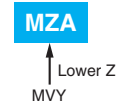


Alchip™ **MZA** Series *Upgrade!*

- 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.

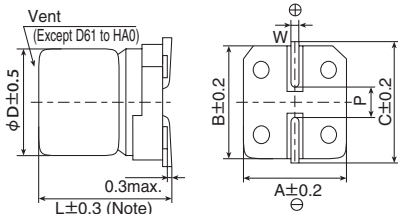


◆ **SPECIFICATIONS**

| Items | Characteristics | | | | | | | | | | |
|---|--|--|------|------|------|------|------|------|------|------|------|
| Category | -55 to +105°C | | | | | | | | | | |
| Temperature Range | | | | | | | | | | | |
| Rated Voltage Range | 6.3 to 100V _{dc} | | | | | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) | | | | | | | | | | |
| Leakage Current | I=0.01CV or 3μA, whichever is greater 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 _{dc}) | 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 | 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 _{dc}) | 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 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 | | | | | | | | | |

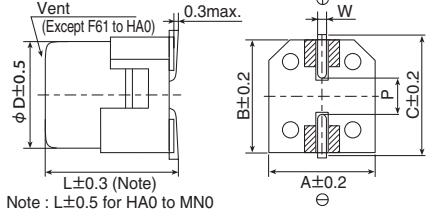
◆ **DIMENSIONS [mm]**

- 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

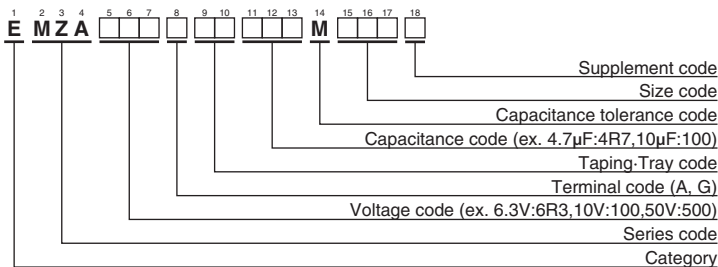


Note : L±0.5 for HA0 to MN0

▨ : 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 _{dc}) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 80 |
|----------------------------------|-----|----|----|----|----|----|----|----|
| Symbol | j | A | C | E | V | H | J | K |

