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## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

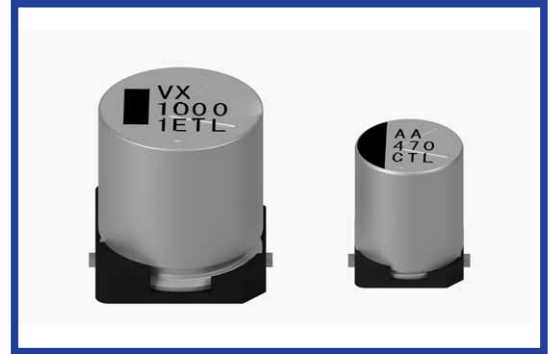


TLV SERIES

UPGRADE

Load Life : 105°C 2000~5000 hours, Low Impedance

•AEC-Q200.



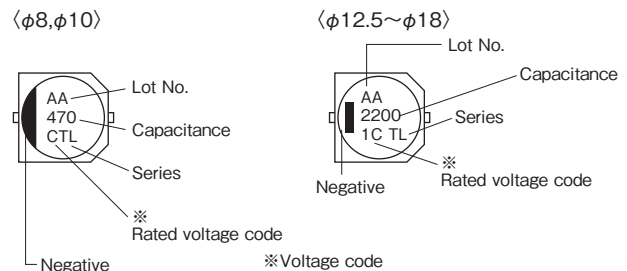
◆SPECIFICATIONS

| Items  | Characteristics  |   |  |   |                 |                 |      |               |           |               |                  |      |         |         |      |      |                    |  |                 |                                    |   |   |   |   |   |   |   |  |                  |   |   |   |   |   |   |   |  |
|--|--|---|--|---|-----------------|-----------------|------|---------------|-----------|---------------|------------------|------|---------|---------|------|------|--------------------|--|-----------------|------------------------------------|---|---|---|---|---|---|---|--|------------------|---|---|---|---|---|---|---|--|
| Category Temperature Range                     | -55~+105°C   |   |  |   |                 |                 |      |               |           |               |                  |      |         |         |      |      |                    |  |                 |                                    |   |   |   |   |   |   |   |  |                  |   |   |   |   |   |   |   |  |
| Rated Voltage Range                            | 6.3~63Vdc  |   |  |   |                 |                 |      |               |           |               |                  |      |         |         |      |      |                    |  |                 |                                    |   |   |   |   |   |   |   |  |                  |   |   |   |   |   |   |   |  |
| Capacitance Tolerance                          | ±20% (20°C, 120Hz)   |   |  |   |                 |                 |      |               |           |               |                  |      |         |         |      |      |                    |  |                 |                                    |   |   |   |   |   |   |   |  |                  |   |   |   |   |   |   |   |  |
| Leakage Current(MAX)                           | I=0.01CV or 3μA whichever is greater.(After 2 minutes application of rated voltage)<br>I=Leakage Current(μA)      C=Capacitance (μF)      V=Rated Voltage(Vdc)   |   |  |   |                 |                 |      |               |           |               |                  |      |         |         |      |      |                    |  |                 |                                    |   |   |   |   |   |   |   |  |                  |   |   |   |   |   |   |   |  |
| Dissipation Factor(MAX) (tanδ)                 | <table border="1"> <tr> <td>Rated Voltage (Vdc)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>(20°C, 120Hz)</td> </tr> <tr> <td>tanδ</td> <td>0.26</td> <td>0.19</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.10</td> <td>0.09</td> <td></td> </tr> </table> <p>When rated capacitance is over 1000μF, tanδ shall be added 0.02 to the listed value with increase of every 1000μF.</p>   | Rated Voltage (Vdc)   | 6.3  | 10  | 16              | 25              | 35   | 50            | 63        | (20°C, 120Hz) | tanδ             | 0.26 | 0.19    | 0.16    | 0.14 | 0.12 | 0.10               | 0.09   |                 |                                    |   |   |   |   |   |   |   |  |                  |   |   |   |   |   |   |   |  |
| Rated Voltage (Vdc)                            | 6.3  | 10  | 16   | 25  | 35              | 50              | 63   | (20°C, 120Hz) |           |               |                  |      |         |         |      |      |                    |  |                 |                                    |   |   |   |   |   |   |   |  |                  |   |   |   |   |   |   |   |  |
| tanδ   | 0.26   | 0.19  | 0.16   | 0.14  | 0.12            | 0.10            | 0.09 |               |           |               |                  |      |         |         |      |      |                    |  |                 |                                    |   |   |   |   |   |   |   |  |                  |   |   |   |   |   |   |   |  |
| Endurance                                      | <p>After applying rated voltage for specified time at 105°C, the capacitor shall meet the following requirements.</p> <table border="1"> <tr> <td>Capacitance Change</td> <td>Within ±30% of the initially measured value.</td> <td rowspan="3"> <table border="1"> <tr> <td>Case Size</td> <td colspan="2">Life Time (hrs)</td> </tr> <tr> <td></td> <td>6.3~50Vdc</td> <td>63Vdc</td> </tr> <tr> <td>φD≤10</td> <td>5000</td> <td>2000</td> </tr> <tr> <td>φD≥12.5</td> <td colspan="2">5000</td> </tr> </table> </td> </tr> <tr> <td>Dissipation Factor</td> <td>Not more than 200% of the specified value. (φ8,φ10:300%)</td> </tr> <tr> <td>Leakage Current</td> <td>Not more than the specified value.</td> </tr> </table> | Capacitance Change  | Within ±30% of the initially measured value. | <table border="1"> <tr> <td>Case Size</td> <td colspan="2">Life Time (hrs)</td> </tr> <tr> <td></td> <td>6.3~50Vdc</td> <td>63Vdc</td> </tr> <tr> <td>φD≤10</td> <td>5000</td> <td>2000</td> </tr> <tr> <td>φD≥12.5</td> <td colspan="2">5000</td> </tr> </table> | Case Size       | Life Time (hrs) |      |               | 6.3~50Vdc | 63Vdc         | φD≤10            | 5000 | 2000    | φD≥12.5 | 5000 |      | Dissipation Factor | Not more than 200% of the specified value. (φ8,φ10:300%) | Leakage Current | Not more than the specified value. |   |   |   |   |   |   |   |  |                  |   |   |   |   |   |   |   |  |
