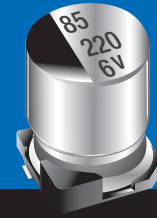


# SML

## + 85°C General Purpose Surface Mount Chip Aluminum Electrolytic Capacitors



Surface Mount

### FEATURES

- Wide Capacitance Range (.1 to 1,000  $\mu$ F)
- Solvent Proof
- Standard Case Sizes
- Operating Voltage Range: 4WVDC to 100 WVDC

### SPECIFICATIONS

|  |  |  |     |     |     |             |      |      |      |     |
|--|--|--|-----|-----|-----|-------------|------|------|------|-----|
| <b>Capacitance Tolerance</b>   |  | <b><math>\pm 20\%</math> at 120Hz, 20°C</b>  |     |     |     |             |      |      |      |     |
| <b>Operating Temperature Range</b>                                       |  | <b>-40°C to +85°C</b>  |     |     |     |             |      |      |      |     |
| <b>Dissipation Factor<br/>120Hz, 20°C (Max) <math>\tan \delta</math></b> |  | 4  | 6.3 | 10  | 16  | 25          | 35   | 50   | 63   | 100 |
|  |  | .35  | .28 | .24 | .20 | .14         | .14  | .12  | .12  | .10 |
| <b>Leakage current</b>   | <b>Time</b>  | 2 minutes  |     |     |     |             |      |      |      |     |
|  | <b>L.C.</b>  | .01 CV or 3 $\mu$ A, whichever is greater  |     |     |     |             |      |      |      |     |
| <b>Impedance Ratio at Low<br/>Temperature (120Hz)</b>                    | -25°C/20°C   | 7  | 4   | 3   | 2   | 2           | 2    | 2    | 2    | 2   |
|  | -40°C/20°C   | 15   | 8   | 6   | 4   | 4           | 4    | 3    | 3    | 3   |
| <b>Load Life</b>   | 2,000 hours at 85°C with rated voltage   |  |     |     |     |             |      |      |      |     |
|  | Capacitance change<br>Dissipation factor<br>Leakage current  | $\leq 25\%$ of initial measured values<br>$\leq 200\%$ initial specified value<br>$\leq 100\%$ Initial specified value |     |     |     |             |      |      |      |     |
| <b>Shelf Life</b>  | 1000 hours at 85°C with no applied voltage.  |  |     |     |     |             |      |      |      |     |
| <b>Resistance to<br/>Soldering Heat</b>                                  | Capacitors placed on a 250°C hot plate for 30 seconds with their electrode terminals facing downward will fulfill the following conditions after being cooled to room temperature. |  |     |     |     |             |      |      |      |     |
|  | Capacitance change<br>Dissipation factor<br>Leakage current  | $\leq 10\%$ of the initial measured value<br>$\leq$ The initial specified value<br>$\leq$ The Initial specified value  |     |     |     |             |      |      |      |     |
| <b>Ripple Current<br/>Multipliers</b>                                    | Frequency (Hz)   |  |     |     |     | Temperature |      |      |      |     |
|  | 50   | 120  | 400 | 1K  | 10K | 100K        | 85°C | 70°C | 65°C |     |
|  | .8   | 1.0  | 1.0 | 1.1 | 1.3 | 1.5         | 1.0  | 1.35 | 1.35 |     |