◆ **STANDARD RATINGS**

| WV (Vdc) | Cap (μF) | Size code | Impedance (Ω max./100kHz) | | Rated ripple current (mA rms/105°C, 100kHz) | Part No. | WV (Vdc) | Cap (μF) | Size code | Impedance (Ω max./100kHz) | | Rated ripple current (mA rms/105°C, 100kHz) | Part No. |
|----------|----------|-----------|---------------------------|-------|---|----------------------|--------------------|----------|-----------|---------------------------|-------|---|----------------------|
| | | | 20°C | -40°C | | | | | | 20°C | -40°C | | |
| 6.3 | 22 | D61 | 1.35 | - | 90 | EMZA6R3ARA220MD61G | 35 | 330 | JA0 | 0.08 | - | 850 | EMZA350 □ RA331MJA0G |
| | 47 | D61 | 1.35 | - | 90 | EMZA6R3ARA470MD61G | | 620 | KE0 | 0.060 | 0.30 | 1,320 | EMZA350 □ RA621MKE0S |
| | 47 | E61 | 0.70 | - | 160 | EMZA6R3ARA470ME61G | | 820 | KG5 | 0.056 | 0.28 | 1,470 | EMZA350 □ RA821MKG5S |
| | 100 | E61 | 0.70 | - | 160 | EMZA6R3ARA101ME61G | | 1,200 | LH0 | 0.047 | 0.24 | 1,820 | EMZA350 □ RA122MLH0S |
| | 100 | F61 | 0.36 | - | 240 | EMZA6R3 □ RA101MF61G | | 1,600 | MH0 | 0.045 | 0.23 | 2,060 | EMZA350 □ RA162MMH0S |
| | 220 | F61 | 0.36 | - | 240 | EMZA6R3 □ RA221MF61G | | 1,800 | LNO | 0.034 | 0.17 | 2,400 | EMZA350 □ RA182MLN0S |
| | 330 | F80 | 0.34 | - | 280 | EMZA6R3 □ RA331MF80G | | 2,400 | MNO | 0.032 | 0.16 | 2,640 | EMZA350 □ RA242MMN0S |
| | 470 | HA0 | 0.16 | - | 600 | EMZA6R3 □ RA471MHA0G | | 4.7 | D61 | 2.9 | - | 60 | EMZA500ARA4R7MD61G |
| | 1,000 | HA0 | 0.16 | - | 600 | EMZA6R3 □ RA102MHA0G | | 10 | E61 | 1.52 | - | 85 | EMZA500ARA100ME61G |
| | 1,500 | JA0 | 0.08 | - | 850 | EMZA6R3 □ RA152MJA0G | | 10 | F61 | 0.88 | - | 165 | EMZA500 □ RA100MF61G |
| 10 | 22 | D61 | 1.35 | - | 90 | EMZA100ARA220MD61G | 22 | F61 | 0.88 | - | 165 | EMZA500 □ RA220MF61G | |
| | 33 | D61 | 1.35 | - | 90 | EMZA100ARA330MD61G | 33 | F80 | 0.68 | - | 195 | EMZA500 □ RA330MF80G | |
| | 33 | E61 | 0.70 | - | 160 | EMZA100ARA330ME61G | 47 | F80 | 0.68 | - | 195 | EMZA500 □ RA470MF80G | |
| | 220 | F80 | 0.34 | - | 280 | EMZA100 □ RA221MF80G | 100 | HA0 | 0.34 | - | 350 | EMZA500 □ RA101MHA0G | |
| | 330 | HA0 | 0.16 | - | 600 | EMZA100 □ RA331MHA0G | 220 | JA0 | 0.18 | - | 670 | EMZA500 □ RA221MJA0G | |
| | 470 | HA0 | 0.16 | - | 600 | EMZA100 □ RA471MHA0G | 330 | KE0 | 0.11 | 0.55 | 980 | EMZA500 □ RA331MKE0S | |
| | 680 | HA0 | 0.16 | - | 600 | EMZA100 □ RA681MHA0G | 430 | KG5 | 0.10 | 0.50 | 1,090 | EMZA500 □ RA431MKG5S | |
| | 1,000 | JA0 | 0.08 | - | 850 | EMZA100 □ RA102MJA0G | 620 | LH0 | 0.087 | 0.44 | 1,320 | EMZA500 □ RA621MLH0S | |
| | 16 | 10 | D61 | 1.35 | - | 90 | EMZA160ARA100MD61G | 820 | MH0 | 0.087 | 0.44 | 1,420 | EMZA500 □ RA821MMH0S |
| | | 22 | D61 | 1.35 | - | 90 | EMZA160ARA220MD61G | 1,000 | LNO | 0.050 | 0.25 | 1,910 | EMZA500 □ RA102MLN0S |
| 22 | | E61 | 0.70 | - | 160 | EMZA160ARA220ME61G | 1,300 | MNO | 0.050 | 0.25 | 2,180 | EMZA500 □ RA132MMN0S | |
| 47 | | E61 | 0.70 | - | 160 | EMZA160ARA470ME61G | 4.7 | E61 | 4.8 | - | 50 | EMZA630ARA4R7ME61G | |
| 47 | | F61 | 0.36 | - | 240 | EMZA160 □ RA470MF61G | 10 | F61 | 2.2 | - | 80 | EMZA630 □ RA100MF61G | |
| 100 | | F61 | 0.36 | - | 240 | EMZA160 □ RA101MF61G | 22 | F80 | 2.1 | - | 120 | EMZA630 □ RA220MF80G | |
