

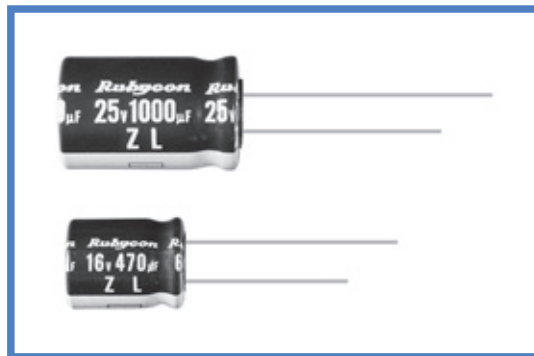
ZL 系列

SERIES

105°C 高纹波电流低阻抗品
105°C High ripple current, Low impedance.

◆ 特 长 / FEATURES

- 实现高频阻抗的降低及高纹波电流化。
Enabled high ripple current by a reduction of impedance at high frequency range.
- 105°C、1000~5000小时品。
Load Life : 105°C 1000~5000hours.
- RoHS指令对应品。
RoHS compliance.

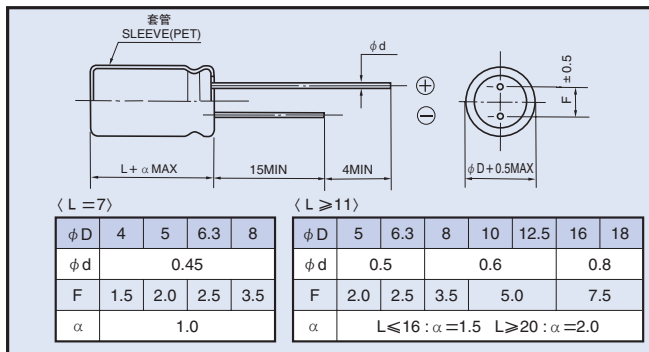


◆ 规格表 / SPECIFICATIONS

| 项 目 Items | 特 性 Characteristics | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|-------------------------------|---|-------------------|-----------------------|------------------------------|--|------|---------------|--------------------------|---|------------------|------|------|------|---------|------|------|------|----------|------|------------------|---|------------|------|---|---|---|---|---|--|
| 工作温度范围 Category Temperature Range | -40~+105°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 额定电压范围 Rated Voltage Range | 6.3~100V.DC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 静电容量允许差 Capacitance Tolerance | ±20% (20°C, 120Hz) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 漏 电 流 Leakage Current(MAX) | 小于I=0.01CV和3µA中的较大值 (施加额定电压2分钟后) I=0.01CV or 3µA whichever is greater. (After 2 minutes) I=漏电流 (µA) C=额定静电容量 (µF) V=额定电压 (V) Leakage Current Rated Capacitance Rated Voltage | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 损失角正切值(tan δ) Dissipation Factor(MAX) | <table border="1"> <tr> <td>额定电压 (V) Rated Voltage</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> <td>(20°C, 120Hz)</td> </tr> <tr> <td>tan δ</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>0.09</td> <td>0.08</td> <td></td> </tr> </table> <p>对于额定静电容量超过1000µF的产品, 其静电容量每增加1000µF, 则损失角正切值在上表值的基础上加上0.02。 When rated capacitance is over 1000µF, tan δ shall be added 0.02 to the listed value with increase of every 1000µF.</p> | 额定电压 (V) Rated Voltage | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | (20°C, 120Hz) | tan δ | 0.22 | 0.19 | 0.16 | 0.14 | 0.12 | 0.10 | 0.09 | 0.08 | | | | | | | | | | | |
| 额定电压 (V) Rated Voltage | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | (20°C, 120Hz) | | | | | | | | | | | | | | | | | | | | | | |
| tan δ | 0.22 | 0.19 | 0.16 | 0.14 | 0.12 | 0.10 | 0.09 | 0.08 | | | | | | | | | | | | | | | | | | | | | | | |
| 耐 久 性 Endurance | <p>在105°C环境中, 不超过额定电压的范围内叠加额定纹波电流, 连续加载右表时间后, 满足以下各项要求。 After life test with rated ripple current at conditions stated in the table below, the capacitors shall meet the following requirements.</p> <table border="1"> <tr> <td>静电容量变化率 Capacitance Change</td> <td>初期值的±25%以内 Within ±25% of the initial value.</td> <td>铝壳尺寸 Case Size</td> <td>时间 (hrs) Life Time</td> </tr> <tr> <td>损失角正切值 Dissipation Factor</td> <td>规格值的200%以下 Not more than 200% of the specified value.</td> <td>L=7</td> <td>1000</td> </tr> <tr> <td>漏 电 流 Leakage Current</td> <td>规格值以下 Not more than the specified value.</td> <td>φ D ≤ 6.3</td> <td>2000</td> </tr> <tr> <td></td> <td></td> <td>φ D = 8</td> <td>3000</td> </tr> <tr> <td></td> <td></td> <td>φ D = 10</td> <td>4000</td> </tr> <tr> <td></td> <td></td> <td>φ D ≥ 12.5</td> <td>5000</td> </tr> </table> | 静电容量变化率 Capacitance Change | 初期值的±25%以内 Within ±25% of the initial value. | 铝壳尺寸 Case Size | 时间 (hrs) Life Time | 损失角正切值 Dissipation Factor | 规格值的200%以下 Not more than 200% of the specified value. | L=7 | 1000 | 漏 电 流 Leakage Current | 规格值以下 Not more than the specified value. | φ D ≤ 6.3 | 2000 | | | φ D = 8 | 3000 | | | φ D = 10 | 4000 | | | φ D ≥ 12.5 | 5000 | | | | | | |
| 静电容量变化率 Capacitance Change | 初期值的±25%以内 Within ±25% of the initial value. | 铝壳尺寸 Case Size | 时间 (hrs) Life Time | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 损失角正切值 Dissipation Factor | 规格值的200%以下 Not more than 200% of the specified value. | L=7 | 1000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 漏 电 流 Leakage Current | 规格值以下 Not more than the specified value. | φ D ≤ 6.3 | 2000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | φ D = 8 | 3000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | φ D = 10 | 4000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | φ D ≥ 12.5 | 5000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 低 温 特 性 Low Temperature Stability (阻抗比) Impedance Ratio(MAX) | <table border="1"> <tr> <td>额定电压 (V) Rated Voltage</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> <td>(120Hz)</td> </tr> <tr> <td>Z(-25°C)/Z(20°C)</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td></td> </tr> <tr> <td>Z(-40°C)/Z(20°C)</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td></td> </tr> </table> | 额定电压 (V) Rated Voltage | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | (120Hz) | Z(-25°C)/Z(20°C) | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | | Z(-40°C)/Z(20°C) | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | |
| 额定电压 (V) Rated Voltage | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | (120Hz) | | | | | | | | | | | | | | | | | | | | | | |
| Z(-25°C)/Z(20°C) | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | | | | | | | | | | | | | | | | | | | | | | | |
| Z(-40°C)/Z(20°C) | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | | | | | | | | | | | | | | | | | | | | | | | |

