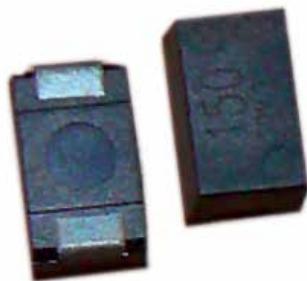


# Type SPCX Solid Polymer Aluminum SMT Capacitors



The solid polymer SPCX aluminum capacitor is an ideal choice for general purpose applications in audio-visual equipment, home appliances, computers, office equipment, optical and measuring equipment and industrial robots. The SPCX is a very cost effective capacitor in a compact low-profile package that is offered on tape and reel. The SPCX is environmentally green and RoHS compliant.

## Highlights

- A low-profile height of 1.9 mm
- Offered on tape and reel
- Can withstand 260 °C reflow for 10 s
- 15 mΩ ESR @ 100 kHz
- A great value in a small package



Complies with the EU Directive 2002/95/EC requirement restricting the use of Lead (Pb), Mercury (Hg), Cadmium (Cd), Hexavalent chromium (Cr(VI)), PolyBrominated Biphenyls (PBB) and PolyBrominated Diphenyl Ethers (PBDE).

## Specifications

**Operating Temperature Range:** -40 °C to +105 °C

**Capacitance Range:** 100 μF to 470 μF

**Operating Working Range:** 2.0, 2.5, 4.0, 6.3 Vdc

**Capacitance Tolerance:** ±20 % (120 Hz @ 20 °C)

**Surge Voltage:**

| Vdc   | 2.0 | 2.5 | 4.0 | 6.3 |
|-------|-----|-----|-----|-----|
| Surge | 2.5 | 3.1 | 5.0 | 8.0 |

**Rated Ripple Current:** See ratings table

### Life Test:

Apply rated voltage at +105 °C ±2 °C for 1000 h

- \* Leakage current: ≤ ratings table values
- \* Capacitance: ±10% of initial measured value
- \* DF: ≤ ratings table values
- \* Appearance: No abnormal change to occur

### Moisture Resis-

+60 °C ±2 °C @ 90% RH; rated voltage for 500 h

- \* Leakage current: ≤ rating table values
- \* Capacitance: +70%, -20% (2V, 2.5V)  
+60%, -20% (4V)  
+50%, -20% (6.3V)  
of initial measured value
- \* DF: ≤200% of initial specified value
- \* Appearance: No abnormal change to occur

### Shelf Life Test:

+105 °C ±2 °C for 500 h

- Leakage current: ≤ rating table values
- Capacitance: ±10% of initial measured value
- DF: ≤ ratings table values
- Appearance: No abnormal change to occur

### Surge Test:

Test temperature is +15 °C to +35 °C in series with a 1000 Ω resistor with the surge voltage applied for 1000 cycles of 30±5 s (ON) and 5 min 30 s (OFF)

- Leakage current: I≤0.1CV
- Capacitance: ±10% of initial measured value
- DF: ≤ the values in the ratings table
- Appearance: No abnormal change to occur

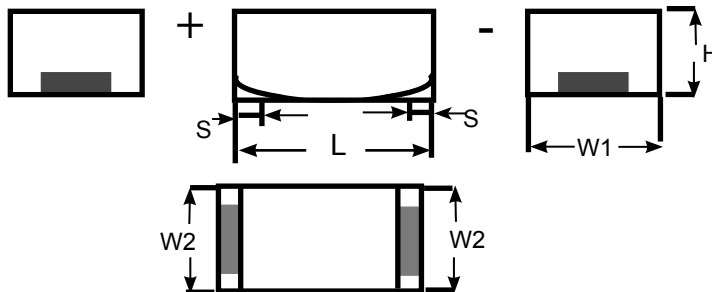
### Vibration

10 Hz to 2000 Hz to 10 Hz frequency applied one cycle per 20 min at a total amplitude of 1.5 mm. Direction and duration of vibration will be 2 h each in the X,Y and Z planes for total of 6 h with the capacitor soldered in place.

- Appearance; No abnormal change to occur.
- Capacitance: Measured value to be stabilized during test, when measured several times within 30 min before completion of test.

