

# CD50S SERIES



## ALUMINUM ELECTROLYTIC CAPACITORS

- Load life of 1000 hours at 85°C
- 5mm height
- VTR, digital cameras car radios, micro cassette tape recorder etc.



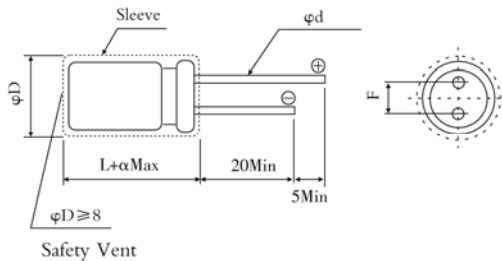
### ■ SPECIFICATIONS

| Item                               | Characteristics   |                   |           |                 |                                    |                    |                             |             |  |    |           |               |      |      |      |      |      |      |      |       |               |      |      |      |      |      |      |  |
|------------------------------------|---|-------------------|-----------|-----------------|------------------------------------|--------------------|-----------------------------|-------------|--|----|-----------|---------------|------|------|------|------|------|------|------|-------|---------------|------|------|------|------|------|------|--|
| Operating Temperature Range(°C)    | -40 ~ +85   |                   |           |                 |                                    |                    |                             |             |  |    |           |               |      |      |      |      |      |      |      |       |               |      |      |      |      |      |      |  |
| Rated Voltage Range (V)            | 4~50  |                   |           |                 |                                    |                    |                             |             |  |    |           |               |      |      |      |      |      |      |      |       |               |      |      |      |      |      |      |  |
| Nominal capacitance range(μF)      | 0.1~470   |                   |           |                 |                                    |                    |                             |             |  |    |           |               |      |      |      |      |      |      |      |       |               |      |      |      |      |      |      |  |
| Capacitance Tolerance(20°C, 120Hz) | ±20%  |                   |           |                 |                                    |                    |                             |             |  |    |           |               |      |      |      |      |      |      |      |       |               |      |      |      |      |      |      |  |
| Leakage Current (μA)               | $I \leq 0.01CV$ or 3 whichever is greater. (at 20°C, after 2 minutes)<br>C: Nominal Capacitance (μF) V: Rated Voltage (V)   |                   |           |                 |                                    |                    |                             |             |  |    |           |               |      |      |      |      |      |      |      |       |               |      |      |      |      |      |      |  |
| Dissipation Factor(20°C,120Hz)     | <table border="1"> <thead> <tr> <th colspan="2">Rated voltage (v)</th> <th>4</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> </tr> </thead> <tbody> <tr> <td rowspan="2">tan δ</td> <td>φ3-φ6.3</td> <td>0.35</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>φ8</td> <td>0.39</td> <td>0.28</td> <td>0.24</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.10</td> </tr> </tbody> </table> | Rated voltage (v) |           | 4               | 6.3                                | 10                 | 16                          | 25          | 35   | 50 | tan δ     | φ3-φ6.3       | 0.35 | 0.24 | 0.20 | 0.16 | 0.14 | 0.12 | 0.10 | φ8    | 0.39          | 0.28 | 0.24 | 0.16 | 0.14 | 0.12 | 0.10 |  |
| Rated voltage (v)                  |   | 4                 | 6.3       | 10              | 16                                 | 25                 | 35                          | 50          |  |    |           |               |      |      |      |      |      |      |      |       |               |      |      |      |      |      |      |  |
| tan δ                              | φ3-φ6.3   | 0.35              | 0.24      | 0.20            | 0.16                               | 0.14               | 0.12                        | 0.10        |  |    |           |               |      |      |      |      |      |      |      |       |               |      |      |      |      |      |      |  |
|                                    | φ8  | 0.39              | 0.28      | 0.24            | 0.16                               | 0.14               | 0.12                        | 0.10        |  |    |           |               |      |      |      |      |      |      |      |       |               |      |      |      |      |      |      |  |
| Temperature Stability(120Hz)       | <table border="1"> <thead> <tr> <th colspan="2">Rated voltage (v)</th> <th>4</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> </tr> </thead> <tbody> <tr> <td>Impedance</td> <td>z-25°C/z+20°C</td> <td>6</td> <td>4</td> <td>3</td> <td colspan="4">2</td> </tr> <tr> <td>Ratio</td> <td>z-40°C/z+20°C</td> <td>16</td> <td>10</td> <td>8</td> <td>6</td> <td colspan="3">4</td> </tr> </tbody> </table>  | Rated voltage (v) |           | 4               | 6.3                                | 10                 | 16                          | 25          | 35   | 50 | Impedance | z-25°C/z+20°C | 6    | 4    | 3    | 2    |      |      |      | Ratio | z-40°C/z+20°C | 16   | 10   | 8    | 6    | 4    |      |  |