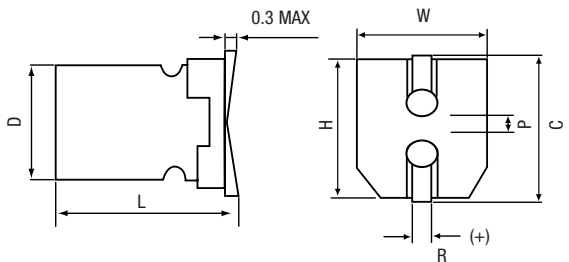
## PHYSICAL DIMENSIONS

| WVDC (SV)<br>(μF) | 4<br>(5.2) | 6.3<br>(7.9)     | 10<br>(13)     | 16<br>(20)        | 25<br>(32)        | 35<br>(44)        | 50<br>(63)        | 63<br>(79) | 100<br>(125) |
|-------------------|------------|------------------|----------------|-------------------|-------------------|-------------------|-------------------|------------|--------------|
| 0.1               |            |                  |                |                   |                   |                   | 4x5.4             |            |              |
| 0.22              |            |                  |                |                   |                   |                   | 4x5.4             |            |              |
| 0.33              |            |                  |                |                   |                   |                   | 4x5.4             |            |              |
| 0.47              |            |                  |                |                   |                   |                   | 4x5.4             |            |              |
| 1                 |            |                  |                |                   |                   |                   | 4x5.4             |            |              |
| 2.2               |            |                  |                |                   |                   |                   | 4x5.4             |            |              |
| 3.3               |            |                  |                |                   |                   |                   | 4x5.4             |            | 6.3x5.8      |
| 4.7               |            |                  |                |                   |                   | 4x5.4             | 4x5.4<br>5x5.4    |            | 8x10.2       |
| 10                |            |                  |                | 4x5.4             |                   | 4x5.4<br>5x5.4    | 5x5.4<br>6.3x5.4  |            | 8x10.2       |
| 22                |            | 4x5.4            |                | 4x5.4<br>5x5.4    | 5x5.4             | 6.3x5.4           | 6.3x5.4           | 8x10.2     | 8x10.2       |
| 33                | 4x5.4      |                  | 5x5.4<br>4x5.4 |                   | 5x5.4<br>6.3x5.4  | 6.3x5.8           | 6.3x7.7<br>8x6.2  | 8x10.2     | 10x10.2      |
| 47                | 4x5.4      | 4x5.4<br>5x5.4   |                | 5x5.4<br>6.3x5.4  | 6.3x5.4           | 6.3x5.8<br>8x6.2  | 6.3x7.7<br>8x10.2 |            | 10x10        |
| 68                |            | 5x5.4            |                | 6.3x5.4           |                   |                   |                   |            |              |
| 100               | 5x5.4      | 5x5.4            |                | 6.3x5.4           | 8x6.2             | 6.3x7.7           | 10x10.2<br>8x10.2 | 10x10.2    |              |
| 150               | 6.3x5.4    |                  | 6.3x5.8        | 6.3x7.7           |                   | 8x10.2            |                   |            |              |
| 220               | 6.3x5.4    | 6.3x5.8          | 8x6.2          | 6.3x7.7<br>8x10.2 | 10x7.7<br>8x10.2  | 10x10.2<br>8x10.2 | 10x10.2           |            |              |
| 330               |            | 6.3x7.7<br>8x6.2 |                |                   | 10x10.2<br>8x10.2 | 10x10.2           |                   |            |              |
| 470               | 6.3x7.7    | 8x10.2           | 8x10.2         | 10x10.2<br>8x10.2 |                   |                   |                   |            |              |
| 1000              | 8x10.2     | 8x10.2           | 10x10.2        |                   |                   |                   |                   |            |              |

Convert to inches, divide by 25.4

DxL (mm)

## DIMENSIONS



| D+0.5 MAX | L             | W±0.2 | H±0.2 | C±0.2 | R       | P±0.2 |
|-----------|---------------|-------|-------|-------|---------|-------|
| 4         | 5.4 +0.1/-0.2 | 4.3   | 4.3   | 5.0   | 0.5~0.8 | 1.0   |
| 5         | 5.4 +0.1/-0.2 | 5.3   | 5.3   | 6.0   | 0.5~0.8 | 1.4   |
| 6.3       | 5.4 +0.1/-0.2 | 6.6   | 6.6   | 7.3   | 0.5~0.8 | 2.2   |
| 6.3       | 5.8 +0.3 MAX  | 6.6   | 6.6   | 7.3   | 0.5~0.8 | 2.2   |
| 6.3       | 7.7 +0.3 MAX  | 6.6   | 6.6   | 7.3   | 0.5~0.8 | 2.2   |
| 8         | 6.2 +0.3 MAX  | 8.3   | 8.3   | 9.0   | 0.7~1.0 | 3.2   |
| 8         | 10.2 +0.5 MAX | 8.3   | 8.3   | 9.0   | 0.7~1.0 | 3.2   |
| 10        | 10.2 +0.5 MAX | 10.3  | 10.3  | 11.0  | 0.7~1.0 | 4.6   |

(mm)

