

# ALUMINUM ELECTROLYTIC CAPACITORS



## CTF Series

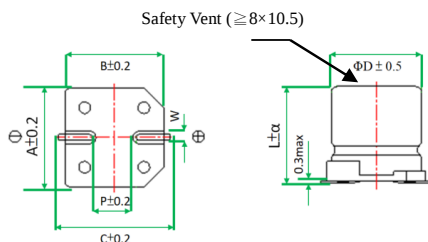
- High Voltage 160V~450V
- Long life 3,000~5,000 hours at 105°C



### ◆ SPECIFICATIONS

| Item                                                                                             | Performance Characteristics                                                                                                                                                                                                                                                                |      |                               |      |      |      |                   |     |     |     |     |     |                   |      |      |      |      |      |                   |   |   |   |    |    |
|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------------------------------|------|------|------|-------------------|-----|-----|-----|-----|-----|-------------------|------|------|------|------|------|-------------------|---|---|---|----|----|
| Category Temperature Range                                                                       | -40 ~ +105°C                                                                                                                                                                                                                                                                               |      |                               |      |      |      |                   |     |     |     |     |     |                   |      |      |      |      |      |                   |   |   |   |    |    |
| Working Voltage Range                                                                            | 160 ~ 450Vdc                                                                                                                                                                                                                                                                               |      |                               |      |      |      |                   |     |     |     |     |     |                   |      |      |      |      |      |                   |   |   |   |    |    |
| Capacitance Range                                                                                | 2.2 ~ 47 μF                                                                                                                                                                                                                                                                                |      |                               |      |      |      |                   |     |     |     |     |     |                   |      |      |      |      |      |                   |   |   |   |    |    |
| Capacitance Tolerance                                                                            | ±20% (at 25°C and 120Hz)                                                                                                                                                                                                                                                                   |      |                               |      |      |      |                   |     |     |     |     |     |                   |      |      |      |      |      |                   |   |   |   |    |    |
| Dissipation Factor (tanδ)<br>(at 25°C, 120Hz)                                                    | <table><tr><td>Rated Voltage (V)</td><td>160</td><td>200</td><td>250</td><td>400</td><td>450</td></tr><tr><td>tanδ(Max)</td><td>0.15</td><td>0.15</td><td>0.15</td><td>0.20</td><td>0.20</td></tr></table>                                                                                 |      |                               |      |      |      | Rated Voltage (V) | 160 | 200 | 250 | 400 | 450 | tanδ(Max)         | 0.15 | 0.15 | 0.15 | 0.20 | 0.20 |                   |   |   |   |    |    |
|                                                                                                  | Rated Voltage (V)                                                                                                                                                                                                                                                                          | 160  | 200                           | 250  | 400  | 450  |                   |     |     |     |     |     |                   |      |      |      |      |      |                   |   |   |   |    |    |
|                                                                                                  | tanδ(Max)                                                                                                                                                                                                                                                                                  | 0.15 | 0.15                          | 0.15 | 0.20 | 0.20 |                   |     |     |     |     |     |                   |      |      |      |      |      |                   |   |   |   |    |    |
| When nominal capacitance exceeds 1,000uF, add 0.02 to the value above for each 1,000uF increase. |                                                                                                                                                                                                                                                                                            |      |                               |      |      |      |                   |     |     |     |     |     |                   |      |      |      |      |      |                   |   |   |   |    |    |
| Leakage Current                                                                                  | (160V~450V) I=0.04CV+100μA whichever is greater impress the rated voltage for 2 minutes<br>I : Leakage current (μA) C : Rated capacitance (μF) V : Rated voltage (V)                                                                                                                       |      |                               |      |      |      |                   |     |     |     |     |     |                   |      |      |      |      |      |                   |   |   |   |    |    |
| Low Temperature Characteristics<br>Impedance Ratio(MAX)                                          | <table><tr><td>Rated voltage (V)</td><td>160</td><td>200</td><td>250</td><td>400</td><td>450</td></tr><tr><td>Z(-25°C)/Z(+20°C)</td><td>3</td><td>3</td><td>3</td><td>6</td><td>6</td></tr><tr><td>Z(-40°C)/Z(+20°C)</td><td>6</td><td>6</td><td>6</td><td>10</td><td>10</td></tr></table> |      |                               |      |      |      | Rated voltage (V) | 160 | 200 | 250 | 400 | 450 | Z(-25°C)/Z(+20°C) | 3    | 3    | 3    | 6    | 6    | Z(-40°C)/Z(+20°C) | 6 | 6 | 6 | 10 | 10 |
|                                                                                                  | Rated voltage (V)                                                                                                                                                                                                                                                                          | 160  | 200                           | 250  | 400  | 450  |                   |     |     |     |     |     |                   |      |      |      |      |      |                   |   |   |   |    |    |
