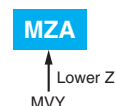


## Alchip™ MZA Series Upgrade!

- Endurance : 2,000 to 5,000 hours at 105°C
- Low impedance
- Solvent resistant type(see PRECAUTIONS AND GUIDELINES)
- Vibration resistant structure
- RoHS2 Compliant
- AEC-Q200 compliant : Please contact Chemi-Con for more details, test data, information.

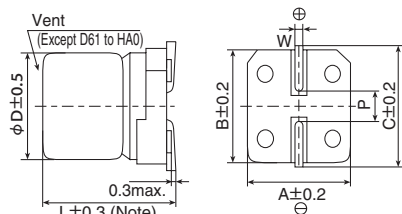


### SPECIFICATIONS

| Items                                                                                                             | Characteristics                                                                                                                                              |                                                      |      |      |      |      |      |      |      |      |
|-------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|------|------|------|------|------|------|------|------|
| Category                                                                                                          | -55 to +105°C                                                                                                                                                |                                                      |      |      |      |      |      |      |      |      |
| Temperature Range                                                                                                 |                                                                                                                                                              |                                                      |      |      |      |      |      |      |      |      |
| 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 (tan δ)                                                                                        | Rated voltage(V <sub>dc</sub> )                                                                                                                              | 6.3V                                                 | 10V  | 16V  | 25V  | 35V  | 50V  | 63V  | 80V  | 100V |
|                                                                                                                   | tan δ(Max.)                                                                                                                                                  | D61 to JA0                                           | 0.26 | 0.19 | 0.16 | 0.14 | 0.12 | 0.10 | 0.08 | 0.08 |
|                                                                                                                   |                                                                                                                                                              | KE0 to MN0                                           | —    | —    | —    | 0.16 | 0.14 | 0.12 | 0.12 | 0.10 |
| 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 |
|                                                                                                                   | Z(-25°C)/Z(+20°C)                                                                                                                                            | 2                                                    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
|                                                                                                                   | Z(-40°C)/Z(+20°C)                                                                                                                                            | 3                                                    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    |
|                                                                                                                   | 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.     |                                                      |      |      |      |      |      |      |      |      |
|                                                                                                                   | Time                                                                                                                                                         | D61 to JA0 : 2,000 hours<br>KE0 to MN0 : 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                         |      |      |      |      |      |      |      |      |

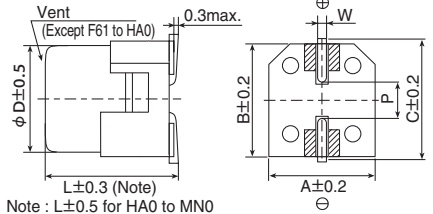
### DIMENSIONS [mm]

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



Note : L±0.5 for HA0 to MN0

- Terminal Code : G(Vibration resistant structure)
- Size code : F61 to MN0

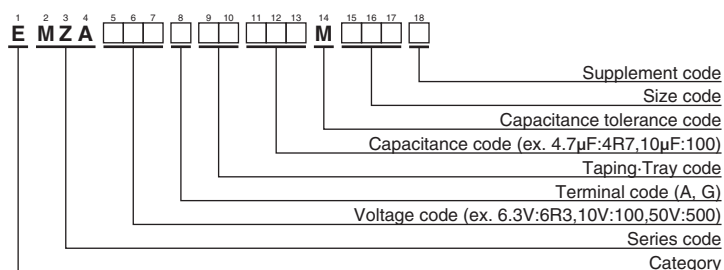


Note : L±0.5 for HA0 to MN0

⊠ : Dummy terminals

| 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



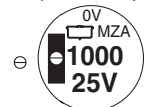
Please refer to "Product code guide (surface mount type)"