## STANDARD PART LISTING

| Capacitance (µF) | WVDC | ic <sup>®</sup> PART NUMBER | Maximum E.S.R. Ω<br>120Hz,<br>+20°C | Maximum RMS Ripple Current (mA)<br>at 120 Hz,<br>+85°C | Dimensions DxL (mm) |
|------------------|------|-----------------------------|-------------------------------------|--|---------------------|
| 0.1              | 50   | 104SML050MD4                | 1989.437                            | 3.2  | 4x5.4               |
| 0.22             | 50   | 224SML050MD4                | 904.289                             | 4.7  | 4x5.4               |
| 0.33             | 50   | 334SML050MD4                | 602.860                             | 5.7  | 4x5.4               |
| 0.47             | 50   | 474SML050MD4                | 423.284                             | 6.8  | 4x5.4               |
| 1                | 50   | 105SML050MD4                | 198.944                             | 10   | 4x5.4               |
| 2.2              | 50   | 225SML050MD4                | 90.429                              | 15   | 4x5.4               |
| 3.3              | 50   | 335SML050M                  | 60.286                              | 18   | 4x5.4               |
| 3.3              | 100  | 335SML100M                  | 50.238                              | 28   | 6.3x5.8             |
| 4.7              | 35   | 475SML035M                  | 42.328                              | 20   | 4x5.4               |
| 4.7              | 50   | 475SML050M                  | 42.328                              | 23   | 4x5.4               |
| 4.7              | 50   | 475SML050MD5                | 42.328                              | 25   | 5x5.4               |
| 4.7              | 100  | 475SML100MD8                | 35.274                              | 60   | 8x10.2              |
| 10               | 16   | 106SML016M                  | 26.526                              | 25   | 4x5.4               |
| 10               | 35   | 106SML035M                  | 19.894                              | 30   | 5x5.4               |
| 10               | 35   | 106SML035MD4                | 23.210                              | 27   | 4x5.4               |
| 10               | 50   | 106SML050MD5                | 19.894                              | 41   | 5x5.4               |
| 10               | 50   | 106SML050M                  | 19.894                              | 42.6   | 6.3x5.4             |
| 10               | 100  | 106SML100MD8                | 16.579                              | 85   | 8x10.2              |
| 22               | 6.3  | 226SML6R3M                  | 19.593                              | 31   | 4x5.4               |
| 22               | 16   | 226SML016M                  | 12.057                              | 39   | 5x5.4               |
| 22               | 16   | 226SML016MD4                | 15.071                              | 30   | 4x5.4               |
| 22               | 25   | 226SML025MD5                | 10.550                              | 41   | 5x5.4               |
| 22               | 35   | 226SML035M                  | 9.043                               | 54   | 6.3x5.4             |
| 22               | 50   | 226SML050M                  | 9.043                               | 45   | 6.3x5.4             |
| 22               | 63   | 226SML063MD8                | 9.043                               | 120  | 8x10.2              |
| 22               | 100  | 226SML100M                  | 7.536                               | 120  | 8x10.2              |
| 33               | 4    | 336SML004M                  | 17.583                              | 26   | 4x5.4               |
| 33               | 10   | 336SML010M                  | 10.048                              | 43   | 5x5.4               |
| 33               | 10   | 336SML010MD4                | 12.057                              | 34   | 4x5.4               |
| 33               | 25   | 336SML025MD5                | 7.033                               | 50   | 5x5.4               |
| 33               | 25   | 336SML025M                  | 8.038                               | 63   | 6.3x5.4             |
| 33               | 35   | 336SML035M                  | 6.029                               | 60   | 6.3x5.8             |
| 33               | 50   | 336SML050MD8                | 6.029                               | 95   | 8x6.2               |
| 33               | 50   | 336SML050M                  | 6.029                               | 85   | 6.3x7.7             |
| 33               | 63   | 336SML063M                  | 6.029                               | 160  | 8x10.2              |
| 33               | 100  | 336SML100M                  | 5.024                               | 190  | 10x10.2             |
| 47               | 4    | 476SML004M                  | 12.346                              | 34   | 4x5.4               |
| 47               | 6.3  | 476SML6R3MD4                | 9.877                               | 36   | 4x5.4               |
| 47               | 6.3  | 476SML6R3M                  | 9.171                               | 47   | 5x5.4               |
| 47               | 16   | 476SML016MD5                | 7.055                               | 52   | 5x5.4               |
| 47               | 16   | 476SML016M                  | 7.055                               | 68   | 6.3x5.4             |
| 47               | 25   | 476SML025M                  | 4.938                               | 70   | 6.3x5.4             |

