



#### FEATURES

Small Size - Low Cost

#### APPLICATIONS

Filtering - Bypass - Coupling - Blocking

|   |                       |  |                                  |            |           |            |                         |           |           |            |            |  |
|---|-----------------------|--|----------------------------------|------------|-----------|------------|-------------------------|-----------|-----------|------------|------------|--|
| <b>Operating Temperature Range</b>                        |                       | <b>-40°C to +85°C</b>  |                                  |            |           |            |                         |           |           |            |            |  |
| <b>Capacitance Tolerance</b>                              |                       | <b>+20% at 120 Hz, 20°C</b>  |                                  |            |           |            |                         |           |           |            |            |  |
| <b>Surge voltage</b>                                      | <b>WVDC</b>           | <b>4</b>   | <b>6.3</b>                       | <b>10</b>  | <b>16</b> | <b>25</b>  | <b>35</b>               | <b>50</b> | <b>63</b> | <b>100</b> |            |  |
|   | <b>SVDC</b>           | 5.2  | 7.9                              | 13         | 20        | 32         | 44                      | 63        | 79        | 125        |            |  |
| <b>Dissipation Factor</b>                                 | <b>WVDC</b>           | <b>4</b>   | <b>6.3</b>                       | <b>10</b>  | <b>16</b> | <b>25</b>  | <b>35</b>               | <b>50</b> | <b>63</b> | <b>100</b> |            |  |
|   | <b>tan δ</b>          | .35  | .28                              | .24        | .2        | .16        | .14                     | .12       | .12       | .1         |            |  |
| <b>Leakage current</b>                                    |                       | <b>2 Minutes</b>   |                                  |            |           |            |                         |           |           |            |            |  |
|   |                       | <b>.01CV or 3uA, Whichever is greater</b>  |                                  |            |           |            |                         |           |           |            |            |  |
| <b>Low temperature stability Impedance ratio (120 Hz)</b> | <b>Rated WVDC</b>     |  | <b>4</b>                         | <b>6.3</b> | <b>10</b> | <b>16</b>  | <b>25</b>               | <b>35</b> | <b>50</b> | <b>63</b>  | <b>100</b> |  |
|   | <b>-25°C to +20°C</b> | <b>D&lt;8</b>  | 7                                | 4          | 3         | 2          | 2                       | 2         | 2         | 2          | 2          |  |
|   |                       | <b>D≥8</b>   | 7                                | 5          | 4         | 3          | 2                       | 2         | 2         | 2          | 2          |  |
|   | <b>-40°C to +20°C</b> | <b>D&lt;8</b>  | 15                               | 8          | 6         | 4          | 4                       | 3         | 3         | 3          | 3          |  |
| <b>D≥8</b>  |                       | 15   | 10                               | 8          | 6         | 4          | 3                       | 3         | 3         | 3          |            |  |
| <b>Load Life</b>  |                       | <b>2000 hours at 85°C with rated WVDC and ripple current applied</b>   |                                  |            |           |            |                         |           |           |            |            |  |
|   |                       | <b>Capacitance change</b>  | ≤20% of initial measured value   |            |           |            |                         |           |           |            |            |  |
|   |                       | <b>Dissipation factor</b>  | ≤200% of maximum specified value |            |           |            |                         |           |           |            |            |  |
|   |                       | <b>Leakage current</b>   | ≤100% of maximum specified value |            |           |            |                         |           |           |            |            |  |
| <b>Shelf Life</b>   |                       | <b>1000 hours at 85°C with no voltage applied</b>  |                                  |            |           |            |                         |           |           |            |            |  |
|   |                       | <b>Capacitance change</b>  | ≤20% of initial measured value   |            |           |            |                         |           |           |            |            |  |
|   |                       | <b>Dissipation factor</b>  | ≤200% of maximum specified value |            |           |            |                         |           |           |            |            |  |
|   |                       | <b>Leakage current</b>   | ≤100% of maximum specified value |            |           |            |                         |           |           |            |            |  |
| <b>Resistance to soldering heat</b>                       |                       | <b>Capacitors placed on a 250C hot plate for 30 seconds with their electrode terminations facing downward will fulfill the following conditions after being cooled to room temperature</b> |                                  |            |           |            |                         |           |           |            |            |  |
|   |                       | <b>Capacitance change</b>  | ≤10% of initial measured value   |            |           |            |                         |           |           |            |            |  |
|   |                       | <b>Dissipation factor</b>  | ≤200% of maximum specified value |            |           |            |                         |           |           |            |            |  |
|   |                       | <b>Leakage current</b>   | ≤100% of maximum specified value |            |           |            |                         |           |           |            |            |  |
| <b>Ripple Current Multipliers</b>                         |                       | <b>Frequency (Hz)</b>  |                                  |            |           |            | <b>Temperature (°C)</b> |           |           |            |            |  |
|   |                       | <b>50</b>  | <b>120</b>                       | <b>400</b> | <b>1k</b> | <b>10k</b> | <b>100k</b>             | <b>85</b> | <b>70</b> | <b>65</b>  |            |  |
|   |                       | 0.7  | 1.0                              | 1.17       | 1.36      | 1.5        | 1.5                     | 1.0       | 1.35      | 1.35       |            |  |