### 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                                                    | EMZA6R3ARA220MD61G   |
|             | 47          | D61          | 1.35                             | —     | 90                                                    | EMZA6R3ARA470MD61G   |
|             | 47          | E61          | 0.70                             | —     | 160                                                   | EMZA6R3ARA470ME61G   |
|             | 100         | E61          | 0.70                             | —     | 160                                                   | EMZA6R3ARA101ME61G   |
|             | 100         | F61          | 0.36                             | —     | 240                                                   | EMZA6R3 □ RA101MF61G |
|             | 220         | F61          | 0.36                             | —     | 240                                                   | EMZA6R3 □ RA221MF61G |
|             | 330         | F80          | 0.34                             | —     | 280                                                   | EMZA6R3 □ RA331MF80G |
|             | 470         | HA0          | 0.16                             | —     | 600                                                   | EMZA6R3 □ RA471MHA0G |
|             | 1,000       | HA0          | 0.16                             | —     | 600                                                   | EMZA6R3 □ RA102MHA0G |
|             | 1,500       | JA0          | 0.08                             | —     | 850                                                   | EMZA6R3 □ RA152MJA0G |
| 10          | 22          | D61          | 1.35                             | —     | 90                                                    | EMZA100ARA220MD61G   |
|             | 33          | D61          | 1.35                             | —     | 90                                                    | EMZA100ARA330MD61G   |
|             | 33          | E61          | 0.70                             | —     | 160                                                   | EMZA100ARA330ME61G   |
|             | 220         | F80          | 0.34                             | —     | 280                                                   | EMZA100 □ RA221MF80G |
|             | 330         | HA0          | 0.16                             | —     | 600                                                   | EMZA100 □ RA331MHA0G |
|             | 470         | HA0          | 0.16                             | —     | 600                                                   | EMZA100 □ RA471MHA0G |
|             | 680         | HA0          | 0.16                             | —     | 600                                                   | EMZA100 □ RA681MHA0G |
|             | 1,000       | JA0          | 0.08                             | —     | 850                                                   | EMZA100 □ RA102MJA0G |
|             | 10          | D61          | 1.35                             | —     | 90                                                    | EMZA160ARA100MD61G   |
|             | 22          | D61          | 1.35                             | —     | 90                                                    | EMZA160ARA220MD61G   |
| 16          | 22          | E61          | 0.70                             | —     | 160                                                   | EMZA160ARA220ME61G   |
|             | 47          | E61          | 0.70                             | —     | 160                                                   | EMZA160ARA470ME61G   |
|             | 47          | F61          | 0.36                             | —     | 240                                                   | EMZA160 □ RA470MF61G |
|             | 100         | F61          | 0.36                             | —     | 240                                                   | EMZA160 □ RA101MF61G |
|             | 220         | F80          | 0.34                             | —     | 280                                                   | EMZA160 □ RA221MF80G |
|             | 330         | HA0          | 0.16                             | —     | 600                                                   | EMZA160 □ RA331MHA0G |
|             | 470         | HA0          | 0.16                             | —     | 600                                                   | EMZA160 □ RA471MHA0G |
|             | 680         | JA0          | 0.08                             | —     | 850                                                   | EMZA160 □ RA681MJA0G |
|             | 10          | D61          | 1.35                             | —     | 90                                                    | EMZA250ARA100MD61G   |
|             | 22          | E61          | 0.70                             | —     | 160                                                   | EMZA250ARA220ME61G   |
| 25          | 33          | E61          | 0.70                             | —     | 160                                                   | EMZA250ARA330ME61G   |
|             | 33          | F61          | 0.36                             | —     | 240                                                   | EMZA250 □ RA330MF61G |
|             | 47          | F61          | 0.36                             | —     | 240                                                   | EMZA250 □ RA470MF61G |
|             | 100         | F80          | 0.34                             | —     | 280                                                   | EMZA250 □ RA101MF80G |
|             | 220         | HA0          | 0.16                             | —     | 600                                                   | EMZA250 □ RA221MHA0G |
