

LE 系列 Series

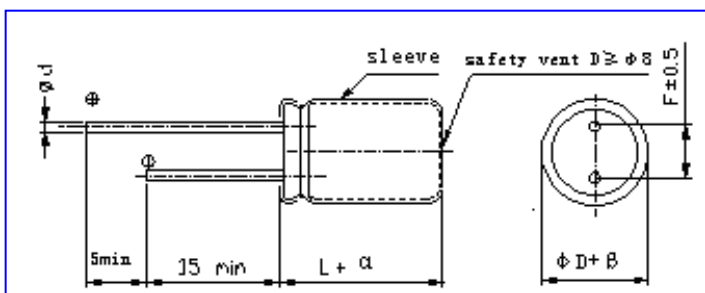
- 耐高纹波，耐高温，特长寿命，105°C 8000 小时~10000 小时
High Ripple Current High Temperature , extremely Long Life, Life time 105°C 8000hours~10000hours
- 专为 LED 驱动电源设计制造
Specially designed for light emitting diode lamp (LED)drive source
- RoHS 指令已对应完毕。
Adapted to the RoHS directive.

主要技术性能 Specifications

| 项目 Item | 特性 Performance Characteristics | | | | | | | | | | | | |
|--|---|---|------------|------------|------------------------|-----------|--|---------------|------------|--|-------------|--|------------|
| 使用温度范围 Operating temperature range | -40°C ~ +105°C | | | | | | | | | | | | |
| 额定电压范围 Rated voltage range | 16V~100V | 160V ~ 450V | | | | | | | | | | | |
| 标称电容量范围 Nominal capacitance range | 0.47μF ~6800μF | | | | | | | | | | | | |
| 电容量允许偏差 Capacitance tolerance | ± 20% (120Hz, +20°C) | | | | | | | | | | | | |
| 漏电流 Leakage current (+20°C) | $I \leq 0.01CV$ 或 $3(\mu A)$ 2分钟 取较大者 (at 20°C, after 2 minutes) (whichever is greater) | $I \leq 0.02 CV + 10 \mu A$ (2分钟, 20°C) $0.02CV + 10 \mu A$ (at 20°C ,after 2 minutes) | | | | | | | | | | | |
| C: 标称容量Capacitance (μF); V: 额定电压Rated voltage range (V) | | | | | | | | | | | | | |
| 损耗角正切值 Dissipation factor (tg δ) (+20°C, 120Hz) | U_R (V) | 16 25 35 50 63 100 | | | | | | | | | | | |
| | tg δ | 0.16 0.14 0.12 0.10 0.09 0.09 | | | | | | | | | | | |
| | U_R (V) | 160 200 250 350 400 450 | | | | | | | | | | | |
| | tg δ | 0.15 0.15 0.15 0.20 0.20 0.20 | | | | | | | | | | | |
| 容量大于 1000μF 者，每增加 1000μF，其损耗角正切值增加 0.02。When nominal capacitance exceeds 1000μF, add 0.02 to the value above for each 1000μF increase. | | | | | | | | | | | | | |
| 温度特性 Temperature characteristics (Impedance ratio at 120Hz) | U_R (V) | 16 25 35 50 63 100 160 200 250 350 400 450 | | | | | | | | | | | |
| | Z-40°C / +20°C | 8 6 6 6 4 4 6 6 6 7 7 9 | | | | | | | | | | | |
| 耐久性 Load life | <p>在+105°C 条件下，施加含额定纹波电流的额定电压，持续规定时间，并在+20°C下恢复 16 小时后，电容器应符合下列要求 The following specifications shall be met when the capacitors are restored to +20°C for 16 hours after D.C. bias rated ripple current is applied at +105°C, the peak voltage shall not exceed the voltage.</p> <table border="1"> <tr> <td rowspan="2">Time</td> <td>16WV~100WV</td> <td>$\phi 5 \sim \phi 6.3$</td> <td>8000hours</td> </tr> <tr> <td></td> <td>$\phi \geq 8$</td> <td>10000hours</td> </tr> <tr> <td></td> <td>160WV~450WV</td> <td></td> <td>10000hours</td> </tr> </table> <p>Capacitance change : ±20%初始测量值以内 ±20% of the Initial measured value Leakage current : ≤初始规定值 ≤the Initial specified value Dissipation factor : ≤2 倍初始规定值 ≤2times of the Initial specified value</p> | | Time | 16WV~100WV | $\phi 5 \sim \phi 6.3$ | 8000hours | | $\phi \geq 8$ | 10000hours | | 160WV~450WV | | 10000hours |
| Time | 16WV~100WV | $\phi 5 \sim \phi 6.3$ | | 8000hours | | | | | | | | | |
| | | $\phi \geq 8$ | 10000hours | | | | | | | | | | |
| | 160WV~450WV | | 10000hours | | | | | | | | | | |
| 高温贮存 Shelf life | <p>+105°C 1000 小时贮存后，恢复 16 小时后 After storage for 1000 hours at +105°C and then resumed for 16 hours:</p> <p>Capacitance change : ±20%初始测量值以内 ±20% of the Initial measured value Leakage current : ≤2 倍初始规定值 ≤2 times of the Initial specified value Dissipation factor : ≤2 倍初始规定值 ≤2times of the Initial specified value</p> | | | | | | | | | | | | |