◆ 尺寸图 / DIMENSIONS

(mm)



◆ 纹波电流修正系数 /

MULTIPLIER FOR RIPPLE CURRENT

频率系数 Frequency Coefficient

| 频率 (Hz) Frequency | | 120 | 1k | 10k | 100k ≤ |
|----------------------|-------------|------|------|------|--------|
| 系 数 Coefficient | 5.6~33µF | 0.42 | 0.70 | 0.90 | 1.00 |
| | 39~270µF | 0.50 | 0.73 | 0.92 | 1.00 |
| | 330~680µF | 0.55 | 0.77 | 0.94 | 1.00 |
| | 820~1800µF | 0.60 | 0.80 | 0.96 | 1.00 |
| | 2200~6800µF | 0.70 | 0.85 | 0.98 | 1.00 |

◆ 副记号 / OPTION

| | 记号 Code |
|------------------|---------|
| PET套管 PET Sleeve | EFC |

◆ 产品型号体系 / PART NUMBER

| | | | | | | |
|-----------------------|----------------|-----------------------------|----------------------------------|---------------|------------------------|-------------------|
| □□□ | ZL | □□□□□ | M | □□□ | □□ | D × L |
| 额定电压 Rated Voltage | 系列名称 Series | 额定静电容量 Rated Capacitance | 静电容量允许差 Capacitance Tolerance | 副记号 Option | 引线加工记号 Lead Forming | 铝壳尺寸 Case Size |