|             | 330         | HA0          | 0.16                             | —     | 600                                                   | EMZA250 □ RA331MHA0G |
|             | 470         | JA0          | 0.08                             | —     | 850                                                   | EMZA250 □ RA471MJA0G |
|             | 1,000       | KE0          | 0.060                            | 0.30  | 1,320                                                 | EMZA250 □ RA102MKE0S |
|             | 1,300       | KG5          | 0.056                            | 0.28  | 1,470                                                 | EMZA250 □ RA132MKG5S |
|             | 1,800       | LH0          | 0.047                            | 0.24  | 1,820                                                 | EMZA250 □ RA182MLH0S |
| 35          | 2,400       | MH0          | 0.045                            | 0.23  | 2,060                                                 | EMZA250 □ RA242MMH0S |
|             | 3,000       | LN0          | 0.034                            | 0.17  | 2,400                                                 | EMZA250 □ RA302MLN0S |
|             | 3,900       | MN0          | 0.032                            | 0.16  | 2,640                                                 | EMZA250 □ RA392MMN0S |
|             | 4.7         | D61          | 1.35                             | —     | 90                                                    | EMZA350ARA4R7MD61G   |
|             | 10          | D61          | 1.35                             | —     | 90                                                    | EMZA350ARA100MD61G   |
|             | 10          | E61          | 0.70                             | —     | 160                                                   | EMZA350ARA100ME61G   |
|             | 22          | E61          | 0.70                             | —     | 160                                                   | EMZA350ARA220ME61G   |
|             | 33          | F61          | 0.36                             | —     | 240                                                   | EMZA350 □ RA330MF61G |
|             | 47          | F61          | 0.36                             | —     | 240                                                   | EMZA350 □ RA470MF61G |
|             | 100         | F80          | 0.34                             | —     | 280                                                   | EMZA350 □ RA101MF80G |
| 6.3         | 330         | HA0          | 0.16                             | —     | 600                                                   | EMZA350 □ RA101MHA0G |
|             | 220         | HA0          | 0.16                             | —     | 600                                                   | EMZA350 □ RA221MHA0G |
| 35          | 330         | JA0          | 0.08                             | —     | 850                                                   | EMZA350 □ RA331MJA0G |
|             | 620         | KE0          | 0.060                            | 0.30  | 1,320                                                 | EMZA350 □ RA621MKE0S |
|             | 820         | KG5          | 0.056                            | 0.28  | 1,470                                                 | EMZA350 □ RA821MKG5S |
|             | 1,200       | LH0          | 0.047                            | 0.24  | 1,820                                                 | EMZA350 □ RA122MLH0S |
|             | 1,600       | MH0          | 0.045                            | 0.23  | 2,060                                                 | EMZA350 □ RA162MMH0S |
|             | 1,800       | LN0          | 0.034                            | 0.17  | 2,400                                                 | EMZA350 □ RA182MLN0S |
|             | 2,400       | MN0          | 0.032                            | 0.16  | 2,640                                                 | EMZA350 □ RA242MMN0S |
|             | 4.7         | D61          | 2.9                              | —     | 60                                                    | EMZA500ARA4R7MD61G   |
|             | 10          | E61          | 1.52                             | —     | 85                                                    | EMZA500ARA100ME61G   |
|             | 10          | F61          | 0.88                             | —     | 165                                                   | EMZA500 □ RA100MF61G |
| 50          | 22          | F61          | 0.88                             | —     | 165                                                   | EMZA500 □ RA220MF61G |
|             | 33          | F80          | 0.68                             | —     | 195                                                   | EMZA500 □ RA330MF80G |
|             | 47          | F80          | 0.68                             | —     | 195                                                   | EMZA500 □ RA470MF80G |
|             | 100         | HA0          | 0.34                             | —     | 350                                                   | EMZA500 □ RA101MHA0G |
|             | 220         | JA0          | 0.18                             | —     | 670                                                   | EMZA500 □ RA221MJA0G |
|             | 330         | KE0          | 0.11                             | 0.55  | 980                                                   | EMZA500 □ RA331MKE0S |
|             | 430         | KG5          | 0.10                             | 0.50  | 1,090                                                 | EMZA500 □ RA431MKG5S |
|             | 620         | LH0          | 0.087                            | 0.44  | 1,320                                                 | EMZA500 □ RA621MLH0S |
|             | 820         | MH0          | 0.087                            | 0.44  | 1,420                                                 | EMZA500 □ RA821MMH0S |