外形图及尺寸表 Case size table

Unit : mm



| | | | | | | | |
|---|-----|-----|---------|-----|------|-----|-----|
| D | 5 | 6.3 | 8 | 10 | 12.5 | 16 | 18 |
| F | 2.0 | 2.5 | 3.5 | 5.0 | | 7.5 | 7.5 |
| d | 0.5 | 0.5 | 0.5、0.6 | 0.6 | | 0.8 | 0.8 |

| | |
|-------|----------------|
| α MAX | (L < 20) 1.5 |
| | (L ≥ 20) 2.0 |

| | |
|-------|-----|
| β MAX | 0.5 |
|-------|-----|

◇允许纹波电流的修正系数 Coefficient of allowable ripple current

| | | | | | |
|-------------------|------|------|------|------|------|
| 频率 Frequency (Hz) | 50 | 120 | 1K | 10K | 100K |
| 修正系数 Coefficient | 0.40 | 0.50 | 0.80 | 0.90 | 1.00 |

■尺 寸 Dimensions

| 电压Uk 项目 Item 容量 Ca(μF) 代码 Code | | 16V(1C) | | | 25V(1E) | | | 35V(1V) | | | 50V(1H) | | |
|--|-----|-----------|-------|--------|-----------|-------|--------|-----------|-------|--------|-----------|-------|--------|
| | | Size | ESR | Ripple | Size | ESR | Ripple | Size | ESR | Ripple | Size | ESR | Ripple |
| | | φ D×L(mm) | Ω MAX | (mA) | φ D×L(mm) | Ω MAX | (mA) | φ D×L(mm) | Ω MAX | (mA) | φ D×L(mm) | Ω MAX | (mA) |
| 10 | 100 | 5×11 | 0.95 | 150 | 5×11 | 0.95 | 160 | 5×11 | 1.35 | 165 | 5×11 | 1.35 | 185 |
| 15 | 150 | 5×11 | 0.95 | 155 | 5×11 | 0.95 | 170 | 5×11 | 0.95 | 175 | 5×11 | 1.35 | 195 |
| 22 | 220 | 5×11 | 0.36 | 170 | 5×11 | 0.36 | 185 | 5×11 | 0.95 | 195 | 5×11 | 0.55 | 240 |
| 33 | 330 | 5×11 | 0.36 | 185 | 5×11 | 0.36 | 200 | 5×11 | 0.36 | 205 | 6.3×11 | 0.32 | 400 |
| 39 | 390 | 5×11 | 0.36 | 225 | 5×11 | 0.36 | 225 | 5×11 | 0.36 | 245 | 6.3×11 | 0.23 | 400 |
| 47 | 470 | 5×11 | 0.23 | 245 | 5×11 | 0.23 | 315 | 5×11 | 0.23 | 345 | 6.3×11 | 0.23 | 420 |
| 56 | 560 | 5×11 | 0.23 | 280 | 5×11 | 0.23 | 335 | 6.3×11 | 0.15 | 480 | 6.3×11 | 0.12 | 385 |
| 68 | 680 | 5×11 | 0.23 | 305 | 5×11 | 0.23 | 355 | 6.3×11 | 0.13 | 520 | 8×11.5 | 0.135 | 640 |
| 100 | 101 | 5×11 | 0.23 | 345 | 6.3×11 | 0.098 | 485 | 6.3×11 | 0.085 | 545 | 8×11.5 | 0.12 | 725 |
| 120 | 121 | 6.3×11 | 0.098 | 485 | 6.3×11 | 0.098 | 525 | 8×11.5 | 0.078 | 780 | 8×16 | 0.061 | 975 |
| 150 | 151 | 6.3×11 | 0.098 | 510 | 6.3×11 | 0.098 | 555 | 8×11.5 | 0.072 | 840 | 8×16 | 0.061 | 975 |
| 180 | 181 | 6.3×11 | 0.098 | 525 | 8×11.5 | 0.061 | 875 | 8×11.5 | 0.068 | 965 | 10×16 | 0.046 | 1380 |
| 220 | 221 | 6.3×11 | 0.098 | 555 | 8×11.5 | 0.061 | 905 | 8×16 | 0.048 | 1020 | 8×20 | 0.041 | 1320 |
| | | | | | | | | 10×12.5 | 0.043 | 1180 | 10×16 | 0.042 | 1380 |
| 270 | 271 | 8×11.5 | 0.061 | 870 | 8×11.5 | 0.061 | 965 | 8×16 | 0.048 | 1050 | 12.5×15 | 0.038 | 1762 |
| | | | | | | | | 10×12.5 | 0.043 | 1210 | 10×20 | 0.036 | 1590 |
