

# HLD 系列 Series

## 特点 Features

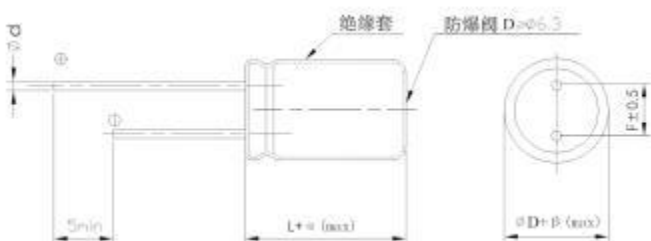
- 耐高纹波，耐高温，特长寿命，105°C 6000小时~8000小时。  
High Ripple Current High Temperature , extremely Long Life,  
Life time 105°C 6000hours~8000hours.
- 专为LED驱动电源设计制造。  
Specially designed for light emitting diode lamp (LED) drive source.
- RoHS指令已对应完毕。  
Adapted to the RoHS directive.



## 主要技术性能 Specifications

| 项目 Items   | 特性 Characteristics   |  |            |            |                              |            |     |                  |            |     |             |      |            |      |      |                 |           |     |     |     |     |     |     |     |      |      |      |      |      |      |
|--|--|--|------------|------------|------------------------------|------------|-----|------------------|------------|-----|-------------|------|------------|------|------|-----------------|-----------|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| 使用温度范围<br>Operating Temperature Range                          | -40~+105°C   |  |            |            |                              |            |     |                  |            |     |             |      |            |      |      |                 |           |     |     |     |     |     |     |     |      |      |      |      |      |      |
| 额定电压范围<br>Rated Voltage Range                                  | 16~100V  | 160~450V   |            |            |                              |            |     |                  |            |     |             |      |            |      |      |                 |           |     |     |     |     |     |     |     |      |      |      |      |      |      |
| 标称电容量范围<br>Nominal Capacitance Range                           | 0.47~10000μF   |  |            |            |                              |            |     |                  |            |     |             |      |            |      |      |                 |           |     |     |     |     |     |     |     |      |      |      |      |      |      |
| 标称电容量允许偏差<br>Capacitance Tolerance                             | ±20%(120Hz, +20°C)   |  |            |            |                              |            |     |                  |            |     |             |      |            |      |      |                 |           |     |     |     |     |     |     |     |      |      |      |      |      |      |
| 漏电流<br>Leakage Current(+20°C)                                  | $I \leq 0.01CV$ 或 $3(\mu A)$ 2分钟 取较大者<br>(at 20°C, after 2 minutes)(whichever is greater)  | $I \leq 0.02 CV + 10\mu A$ (2分钟,20°C)<br>$0.02CV + 10\mu A$ (at 20°C, after 2 minutes) |            |            |                              |            |     |                  |            |     |             |      |            |      |      |                 |           |     |     |     |     |     |     |     |      |      |      |      |      |      |
| 损耗角正切值(tgδ)<br>Dissipation Factor (+20°C, 120Hz)               | <table border="1"> <tr> <td><math>U_r</math> (V)</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>100</td> </tr> <tr> <td>tgδ</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.10</td> <td>0.09</td> <td>0.09</td> </tr> <tr> <td><math>U_r</math> (V)</td> <td>160</td> <td>200</td> <td>250</td> <td>350</td> <td>400</td> <td>450</td> </tr> <tr> <td>tgδ</td> <td>0.15</td> <td>0.15</td> <td>0.15</td> <td>0.20</td> <td>0.20</td> <td>0.20</td> </tr> </table> <p>容量大于1000μF者，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>  |  | $U_r$ (V)  | 16         | 25                           | 35         | 50  | 63               | 100        | tgδ | 0.16        | 0.14 | 0.12       | 0.10 | 0.09 | 0.09            | $U_r$ (V) | 160 | 200 | 250 | 350 | 400 | 450 | tgδ | 0.15 | 0.15 | 0.15 | 0.20 | 0.20 | 0.20 |
| $U_r$ (V)  | 16   | 25   | 35         | 50         | 63                           | 100        |     |                  |            |     |             |      |            |      |      |                 |           |     |     |     |     |     |     |     |      |      |      |      |      |      |
| tgδ  | 0.16   | 0.14   | 0.12       | 0.10       | 0.09                         | 0.09       |     |                  |            |     |             |      |            |      |      |                 |           |     |     |     |     |     |     |     |      |      |      |      |      |      |
