

SY Low Impedance & Long Life Series

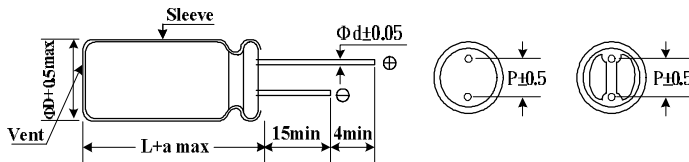
- Features : Low Impedance , high permissible ripple current at high frequency and long life than SC
- Recommended Applications: Used switching regulator applications in computers. Especially for high frequency.
- Corresponding product to RoHS



■ Specifications

| Item | Characteristics | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|---------------------------|-----------------------------------|----------------------|---------------------------------------|-----------------|-----------------------------------|----------|----------------------|---------------------------|-------------------------|----------------------|------|----------|----------|----------|----------|------|------|-----------------|---|---|---|---|---|---|---|---|-----------------|---|---|---|---|---|---|---|---|
| Operating Temperature Range | -40 ~ +105°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rated Voltage Range | 6.3 ~ 100VDC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rated Capacitance Range | 2.2 ~ 15000 μ F | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Capacitance Tolerance | \pm 20% at 120Hz , 20°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Leakage Current (MAX) (20°C) | I=0.01CV or 3 μ A ,whichever is greater. (After rated voltage applied for 2 minutes) I= Leakage Current (μ A) C= Nominal Capacitance (μ F) V= Rated Voltage (V) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dissipation Factor (MAX) (tan δ) (120Hz ,20°C) | <table border="1"> <thead> <tr> <th>WV</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> <th>63</th> <th>100</th> </tr> </thead> <tbody> <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> </tr> </tbody> </table> <p>When nominal capacitance is over 1000 μF, tan δ shall be added 0.02 to the listed value with increase of every 1000 μF.</p> | WV | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | tan δ | 0.22 | 0.19 | 0.16 | 0.14 | 0.12 | 0.10 | 0.09 | 0.08 | | | | | | | | | | | | | | | | | | |
| WV | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| tan δ | 0.22 | 0.19 | 0.16 | 0.14 | 0.12 | 0.10 | 0.09 | 0.08 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Low Temperature Stability Impedance Ratio (MAX) | <table border="1"> <thead> <tr> <th>WV</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> <th>63</th> <th>100</th> </tr> </thead> <tbody> <tr> <td>Z(120Hz)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Z-25°C / Z+20°C</td> <td>4</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td>Z-40°C / Z+20°C</td> <td>8</td> <td>6</td> <td>4</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> </tr> </tbody> </table> | WV | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | Z(120Hz) | | | | | | | | | Z-25°C / Z+20°C | 4 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | Z-40°C / Z+20°C | 8 | 6 | 4 | 3 | 3 | 3 | 3 | 3 |
| WV | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Z(120Hz) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Z-25°C / Z+20°C | 4 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Z-40°C / Z+20°C | 8 | 6 | 4 | 3 | 3 | 3 | 3 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Endurance | <p>After applying rated voltage with rated ripple current for 6000 hours at 105°C, the capacitors shall meet the following requirements.</p> <table border="1"> <thead> <tr> <th>Capacitance Change</th> <th>Within \pm 25% of initial value</th> </tr> </thead> <tbody> <tr> <td>Dissipation Factor</td> <td>Not more than 200% of specified value</td> </tr> <tr> <td>Leakage Current</td> <td>Not more than the specified value</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>D ϕ</th> <th>5 ϕ ~6.3 ϕ</th> <th>8 ϕ ~10 ϕ x12.5</th> <th>10 ϕ x15~12 ϕ</th> <th>13 ϕ ~18 ϕ</th> </tr> </thead> <tbody> <tr> <td>Life</td> <td>3000 hrs</td> <td>4000 hrs</td> <td>5000 hrs</td> <td>6000 hrs</td> </tr> </tbody> </table> <p>*If dimension is down size,Endurance will be less 1000 hours than standard.</p> | Capacitance Change | Within \pm 25% of initial value | Dissipation Factor | Not more than 200% of specified value | Leakage Current | Not more than the specified value | D ϕ | 5 ϕ ~6.3 ϕ | 8 ϕ ~10 ϕ x12.5 | 10 ϕ x15~12 ϕ | 13 ϕ ~18 ϕ | Life | 3000 hrs | 4000 hrs | 5000 hrs | 6000 hrs | | | | | | | | | | | | | | | | | | | | |
| Capacitance Change | Within \pm 25% of initial value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dissipation Factor | Not more than 200% of specified value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Leakage Current | Not more than the specified value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D ϕ | 5 ϕ ~6.3 ϕ | 8 ϕ ~10 ϕ x12.5 | 10 ϕ x15~12 ϕ | 13 ϕ ~18 ϕ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Life | 3000 hrs | 4000 hrs | 5000 hrs | 6000 hrs | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Shelf Life | After placed at 105°C without voltage applied for 1000 hours, the capacitors shall meet the same requirement as Endurance. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