| 330 | 331 | 8×11.5 | 0.061 | 920 | 8×11.5 | 0.061 | 965 | 10×12.5 | 0.043 | 1340 | 10×25 | 0.036 | 1650 |
| 390 | 391 | 8×11.5 | 0.061 | 940 | 8×16 | 0.049 | 1280 | 8×20 | 0.030 | 1520 | 10×25 | 0.031 | 1880 |
| | | | | | 10×12.5 | 0.043 | 1340 | 10×16 | 0.030 | 1650 | 12.5×20 | 0.030 | 2060 |
| 470 | 471 | 8×11.5 | 0.061 | 960 | 10×12.5 | 0.043 | 1325 | 10×16 | 0.030 | 1755 | 12.5×20 | 0.030 | 2050 |
| 560 | 561 | 8×16 | □□□49 | 1230 | 8×20 | 0.031 | 1540 | 10×20 | 0.03 | 1970 | 12.5×25 | 0.025 | 2420 |
| | | 10×12.5 | 0.043 | 1340 | 10×16 | 0.031 | 1770 | 12.5×15 | 0.025 | 2340 | | | |
| 680 | 681 | 8×16 | 0.049 | 1280 | 10×16 | 0.031 | 1770 | 10×25 | 0.024 | 2260 | 12.5×30 | 0.021 | 2860 |
| | | 10×12.5 | 0.043 | 1340 | | | | 12.5×20 | 0.024 | 2360 | | | |
| 820 | 821 | 8×20 | 0.031 | 1540 | 10×20 | 0.020 | 2010 | 12.5×20 | 0.024 | 2490 | 12.5×30 | 0.022 | 2870 |
| | | 10×16 | 0.031 | 1770 | 12.5×15 | 0.020 | 2010 | | | | | | |
| 1000 | 102 | 8×20 | 0.031 | 1540 | 10×25 | 0.020 | 2260 | 12.5×20 | 0.024 | 2490 | 12.5×35 | 0.018 | 3050 |
| | | 10×16 | 0.031 | 1770 | 12.5×20 | 0.019 | 2260 | | | | 16×25 | 0.020 | 3010 |
| 1200 | 122 | 10×20 | 0.022 | 1970 | 12.5×20 | 0.019 | 2370 | 12.5×25 | 0.023 | 2910 | 16×30 | 0.018 | 3290 |
| | | 12.5×15 | 0.020 | 2340 | | | | | | | 18×25 | 0.025 | 3070 |
| 1500 | 152 | 10×20 | 0.022 | 1970 | 12.5×20 | 0.019 | 2490 | 12.5×30 | 0.014 | 3460 | 16×35 | 0.018 | 3050 |
| | | 12.5×15 | 0.020 | 2340 | | | | 16×20 | 0.022 | 3260 | 18×25 | 0.023 | 3310 |
| 1800 | 182 | 10×25 | 0.020 | 2260 | 12.5×25 | 0.017 | 2910 | 12.5×35 | 0.012 | 3470 | 16×40 | 0.016 | 3440 |
| | | 12.5×20 | 0.019 | 2490 | | | | 16×25 | 0.021 | 3580 | 18×35 | 0.021 | 3520 |
| 2200 | 222 | 12.5×20 | 0.019 | 2490 | 12.5×30 | 0.014 | 3460 | 16×25 | 0.020 | 3640 | 18×35 | 0.021 | 3580 |
| | | | | | 16×20 | 0.017 | 3260 | | | | | | |
| 2700 | 272 | 12.5×25 | 0.017 | 2710 | 12.5×35 | 0.013 | 3580 | 16×30 | 0.011 | 3540 | | | |
| | | | | | 16×25 | 0.014 | 3640 | 18×25 | 0.011 | 3650 | | | |
| 3300 | 332 | 12.5×30 | 0.014 | 2960 | 12.5×40 | 0.012 | 3900 | 18×35 | 0.010 | 4090 | | | |
| | | 16×20 | 0.017 | 2960 | 16×25 | 0.014 | 3640 | | | | | | |
| 3900 | 392 | 12.5×30 | 0.014 | 3060 | 16×30 | 0.012 | 3900 | 18×40 | 0.010 | 4160 | | | |
| | | 16×20 | 0.017 | 3060 | 18×25 | 0.013 | 3660 | | | | | | |
| 4700 | 472 | 12.5×35 | 0.013 | 3280 | 16×35 | 0.011 | 3840 | | | | | | |
| | | 16×25 | 0.014 | 3240 | 18×30 | 0.011 | 4020 | | | | | | |
| 5600 | 562 | 16×30 | 0.012 | 3700 | 18×35 | 0.010 | 4090 | | | | | | |
| | | 18×25 | 0.013 | 3660 | | | | | | | | | |
| 6800 | 682 | 16×30 | 0.012 | 3900 | 18×40 | 0.010 | 4160 | | | | | | |