| Capacitance Change                             | Within ±30% of the initially measured value.   | <table border="1"> <tr> <td>Case Size</td> <td colspan="2">Life Time (hrs)</td> </tr> <tr> <td></td> <td>6.3~50Vdc</td> <td>63Vdc</td> </tr> <tr> <td>φD≤10</td> <td>5000</td> <td>2000</td> </tr> <tr> <td>φD≥12.5</td> <td colspan="2">5000</td> </tr> </table> | Case Size                                    |   | Life Time (hrs) |                 |      | 6.3~50Vdc     | 63Vdc     | φD≤10         | 5000             | 2000 | φD≥12.5 | 5000    |      |      |                    |  |                 |                                    |   |   |   |   |   |   |   |  |                  |   |   |   |   |   |   |   |  |
| Case Size                                      | Life Time (hrs)  |   |  |   |                 |                 |      |               |           |               |                  |      |         |         |      |      |                    |  |                 |                                    |   |   |   |   |   |   |   |  |                  |   |   |   |   |   |   |   |  |
|  | 6.3~50Vdc  |   | 63Vdc  |   |                 |                 |      |               |           |               |                  |      |         |         |      |      |                    |  |                 |                                    |   |   |   |   |   |   |   |  |                  |   |   |   |   |   |   |   |  |
| φD≤10  | 5000   | 2000  |  |   |                 |                 |      |               |           |               |                  |      |         |         |      |      |                    |  |                 |                                    |   |   |   |   |   |   |   |  |                  |   |   |   |   |   |   |   |  |
| φD≥12.5  | 5000   |   |  |   |                 |                 |      |               |           |               |                  |      |         |         |      |      |                    |  |                 |                                    |   |   |   |   |   |   |   |  |                  |   |   |   |   |   |   |   |  |
| Dissipation Factor                             | Not more than 200% of the specified value. (φ8,φ10:300%)   |   |  |   |                 |                 |      |               |           |               |                  |      |         |         |      |      |                    |  |                 |                                    |   |   |   |   |   |   |   |  |                  |   |   |   |   |   |   |   |  |
| Leakage Current                                | Not more than the specified value.   |   |  |   |                 |                 |      |               |           |               |                  |      |         |         |      |      |                    |  |                 |                                    |   |   |   |   |   |   |   |  |                  |   |   |   |   |   |   |   |  |
| Low Temperature Stability Impedance Ratio(MAX) | <table border="1"> <tr> <td>Rated Voltage (Vdc)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>(120Hz)</td> </tr> <tr> <td>Z(-25°C)/Z(20°C)</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td></td> </tr> <tr> <td>Z(-40°C)/Z(20°C)</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td></td> </tr> <tr> <td>Z(-55°C)/Z(20°C)</td> <td>4</td> <td>4</td> <td>4</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td></td> </tr> </table>  | Rated Voltage (Vdc)   | 6.3  | 10  | 16              | 25              | 35   | 50            | 63        | (120Hz)       | Z(-25°C)/Z(20°C) | 2    | 2       | 2       | 2    | 2    | 2                  | 2  |                 | Z(-40°C)/Z(20°C)                   | 3 | 3 | 3 | 3 | 3 | 3 | 3 |  | Z(-55°C)/Z(20°C) | 4 | 4 | 4 | 3 | 3 | 3 | 3 |  |
| Rated Voltage (Vdc)                            | 6.3  | 10  | 16   | 25  | 35              | 50              | 63   | (120Hz)       |           |               |                  |      |         |         |      |      |                    |  |                 |                                    |   |   |   |   |   |   |   |  |                  |   |   |   |   |   |   |   |  |
| Z(-25°C)/Z(20°C)                               | 2  | 2   | 2  | 2   | 2               | 2               | 2    |               |           |               |                  |      |         |         |      |      |                    |  |                 |                                    |   |   |   |   |   |   |   |  |                  |   |   |   |   |   |   |   |  |
| Z(-40°C)/Z(20°C)                               | 3  | 3   | 3  | 3   | 3               | 3               | 3    |               |           |               |                  |      |         |         |      |      |                    |  |                 |                                    |   |   |   |   |   |   |   |  |                  |   |   |   |   |   |   |   |  |
| Z(-55°C)/Z(20°C)                               | 4  | 4   | 4  | 3   | 3               | 3               | 3    |               |           |               |                  |      |         |         |      |      |                    |  |                 |                                    |   |   |   |   |   |   |   |  |                  |   |   |   |   |   |   |   |  |

