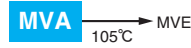


Alchip™ **MVA** Series *Upgrade!*

- φ 4 through φ 18 case sizes are fully lined up
- Endurance : 2,000 hours at 85°C
- Suitable to fit for downsized equipment
- Solvent resistant type except 100 to 450V_{dc} (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant

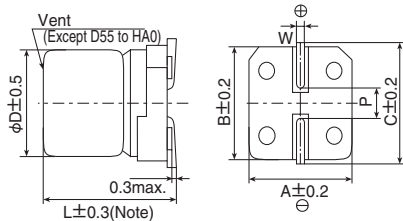


◆ SPECIFICATIONS

| Items | Characteristics | | | | | | | | | | | | |
|---|--|---|------|------|------|--------------------------------------|------|-------------------------------------|------|--------------------------------------|-------------|------------|---|
| Category | -40 to +85°C | | | | | | | | | | | | |
| Temperature Range | -40 to +85°C | | | | | | | | | | | | |
| Rated Voltage Range | 4 to 450V _{dc} | | | | | | | | | | | | |
| Capacitance Tolerance | ±20% (M) (at 20°C, 120Hz) | | | | | | | | | | | | |
| Leakage Current | Rated voltage (V _{dc}) | 4 to 100V | | | | | | 160 to 450V | | | | | |
| | D55 to JA0 | I=0.01CV or 3μA, whichever is greater.(after 2 minutes) | | | | | | — | | | | | |
| | KE0 to MN0 | I=0.03CV or 4μA, whichever is greater.(after 1 minute) | | | | | | I=0.04CV+100μA max.(after 1 minute) | | | | | |
| Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20°C) | | | | | | | | | | | | | |
| Dissipation Factor (tan δ) | Rated voltage (V _{dc}) | 4V | 6.3V | 10V | 16V | 25V | 35V | 50V | 63V | 100V | 160 to 250V | 400 & 450V | |
| | tan δ (Max.) | D55 to JA0 | 0.42 | 0.35 | 0.30 | 0.26 | 0.16 | 0.14 | 0.12 | 0.12 | 0.12 | — | — |
| | KE0 to MN0 | — | 0.38 | 0.34 | 0.30 | 0.26 | 0.22 | 0.18 | 0.14 | 0.10 | 0.20 | 0.25 | |
| 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}) | 4V | 6.3V | 10V | 16V | 25V | 35V | 50V | 63V | 100V | 160 to 250V | 400 & 450V | |
| | D55 to JA0 | Z(-25°C)/Z(+20°C) | 7 | 4 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | — | — |
| | | Z(-40°C)/Z(+20°C) | 17 | 10 | 8 | 6 | 4 | 3 | 3 | 3 | 4 | — | — |
| | KE0 to MN0 | Z(-25°C)/Z(+20°C) | — | 5 | 4 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 6 |
| Z(-40°C)/Z(+20°C) | | — | 12 | 10 | 8 | 5 | 4 | 3 | 3 | 3 | 6 | 10 | |
| (at 120Hz) | | | | | | | | | | | | | |
| 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 85°C. | | | | | | | | | | | | |
| | Size code | D55 to JA0 | | | | D55 to JA0 | | | | KE0 to MN0 | | | |
| | Rated voltage (V _{dc}) | 4V & 6.3V | | | | 10 to 100V | | | | 6.3 to 450V | | | |
| | Capacitance change | ≤ ±30% of the initial value | | | | ≤ ±20% of the initial value | | | | ≤ ±20% of the initial value | | | |
| | D.F. (tan δ) | ≤200% of the initial specified value | | | | ≤200% of the initial specified value | | | | ≤200% of the initial specified value | | | |
| | Leakage current | ≤The initial specified value | | | | ≤The initial specified value | | | | ≤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 85°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. | | | | | | | | | | | | |
| | Size code | D55 to JA0 | | | | D55 to JA0 | | | | KE0 to MN0 | | | |
| | Rated voltage | 4V & 6.3V | | | | 10 to 100V | | | | 6.3 to 450V | | | |
| | Capacitance change | ≤ ±30% of the initial value | | | | ≤ ±20% of the initial value | | | | ≤ ±20% of the initial value | | | |
| | D.F. (tan δ) | ≤200% of the initial specified value | | | | ≤200% of the initial specified value | | | | ≤200% of the initial specified value | | | |
| | Leakage current | ≤The initial specified value | | | | ≤The initial specified value | | | | ≤The initial specified value | | | |

