

# Alchip™-MZA Series

Upgrade!

- Endurance : 2,000 to 5,000 hours at 105°C
- Low impedance
- Solvent resistant type(see PRECAUTIONS AND GUIDELINES)
- Vibration resistant structure
- RoHS Compliant

MZA  
↑ Lower Z  
MVY P76

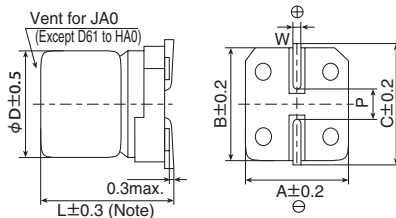


## SPECIFICATIONS

| Items                                                  | Characteristics                                                                                                                                                                                                                                                                                                                                                               |
|--------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Category                                               |                                                                                                                                                                                                                                                                                                                                                                               |
| Temperature Range                                      | -55 to +105°C                                                                                                                                                                                                                                                                                                                                                                 |
| Rated Voltage Range                                    | 6.3 to 100V <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 (tanδ)                              | Rated voltage(V <sub>dc</sub> ) 6.3V 10V 16V 25V 35V 50V 63V 80V 100V<br>tanδ(Max.) D61 to JA0 0.26 0.19 0.16 0.14 0.12 0.10 0.08 0.08 —<br>KE0 to MN0 — — — 0.16 0.14 0.12 0.12 0.10 0.10<br>When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20°C, 120Hz)                                                               |
| Low Temperature Characteristics (Max. impedance Ratio) | Rated voltage(V <sub>dc</sub> ) 6.3V 10V 16V 25V 35V 50V 63V 80V 100V<br>Z(-25°C)/Z(+20°C) 2 2 2 2 2 2 2 2 2<br>Z(-40°C)/Z(+20°C) 3 3 3 3 3 3 3 3 3<br>Z(-55°C)/Z(+20°C) 4 4 4 3 3 3 3 3 3 (at 120Hz)                                                                                                                                                                         |
| Endurance                                              | 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.<br>Time D61 to JA0 : 2,000 hours<br>KE0 to MN0 : 5,000 hours<br>Capacitance change ≤ ±30% of the initial value<br>D.F. (tanδ) ≤ 200% of the initial specified value<br>Leakage current ≤ The initial specified value |

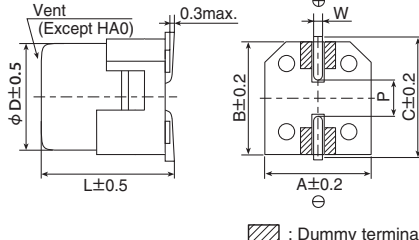
## DIMENSIONS [mm]

- Terminal Code : A
- Size code : D61 to MN0



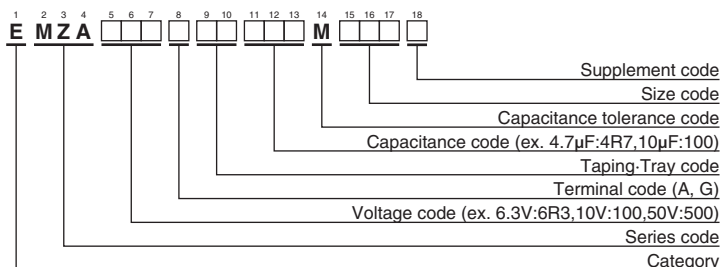
Note : L±0.5 for HA0 and MN0

- Terminal Code : G(Vibration resistant structure)
- Size code : HA0 to MN0



| Size code | D    | L    | A    | B    | C    | W          | P   |
|-----------|------|------|------|------|------|------------|-----|
| D61       | 4    | 5.8  | 4.3  | 4.3  | 5.1  | 0.5 to 0.8 | 1.0 |
| 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 |
| MH0       | 18   | 16.5 | 19.0 | 19.0 | 20.0 | 1.0 to 1.3 | 6.5 |
| MN0       | 18   | 21.5 | 19.0 | 19.0 | 20.0 | 1.0 to 1.3 | 6.5 |

## PART NUMBERING SYSTEM



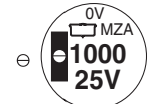
Please refer to "Product code guide (surface mount type)"

