Type SPSX Solid Polymer Aluminum SMT Capacitors

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.

RoHS Compliant

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) andPolyBrominated Diphenyl Ethers (PBDE).

Highlights

- A low-profile height of 1.9 mm
- Offered on tape and reel
- Can withstand 260 °C reflow for 10 s
- 4.5 - 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 560 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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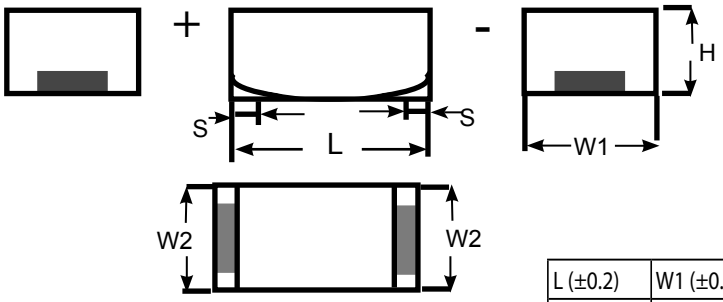
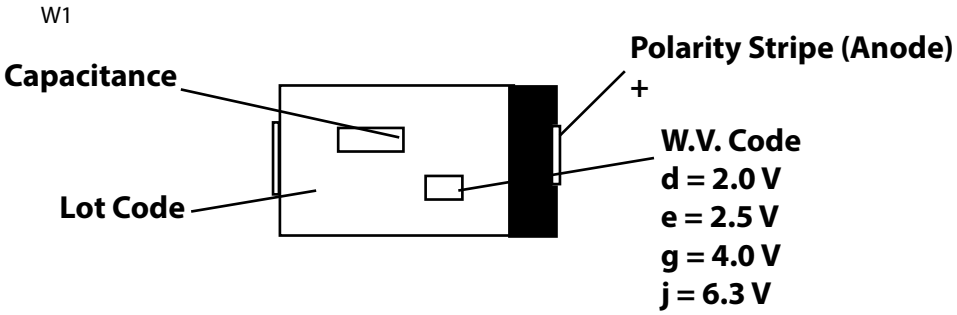
Outline Drawings



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

Surface finish of terminal; Tin (Sn)

Marking



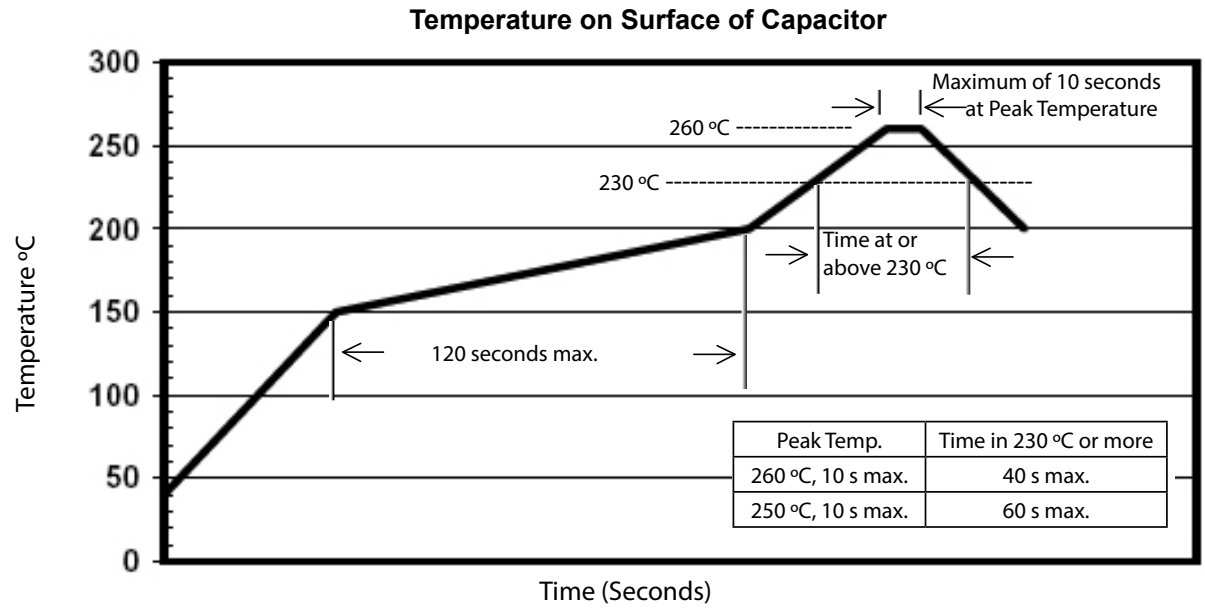
Part Numbering System

SPSX	221	M	0E	R	-7
Type	Capacitance Code 820 = 82 101 = 100 221 = 220	Capacitance Tolerance M = ±20%	Voltage Code 02 = 2.0 Vdc 0E = 2.5 VDC 04 = 4.0 Vdc 06 = 6.3 Vdc	Packaging Code R = Tape & Reel: 3500 pcs/reel B = Bulk	Optional Lower ESR Value at 100 kHz (see tables for available options)