| $U_r$ (V)  | 160  | 200  | 250        | 350        | 400                          | 450        |     |                  |            |     |             |      |            |      |      |                 |           |     |     |     |     |     |     |     |      |      |      |      |      |      |
| tgδ  | 0.15   | 0.15   | 0.15       | 0.20       | 0.20                         | 0.20       |     |                  |            |     |             |      |            |      |      |                 |           |     |     |     |     |     |     |     |      |      |      |      |      |      |
| 温度特性 Temperature Characteristics<br>(Impedance ratio at 120Hz) | <table border="1"> <tr> <td><math>U_r</math> (V)</td> <td>16</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>Z-40°C / Z+20°C</td> <td>8</td> <td>6</td> <td>6</td> <td>6</td> <td>4</td> <td>4</td> <td>6</td> <td>6</td> <td>6</td> <td>7</td> <td>7</td> <td>9</td> </tr> </table>  |  | $U_r$ (V)  | 16         | 25                           | 35         | 50  | 63               | 100        | 160 | 200         | 250  | 350        | 400  | 450  | Z-40°C / Z+20°C | 8         | 6   | 6   | 6   | 4   | 4   | 6   | 6   | 6    | 7    | 7    | 9    |      |      |
| $U_r$ (V)  | 16   | 25   | 35         | 50         | 63                           | 100        | 160 | 200              | 250        | 350 | 400         | 450  |            |      |      |                 |           |     |     |     |     |     |     |     |      |      |      |      |      |      |
| Z-40°C / Z+20°C  | 8  | 6  | 6          | 6          | 4                            | 4          | 6   | 6                | 6          | 7   | 7           | 9    |            |      |      |                 |           |     |     |     |     |     |     |     |      |      |      |      |      |      |
| 耐久性<br>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<br/>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><math>\varphi 5 \sim \varphi 6.3</math></td> <td>6000 hours</td> </tr> <tr> <td></td> <td><math>\varphi \geq 8</math></td> <td>8000 hours</td> </tr> <tr> <td></td> <td>160WV~450WV</td> <td></td> <td>8000 hours</td> </tr> </table> <p>Capacitance change : ±20%初始测量值以内 ±20% of the initial measured value<br/>Leakage current : ≤初始规定值 ≤Initial specified value<br/>Dissipation factor : ≤2倍初始规定值 ≤2 times of the initial specified value</p> |  | Time       | 16WV~100WV | $\varphi 5 \sim \varphi 6.3$ | 6000 hours |     | $\varphi \geq 8$ | 8000 hours |     | 160WV~450WV |      | 8000 hours |      |      |                 |           |     |     |     |     |     |     |     |      |      |      |      |      |      |
| Time   | 16WV~100WV   | $\varphi 5 \sim \varphi 6.3$   |            | 6000 hours |                              |            |     |                  |            |     |             |      |            |      |      |                 |           |     |     |     |     |     |     |     |      |      |      |      |      |      |
|  |  | $\varphi \geq 8$   | 8000 hours |            |                              |            |     |                  |            |     |             |      |            |      |      |                 |           |     |     |     |     |     |     |     |      |      |      |      |      |      |
|  | 160WV~450WV  |  | 8000 hours |            |                              |            |     |                  |            |     |             |      |            |      |      |                 |           |     |     |     |     |     |     |     |      |      |      |      |      |      |
| 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 resumed for 16 hours:<br/>Capacitance change : ±20%初始测量值以内 ±20% of the initial measured value<br/>Leakage current : ≤2倍初始规定值 ≤2 times of the initial specified value<br/>Dissipation factor : ≤2倍初始规定值 ≤2 times of the initial specified value</p>   |  |            |            |                              |            |     |                  |            |     |             |      |            |      |      |                 |           |     |     |     |     |     |     |     |      |      |      |      |      |      |

## 外形图及尺寸表 Case Size Table



单位 Unit: mm

| D    | 5            | 6.3 | 8        | 10  | 13   | 16  | 18  |
|------|--------------|-----|----------|-----|------|-----|-----|
| F    | 2.0          | 2.5 | 3.5      | 5.0 | 5.0  | 7.5 | 7.5 |
| d    | 0.5          | 0.5 | 0.5, 0.6 | 0.6 | 0.6  | 0.8 | 0.8 |
| αMAX | L < 20 > 1.5 |     |          |     | βMAX |     | 0.5 |
|      | L ≥ 20 > 2.0 |     |          |     |      |     |     |