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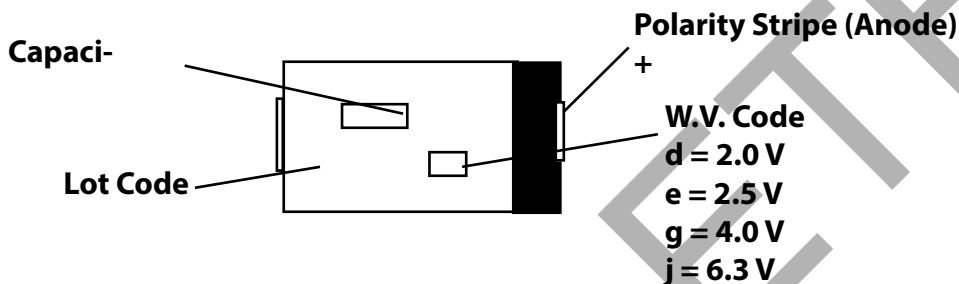
## Outline Drawings



Surface finish of terminal; Tin (Sn)

| L (±0.2) | W1 (±0.2) | W2 (±0.1) | H (±0.2) | S (±0.3) |
|----------|-----------|-----------|----------|----------|
| 7.3 mm   | 4.3 mm    | 2.4 mm    | 1.9 mm   | 1.3 mm   |

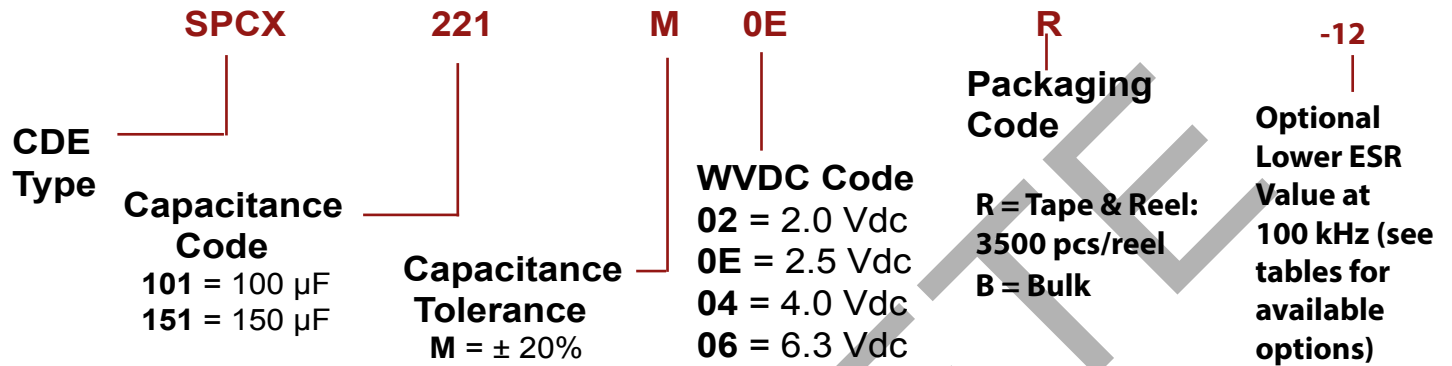
## Marking



## Ratings

| Cap (µF)                      | Catalog Part Number | Max. D.F. @ 120Hz | Max. Leakage Current (µA) | Max. ESR @ 100kHz/20°C (mΩ) | Max. Ripple Current @ 100kHz/20° to 105°C (Arms) |
|-------------------------------|---------------------|-------------------|---------------------------|-----------------------------|--|
| <b>2.0 Vdc (Surge 2.5Vdc)</b> |                     |                   |                           |                             |  |
| 220                           | SPCX221M02R         | 0.06              | 44                        | 15                          | 2.7  |
| 270                           | SPCX271M02R-12      | 0.06              | 54                        | 12                          | 3.0  |
| 330                           | SPCX331M02R         | 0.06              | 66                        | 15                          | 2.7  |
| 330                           | SPCX331M02R-12      | 0.06              | 66                        | 12                          | 3.0  |
| 390                           | SPCX391M02R         | 0.06              | 78                        | 15                          | 2.7  |
| 470                           | SPCX471M02R         | 0.06              | 94                        | 15                          | 2.7  |
| <b>2.5 Vdc (Surge 3.1Vdc)</b> |                     |                   |                           |                             |  |
| 220                           | SPCX221M0ER         | 0.06              | 55                        | 15                          | 2.7  |
| 330                           | SPCX331M0ER         | 0.06              | 82.5                      | 15                          | 2.7  |
| 390                           | SPCX391M0ER         | 0.06              | 97.5                      | 15                          | 2.7  |
| 470                           | SPCX471M0ER         | 0.06              | 117.5                     | 15                          | 2.7  |
| <b>4.0 Vdc (Surge 5.0Vdc)</b> |                     |                   |                           |                             |  |
| 150                           | SPCX151M04R         | 0.06              | 60                        | 15                          | 2.7  |
| 180                           | SPCX181M04R         | 0.06              | 72                        | 15                          | 2.7  |
| 180                           | SPCX181M04R-12      | 0.06              | 72                        | 12                          | 3.0  |
| 220                           | SPCX221M04R         | 0.06              | 88                        | 15                          | 2.7  |
| 220                           | SPCX221M04R-12      | 0.06              | 88                        | 12                          | 3.0  |
| <b>6.3 Vdc (Surge 8.0Vdc)</b> |                     |                   |                           |                             |  |
| 100                           | SPCX101M06R         | 0.06              | 63                        | 15                          | 2.7  |
| 120                           | SPCX121M06R         | 0.06              | 75.6                      | 15                          | 2.7  |
| 150                           | SPCX151M06R         | 0.06              | 94.5                      | 15                          | 2.7  |
| 150                           | SPCX151M06R-12      | 0.06              | 94.5                      | 12                          | 3.0  |

