

How high a temperature can St John s super farad capacitor withstand

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Generated on: 2026-07-21 14:24:38

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Can a supercapacitor be operated out of a specified range?

Fig. 1 Example of Derating Temperature and Voltage to Extend Lifetime. Abracon does not recommend operating supercapacitors out of their specified ranges. For example, designing a 0-700C supercapacitor into a system that will experience 850C ambient temperature is not recommended, regardless of whether the temperature increase is temporary.

How long does a super capacitor last?

The life of supercapacitors will double for every 10°C decrease in temperature or voltage by 0.1V. Supercapacitors operated at room temperature can have life expectancies of several years compared to operating the capacitors at their maximum rated temperature. L1= Load life rating of the super capacitor (typically 1000 hours at rated temperature).

What is the operating temperature of a supercapacitor?

The operating temperature of a supercapacitor can vary depending on the manufacturer and model. However, most supercapacitors are designed to function within a temperature range of (-40 to 85)°C or (-40 to 185)°F. This temperature range is commonly referred to as the "standard" or "commercial" range.

What is the maximum specific capacitance of a supercapacitor at 200 °C?

A maximum specific capacitance of 33 F/g at a current density of 4 A/g was observed at 200 °C for supercapacitors based on free-standing TPU/clay/RTIL electrolyte. Meanwhile, the power density of the supercapacitor at 200 °C increased almost by two orders of magnitude compared to that at room temperature.

The operating temperature range of supercapacitors is -40°C to +70°C, while the operating temperature range of commercial supercapacitors can reach -40°C to +80°C.

Higher temperature promotes the migration of ions to the innermost pores of electrodes, leading to an increase in effective surface area, and thus a higher capacitance.

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Here we demonstrate that a tailored mixture of materials can facilitate operation of supercapacitors at record temperatures, as high as 200°C.

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The low temperature limit of IL-based supercapacitors can be extended below room temperature, even down to very low temperatures (below -30 °C), by using eutectic mixtures ...

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While the electrostatic capacitor can be made to withstand high volts, the supercapacitor is confined to 2.5-2.7V. Voltages of 2.8V and higher are possible, but at a reduce service life.

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