### 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

| WV<br>CAP(μF) |     | 16V(1C) |       |        | 25V(1E) |       |        | 35V(1V) |       |        | 50V(1H) |       |        |
|---------------|-----|---------|-------|--------|---------|-------|--------|---------|-------|--------|---------|-------|--------|
|               |     | Size    | ESR   | Ripple | Size    | ESR   | Ripple | Size    | ESR   | Ripple | Size    | ESR   | Ripple |
| 10            | 100 | 5×11    | 0.97  | 141    | 5×11    | 0.97  | 141    | 5×11    | 1.40  | 117    | 5×11    | 1.35  | 115    |
| 15            | 150 | 5×11    | 0.97  | 150    | 5×11    | 0.97  | 150    | 5×11    | 0.97  | 141    | 5×11    | 1.05  | 120    |
| 22            | 220 | 5×11    | 0.45  | 228    | 5×11    | 0.67  | 228    | 5×11    | 0.97  | 150    | 5×11    | 0.55  | 205    |
| 33            | 330 | 5×11    | 0.37  | 238    | 5×11    | 0.37  | 238    | 5×11    | 0.37  | 228    | 6.3×11  | 0.37  | 320    |
| 39            | 390 | 5×11    | 0.37  | 245    | 5×11    | 0.37  | 245    | 5×11    | 0.37  | 238    | 6.3×11  | 0.29  | 340    |
| 47            | 470 | 5×11    | 0.24  | 252    | 5×11    | 0.24  | 283    | 5×11    | 0.37  | 245    | 6.3×11  | 0.24  | 380    |
| 56            | 560 | 5×11    | 0.24  | 261    | 5×11    | 0.24  | 295    | 6.3×11  | 0.24  | 545    | 6.3×11  | 0.24  | 390    |
| 68            | 680 | 5×11    | 0.24  | 273    | 5×11    | 0.24  | 305    | 6.3×11  | 0.24  | 555    | 8×11.5  | 0.15  | 640    |
| 100           | 101 | 5×11    | 0.24  | 285    | 6.3×11  | 0.10  | 545    | 6.3×11  | 0.10  | 565    | 8×11.5  | 0.15  | 720    |
| 120           | 121 | 5×11    | 0.24  | 296    | 6.3×11  | 0.10  | 560    | 8×11.5  | 0.090 | 950    | 8×16    | 0.085 | 840    |
| 150           | 151 | 6.3×11  | 0.10  | 545    | 6.3×11  | 0.10  | 575    | 8×11.5  | 0.090 | 965    | 8×16    | 0.067 | 955    |
| 180           | 181 | 6.3×11  | 0.10  | 555    | 8×11.5  | 0.090 | 950    | 8×11.5  | 0.090 | 975    | 8×20    | 0.062 | 1050   |
| 220           | 221 | 6.3×11  | 0.10  | 565    | 8×11.5  | 0.090 | 965    | 8×11.5  | 0.090 | 1050   | 8×20    | 0.062 | 1200   |
| 270           | 271 | 8×11.5  | 0.090 | 950    | 8×11.5  | 0.090 | 975    | 8×16    | 0.050 | 1260   | 10×20   | 0.062 | 1430   |
| 330           | 331 | 8×11.5  | 0.090 | 965    | 8×11.5  | 0.090 | 995    | 10×13   | 0.050 | 1300   | 10×20   | 0.042 | 1460   |
| 390           | 391 | 8×11.5  | 0.090 | 975    | 8×16    | 0.050 | 1260   | 8×20    | 0.048 | 1510   | 10×25   | 0.034 | 1650   |
| 470           | 471 | 8×11.5  | 0.062 | 995    | 10×13   | 0.050 | 1390   | 10×16   | 0.045 | 1730   | 13×20   | 0.032 | 1820   |
| 560           | 561 | 8×16    | 0.050 | 1260   | 8×20    | 0.050 | 1510   | 10×20   | 0.042 | 1970   | 13×20   | 0.030 | 2060   |
| 680           | 681 | 10×13   | 0.043 | 1340   | 10×16   | 0.031 | 1770   | 13×15   | 0.042 | 2130   |         |       |        |
| 820           | 821 | 8×16    | 0.050 | 1295   | 10×16   | 0.031 | 1795   | 10×25   | 0.026 | 2260   | 13×25   | 0.025 | 2420   |
|               |     | 10×13   | 0.043 | 1395   |         |       |        | 13×20   | 0.024 | 2490   |         |       |        |
| 820           | 821 | 8×20    | 0.032 | 1510   | 10×20   | 0.022 | 1970   | 13×20   | 0.024 | 2510   | 13×30   | 0.023 | 2870   |