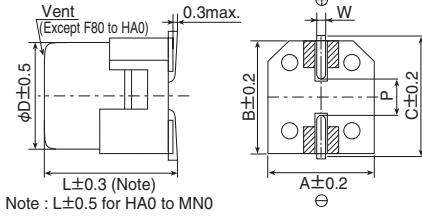
◆ DIMENSIONS [mm]

- Terminal Code : A
- Size code : D55 to MN0



Note : L±0.5 for HA0 to MN0

- Terminal Code : G (Vibration resistant structure)
- Size code : F80 to MN0



Note : L±0.5 for HA0 to MN0

▨ : Dummy terminals

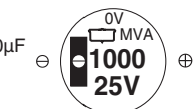
| Size code | D | L | A | B | C | W | P |
|-----------|------|------|------|------|------|------------|-----|
| D55 | 4 | 5.2 | 4.3 | 4.3 | 5.1 | 0.5 to 0.8 | 1.0 |
| E55 | 5 | 5.2 | 5.3 | 5.3 | 5.9 | 0.5 to 0.8 | 1.4 |
| F55 | 6.3 | 5.2 | 6.6 | 6.6 | 7.2 | 0.5 to 0.8 | 1.9 |
| F80 | 6.3 | 7.7 | 6.6 | 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 |

◆ MARKING

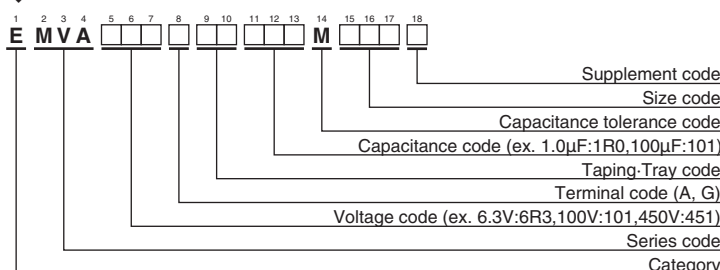
D55 to JA0
EX) 16V47μF



KE0 to HN0
EX) 25V1,000μF



◆ PART NUMBERING SYSTEM



◆ RATED RIPPLE CURRENT MULTIPLIERS

● Frequency Multipliers

| Size code | Capacitance(μF) | Frequency(Hz) | | | |
|------------|-----------------|---------------|------|------|------|
| | | 1.0 | 1k | 10k | 100k |
| D55 to JA0 | 1.0 | 1.00 | 1.50 | 1.75 | 1.80 |
| | 2.2 to 10 | 1.00 | 1.30 | 1.40 | 1.50 |
| | 22 to 1,500 | 1.00 | 1.05 | 1.08 | 1.08 |
| KE0 to MN0 | 4.7 | 1.00 | 1.75 | 2.30 | 2.50 |
| | 10 to 68 | 1.00 | 1.50 | 1.75 | 1.80 |
| | 100 to 1,000 | 1.00 | 1.30 | 1.40 | 1.50 |
| | 2,200 to 10,000 | 1.00 | 1.05 | 1.08 | 1.08 |

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.

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

◆ **STANDARD RATINGS**

□ is not solvent resistant.

