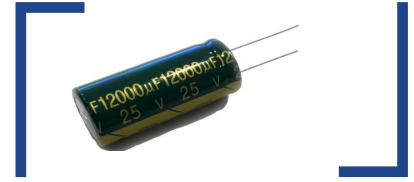


# LZ-ESR

## 特点 Features

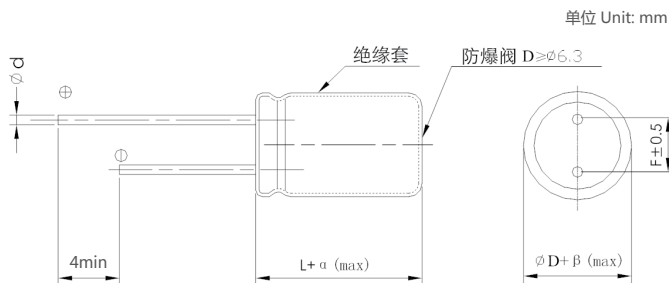
- 保证105°C 2000~5000小时。 Endurance :2000~5000h at 105°C.
- 额定电压范围：6.3~100V。 Rated Voltage Range: 6.3~100V.
- 高频率，低阻抗。 Low ESR at high frequency.
- 满足RoHS RoHS Compliant.



## 主要技术性能 Specifications

| 项目 Items   | 特性 Performance Characteristics   |                          |       |       |      |      |       |           |       |       |  |       |      |      |      |      |      |      |      |   |   |   |   |   |   |   |   |   |               |
|--|--|--------------------------|-------|-------|------|------|-------|-----------|-------|-------|--|-------|------|------|------|------|------|------|------|---|---|---|---|---|---|---|---|---|---------------|
| 类别温度范围<br>Category Temperature Range                         | -40~+105°C   |                          |       |       |      |      |       |           |       |       |  |       |      |      |      |      |      |      |      |   |   |   |   |   |   |   |   |   |               |
| 额定电压范围<br>Rated Voltage(U <sub>R</sub> )                     | 6.3~100V   |                          |       |       |      |      |       |           |       |       |  |       |      |      |      |      |      |      |      |   |   |   |   |   |   |   |   |   |               |
| 标称电容容量范围<br>Nominal Capacitance Range(C <sub>R</sub> )       | 4.7~6800µF   | 120Hz, +20°C             |       |       |      |      |       |           |       |       |  |       |      |      |      |      |      |      |      |   |   |   |   |   |   |   |   |   |               |
| 标称电容容量允许偏差<br>Allowed Capacitance Tolerance(C <sub>T</sub> ) | ±20%(M)  | 120Hz, +20°C             |       |       |      |      |       |           |       |       |  |       |      |      |      |      |      |      |      |   |   |   |   |   |   |   |   |   |               |
| 漏电流<br>Leakage Current(I <sub>L</sub> )                      | ≤0.01C <sub>R</sub> U <sub>R</sub> 或者3µA<br>取较大值 ( Whichver is greater )   | +20°C<br>after 2 minutes |       |       |      |      |       |           |       |       |  |       |      |      |      |      |      |      |      |   |   |   |   |   |   |   |   |   |               |
| 损耗角正切值<br>Tangent of loss angle(Tanδ)                        | <table border="1"> <tr> <td>U<sub>R</sub> (V)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>100</td> </tr> <tr> <td>Tanδ</td> <td>0.22</td> <td>0.19</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.10</td> <td>0.10</td> <td>0.10</td> </tr> </table> <p>当容量大于1000µF时，每增加1000µF，其损耗角正切值增加0.02<br/>When nominal capacitance exceeds 1000µF, add 0.02 to the value above for each 1000µF increase.</p>  | U <sub>R</sub> (V)       | 6.3   | 10    | 16   | 25   | 35    | 50        | 63    | 100   | Tanδ                                   | 0.22  | 0.19 | 0.16 | 0.14 | 0.12 | 0.10 | 0.10 | 0.10 | Max.<br>120Hz, +20°C                    |   |   |   |   |   |   |   |   |               |
| U <sub>R</sub> (V)   | 6.3  | 10                       | 16    | 25    | 35   | 50   | 63    | 100       |       |       |  |       |      |      |      |      |      |      |      |   |   |   |   |   |   |   |   |   |               |
| Tanδ   | 0.22   | 0.19                     | 0.16  | 0.14  | 0.12 | 0.10 | 0.10  | 0.10      |       |       |  |       |      |      |      |      |      |      |      |   |   |   |   |   |   |   |   |   |               |