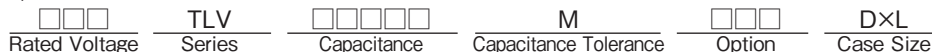
◆MULTIPLIER FOR RIPPLE CURRENT

| Frequency (Hz) |             | 120  | 1k   | 10k  | 100k≤ |
|----------------|-------------|------|------|------|-------|
| Coefficient    | 33μF        | 0.45 | 0.75 | 0.90 | 1.00  |
|                | 47~150μF    | 0.50 | 0.80 | 0.95 | 1.00  |
|                | 220~10000μF | 0.60 | 0.85 | 0.95 | 1.00  |

◆MARKING



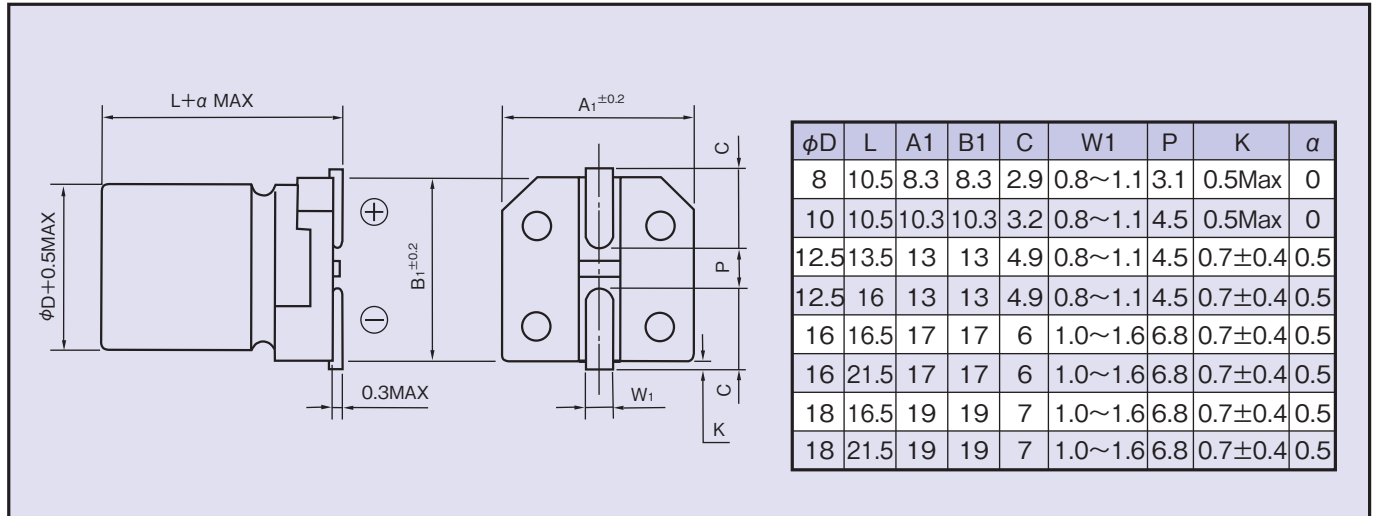
◆PART NUMBER



| Rated Voltage (Vdc) | 6.3     | 10 | 16 | 25 | 35 | 50 | 63 |    |
|---------------------|---------|----|----|----|----|----|----|----|
| Voltage code        | φD≤10   | j  | A  | C  | E  | V  | H  | J  |
|                     | φD≥12.5 | 0J | 1A | 1C | 1E | 1V | 1H | 1J |