| D   | L             | W±0.2 | H±0.2 | C±0.2 | R       | LL±0.2 | S±0.2 |
|-----|---------------|-------|-------|-------|---------|--------|-------|
| 4   | 5.4 +0.1/-0.2 | 4.3   | 4.3   | 5.0   | 0.5~0.8 | 1.8    | 1.0   |
| 5   | 5.4 +0.1/-0.2 | 5.3   | 5.3   | 6.0   | 0.5~0.8 | 2.1    | 1.4   |
| 6.3 | 5.4 +0.1/-0.2 | 6.6   | 6.6   | 7.3   | 0.5~0.8 | 2.4    | 2.2   |
| 6.3 | 5.8 +0.1/-0.2 | 6.6   | 6.6   | 7.3   | 0.5~0.8 | 2.4    | 2.2   |
| 6.3 | 7.7 +0.1/-0.2 | 6.6   | 6.6   | 7.3   | 0.5~0.8 | 2.4    | 2.2   |
| 8   | 6.2 +0.1/-0.2 | 8.3   | 8.3   | 9.0   | 0.7~1.0 | 2.4    | 3.2   |
| 8   | 10.2+0.1/-0.2 | 8.3   | 8.3   | 9.0   | 0.7~1.0 | 2.8    | 3.2   |
| 10  | 10.2+0.1/-0.2 | 10    | 10    | 11.0  | 0.7~1.0 | 3.2    | 4.6   |