| 低温特性<br>Characteristics at low temperature                   | <table border="1"> <tr> <td>U<sub>R</sub> (V)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>100</td> </tr> <tr> <td>Z<sub>25°C</sub> / Z<sub>+20°C</sub></td> <td>4</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td>Z<sub>-40°C</sub> / Z<sub>+20°C</sub></td> <td>8</td> <td>6</td> <td>6</td> <td>4</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> </tr> </table>   | U <sub>R</sub> (V)       | 6.3   | 10    | 16   | 25   | 35    | 50        | 63    | 100   | Z <sub>25°C</sub> / Z <sub>+20°C</sub> | 4     | 3    | 2    | 2    | 2    | 2    | 2    | 2    | Z <sub>-40°C</sub> / Z <sub>+20°C</sub> | 8 | 6 | 6 | 4 | 3 | 3 | 3 | 3 | Max.<br>120Hz |
| U <sub>R</sub> (V)   | 6.3  | 10                       | 16    | 25    | 35   | 50   | 63    | 100       |       |       |  |       |      |      |      |      |      |      |      |   |   |   |   |   |   |   |   |   |               |
| Z <sub>25°C</sub> / Z <sub>+20°C</sub>                       | 4  | 3                        | 2     | 2     | 2    | 2    | 2     | 2         |       |       |  |       |      |      |      |      |      |      |      |   |   |   |   |   |   |   |   |   |               |
| Z <sub>-40°C</sub> / Z <sub>+20°C</sub>                      | 8  | 6                        | 6     | 4     | 3    | 3    | 3     | 3         |       |       |  |       |      |      |      |      |      |      |      |   |   |   |   |   |   |   |   |   |               |
| 耐久性<br>Load life   | <p>+105°C，不超过额定电压的范围下叠加额定纹波电流，连续施加表中规定额定电压时间，恢复16小时后：<br/>Overlay the rated ripple current within the range of rated voltage, continuously apply the rated voltage specified in the table for a time +105 °C, and recover for 16 hours ;<br/>电容量变化率Capacitance change : ±25%初始测量值以内 within ±25% of initial value<br/>损耗角正切值 Tanδ : ≤2倍初始规定值 Not more than 200% of specified value<br/>漏 电 流 Leakage current : ≤初始规定值 Not more than specified value</p> <table border="1"> <tr> <td>ØD</td> <td>5~6.3</td> <td>8</td> <td>10</td> <td>12.5~</td> </tr> <tr> <td>Load life</td> <td>2000h</td> <td>3000h</td> <td>4000h</td> <td>5000h</td> </tr> </table> |                          | ØD    | 5~6.3 | 8    | 10   | 12.5~ | Load life | 2000h | 3000h | 4000h                                  | 5000h |      |      |      |      |      |      |      |   |   |   |   |   |   |   |   |   |               |
| ØD   | 5~6.3  | 8                        | 10    | 12.5~ |      |      |       |           |       |       |  |       |      |      |      |      |      |      |      |   |   |   |   |   |   |   |   |   |               |
| Load life  | 2000h  | 3000h                    | 4000h | 5000h |      |      |       |           |       |       |  |       |      |      |      |      |      |      |      |   |   |   |   |   |   |   |   |   |               |
| 高温贮存<br>Shelf life   | <p>+105°C,1000小时贮存后,恢复16小时后：<br/>After storage for 1000 hours at +105°C and then recovery 16 hours:<br/>电容量变化率Capacitance change : ±25%初始测量值以内 within ±25% of initial value<br/>损耗角正切值 Tanδ : ≤2倍初始规定值 Not more than 200% of specified value<br/>漏 电 流 Leakage current : ≤2倍初始规定值 Not more than 200% of specified value</p>  |                          |       |       |      |      |       |           |       |       |  |       |      |      |      |      |      |      |      |   |   |   |   |   |   |   |   |   |               |

