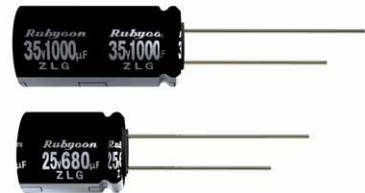


# ZLG SERIES

## 105°C Ultra Low Impedance

\*Load Life : 105°C 1000~5000 hours.

RoHS  
compliance



## SPECIFICATIONS

| Items                                             | Characteristics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                    |      |      |      |  |                        |                                   |                    |                                            |                 |                                    |                |      |                    |      |      |      |                |      |       |      |        |      |         |      |
|---------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|------|------|------|--|------------------------|-----------------------------------|--------------------|--------------------------------------------|-----------------|------------------------------------|----------------|------|--------------------|------|------|------|----------------|------|-------|------|--------|------|---------|------|
| Category Temperature Range                        | -40~+105℃                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                    |      |      |      |  |                        |                                   |                    |                                            |                 |                                    |                |      |                    |      |      |      |                |      |       |      |        |      |         |      |
| Rated Voltage Range                               | 6.3~35Vdc                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                    |      |      |      |  |                        |                                   |                    |                                            |                 |                                    |                |      |                    |      |      |      |                |      |       |      |        |      |         |      |
| Capacitance Tolerance                             | ±20% (20℃,120Hz)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                    |      |      |      |  |                        |                                   |                    |                                            |                 |                                    |                |      |                    |      |      |      |                |      |       |      |        |      |         |      |
| Leakage Current(MAX)                              | I=0.03CV or 3μA whichever is greater. (After 2 minutes)<br>I=Leakage Current(μA)                      C=Capacitance(μF)                      V=Rated Voltage(Vdc)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                    |      |      |      |  |                        |                                   |                    |                                            |                 |                                    |                |      |                    |      |      |      |                |      |       |      |        |      |         |      |
| Dissipation Factor(MAX)<br>(tanδ)                 | <table border="1"><tr><td>Rated Voltage<br/>(Vdc)</td><td>6.3</td><td>10</td><td>16</td><td>25</td><td>35</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></tr></table><br>(20℃,120Hz)<br><br>When capacitance is over 1000μF, tanδ shall be added 0.02 to the listed value with increase of every 1000μF.                                                                                                                                                                                                                                                                                                                                                                                    |                    |      |      |      |  | Rated Voltage<br>(Vdc) | 6.3                               | 10                 | 16                                         | 25              | 35                                 | tanδ           | 0.22 | 0.19               | 0.16 | 0.14 | 0.12 |                |      |       |      |        |      |         |      |
| Rated Voltage<br>(Vdc)                            | 6.3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 10                 | 16   | 25   | 35   |  |                        |                                   |                    |                                            |                 |                                    |                |      |                    |      |      |      |                |      |       |      |        |      |         |      |
| tanδ                                              | 0.22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 0.19               | 0.16 | 0.14 | 0.12 |  |                        |                                   |                    |                                            |                 |                                    |                |      |                    |      |      |      |                |      |       |      |        |      |         |      |
| Endurance                                         | <p>After applying rated voltage with rated ripple current for specified time at 105℃, the capacitors shall meet the following requirements.</p> <table border="1"><tr><td>Capacitance Change</td><td>Within ±25% of the initial value.</td></tr><tr><td>Dissipation Factor</td><td>Not more than 200% of the specified value.</td></tr><tr><td>Leakage Current</td><td>Not more than the specified value.</td></tr></table> <table border="1"><tr><td colspan="2">Case Size</td><td>Life Time<br/>(hrs)</td></tr><tr><td rowspan="5">L≥11</td><td>L=7</td><td>1000</td></tr><tr><td>φD≤6.3</td><td>2000</td></tr><tr><td>φD= 8</td><td>3000</td></tr><tr><td>φD= 10</td><td>4000</td></tr><tr><td>φD≥12.5</td><td>5000</td></tr></table> |                    |      |      |      |  | Capacitance Change     | Within ±25% of the initial value. | Dissipation Factor | Not more than 200% of the specified value. | Leakage Current | Not more than the specified value. | Case Size      |      | Life Time<br>(hrs) | L≥11 | L=7  | 1000 | φD≤6.3         | 2000 | φD= 8 | 3000 | φD= 10 | 4000 | φD≥12.5 | 5000 |
| Capacitance Change                                | Within ±25% of the initial value.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                    |      |      |      |  |                        |                                   |                    |                                            |                 |                                    |                |      |                    |      |      |      |                |      |       |      |        |      |         |      |
| Dissipation Factor                                | Not more than 200% of the specified value.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                    |      |      |      |  |                        |                                   |                    |                                            |                 |                                    |                |      |                    |      |      |      |                |      |       |      |        |      |         |      |
| Leakage Current                                   | Not more than the specified value.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                    |      |      |      |  |                        |                                   |                    |                                            |                 |                                    |                |      |                    |      |      |      |                |      |       |      |        |      |         |      |
| Case Size                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Life Time<br>(hrs) |      |      |      |  |                        |                                   |                    |                                            |                 |                                    |                |      |                    |      |      |      |                |      |       |      |        |      |         |      |
| L≥11                                              | L=7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 1000               |      |      |      |  |                        |                                   |                    |                                            |                 |                                    |                |      |                    |      |      |      |                |      |       |      |        |      |         |      |
|                                                   | φD≤6.3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2000               |      |      |      |  |                        |                                   |                    |                                            |                 |                                    |                |      |                    |      |      |      |                |      |       |      |        |      |         |      |
|                                                   | φD= 8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 3000               |      |      |      |  |                        |                                   |                    |                                            |                 |                                    |                |      |                    |      |      |      |                |      |       |      |        |      |         |      |
|                                                   | φD= 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 4000               |      |      |      |  |                        |                                   |                    |                                            |                 |                                    |                |      |                    |      |      |      |                |      |       |      |        |      |         |      |
|                                                   | φD≥12.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 5000               |      |      |      |  |                        |                                   |                    |                                            |                 |                                    |                |      |                    |      |      |      |                |      |       |      |        |      |         |      |
| Low Temperature Stability<br>Impedance Ratio(MAX) | <table border="1"><tr><td>Rated Voltage<br/>(Vdc)</td><td>6.3</td><td>10</td><td>16</td><td>25</td><td>35</td></tr><tr><td>Z(-25℃)/Z(20℃)</td><td>2</td><td>2</td><td>2</td><td>2</td><td>2</td></tr><tr><td>Z(-40℃)/Z(20℃)</td><td>12</td><td>12</td><td>10</td><td>8</td><td>6</td></tr></table><br>(120Hz)                                                                                                                                                                                                                                                                                                                                                                                                                            |                    |      |      |      |  | Rated Voltage<br>(Vdc) | 6.3                               | 10                 | 16                                         | 25              | 35                                 | Z(-25℃)/Z(20℃) | 2    | 2                  | 2    | 2    | 2    | Z(-40℃)/Z(20℃) | 12   | 12    | 10   | 8      | 6    |         |      |
| Rated Voltage<br>(Vdc)                            | 6.3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 10                 | 16   | 25   | 35   |  |                        |                                   |                    |                                            |                 |                                    |                |      |                    |      |      |      |                |      |       |      |        |      |         |      |
| Z(-25℃)/Z(20℃)                                    | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 2                  | 2    | 2    | 2    |  |                        |                                   |                    |                                            |                 |                                    |                |      |                    |      |      |      |                |      |       |      |        |      |         |      |
| Z(-40℃)/Z(20℃)                                    | 12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 12                 | 10   | 8    | 6    |  |                        |                                   |                    |                                            |                 |                                    |                |      |                    |      |      |      |                |      |       |      |        |      |         |      |