■ Diagram of Dimensions



| | | | | | | | |
|----------|-----|-----|-----|-----|-----|-----|-----|
| ϕ D | 5 | 6.3 | 8 | 10 | 13 | 16 | 18 |
| P | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 |
| ϕ d | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.8 | 0.8 |
| a | 1.5 | 1.5 | 1.5 | 1.5 | 2.0 | 2.0 | 2.0 |

■ Multiplier for Ripple Current

Frequency coefficient

| Frequency (Hz) | 120 | 1 K | 10 K | 100 K |
|---------------------|------|------|------|-------|
| 22 ~ 180 μ F | 0.40 | 0.75 | 0.90 | 1.00 |
| 220 ~ 560 μ F | 0.50 | 0.85 | 0.94 | 1.00 |
| 680 ~1800 μ F | 0.60 | 0.87 | 0.95 | 1.00 |
| 2200 ~ 3900 μ F | 0.75 | 0.90 | 0.95 | 1.00 |
| 4700 μ F Higher | 0.85 | 0.95 | 0.98 | 1.00 |


■ Dimensions, Rated Ripple Current, Max Impedance

| Capacitance (μF) | Rated (Surge) Voltage | | | | | | | | |
|------------------|------------------------|--------|-------|------------|--------|-------|------------|--------|-------|
| | 6.3V (8) | | | 10V (13) | | | 16V (20) | | |
| | SIZE | Ripple | Z | SIZE | Ripple | Z | SIZE | Ripple | Z |
| 56 | | | | | | | 5x11 | 210 | 0.580 |
| 100 | | | | 5x11 | 210 | 0.580 | 6.3x11 | 250 | 0.230 |
| 120 | | | | | | | 6.3x11 | 340 | 0.220 |
| 150 | 5x11 | 210 | 0.580 | | | | | | |
| 220 | | | | | | | 6.3x11 | 469 | 0.185 |
| | | | | 6.3x11 | 340 | 0.220 | 8x11 | 582 | 0.150 |
| 330 | 6.3x11 | 340 | 0.220 | | | | 8x11 | 640 | 0.130 |
| 470 | 6.3x11 | 510 | 0.160 | 8x11 | 640 | 0.130 | *8x15 | 840 | 0.087 |
| | | | | | | | 8x20 | 950 | 0.078 |
| | | | | | | | *10x12.5 | 865 | 0.080 |
| | | | | | | | 10X16 | 1210 | 0.060 |
| 680 | 8x11 | 640 | 0.130 | 8x15 | 840 | 0.087 | 8x20 | 1050 | 0.069 |
| | | | | | | | 10X16 | 1210 | 0.060 |
| 820 | 10x12.5 | 865 | 0.080 | 10x12.5 | 865 | 0.080 | | | |
| 1000 | 8x15 | 840 | 0.087 | 8x20 | 1050 | 0.069 | 8x20 | 1050 | 0.069 |
| | | | | 10X16 | 1210 | 0.060 | *10X16 | 1210 | 0.060 |
| | | | | | | | 10x20 | 1400 | 0.046 |
| | | | | | | | 13x16 | 1450 | 0.049 |
