

## Alchip™-MV Series

- Height 5.2 to 10.0mm
- Suitable to fit for downsized equipment
- Solvent resistant type (see PRECAUTIONS AND GUIDELINES)
- RoHS Compliant

MVA  
MVS  
Low profile  
Downsized  
MV  
105°C  
MVK

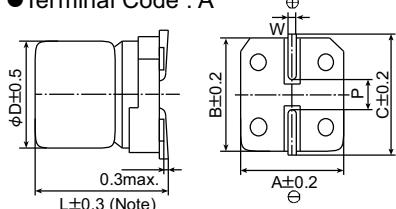


## ◆SPECIFICATIONS

| Items  | Characteristics  |   |      |      |      |      |      |      |                     |    |      |     |     |     |     |     |     |                     |            |      |      |      |      |      |      |      |            |   |      |      |      |      |      |      |                     |    |      |     |     |     |     |     |     |                   |   |   |   |   |   |   |   |   |                   |            |    |    |   |   |   |   |   |            |   |    |   |   |   |   |   |
|--|--|---|------|------|------|------|------|------|---------------------|----|------|-----|-----|-----|-----|-----|-----|---------------------|------------|------|------|------|------|------|------|------|------------|---|------|------|------|------|------|------|---------------------|----|------|-----|-----|-----|-----|-----|-----|-------------------|---|---|---|---|---|---|---|---|-------------------|------------|----|----|---|---|---|---|---|------------|---|----|---|---|---|---|---|
| Category Temperature Range                             | -40 to +85°C   |   |      |      |      |      |      |      |                     |    |      |     |     |     |     |     |     |                     |            |      |      |      |      |      |      |      |            |   |      |      |      |      |      |      |                     |    |      |     |     |     |     |     |     |                   |   |   |   |   |   |   |   |   |                   |            |    |    |   |   |   |   |   |            |   |    |   |   |   |   |   |
| Rated Voltage Range                                    | 4 to 63Vdc   |   |      |      |      |      |      |      |                     |    |      |     |     |     |     |     |     |                     |            |      |      |      |      |      |      |      |            |   |      |      |      |      |      |      |                     |    |      |     |     |     |     |     |     |                   |   |   |   |   |   |   |   |   |                   |            |    |    |   |   |   |   |   |            |   |    |   |   |   |   |   |
| Capacitance Tolerance                                  | $\pm 20\%$ (M) (at 20°C, 120Hz)  |   |      |      |      |      |      |      |                     |    |      |     |     |     |     |     |     |                     |            |      |      |      |      |      |      |      |            |   |      |      |      |      |      |      |                     |    |      |     |     |     |     |     |     |                   |   |   |   |   |   |   |   |   |                   |            |    |    |   |   |   |   |   |            |   |    |   |   |   |   |   |
| Leakage Current  | $I = 0.01CV$ or $3\mu A$ , whichever is greater.<br>Where, I : Max. leakage current ( $\mu A$ ), C : Nominal capacitance ( $\mu F$ ), V : Rated voltage (V) (at 20°C after 2 minutes)  |   |      |      |      |      |      |      |                     |    |      |     |     |     |     |     |     |                     |            |      |      |      |      |      |      |      |            |   |      |      |      |      |      |      |                     |    |      |     |     |     |     |     |     |                   |   |   |   |   |   |   |   |   |                   |            |    |    |   |   |   |   |   |            |   |    |   |   |   |   |   |
| Dissipation Factor ( $\tan\delta$ )                    | <table border="1"> <tr> <td>Rated voltage (Vdc)</td> <td>4V</td> <td>6.3V</td> <td>10V</td> <td>16V</td> <td>25V</td> <td>35V</td> <td>50V</td> <td>63V</td> </tr> <tr> <td rowspan="2">tan<math>\delta</math> (Max.)