## MULTIPLIER FOR RIPPLE CURRENT

| Frequency(Hz) |             | 120  | 1k   | 10k  | 100k≤ |
|---------------|-------------|------|------|------|-------|
| Coefficient   | 4.7~10uF    | 0.15 | 0.53 | 0.80 | 1.00  |
|               | 22~47uF     | 0.18 | 0.70 | 0.90 | 1.00  |
|               | 56~100uF    | 0.27 | 0.73 | 0.92 | 1.00  |
|               | 120~270uF   | 0.49 | 0.73 | 0.92 | 1.00  |
|               | 330~680uF   | 0.55 | 0.77 | 0.94 | 1.00  |
|               | 820~1500uF  | 0.60 | 0.80 | 0.96 | 1.00  |
|               | 2200~3900uF | 0.70 | 0.85 | 0.98 | 1.00  |

## DIMENSIONS

(mm)

Technical drawing of a capacitor showing side and top views with dimensions.

**Side View Dimensions:**

- SLEEVE(PET):** Label for the sleeve component.
- $\phi d$ :** Lead diameter.
- $L+a$  MAX:** Maximum total length.
- 15MIN:** Minimum length of the lead.
- 4MIN:** Minimum length of the sleeve.

**Top View Dimensions:**

- $\phi D \pm 0.5$  MAX:** Maximum case diameter with tolerance.
- 0.5:** Dimension from the center to the lead hole.
- $L$ :** Dimension from the center to the lead hole.