| 1200 | 8x20 | 1050 | 0.069 | 10x20 | 1400 | 0.046 | 10x25 | 1650 | 0.042 |
| | 10X16 | 1210 | 0.060 | | | | | | |
| 1500 | 8x20 | 1050 | 0.069 | 10x25 | 1650 | 0.042 | 10x30 | 1910 | 0.031 |
| | *10X16 | 1210 | 0.060 | 13x16 | 1450 | 0.049 | 13x20 | 1900 | 0.035 |
| | 10x20 | 1400 | 0.046 | | | | 16x16 | 1940 | 0.042 |
| 1800 | 13x16 | 1450 | 0.049 | | | | | | |
| 2200 | *10x20 | 1400 | 0.046 | 10x30 | 1910 | 0.031 | 13x25 | 2230 | 0.027 |
| | 10x25 | 1650 | 0.042 | 13x20 | 1900 | 0.042 | 18x16 | 2210 | 0.043 |
| | | | | 16x16 | 1940 | 0.042 | | | |
| 2700 | 10x30 | 1910 | 0.031 | 18x16 | 2210 | 0.043 | 13x30 | 2650 | 0.024 |
| | 16x16 | 1940 | 0.042 | | | | 16x20 | 2530 | 0.027 |
| 3300 | 10x25 | 1650 | 0.042 | 10x30 | 1910 | 0.031 | | | |
| | 13x20 | 1900 | 0.035 | 13x25 | 2230 | 0.027 | 13x36 | 2880 | 0.020 |
| 3900 | 13x25 | 2230 | 0.027 | 13x30 | 2650 | 0.024 | 13x40 | 3350 | 0.017 |
| | 18x16 | 2210 | 0.043 | 16x20 | 2530 | 0.027 | 16x25 | 2930 | 0.021 |
| | | | | | | | 18x20 | 2860 | 0.026 |
| 4700 | 13x30 | 2650 | 0.024 | 13x36 | 2880 | 0.020 | 16x32 | 3450 | 0.017 |
| | | | | | | | 18x25 | 3140 | 0.019 |
| | | | | | | | | | |
| 5600 | 13x36 | 2880 | 0.020 | 13x40 | 3350 | 0.017 | 16x36 | 3610 | 0.015 |
| | 16x20 | 2530 | 0.027 | 16x25 | 2930 | 0.021 | 18x32 | 4170 | 0.015 |
| | | | | 18x20 | 2860 | 0.026 | | | |
| 6800 | 13x40 | 3350 | 0.017 | 16x32 | 3450 | 0.017 | 16x40 | 4080 | 0.013 |
| | 16x25 | 2930 | 0.021 | 18x25 | 3140 | 0.019 | | | |
| | 18x20 | 2860 | 0.026 | | | | | | |
| 8200 | 16x32 | 3450 | 0.017 | 16x36 | 3610 | 0.015 | 18x36 | 4220 | 0.014 |
| | | | | 18x32 | 4170 | 0.015 | | | |
| 10000 | 16x36 | 3610 | 0.015 | 16x40 | 4080 | 0.013 | 18x40 | 4280 | 0.012 |
| | 18x25 | 3140 | 0.017 | 18x36 | 4220 | 0.014 | | | |
| 12000 | 18x32 | 4170 | 0.015 | 18x40 | 4280 | 0.012 | | | |
| 15000 | 18x36 | 4220 | 0.014 | | | | | | |

☆ Size: D φ x L (mm) ☆ Ripple Current: (mA/rms), 105°C, 100KHz ☆ Impedance (Ω), 20°C, 100KHz

" * " is down size, Ripple life is less 1000 hrs than standard.