</td> <td>D55 to F60</td> <td>0.42</td> <td>0.24</td> <td>0.20</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.10</td> </tr> <tr> <td>H63 to JA0</td> <td>—</td> <td>0.40</td> <td>0.30</td> <td>0.26</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> </tr> </table><br><table border="1"> <tr> <td>Rated voltage (Vdc)</td> <td>4V</td> <td>6.3V</td> <td>10V</td> <td>16V</td> <td>25V</td> <td>35V</td> <td>50V</td> <td>63V</td> </tr> <tr> <td>Z(-25°C)/Z(+20°C)</td> <td>7</td> <td>4</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td rowspan="2">Z(-40°C)/Z(+20°C)</td> <td>D55 to F60</td> <td>15</td> <td>10</td> <td>8</td> <td>6</td> <td>4</td> <td>3</td> <td>3</td> </tr> <tr> <td>H63 to JA0</td> <td>—</td> <td>10</td> <td>8</td> <td>6</td> <td>4</td> <td>3</td> <td>3</td> </tr> </table> |   |      |      |      |      |      |      | Rated voltage (Vdc) | 4V | 6.3V | 10V | 16V | 25V | 35V | 50V | 63V | tan $\delta$ (Max.) | D55 to F60 | 0.42 | 0.24 | 0.20 | 0.16 | 0.14 | 0.12 | 0.10 | H63 to JA0 | — | 0.40 | 0.30 | 0.26 | 0.16 | 0.14 | 0.12 | Rated voltage (Vdc) | 4V | 6.3V | 10V | 16V | 25V | 35V | 50V | 63V | Z(-25°C)/Z(+20°C) | 7 | 4 | 3 | 2 | 2 | 2 | 2 | 2 | Z(-40°C)/Z(+20°C) | D55 to F60 | 15 | 10 | 8 | 6 | 4 | 3 | 3 | H63 to JA0 | — | 10 | 8 | 6 | 4 | 3 | 3 |
| Rated voltage (Vdc)                                    | 4V   | 6.3V  | 10V  | 16V  | 25V  | 35V  | 50V  | 63V  |                     |    |      |     |     |     |     |     |     |                     |            |      |      |      |      |      |      |      |            |   |      |      |      |      |      |      |                     |    |      |     |     |     |     |     |     |                   |   |   |   |   |   |   |   |   |                   |            |    |    |   |   |   |   |   |            |   |    |   |   |   |   |   |
| tan $\delta$ (Max.)                                    | D55 to F60   | 0.42  | 0.24 | 0.20 | 0.16 | 0.14 | 0.12 | 0.10 |                     |    |      |     |     |     |     |     |     |                     |            |      |      |      |      |      |      |      |            |   |      |      |      |      |      |      |                     |    |      |     |     |     |     |     |     |                   |   |   |   |   |   |   |   |   |                   |            |    |    |   |   |   |   |   |            |   |    |   |   |   |   |   |
|  | H63 to JA0   | —   | 0.40 | 0.30 | 0.26 | 0.16 | 0.14 | 0.12 |                     |    |      |     |     |     |     |     |     |                     |            |      |      |      |      |      |      |      |            |   |      |      |      |      |      |      |                     |    |      |     |     |     |     |     |     |                   |   |   |   |   |   |   |   |   |                   |            |    |    |   |   |   |   |   |            |   |    |   |   |   |   |   |
| Rated voltage (Vdc)                                    | 4V   | 6.3V  | 10V  | 16V  | 25V  | 35V  | 50V  | 63V  |                     |    |      |     |     |     |     |     |     |                     |            |      |      |      |      |      |      |      |            |   |      |      |      |      |      |      |                     |    |      |     |     |     |     |     |     |                   |   |   |   |   |   |   |   |   |                   |            |    |    |   |   |   |   |   |            |   |    |   |   |   |   |   |
| Z(-25°C)/Z(+20°C)                                      | 7  | 4   | 3    | 2    | 2    | 2    | 2    | 2    |                     |    |      |     |     |     |     |     |     |                     |            |      |      |      |      |      |      |      |            |   |      |      |      |      |      |      |                     |    |      |     |     |     |     |     |     |                   |   |   |   |   |   |   |   |   |                   |            |    |    |   |   |   |   |   |            |   |    |   |   |   |   |   |
| Z(-40°C)/Z(+20°C)                                      | D55 to F60   | 15  | 10   | 8    | 6    | 4    | 3    | 3    |                     |    |      |     |     |     |     |     |     |                     |            |      |      |      |      |      |      |      |            |   |      |      |      |      |      |      |                     |    |      |     |     |     |     |     |     |                   |   |   |   |   |   |   |   |   |                   |            |    |    |   |   |   |   |   |            |   |    |   |   |   |   |   |
|  | H63 to JA0   | —   | 10   | 8    | 6    | 4    | 3    | 3    |                     |    |      |     |     |     |     |     |     |                     |            |      |      |      |      |      |      |      |            |   |      |      |      |      |      |      |                     |    |      |     |     |     |     |     |     |                   |   |   |   |   |   |   |   |   |                   |            |    |    |   |   |   |   |   |            |   |    |   |   |   |   |   |
