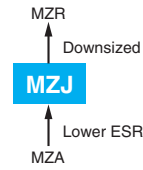


# Alchip™-MZJ Series

- Lower ESR, 2,000 to 5,000 hours at 105°C
- Rated voltage range : 6.3 to 50V
- Nominal capacitance range : 22 to 10,000μF
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- Vibration resistant structure
- RoHS2 Compliant
- AEC-Q200 compliant : Please contact Chemi-Con for more details, test data, information.



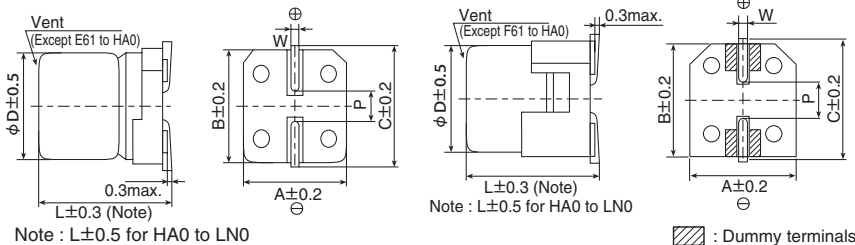
## SPECIFICATIONS

| Items                                                                                            | Characteristics                                                                                                                                                                                                                                                                         |                                                                                                                                                                        |      |      |      |      |      |                  |  |
|--------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------|------|------|------|------------------|--|
| <b>Category</b>                                                                                  | -55 to +105°C                                                                                                                                                                                                                                                                           |                                                                                                                                                                        |      |      |      |      |      |                  |  |
| <b>Temperature Range</b>                                                                         | -55 to +105°C                                                                                                                                                                                                                                                                           |                                                                                                                                                                        |      |      |      |      |      |                  |  |
| <b>Rated Voltage Range</b>                                                                       | 6.3 to 50V <sub>dc</sub>                                                                                                                                                                                                                                                                |                                                                                                                                                                        |      |      |      |      |      |                  |  |
| <b>Capacitance Tolerance</b>                                                                     | ±20% (M) (at 20°C, 120Hz)                                                                                                                                                                                                                                                               |                                                                                                                                                                        |      |      |      |      |      |                  |  |
| <b>Leakage Current</b>                                                                           | I=0.01CV or 3μA, whichever is greater. (at 20°C after 2 minutes)<br>Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V)                                                                                                                           |                                                                                                                                                                        |      |      |      |      |      |                  |  |
| <b>Dissipation Factor (tan δ)</b>                                                                | Rated voltage (V <sub>dc</sub> )                                                                                                                                                                                                                                                        | 6.3V                                                                                                                                                                   | 10V  | 16V  | 25V  | 35V  | 50V  | (at 20°C, 120Hz) |  |
|                                                                                                  | tan δ (Max.)                                                                                                                                                                                                                                                                            | 0.26                                                                                                                                                                   | 0.19 | 0.16 | 0.14 | 0.12 | 0.12 |                  |  |
| When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. |                                                                                                                                                                                                                                                                                         |                                                                                                                                                                        |      |      |      |      |      |                  |  |
| <b>Low Temperature Characteristics (Max. Impedance Ratio)</b>                                    | Rated voltage (V <sub>dc</sub> )                                                                                                                                                                                                                                                        | 6.3V                                                                                                                                                                   | 10V  | 16V  | 25V  | 35V  | 50V  | (at 120Hz)       |  |
|                                                                                                  | Z(-25°C)/Z(+20°C)                                                                                                                                                                                                                                                                       | 2                                                                                                                                                                      | 2    | 2    | 2    | 2    | 2    |                  |  |
|                                                                                                  | Z(-40°C)/Z(+20°C)                                                                                                                                                                                                                                                                       | 3                                                                                                                                                                      | 3    | 3    | 3    | 3    | 3    |                  |  |
|                                                                                                  | Z(-55°C)/Z(+20°C)                                                                                                                                                                                                                                                                       | 4                                                                                                                                                                      | 4    | 4    | 3    | 3    | 3    |                  |  |
| <b>Endurance</b>                                                                                 | The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for specified time at 105°C.                                                                                                                                |                                                                                                                                                                        |      |      |      |      |      |                  |  |
|                                                                                                  | Time                                                                                                                                                                                                                                                                                    | E61 to JA0 : 2,000 hours                                                                                                                                               |      |      |      |      |      |                  |  |