| Capacitance (µF) | WVDC | ic <sup>®</sup> PART NUMBER | Maximum E.S.R. Ω<br>120Hz,<br>+20°C | Maximum RMS Ripple Current (mA)<br>at 120 Hz,<br>+85°C | Dimensions DxL (mm) |
|------------------|------|-----------------------------|-------------------------------------|--|---------------------|
| 47               | 35   | 476SML035M                  | 4.233                               | 70   | 6.3x5.8             |
| 47               | 35   | 476SML035MD8                | 4.938                               | 105  | 8x6.2               |
| 47               | 50   | 476SML050M                  | 4.233                               | 90   | 6.3x7.7             |
| 47               | 50   | 476SML050MD8                | 4.233                               | 140  | 8x10.2              |
| 47               | 100  | 476SML100M                  | 3.527                               | 155  | 10x10.2             |
| 68               | 6.3  | 686SML6R3M                  | 6.826                               | 50   | 5x5.4               |
| 68               | 16   | 686SML016M                  | 4.876                               | 78   | 6.3x5.4             |
| 100              | 4    | 107SML004M                  | 5.803                               | 61   | 5x5.4               |
| 100              | 6.3  | 107SML6R3M                  | 4.642                               | 60   | 5x5.4               |
| 100              | 16   | 107SML016M                  | 2.653                               | 86   | 6.3x5.4             |
| 100              | 25   | 107SML025M                  | 2.653                               | 145  | 8x6.2               |
| 100              | 35   | 107SML035M                  | 1.989                               | 120  | 6.3x7.7             |
| 100              | 50   | 107SML050M                  | 1.989                               | 200  | 8x10.2              |
| 100              | 50   | 107SML050MD10               | 1.989                               | 195  | 10x10.2             |
| 100              | 63   | 107SML063M                  | 1.989                               | 280  | 10x10.2             |
| 150              | 4    | 157SML004M                  | 3.868                               | 84   | 6.3x5.4             |
| 150              | 10   | 157SML010M                  | 2.653                               | 88   | 6.3x5.8             |
| 150              | 16   | 157SML016M                  | 2.210                               | 135  | 6.3x7.7             |
| 150              | 35   | 157SML035MD8                | 1.547                               | 220  | 8x10.2              |
| 220              | 4    | 227SML004M                  | 2.638                               | 82   | 6.3x5.4             |
| 220              | 6.3  | 227SML6R3M                  | 1.959                               | 95   | 6.3x5.8             |
| 220              | 10   | 227SML010M                  | 1.809                               | 175  | 8x6.2               |
| 220              | 16   | 227SML016MD8                | 1.507                               | 215  | 8x10.2              |
| 220              | 16   | 227SML016M                  | 1.507                               | 150  | 6.3x7.7             |
| 220              | 25   | 227SML025MD8                | 1.055                               | 270  | 8x10.2              |
| 220              | 25   | 227SML025M                  | 1.206                               | 250  | 10x7.7              |
| 220              | 35   | 227SML035M                  | 1.055                               | 270  | 8x10.2              |
| 220              | 35   | 227SML035MD10               | 1.055                               | 265  | 10x10.2             |
| 220              | 50   | 227SML050M                  | 0.904                               | 320  | 10x10.2             |
| 330              | 6.3  | 337SML6R3MD8                | 1.407                               | 190  | 8x6.2               |
| 330              | 6.3  | 337SML6R3M                  | 1.407                               | 150  | 6.3x7.7             |
| 330              | 25   | 337SML025M                  | 0.804                               | 310  | 8x10.2              |
| 330              | 25   | 337SML025MD10               | 0.804                               | 305  | 10x10.2             |
| 330              | 35   | 337SML035M                  | 0.703                               | 340  | 10x10.2             |
| 470              | 4    | 477SML004M                  | 1.235                               | 150  | 6.3x7.7             |
| 470              | 6.3  | 477SML6R3M                  | 0.988                               | 265  | 8x10.2              |
| 470              | 10   | 477SML010MD8                | 0.847                               | 290  | 8x10.2              |
| 470              | 16   | 477SML016M                  | 0.705                               | 330  | 8x10.2              |
| 470              | 16   | 477SML016MD10               | 0.705                               | 330  | 10x10.2             |
| 1000             | 4    | 108SML004MD8                | 0.580                               | 300  | 8x10.2              |
| 1000             | 6.3  | 108SML6R3M                  | 0.464                               | 330  | 8x10.2              |
| 1000             | 10   | 108SML010M                  | 0.398                               | 450  | 10x10.2             |