## MARKING

D61 to JA0  
EX) 16V220μF



KE0 to MN0  
EX) 25V1,000μF



## Rated voltage symbol (D61 to JA0)

| Rated voltage (V <sub>dc</sub> ) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 80 |
|----------------------------------|-----|----|----|----|----|----|----|----|
| Symbol                           | j   | A  | C  | E  | V  | H  | J  | K  |

## ◆ STANDARD RATINGS

| WV<br>(Vdc) | Cap<br>(μF) | Size<br>code | Impedance<br>(Ω max/<br>100kHz) |       | Rated ripple<br>current<br>(mA rms/<br>105°C, 100kHz) | Part No.             |
|-------------|-------------|--------------|---------------------------------|-------|-------------------------------------------------------|----------------------|
|             |             |              | 20°C                            | -40°C |                                                       |                      |
| 6.3         | 22          | D61          | 1.35                            | —     | 90                                                    | EMZA6R3ADA220MD61G   |
|             | 47          | D61          | 1.35                            | —     | 90                                                    | EMZA6R3ADA470MD61G   |
|             | 47          | E61          | 0.70                            | —     | 160                                                   | EMZA6R3ADA470ME61G   |
|             | 100         | E61          | 0.70                            | —     | 160                                                   | EMZA6R3ADA101ME61G   |
|             | 100         | F61          | 0.36                            | —     | 240                                                   | EMZA6R3ADA101MF61G   |
|             | 220         | F61          | 0.36                            | —     | 240                                                   | EMZA6R3ADA221MF61G   |
|             | 330         | F80          | 0.34                            | —     | 280                                                   | EMZA6R3ADA331MF80G   |
|             | 470         | HA0          | 0.16                            | —     | 600                                                   | EMZA6R3ADA471MHA0G   |
|             | 1,000       | HA0          | 0.16                            | —     | 600                                                   | EMZA6R3ADA102MHA0G   |
| 10          | 1,500       | JA0          | 0.08                            | —     | 850                                                   | EMZA6R3ADA152MJA0G   |
|             | 22          | D61          | 1.35                            | —     | 90                                                    | EMZA100ADA220MD61G   |
|             | 33          | D61          | 1.35                            | —     | 90                                                    | EMZA100ADA330MD61G   |
|             | 33          | E61          | 0.70                            | —     | 160                                                   | EMZA100ADA330ME61G   |
|             | 220         | F80          | 0.34                            | —     | 280                                                   | EMZA100ADA221MF80G   |
|             | 330         | HA0          | 0.16                            | —     | 600                                                   | EMZA100ADA331MHA0G   |
|             | 470         | HA0          | 0.16                            | —     | 600                                                   | EMZA100ADA471MHA0G   |
|             | 680         | HA0          | 0.16                            | —     | 600                                                   | EMZA100ADA681MHA0G   |
|             | 1,000       | JA0          | 0.08                            | —     | 850                                                   | EMZA100ADA102MJA0G   |
| 16          | 10          | D61          | 1.35                            | —     | 90                                                    | EMZA160ADA100MD61G   |
|             | 22          | D61          | 1.35                            | —     | 90                                                    | EMZA160ADA220MD61G   |
|             | 22          | E61          | 0.70                            | —     | 160                                                   | EMZA160ADA220ME61G   |
|             | 47          | E61          | 0.70                            | —     | 160                                                   | EMZA160ADA470ME61G   |
|             | 47          | F61          | 0.36                            | —     | 240                                                   | EMZA160ADA470MF61G   |
|             | 100         | F61          | 0.36                            | —     | 240                                                   | EMZA160ADA101MF61G   |
|             | 220         | F80          | 0.34                            | —     | 280                                                   | EMZA160ADA221MF80G   |
|             | 330         | HA0          | 0.16                            | —     | 600                                                   | EMZA160ADA331MHA0G   |
|             | 470         | HA0          | 0.16                            | —     | 600                                                   | EMZA160ADA471MHA0G   |