| | | | | | | | | | | | | |
|------|-----|-------|-------|------|--|--|--|--|--|--|--|--|
| 1800 | 182 | 16×40 | 0.021 | 3250 | | | | | | | | |
| 2200 | 222 | 18×40 | 0.028 | 3430 | | | | | | | | |

■尺寸 Dimensions

| 电压U _k 容量 C _x (μF) | 项目 Item 代码 Code | 250V(2E) | | | 350V(2V) | | | 400V(2G) | | | 450V(2W) | | |
|---|--------------------------|-----------|-------|--------|-----------|-------|--------|-----------|-------|--------|-----------|-------|--------|
| | | Size | ESR | Ripple | Size | ESR | Ripple | Size | ESR | Ripple | Size | ESR | Ripple |
| | | φ D×L(mm) | Ω MAX | (mA) | φ D×L(mm) | Ω MAX | (mA) | φ D×L(mm) | Ω MAX | (mA) | φ D×L(mm) | Ω MAX | (mA) |
| 1.0 | 010 | | | | 6.3×11 | 11.5 | 55 | 6.3×11 | 25.0 | 65 | 6.3×11 | 33.0 | 50 |
| 1.2 | 1R2 | | | | 6.3×11 | 11.5 | 55 | 6.3×11 | 25.0 | 70 | 6.3×11 | 25.0 | 55 |
| 1.5 | 1R5 | | | | 6.3×11 | 11.5 | 60 | 6.3×11 | 25.0 | 75 | 8×11.5 | 25.0 | 80 |
| 1.8 | 1R8 | | | | 6.3×11 | 11.5 | 65 | 6.3×11 | 25.0 | 85 | 8×11.5 | 20.0 | 85 |
| 2.2 | 2R2 | 6.3×11 | 10.15 | 80 | 6.3×11 | 11.5 | 70 | 8×11.5 | 20.0 | 90 | 8×16 | 15.72 | 95 |
| 2.7 | 2R7 | 6.3×11 | 10.15 | 90 | 8×11.5 | 15.72 | 85 | 8×11.5 | 15.72 | 95 | 8×16 | 15.72 | 100 |
| 3.3 | 3R3 | 6.3×11 | 10.15 | 100 | 8×11.5 | 15.72 | 95 | 8×11.5 | 15.72 | 100 | 8×16 | 15.72 | 110 |
| 3.9 | 3R9 | 8×11.5 | 10.15 | 110 | 8×11.5 | 15.72 | 100 | 8×11.5 | 15.72 | 105 | 8×16 | 15.72 | 120 |
| 4.7 | 4R7 | 8×11.5 | 10.15 | 135 | 8×11.5 | 15.72 | 130 | 8×11.5 | 12.00 | 110 | 8×20 | 10.51 | 150 |
| | | | | | | | | 8×16 | 12.00 | 115 | 10×16 | 10.51 | 150 |
| 5.6 | 5R6 | 8×11.5 | 9.00 | 150 | 8×16 | 10.51 | 155 | 8×16 | 10.51 | 160 | 8×20 | 7.50 | 180 |
| | | | | | 10×12.5 | 10.51 | 155 | 10×12.5 | 10.50 | 180 | 10×16 | 7.50 | 180 |
| 6.8 | 6R8 | 8×11.5 | 6.70 | 160 | 10×12.5 | 10.51 | 170 | 8×20 | 8.70 | 180 | 10×16 | 7.50 | 220 |
| | | | | | | | | 10×16 | 8.70 | 220 | | | |
| 8.2 | 8R2 | 8×12 | 3.65 | 170 | 8×20 | 7.50 | 240 | 10×16 | 7.50 | 252 | 10×20 | 6.20 | 265 |