|               |     | 10×16   | 0.031 | 1770   | 13×15   | 0.021 | 2130   |         |       |        | 16×20   | 0.025 | 2740   |
| 1000          | 102 | 8×20    | 0.032 | 1550   | 10×25   | 0.020 | 2260   | 13×20   | 0.024 | 2550   | 13×35   | 0.021 | 2950   |
|               |     | 10×16   | 0.031 | 1795   | 13×20   | 0.019 | 2490   |         |       |        | 16×25   | 0.023 | 3020   |
| 1200          | 122 | 10×20   | 0.022 | 1970   | 13×20   | 0.019 | 2510   | 13×25   | 0.022 | 2705   | 16×30   | 0.020 | 3250   |
|               |     | 13×15   | 0.021 | 2130   |         |       |        |         |       |        | 18×25   | 0.023 | 2840   |
| 1500          | 152 | 10×20   | 0.022 | 2020   | 13×20   | 0.019 | 2550   | 13×30   | 0.020 | 2860   | 16×30   | 0.019 | 3120   |
|               |     | 13×15   | 0.021 | 2165   |         |       |        | 16×20   | 0.020 | 2790   | 18×25   | 0.020 | 3150   |
| 1800          | 182 | 10×25   | 0.020 | 2260   | 13×25   | 0.017 | 2910   | 13×35   | 0.018 | 3180   | 16×35   | 0.016 | 3450   |
|               |     | 13×20   | 0.019 | 2490   |         |       |        | 16×25   | 0.018 | 3240   | 18×30   | 0.018 | 3650   |
| 2200          | 222 | 13×20   | 0.019 | 2520   | 13×30   | 0.014 | 3460   | 16×25   | 0.018 | 3340   | 18×35   | 0.016 | 3720   |
|               |     |         |       |        | 16×20   | 0.017 | 3260   |         |       |        |         |       |        |
| 2700          | 272 | 13×25   | 0.017 | 2910   | 13×35   | 0.013 | 3580   | 16×35   | 0.011 | 3720   | 18×40   | 0.014 | 3850   |
|               |     |         |       |        | 16×25   | 0.014 | 3640   | 18×30   | 0.011 | 3720   |         |       |        |
| 3300          | 332 | 13×25   | 0.017 | 2950   | 13×40   | 0.012 | 3900   | 16×40   | 0.010 | 4090   |         |       |        |
|               |     |         |       |        | 16×25   | 0.014 | 3690   | 18×35   | 0.010 | 4090   |         |       |        |
| 3900          | 392 | 13×30   | 0.014 | 3460   | 16×30   | 0.012 | 3900   | 18×40   | 0.010 | 4150   |         |       |        |
|               |     | 16×20   | 0.017 | 3260   | 18×25   | 0.013 | 3750   |         |       |        |         |       |        |
| 4700          | 472 | 13×35   | 0.013 | 3580   | 16×40   | 0.010 | 4090   |         |       |        |         |       |        |
|               |     | 16×25   | 0.014 | 3640   | 18×30   | 0.011 | 4020   |         |       |        |         |       |        |
| 5600          | 562 | 16×30   | 0.012 | 3900   | 18×35   | 0.010 | 4090   |         |       |        |         |       |        |
|               |     | 18×25   | 0.013 | 3660   |         |       |        |         |       |        |         |       |        |
| 6800          | 682 | 16×30   | 0.012 | 3950   |         |       |        |         |       |        |         |       |        |
|               |     | 18×25   | 0.013 | 3695   |         |       |        |         |       |        |         |       |        |
| 8200          | 822 | 16×35   | 0.011 | 4020   |         |       |        |         |       |        |         |       |        |
|               |     | 18×30   | 0.011 | 4020   |         |       |        |         |       |        |         |       |        |
| 10000         | 103 | 18×35   | 0.010 | 4090   |         |       |        |         |       |        |         |       |        |