| 25          | 680         | JA0          | 0.08                            | —     | 850                                                   | EMZA160ADA681MJA0G   |
|             | 10          | D61          | 1.35                            | —     | 90                                                    | EMZA250ADA100MD61G   |
|             | 22          | E61          | 0.70                            | —     | 160                                                   | EMZA250ADA220ME61G   |
|             | 33          | E61          | 0.70                            | —     | 160                                                   | EMZA250ADA330ME61G   |
|             | 33          | F61          | 0.36                            | —     | 240                                                   | EMZA250ADA330MF61G   |
|             | 47          | F61          | 0.36                            | —     | 240                                                   | EMZA250ADA470MF61G   |
|             | 100         | F80          | 0.34                            | —     | 280                                                   | EMZA250ADA101MF80G   |
|             | 220         | HA0          | 0.16                            | —     | 600                                                   | EMZA250ADA221MHA0G   |
|             | 330         | HA0          | 0.16                            | —     | 600                                                   | EMZA250ADA331MHA0G   |
| 35          | 470         | JA0          | 0.08                            | —     | 850                                                   | EMZA250ADA471MJA0G   |
|             | 1,000       | KE0          | 0.060                           | 0.30  | 1,320                                                 | EMZA250ARA102MKE0S   |
|             | 1,300       | KG5          | 0.056                           | 0.28  | 1,470                                                 | EMZA250ARA132MKG5S   |
|             | 1,800       | LH0          | 0.047                           | 0.24  | 1,820                                                 | EMZA250 □ DA182MLH0S |
|             | 2,400       | MH0          | 0.045                           | 0.23  | 2,060                                                 | EMZA250 □ DA242MMH0S |
|             | 3,000       | LN0          | 0.034                           | 0.17  | 2,400                                                 | EMZA250 □ DA302MLN0S |
|             | 3,900       | MN0          | 0.032                           | 0.16  | 2,640                                                 | EMZA250 □ DA392MMN0S |
|             | 4.7         | D61          | 1.35                            | —     | 90                                                    | EMZA350ADA4R7MD61G   |
|             | 10          | D61          | 1.35                            | —     | 90                                                    | EMZA350ADA100MD61G   |
| 50          | 10          | E61          | 0.70                            | —     | 160                                                   | EMZA350ADA100ME61G   |
|             | 22          | E61          | 0.70                            | —     | 160                                                   | EMZA350ADA220ME61G   |
|             | 33          | F61          | 0.36                            | —     | 240                                                   | EMZA350ADA470MF61G   |
|             | 47          | F61          | 0.36                            | —     | 240                                                   | EMZA350ADA470MF61G   |
|             | 100         | F80          | 0.34                            | —     | 280                                                   | EMZA350ADA101MF80G   |
|             | 220         | HA0          | 0.16                            | —     | 600                                                   | EMZA350ADA221MHA0G   |
|             | 330         | HA0          | 0.16                            | —     | 600                                                   | EMZA350ADA331MHA0G   |
|             | 470         | HA0          | 0.16                            | —     | 600                                                   | EMZA350ADA471MHA0G   |
|             | 1,000       | JA0          | 0.08                            | —     | 850                                                   | EMZA350ADA102MJA0G   |
| 63          | 1,300       | MN0          | 0.050                           | 0.25  | 2,180                                                 | EMZA500 □ DA132MMN0S |
|             | 4.7         | E61          | 4.8                             | —     | 50                                                    | EMZA630ADA4R7ME61G   |
|             | 10          | F61          | 2.2                             | —     | 80                                                    | EMZA630ADA100MF61G   |
|             | 22          | F80          | 2.1                             | —     | 120                                                   | EMZA630ADA220MF80G   |
|             | 33          | HA0          | 0.70                            | —     | 250                                                   | EMZA630ADA330MHA0G   |