| WV (V _{dc}) | Cap (μF) | Size code | tan δ | Rated ripple current (mArms/85°C, 120Hz) | Part No. | WV (V _{dc}) | Cap (μF) | Size code | tan δ | Rated ripple current (mArms/85°C, 120Hz) | Part No. | | |
|-----------------------|----------|-----------|-------|--|--------------------|-----------------------|--------------------|-----------|--------------------|--|--------------------|--------------------|--------------------|
| 4 | 33 | D55 | 0.42 | 25 | EMVA4R0ARA330MD55G | 35 | 33 | F55 | 0.14 | 54 | EMVA350ARA330MF55G | | |
| | 47 | D55 | 0.42 | 30 | EMVA4R0ARA470MD55G | | 100 | F80 | 0.14 | 120 | EMVA350□RA101MF80G | | |
| | 100 | E55 | 0.42 | 50 | EMVA4R0ARA101ME55G | | 150 | HA0 | 0.14 | 210 | EMVA350□RA151MHA0G | | |
| | 220 | F55 | 0.42 | 80 | EMVA4R0ARA221MF55G | | 220 | HA0 | 0.14 | 260 | EMVA350□RA221MHA0G | | |
| | 330 | F80 | 0.42 | 135 | EMVA4R0□RA331MF80G | | 330 | JA0 | 0.14 | 360 | EMVA350□RA331MJA0G | | |
| | 470 | F80 | 0.42 | 150 | EMVA4R0□RA471MF80G | | 470 | KE0 | 0.22 | 600 | EMVA350□RA471MKE0S | | |
| | 1,000 | HA0 | 0.42 | 320 | EMVA4R0□RA102MHA0G | | 1,000 | LH0 | 0.22 | 1,100 | EMVA350□RA102MLH0S | | |
| 6.3 | 33 | D55 | 0.35 | 30 | EMVA6R3ARA330MD55G | 50 | 2,200 | MN0 | 0.24 | 1,700 | EMVA350□RA222MMN0S | | |
| | 47 | D55 | 0.35 | 33 | EMVA6R3ARA470MD55G | | 3.3 | D55 | 0.12 | 15 | EMVA500ARA3R3MD55G | | |
| | 100 | E55 | 0.35 | 55 | EMVA6R3ARA101ME55G | | 4.7 | D55 | 0.12 | 18 | EMVA500ARA4R7MD55G | | |
| | 220 | F55 | 0.35 | 88 | EMVA6R3ARA221MF55G | | 10 | E55 | 0.12 | 30 | EMVA500ARA100ME55G | | |
| | 330 | F80 | 0.35 | 135 | EMVA6R3□RA331MF80G | | 22 | F55 | 0.12 | 47 | EMVA500ARA220MF55G | | |
| | 470 | HA0 | 0.35 | 280 | EMVA6R3□RA471MHA0G | | 33 | F80 | 0.12 | 70 | EMVA500□RA330MF80G | | |
| | 680 | HA0 | 0.35 | 290 | EMVA6R3□RA681MHA0G | | 47 | F80 | 0.12 | 85 | EMVA500□RA470MF80G | | |
| | 820 | HA0 | 0.35 | 320 | EMVA6R3□RA821MHA0G | | 100 | HA0 | 0.12 | 190 | EMVA500□RA101MHA0G | | |
| | 1,000 | JA0 | 0.35 | 430 | EMVA6R3□RA102MJA0G | | 220 | JA0 | 0.12 | 320 | EMVA500□RA221MJA0G | | |
| | 1,500 | JA0 | 0.35 | 480 | EMVA6R3□RA152MJA0G | | 330 | KE0 | 0.18 | 600 | EMVA500□RA331MKE0S | | |
| | 2,200 | KE0 | 0.40 | 890 | EMVA6R3□RA222MKE0S | | 470 | KG5 | 0.18 | 740 | EMVA500□RA471MKG5S | | |
| | 3,300 | KG5 | 0.42 | 1,000 | EMVA6R3□RA332MKG5S | | 470 | LH0 | 0.18 | 850 | EMVA500□RA471MLH0S | | |
| | 3,300 | LH0 | 0.42 | 1,200 | EMVA6R3□RA332MLH0S | | 1,000 | LN0 | 0.18 | 1,300 | EMVA500□RA102MLN0S | | |