|                                                                                                  |                                                                                                                                                                                                                                                                                         | KE0 to LN0 : 5,000 hours                                                                                                                                               |      |      |      |      |      |                  |  |
|                                                                                                  | Capacitance change                                                                                                                                                                                                                                                                      | ≤ ±30% of the initial value                                                                                                                                            |      |      |      |      |      |                  |  |
|                                                                                                  | D.F. (tan δ)                                                                                                                                                                                                                                                                            | ≤200% of the initial specified value                                                                                                                                   |      |      |      |      |      |                  |  |
|                                                                                                  | Leakage current                                                                                                                                                                                                                                                                         | ≤The initial specified value                                                                                                                                           |      |      |      |      |      |                  |  |
| <b>Shelf Life</b>                                                                                | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 105°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4. |                                                                                                                                                                        |      |      |      |      |      |                  |  |
|                                                                                                  | Capacitance change                                                                                                                                                                                                                                                                      | ≤ ±30% of the initial value                                                                                                                                            |      |      |      |      |      |                  |  |
|                                                                                                  | D.F. (tan δ)                                                                                                                                                                                                                                                                            | ≤200% of the initial specified value                                                                                                                                   |      |      |      |      |      |                  |  |
|                                                                                                  | Leakage current                                                                                                                                                                                                                                                                         | ≤The initial specified value                                                                                                                                           |      |      |      |      |      |                  |  |
| <b>Surge Voltage Test</b>                                                                        | The capacitors shall be subjected to 1,000 cycles each consisting of charging with the specified surge voltage for 30±5 seconds through a protective resistor (as required for RC=0.1±0.05sec) and open-circuiting for 5.5 minutes at a room temperature of 15 to 35°C.                 |                                                                                                                                                                        |      |      |      |      |      |                  |  |
|                                                                                                  | Rated voltage (V <sub>dc</sub> )                                                                                                                                                                                                                                                        | 6.3                                                                                                                                                                    | 10   | 16   | 25   | 35   | 50   |                  |  |
|                                                                                                  | Surge voltage (V <sub>dc</sub> )                                                                                                                                                                                                                                                        | 7.2                                                                                                                                                                    | 12   | 18   | 29   | 40   | 58   |                  |  |
|                                                                                                  | Appearance                                                                                                                                                                                                                                                                              | No significant damage                                                                                                                                                  |      |      |      |      |      |                  |  |
|                                                                                                  | Capacitance change                                                                                                                                                                                                                                                                      | ≤ ±20% of the initial value                                                                                                                                            |      |      |      |      |      |                  |  |
|                                                                                                  | D.F. (tan δ)                                                                                                                                                                                                                                                                            | ≤200% of the initial specified value                                                                                                                                   |      |      |      |      |      |                  |  |
|                                                                                                  | Leakage current                                                                                                                                                                                                                                                                         | ≤The initial specified value                                                                                                                                           |      |      |      |      |      |                  |  |
|                                                                                                  | (Caution)                                                                                                                                                                                                                                                                               | Surge Voltage Test intends to evaluate capacitors in durability of an exceptional excessive voltage under specific conditions. It does not imply long-term use at all. |      |      |      |      |      |                  |  |

## DIMENSIONS [mm]

- Terminal Code : A
- Terminal Code : G (Vibration resistant structure)