Size φD×L(mm)

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

Maximum ESR (Ω) at 20°C 100KHz

尺寸 Dimensions

| WV<br>CAP(μF) |     | 63V(1J) |       |        | 100V(2A) |       |        | 160V(2C) |      |        | 200V(2D) |      |        |
|---------------|-----|---------|-------|--------|----------|-------|--------|----------|------|--------|----------|------|--------|
|               |     | Size    | ESR   | Ripple | Size     | ESR   | Ripple | Size     | ESR  | Ripple | Size     | ESR  | Ripple |
| 0.47          | R47 | 5×11    | 1.40  | 60     | 5×11     | 1.50  | 60     |          |      |        |          |      |        |
| 1.0           | 010 | 5×11    | 1.40  | 62     | 5×11     | 1.50  | 62     |          |      |        |          |      |        |
| 1.8           | 1R8 | 5×11    | 1.40  | 65     | 5×11     | 1.50  | 65     | 6.3×11   | 15.0 | 60     |          |      |        |
| 2.2           | 2R2 | 5×11    | 1.20  | 68     | 5×11     | 1.50  | 70     | 6.3×11   | 15.0 | 64     | 6.3×11   | 14.9 | 65     |
| 2.7           | 2R7 | 5×11    | 1.20  | 70     | 5×11     | 1.50  | 73     | 6.3×11   | 15.0 | 70     | 6.3×11   | 14.9 | 70     |
| 3.3           | 3R3 | 5×11    | 1.20  | 74     | 5×11     | 1.50  | 78     | 6.3×11   | 15.0 | 75     | 6.3×11   | 14.9 | 75     |
| 3.9           | 3R9 | 5×11    | 1.20  | 76     | 5×11     | 1.50  | 84     | 6.3×11   | 15.0 | 78     | 6.3×11   | 14.9 | 80     |
| 4.7           | 4R7 | 5×11    | 1.20  | 78     | 5×11     | 1.50  | 88     | 6.3×11   | 15.0 | 80     | 6.3×11   | 14.9 | 85     |
| 5.6           | 5R6 | 5×11    | 1.00  | 84     | 5×11     | 1.00  | 92     | 6.3×11   | 15.0 | 85     | 8×11.5   | 8.02 | 95     |
| 6.8           | 6R8 | 5×11    | 1.00  | 88     | 5×11     | 1.00  | 95     | 6.3×11   | 15.0 | 90     | 8×11.5   | 8.02 | 135    |
| 8.2           | 8R2 | 5×11    | 1.00  | 92     | 5×11     | 1.00  | 100    | 8×11.5   | 12.5 | 100    | 8×11.5   | 8.02 | 150    |
| 10            | 100 | 5×11    | 0.85  | 115    | 6.3×11   | 0.85  | 220    | 8×11.5   | 9.15 | 140    | 8×11.5   | 5.30 | 190    |
| 12            | 120 | 5×11    | 0.85  | 120    | 6.3×11   | 0.85  | 240    | 8×11.5   | 9.15 | 150    | 8×16     | 5.30 | 200    |
| 15            | 150 | 5×11    | 0.75  | 130    | 6.3×11   | 0.75  | 245    | 8×16     | 9.15 | 230    | 8×20     | 3.85 | 220    |
| 18            | 180 | 5×11    | 0.75  | 145    | 6.3×11   | 0.70  | 255    | 8×16     | 7.90 | 230    | 8×20     | 3.58 | 280    |
|               |     |         |       |        |          |       |        |          |      |        | 10×16    | 3.58 | 280    |
| 22            | 220 | 6.3×11  | 0.65  | 283    | 8×11.5   | 0.55  | 360    | 8×16     | 7.90 | 270    | 10×16    | 2.90 | 365    |
|               |     |         |       |        |          |       |        | 10×13    | 7.90 | 270    |          |      |        |
| 27            | 270 | 6.3×11  | 0.39  | 290    | 8×11.5   | 0.40  | 375    | 8×20     | 5.90 | 330    | 10×20    | 2.13 | 405    |
|               |     |         |       |        |          |       |        | 10×16    | 5.90 | 330    |          |      |        |
| 33            | 330 | 6.3×11  | 0.39  | 295    | 8×11.5   | 0.40  | 385    | 10×16    | 2.36 | 390    | 10×25    | 1.78 | 470    |
|               |     |         |       |        |          |       |        |          |      |        | 13×20    | 1.78 | 470    |
| 39            | 390 | 6.3×11  | 0.39  | 305    | 8×16     | 0.28  | 420    | 10×20    | 1.97 | 430    | 13×20    | 1.78 | 490    |
|               |     |         |       |        | 10×13    | 0.25  | 445    | 13×15    | 1.97 | 430    |          |      |        |
| 47            | 470 | 6.3×11  | 0.28  | 315    | 8×16     | 0.24  | 430    | 10×20    | 1.97 | 445    | 13×20    | 1.46 | 600    |
|               |     |         |       |        | 10×13    | 0.25  | 460    | 13×15    | 1.97 | 445    | 8×50     | 1.46 | 600    |
| 56            | 560 | 8×11.5  | 0.24  | 405    | 10×13    | 0.25  | 475    | 10×25    | 1.97 | 480    | 13×25    | 1.46 | 625    |
|               |     |         |       |        |          |       |        | 13×20    | 1.56 | 540    |          |      |        |
| 68            | 680 | 8×11.5  | 0.24  | 415    | 8×20     | 0.19  | 650    | 13×20    | 1.56 | 560    | 16×20    | 1.35 | 690    |
|               |     |         |       |        | 10×16    | 0.19  | 645    |          |      |        |          |      |        |
| 82            | 820 | 8×11.5  | 0.24  | 425    | 10×16    | 0.19  | 655    | 13×20    | 1.56 | 580    | 13×30    | 1.25 | 770    |