# SML

+85°C Standard, 2000 hrs

| WVDC | Capacitance (µF) | IC PART NUMBER | Maximum ESR (Ω)<br>120 Hz,<br>+20°C | Maximum RMS Ripple Current (mA)<br>120 Hz,<br>+85°C | Dims DxL (mm) |
|------|------------------|----------------|-------------------------------------|---|---------------|
| 4    | 33               | 336SML004M     | 17.58                               | 31  | 4x5.4         |
| 4    | 47               | 476SML004M     | 12.35                               | 37  | 4x5.4         |
| 4    | 100              | 107SML004M     | 5.83                                | 63  | 5x5.4         |
| 4    | 150              | 157SML004M     | 3.868                               | 84  | 6.3x5.4       |
| 4    | 220              | 227SML004M     | 2.64                                | 110   | 6.3x5.4       |
| 4    | 470              | 477SML004M     | 1.24                                | 150   | 6.3x7.7       |
| 4    | 1000             | 108SML004MD8   | 0.58                                | 300   | 8x10.5        |
| 6.3  | 22               | 226SML6R3M     | 21.1                                | 31  | 4x5.4         |
| 6.3  | 47               | 476SML6R3MD4   | 9.877                               | 40  | 4x5.4         |
| 6.3  | 47               | 476SML6R3M     | 9.877                               | 52  | 5x5.4         |
| 6.3  | 68               | 686SML6R3M     | 6.826                               | 50  | 5x5.4         |
| 6.3  | 100              | 107SML6R3M     | 4.642                               | 54  | 5x5.4         |
| 6.3  | 220              | 227SML6R3M     | 2.11                                | 91  | 6.3x5.8       |
| 6.3  | 330              | 337SML6R3M     | 1.407                               | 188   | 6.3x7.7       |
| 6.3  | 330              | 337SML6R3MD8   | 1.407                               | 190   | 8x6.2         |
| 6.3  | 470              | 477SML6R3M     | 0.9877                              | 380   | 8x10.5        |
| 6.3  | 1000             | 108SML6R3M     | 0.464                               | 370   | 8x10.5        |
| 6.3  | 1500             | 158SML6R3M     | 0.3095                              | 750   | 10x10.5       |
| 10   | 33               | 336SML010MD4   | 12.057                              | 34  | 4x5.4         |
| 10   | 33               | 336SML010M     | 12.057                              | 48  | 5x5.4         |
| 10   | 150              | 157SML010M     | 2.653                               | 88  | 6.3x5.4       |
| 10   | 220              | 227SML010M     | 1.8086                              | 250   | 8x6.5         |
| 10   | 470              | 477SML010MD8   | 0.8466                              | 390   | 8x10.5        |
| 10   | 1000             | 108SML010M     | 0.398                               | 580   | 10x10.5       |
| 16   | 10               | 106SML016M     | 33.16                               | 26  | 4x5.4         |
| 16   | 22               | 226SML016MD4   | 12.057                              | 30  | 4x5.4         |
| 16   | 22               | 226SML016M     | 12.057                              | 44  | 5x5.4         |
| 16   | 47               | 476SML016MD5   | 7.055                               | 52  | 5x5.4         |
| 16   | 47               | 476SML016M     | 7.055                               | 75  | 6.3x5.4       |
| 16   | 68               | 686SML016M     | 4.876                               | 78  | 6.3x5.4       |
| 16   | 100              | 107SML016M     | 3.316                               | 103   | 6.3x5.4       |
| 16   | 150              | 157SML016M     | 2.21                                | 135   | 6.3x7.7       |
| 16   | 220              | 227SML016M     | 1.507                               | 162   | 6.3x7.7       |
| 16   | 220              | 227SML016MD8   | 1.507                               | 280   | 8x10.5        |
| 16   | 470              | 477SML016M     | 0.56                                | 350   | 8x10.5        |
| 16   | 470              | 477SML016MD10  | 0.7055                              | 330   | 10x10.5       |
| 25   | 22               | 226SML025MD5   | 12.06                               | 38  | 5x5.4         |
| 25   | 33               | 336SML025MD5   | 8.038                               | 46  | 5x5.4         |
| 25   | 33               | 336SML025M     | 8.038                               | 67  | 6.3x5.4       |
| 25   | 47               | 476SML025M     | 5.644                               | 70  | 6.3x5.4       |
| 25   | 100              | 107SML025M     | 2.653                               | 145   | 8x6.2         |
| 25   | 220              | 227SML025MD8   | 1.206                               | 230   | 8x10.5        |
| 25   | 220              | 227SML025M     | 1.206                               | 250   | 10x7.7        |
| 25   | 330              | 337SML025M     | 0.7                                 | 270   | 8x10.5        |
| 25   | 330              | 337SML025MD10  | 0.7                                 | 340   | 10x10.5       |
| 25   | 470              | 477SML025M     | 0.49                                | 430   | 10x10.5       |
| 35   | 4.7              | 475SML035M     | 49.38                               | 20  | 4x5.4         |
| 35   | 10               | 106SML035MD4   | 23.21                               | 24  | 4x5.4         |
| 35   | 10               | 106SML035M     | 23.21                               | 34  | 5x5.4         |
| 35   | 22               | 226SML035M     | 10.55                               | 59  | 6.3x5.4       |
| 35   | 33               | 336SML035M     | 7.033                               | 65  | 6.3x5.4       |
| 35   | 47               | 476SML035M     | 4.938                               | 70  | 6.3x5.8       |
| 35   | 47               | 476SML035MD8   | 4.938                               | 105   | 8x6.2         |
| 35   | 100              | 107SML035M     | 2.321                               | 132   | 6.3x7.7       |
| 35   | 150              | 157SML035MD8   | 1.547                               | 220   | 8x10.5        |
| 35   | 220              | 227SML035M     | 0.9                                 | 270   | 8x10.5        |
| 35   | 220              | 227SML035MD10  | 0.9                                 | 310   | 10x10.5       |
| 35   | 330              | 337SML035M     | 0.703                               | 360   | 10x10.5       |

