

## EV Ultra Low Impedance Series

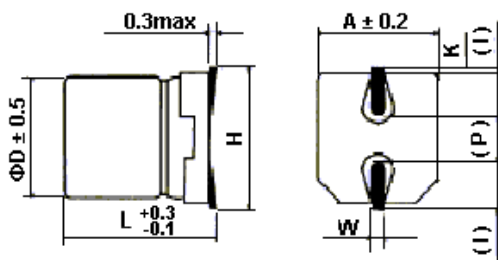
- Features : 105°C 2000 hours , Low profile vertical chip, Ultra low impedance
- Recommended Applications: AV(TV,Video,Audio) ,Monitor/Computer, OA/HA/Communication ,SMPS
- Corresponding product to RoHS



### Specifications

| Item   | Characteristics  |                    |  |                    |   |                 |                                   |            |  |  |  |  |  |                                  |   |   |   |   |   |                                  |   |   |   |   |   |
|--|--|--------------------|--|--------------------|---|-----------------|-----------------------------------|------------|--|--|--|--|--|----------------------------------|---|---|---|---|---|----------------------------------|---|---|---|---|---|
| Operating Temperature Range                            | -40 ~ +105°C   |                    |  |                    |   |                 |                                   |            |  |  |  |  |  |                                  |   |   |   |   |   |                                  |   |   |   |   |   |
| Rated Voltage Range (WV)                               | 6.3 ~ 35VDC  |                    |  |                    |   |                 |                                   |            |  |  |  |  |  |                                  |   |   |   |   |   |                                  |   |   |   |   |   |
| Capacitance Range                                      | 4.7 ~ 1500 $\mu$ F   |                    |  |                    |   |                 |                                   |            |  |  |  |  |  |                                  |   |   |   |   |   |                                  |   |   |   |   |   |
| Capacitance Tolerance                                  | $\pm 20\%$ at 120Hz , 20°C   |                    |  |                    |   |                 |                                   |            |  |  |  |  |  |                                  |   |   |   |   |   |                                  |   |   |   |   |   |
| Leakage Current (MAX) (20°C)                           | $I \leq 0.01CV$ or $3 \mu A$ whichever is greater(After rated voltage applied for 2 minutes)<br>I= Leakage Current ( $\mu A$ ) C= Nominal Capacitance ( $\mu F$ ) V= Rated Voltage (V)   |                    |  |                    |   |                 |                                   |            |  |  |  |  |  |                                  |   |   |   |   |   |                                  |   |   |   |   |   |
| Dissipation Factor (MAX) (tan $\delta$ ) (120Hz ,20°C) | Shown in the table of standard rating  |                    |  |                    |   |                 |                                   |            |  |  |  |  |  |                                  |   |   |   |   |   |                                  |   |   |   |   |   |
| Low Temperature Stability Impedance Ratio (MAX)        | <table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th style="border: none;">WV</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> </tr> </thead> <tbody> <tr> <td style="border: none;"><math>Z(120HZ)</math></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td style="border: none;"><math>Z(-25^\circ C) / Z(20^\circ C)</math></td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td style="border: none;"><math>Z(-40^\circ C) / Z(20^\circ C)</math></td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> </tr> </tbody> </table> | WV                 | 6.3                                    | 10                 | 16  | 25              | 35                                | $Z(120HZ)$ |  |  |  |  |  | $Z(-25^\circ C) / Z(20^\circ C)$ | 2 | 2 | 2 | 2 | 2 | $Z(-40^\circ C) / Z(20^\circ C)$ | 3 | 3 | 3 | 3 | 3 |
| WV   | 6.3  | 10                 | 16                                     | 25                 | 35  |                 |                                   |            |  |  |  |  |  |                                  |   |   |   |   |   |                                  |   |   |   |   |   |
| $Z(120HZ)$   |  |                    |  |                    |   |                 |                                   |            |  |  |  |  |  |                                  |   |   |   |   |   |                                  |   |   |   |   |   |
| $Z(-25^\circ C) / Z(20^\circ C)$                       | 2  | 2                  | 2                                      | 2                  | 2   |                 |                                   |            |  |  |  |  |  |                                  |   |   |   |   |   |                                  |   |   |   |   |   |
| $Z(-40^\circ C) / Z(20^\circ C)$                       | 3  | 3                  | 3                                      | 3                  | 3   |                 |                                   |            |  |  |  |  |  |                                  |   |   |   |   |   |                                  |   |   |   |   |   |
| Endurance  | <p>After applying rated voltage with rated ripple current for 2000 hours at 105°C, the capacitor shall meet the following requirement.</p> <table border="1" style="width: 100%;"> <tr> <td>Capacitance Change</td> <td>Within<math>\pm 30\%</math> of the initial value</td> </tr> <tr> <td>Dissipation Factor</td> <td>Not more than 200% of the specified value</td> </tr> <tr> <td>Leakage Current</td> <td>Not more than the specified value</td> </tr> </table>  | Capacitance Change | Within $\pm 30\%$ of the initial value | Dissipation Factor | Not more than 200% of the specified value | Leakage Current | Not more than the specified value |            |  |  |  |  |  |                                  |   |   |   |   |   |                                  |   |   |   |   |   |
| Capacitance Change                                     | Within $\pm 30\%$ of the initial value   |                    |  |                    |   |                 |                                   |            |  |  |  |  |  |                                  |   |   |   |   |   |                                  |   |   |   |   |   |
| Dissipation Factor                                     | Not more than 200% of the specified value  |                    |  |                    |   |                 |                                   |            |  |  |  |  |  |                                  |   |   |   |   |   |                                  |   |   |   |   |   |
| Leakage Current  | Not more than the specified value  |                    |  |                    |   |                 |                                   |            |  |  |  |  |  |                                  |   |   |   |   |   |                                  |   |   |   |   |   |
| Shelf Life   | After placed at 105°C without voltage applied for 1000 hours, the capacitor shall meet the same requirement as Endurance.  |                    |  |                    |   |                 |                                   |            |  |  |  |  |  |                                  |   |   |   |   |   |                                  |   |   |   |   |   |