|             | 1,000       | LN0          | 0.050                            | 0.25  | 1,910                                                 | EMZA500 □ RA102MLN0S |
| 63          | 1,300       | MN0          | 0.050                            | 0.25  | 2,180                                                 | EMZA500 □ RA132MMN0S |
|             | 4.7         | E61          | 4.8                              | —     | 50                                                    | EMZA630ARA4R7ME61G   |
|             | 10          | F61          | 2.2                              | —     | 80                                                    | EMZA630 □ RA100MF61G |
|             | 22          | F80          | 2.1                              | —     | 120                                                   | EMZA630 □ RA220MF80G |
|             | 33          | HA0          | 0.70                             | —     | 250                                                   | EMZA630 □ RA330MHA0G |
|             | 47          | HA0          | 0.70                             | —     | 250                                                   | EMZA630 □ RA470MHA0G |
|             | 68          | HA0          | 0.70                             | —     | 250                                                   | EMZA630 □ RA680MHA0G |
|             | 100         | JA0          | 0.45                             | —     | 400                                                   | EMZA630 □ RA101MJA0G |
|             | 240         | KE0          | 0.19                             | 1.54  | 880                                                   | EMZA630 □ RA241MKE0S |
|             | 300         | KG5          | 0.17                             | 1.19  | 1,000                                                 | EMZA630 □ RA301MKG5S |
| 80          | 430         | LH0          | 0.15                             | 1.05  | 1,220                                                 | EMZA630 □ RA431MLH0S |
|             | 560         | MH0          | 0.12                             | 0.84  | 1,430                                                 | EMZA630 □ RA561MMH0S |
|             | 680         | LN0          | 0.085                            | 0.58  | 1,790                                                 | EMZA630 □ RA681MLN0S |
|             | 910         | MN0          | 0.070                            | 0.49  | 1,960                                                 | EMZA630 □ RA911MMN0S |
|             | 3.3         | E61          | 5.0                              | —     | 25                                                    | EMZA800ARA3R3ME61G   |
|             | 4.7         | F61          | 3.0                              | —     | 40                                                    | EMZA800 □ RA4R7MF61G |
|             | 10          | F80          | 2.4                              | —     | 60                                                    | EMZA800 □ RA100MF80G |
|             | 22          | HA0          | 1.3                              | —     | 130                                                   | EMZA800 □ RA220MHA0G |
|             | 33          | HA0          | 1.3                              | —     | 130                                                   | EMZA800 □ RA330MHA0G |
|             | 47          | JA0          | 0.70                             | —     | 200                                                   | EMZA800 □ RA470MJA0G |
| 100         | 150         | KE0          | 0.22                             | 1.54  | 810                                                   | EMZA800 □ RA151MKE0S |
|             | 220         | KG5          | 0.17                             | 1.19  | 1,000                                                 | EMZA800 □ RA221MKG5S |
|             | 330         | LH0          | 0.15                             | 1.05  | 1,220                                                 | EMZA800 □ RA331MLH0S |
|             | 430         | MH0          | 0.12                             | 0.84  | 1,430                                                 | EMZA800 □ RA431MMH0S |
|             | 470         | LN0          | 0.085                            | 0.58  | 1,790                                                 | EMZA800 □ RA471MLN0S |
|             | 680         | MN0          | 0.070                            | 0.49  | 1,960                                                 | EMZA800 □ RA681MMN0S |
|             | 110         | KE0          | 0.28                             | 2.24  | 740                                                   | EMZA101 □ RA111MKE0S |
|             | 130         | KG5          | 0.21                             | 1.68  | 900                                                   | EMZA101 □ RA131MKG5S |
|             | 200         | LH0          | 0.18                             | 1.44  | 1,090                                                 | EMZA101 □ RA201MLH0S |
|             | 270         | MH0          | 0.15                             | 1.2   | 1,280                                                 | EMZA101 □ RA271MMH0S |
| 100         | 330         | LN0          | 0.11                             | 0.88  | 1,580                                                 | EMZA101 □ RA331MLN0S |
|             | 430         | MN0          | 0.091                            | 0.73  | 1,690                                                 | EMZA101 □ RA431MMN0S |

□ : Enter the appropriate terminal code.

## ◆ RATED RIPPLE CURRENT MULTIPLIERS

## ● Frequency Multipliers

| Size code  | Capacitance(μF) | Frequency(Hz) | 120  | 1k   | 10k  | 100k |
|------------|-----------------|---------------|------|------|------|------|
| D61 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.