|                                                                                                  | Z(-25°C)/Z(+20°C)                                                                                                                                                                                                                                                                          | 3    | 3                             | 3    | 6    | 6    |                   |     |     |     |     |     |                   |      |      |      |      |      |                   |   |   |   |    |    |
| Z(-40°C)/Z(+20°C)                                                                                | 6                                                                                                                                                                                                                                                                                          | 6    | 6                             | 10   | 10   |      |                   |     |     |     |     |     |                   |      |      |      |      |      |                   |   |   |   |    |    |
| (at 120Hz)                                                                                       |                                                                                                                                                                                                                                                                                            |      |                               |      |      |      |                   |     |     |     |     |     |                   |      |      |      |      |      |                   |   |   |   |    |    |
| Endurance                                                                                        | The following specifications shall be satisfied when the capacitor are restored to 25°C after subjected to DC voltage with the rated voltage is applied for 5,000 hours (Φ 6.3 for 3,000 hours) at 105°C.                                                                                  |      |                               |      |      |      |                   |     |     |     |     |     |                   |      |      |      |      |      |                   |   |   |   |    |    |
|                                                                                                  | Capacitance change                                                                                                                                                                                                                                                                         |      | ≦ ±20% of the initial value   |      |      |      |                   |     |     |     |     |     |                   |      |      |      |      |      |                   |   |   |   |    |    |
|                                                                                                  | Dissipation factor(tanδ)                                                                                                                                                                                                                                                                   |      | ≦ 200% of the specified value |      |      |      |                   |     |     |     |     |     |                   |      |      |      |      |      |                   |   |   |   |    |    |
|                                                                                                  | Leakage current                                                                                                                                                                                                                                                                            |      | ≦ 200% of the specified value |      |      |      |                   |     |     |     |     |     |                   |      |      |      |      |      |                   |   |   |   |    |    |
| Shelf Life                                                                                       | The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 1,000 hours at 105°C without voltage applied.                                                                                                                                |      |                               |      |      |      |                   |     |     |     |     |     |                   |      |      |      |      |      |                   |   |   |   |    |    |
|                                                                                                  | Capacitance change                                                                                                                                                                                                                                                                         |      | ≦ ±20% of the initial value   |      |      |      |                   |     |     |     |     |     |                   |      |      |      |      |      |                   |   |   |   |    |    |
|                                                                                                  | Dissipation factor(tanδ)                                                                                                                                                                                                                                                                   |      | ≦ 200% of the specified value |      |      |      |                   |     |     |     |     |     |                   |      |      |      |      |      |                   |   |   |   |    |    |
|                                                                                                  | Leakage current                                                                                                                                                                                                                                                                            |      | ≦ specified value             |      |      |      |                   |     |     |     |     |     |                   |      |      |      |      |      |                   |   |   |   |    |    |
| Others                                                                                           | Conforms to JIS-C-5101-18-2 (1999)                                                                                                                                                                                                                                                         |      |                               |      |      |      |                   |     |     |     |     |     |                   |      |      |      |      |      |                   |   |   |   |    |    |

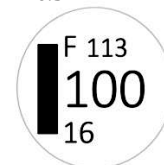
### ◆ DIMENSIONS (mm)