- Size code : E61 to LN0
- Size code : F61 to LN0



| Size code | φD   | L    | A    | B    | C    | W          | P   |
|-----------|------|------|------|------|------|------------|-----|
| E61       | 5    | 5.8  | 5.3  | 5.3  | 5.9  | 0.5 to 0.8 | 1.4 |
| F61       | 6.3  | 5.8  | 6.6  | 6.6  | 7.2  | 0.5 to 0.8 | 1.9 |
| F80       | 6.3  | 7.7  | 6.6  | 6.6  | 7.2  | 0.5 to 0.8 | 1.9 |
| HA0       | 8    | 10.0 | 8.3  | 8.3  | 9.0  | 0.7 to 1.1 | 3.1 |
| JA0       | 10   | 10.0 | 10.3 | 10.3 | 11.0 | 0.7 to 1.1 | 4.5 |
| KE0       | 12.5 | 13.5 | 13.0 | 13.0 | 13.7 | 1.0 to 1.3 | 4.2 |
| KG5       | 12.5 | 16.0 | 13.0 | 13.0 | 13.7 | 1.0 to 1.3 | 4.2 |
| LH0       | 16   | 16.5 | 17.0 | 17.0 | 18.0 | 1.0 to 1.3 | 6.5 |
| LN0       | 16   | 21.5 | 17.0 | 17.0 | 18.0 | 1.0 to 1.3 | 6.5 |

## MARKING

EX) 35V220μF

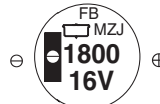


- Rated voltage symbol (E61 to JA0)

| Rated voltage (V <sub>dc</sub> ) | 6.3 | 10 | 16 | 25 | 35 |
|----------------------------------|-----|----|----|----|----|
| Symbol                           | j   | A  | C  | E  | V  |

KE0 to LN0

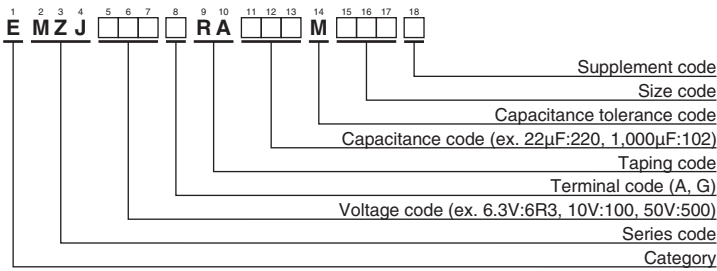
EX) 16V1,800μF



Applying voltage over the rated voltages causes the capacitors to have short lifetime. Besides, applying voltage over the specified surge voltages may cause to have short circuit failure. A protection circuit should be used if applied voltage will exceed the rated voltages.

Alchip™-MZJ Series

◆PART NUMBERING SYSTEM



Please refer to "Product code guide (surface mount type)"