◆标准品一览表 / STANDARD SIZE

| 额定电压 Rated Voltage (V · DC) | 额定静电容量 Rated capacitance (μF) | 外形尺寸 Size φ D×L(mm) | 额定纹波电流 Rated ripple current (mA r.m.s./105°C, 100kHz) | 阻抗 (Ω MAX) Impedance | |
|-----------------------------------|----------------------------------|---------------------------|---|-------------------------|---------------|
| | | | | 20°C, 100kHz | -10°C, 100kHz |
| 6.3 (0J) | 39 | 4×7 | 130 | 0.85 | 2.6 |
| | 68 | 5×7 | 210 | 0.43 | 1.3 |
| | 150 | 6.3×7 | 300 | 0.23 | 0.69 |
| | 150 | 5×11 | 250 | 0.30 | 1.0 |
| | 220 | 8×7 | 380 | 0.15 | 0.45 |
| | 330 | 6.3×11 | 405 | 0.13 | 0.41 |
| | 560 | 8×11.5 | 760 | 0.072 | 0.22 |
| | 820 | 8×16 | 995 | 0.056 | 0.17 |
| | 1000 | 10×12.5 | 1030 | 0.053 | 0.16 |
| | 1200 | 8×20 | 1250 | 0.041 | 0.13 |
| | 1200 | 10×16 | 1430 | 0.038 | 0.12 |
| | 1500 | 10×20 | 1820 | 0.023 | 0.069 |
| | 2200 | 10×23 | 2150 | 0.022 | 0.066 |
| | 3300 | 12.5×20 | 2360 | 0.021 | 0.053 |
| | 3900 | 12.5×25 | 2770 | 0.018 | 0.045 |
| | 4700 | 12.5×30 | 3290 | 0.016 | 0.041 |
| 5600 | 12.5×35 | 3400 | 0.015 | 0.039 | |
| 5600 | 16×20 | 3140 | 0.018 | 0.045 | |
| 6800 | 16×25 | 3460 | 0.016 | 0.043 | |
| 10 (1A) | 27 | 4×7 | 130 | 0.89 | 2.7 |
| | 56 | 5×7 | 210 | 0.44 | 1.4 |
| | 100 | 5×11 | 250 | 0.30 | 1.0 |
| | 120 | 6.3×7 | 300 | 0.23 | 0.69 |
| | 180 | 8×7 | 380 | 0.15 | 0.45 |
| | 220 | 6.3×11 | 405 | 0.13 | 0.41 |
| | 470 | 8×11.5 | 760 | 0.072 | 0.22 |
| | 680 | 8×16 | 995 | 0.056 | 0.17 |
| | 680 | 10×12.5 | 1030 | 0.053 | 0.16 |
| | 1000 | 8×20 | 1250 | 0.041 | 0.13 |
| | 1000 | 10×16 | 1430 | 0.038 | 0.12 |
| | 1200 | 10×20 | 1820 | 0.023 | 0.069 |
| | 1500 | 10×23 | 2150 | 0.022 | 0.066 |
| | 2200 | 12.5×20 | 2360 | 0.021 | 0.053 |
| | 3300 | 12.5×25 | 2770 | 0.018 | 0.045 |
| | 3900 | 12.5×30 | 3290 | 0.016 | 0.041 |
| 3900 | 16×20 | 3140 | 0.018 | 0.045 | |
| 4700 | 12.5×35 | 3400 | 0.015 | 0.039 | |
| 5600 | 16×25 | 3460 | 0.016 | 0.043 | |
| 16 (1C) | 18 | 4×7 | 130 | 0.92 | 2.8 |
| | 33 | 5×7 | 210 | 0.45 | 1.4 |
| | 56 | 5×11 | 250 | 0.30 | 1.0 |
| | 68 | 6.3×7 | 300 | 0.24 | 0.72 |
| | 120 | 8×7 | 380 | 0.15 | 0.45 |
| | 120 | 6.3×11 | 405 | 0.13 | 0.41 |
| | 330 | 8×11.5 | 760 | 0.072 | 0.22 |
| | 470 | 8×16 | 995 | 0.056 | 0.17 |
| | 470 | 10×12.5 | 1030 | 0.053 | 0.16 |
| | 680 | 8×20 | 1250 | 0.041 | 0.13 |
| | 680 | 10×16 | 1430 | 0.038 | 0.12 |
| | 1000 | 10×20 | 1820 | 0.023 | 0.069 |
| | 1200 | 10×23 | 2150 | 0.022 | 0.066 |
| | 1500 | 12.5×20 | 2360 | 0.021 | 0.053 |
| | 2200 | 12.5×25 | 2770 | 0.018 | 0.045 |
| | 2700 | 12.5×30 | 3290 | 0.016 | 0.041 |
| 2700 | 16×20 | 3140 | 0.018 | 0.045 | |
| 3300 | 12.5×35 | 3400 | 0.015 | 0.039 | |
| 3900 | 16×25 | 3460 | 0.016 | 0.043 | |
| 25 (1E) | 15 | 4×7 | 130 | 0.94 | 2.9 |
| | 27 | 5×7 | 210 | 0.46 | 1.4 |
| | 47 | 5×11 | 250 | 0.30 | 1.0 |
| | 56 | 6.3×7 | 300 | 0.24 | 0.72 |
| | 100 | 8×7 | 380 | 0.15 | 0.45 |
| | 100 | 6.3×11 | 405 | 0.13 | 0.41 |
| | 220 | 8×11.5 | 760 | 0.072 | 0.22 |
| | 330 | 8×16 | 995 | 0.056 | 0.17 |
| | 330 | 10×12.5 | 1030 | 0.053 | 0.16 |
| | 470 | 8×20 | 1250 | 0.041 | 0.13 |
| | 470 | 10×16 | 1430 | 0.038 | 0.12 |
| | 680 | 10×20 | 1820 | 0.023 | 0.069 |
| | 820 | 10×23 | 2150 | 0.022 | 0.066 |
| | 1000 | 12.5×20 | 2360 | 0.021 | 0.053 |
| | 1500 | 12.5×25 | 2770 | 0.018 | 0.045 |
| | 1800 | 12.5×30 | 3290 | 0.016 | 0.041 |
| 1800 | 16×20 | 3140 | 0.018 | 0.045 | |
| 2200 | 12.5×35 | 3400 | 0.015 | 0.039 | |
| 2700 | 16×25 | 3460 | 0.016 | 0.043 | |