### Diagram of Dimensions(mm)



$\Phi 8 \sim \Phi 10 \& \Phi 6.3 \times 7.7 = L \pm 0.3$

( ) : Reference size

| $\phi D$ | L    | A    | H        | I   | W              | P             | K              |                |
|----------|------|------|----------|-----|----------------|---------------|----------------|----------------|
| 4.0      | 5.4  | 4.3  | 5.5 Max  | 1.8 | 0.65 $\pm$ 0.1 | 1.0 $\pm$ 0.2 | 0.35           | +0.15<br>-0.20 |
| 5.0      | 5.4  | 5.3  | 6.5 Max  | 2.2 | 0.65 $\pm$ 0.1 | 1.5 $\pm$ 0.2 | 0.35           | +0.15<br>-0.20 |
| 6.3      | 5.4  | 6.6  | 7.8 Max  | 2.6 | 0.65 $\pm$ 0.1 | 1.8 $\pm$ 0.2 | 0.35           | +0.15<br>-0.20 |
| 6.3      | 7.7  | 6.6  | 7.8 Max  | 2.6 | 0.65 $\pm$ 0.1 | 1.8 $\pm$ 0.2 | 0.35           | +0.15<br>-0.20 |
| 8.0      | 6.2  | 8.3  | 9.5 Max  | 3.4 | 0.65 $\pm$ 0.1 | 2.2 $\pm$ 0.2 | 0.35           | +0.15<br>-0.20 |
| 8.0      | 10.2 | 8.3  | 10.0 Max | 3.4 | 0.90 $\pm$ 0.2 | 3.1 $\pm$ 0.2 | 0.70 $\pm$ 0.2 |                |
| 10.0     | 10.2 | 10.3 | 12.0 Max | 3.5 | 0.90 $\pm$ 0.2 | 4.6 $\pm$ 0.2 | 0.70 $\pm$ 0.2 |                |

### Multiplier for Ripple Current

Frequency coefficient

| Frequency (Hz) | 120  | 1K   | 10K  | 100K |
|----------------|------|------|------|------|
| Coefficient    | 0.70 | 0.80 | 0.90 | 1.00 |