◆STANDARD RATINGS

| WV (V <sub>dc</sub> ) | Cap (μF) | Size code | ESR (Ω max./20°C, 100kHz) | Rated ripple current (mA <sub>rms</sub> /105°C, 100kHz) | Part No.           | WV (V <sub>dc</sub> ) | Cap (μF) | Size code | ESR (Ω max./20°C, 100kHz) | Rated ripple current (mA <sub>rms</sub> /105°C, 100kHz) | Part No.           |
|-----------------------|----------|-----------|---------------------------|---------------------------------------------------------|--------------------|-----------------------|----------|-----------|---------------------------|---------------------------------------------------------|--------------------|
| 6.3                   | 100      | E61       | 0.36                      | 240                                                     | EMZJ6R3ARA101ME61G | 25                    | 33       | E61       | 0.36                      | 240                                                     | EMZJ250ARA330ME61G |
|                       | 220      | F61       | 0.26                      | 300                                                     | EMZJ6R3□RA221MF61G |                       | 33       | F61       | 0.26                      | 300                                                     | EMZJ250□RA330MF61G |
|                       | 330      | F80       | 0.16                      | 600                                                     | EMZJ6R3□RA331MF80G |                       | 47       | F61       | 0.26                      | 300                                                     | EMZJ250□RA470MF61G |
|                       | 1,000    | HA0       | 0.08                      | 850                                                     | EMZJ6R3□RA102MHA0G |                       | 68       | F61       | 0.26                      | 300                                                     | EMZJ250□RA680MF61G |
|                       | 1,500    | JA0       | 0.06                      | 1,190                                                   | EMZJ6R3□RA152MJA0G |                       | 100      | F80       | 0.16                      | 600                                                     | EMZJ250□RA101MF80G |
|                       | 1,800    | JA0       | 0.06                      | 1,190                                                   | EMZJ6R3□RA182MJA0G |                       | 330      | HA0       | 0.08                      | 850                                                     | EMZJ250□RA331MHA0G |
|                       | 3,300    | KE0       | 0.051                     | 1,210                                                   | EMZJ6R3□RA332MKE0S |                       | 470      | JA0       | 0.06                      | 1,190                                                   | EMZJ250□RA471MJA0G |
|                       | 3,900    | KG5       | 0.044                     | 1,420                                                   | EMZJ6R3□RA392MKG5S |                       | 560      | JA0       | 0.06                      | 1,190                                                   | EMZJ250□RA561MJA0G |
|                       | 6,800    | LH0       | 0.035                     | 1,850                                                   | EMZJ6R3□RA682MLH0S |                       | 1,200    | KE0       | 0.051                     | 1,210                                                   | EMZJ250□RA122MKE0S |
|                       | 10,000   | LN0       | 0.026                     | 2,330                                                   | EMZJ6R3□RA103MLN0S |                       | 1,500    | KG5       | 0.044                     | 1,420                                                   | EMZJ250□RA152MKG5S |
| 10                    | 150      | F61       | 0.26                      | 300                                                     | EMZJ100□RA151MF61G | 35                    | 22       | E61       | 0.36                      | 240                                                     | EMZJ350ARA220ME61G |
|                       | 680      | HA0       | 0.08                      | 850                                                     | EMZJ100□RA681MHA0G |                       | 33       | F61       | 0.26                      | 300                                                     | EMZJ350□RA330MF61G |
|                       | 1,000    | JA0       | 0.06                      | 1,190                                                   | EMZJ100□RA102MJA0G |                       | 47       | F61       | 0.26                      | 300                                                     | EMZJ350□RA470MF61G |
|                       | 1,200    | JA0       | 0.06                      | 1,190                                                   | EMZJ100□RA122MJA0G |                       | 68       | F61       | 0.26                      | 300                                                     | EMZJ350□RA680MF61G |
|                       | 2,200    | KE0       | 0.051                     | 1,210                                                   | EMZJ100□RA222MKE0S |                       | 100      | F80       | 0.16                      | 600                                                     | EMZJ350□RA101MF80G |
|                       | 2,700    | KG5       | 0.044                     | 1,420                                                   | EMZJ100□RA272MKG5S |                       | 100      | HA0       | 0.08                      | 850                                                     | EMZJ350□RA101MHA0G |
|                       | 4,700    | LH0       | 0.035                     | 1,850                                                   | EMZJ100□RA472MLH0S |                       | 150      | HA0       | 0.08                      | 850                                                     | EMZJ350□RA151MHA0G |
| 6,800                 | LN0      | 0.026     | 2,330                     | EMZJ100□RA682MLN0S                                      | 220                | HA0                   | 0.08     | 850       | EMZJ350□RA221MHA0G        |                                                         |                    |
| 16                    | 47       | E61       | 0.36                      | 240                                                     | EMZJ160ARA470ME61G | 50                    | 390      | JA0       | 0.06                      | 1,190                                                   | EMZJ500□RA391MKE0S |
|                       | 100      | F61       | 0.26                      | 300                                                     | EMZJ160□RA101MF61G |                       | 470      | KG5       | 0.092                     | 1,120                                                   | EMZJ500□RA471MKG5S |
|                       | 150      | F80       | 0.16                      | 600                                                     | EMZJ160□RA151MF80G |                       | 1,000    | LH0       | 0.073                     | 1,660                                                   | EMZJ500□RA102MLH0S |
|                       | 220      | F80       | 0.16                      | 600                                                     | EMZJ160□RA221MF80G |                       | 1,200    | LN0       | 0.050                     | 1,920                                                   | EMZJ500□RA122MLN0S |
|                       | 470      | HA0       | 0.08                      | 850                                                     | EMZJ160□RA471MHA0G |                       |          |           |                           |                                                         |                    |
|                       | 680      | JA0       | 0.06                      | 1,190                                                   | EMZJ160□RA681MJA0G |                       |          |           |                           |                                                         |                    |
|                       | 820      | JA0       | 0.06                      | 1,190                                                   | EMZJ160□RA821MJA0G |                       |          |           |                           |                                                         |                    |
|                       | 1,800    | KE0       | 0.051                     | 1,210                                                   | EMZJ160□RA182MKE0S |                       |          |           |                           |                                                         |                    |
|                       | 2,200    | KG5       | 0.044                     | 1,420                                                   | EMZJ160□RA222MKG5S |                       |          |           |                           |                                                         |                    |
|                       | 3,900    | LH0       | 0.035                     | 1,850                                                   | EMZJ160□RA392MLH0S |                       |          |           |                           |                                                         |                    |
| 5,600                 | LN0      | 0.026     | 2,330                     | EMZJ160□RA562MLN0S                                      |                    |                       |          |           |                           |                                                         |                    |
| 25                    | 22       | E61       | 0.36                      | 240                                                     | EMZJ250ARA220ME61G |                       |          |           |                           |                                                         |                    |