| | 4,700 | LH0 | 0.44 | 1,400 | EMVA6R3□RA472MLH0S | | 1,000 | MN0 | 0.18 | 1,400 | EMVA500□RA102MMN0S | | |
| | 6,800 | LN0 | 0.48 | 1,750 | EMVA6R3□RA682MLN0S | | 63 | 1.0 | D55 | 0.12 | 8.0 | EMVA630ARA1R0MD55G | |
| 6,800 | MH0 | 0.48 | 1,700 | EMVA6R3□RA682MMH0S | 2.2 | D55 | | 0.12 | 12 | EMVA630ARA2R2MD55G | | | |
| 10,000 | MN0 | 0.56 | 2,000 | EMVA6R3□RA103MMN0S | 3.3 | E55 | | 0.12 | 17 | EMVA630ARA3R3ME55G | | | |
| 10 | 22 | D55 | 0.30 | 26 | EMVA100ARA220MD55G | 4.7 | | E55 | 0.12 | 20 | EMVA630ARA4R7ME55G | | |
| | 33 | D55 | 0.30 | 30 | EMVA100ARA330MD55G | 10 | | F55 | 0.12 | 32 | EMVA630ARA100MF55G | | |
| | 47 | E55 | 0.30 | 44 | EMVA100ARA470ME55G | 22 | | F80 | 0.12 | 60 | EMVA630□RA220MF80G | | |
| | 100 | F55 | 0.30 | 70 | EMVA100ARA101MF55G | 33 | | HA0 | 0.12 | 110 | EMVA630□RA330MHA0G | | |
| | 150 | F55 | 0.30 | 79 | EMVA100ARA151MF55G | 47 | | HA0 | 0.12 | 130 | EMVA630□RA470MHA0G | | |
| | 220 | F80 | 0.30 | 130 | EMVA100□RA221MF80G | 56 | | JA0 | 0.12 | 160 | EMVA630□RA560MJA0G | | |
| | 330 | HA0 | 0.30 | 270 | EMVA100□RA331MHA0G | 68 | | JA0 | 0.12 | 170 | EMVA630□RA680MJA0G | | |
| | 470 | HA0 | 0.30 | 280 | EMVA100□RA471MHA0G | 100 | | KE0 | 0.14 | 380 | EMVA630□RA101MKE0S | | |
| | 1,000 | JA0 | 0.30 | 430 | EMVA100□RA102MJA0G | 220 | | KE0 | 0.14 | 580 | EMVA630□RA221MKE0S | | |
| | 2,200 | KE0 | 0.36 | 960 | EMVA100□RA222MKE0S | 330 | | KG5 | 0.14 | 720 | EMVA630□RA331MKG5S | | |
| | 3,300 | LH0 | 0.38 | 1,300 | EMVA100□RA332MLH0S | 330 | | LH0 | 0.14 | 820 | EMVA630□RA331MLH0S | | |
| | 4,700 | LN0 | 0.40 | 1,550 | EMVA100□RA472MLN0S | 470 | | LH0 | 0.14 | 950 | EMVA630□RA471MLH0S | | |
| | 4,700 | MH0 | 0.40 | 1,600 | EMVA100□RA472MMH0S | 470 | MH0 | 0.14 | 1,000 | EMVA630□RA471MMH0S | | | |
| | 6,800 | MN0 | 0.44 | 1,850 | EMVA100□RA682MMN0S | 100 | 22 | HA0 | 0.12 | 90 | EMVA101□RA220MHA0G | | |
| | 16 | 22 | D55 | 0.26 | 26 | | EMVA160ARA220MD55G | 33 | JA0 | 0.12 | 120 | EMVA101□RA330MJA0G | |
| 33 | | E55 | 0.26 | 37 | EMVA160ARA330ME55G | | 68 | KE0 | 0.10 | 380 | EMVA101□RA680MKE0S | | |
| 47 | | E55 | 0.26 | 44 | EMVA160ARA470ME55G | | 100 | KE0 | 0.10 | 440 | EMVA101□RA101MKE0S | | |
| 100 | | F55 | 0.26 | 70 | EMVA160ARA101MF55G | | 220 | LN0 | 0.10 | 850 | EMVA101□RA221MLN0S | | |
| 150 | | F80 | 0.26 | 110 | EMVA160□RA151MF80G | | 220 | MH0 | 0.10 | 800 | EMVA101□RA221MMH0S | | |
| 220 | | F80 | 0.26 | 130 | EMVA160□RA221MF80G | | 330 | MN0 | 0.10 | 1,000 | EMVA101□RA331MMN0S | | |
| 330 | | HA0 | 0.26 | 270 | EMVA160□RA331MHA0G | | 160 | 47 | KG5 | 0.20 | 370 | EMVA161□RA470MKG5S | |