## Part Numbering System



Tape: 12 mm wide; negative terminal towards the sprocket holes

Reel: 330 mm Dia.

MSL 2 – when in the bag

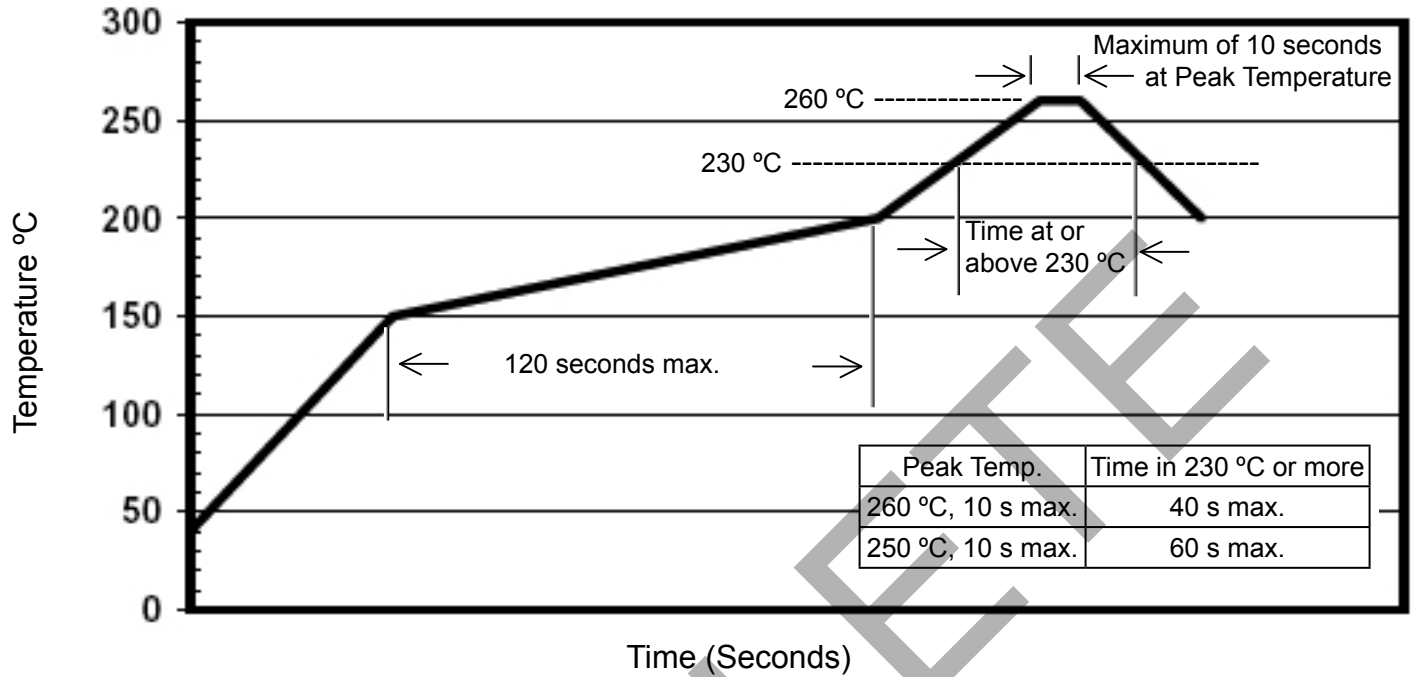
MSL 3 – when outside the bag

Maximum of 2 reflow solderings; 2nd reflow should be within 5 days of the first reflow soldering.