**◆ DIMENSIONS**

(mm)



**◆ STANDARD SIZE**

Size φDXL(mm), Rated Ripple Current(mA r.m.s./105°C,100kHz), Impedance(Ω MAX/20°C, 100kHz)

| Vdc  | Cap (μF) | Size (φDXL) | Ripple | Impedance | Vdc  | Cap (μF) | Size (φDXL) | Ripple | Impedance |
|------|----------|-------------|--------|-----------|------|----------|-------------|--------|-----------|
| 6.3  | 2200     | 12.5×13.5   | 1100   | 0.065     | 50   | 100      | 8×10.5      | 350    | 0.34      |
|      | 3300     | 12.5×16     | 1400   | 0.055     |      | 150      | 10×10.5     | 670    | 0.18      |
|      | 4700     | 16×16.5     | 1800   | 0.045     |      | 220      | 10×10.5     | 670    | 0.18      |
|      | 6800     | 16×21.5     | 2330   | 0.029     |      | 330      | 12.5×13.5   | 900    | 0.12      |
|      | 10000    | 18×21.5     | 2640   | 0.028     |      | 390      | 12.5×13.5   | 900    | 0.12      |
| 10   | 1000     | 10×10.5     | 850    | 0.08      |      | 470      | 12.5×16     | 1200   | 0.1       |
|      | 2200     | 12.5×16     | 1400   | 0.055     |      | 470      | 16×16.5     | 1610   | 0.075     |
|      | 3300     | 16×16.5     | 1800   | 0.045     |      | 560      | 16×16.5     | 1610   | 0.075     |
|      | 4700     | 18×16.5     | 2060   | 0.044     |      | 680      | 16×16.5     | 1610   | 0.075     |
|      | 6800     | 18×21.5     | 2640   | 0.028     |      | 820      | 18×16.5     | 1700   | 0.07      |
| 16   | 470      | 8×10.5      | 600    | 0.16      |      | 1000     | 18×16.5     | 1700   | 0.07      |
|      | 680      | 10×10.5     | 850    | 0.08      |      | 1000     | 16×21.5     | 2000   | 0.05      |
|      | 1500     | 12.5×13.5   | 1100   | 0.065     |      | 1300     | 16×21.5     | 2000   | 0.05      |
|      | 2200     | 16×16.5     | 1800   | 0.045     |      | 1500     | 18×21.5     | 2200   | 0.045     |
|      | 3300     | 18×16.5     | 2060   | 0.044     |      | 63       | 33          | 8×10.5 | 250       |
|      | 4700     | 16×21.5     | 2330   | 0.029     | 47   |          | 8×10.5      | 250    | 0.65      |
| 25   | 220      | 8×10.5      | 600    | 0.16      | 68   |          | 8×10.5      | 250    | 0.65      |
|      | 330      | 8×10.5      | 600    | 0.16      | 68   |          | 10×10.5     | 400    | 0.35      |
|      | 470      | 10×10.5     | 850    | 0.08      | 100  |          | 10×10.5     | 400    | 0.35      |
|      | 1000     | 12.5×13.5   | 1100   | 0.065     | 150  |          | 12.5×13.5   | 800    | 0.17      |
|      | 1500     | 16×16.5     | 1800   | 0.045     | 220  |          | 12.5×13.5   | 800    | 0.17      |
|      | 2200     | 18×16.5     | 2060   | 0.044     | 330  |          | 12.5×16     | 1000   | 0.14      |
|      | 3300     | 18×21.5     | 2640   | 0.028     | 470  |          | 16×16.5     | 1410   | 0.12      |
| 35   | 100      | 8×10.5      | 600    | 0.16      | 680  |          | 18×16.5     | 1690   | 0.11      |
|      | 100      | 10×10.5     | 850    | 0.08      | 680  | 16×21.5  | 1790        | 0.08   |           |
|      | 150      | 8×10.5      | 600    | 0.16      | 1000 | 18×21.5  | 1960        | 0.07   |           |
|      | 220      | 8×10.5      | 600    | 0.16      |      |          |             |        |           |
|      | 330      | 10×10.5     | 850    | 0.08      |      |          |             |        |           |
|      | 470      | 12.5×13.5   | 1100   | 0.065     |      |          |             |        |           |
|      | 680      | 12.5×13.5   | 1100   | 0.065     |      |          |             |        |           |
|      | 1000     | 16×16.5     | 1800   | 0.045     |      |          |             |        |           |
|      | 1500     | 18×16.5     | 2060   | 0.044     |      |          |             |        |           |
| 2200 | 16×21.5  | 2330        | 0.029  |           |      |          |             |        |           |