| Low Temperature Characteristics (Max. Impedance Ratio) | (at 20°C, 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.   |   |      |      |      |      |      |      |                     |    |      |     |     |     |     |     |     |                     |            |      |      |      |      |      |      |      |            |   |      |      |      |      |      |      |                     |    |      |     |     |     |     |     |     |                   |   |   |   |   |   |   |   |   |                   |            |    |    |   |   |   |   |   |            |   |    |   |   |   |   |   |
|  | Capacitance change   | $\leq \pm 20\%$ of the initial value        |      |      |      |      |      |      |                     |    |      |     |     |     |     |     |     |                     |            |      |      |      |      |      |      |      |            |   |      |      |      |      |      |      |                     |    |      |     |     |     |     |     |     |                   |   |   |   |   |   |   |   |   |                   |            |    |    |   |   |   |   |   |            |   |    |   |   |   |   |   |
|  | D.F. ( $\tan\delta$ )  | $\leq 200\%$ of the initial specified value |      |      |      |      |      |      |                     |    |      |     |     |     |     |     |     |                     |            |      |      |      |      |      |      |      |            |   |      |      |      |      |      |      |                     |    |      |     |     |     |     |     |     |                   |   |   |   |   |   |   |   |   |                   |            |    |    |   |   |   |   |   |            |   |    |   |   |   |   |   |
|  | Leakage current  | $\leq$ The initial specified value          |      |      |      |      |      |      |                     |    |      |     |     |     |     |     |     |                     |            |      |      |      |      |      |      |      |            |   |      |      |      |      |      |      |                     |    |      |     |     |     |     |     |     |                   |   |   |   |   |   |   |   |   |                   |            |    |    |   |   |   |   |   |            |   |    |   |   |   |   |   |
| Shelf Life   | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 500 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.   |   |      |      |      |      |      |      |                     |    |      |     |     |     |     |     |     |                     |            |      |      |      |      |      |      |      |            |   |      |      |      |      |      |      |                     |    |      |     |     |     |     |     |     |                   |   |   |   |   |   |   |   |   |                   |            |    |    |   |   |   |   |   |            |   |    |   |   |   |   |   |
|  | Capacitance change   | $\leq \pm 15\%$ of the initial value        |      |      |      |      |      |      |                     |    |      |     |     |     |     |     |     |                     |            |      |      |      |      |      |      |      |            |   |      |      |      |      |      |      |                     |    |      |     |     |     |     |     |     |                   |   |   |   |   |   |   |   |   |                   |            |    |    |   |   |   |   |   |            |   |    |   |   |   |   |   |
|  | D.F. ( $\tan\delta$ )  | $\leq 150\%$ of the initial specified value |      |      |      |      |      |      |                     |    |      |     |     |     |     |     |     |                     |            |      |      |      |      |      |      |      |            |   |      |      |      |      |      |      |                     |    |      |     |     |     |     |     |     |                   |   |   |   |   |   |   |   |   |                   |            |    |    |   |   |   |   |   |            |   |    |   |   |   |   |   |
|  | Leakage current  | $\leq$ The initial specified value          |      |      |      |      |      |      |                     |    |      |     |     |     |     |     |     |                     |            |      |      |      |      |      |      |      |            |   |      |      |      |      |      |      |                     |    |      |     |     |     |     |     |     |                   |   |   |   |   |   |   |   |   |                   |            |    |    |   |   |   |   |   |            |   |    |   |   |   |   |   |