|             | 47          | HA0          | 0.70                            | —     | 250                                                   | EMZA630ADA470MHA0G   |
|             | 68          | HA0          | 0.70                            | —     | 250                                                   | EMZA630ADA680MHA0G   |
|             | 100         | JA0          | 0.45                            | —     | 400                                                   | EMZA630ADA101MJA0G   |
|             | 240         | KE0          | 0.19                            | 1.54  | 880                                                   | EMZA630ARA241MKE0S   |
| 80          | 300         | KG5          | 0.17                            | 1.19  | 1,000                                                 | EMZA630ARA301MKG5S   |
|             | 430         | LH0          | 0.15                            | 1.05  | 1,220                                                 | EMZA630 □ DA431MLH0S |
|             | 560         | MH0          | 0.12                            | 0.84  | 1,430                                                 | EMZA630 □ DA561MMH0S |
|             | 680         | LN0          | 0.085                           | 0.58  | 1,790                                                 | EMZA630 □ DA681MLN0S |
|             | 910         | MN0          | 0.070                           | 0.49  | 1,960                                                 | EMZA630 □ DA911MMN0S |
|             | 3.3         | E61          | 5.0                             | —     | 25                                                    | EMZA800ADA3R3ME61G   |
|             | 4.7         | F61          | 3.0                             | —     | 40                                                    | EMZA800ADA4R7MF61G   |
|             | 10          | F80          | 2.4                             | —     | 60                                                    | EMZA800ADA100MF80G   |
|             | 22          | HA0          | 1.3                             | —     | 130                                                   | EMZA800ADA220MHA0G   |
| 100         | 33          | HA0          | 1.3                             | —     | 130                                                   | EMZA800ADA330MHA0G   |
|             | 47          | JA0          | 0.70                            | —     | 200                                                   | EMZA800ADA470MJA0G   |
|             | 150         | KE0          | 0.22                            | 1.54  | 810                                                   | EMZA800ARA151MKE0S   |
|             | 220         | KG5          | 0.17                            | 1.19  | 1,000                                                 | EMZA800ARA221MKG5S   |
|             | 330         | LH0          | 0.15                            | 1.05  | 1,220                                                 | EMZA800 □ DA331MLH0S |
|             | 430         | MH0          | 0.12                            | 0.84  | 1,430                                                 | EMZA800 □ DA431MMH0S |
|             | 470         | LN0          | 0.085                           | 0.58  | 1,790                                                 | EMZA800 □ DA471MLN0S |
|             | 680         | MN0          | 0.070                           | 0.49  | 1,960                                                 | EMZA800 □ DA681MMN0S |
|             | 110         | KE0          | 0.28                            | 2.24  | 740                                                   | EMZA101ARA111MKE0S   |
| 100         | 130         | KG5          | 0.21                            | 1.68  | 900                                                   | EMZA101ARA131MKG5S   |
|             | 200         | LH0          | 0.18                            | 1.44  | 1,090                                                 | EMZA101 □ DA201MLH0S |
|             | 270         | MH0          | 0.15                            | 1.2   | 1,280                                                 | EMZA101 □ DA271MMH0S |
|             | 330         | LN0          | 0.11                            | 0.88  | 1,580                                                 | EMZA101 □ DA331MLN0S |
| 100         | 430         | MN0          | 0.091                           | 0.73  | 1,690                                                 | EMZA101 □ DA431MMN0S |

□ : Enter the appropriate terminal code.

## ◆ RATED RIPPLE CURRENT MULTIPLIERS

## ● Frequency Multipliers

| Size code  | Frequency(Hz)   | 120  | 1k   | 10k  | 100k |
|------------|-----------------|------|------|------|------|
|            | Capacitance(μF) |      |      |      |      |
| D55 to JA0 | 3.3 to 4.7      | 0.35 | 0.70 | 0.90 | 1.00 |
|            | 10 to 100       | 0.40 | 0.75 | 0.90 | 1.00 |
|            | 220 to 470      | 0.50 | 0.85 | 0.94 | 1.00 |
|            | 680 to 1,500    | 0.60 | 0.87 | 0.95 | 1.00 |
| KE0 to MN0 | 110 to 200      | 0.40 | 0.75 | 0.90 | 1.00 |
|            | 220 to 620      | 0.50 | 0.85 | 0.94 | 1.00 |
|            | 680 to 1,800    | 0.60 | 0.87 | 0.95 | 1.00 |
|            | 2,400 to 3,000  | 0.75 | 0.90 | 0.95 | 1.00 |
|            | 3,900           | 0.85 | 0.95 | 0.98 | 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.