| 220 | | F80 | 0.34 | - | 280 | EMZA160 □ RA221MF80G | 33 | HA0 | 0.70 | - | 250 | EMZA630 □ RA330MHA0G | |
| 330 | | HA0 | 0.16 | - | 600 | EMZA160 □ RA331MHA0G | 47 | HA0 | 0.70 | - | 250 | EMZA630 □ RA470MHA0G | |
| 470 | | HA0 | 0.16 | - | 600 | EMZA160 □ RA471MHA0G | 68 | HA0 | 0.70 | - | 250 | EMZA630 □ RA680MHA0G | |
| 680 | | JA0 | 0.08 | - | 850 | EMZA160 □ RA681MJA0G | 100 | JA0 | 0.45 | - | 400 | EMZA630 □ RA101MJA0G | |
| 25 | 10 | D61 | 1.35 | - | 90 | EMZA250ARA100MD61G | 240 | KE0 | 0.19 | 1.54 | 880 | EMZA630 □ RA241MKE0S | |
| | 22 | E61 | 0.70 | - | 160 | EMZA250ARA220ME61G | 300 | KG5 | 0.17 | 1.19 | 1,000 | EMZA630 □ RA301MKG5S | |
| | 33 | E61 | 0.70 | - | 160 | EMZA250ARA330ME61G | 430 | LH0 | 0.15 | 1.05 | 1,220 | EMZA630 □ RA431MLH0S | |
| | 33 | F61 | 0.36 | - | 240 | EMZA250 □ RA330MF61G | 560 | MH0 | 0.12 | 0.84 | 1,430 | EMZA630 □ RA561MMH0S | |
| | 47 | F61 | 0.36 | - | 240 | EMZA250 □ RA470MF61G | 680 | LNO | 0.085 | 0.58 | 1,790 | EMZA630 □ RA681MLN0S | |
| | 100 | F80 | 0.34 | - | 280 | EMZA250 □ RA101MF80G | 910 | MNO | 0.070 | 0.49 | 1,960 | EMZA630 □ RA911MMN0S | |
| | 220 | HA0 | 0.16 | - | 600 | EMZA250 □ RA221MHA0G | 3.3 | E61 | 5.0 | - | 25 | EMZA800ARA3R3ME61G | |
| | 330 | HA0 | 0.16 | - | 600 | EMZA250 □ RA331MHA0G | 4.7 | F61 | 3.0 | - | 40 | EMZA800 □ RA4R7MF61G | |
| | 470 | JA0 | 0.08 | - | 850 | EMZA250 □ RA471MJA0G | 10 | F80 | 2.4 | - | 60 | EMZA800 □ RA100MF80G | |
| | 1,000 | KE0 | 0.060 | 0.30 | 1,320 | EMZA250 □ RA102MKE0S | 22 | HA0 | 1.3 | - | 130 | EMZA800 □ RA220MHA0G | |
| 35 | 1,300 | KG5 | 0.056 | 0.28 | 1,470 | EMZA250 □ RA132MKG5S | 33 | HA0 | 1.3 | - | 130 | EMZA800 □ RA330MHA0G | |
| | 1,800 | LH0 | 0.047 | 0.24 | 1,820 | EMZA250 □ RA182MLH0S | 47 | JA0 | 0.70 | - | 200 | EMZA800 □ RA470MJA0G | |
| | 2,400 | MH0 | 0.045 | 0.23 | 2,060 | EMZA250 □ RA242MMH0S | 150 | KE0 | 0.22 | 1.54 | 810 | EMZA800 □ RA151MKE0S | |
| | 3,000 | LNO | 0.034 | 0.17 | 2,400 | EMZA250 □ RA302MLN0S | 220 | KG5 | 0.17 | 1.19 | 1,000 | EMZA800 □ RA221MKG5S | |
| | 3,900 | MNO | 0.032 | 0.16 | 2,640 | EMZA250 □ RA392MMN0S | 330 | LH0 | 0.15 | 1.05 | 1,220 | EMZA800 □ RA331MLH0S | |
| | 4.7 | D61 | 1.35 | - | 90 | EMZA350ARA4R7MD61G | 430 | MH0 | 0.12 | 0.84 | 1,430 | EMZA800 □ RA431MMH0S | |
| | 10 | D61 | 1.35 | - | 90 | EMZA350ARA100MD61G | 470 | LNO | 0.085 | 0.58 | 1,790 | EMZA800 □ RA471MLN0S | |
| | 10 | E61 | 0.70 | - | 160 | EMZA350ARA100ME61G | 680 | MNO | 0.070 | 0.49 | 1,960 | EMZA800 □ RA681MMN0S | |
| | 22 | E61 | 0.70 | - | 160 | EMZA350ARA220ME61G | 110 | KE0 | 0.28 | 2.24 | 740 | EMZA101 □ RA111MKE0S | |
| | 33 | F61 | 0.36 | - | 240 | EMZA350 □ RA330MF61G | 130 | KG5 | 0.21 | 1.68 | 900 | EMZA101 □ RA131MKG5S | |
| 35 | 47 | F61 | 0.36 | - | 240 | EMZA350 □ RA470MF61G | 200 | LH0 | 0.18 | 1.44 | 1,090 | EMZA101 □ RA201MLH0S | |
| | 100 | F80 | 0.34 | - | 280 | EMZA350 □ RA101MF80G | 270 | MH0 | 0.15 | 1.2 | 1,280 | EMZA101 □ RA271MMH0S | |
| | 100 | HA0 | 0.16 | - | 600 | EMZA350 □ RA101MHA0G | 330 | LNO | 0.11 | 0.88 | 1,580 | EMZA101 □ RA331MLN0S | |
| | 220 | HA0 | 0.16 | - | 600 | EMZA350 □ RA221MHA0G | 430 | MNO | 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 MNO | 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.