□ : Enter the appropriate terminal code.

◆RATED RIPPLE CURRENT MULTIPLIERS

● Frequency Multipliers

| Size code  | Capacitance(μF) | Frequency(Hz) |      |      |      |
|------------|-----------------|---------------|------|------|------|
|            |                 | 120           | 1k   | 10k  | 100k |
| E61 to JA0 | 22 to 150       | 0.40          | 0.75 | 0.90 | 1.00 |
|            | 220 to 560      | 0.50          | 0.85 | 0.94 | 1.00 |
|            | 680 to 1,800    | 0.60          | 0.87 | 0.95 | 1.00 |
| KE0 to LN0 | 390 to 470      | 0.50          | 0.85 | 0.94 | 1.00 |
|            | 680 to 1,800    | 0.60          | 0.87 | 0.95 | 1.00 |
|            | 2,200 to 3,300  | 0.75          | 0.90 | 0.95 | 1.00 |
|            | 3,900 to 10,000 | 0.85          | 0.95 | 0.98 | 1.00 |

The deterioration of aluminum electrolytic capacitors accelerates their life due to the internal heating produced by ripple current. For details, refer to Section "5-3 Ripple Current Effect on Lifetime" in the catalog, Technical Note.



- Always read "Notes on Use" before using the product in order to enable you to use the product correctly and prevent any faults and accidents from occurring.
- Request the Product Specification on the product of NIPPON CHEMI-CON CORPORATION to refer to it as well as this brochure prior to the order of the products. Some specific notes on use of the ordered product may be described in the specifications.
- The products listed in this catalog are designed and manufactured for general electronics equipment use and are not intended for use in applications that can adversely affect human life; where the malfunction of equipment may cause damage to life or property. In addition, our products are not intended to be used in specific applications that may cause a major social impact. Please consult with us in advance of usage of our products in the following listed applications. ① Aerospace equipment ② Power generation equipment such as thermal power, nuclear power etc. ③ Medical equipment ④ Transport equipment (automobiles, trains, ships, etc.) ⑤ Transportation control equipment ⑥ Disaster prevention / crime prevention equipment ⑦ Highly publicized information processing equipment ⑧ Submarine equipment ⑨ Other applications that are not considered general-purpose applications.
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[Part Numbering System](#)

[Part Numbering System \(Appendix\)](#)

[Standardization](#)

[Available Items by Manufacturing Locations](#)

[Environmental Measures](#)

[Technical Note](#)

[Precautions and Guidelines](#)

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[Taping, Lead-preforming and Packaging](#)

[Available Terminals for Snap-in and Screw Mount Type](#)

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