**Surface Markings:**  $\oplus$  and  $\ominus$  symbols.

( $L=7$ )

| $\phi D$ | 4    | 5   | 6.3 |
|----------|------|-----|-----|
| $\phi d$ | 0.45 |     |     |
| F        | 1.5  | 2.0 | 2.5 |
| a        | 1.0  |     |     |

( $L \geq 11$ )

| $\phi D$ | 5                                               | 6.3 | 8   | 10  | 12.5 |
|----------|-------------------------------------------------|-----|-----|-----|------|
| $\phi d$ | 0.5                                             |     | 0.6 |     |      |
| F        | 2.0                                             | 2.5 | 3.5 | 5.0 |      |
| a        | $L \leq 16 : a = 1.5 \quad L \geq 20 : a = 2.0$ |     |     |     |      |

## PART NUMBER

□□□    ZLG    □□□□□    M    □□□    □□    DXL  
 Rated Voltage    Series    Capacitance    Capacitance Tolerance    Option    Lead Forming    Case Size

## OPTION

|            | Code |
|------------|------|
| PET Sleeve | EFC  |

**◆STANDARD SIZE**

| Rated Voltage<br>(Vdc) | Capacitance<br>( $\mu$ F) | Size<br>$\phi$ D×L(mm) | Rated ripple current<br>(mA r.m.s./105°C, 100kHz) | Impedance<br>( $\Omega$ MAX) |               |
|------------------------|---------------------------|------------------------|---------------------------------------------------|------------------------------|---------------|
|                        |                           |                        |                                                   | 20°C, 100kHz                 | -10°C, 100kHz |
| 6.3                    | 33                        | 4×7                    | 230                                               | 0.48                         | 1.6           |
|                        | 47                        | 5×7                    | 350                                               | 0.26                         | 0.86          |
|                        | 100                       | 6.3×7                  | 480                                               | 0.15                         | 0.50          |
|                        | 150                       | 5×11                   | 405                                               | 0.15                         | 0.50          |
|                        | 330                       | 6.3×11                 | 760                                               | 0.065                        | 0.19          |
|                        | 560                       | 8×11.5                 | 1000                                              | 0.036                        | 0.11          |
|                        | 820                       | 8×16                   | 1250                                              | 0.028                        | 0.083         |
|                        | 1000                      | 10×12.5                | 1430                                              | 0.027                        | 0.070         |
|                        | 1200                      | 8×20                   | 1600                                              | 0.020                        | 0.056         |
|                        | 1200                      | 10×16                  | 1820                                              | 0.020                        | 0.056         |
|                        | 1500                      | 10×20                  | 2180                                              | 0.014                        | 0.033         |
|                        | 1500                      | 12.5×16                | 2200                                              | 0.018                        | 0.033         |
|                        | 2200                      | 10×23                  | 2360                                              | 0.013                        | 0.030         |
|                        | 3300                      | 12.5×20                | 2480                                              | 0.013                        | 0.030         |
|                        | 3900                      | 12.5×25                | 2900                                              | 0.012                        | 0.024         |
| 10                     | 22                        | 4×7                    | 230                                               | 0.49                         | 1.6           |
|                        | 33                        | 5×7                    | 350                                               | 0.26                         | 0.86          |
|                        | 47                        | 5×7                    | 350                                               | 0.26                         | 0.86          |
|                        | 100                       | 6.3×7                  | 480                                               | 0.15                         | 0.50          |
|                        | 100                       | 5×11                   | 405                                               | 0.15                         | 0.50          |
|                        | 220                       | 6.3×11                 | 760                                               | 0.065                        | 0.19          |
|                        | 470                       | 8×11.5                 | 1000                                              | 0.036                        | 0.11          |
|                        | 680                       | 8×16                   | 1250                                              | 0.028                        | 0.083         |
|                        | 680                       | 10×12.5                | 1430                                              | 0.027                        | 0.070         |
|                        | 1000                      | 8×20                   | 1600                                              | 0.020                        | 0.056         |
|                        | 1000                      | 10×16                  | 1820                                              | 0.020                        | 0.056         |
|                        | 1200                      | 10×20                  | 2180                                              | 0.014                        | 0.033         |
|                        | 1200                      | 12.5×16                | 2200                                              | 0.018                        | 0.033         |
|                        | 1500                      | 10×23                  | 2360                                              | 0.013                        | 0.030         |
|                        | 2200                      | 12.5×20                | 2480                                              | 0.013                        | 0.030         |
|                        | 3300                      | 12.5×25                | 2900                                              | 0.012                        | 0.024         |
| 16                     | 22                        | 5×7                    | 350                                               | 0.27                         | 0.89          |
|                        | 33                        | 5×7                    | 350                                               | 0.26                         | 0.86          |
|                        | 47                        | 6.3×7                  | 480                                               | 0.15                         | 0.50          |
|                        | 56                        | 5×11                   | 405                                               | 0.15                         | 0.50          |