## ◆DIMENSIONS [mm]

- Terminal Code : A

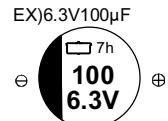


Note : L $\pm 0.5$  for H63 to JA0

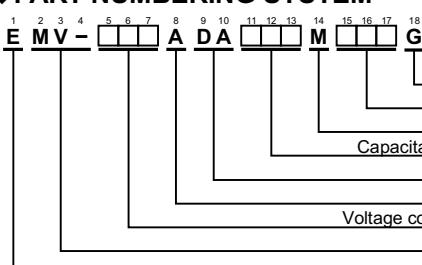
| Size code | D   | L    | A    | B    | C    | W          | P   |
|-----------|-----|------|------|------|------|------------|-----|
| D55 & D60 | 4   | *5.2 | 4.3  | 4.3  | 5.1  | 0.5 to 0.8 | 1.0 |
| E55 & E60 | 5   | *5.2 | 5.3  | 5.3  | 5.9  | 0.5 to 0.8 | 1.4 |
| F55 & F60 | 6.3 | *5.2 | 6.6  | 6.6  | 7.2  | 0.5 to 0.8 | 1.9 |
| H63       | 8   | 6.3  | 8.3  | 8.3  | 9.0  | 0.5 to 0.8 | 2.3 |
| 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 |

\* : L=5.7 for D60, E60 and F60.

## ◆MARKING



## ◆PART NUMBERING SYSTEM



Supplement code  
Size code  
Capacitance tolerance code  
Capacitance code (ex. 4.7μF:4R7, 10μF:100)  
Taping code  
Terminal code  
Voltage code (ex. 6.3V:6R3, 10V:100, 50V:500)  
Series code  
Category

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

## ◆STANDARD RATINGS

| WV<br>(Vdc) | Cap<br>( $\mu$ F) | Size code | $\tan\delta$ | Rated ripple current<br>(mArms/<br>85°C,120Hz) | Part No.           |
|-------------|-------------------|-----------|--------------|--|--------------------|
| 4           | 33                | D55       | 0.42         | 23   | EMV-4R0ADA330MD55G |
|             | 47                | D55       | 0.42         | 27   | EMV-4R0ADA470MD55G |
|             | 100               | E55       | 0.42         | 46   | EMV-4R0ADA101ME55G |
|             | 220               | F55       | 0.42         | 74   | EMV-4R0ADA221MF55G |
| 6.3         | 22                | D55       | 0.24         | 23   | EMV-6R3ADA220MD55G |
|             | 47                | E55       | 0.24         | 38   | EMV-6R3ADA470ME55G |
|             | 100               | F55       | 0.24         | 60   | EMV-6R3ADA101MF55G |
|             | 330               | H63       | 0.40         | 190  | EMV-6R3ADA331MH63G |
|             | 470               | HA0       | 0.40         | 265  | EMV-6R3ADA471MHA0G |
|             | 1,000             | JA0       | 0.40         | 400  | EMV-6R3ADA102MJA0G |
| 10          | 33                | E55       | 0.20         | 35   | EMV-100ADA330ME55G |
|             | (100)             | (F60)     | (0.20)       | (70)   | EMV-100ADA101MF60G |
|             | 220               | H63       | 0.30         | 175  | EMV-100ADA221MH63G |
| 16          | 10                | D55       | 0.16         | 17   | EMV-160ADA100MD55G |
|             | 22                | E55       | 0.16         | 32   | EMV-160ADA220ME55G |
|             | 47                | F55       | 0.16         | 50   | EMV-160ADA470MF55G |
|             | 220               | HA0       | 0.26         | 215  | EMV-160ADA221MHA0G |
|             | 330               | HA0       | 0.26         | 270  | EMV-160ADA331MHA0G |
|             | 470               | JA0       | 0.26         | 330  | EMV-160ADA471MJA0G |
| 25          | 33                | F55       | 0.14         | 45   | EMV-250ADA330MF55G |
|             | (47)              | (F60)     | (0.14)       | (65)   | EMV-250ADA470MF60G |
|             | 100               | H63       | 0.16         | 145  | EMV-250ADA101MH63G |
|             | 330               | JA0       | 0.16         | 305  | EMV-250ADA331MJA0G |
| 35          | 4.7               | D55       | 0.12         | 15   | EMV-350ADA4R7MD55G |
|             | 10                | E55       | 0.12         | 25   | EMV-350ADA100ME55G |
|             | 22                | F55       | 0.12         | 40   | EMV-350ADA220MF55G |
|             | (33)              | (F60)     | (0.12)       | (55)   | EMV-350ADA330MF60G |
|             | 47                | H63       | 0.14         | 105  | EMV-350ADA470MH63G |
|             | 100               | HA0       | 0.14         | 175  | EMV-350ADA101MHA0G |
|             | 220               | JA0       | 0.14         | 265  | EMV-350ADA221MJA0G |