■ Dimensions, Rated Ripple Current, Max Impedance

| Capacitance (μF) | Rated (Surge) Voltage | | | | | | | | |
|------------------|------------------------|--------|-------|------------|--------|-------|------------|--------|-------|
| | 25V (32) | | | 35V (44) | | | 50V (63) | | |
| | SIZE | Ripple | Z | SIZE | Ripple | Z | SIZE | Ripple | Z |
| 2.2 | | | | | | | 5x11 | 85 | 2.280 |
| 4.7 | | | | 5x11 | 95 | 2.400 | 5x11 | 100 | 2.000 |
| 10 | | | | 5x11 | 130 | 1.600 | 5x11 | 135 | 1.200 |
| 22 | | | | | | | 5x11 | 180 | 0.700 |
| 33 | | | | 5x11 | 210 | 0.580 | 6.3x11 | 245 | 0.490 |
| 47 | 5x11 | 210 | 0.580 | 6.3x11 | 275 | 0.390 | 6.3x11 | 300 | 0.520 |
| 56 | | | | 6.3x11 | 340 | 0.220 | 6.3x11 | 295 | 0.300 |
| 68 | | | | 6.3x11 | 500 | 0.170 | | | |
| 82 | | | | 6.3x11 | 540 | 0.160 | | | |
| 100 | 6.3x11 | 340 | 0.220 | 8x11 | 580 | 0.150 | 8x11 | 555 | 0.170 |
| 120 | | | | | | | 8x15 | 730 | 0.120 |
| 150 | 8x11 | 640 | 0.160 | 8x11 | 640 | 0.130 | 10x12.5 | 760 | 0.120 |
| 180 | | | | | | | 8x20 | 910 | 0.091 |
| 220 | 8x11 | 640 | 0.130 | *8x15 | 840 | 0.087 | 10x16 | 1050 | 0.084 |
| | | | | 10x12.5 | 865 | 0.080 | | | |
| 270 | | | | 8x20 | 1050 | 0.069 | 10x20 | 1220 | 0.060 |
| | | | | | | | 13x16 | 1260 | 0.061 |
| 330 | 8x15 | 840 | 0.087 | *10x16 | 1210 | 0.060 | *10x20 | 1400 | 0.058 |
| | 10x12.5 | 865 | 0.080 | 10x20 | 1400 | 0.046 | 10x25 | 1440 | 0.055 |
| 470 | 8x20 | 1050 | 0.069 | 10x20 | 1400 | 0.046 | 10x30 | 1690 | 0.043 |
| | *10x12.5 | 1050 | 0.070 | 13x16 | 1450 | 0.049 | 13x20 | 1660 | 0.045 |
| | 10x16 | 1210 | 0.060 | | | | 16x16 | 1690 | 0.055 |
| 560 | | | | 10x25 | 1650 | 0.042 | 13x25 | 1950 | 0.034 |
| | | | | | | | 18x16 | 1930 | 0.054 |
| 680 | 10x20 | 1400 | 0.046 | 10x30 | 1910 | 0.031 | 13x30 | 2310 | 0.030 |
| | 13x16 | 1450 | 0.049 | 13x20 | 1900 | 0.035 | | | |
| | | | | 16x16 | 1940 | 0.042 | | | |
| 820 | 10x25 | 1650 | 0.042 | 13x20 | 1900 | 0.035 | 13x36 | 2510 | 0.025 |
| | | | | | | | 16x20 | 2210 | 0.034 |
| 1000 | | | | 13x25 | 2230 | 0.027 | 13x40 | 2920 | 0.021 |
| | 10x30 | 1910 | 0.031 | 18x16 | 2210 | 0.043 | 16x25 | 2555 | 0.025 |
| | 13x20 | 1900 | 0.035 | | | | 18x20 | 2490 | 0.036 |
| | 16x16 | 1940 | 0.042 | | | | | | |
| 1200 | 18x16 | 2210 | 0.043 | 13x30 | 2650 | 0.024 | 16x32 | 3010 | 0.022 |
| | | | | 16x20 | 2530 | 0.027 | 18x25 | 2740 | 0.026 |
| 1500 | *13x20 | 1900 | 0.035 | 13x36 | 2880 | 0.020 | 16x36 | 3150 | 0.019 |
| | 13x25 | 2230 | 0.027 | | | | | | |
| 1800 | 13x30 | 2650 | 0.024 | 13x40 | 3350 | 0.017 | 16x40 | 3710 | 0.016 |
| | 16x20 | 2530 | 0.027 | 16x25 | 2930 | 0.021 | 18x32 | 3635 | 0.021 |
| | | | | 18x20 | 2860 | 0.026 | | | |
| 2200 | 13x36 | 2880 | 0.020 | 16x32 | 3450 | 0.017 | 18x36 | 3680 | 0.017 |
| | 18x20 | 2860 | 0.026 | 18x25 | 3140 | 0.019 | | | |
| 2700 | 13x40 | 3350 | 0.017 | 16x36 | 3610 | 0.015 | 18x40 | 3800 | 0.014 |
| | 16x25 | 2930 | 0.021 | 18x32 | 4170 | 0.015 | | | |
| 3300 | 16x32 | 3450 | 0.017 | 16x40 | 4080 | 0.013 | | | |
| | 18x25 | 3140 | 0.019 | 18x36 | 4220 | 0.014 | | | |
| 3900 | 18x32 | 4170 | 0.015 | 18x40 | 4280 | 0.012 | | | |
| 4700 | 18x36 | 4220 | 0.014 | | | | | | |
| 5600 | 18x40 | 4280 | 0.012 | | | | | | |