EV

Ultra Low Impedance  
Series

■ Case Size /  $\tan \delta$  / Max Ripple Current / Impedance

| Capacitance<br>( $\mu$ F) | Rated (Surge) Voltage |               |     |      |            |               |     |      |            |               |     |      |
|---------------------------|-----------------------|---------------|-----|------|------------|---------------|-----|------|------------|---------------|-----|------|
|                           | 6.3(8)                |               |     |      | 10(13)     |               |     |      | 16(20)     |               |     |      |
|                           | $\phi$ DxL            | $\tan \delta$ | RC  | Z    | $\phi$ DxL | $\tan \delta$ | RC  | Z    | $\phi$ DxL | $\tan \delta$ | RC  | Z    |
| 22                        | 4x5.4                 | 0.26          | 90  | 1.93 | 4x5.4      | 0.19          | 90  | 1.93 | 4x5.4      | 0.16          | 90  | 1.93 |
|                           |                       |               |     |      |            |               |     |      | 5x5.4      | 0.16          | 160 | 1.00 |
| 33                        | 4x5.4                 | 0.26          | 90  | 1.93 | 4x5.4      | 0.19          | 90  | 1.93 | 5x5.4      | 0.16          | 160 | 1.00 |
|                           |                       |               |     |      | 5x5.4      | 0.19          | 160 | 1.00 |            |               |     |      |
| 47                        | 4x5.4                 | 0.26          | 90  | 1.93 | 6.3x5.4    | 0.19          | 190 | 0.52 | 5x5.4      | 0.16          | 160 | 1.00 |
|                           | 5x5.4                 | 0.26          | 160 | 1.00 |            |               |     |      | 6.3x5.4    | 0.16          | 240 | 0.52 |
| 100                       | 5x5.4                 | 0.26          | 160 | 1.00 | 6.3x5.4    | 0.19          | 190 | 0.52 | 6.3x5.4    | 0.16          | 240 | 0.52 |
|                           | 6.3x5.4               | 0.26          | 240 | 0.52 |            |               |     |      |            |               |     |      |
| 150                       | 6.3x7.7               | 0.26          | 240 | 0.30 | 6.3x7.7    | 0.19          | 240 | 0.34 | 6.3x7.7    | 0.16          | 280 | 0.34 |
| 220                       | 6.3x7.7               | 0.26          | 240 | 0.30 | 6.3x7.7    | 0.19          | 280 | 0.34 | 6.3x7.7    | 0.16          | 280 | 0.34 |
|                           |                       |               |     |      |            |               |     |      | 8x10.2     | 0.16          | 370 | 0.22 |
| 330                       | 6.3x7.7               | 0.26          | 280 | 0.34 | 8x10.2     | 0.19          | 600 | 0.16 | 8x10.2     | 0.16          | 600 | 0.16 |
|                           | 8x6.2                 | 0.26          | 300 | 0.26 |            |               |     |      |            |               |     |      |
| 470                       | 8x10.2                | 0.26          | 600 | 0.16 | 8x10.2     | 0.19          | 600 | 0.16 | 8x10.2     | 0.16          | 600 | 0.16 |
| 680                       | 8x10.2                | 0.26          | 600 | 0.16 | 10x10.2    | 0.19          | 600 | 0.12 | 10x10.2    | 0.16          | 850 | 0.08 |
| 1000                      | 8x10.2                | 0.26          | 600 | 0.16 | 10x10.2    | 0.19          | 850 | 0.08 |            |               |     |      |
| 1500                      | 10x10.2               | 0.26          | 850 | 0.08 |            |               |     |      |            |               |     |      |

| Capacitance<br>( $\mu$ F) | Rated (Surge) Voltage |               |     |      |            |               |     |      |
|---------------------------|-----------------------|---------------|-----|------|------------|---------------|-----|------|
|                           | 25(32)                |               |     |      | 35(44)     |               |     |      |
|                           | $\phi$ DxL            | $\tan \delta$ | RC  | Z    | $\phi$ DxL | $\tan \delta$ | RC  | Z    |
| 4.7                       |                       |               |     |      | 4x5.4      | 0.12          | 90  | 1.93 |
| 10                        | 4x5.4                 | 0.14          | 90  | 1.93 | 4x5.4      | 0.12          | 90  | 1.93 |
|                           |                       |               |     |      | 5x5.4      | 0.12          | 160 | 1.00 |
| 22                        | 5x5.4                 | 0.14          | 160 | 1.00 | 5x5.4      | 0.12          | 160 | 1.00 |
| 33                        | 5x5.4                 | 0.14          | 160 | 1.00 | 6.3x5.4    | 0.12          | 240 | 0.52 |
|                           | 6.3x5.4               | 0.14          | 240 | 0.52 |            |               |     |      |
| 47                        | 6.3x5.4               | 0.14          | 240 | 0.52 | 6.3x5.4    | 0.12          | 240 | 0.52 |
| 68                        | 6.3x5.4               | 0.14          | 240 | 0.52 | 6.3x7.7    | 0.12          | 280 | 0.34 |
| 100                       | 6.3x7.7               | 0.14          | 280 | 0.34 | 6.3x7.7    | 0.12          | 280 | 0.34 |
|                           |                       |               |     |      | 8x10.2     | 0.12          | 600 | 0.16 |
| 150                       | 8x10.2                | 0.14          | 600 | 0.16 | 8x10.2     | 0.12          | 600 | 0.16 |
| 220                       | 8x10.2                | 0.14          | 600 | 0.16 | 8x10.2     | 0.12          | 600 | 0.16 |
| 330                       | 8x10.2                | 0.14          | 600 | 0.16 | 10x10.2    | 0.12          | 850 | 0.08 |
| 470                       | 10x10.2               | 0.14          | 850 | 0.08 |            |               |     |      |

☆ CASE SIZE :  $\phi$  DxL(mm) 、 MAX DISSIPATION FACTOR :  $\tan \delta$  / 120Hz,20°C 、  
 MAX PERMISSIBLE RIPPLE CURRENT : RC(mArms) / 100KHz,105°C 、  
 MAX IMPEDANCE : Z( $\Omega$ ) / 100KHz,20°C