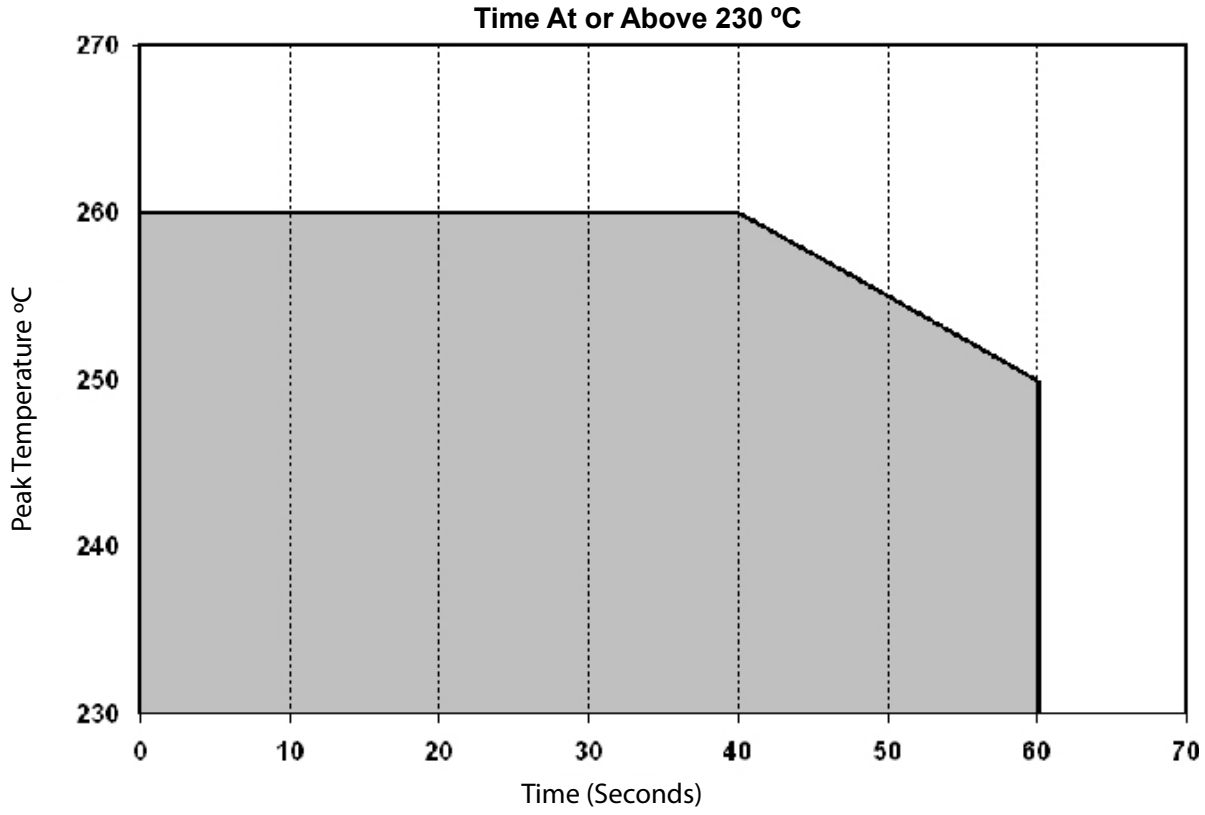
Ratings

Capacitance (µF)	Catalog Part Number	Max. D.F. @ 120 Hz	Max. DCL (µA)	Max. E.S.R. @100kHz/+20°C (mΩ)	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
270	SPSX271M02R-6	0.06	54	6	3.5
270	SPSX271M02R-4	0.06	54	4.5	3.8
330	SPSX331M02R	0.06	66	9	3
330	SPSX331M02R-6	0.06	66	6	3.5
330	SPSX331M02R-4	0.06	66	4.5	3.8
390	SPSX391M02R	0.06	78	9	3
390	SPSX391M02R-6	0.06	78	6	3.5
390	SPSX391M02R-4	0.06	78	4.5	4
470	SPSX471M02R	0.06	94	9	3
470	SPSX471M02R-6	0.06	94	6	3.5
470	SPSX471M02R-4	0.06	94	4.5	4
560	SPSX561M02R-4	0.06	112	4.5	4
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
220	SPSX221M0ER-7	0.06	55	7	3.5
270	SPSX271M0ER-7	0.06	67.5	7	3.5
330	SPSX331M0ER	0.06	82.5	9	3
330	SPSX331M0ER-6	0.06	82.5	6	3.5
330	SPSX331M0ER-4	0.06	82.5	4.5	4
390	SPSX391M0ER	0.06	97.5	9	3
390	SPSX391M0ER-6	0.06	97.5	6	3.5
390	SPSX391M0ER-4	0.06	97.5	4.5	4
470	SPSX471M0ER	0.06	117.5	9	3
470	SPSX471M0ER-6	0.06	117.5	6	3.5
470	SPSX471M0ER-4	0.06	117.5	4.5	4
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
150	SPSX151M04R-7	0.06	60	7	3.5
180	SPSX181M04R	0.06	72	9	3
220	SPSX221M04R	0.06	88	9	3
6.3 Vdc (Surge 8.0 Vdc)					
120	SPSX121M06R-7	0.06	75.6	7	3.5
150	SPSX151M06R	0.06	94.5	9	3

Reflow Soldering Profile



Peak Temp.	Time in 230 °C or more
260 °C, 10 s max.	40 s max.
250 °C, 10 s max.	60 s max.



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