| Rated voltage (v)                  |   | 4                 | 6.3       | 10              | 16                                 | 25                 | 35                          | 50          |  |    |           |               |      |      |      |      |      |      |      |       |               |      |      |      |      |      |      |  |
| Impedance                          | z-25°C/z+20°C   | 6                 | 4         | 3               | 2                                  |                    |                             |             |  |    |           |               |      |      |      |      |      |      |      |       |               |      |      |      |      |      |      |  |
| Ratio                              | z-40°C/z+20°C   | 16                | 10        | 8               | 6                                  | 4                  |                             |             |  |    |           |               |      |      |      |      |      |      |      |       |               |      |      |      |      |      |      |  |
| Load Life(+85°C)                   | <table border="1"> <thead> <tr> <th>Time</th> <th>1000hours</th> </tr> </thead> <tbody> <tr> <td>Leakage current</td> <td>Not more than the specified value.</td> </tr> <tr> <td>Capacitance change</td> <td>within±20% of initial value</td> </tr> <tr> <td>Dissipation</td> <td>Not more than 200% of the specified value.</td> </tr> </tbody> </table>   | Time              | 1000hours | Leakage current | Not more than the specified value. | Capacitance change | within±20% of initial value | Dissipation | Not more than 200% of the specified value. |    |           |               |      |      |      |      |      |      |      |       |               |      |      |      |      |      |      |  |
| Time                               | 1000hours   |                   |           |                 |                                    |                    |                             |             |  |    |           |               |      |      |      |      |      |      |      |       |               |      |      |      |      |      |      |  |
| Leakage current                    | Not more than the specified value.  |                   |           |                 |                                    |                    |                             |             |  |    |           |               |      |      |      |      |      |      |      |       |               |      |      |      |      |      |      |  |
| Capacitance change                 | within±20% of initial value   |                   |           |                 |                                    |                    |                             |             |  |    |           |               |      |      |      |      |      |      |      |       |               |      |      |      |      |      |      |  |
| Dissipation                        | Not more than 200% of the specified value.  |                   |           |                 |                                    |                    |                             |             |  |    |           |               |      |      |      |      |      |      |      |       |               |      |      |      |      |      |      |  |
| Shelf Life(+85°C)                  | <table border="1"> <thead> <tr> <th>Time</th> <th>500hours</th> </tr> </thead> <tbody> <tr> <td>Leakage current</td> <td>Not more than the specified value.</td> </tr> <tr> <td>Capacitance change</td> <td>within±20% of initial value</td> </tr> <tr> <td>Dissipation</td> <td>Not more than 200% of the specified value.</td> </tr> </tbody> </table> <p>After test: Rated voltage to be applied for 30 minutes, 24 to 48 hours before measurement.</p>                            | Time              | 500hours  | Leakage current | Not more than the specified value. | Capacitance change | within±20% of initial value | Dissipation | Not more than 200% of the specified value. |    |           |               |      |      |      |      |      |      |      |       |               |      |      |      |      |      |      |  |
| Time                               | 500hours  |                   |           |                 |                                    |                    |                             |             |  |    |           |               |      |      |      |      |      |      |      |       |               |      |      |      |      |      |      |  |
| Leakage current                    | Not more than the specified value.  |                   |           |                 |                                    |                    |                             |             |  |    |           |               |      |      |      |      |      |      |      |       |               |      |      |      |      |      |      |  |
| Capacitance change                 | within±20% of initial value   |                   |           |                 |                                    |                    |                             |             |  |    |           |               |      |      |      |      |      |      |      |       |               |      |      |      |      |      |      |  |
| Dissipation                        | Not more than 200% of the specified value.  |                   |           |                 |                                    |                    |                             |             |  |    |           |               |      |      |      |      |      |      |      |       |               |      |      |      |      |      |      |  |

