



- Ultra-Low ESR – 5 mΩ to 9 mΩ @ 100 kHz
- High Ripple current – up to 4.0 Arms at 100 kHz
- Long Life – No dry out failure related mechanism
- Stable Impedance and ESR vs. Temperature
- Great for bulk storage and ripple filtering
- Ignition free

## Applications

**Motherboard By-Pass**

**Switching Supply Input/Output Filters**

**Power Supply Decoupling**

**High Frequency Noise Reduction**

**Laptop LCD Displays**

**Automotive Digital Equipment**

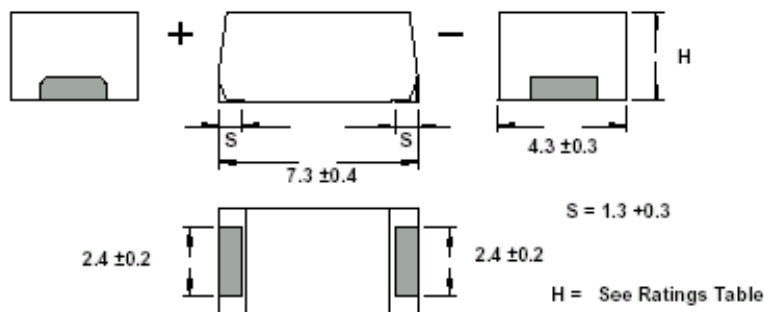
**Portable Electronic Equipment**

## Specifications

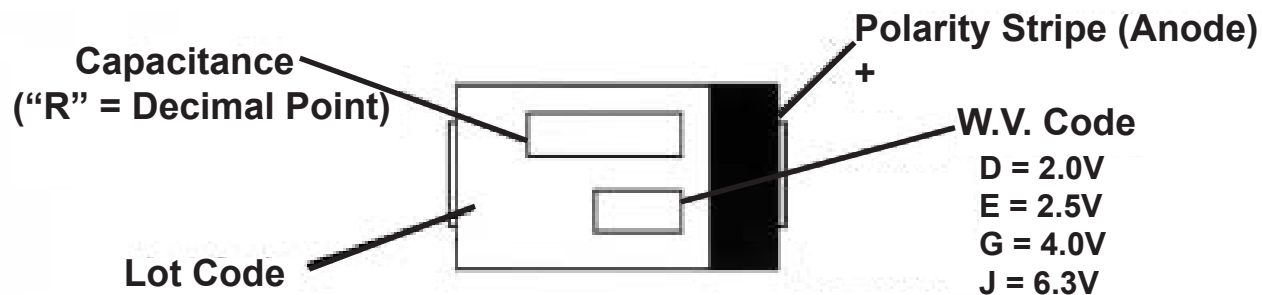
|                               |                                                                                                                                         |
|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| <b>Operating Temperature:</b> | -40 °C to +105 °C                                                                                                                       |
| <b>Rated Voltage:</b>         | 2 Vdc to 6.3 Vdc                                                                                                                        |
| <b>Surge Voltage:</b>         | 1.25 x Rated Voltage                                                                                                                    |
| <b>Capacitance Range:</b>     | 56 μF to 470 μF                                                                                                                         |
| <b>Capacitance Tolerance:</b> | ±20% @120 Hz, +20 °C                                                                                                                    |
| <b>Dissipation Factor:</b>    | 0.06 max (1.8/1.9); 0.10 max (2.8/4.2)<br>(Case "H" mm; 120 Hz +20 °C)                                                                  |
| <b>DC Leakage Current:</b>    | $I \leq 0.06 \text{ CV}$ after 2 minutes                                                                                                |
| <b>Load Life:</b>             | 1000 h @ 105 °C<br>Δ Capacitance: ±10% of the initial measured value<br>D.F. ≤ Initial specified value<br>DCL ≤ Initial specified value |