|                        | 120                       | 6.3×11                 | 760                                               | 0.065                        | 0.19          |
|                        | 330                       | 8×11.5                 | 1000                                              | 0.036                        | 0.11          |
|                        | 470                       | 8×16                   | 1250                                              | 0.028                        | 0.083         |
|                        | 470                       | 10×12.5                | 1430                                              | 0.027                        | 0.070         |
|                        | 680                       | 8×20                   | 1600                                              | 0.020                        | 0.056         |
|                        | 680                       | 10×16                  | 1820                                              | 0.020                        | 0.056         |
|                        | 1000                      | 10×20                  | 2180                                              | 0.014                        | 0.033         |
|                        | 1000                      | 12.5×16                | 2200                                              | 0.018                        | 0.033         |
|                        | 1200                      | 10×23                  | 2360                                              | 0.013                        | 0.030         |
|                        | 1500                      | 12.5×20                | 2480                                              | 0.013                        | 0.030         |
|                        | 2200                      | 12.5×25                | 2900                                              | 0.012                        | 0.024         |
| 25                     | 10                        | 4×7                    | 230                                               | 0.52                         | 1.7           |
|                        | 22                        | 5×7                    | 350                                               | 0.27                         | 0.89          |
|                        | 33                        | 6.3×7                  | 480                                               | 0.16                         | 0.53          |
|                        | 47                        | 6.3×7                  | 480                                               | 0.15                         | 0.50          |
|                        | 47                        | 5×11                   | 405                                               | 0.15                         | 0.50          |
|                        | 100                       | 6.3×11                 | 760                                               | 0.065                        | 0.19          |
|                        | 220                       | 8×11.5                 | 1000                                              | 0.036                        | 0.11          |
|                        | 330                       | 8×16                   | 1250                                              | 0.028                        | 0.083         |
|                        | 330                       | 10×12.5                | 1430                                              | 0.027                        | 0.070         |
|                        | 470                       | 8×20                   | 1600                                              | 0.020                        | 0.056         |
|                        | 470                       | 10×16                  | 1820                                              | 0.020                        | 0.056         |
|                        | 680                       | 10×20                  | 2180                                              | 0.014                        | 0.033         |
|                        | 680                       | 12.5×16                | 2200                                              | 0.018                        | 0.033         |
|                        | 820                       | 10×23                  | 2360                                              | 0.013                        | 0.030         |
|                        | 1000                      | 12.5×20                | 2480                                              | 0.013                        | 0.030         |
|                        | 1500                      | 12.5×25                | 2900                                              | 0.012                        | 0.024         |
| 35                     | 4.7                       | 4×7                    | 230                                               | 0.64                         | 2.1           |
|                        | 10                        | 5×7                    | 350                                               | 0.33                         | 1.1           |
|                        | 22                        | 6.3×7                  | 480                                               | 0.17                         | 0.56          |
|                        | 33                        | 6.3×7                  | 480                                               | 0.16                         | 0.53          |
|                        | 33                        | 5×11                   | 405                                               | 0.15                         | 0.50          |
|                        | 56                        | 6.3×11                 | 760                                               | 0.065                        | 0.19          |
|                        | 150                       | 8×11.5                 | 1000                                              | 0.036                        | 0.11          |
|                        | 220                       | 8×16                   | 1250                                              | 0.028                        | 0.083         |
|                        | 220                       | 10×12.5                | 1430                                              | 0.027                        | 0.070         |
|                        | 270                       | 8×20                   | 1600                                              | 0.020                        | 0.056         |
|                        | 330                       | 10×12.5                | 1330                                              | 0.039                        | 0.014         |
|                        | 330                       | 10×16                  | 1820                                              | 0.020                        | 0.056         |
|                        | 470                       | 10×20                  | 2180                                              | 0.014                        | 0.033         |
|                        | 470                       | 12.5×16                | 2200                                              | 0.018                        | 0.033         |
|                        | 560                       | 10×23                  | 2360                                              | 0.013                        | 0.030         |
|                        | 680                       | 12.5×20                | 2480                                              | 0.013                        | 0.030         |
|                        | 1000                      | 12.5×25                | 2900                                              | 0.012                        | 0.024         |