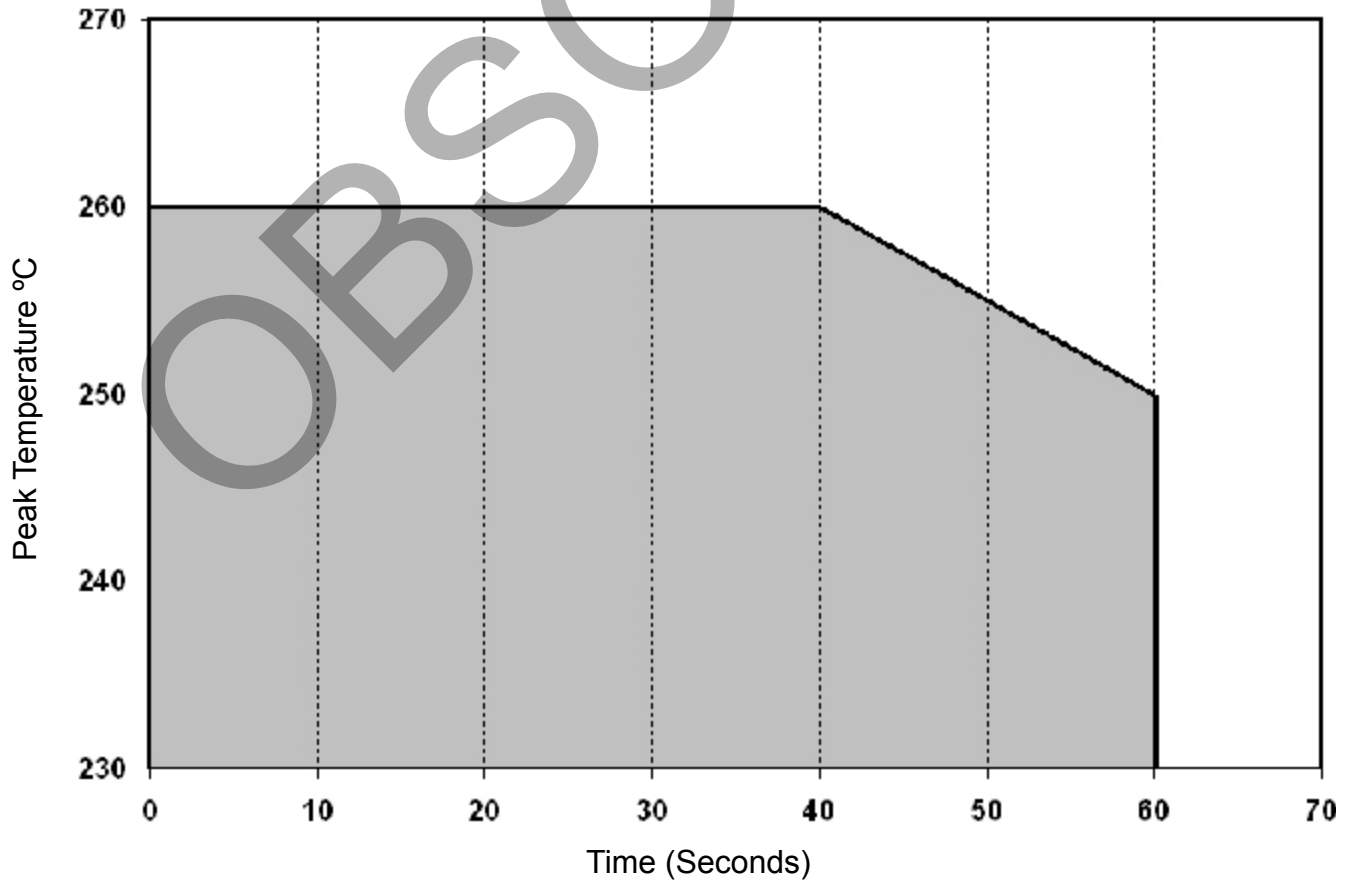
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## Reflow Soldering Profile

### Temperature on Surface of Capacitor



### Time At or Above 230 °C



## Type SPCX Solid Polymer Aluminum SMT Capacitors

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OBSOLETE