## 尺寸图 Dimension drawings



|   |     |     |         |     |      |     |
|---|-----|-----|---------|-----|------|-----|
| D | 5   | 6.3 | 8       | 10  | 12.5 | 16  |
| F | 2.0 | 2.5 | 3.5     | 5.0 | 5.0  | 7.5 |
| d | 0.5 | 0.5 | 0.5、0.6 | 0.6 | 0.6  | 0.8 |

|      |                |
|------|----------------|
| αMAX | α L < 20 > 1.5 |
|      | α L ≥ 20 > 2.0 |

|      |                |
|------|----------------|
| βMAX | β D < 20 > 0.5 |
|      | β D ≥ 20 > 1.0 |

## 频率修正系数 Frequency Coefficient

| Frequency (Hz)           | Kf   |      |      |      |
|--------------------------|------|------|------|------|
|                          | 120  | 1K   | 10K  | 100K |
| C <sub>R</sub> (µF) ~180 | 0.40 | 0.75 | 0.90 | 1.00 |
| 220~560                  | 0.50 | 0.85 | 0.94 | 1.00 |
| 680~1800                 | 0.60 | 0.87 | 0.95 | 1.00 |
| 2200~3900                | 0.75 | 0.90 | 0.95 | 1.00 |
| 4700~                    | 0.85 | 0.95 | 0.98 | 1.00 |