| | | | | | 10×16 | 7.50 | 240 | | | | | | |
| 10 | 100 | 8×16 | 3.65 | 250 | 10×16 | 7.50 | 250 | 10×20 | 4.90 | 288 | 10×25 | 6.20 | 305 |
| | | 10×12.5 | 3.65 | 250 | | | | | | | 12.5×20 | 5.20 | 305 |
| 15 | 150 | 8×20 | 3.24 | 380 | 10×25 | 6.20 | 340 | 12.5×20 | 4.20 | 400 | 12.5×20 | 5.20 | 400 |
| | | 10×16 | 3.24 | 390 | 12.5×15 | 6.20 | 340 | | | | 8×50 | 5.20 | 400 |
| 18 | 180 | 10×16 | 3.24 | 410 | 10×25 | 6.20 | 430 | 12.5×20 | 4.20 | 470 | 12.5×25 | 3.60 | 470 |
| | | | | | 12.5×20 | 3.10 | 430 | | | | | | |
| 22 | 220 | 10×20 | 3.24 | 475 | 12.5×20 | 3.10 | 475 | 12.5×25 | 2.25 | 475 | 16×20 | 2.02 | 550 |
| | | | | | 8×50 | 3.10 | 475 | 8×50 | 2.25 | 475 | 10×40 | 2.02 | 550 |
| 33 | 330 | 12.5×20 | 1.38 | 570 | 12.5×25 | 2.25 | 570 | 16×25 | 1.70 | 610 | 16×25 | 1.82 | 665 |
| | | 8×50 | 1.38 | 570 | 10×50 | 2.25 | 570 | 10×50 | 1.70 | 610 | 10×50 | 1.82 | 665 |
| 47 | 470 | 12.5×25 | 1.38 | 650 | 16×25 | 2.25 | 800 | 18×25 | 1.70 | 795 | 16×35 | 1.38 | 730 |
| | | | | | | | | | | | 12.5×50 | 1.38 | 730 |
| 56 | 560 | 12.5×30 | 1.25 | 750 | 16×30 | 2.02 | 840 | 16×30 | 1.70 | 820 | 16×35 | 1.38 | 750 |
| | | | | | | | | 12.5×50 | 1.70 | 820 | | | |
| 68 | 680 | 12.5×30 | 1.25 | 870 | 18×25 | 1.38 | 880 | 18×30 | 1.38 | 910 | 18×35 | 1.25 | 970 |
| | | 10×50 | 1.25 | 870 | 12.5×50 | 1.38 | 880 | | | | | | |
| 82 | 820 | 16×30 | 1.15 | 910 | 18×30 | 1.38 | 940 | 16×40 | 1.25 | 980 | 18×40 | 0.97 | 1030 |
| | | | | | | | | 18×35 | 1.25 | 980 | | | |
| 100 | 101 | 16×30 | 1.18 | 960 | 18×35 | 1.25 | 112 | 18×40 | 0.97 | 1100 | | | |
| | | 12.5×50 | 1.18 | 960 | | | | | | | | | |
| 120 | 121 | 18×30 | 1.02 | 1210 | 18×35 | 1.25 | 120 | | | | | | |
| 150 | 151 | 18×30 | 0.98 | 1400 | | | | | | | | | |
| 180 | 181 | 18×35 | 0.74 | 1540 | | | | | | | | | |
| 220 | 221 | 18×40 | 0.61 | 1620 | | | | | | | | | |

Size φ D×L(mm)

Maximum Allowable Ripple Current (mA rms) at 105°C 100KHz

Maximum ESR (Ω) at 20°C 100KHz

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