# SML

+85°C Standard, 2000 hrs

| WVDC | Capacitance (µF) | IC PART NUMBER                | Maximum ESR (Ω)<br>120 Hz,<br>+20°C | Maximum RMS Ripple Current (mA)<br>120 Hz,<br>+85°C | Dims DxL (mm) |
|------|------------------|-------------------------------|-------------------------------------|---|---------------|
| 50   | 0.1              | <a href="#">104SML050MD4</a>  | 1989.44                             | 3.2   | 4x5.4         |
| 50   | 0.22             | <a href="#">224SML050MD4</a>  | 904.29                              | 4.7   | 4x5.4         |
| 50   | 0.33             | <a href="#">334SML050MD4</a>  | 602.86                              | 5.7   | 4x5.4         |
| 50   | 0.47             | <a href="#">474SML050MD4</a>  | 423.28                              | 6.8   | 4x5.4         |
| 50   | 1                | <a href="#">105SML050MD4</a>  | 198.944                             | 10  | 4x5.4         |
| 50   | 2.2              | <a href="#">225SML050MD4</a>  | 90.429                              | 15  | 4x5.4         |
| 50   | 3.3              | <a href="#">335SML050M</a>    | 60.29                               | 18  | 4x5.4         |
| 50   | 4.7              | <a href="#">475SML050M</a>    | 42.33                               | 24  | 4x5.4         |
| 50   | 4.7              | <a href="#">475SML050MD5</a>  | 42.33                               | 25  | 5x5.4         |
| 50   | 10               | <a href="#">106SML050MD5</a>  | 19.894                              | 41  | 5x5.4         |
| 50   | 10               | <a href="#">106SML050M</a>    | 19.894                              | 43  | 6.3x5.4       |
| 50   | 22               | <a href="#">226SML050M</a>    | 9.043                               | 71  | 6.3x5.4       |
| 50   | 33               | <a href="#">336SML050M</a>    | 6.029                               | 85  | 6.3x7.7       |
| 50   | 33               | <a href="#">336SML050MD8</a>  | 6.029                               | 95  | 8x6.2         |
| 50   | 47               | <a href="#">476SML050M</a>    | 4.23                                | 105   | 6.3x7.7       |
| 50   | 47               | <a href="#">476SML050MD8</a>  | 4.23                                | 140   | 8x10.5        |
| 50   | 100              | <a href="#">107SML050M</a>    | 1.99                                | 200   | 8x10.5        |
| 50   | 100              | <a href="#">107SML050MD10</a> | 1.99                                | 250   | 10x10.5       |
| 50   | 220              | <a href="#">227SML050M</a>    | 0.9043                              | 320   | 10x10.5       |
| 63   | 10               | <a href="#">106SML063M</a>    | 19.89                               | 34  | 6.3x5.4       |
| 63   | 22               | <a href="#">226SML063M</a>    | 9.04                                | 70  | 6.3x7.7       |
| 63   | 22               | <a href="#">226SML063MD8</a>  | 9.043                               | 120   | 8x10.5        |
| 63   | 33               | <a href="#">336SML063M</a>    | 6.03                                | 117   | 8x10.5        |
| 63   | 47               | <a href="#">476SML063M</a>    | 4.23                                | 170   | 8x10.5        |
| 63   | 100              | <a href="#">107SML063M</a>    | 1.99                                | 280   | 10x10.5       |
| 100  | 3.3              | <a href="#">335SML100M</a>    | 50.24                               | 28  | 6.3x5.8       |
| 100  | 4.7              | <a href="#">475SML100MD8</a>  | 3.53                                | 60  | 8x10.5        |
| 100  | 10               | <a href="#">106SML100M</a>    | 16.57                               | 50  | 6.3x7.7       |
| 100  | 10               | <a href="#">106SML100MD8</a>  | 16.579                              | 85  | 8x10.5        |
| 100  | 22               | <a href="#">226SML100M</a>    | 7.54                                | 120   | 8x10.5        |
| 100  | 33               | <a href="#">336SML100M</a>    | 5.02                                | 100   | 8x10.5        |
| 100  | 47               | <a href="#">476SML100M</a>    | 3.5274                              | 130   | 10x10.5       |