## 规格特性表

## Table of specifications and characteristics

| C <sub>r</sub> (μF) | U <sub>R</sub> (V) | 6.3           |   |  | 10            |   |  | 16            |   |  | 25            |   |  |
|---------------------|--------------------|---------------|---|--|---------------|---|--|---------------|---|--|---------------|---|--|
|                     |                    | ΦD×L<br>mm*mm | ESR <sub>max</sub><br>100kHz<br>25°C<br>Ω | I <sub>AC,max</sub><br>100kHz<br>105°C<br>mA | ΦD×L<br>mm*mm | ESR <sub>max</sub><br>100kHz<br>25°C<br>Ω | I <sub>AC,max</sub><br>100kHz<br>105°C<br>mA | ΦD×L<br>mm*mm | ESR <sub>max</sub><br>100kHz<br>25°C<br>Ω | I <sub>AC,max</sub><br>100kHz<br>105°C<br>mA | ΦD×L<br>mm*mm | ESR <sub>max</sub><br>100kHz<br>25°C<br>Ω | I <sub>AC,max</sub><br>100kHz<br>105°C<br>mA |
| 100                 |                    | 5×11          | 0.28                                      | 220  | 6.3×11        | 0.13                                      | 405  | 6.3×11        | 0.13                                      | 405  | 6.3×11        | 0.13                                      | 410  |
| 120                 |                    |               |   |  |               |   |  | 6.3×11        | 0.13                                      | 420  |               |   |  |
| 220                 |                    | 6.3×11        | 0.13                                      | 405  | 6.3×11        | 0.13                                      | 420  | 6.3×11        | 0.102                                     | 450  | 8×11.5        | 0.072                                     | 760  |
|                     |                    |               |   |  | 8×11.5        | 0.072                                     | 760  | 8×11.5        | 0.072                                     | 760  |               |   |  |
| 330                 |                    | 6.3×11        | 0.13                                      | 420  | 8×11.5        | 0.072                                     | 795  | 8×11.5        | 0.072                                     | 795  | 8×11.5        | 0.056                                     | 995  |
|                     |                    |               |   |  |               |   |  | 8×16          | 0.056                                     | 995  | 10×12.5       | 0.053                                     | 1030   |
| 470                 |                    | 8×11.5        | 0.072                                     | 760  | 8×11.5        | 0.056                                     | 820  |               |   |  | 8×14          | 0.065                                     | 1040   |
|                     |                    |               |   |  |               |   |  | 10×12.5       | 0.053                                     | 1030   | 10×12.5       | 0.056                                     | 1160   |
| 560                 |                    | 8×11.5        | 0.072                                     | 795  |               |   |  | 8×20          | 0.041                                     | 1250   |               |   |  |
| 680                 |                    |               |   |  | 8×11.5        | 0.056                                     | 995  |               |   |  | 10×16         | 0.032                                     | 1550   |
|                     |                    |               |   |  | 8×20          | 0.041                                     | 1250   | 10×12.5       | 0.048                                     | 1160   |               |   |  |
| 820                 |                    | 8×16          | 0.056                                     | 995  | 10×16         | 0.038                                     | 1430   |               |   |  | 10×20         | 0.030                                     | 1890   |
| 1000                |                    | 10×12.5       | 0.053                                     | 1030   |               |   |  | 8×16          | 0.035                                     | 1400   | 10×20         | 0.028                                     | 2000   |
|                     |                    |               |   |  | 10×20         | 0.030                                     | 1820   | 10×12.5       | 0.048                                     | 1430   | 12.5×12.5     | 0.032                                     | 1550   |
| 1200                |                    | 8×20          | 0.041                                     | 1250   | 10×20         | 0.027                                     | 1950   | 10×20         | 0.027                                     | 1900   |               |   |  |
|                     |                    | 10×16         | 0.038                                     | 1430   | 12.5×20       | 0.025                                     | 2150   |               |   |  |               |   |  |
| 1500                |                    | 10×20         | 0.023                                     | 1820   |               |   |  | 12.5×20       | 0.025                                     | 2100   | 12.5×20       | 0.024                                     | 2400   |
| 2200                |                    | 10×25         | 0.022                                     | 1980   | 12.5×25       | 0.018                                     | 2770   | 12.5×25       | 0.023                                     | 2850   | 12.5×25       | 0.020                                     | 2650   |
| 2700                |                    |               |   |  | 12.5×30       | 0.016                                     | 2850   | 12.5×35       | 0.015                                     | 3150   | 16×25         | 0.016                                     | 3000   |
| 3300                |                    | 12.5×20       | 0.021                                     | 2080   | 12.5×35       | 0.015                                     | 3150   |               |   |  |               |   |  |
| 3900                |                    | 12.5×25       | 0.018                                     | 2470   | 16×25         | 0.016                                     | 3018   |               |   |  |               |   |  |
| 4700                |                    | 12.5×30       | 0.016                                     | 2850   |               |   |  |               |   |  | 16×30         | 0.016                                     | 3260   |
| 5600                |                    | 12.5×35       | 0.016                                     | 3150   |               |   |  |               |   |  |               |   |  |
|                     |                    | 16×20         | 0.015                                     | 3150   |               |   |  |               |   |  |               |   |  |
| 6800                |                    | 16×25         | 0.014                                     | 3250   |               |   |  |               |   |  |               |   |  |

