | 6    | 5    | 3    | 3   |   | 3                              |                 | 3    |            |  |
| Temperature                           |  | Z-40°C / Z+20°C | 10   | 10   | 6    | 6   |   | 4                              |                 | 4    |            |  |
| Endurance                             | The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 1000 hours at 105°C.  Capacitance change Within ±30% of the initial capacitan tan δ 300% or less than the initial specific tan δ Leakage current Less than or equal to the initial specific tan δ 100% or less than or equal to the initial specific tan δ 100% or less than or equal to the initial specific tan δ 100% or less than or equal to the initial specific tan δ 100% or less than the initial specific tan δ 100% or less than the initial specific tan δ 100% or less than the initial specific tan δ 100% or less than the initial specific tan δ 100% or less than the initial specific tan δ 100% or less than the initial capacitan tan δ 100% or less than the initial capacitan tan δ 100% or less than the initial capacitan tan δ 100% or less than the initial specific tan δ 100% or less than th |                 |      |      |      |     |   | an 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.  |                 |      |      |      |     |   |                                |                 |      |            |  |
| Resistance to soldering heat          | maintained at 250°C. The capacitors shall meet the characteristic requirements listed at right when they are removed from the plate and tan δ Less than or equal to the initial speci  |                 |      |      |      |     | ±10% of the initial capacitance value<br>an or equal to the initial specified value<br>an or equal to the initial specified value |                                |                 |      |            |  |
| Marking                               | Black print on the case top.   |                 |      |      |      |     |   |                                |                 |      |            |  |

## ■Chip Type



## Type numbering system (Example : 16V $10\mu F$ )



### Dimensions

| V              |     | 6.3 |    | 10  |        | 16  |      | 25  |    | 35  |        | 50                   |              |
|----------------|-----|-----|----|-----|--------|-----|------|-----|----|-----|--------|----------------------|--------------|
| Cap. (µF) Code |     | 0J  |    | 1A  |        | 1C  |      | 1E  |    | 1V  |        | 1H                   |              |
| 0.1            | 0R1 |     |    |     |        |     |      |     |    |     |        | 4                    | 0.9          |
| 0.22           | R22 |     |    |     | i<br>i |     | İ    |     | İ  |     |        | 4                    | 2.2          |
| 0.33           | R33 |     |    |     | <br>   |     | <br> |     |    |     |        | 4                    | 2.8          |
| 0.47           | R47 |     |    |     |        |     |      |     |    |     |        | 4                    | 3.3          |
| 1              | 010 |     |    |     | i      |     | į    |     | İ  |     |        | 4                    | 5.4          |
| 2.2            | 2R2 |     |    |     |        |     | !    |     | !  |     | !      | 4                    | 9.6          |
| 3.3            | 3R3 |     |    |     |        |     |      |     |    |     |        | 4                    | 12           |
| 4.7            | 4R7 |     |    |     |        |     | i    | 4   | 11 | 4   | 13     | 5                    | 16           |
| 10             | 100 |     |    |     | l<br>I | 4   | 16   | 5   | 20 | 5   | 22     | 6.3                  | 26           |
| 22             | 220 | 4   | 19 | 5   | 24     | 5   | 26   | 6.3 | 33 | 6.3 | 36     |                      |              |
| 33             | 330 | 5   | 26 | 5   | 30     | 6.3 | 35   | 6.3 | 42 |     | i<br>i |                      | i            |
| 47             | 470 | 5   | 32 | 6.3 | 40     | 6.3 | 44   |     | 1  |     | !      |                      |              |
| 100            | 101 | 6.3 | 52 |     |        |     |      |     | İ  |     |        | Case size<br>φD (mm) | Rated ripple |

Rated ripple current (mArms) at 105°C 120Hz

#### Frequency coefficient of rated ripple current

| 1    | <b>,</b> |       |        | 1. 1   |       |                |  |  |  |  |
|------|----------|-------|--------|--------|-------|----------------|--|--|--|--|
| Fred | quency   | 50 Hz | 120 Hz | 300 Hz | 1 kHz | 10 kHz or more |  |  |  |  |
| Coe  | fficient | 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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106SML050M EDK226M035A9DAA EDT476M050S9MAA EEV-HA0J152P EEV-HA1A471UP EEV-HA1C220WR EEV-HA1C471P

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TYEH1V337H10MTR EDT107M035S9MAA BMVK100ADA330MF60G BMVK160ADA4R7MD60G NACK222M10V12.5X14TR13F

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