

Electrolytic series/

ECR

ESI

ECR type, ESI type

- Made of electrolytes and aluminum foils
- Long operation life and reliability
- Low dissipation factor and impedance
- Standard series for general purpose for pc board plug in
- Endurance with ripple current: 2,000hrs/ 3000hrs/ 5000hrs at 85/ 105°C for optional.

Application: ECR and ESI are widely used in electronic ballast, power supply, UPS and inverter.

Capacitance tolerance is available to customer requested. 低阻抗型電解電容器，低損失、低阻抗、長壽命、高穩定性，適用於高品質電子電源以及電源濾波、電源供應器、電子鎮流器、電子節能燈等用途。

Specifications

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|----------|-------|-------|------|----------|------|------|------|------|---|------|---------|----|----|----|----|-----|-----|-----|-----|-----|-----|------------|---|-------|------|------|------|------|------|------|------|------|------|------------|------|-----|---------|----|-----|-----|-----|-----|-----|-----|-----|---------|-------|------|------|------|------|------|------|------|------|------------|---|---|---|---|---|---|---|---|--|------------|---|---|---|---|----|----|----|----|
| Capacitance range | 100 ~ 15000μF / 25V ~ 100V | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Voltage range | 2.2 ~ 2200μF / 160V ~ 450V (500V for customization) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Capacitance tolerance | +20-20% (M) for standard/ ±10% (K) for customized. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Temperature range | -40 ~ +85°C / -40 ~ +105°C optional | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Leakage current | $I \leq 0.01CV$ or $3\mu A$ Whichever is greater (at 20°C, after 2 minutes.) $I = \text{Leakage current}(\mu A)$, $C = \text{Rated capacitance}(\mu F)$, $V = \text{Rated voltage}(V)$ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dissipation factor (Tanδ%) | <table border="1"> <tr> <td>When the capacitance exceeds 1000μF, 0.02 shall be added every 1000μF increase at 20°C,</td> </tr> <tr> <td>ECR</td> <td>Rated V</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>100</td> <td>160</td> <td>200</td> <td>250</td> <td>350</td> <td>400</td> <td>450</td> </tr> <tr> <td></td> <td>Tanδ%</td> <td>0.15</td> <td>0.12</td> <td>0.10</td> <td>0.10</td> <td>0.10</td> <td>0.20</td> <td>0.20</td> <td>0.20</td> <td>0.20</td> <td>0.25</td> <td>0.25</td> </tr> </table> <table border="1"> <tr> <td>ESI</td> <td>Rated V</td> <td>63</td> <td>100</td> <td>160</td> <td>200</td> <td>250</td> <td>350</td> <td>400</td> <td>450</td> </tr> <tr> <td></td> <td>Tanδ%</td> <td>0.20</td> <td>0.15</td> <td>0.15</td> <td>0.15</td> <td>0.15</td> <td>0.15</td> <td>0.15</td> <td>0.15</td> </tr> </table> | | | | | | | | | | When the capacitance exceeds 1000μF, 0.02 shall be added every 1000μF increase at 20°C, | ECR | Rated V | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 400 | 450 | | Tanδ% | 0.15 | 0.12 | 0.10 | 0.10 | 0.10 | 0.20 | 0.20 | 0.20 | 0.20 | 0.25 | 0.25 | ESI | Rated V | 63 | 100 | 160 | 200 | 250 | 350 | 400 | 450 | | Tanδ% | 0.20 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | | | | | | | | | | | | | | | | | | | |
| When the capacitance exceeds 1000μF, 0.02 shall be added every 1000μF increase at 20°C, | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ECR | Rated V | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 400 | 450 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Tanδ% | 0.15 | 0.12 | 0.10 | 0.10 | 0.10 | 0.20 | 0.20 | 0.20 | 0.20 | 0.25 | 0.25 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ESI | Rated V | 63 | 100 | 160 | 200 | 250 | 350 | 400 | 450 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Tanδ% | 0.20 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Low temperature characteristics | <table border="1"> <tr> <td>Impedance ratio