



# 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.



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).

## 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

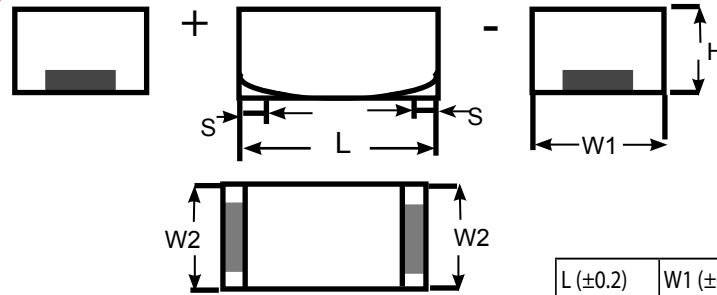
### Vibration:

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.

# Type SPSX Solid Polymer Aluminum SMT Capacitors

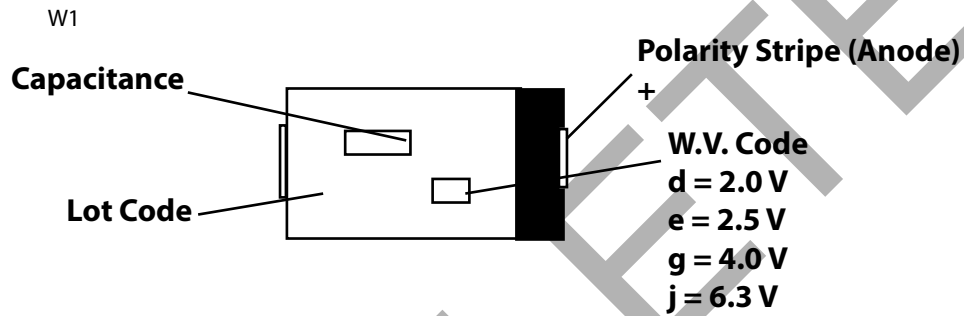
## Outline Drawings



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

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

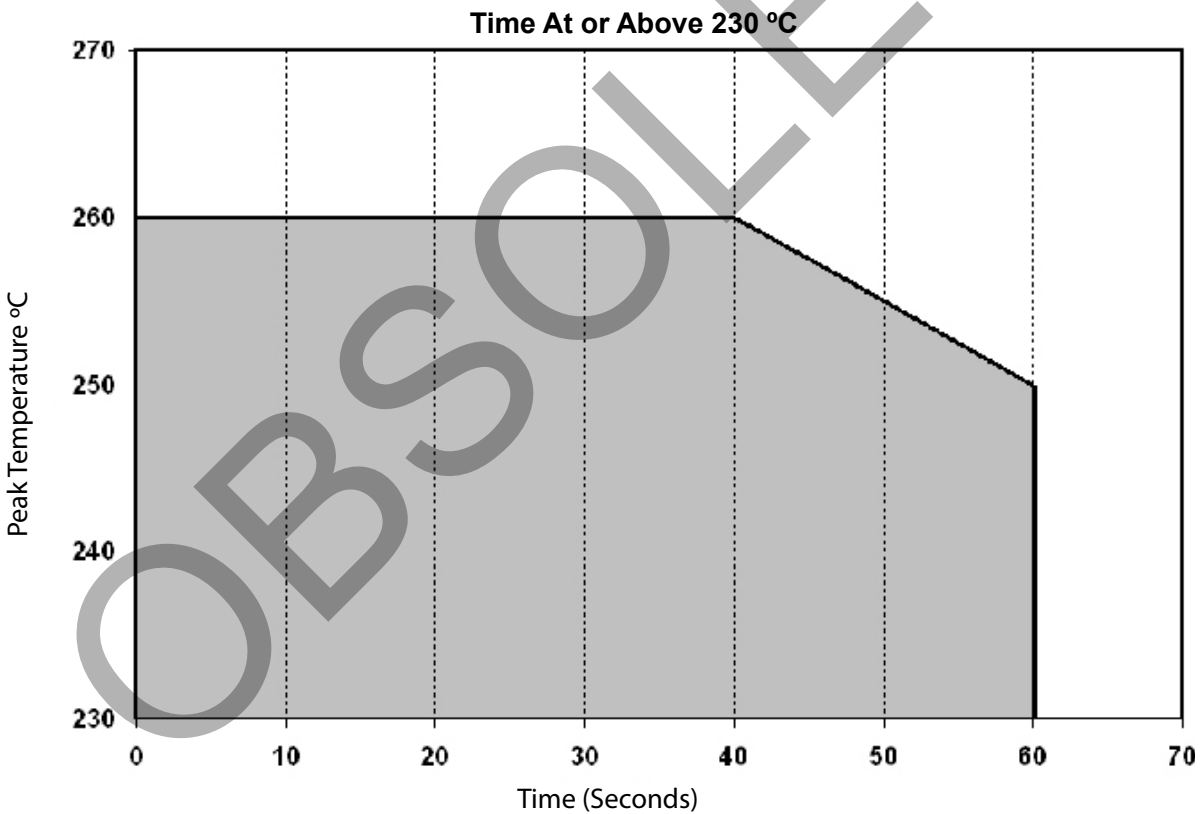
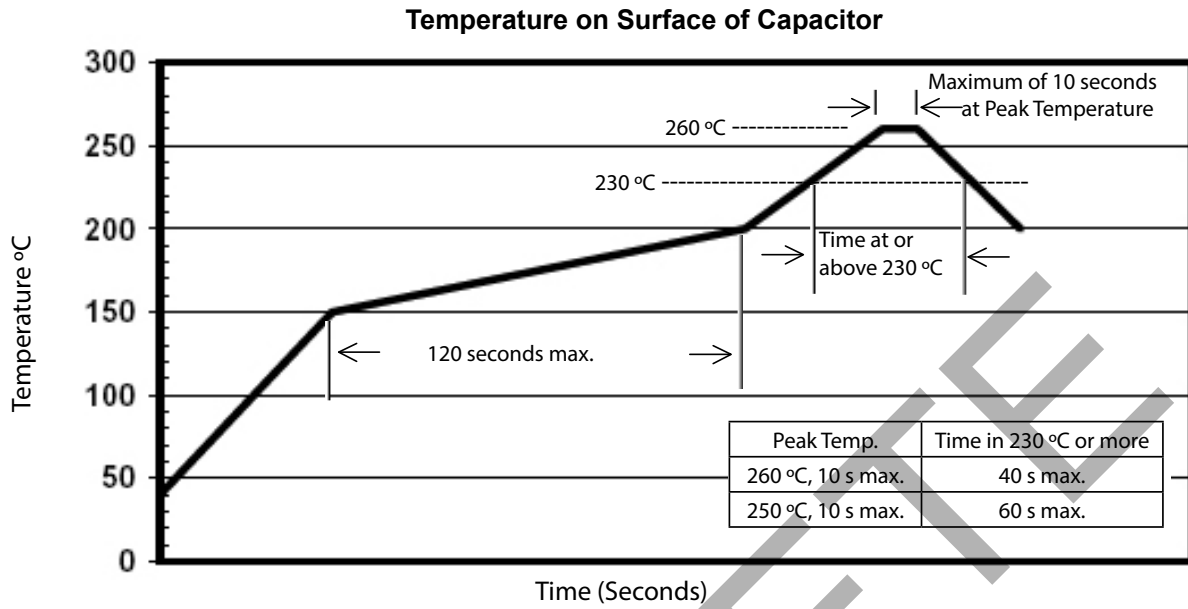
# Type SPSX Solid Polymer Aluminum SMT Capacitors