◆标准品一览表 / STANDARD SIZE

| 额定电压 Rated Voltage (V · DC) | 额定静电容容量 Rated capacitance (μF) | 外形尺寸 Size φ D×L(mm) | 额定纹波电流 Rated ripple current (mA r.m.s./105°C, 100kHz) | 阻抗 (Ω MAX) Impedance | |
|-----------------------------------|-----------------------------------|---------------------------|---|-------------------------|---------------|
| | | | | 20°C, 100kHz | -10°C, 100kHz |
| 35 (1V) | 10 | 4×7 | 130 | 0.96 | 2.9 |
| | 18 | 5×7 | 210 | 0.47 | 1.5 |
| | 33 | 5×11 | 250 | 0.30 | 1.0 |
| | 39 | 6.3×7 | 300 | 0.25 | 0.75 |
| | 56 | 8×7 | 380 | 0.16 | 0.48 |
| | 56 | 6.3×11 | 405 | 0.13 | 0.41 |
| | 150 | 8×11.5 | 760 | 0.072 | 0.22 |
| | 220 | 8×16 | 995 | 0.056 | 0.17 |
| | 220 | 10×12.5 | 1030 | 0.053 | 0.16 |
| | 270 | 8×20 | 1250 | 0.041 | 0.13 |
| | 330 | 10×16 | 1430 | 0.038 | 0.12 |
| | 470 | 10×20 | 1820 | 0.023 | 0.069 |
| | 560 | 10×23 | 2150 | 0.022 | 0.066 |
| | 680 | 12.5×20 | 2360 | 0.021 | 0.053 |
| | 1000 | 12.5×25 | 2770 | 0.018 | 0.045 |
| | 1200 | 12.5×30 | 3290 | 0.016 | 0.041 |
| 1200 | 16×20 | 3140 | 0.018 | 0.045 | |
| 1500 | 12.5×35 | 3400 | 0.015 | 0.039 | |
| 1800 | 16×25 | 3460 | 0.016 | 0.043 | |
| 50 (1H) | 5.6 | 4×7 | 130 | 1.0 | 3.0 |
| | 10 | 5×7 | 210 | 0.50 | 1.5 |
| | 22 | 6.3×7 | 300 | 0.26 | 0.78 |
| | 22 | 5×11 | 238 | 0.34 | 1.18 |
| | 33 | 8×7 | 380 | 0.17 | 0.51 |
| | 56 | 6.3×11 | 385 | 0.14 | 0.50 |
| | 100 | 8×11.5 | 724 | 0.074 | 0.22 |
| | 120 | 8×16 | 950 | 0.061 | 0.18 |
| | 150 | 10×12.5 | 979 | 0.061 | 0.18 |
| | 180 | 8×20 | 1190 | 0.046 | 0.14 |
| | 220 | 10×16 | 1370 | 0.042 | 0.12 |
| | 270 | 10×20 | 1580 | 0.030 | 0.090 |
| | 330 | 10×23 | 1870 | 0.028 | 0.085 |
| | 470 | 12.5×20 | 2050 | 0.027 | 0.068 |
| | 560 | 12.5×25 | 2410 | 0.023 | 0.059 |
| | 680 | 12.5×30 | 2860 | 0.021 | 0.052 |
| 820 | 12.5×35 | 2960 | 0.019 | 0.051 | |
| 820 | 16×20 | 2730 | 0.023 | 0.059 | |
| 1000 | 16×25 | 3010 | 0.021 | 0.056 | |