# Type SPA Solid Polymer Aluminum SMT Capacitors

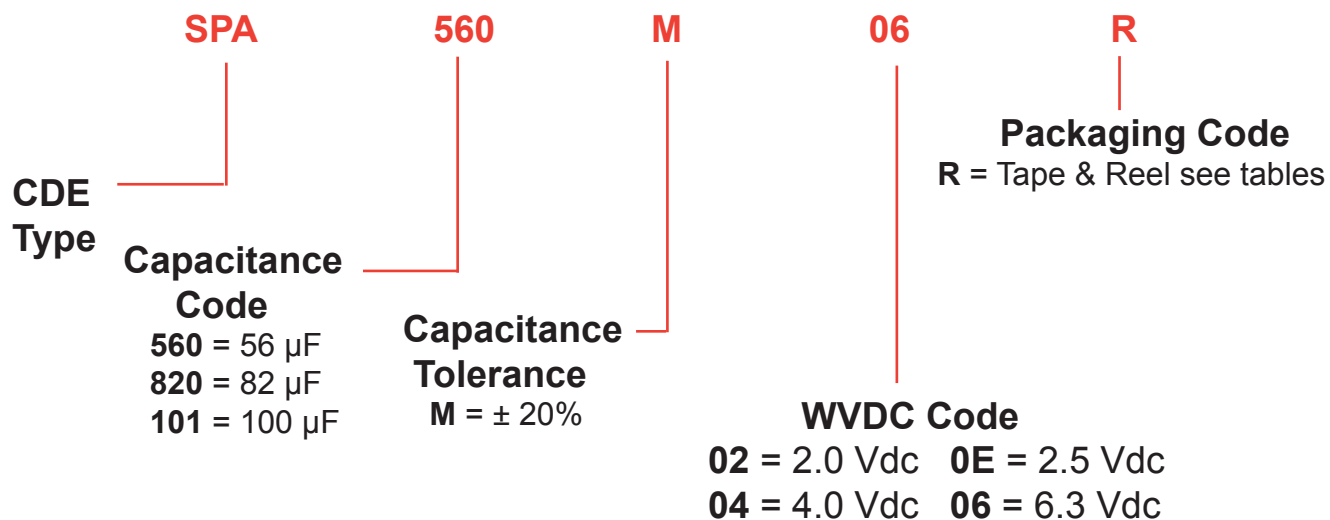
## Outline Drawing



## Markings



## Ordering Information



# Type SPA Solid Polymer Aluminum SMT Capacitors

## Ratings

| Capacitance<br>( $\mu\text{F}$ ) | Catalog<br>Part Number<br>(Tape & Reel) | Maximum<br>E.S.R.<br>100 kHz/20 °C<br>( $\Omega$ ) | Maximum<br>Ripple Current<br>100 kHz/105 °C<br>( $A_{\text{rms}}$ ) | Case<br>Height<br>H<br>(mm) | Qty/Reel |
|----------------------------------|-----------------------------------------|----------------------------------------------------|---------------------------------------------------------------------|-----------------------------|----------|
| <b>2.0 Vdc</b>                   |                                         |                                                    |                                                                     |                             |          |
| 120                              | SPA121M02R                              | 0.009                                              | 3.0                                                                 | 1.8 $\pm$ 1                 | 3500     |
| 150                              | SPA151M02R                              | 0.009                                              | 3.0                                                                 | 1.8 $\pm$ 1                 | 3500     |
| 180                              | SPA181M02R                              | 0.009                                              | 3.0                                                                 | 1.9 $\pm$ 2                 | 3500     |
| 270                              | SPA271M02R                              | 0.007                                              | 3.5                                                                 | 2.8 $\pm$ 2                 | 2000     |
| 330                              | SPA331M02R                              | 0.007                                              | 3.5                                                                 | 2.8 $\pm$ 2                 | 2000     |
| 390                              | SPA391M02R                              | 0.005                                              | 4.0                                                                 | 4.2 $\pm$ 1                 | 2000     |
| 470                              | SPA471M02R                              | 0.005                                              | 4.0                                                                 | 4.2 $\pm$ 1                 | 2000     |
| <b>2.5 Vdc</b>                   |                                         |                                                    |                                                                     |                             |          |
| 100                              | SPA101M0ER                              | 0.009                                              | 3.0                                                                 | 1.8 $\pm$ 1                 | 3500     |
| 120                              | SPA121M0ER                              | 0.009                                              | 3.0                                                                 | 1.8 $\pm$ 1                 | 3500     |
| 150                              | SPA151M0ER                              | 0.009                                              | 3.0                                                                 | 1.9 $\pm$ 2                 | 3500     |
| 220                              | SPA221M0ER                              | 0.007                                              | 3.5                                                                 | 2.8 $\pm$ 2                 | 2000     |
| 270                              | SPA271M0ER                              | 0.007                                              | 3.5                                                                 | 2.8 $\pm$ 2                 | 2000     |
| 330                              | SPA331M0ER                              | 0.005                                              | 4.0                                                                 | 4.2 $\pm$ 1                 | 2000     |
| 390                              | SPA391M0ER                              | 0.005                                              | 4.0                                                                 | 4.2 $\pm$ 1                 | 2000     |
| <b>4.0 Vdc</b>                   |                                         |                                                    |                                                                     |                             |          |
| 82                               | SPA820M04R                              | 0.009                                              | 3.0                                                                 | 1.8 $\pm$ 1                 | 3500     |
| 100                              | SPA101M04R                              | 0.009                                              | 3.0                                                                 | 1.9 $\pm$ 2                 | 3500     |
| 150                              | SPA151M04R                              | 0.007                                              | 3.5                                                                 | 2.8 $\pm$ 2                 | 2000     |
| 220                              | SPA221M04R                              | 0.005                                              | 4.0                                                                 | 4.2 $\pm$ 1                 | 2000     |
| <b>6.3 Vdc</b>                   |                                         |                                                    |                                                                     |                             |          |
| 56                               | SPA560M06R                              | 0.009                                              | 3.0                                                                 | 1.8 $\pm$ 1                 | 3500     |
| 68                               | SPA680M06R                              | 0.009                                              | 3.0                                                                 | 1.9 $\pm$ 2                 | 3500     |
| 120                              | SPA121M06R                              | 0.007                                              | 3.5                                                                 | 2.8 $\pm$ 2                 | 2000     |
| 180                              | SPA181M06R                              | 0.005                                              | 4.0                                                                 | 4.2 $\pm$ 1                 | 2000     |