

# Alchip™-MZR Series

- Downsizing and Lower ESR, 2,000hours at 105°C
- Rated voltage range : 6.3 to 50V, Nominal capacitance range : 22 to 2,200μF
- Solvent resistant type(see PRECAUTIONS AND GUIDELINES)
- Vibration resistance structure
- RoHS2 Compliant
- AEC-Q200 compliant : Please contact Chemi-Con for more details, test data, information.

MZR

↓  
Downsized  
MZJ



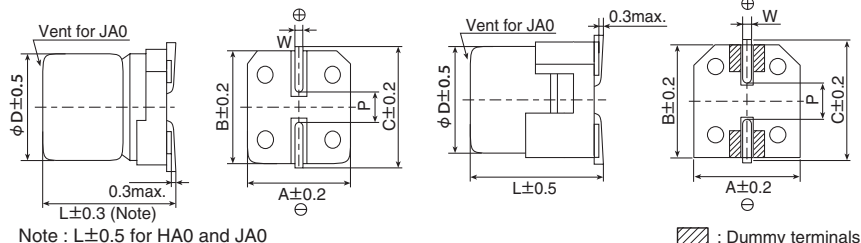
## SPECIFICATIONS

| Items                                                  | Characteristics                                                                                                                                                                                                                                                                         |                                      |      |      |      |      |      |                  |
|--------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|------|------|------|------|------|------------------|
| Category                                               | -55 to +105°C                                                                                                                                                                                                                                                                           |                                      |      |      |      |      |      |                  |
| Temperature Range                                      |                                                                                                                                                                                                                                                                                         |                                      |      |      |      |      |      |                  |
| Rated Voltage Range                                    | 6.3 to 50V <sub>dc</sub>                                                                                                                                                                                                                                                                |                                      |      |      |      |      |      |                  |
| Capacitance Tolerance                                  | ± 20% (M) (at 20°C, 120Hz)                                                                                                                                                                                                                                                              |                                      |      |      |      |      |      |                  |
| Leakage Current                                        | I=0.01CV or 3μA, whichever is greater.<br>Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20°C after 2 minutes)                                                                                                                           |                                      |      |      |      |      |      |                  |
| Dissipation Factor (tan δ)                             | 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 | 0.10 |                  |
| Low Temperature Characteristics (Max. Impedance Ratio) | 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    |                  |
| Endurance                                              | The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for 2,000 hours at 105°C.                                                                                                                                   |                                      |      |      |      |      |      |                  |
|                                                        | Capacitance change                                                                                                                                                                                                                                                                      | ≤ ±30% of the initial value          |      |      |      |      |      |                  |
|                                                        | D.F. (tan δ)                                                                                                                                                                                                                                                                            | ≤200% of the initial specified value |      |      |      |      |      |                  |
|                                                        | Leakage current                                                                                                                                                                                                                                                                         | ≤The initial specified value         |      |      |      |      |      |                  |
| Shelf Life                                             | 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         |      |      |      |      |      |                  |
| Surge Voltage Test                                     | 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
- Size code : E61 to JA0

- Terminal Code : G(Vibration resistant structure)
- Size code : HA0 and JA0



| Size code | D   | 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 |

## MARKING

EX) 35V330μF



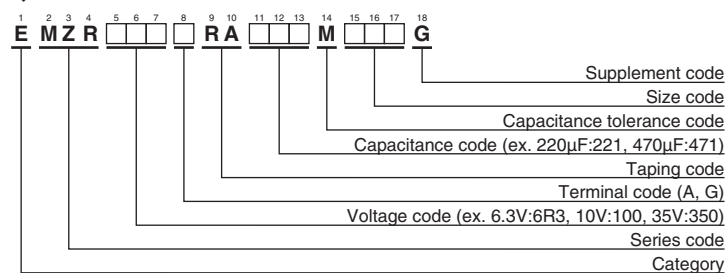
- Rated voltage symbol

| Rated voltage (V <sub>dc</sub> ) | 6.3 | 10 | 16 | 25 | 35 | 50 |
|----------------------------------|-----|----|----|----|----|----|
| Symbol                           | j   | A  | C  | E  | V  | H  |