|               |     |         |       |        |          |       |        | 8×50     | 1.56 | 625    | 10×50    | 1.35 | 770    |
| 100           | 101 | 8×16    | 0.18  | 530    | 10×20    | 0.13  | 720    | 13×25    | 1.18 | 700    | 16×25    | 1.25 | 820    |
|               |     | 10×13   | 0.17  | 540    | 13×15    | 0.14  | 705    |          |      |        |          |      |        |
| 120           | 121 | 8×16    | 0.18  | 560    | 10×25    | 0.12  | 920    | 13×30    | 1.18 | 770    | 16×30    | 1.12 | 930    |
|               |     | 10×13   | 0.17  | 580    | 13×20    | 0.093 | 940    |          |      |        |          |      |        |
| 150           | 151 | 8×20    | 0.13  | 620    | 13×20    | 0.093 | 955    | 13×35    | 1.18 | 820    | 16×35    | 1.12 | 1010   |
|               |     | 10×16   | 0.19  | 640    |          |       |        | 10×50    | 0.94 | 820    | 13×50    | 1.12 | 1040   |
| 180           | 181 | 10×16   | 0.19  | 655    | 13×25    | 0.066 | 1250   | 16×30    | 0.94 | 900    | 18×30    | 0.95 | 1050   |
|               |     |         |       |        |          |       |        |          |      |        |          |      |        |
| 220           | 221 | 10×20   | 0.086 | 920    | 13×25    | 0.066 | 1280   | 16×30    | 0.94 | 1050   | 18×35    | 0.85 | 1230   |
|               |     | 13×15   | 0.090 | 905    |          |       |        | 13×50    | 0.94 | 1050   |          |      |        |
| 270           | 271 | 10×20   | 0.086 | 1020   | 13×30    | 0.056 | 1360   | 16×35    | 0.76 | 1210   |          |      |        |
|               |     | 13×15   | 0.090 | 985    | 16×20    | 0.064 | 1345   |          |      |        |          |      |        |
| 330           | 331 | 10×25   | 0.076 | 1165   | 13×35    | 0.047 | 1460   | 18×35    | 0.50 | 1320   |          |      |        |
|               |     | 13×20   | 0.066 | 1180   | 16×25    | 0.048 | 1520   |          |      |        |          |      |        |
| 390           | 391 | 13×20   | 0.066 | 1210   | 13×40    | 0.040 | 1680   | 18×40    | 0.45 | 1520   |          |      |        |
|               |     |         |       |        | 16×25    | 0.048 | 1580   |          |      |        |          |      |        |
| 470           | 471 | 13×25   | 0.047 | 1620   | 16×30    | 0.036 | 1980   |          |      |        |          |      |        |
|               |     |         |       |        | 18×25    | 0.042 | 2150   |          |      |        |          |      |        |
| 560           | 561 | 13×30   | 0.038 | 1820   | 16×35    | 0.032 | 2250   |          |      |        |          |      |        |
|               |     | 16×20   | 0.047 | 1850   | 18×30    | 0.034 | 2260   |          |      |        |          |      |        |
| 680           | 681 | 13×35   | 0.036 | 2050   | 16×40    | 0.030 | 2300   |          |      |        |          |      |        |
|               |     | 16×25   | 0.035 | 2100   | 18×35    | 0.030 | 2450   |          |      |        |          |      |        |
| 820           | 821 | 13×40   | 0.030 | 2430   | 18×40    | 0.029 | 2730   |          |      |        |          |      |        |
|               |     | 16×25   | 0.035 | 2480   |          |       |        |          |      |        |          |      |        |
| 1000          | 102 | 16×30   | 0.026 | 2640   |          |       |        |          |      |        |          |      |        |
|               |     | 18×25   | 0.034 | 2650   |          |       |        |          |      |        |          |      |        |
| 1200          | 122 | 16×30   | 0.026 | 2690   |          |       |        |          |      |        |          |      |        |
|               |     | 18×25   | 0.034 | 2680   |          |       |        |          |      |        |          |      |        |
| 1500          | 152 | 16×35   | 0.023 | 2920   |          |       |        |          |      |        |          |      |        |
|               |     | 18×30   | 0.028 | 2980   |          |       |        |          |      |        |          |      |        |
| 1800          | 182 | 16×40   | 0.021 | 3250   |          |       |        |          |      |        |          |      |        |
|               |     | 18×35   | 0.022 | 3270   |          |       |        |          |      |        |          |      |        |
| 2200          | 222 | 18×40   | 0.020 | 3430   |          |       |        |          |      |        |          |      |        |