( ) : Second standard

| WV<br>(Vdc) | Cap<br>( $\mu$ F) | Size code | $\tan\delta$ | Rated ripple current<br>(mArms/<br>85°C,120Hz) | Part No.           |
|-------------|-------------------|-----------|--------------|--|--------------------|
| 50          | 0.10              | D55       | 0.10         | 1.3  | EMV-500ADAR10MD55G |
|             | 0.22              | D55       | 0.10         | 2.9  | EMV-500ADAR22MD55G |
|             | 0.33              | D55       | 0.10         | 3.5  | EMV-500ADAR33MD55G |
|             | 0.47              | D55       | 0.10         | 4.2  | EMV-500ADAR47MD55G |
|             | 1.0               | D55       | 0.10         | 6.2  | EMV-500ADA1R0MD55G |
|             | 2.2               | D55       | 0.10         | 10   | EMV-500ADA2R2MD55G |
|             | 3.3               | D55       | 0.10         | 14   | EMV-500ADA3R3MD55G |
|             | 4.7               | E55       | 0.10         | 19   | EMV-500ADA4R7ME55G |
|             | 10                | F55       | 0.10         | 29   | EMV-500ADA100MF55G |
|             | (22)              | (F60)     | (0.10)       | (45)   | EMV-500ADA220MF60G |
|             | 33                | H63       | 0.12         | 95   | EMV-500ADA330MH63G |
|             | 47                | HA0       | 0.12         | 140  | EMV-500ADA470MHA0G |
|             | 100               | JA0       | 0.12         | 195  | EMV-500ADA101MJA0G |
| 63          | 0.10              | D55       | 0.12         | 1.3  | EMV-630ADAR10MD55G |
|             | 0.22              | D55       | 0.12         | 2.9  | EMV-630ADAR22MD55G |
|             | 0.33              | D55       | 0.12         | 3.5  | EMV-630ADAR33MD55G |
|             | 0.47              | D55       | 0.12         | 4.2  | EMV-630ADAR47MD55G |
|             | 1.0               | D60       | 0.12         | 7.0  | EMV-630ADA1R0MD60G |
|             | 2.2               | D60       | 0.12         | 10   | EMV-630ADA2R2MD60G |
|             | 3.3               | E60       | 0.12         | 13   | EMV-630ADA3R3ME60G |
|             | (4.7)             | (F60)     | (0.12)       | (18.5)   | EMV-630ADA4R7MF60G |
|             | 10                | HA0       | 0.12         | 46   | EMV-630ADA100MHA0G |
|             | 22                | HA0       | 0.12         | 69   | EMV-630ADA220MHA0G |
|             | 33                | HA0       | 0.12         | 85   | EMV-630ADA330MHA0G |
|             | 47                | HA0       | 0.12         | 101  | EMV-630ADA470MHA0G |