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™-MZR Series

◆PART NUMBERING SYSTEM



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

◆STANDARD RATINGS

| WV<br>(V <sub>dc</sub> ) | Cap<br>(μF) | Size code | tan δ | ESR<br>(Ω max./20°C, 100kHz) | Rated ripple current<br>(mA rms/105°C, 100kHz) | Part No.           |
|--------------------------|-------------|-----------|-------|------------------------------|------------------------------------------------|--------------------|
| 6.3                      | 220         | E61       | 0.26  | 0.36                         | 240                                            | EMZR6R3ARA221ME61G |
|                          | 330         | F61       | 0.26  | 0.26                         | 300                                            | EMZR6R3ARA331MF61G |
|                          | 680         | F80       | 0.26  | 0.16                         | 600                                            | EMZR6R3ARA681MF80G |
|                          | 1,500       | HA0       | 0.26  | 0.08                         | 850                                            | EMZR6R3□RA152MHA0G |
|                          | 2,200       | JA0       | 0.26  | 0.06                         | 1,190                                          | EMZR6R3□RA222MJA0G |
| 10                       | 150         | E61       | 0.19  | 0.36                         | 240                                            | EMZR100ARA151ME61G |
|                          | 220         | F61       | 0.19  | 0.26                         | 300                                            | EMZR100ARA221MF61G |
|                          | 470         | F80       | 0.19  | 0.16                         | 600                                            | EMZR100ARA471MF80G |
|                          | 1,000       | HA0       | 0.19  | 0.08                         | 850                                            | EMZR100□RA102MHA0G |
|                          | 1,500       | JA0       | 0.19  | 0.06                         | 1,190                                          | EMZR100□RA152MJA0G |
| 16                       | 100         | E61       | 0.16  | 0.36                         | 240                                            | EMZR160ARA101ME61G |
|                          | 220         | F61       | 0.16  | 0.26                         | 300                                            | EMZR160ARA221MF61G |
|                          | 330         | F80       | 0.16  | 0.16                         | 600                                            | EMZR160ARA331MF80G |
|                          | 680         | HA0       | 0.16  | 0.08                         | 850                                            | EMZR160□RA681MHA0G |
|                          | 1,000       | JA0       | 0.16  | 0.06                         | 1,190                                          | EMZR160□RA102MJA0G |
| 25                       | 68          | E61       | 0.14  | 0.36                         | 240                                            | EMZR250ARA680ME61G |
|                          | 100         | F61       | 0.14  | 0.26                         | 300                                            | EMZR250ARA101MF61G |
|                          | 220         | F80       | 0.14  | 0.16                         | 600                                            | EMZR250ARA221MF80G |
|                          | 470         | HA0       | 0.14  | 0.08                         | 850                                            | EMZR250□RA471MHA0G |
|                          | 820         | JA0       | 0.14  | 0.06                         | 1,190                                          | EMZR250□RA821MJA0G |
| 35                       | 47          | E61       | 0.12  | 0.36                         | 240                                            | EMZR350ARA470ME61G |
|                          | 100         | F61       | 0.12  | 0.26                         | 300                                            | EMZR350ARA101MF61G |
|                          | 150         | F80       | 0.12  | 0.16                         | 600                                            | EMZR350ARA151MF80G |
|                          | 330         | HA0       | 0.12  | 0.08                         | 850                                            | EMZR350□RA331MHA0G |
|                          | 560         | JA0       | 0.12  | 0.06                         | 1,190                                          | EMZR350□RA561MJA0G |
| 50                       | 22          | E61       | 0.10  | 0.88                         | 165                                            | EMZR500ARA220ME61G |
|                          | 47          | F61       | 0.10  | 0.68                         | 195                                            | EMZR500ARA470MF61G |
|                          | 100         | F80       | 0.10  | 0.34                         | 350                                            | EMZR500ARA101MF80G |
|                          | 220         | HA0       | 0.10  | 0.18                         | 670                                            | EMZR500□RA221MHA0G |
|                          | 330         | JA0       | 0.10  | 0.12                         | 900                                            | EMZR500□RA331MJA0G |

□ : Enter the appropriate terminal code.

◆RATED RIPPLE CURRENT MULTIPLIERS

●Frequency Multipliers

| Capacitance(μF) | Frequency(Hz) | 120  | 1k   | 10k  | 100k |
|-----------------|---------------|------|------|------|------|
| 22 to 150       |               | 0.40 | 0.75 | 0.90 | 1.00 |
| 220 to 560      |               | 0.50 | 0.85 | 0.94 | 1.00 |
| 680 to 2,200    |               | 0.60 | 0.87 | 0.95 | 1.00 |

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.