Size φD×L(mm)

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

Maximum ESR (Ω) at 20°C 100KHz

尺寸 Dimensions

| CAP(μF) \ WV |     | 250V(2E) |      |        | 350V(2V) |        |        | 400V(2G) |      |        | 450V(2W) |       |        |
|--------------|-----|----------|------|--------|----------|--------|--------|----------|------|--------|----------|-------|--------|
|              |     | Size     | ESR  | Ripple | Size     | ESR    | Ripple | Size     | ESR  | Ripple | Size     | ESR   | Ripple |
| 1.0          | 010 |          |      |        | 6.3×11   | 29.0   | 45     | 6.3×11   | 33.0 | 60     | 6.3×11   | 28.56 | 65     |
| 1.2          | 1R2 |          |      |        | 6.3×11   | 29.0   | 50     | 6.3×11   | 33.0 | 65     | 6.3×11   | 28.56 | 70     |
| 1.5          | 1R5 |          |      |        | 6.3×11   | 29.0   | 55     | 6.3×11   | 33.0 | 70     | 6.3×11   | 28.56 | 75     |
| 1.8          | 1R8 |          |      |        | 6.3×11   | 20.0   | 60     | 6.3×11   | 33.0 | 75     | 6.3×11   | 22.25 | 75     |
| 2.2          | 2R2 | 6.3×11   | 30.0 | 75     | 6.3×11   | 20.0   | 75     | 6.3×11   | 33.0 | 80     | 8×11.5   | 16.25 | 80     |
| 2.7          | 2R7 | 6.3×11   | 30.0 | 80     | 8×11.5   | 18.0   | 80     | 8×11.5   | 33.0 | 90     | 8×11.5   | 16.25 | 85     |
| 3.3          | 3R3 | 6.3×11   | 30.0 | 85     | 8×11.5   | 16.850 | 85     | 8×11.5   | 10.5 | 95     | 8×11.5   | 16.25 | 90     |
| 3.9          | 3R9 | 8×11.5   | 14.9 | 90     | 8×11.5   | 16.850 | 90     | 8×11.5   | 10.5 | 100    | 8×11.5   | 16.25 | 95     |
| 4.7          | 4R7 | 8×11.5   | 14.9 | 105    | 8×11.5   | 16.850 | 90     | 8×11.5   | 10.5 | 105    | 8×16     | 11.25 | 110    |
|              |     |          |      |        |          |        |        | 8×16     | 10.5 | 105    | 10×13    | 11.25 | 115    |
| 5.6          | 5R6 | 8×11.5   | 10.9 | 110    | 8×16     | 11.250 | 110    | 8×16     | 10.5 | 130    | 8×20     | 8.05  | 130    |
|              |     |          |      |        |          |        |        | 10×13    | 9.50 | 130    | 10×16    | 8.05  | 130    |
| 6.8          | 6R8 | 8×11.5   | 8.02 | 120    | 8×16     | 11.250 | 130    | 8×20     | 9.50 | 160    | 8×20     | 8.05  | 170    |
|              |     |          |      |        |          |        |        | 10×16    | 9.50 | 160    | 10×16    | 8.05  | 170    |
| 8.2          | 8R2 | 8×16     | 8.02 | 125    | 8×20     | 10.30  | 150    | 10×16    | 5.40 | 230    | 10×16    | 8.05  | 225    |
|              |     |          |      |        | 10×16    | 10.30  | 150    |          |      |        |          |       |        |
| 10           | 100 | 8×16     | 8.02 | 220    | 10×16    | 8.05   | 220    | 10×16    | 4.50 | 240    | 10×20    | 6.70  | 245    |
|              |     |          |      |        |          |        |        |          |      |        | 13×15    | 6.70  | 245    |
