

Type SPSX Solid Polymer Aluminum SMT Capacitors



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).

The solid polymer SPSX aluminum capacitor is an ideal choice for audio/visual equipment, home appliances, computers, measuring equipment and industrial robots. Like the SPCX, the SPSX is a compact component. But SPSX offers a much lower ESR and a higher ripple current rating than the SPCX. The SPSX is a green product 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
- 9 mΩ ESR @ 100 kHz
- A great value in a small package

Specifications

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

Capacitance Range: 82 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 Resistance:

+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

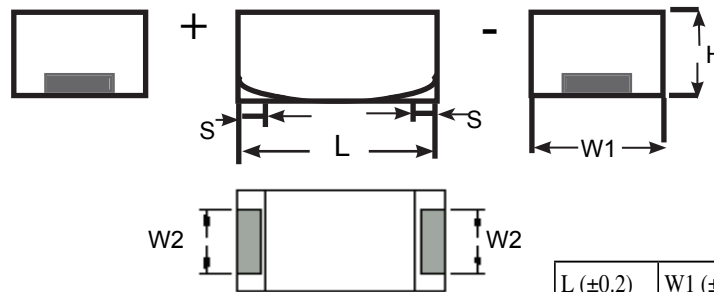
Vibration:

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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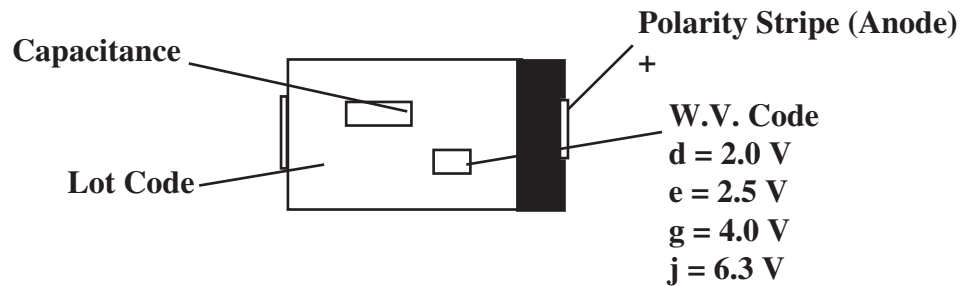
Outline Drawings



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



Part Numbering System

| | | | | |
|-------------|------------------|-----------------------|--------------|--------------------------------|
| SPSX | 221 | M | 0E | R |
| Type | Capacitance Code | Capacitance Tolerance | Voltage Code | Packaging Code |
| | 820 = 82 | M = $\pm 20\%$ | 02 = 2.0 Vdc | R = Tape & Reel: 3500 pcs/reel |
| | 101 = 100 | | 0E = 2.5 VDC | |
| | 221 = 220 | | 04 = 4.0 Vdc | |
| | | | 06 = 6.3 Vdc | |

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Ratings

| Capacitance (μ F) | Catalog Part Number | Max. D.F. @ 120 Hz | Max. DCL (μ A) | Max. E.S.R. @ 100kHz/20°C (m Ω) | Max. Ripple Current @ 100kHz/(20°C to 105°C) (Arms) |
|--------------------------------|------------------------|-----------------------|---------------------------|---|---|
| 2.0 Vdc (Surge 2.5 Vdc) | | | | | |
| 180 | SPSX181M02R | 0.06 | 36 | 9 | 3 |
| 220 | SPSX221M02R | 0.06 | 44 | 9 | 3 |
| 270 | SPSX271M02R | 0.06 | 54 | 9 | 3 |
| 330 | SPSX331M02R | 0.06 | 66 | 9 | 3 |
| 390 | SPSX391M02R | 0.06 | 78 | 9 | 3 |
| 470 | SPSX471M02R | 0.06 | 94 | 9 | 3 |
| 2.5 Vdc (Surge 3.1 Vdc) | | | | | |
| 150 | SPSX151M0ER | 0.06 | 37.5 | 9 | 3 |
| 180 | SPSX181M0ER | 0.06 | 45 | 9 | 3 |
| 220 | SPSX221M0ER | 0.06 | 55 | 9 | 3 |
| 330 | SPSX331M0ER | 0.06 | 82.5 | 9 | 3 |
| 390 | SPSX391M0ER | 0.06 | 97.5 | 9 | 3 |
| 4.0 Vdc (Surge 5.0 Vdc) | | | | | |
| 82 | SPSX820M04R | 0.06 | 32.8 | 9 | 3 |
| 100 | SPSX101M04R | 0.06 | 40 | 9 | 3 |
| 150 | SPSX151M04R | 0.06 | 60 | 9 | 3 |
| 180 | SPSX181M04R | 0.06 | 72 | 9 | 3 |
| 220 | SPSX221M04R | 0.06 | 88 | 9 | 3 |
| 6.3 Vdc (Surge 8.0 Vdc) | | | | | |
| 150 | SPSX151M06R | 0.06 | 94.5 | 9 | 3 |

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Reflow Soldering Profile