| 470 | | HA0 | 0.26 | 280 | EMVA160□RA471MHA0G | | | 68 | LH0 | 0.20 | 500 | EMVA161□RA680MLH0S | |
| 680 | | JA0 | 0.26 | 380 | EMVA160□RA681MJA0G | | | 100 | LN0 | 0.20 | 590 | EMVA161□RA101MLN0S | |
| 1,000 | | KE0 | 0.30 | 710 | EMVA160□RA102MKE0S | | | 100 | MH0 | 0.20 | 590 | EMVA161□RA101MMH0S | |
| 2,200 | | LH0 | 0.32 | 1,150 | EMVA160□RA222MLH0S | | | 200 | 22 | KE0 | 0.20 | 240 | EMVA201□RA220MKE0S |
| 3,300 | | LN0 | 0.34 | 1,450 | EMVA160□RA332MLN0S | | | | 33 | KG5 | 0.20 | 310 | EMVA201□RA330MKG5S |
| 3,300 | | MH0 | 0.34 | 1,450 | EMVA160□RA332MMH0S | | | | 47 | LH0 | 0.20 | 420 | EMVA201□RA470MLH0S |
| 4,700 | | MN0 | 0.36 | 1,750 | EMVA160□RA472MMN0S | | | | 68 | LN0 | 0.20 | 510 | EMVA201□RA680MLN0S |
| 25 | | 10 | D55 | 0.16 | 24 | EMVA250ARA100MD55G | | | 68 | MH0 | 0.20 | 510 | EMVA201□RA680MMH0S |
| | 22 | E55 | 0.16 | 41 | EMVA250ARA220ME55G | 100 | | | MN0 | 0.20 | 590 | EMVA201□RA101MMN0S | |
| | 33 | E55 | 0.16 | 47 | EMVA250ARA330ME55G | 250 | | | 10 | KE0 | 0.20 | 150 | EMVA251□RA100MKE0S |
| | 47 | F55 | 0.16 | 60 | EMVA250ARA470MF55G | | | | 22 | KG5 | 0.20 | 240 | EMVA251□RA220MKG5S |
| | 56 | F55 | 0.16 | 66 | EMVA250ARA560MF55G | | | | 33 | LH0 | 0.20 | 340 | EMVA251□RA330MLH0S |
| | 100 | F80 | 0.16 | 120 | EMVA250□RA101MF80G | | | | 47 | LN0 | 0.20 | 420 | EMVA251□RA470MLN0S |
| | 150 | HA0 | 0.16 | 210 | EMVA250□RA151MHA0G | | | | 47 | MH0 | 0.20 | 420 | EMVA251□RA470MMH0S |
| | 220 | HA0 | 0.16 | 260 | EMVA250□RA221MHA0G | | 68 | | MN0 | 0.20 | 490 | EMVA251□RA680MMN0S | |
| | 330 | HA0 | 0.16 | 300 | EMVA250□RA331MHA0G | | 400 | | 4.7 | KE0 | 0.25 | 120 | EMVA401□RA4R7MKE0S |
| | 470 | JA0 | 0.16 | 400 | EMVA250□RA471MJA0G | | | | 10 | LH0 | 0.25 | 140 | EMVA401□RA100MLH0S |
| | 1,000 | KE0 | 0.26 | 820 | EMVA250□RA102MKE0S | | | | 22 | LN0 | 0.25 | 280 | EMVA401□RA220MLN0S |
| | 2,200 | LN0 | 0.28 | 1,450 | EMVA250□RA222MLN0S | | | 22 | MH0 | 0.25 | 280 | EMVA401□RA220MMH0S | |
| | 2,200 | MH0 | 0.28 | 1,400 | EMVA250□RA222MMH0S | | | 33 | MN0 | 0.25 | 350 | EMVA401□RA330MMN0S | |
| | 3,300 | MN0 | 0.30 | 1,800 | EMVA250□RA332MMN0S | | | 450 | 4.7 | KE0 | 0.25 | 120 | EMVA451□RA4R7MKE0S |
| | 35 | 4.7 | D55 | 0.14 | 18 | | | | EMVA350ARA4R7MD55G | 10 | LH0 | 0.25 | 140 |
| 10 | | D55 | 0.14 | 24 | EMVA350ARA100MD55G | | | | 22 | LN0 | 0.25 | 280 | EMVA451□RA220MLN0S |
| 22 | | E55 | 0.14 | 41 | EMVA350ARA220ME55G | | | | 33 | MN0 | 0.25 | 350 | EMVA451□RA330MMN0S |

□ : Enter the appropriate terminal code.