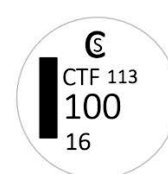
| Code | Size      | $\Phi$ D | L    | $\alpha$  | A    | B    | C    | W       | P   |
|------|-----------|----------|------|-----------|------|------|------|---------|-----|
| 63A5 | 6.3×10.5  | 6.3      | 10.5 | $\pm 0.3$ | 6.6  | 6.6  | 7.1  | 0.5~0.8 | 2.2 |
| 08A5 | 8×10.5    | 8.0      | 10.5 | $\pm 0.5$ | 8.3  | 8.3  | 9.1  | 0.8~1.2 | 3.1 |
| 08C5 | 8×12.5    | 8.0      | 12.5 | $\pm 0.5$ | 8.3  | 8.3  | 9.1  | 0.8~1.2 | 3.1 |
| 10C5 | 10×12.5   | 10.0     | 12.5 | $\pm 0.5$ | 10.3 | 10.3 | 11.0 | 0.8~1.2 | 4.6 |
| 12D5 | 12.5×13.5 | 12.5     | 13.5 | $\pm 1.0$ | 12.8 | 12.8 | 13.8 | 0.8~1.2 | 4.6 |
| 12I6 | 12.5×16   | 12.5     | 16.0 | $\pm 1.0$ | 12.8 | 12.8 | 13.8 | 0.8~1.2 | 4.6 |

### ◆ MARKING

6.3  $\Phi$



$\geq 8\Phi$





◆ **PART NUMBER SYSTEM ( Example : 160V 6.8 $\mu$ F )**

## ◆ STANDARD RATINGS

| WV<br>(Vdc) | Cap<br>(μF) | Case Size<br>(mm)<br>ΦD×L | Rated Ripple<br>current<br>(mA rms/<br>105°C,<br>120Hz) | Part Number     |
|-------------|-------------|---------------------------|---------------------------------------------------------|-----------------|
| 250<br>(2E) | 4.7         | 8×12.5                    | 40                                                      | CTF2E4R7MCB08C5 |
|             | 6.8         | 10×12.5                   | 45                                                      | CTF2E6R8MCB10C5 |
|             | 10          | 10×12.5                   | 105                                                     | CTF2E100MCB10C5 |
|             | 22          | 12.5×16                   | 180                                                     | CTF2E220MCB1216 |
| 400<br>(2G) | 2.2         | 6.3×10.5                  | 30                                                      | CTF2G2R2MCB63A5 |
|             | 3.3         | 8×12.5                    | 38                                                      | CTF2G3R3MCB08C5 |
|             | 3.3         | 10×12.5                   | 40                                                      | CTF2G3R3MCB10C5 |
|             | 4.7         | 8×12.5                    | 40                                                      | CTF2G4R7MCB08C5 |
|             | 4.7         | 10×12.5                   | 50                                                      | CTF2G4R7MCB10C5 |
|             | 6.8         | 10×12.5                   | 50                                                      | CTF2G6R8MCB10C5 |
|             | 10          | 12.5×13.5                 | 85                                                      | CTF2G100MCB12D5 |
| 450<br>(2W) | 2.2         | 10×12.5                   | 40                                                      | CTF2W2R2MCB10C5 |
|             | 3.3         | 10×12.5                   | 40                                                      | CTF2W3R3MCB10C5 |
|             | 4.7         | 10×12.5                   | 50                                                      | CTF2W4R7MCB10C5 |
|             | 6.8         | 12.5×13.5                 | 65                                                      | CTF2W6R8MCB12D5 |
|             | 10          | 12.5×13.5                 | 85                                                      | CTF2W100MCB12D5 |

### ◆ RIPPLE CURRENT MULTIPLIERS

| Vdc     | Frequency (Hz) |      |      |      |      |
|---------|----------------|------|------|------|------|
|         | 50             | 120  | 300  | 1K   | 10K~ |
| 160~450 | 0.80           | 1.00 | 1.25 | 1.40 | 1.60 |