### ■ DIMENSIONS

### MM

### ■ MULTIPLIER FOR RIPPLE CURRENT



#### Lead spacing and diameter

|        |        |      |     |     |   |
|--------|--------|------|-----|-----|---|
| φD±0.5 | 3      | 4    | 5   | 6.3 | 8 |
| F±0.5  | 1.0    | 1.5  | 2.0 | 2.5 |   |
| φd±0.1 | 0.4    | 0.45 |     |     |   |
| a      | 0~+1.0 |      |     |     |   |

#### Frequency coefficient

| Rated voltage(v) | Freq(Hz) |     |     |          |
|------------------|----------|-----|-----|----------|
|                  | 50,60    | 120 | 1K  | 10K-100K |
| 4~16             | 0.80     | 1   | 1.1 | 1.2      |
| 25~35            | 0.80     | 1   | 1.5 | 1.7      |
| 50               | 0.80     | 1   | 1.6 | 1.9      |

#### Temperature coefficient

| Temperature(°C) | +70  | +85 |
|-----------------|------|-----|
| Coefficient     | 1.35 | 1   |

## ■ STANDARD RATINGS

| WV(V)   | 4        |        | 6.3      |        | 10       |        | 16       |        | 25       |        | 35       |        | 50       |        |    |
|---------|----------|--------|----------|--------|----------|--------|----------|--------|----------|--------|----------|--------|----------|--------|----|
| Cap(μF) | Size(mm) | Ripple | Size(mm) | Ripple | Size(mm) | Ripple | Size(mm) | Ripple | Size(mm) | Ripple | Size(mm) | Ripple | Size(mm) | Ripple |    |
|         | φDxL     | (mA)   | φDxL     | (mA)   | φDxL     | (mA)   | φDxL     | (mA)   | φDxL     | (mA)   | φDxL     | (mA)   | φDxL     | (mA)   |    |
| 0.1     | -        | -      | -        | -      | -        | -      | -        | -      | -        | -      | -        | -      | 3x5      | 3      |    |
|         | -        | -      | -        | -      | -        | -      | -        | -      | -        | -      | -        | -      | 4x5      | 3      |    |
| 0.22    | -        | -      | -        | -      | -        | -      | -        | -      | -        | -      | -        | -      | 3x5      | 4      |    |
|         | -        | -      | -        | -      | -        | -      | -        | -      | -        | -      | -        | -      | 4x5      | 5      |    |
| 0.33    | -        | -      | -        | -      | -        | -      | -        | -      | -        | -      | -        | -      | 3x5      | 5      |    |
|         | -        | -      | -        | -      | -        | -      | -        | -      | -        | -      | -        | -      | 4x5      | 6      |    |
| 0.47    | -        | -      | -        | -      | -        | -      | -        | -      | -        | -      | -        | -      | 3x5      | 6      |    |
|         | -        | -      | -        | -      | -        | -      | -        | -      | -        | -      | -        | -      | 4x5      | 7      |    |
| 1       | -        | -      | -        | -      | -        | -      | -        | -      | -        | -      | -        | -      | 3x5      | 8      |    |
|         | -        | -      | -        | -      | -        | -      | -        | -      | -        | -      | -        | -      | 4x5      | 10     |    |
| 2.2     | -        | -      | -        | -      | -        | -      | -        | -      | -        | -      | -        | 3x5    | 11       | 4x5    | 15 |
|         | -        | -      | -        | -      | -        | -      | -        | -      | -        | -      | -        | 4x5    | 14       |        |    |
| 3.3     | -        | -      | -        | -      | -        | -      | -        | -      | 3x5      | 13     | 4x5      | 17     | 4x5      | 18     |    |
|         | -        | -      | -        | -      | -        | -      | -        | -      | 4x5      | 15     |          |        |          |        |    |
| 4.7     | -        | -      | -        | -      | -        | -      | 3x5      | 14     | 4x5      | 18     | 4x5      | 20     | 5x5      | 25     |    |
|         | -        | -      | -        | -      | -        | -      | 4x5      | 17     |          |        |          |        |          |        |    |
| 10      | -        | -      | 3x5      | 17     | 4x5      | 22     | 4x5      | 25     | 5x5      | 30     | 5x5      | 30     | 6.3x5    | 40     |    |
|         | -        | -      | 4x5      | 20     |          |        |          |        |          |        |          |        |          |        |    |
| 22      | 3x5      | 21     | 4x5      | 30     | 5x5      | 35     | 5x5      | 40     | 6.3x5    | 50     | 6.3x5    | 55     | 8x5      | 75     |    |
|         | 4x5      | 25     |          |        |          |        |          |        |          |        |          |        |          |        |    |
| 33      | 4x5      | 30     | 5x5      | 40     | 5x5      | 45     | 6.3x5    | 60     | 6.3x5    | 65     | 8x5      | 80     | 8x5      | 90     |    |
| 47      | 4x5      | 35     | 5x5      | 50     | 6.3x5    | 65     | 6.3x5    | 70     | 8x5      | 95     | 8x5      | 100    | -        | -      |    |
| 100     | 5x5      | 60     | 6.3x5    | 85     | 6.3x5    | 95     | 8x5      | 125    | 8x5      | 135    | -        | -      | -        | -      |    |
| 220     | 6.3x5    | 105    | 8x5      | 145    | 8x5      | 155    | -        | -      | -        | -      | -        | -      | -        | -      |    |
| 330     | 8x5      | 150    | 8x5      | 175    | -        | -      | -        | -      | -        | -      | -        | -      | -        | -      |    |
| 470     | 8x5      | 180    | -        | -      | -        | -      | -        | -      | -        | -      | -        | -      | -        | -      |    |

■ Ripple Current: 85°C, 100Hz or 120Hz.

The specific capacitance and case size are available on request.