| 额定电压 Rated Voltage (V · DC) | 额定静电容容量 Rated capacitance (μF) | 外形尺寸 Size φ D×L(mm) | 额定纹波电流 Rated ripple current (mA r.m.s./105°C, 100kHz) | 阻抗 (Ω MAX) Impedance | |
|-----------------------------------|-----------------------------------|---------------------------|---|-------------------------|---------------|
| | | | | 20°C, 100kHz | -10°C, 100kHz |
| 63 (1J) | 15 | 5×11 | 165 | 0.88 | 3.5 |
| | 33 | 6.3×11 | 265 | 0.35 | 1.4 |
| | 56 | 8×11.5 | 500 | 0.22 | 0.88 |
| | 82 | 8×16 | 665 | 0.16 | 0.64 |
| | 82 | 10×12.5 | 685 | 0.15 | 0.60 |
| | 120 | 8×20 | 820 | 0.12 | 0.48 |
| | 120 | 10×16 | 945 | 0.11 | 0.44 |
| | 180 | 10×20 | 1100 | 0.080 | 0.32 |
| | 180 | 12.5×16 | 1135 | 0.082 | 0.27 |
| | 220 | 10×23 | 1300 | 0.073 | 0.29 |
| | 270 | 12.5×20 | 1495 | 0.060 | 0.20 |
| | 330 | 12.5×25 | 1850 | 0.043 | 0.14 |
| | 470 | 12.5×30 | 2250 | 0.039 | 0.13 |
| | 470 | 16×20 | 1990 | 0.045 | 0.14 |
| | 560 | 12.5×35 | 2450 | 0.033 | 0.11 |
| | 560 | 16×25 | 2550 | 0.032 | 0.096 |
| | 680 | 12.5×40 | 2780 | 0.029 | 0.096 |
| | 680 | 18×20 | 2450 | 0.038 | 0.10 |
| | 820 | 16×31.5 | 2810 | 0.026 | 0.078 |
| | 820 | 18×25 | 2780 | 0.031 | 0.084 |
| | 1000 | 16×35.5 | 2835 | 0.021 | 0.063 |
| 1000 | 18×31.5 | 3270 | 0.025 | 0.068 | |
| 1200 | 16×40 | 3340 | 0.019 | 0.057 | |
| 1200 | 18×35.5 | 3310 | 0.020 | 0.054 | |
| 1500 | 18×40 | 3420 | 0.018 | 0.049 | |
| 100 (2A) | 6.8 | 5×11 | 125 | 1.40 | 5.6 |
| | 15 | 6.3×11 | 205 | 0.57 | 2.3 |
| | 27 | 8×11.5 | 355 | 0.36 | 1.4 |
| | 39 | 8×16 | 450 | 0.25 | 1.0 |
| | 47 | 10×12.5 | 450 | 0.24 | 0.96 |
| | 56 | 8×20 | 565 | 0.19 | 0.76 |
| | 68 | 10×16 | 580 | 0.18 | 0.72 |
| | 82 | 10×20 | 750 | 0.13 | 0.52 |
| | 82 | 12.5×16 | 735 | 0.13 | 0.43 |
| | 100 | 10×23 | 880 | 0.12 | 0.48 |
| | 120 | 12.5×20 | 1045 | 0.094 | 0.31 |
| | 180 | 12.5×25 | 1195 | 0.071 | 0.23 |
| | 220 | 12.5×30 | 1410 | 0.063 | 0.21 |
| | 220 | 16×20 | 1295 | 0.071 | 0.21 |
| | 270 | 12.5×35 | 1560 | 0.052 | 0.17 |
| | 270 | 16×25 | 1600 | 0.053 | 0.16 |
| | 270 | 18×20 | 1470 | 0.069 | 0.19 |
| | 330 | 12.5×40 | 1700 | 0.046 | 0.15 |
| | 390 | 16×31.5 | 1750 | 0.041 | 0.12 |
| | 390 | 18×25 | 1620 | 0.049 | 0.13 |
| | 470 | 16×35.5 | 1890 | 0.033 | 0.10 |
| 470 | 18×31.5 | 1775 | 0.039 | 0.11 | |
| 560 | 16×40 | 2080 | 0.030 | 0.090 | |
| 560 | 18×35.5 | 2060 | 0.031 | 0.084 | |
| 680 | 18×40 | 2570 | 0.028 | 0.076 | |