| C <sub>r</sub> (μF) | U <sub>R</sub> (V) | 35            |   |  | 50            |   |  | 63            |   |  | 100           |   |  |
|---------------------|--------------------|---------------|---|--|---------------|---|--|---------------|---|--|---------------|---|--|
|                     |                    | ΦD×L<br>mm*mm | ESR <sub>max</sub><br>100kHz<br>25°C<br>Ω | I <sub>AC,max</sub><br>100kHz<br>105°C<br>mA | ΦD×L<br>mm*mm | ESR <sub>max</sub><br>100kHz<br>25°C<br>Ω | I <sub>AC,max</sub><br>100kHz<br>105°C<br>mA | ΦD×L<br>mm*mm | ESR <sub>max</sub><br>100kHz<br>25°C<br>Ω | I <sub>AC,max</sub><br>100kHz<br>105°C<br>mA | ΦD×L<br>mm*mm | ESR <sub>max</sub><br>100kHz<br>25°C<br>Ω | I <sub>AC,max</sub><br>100kHz<br>105°C<br>mA |
| 4.7                 |                    |               |   |  |               |   |  |               |   |  | 5×11          | 1.60                                      | 105  |
| 5.6                 |                    |               |   |  |               |   |  |               |   |  | 5×11          | 1.49                                      | 116  |
| 6.8                 |                    |               |   |  |               |   |  |               |   |  | 5×11          | 1.45                                      | 120  |
| 10                  |                    |               |   |  |               |   |  |               |   |  | 6.3×11        | 1.00                                      | 150  |
| 22                  |                    |               |   |  |               |   |  | 6.3×11        | 0.50                                      | 250  | 8×11.5        | 0.80                                      | 370  |
| 33                  |                    |               |   |  |               |   |  | 6.3×11        | 0.32                                      | 270  | 8×11.5        | 0.70                                      | 380  |
| 47                  |                    | 5×11          | 0.55                                      | 200  | 6.3×11        | 0.24                                      | 320  | 8×11.5        | 0.22                                      | 480  | 10×9          | 0.35                                      | 410  |
| 56                  |                    | 6.3×11        | 0.25                                      | 350  |               |   |  |               |   |  | 10×12.5       | 0.21                                      | 550  |
| 68                  |                    |               |   |  |               |   |  | 8×11.5        | 0.20                                      | 550  | 10×16         | 0.18                                      | 630  |
| 82                  |                    |               |   |  |               |   |  |               |   |  | 10×16         | 0.15                                      | 700  |
| 100                 |                    | 6.3×11        | 0.15                                      | 400  | 8×11.5        | 0.15                                      | 610  | 10×12.5       | 0.14                                      | 720  | 10×20         | 0.09                                      | 970  |
| 220                 |                    | 8×16          | 0.065                                     | 980  | 10×12.5       | 0.065                                     | 1000   | 10×25         | 0.075                                     | 1315   | 12.5×20       | 0.065                                     | 1500   |
|                     |                    | 10×12.5       | 0.060                                     | 1050   | 12.5×12.5     | 0.050                                     | 1450   | 10×20         | 0.080                                     | 1180   |               |   |  |
| 270                 |                    |               |   |  |               |   |  | 12.5×20       | 0.060                                     | 1560   |               |   |  |
| 330                 |                    | 8×20          | 0.041                                     | 1210   | 10×20         | 0.05                                      | 1500   | 10×30         | 0.047                                     | 1750   | 16×25         | 0.045                                     | 2150   |
|                     |                    | 10×12.5       | 0.045                                     | 1160   |               |   |  |               |   |  |               |   |  |
| 470                 |                    | 10×16         | 0.045                                     | 1500   | 12.5×20       | 0.035                                     | 1900   | 12.5×25       | 0.038                                     | 2000   | 16×30         | 0.030                                     | 2350   |
|                     |                    | 12.5×12.5     | 0.045                                     | 1450   | 10×20         | 0.055                                     | 1650   | 16×20         | 0.038                                     | 2300   |               |   |  |
| 680                 |                    | 12.5×20       | 0.035                                     | 2150   |               |   |  |               |   |  |               |   |  |
| 820                 |                    |               |   |  | 16×20         | 0.034                                     | 2100   |               |   |  |               |   |  |
| 1000                |                    | 12.5×20       | 0.032                                     | 2180   | 16×25         | 0.025                                     | 2700   | 16×30         | 0.028                                     | 2850   |               |   |  |
| 1200                |                    | 12.5×25       | 0.028                                     | 2300   |               |   |  |               |   |  |               |   |  |
| 1500                |                    | 16×25         | 0.026                                     | 2700   |               |   |  |               |   |  |               |   |  |