| 15           | 150 | 10×16    | 3.85 | 370    | 10×20    | 6.50   | 295    | 10×25    | 4.30 | 300    | 13×20    | 6.70  | 340    |
|              |     |          |      |        |          |        |        | 13×20    | 4.30 | 300    |          |       |        |
| 18           | 180 | 10×20    | 3.58 | 420    | 10×25    | 6.50   | 330    | 13×20    | 4.30 | 350    | 13×20    | 2.45  | 370    |
|              |     |          |      |        | 13×20    | 6.50   | 385    |          |      |        | 8×50     | 2.25  | 370    |
| 22           | 220 | 10×20    | 2.35 | 450    | 13×20    | 6.50   | 410    | 13×20    | 4.14 | 380    | 13×25    | 2.25  | 450    |
|              |     | 8×50     | 2.35 | 450    |          |        |        | 8×50     | 4.14 | 410    |          |       |        |
| 33           | 330 | 13×20    | 2.35 | 530    | 13×25    | 6.50   | 440    | 13×30    | 4.14 | 540    | 16×25    | 2.05  | 530    |
|              |     |          |      |        |          |        |        | 10×50    | 4.14 | 540    | 10×50    | 2.05  | 550    |
| 47           | 470 | 13×25    | 1.20 | 630    | 16×25    | 2.25   | 540    | 16×25    | 4.14 | 630    | 16×30    | 1.60  | 670    |
|              |     |          |      |        | 10×50    | 2.25   | 590    |          |      |        |          |       |        |
| 56           | 560 | 13×30    | 1.20 | 670    | 16×25    | 2.25   | 610    | 16×30    | 2.05 | 680    | 16×35    | 1.36  | 730    |
|              |     |          |      |        |          |        |        |          |      |        | 13×50    | 1.36  | 730    |
| 68           | 680 | 16×25    | 0.68 | 720    | 16×30    | 2.05   | 730    | 18×25    | 1.60 | 760    | 18×30    | 1.09  | 790    |
|              |     | 10×50    | 0.68 | 720    |          |        |        | 13×50    | 1.60 | 760    |          |       |        |
| 82           | 820 | 16×30    | 0.68 | 755    | 16×35    | 1.60   | 800    | 18×30    | 1.60 | 910    | 18×35    | 1.09  | 830    |
| 100          | 101 | 16×30    | 0.68 | 850    | 18×30    | 1.60   | 900    | 18×35    | 1.60 | 1120   | 18×40    | 0.85  | 970    |
|              |     | 13×50    | 0.68 | 850    |          |        |        |          |      |        |          |       |        |
| 120          | 121 | 16×35    | 0.68 | 860    | 18×35    | 1.60   | 990    | 18×40    | 1.50 | 1350   |          |       |        |
| 150          | 151 | 18×30    | 0.56 | 990    | 18×40    | 1.50   | 1100   |          |      |        |          |       |        |
| 180          | 181 | 18×35    | 0.56 | 1060   |          |        |        |          |      |        |          |       |        |
| 220          | 221 | 18×40    | 0.42 | 1180   |          |        |        |          |      |        |          |       |        |

Size φD×L(mm)  
Maximum Allowable Ripple Current (mA rms) at 105°C 100KHz  
Maximum ESR (Ω) at 20°C 100KHz