☆ Size: D φ x L (mm) ☆ Ripple Current: (mA/rms), 105°C, 100KHz ☆ Impedance (Ω), 20°C, 100KHz
 * * " is down size, Ripple life is less 1000 hrs than standard.


■ Dimensions, Rated Ripple Current, Max Impedance

| Capacitance (μF) | Rated (Surge) Voltage | | | | | | | | |
|------------------|------------------------|--------|-------|--------------|--------|-------|--|--|--|
| | 63V (79) | | | 100V (125) | | | | | |
| | SIZE | Ripple | Z | SIZE | Ripple | Z | | | |
| 6.8 | | | | 5×11 | 55 | 2.3 | | | |
| 15 | 5×11 | 55 | 2.3 | 6.3×11 | 115 | 1.2 | | | |
| 27 | | | | 8×12 | 232 | 0.63 | | | |
| 33 | 6.3×11 | 115 | 1.2 | | | | | | |
| 39 | | | | 8×15 | 300 | 0.45 | | | |
| 47 | | | | 10×12.5 | 288 | 0.43 | | | |
| 56 | 8×12 | 232 | 0.63 | 8×20 | 362 | 0.33 | | | |
| 68 | | | | 10×16 | 357 | 0.31 | | | |
| 82 | 8×15 | 300 | 0.45 | 10×20 | 466 | 0.21 | | | |
| | 10×12.5 | 288 | 0.43 | 13×16 | 466 | 0.23 | | | |
| 100 | | | | 10×25 | 531 | 0.2 | | | |
| 120 | 8×20 | 362 | 0.33 | 10×30 | 663 | 0.15 | | | |
| | 10×16 | 357 | 0.31 | 13×20 | 690 | 0.16 | | | |
| 150 | | | | 16×16 | 795 | 0.14 | | | |
| 180 | 10×20 | 466 | 0.21 | 13×25 | 784 | 0.12 | | | |
| | 13×16 | 466 | 0.23 | 18×16 | 920 | 0.12 | | | |
| 220 | 10×25 | 531 | 0.2 | 13×30 | 905 | 0.1 | | | |
| | | | | 16×20 | 1040 | 0.091 | | | |
| 270 | 10×30 | 663 | 0.15 | | | | | | |
| | 13×20 | 690 | 0.16 | 13×36 | 1050 | 0.083 | | | |
| | 16×16 | 795 | 0.14 | 16×25 | 1250 | 0.073 | | | |
| 330 | 13×25 | 784 | 0.12 | 13×40 | 1180 | 0.071 | | | |
| | | | | 18×20 | 1240 | 0.08 | | | |
| 390 | | | | 16×32 | 1570 | 0.054 | | | |
| | 18×16 | 920 | 0.12 | 18×25 | 1490 | 0.057 | | | |
| 470 | 13×30 | 905 | 0.1 | 16×36 | 1790 | 0.045 | | | |
| | 16×20 | 1040 | 0.091 | 18×32 | 1630 | 0.047 | | | |
| 560 | 13×36 | 1050 | 0.083 | | | | | | |
| | 16×25 | 1250 | 0.073 | 16×40 | 2020 | 0.04 | | | |
| 680 | 13×40 | 1180 | 0.071 | | | | | | |
| | 18×20 | 1240 | 0.08 | 18×36 | 1790 | 0.04 | | | |
| 820 | 16×32 | 1570 | 0.054 | | | | | | |
| | 18×25 | 1490 | 0.057 | 18×40 | 2330 | 0.036 | | | |
| 1000 | 16×36 | 1790 | 0.045 | | | | | | |
| | 18×32 | 1630 | 0.047 | | | | | | |
| 1200 | 16×40 | 2020 | 0.04 | | | | | | |

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