at 25°C / 25°C</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>8</td> <td>8</td> <td>8</td> <td>12</td> <td>12</td> <td>12</td> </tr> <tr> <td>ECR</td> <td>-25°C/25°C</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>8</td> <td>8</td> <td>8</td> <td>12</td> <td>12</td> </tr> <tr> <td></td> <td>-40°C/25°C</td> <td>4</td> <td>4</td> <td>3</td> <td>3</td> <td>3</td> <td>8</td> <td>8</td> <td>8</td> <td>12</td> <td>12</td> </tr> </table> <table border="1"> <tr> <td>ESI</td> <td>Rated V</td> <td>63</td> <td>100</td> <td>160</td> <td>200</td> <td>250</td> <td>350</td> <td>400</td> <td>450</td> </tr> <tr> <td></td> <td>-25°C/25°C</td> <td>2</td> <td>2</td> <td>4</td> <td>4</td> <td>4</td> <td>4</td> <td>4</td> <td>8</td> </tr> <tr> <td></td> <td>-40°C/25°C</td> <td>6</td> <td>5</td> <td>4</td> <td>8</td> <td>10</td> <td>16</td> <td>18</td> <td>20</td> </tr> </table> | | | | | | | | | | Impedance ratio at 25°C / 25°C | 2 | 2 | 2 | 2 | 2 | 8 | 8 | 8 | 12 | 12 | 12 | ECR | -25°C/25°C | 2 | 2 | 2 | 2 | 2 | 8 | 8 | 8 | 12 | 12 | | -40°C/25°C | 4 | 4 | 3 | 3 | 3 | 8 | 8 | 8 | 12 | 12 | ESI | Rated V | 63 | 100 | 160 | 200 | 250 | 350 | 400 | 450 | | -25°C/25°C | 2 | 2 | 4 | 4 | 4 | 4 | 4 | 8 | | -40°C/25°C | 6 | 5 | 4 | 8 | 10 | 16 | 18 | 20 |
| Impedance ratio at 25°C / 25°C | 2 | 2 | 2 | 2 | 2 | 8 | 8 | 8 | 12 | 12 | 12 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ECR | -25°C/25°C | 2 | 2 | 2 | 2 | 2 | 8 | 8 | 8 | 12 | 12 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | -40°C/25°C | 4 | 4 | 3 | 3 | 3 | 8 | 8 | 8 | 12 | 12 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ESI | Rated V | 63 | 100 | 160 | 200 | 250 | 350 | 400 | 450 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | -25°C/25°C | 2 | 2 | 4 | 4 | 4 | 4 | 4 | 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | -40°C/25°C | 6 | 5 | 4 | 8 | 10 | 16 | 18 | 20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Load life | <p>The following specification shall be satisfied when the capacitors are restored to 20°C after the rated voltage with the rated ripple current is applied for 2000 hrs at 105°C</p> <p>Capacitance change $\leq \pm 20\%$ of the initial measured value DF (Tanδ%) $\leq \pm 200\%$ of the initial specified value Leakage current \leq The initial specified value</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Shelf life | <p>The following specification shall be satisfied when the capacitors are restored to 20°C after exposing them for 1000 hrs at 105°C without voltage applied. The rated voltage shall be applied to the capacitors for a minimum of 30 minutes., at least 24 hrs and not more than 48hrs before the measurement</p> <p>Capacitance change $\leq \pm 20\%$ of the initial measured value DF (Tanδ%) $\leq \pm 200\%$ of the initial specified value Leakage current \leq The initial specified value</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ripple current & Frequency multipliers | Freq. Cap. | 60(50)Hz | 120Hz | 500Hz | 1KHz | 10KHz up | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Under 100μF | 0.45 | 0.55 | 0.75 | 0.9 | 1.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 100 to 1000μF | 0.65 | 0.75 | 0.9 | 0.98 | 1.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1000μF up | 0.75 | 0.8 | 0.95 | 1.00 | 1.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ripple current & Temperature multipliers | Temperature (°C) | | 85 | | 105 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Multiplier | | 1.7 | | 1.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Drawing

ECR

| | | | | | | |
|---|-----|-----|-----|-----|------|-----|
| D | 10 | 13 | 16 | 18 | 22 | 25 |
| F | 5 | 7.5 | 7.5 | 10 | 12.5 | |
| d | 0.6 | 0.6 | 0.8 | 0.8 | 0.8 | 1.0 |

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