## 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)
<b>2.0 Vdc (Surge 2.5 Vdc)</b>					
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
<b>2.5 Vdc (Surge 3.1 Vdc)</b>					
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
<b>4.0 Vdc (Surge 5.0 Vdc)</b>					
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
<b>6.3 Vdc (Surge 8.0 Vdc)</b>					
120	SPSX121M06R-7	0.06	75.6	7	3.5
150	SPSX151M06R	0.06	94.5	9	3

# Type SPSX Solid Polymer Aluminum SMT Capacitors

## Reflow Soldering Profile



# Type SPSX Solid Polymer Aluminum SMT Capacitors



---

**Notice and Disclaimer:** All product drawings, descriptions, specifications, statements, information and data (collectively, the "Information") in this datasheet or other publication are subject to change. The customer is responsible for checking, confirming and verifying the extent to which the Information contained in this datasheet or other publication is applicable to an order at the time the order is placed. All Information given herein is believed to be accurate and reliable, but it is presented without any guarantee, warranty, representation or responsibility of any kind, expressed or implied. Statements of suitability for certain applications are based on the knowledge that the Cornell Dubilier company providing such statements ("Cornell Dubilier") has of operating conditions that such Cornell Dubilier company regards as typical for such applications, but are not intended to constitute any guarantee, warranty or representation regarding any such matter – and Cornell Dubilier specifically and expressly disclaims any guarantee, warranty or representation concerning the suitability for a specific customer application, use, storage, transportation, or operating environment. The Information is intended for use only by customers who have the requisite experience and capability to determine the correct products for their application. Any technical advice inferred from this Information or otherwise provided by Cornell Dubilier with reference to the use of any Cornell Dubilier products is given gratis (unless otherwise specified by Cornell Dubilier), and Cornell Dubilier assumes no obligation or liability for the advice given or results obtained. Although Cornell Dubilier strives to apply the most stringent quality and safety standards regarding the design and manufacturing of its products, in light of the current state of the art, isolated component failures may still occur. Accordingly, customer applications which require a high degree of reliability or safety should employ suitable designs or other safeguards (such as installation of protective circuitry or redundancies or other appropriate protective measures) in order to ensure that the failure of an electrical component does not result in a risk of personal injury or property damage. Although all product-related warnings, cautions and notes must be observed, the customer should not assume that all safety measures are indicated in such warnings, cautions and notes, or that other safety measures may not be required.

OBSOLETE

## Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

-  [View SPSX471M0ER-6 on WIN SOURCE](#)
-  [Cornell Dubilier Electronics \(CDE\) Information](#)

## Optimize Your Supply Chain with WIN SOURCE Solutions

-  Global Sourcing Solution
-  Obsolete Management
-  Cost Control Management
-  Shortage Management
-  Alternative Solution
-  Excess Inventory Management