

# Supercapacitor specifications and models





## Overview

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What is a supercapacitor configuration?

This configuration aims to enhance energy and power density, as well as to achieve greater cycle life. Ultimately, the goal is to leverage the strengths of both types of electrodes to optimize the performance of the supercapacitor assembly.

What is the power density of a supercapacitor?

The power density of a supercapacitor is the measure of the energy consumed by the load over time in the circuit. Generally, the power is defined using the below equation:  $P = \frac{V^2}{3600 * R}$  Where P is the Power, V is the discharge voltage, and R is the equivalent series resistance.

What are the nuances of supercapacitor specifications?

Understanding the nuances of supercapacitor specifications is the key to maximizing these performance capabilities. There is some level of standardization for supercapacitor sizes, for example, a 10x30mm can supercapacitor is generally 10 Farads across the industry.

What is a hybrid supercapacitor?

Hybrid or asymmetric supercapacitors are another form of supercapacitor in which anode selection often involves carbon material-based electrodes, whereas cathode selection typically involves redox reaction-based electrodes.



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Modelling supercapacitors using a dynamic equivalent circuit ...

Oct 1, 2019 · This study presents a method to model supercapacitors in both time and frequency domains using a dynamic equivalent circuit model with a continuous distribution of time ...

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Microsoft Word

The classical equivalent circuit model illustrated in figure 3 is the simplest of the supercapacitor models and can adequately describe the capacitors performance in slow discharge ...

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Specification for Supercapacitor 4.2V42000F

Dec 19, 2022 · This specification describes the characteristics, appearance, dimensions, performance, test methods, and precautions of the 4.2V42000F60\*138mm energy type ...

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Supercapacitor Selection Guide 2023

Jan 4, 2023 · Supercapacitors Introduction A supercapacitor is a type of capacitor that can store a large amount of energy--typically 10 to 100 times more energy per unit of volume of mass ...

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Supercapacitor specifications and IEC/EN ...

Jun 8, 2020 · When correctly used, supercapacitors can support high power levels, high pulse power loads, and long-term back-up power needs. ...

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Aging Mechanism and Models of Supercapacitors: A Review

Mar 3, 2023 · Electrochemical supercapacitors are a promising type of energy storage device with broad application prospects. Developing an accurate model to reflect their actual working ...

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Modelling of supercapacitors based on simplified equivalent ...

Apr 8, 2021 · The need for energy storage devices especially in renewable energy applications has increased the use of supercapacitors. Accordingly, several supercapacitor models have ...

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XT Supercapacitor data sheet

Jan 30, 2025 · Eaton supercapacitors are unique, ultra-high capacitance devices utilizing electrochemical double layer capacitor (EDLC) construction combined with new, high ...

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Supercapacitor specifications and IEC/EN 62391-1

Jun 8, 2020 · When correctly used, supercapacitors can support high power levels, high pulse power loads, and long-term back-up power needs. Understanding the nuances of ...

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A comprehensive review on supercapacitors: Basics to recent



Jun 15, 2025 · Hybrid or asymmetric supercapacitors are another form of supercapacitor in which anode selection often involves carbon material-based electrodes, whereas cathode selection ...

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KW and KVW Coin cell supercapacitor , 5.0 V and 5.5 V , 0.1 F ...

Manufactured for electric utility meters, motor control units, solar inverters, real-time clock back-up, Programmable Logic Controllers and Irrigation and water control systems. This Eaton ...

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Theories and models of supercapacitors with ...

Apr 30, 2021 · The paper reviews the modelling techniques like Empirical modelling, Dissipation transmission line models, Continuum models, ...

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Supercapacitor Technical Guide

Feb 23, 2024 · Supercapacitors are ideal for applications ranging from wind turbines and mass transit, to hybrid cars, consumer electronics and industrial equipment. Available in a wide ...

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Supercapacitor Technical Guide

Dec 14, 2020 · This equivalent circuit is only a simplified or first order model of a supercapacitor. In reality supercapacitors exhibit a non-ideal behavior due to the porous materials used to ...

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CDE Supercapacitor Technical guide

4 days ago · This equivalent circuit is only a simplified or first order model of a supercapacitor. Supercapacitors exhibit a non-ideal behavior due to the porous materials used to make the ...

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Introduction to Supercapacitors , SpringerLink

Aug 1, 2020 · The supercapacitor has emerged as a promising electrochemical energy storage device. Its excellent performance, easy handling, and stability have gained remarkable ...

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Theories and models of supercapacitors with recent

Apr 30, 2021 · The paper reviews the modelling techniques like Empirical modelling, Dissipation transmission line models, Continuum models, Atomistic models, Quantum models, Simplified ...

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Design and Simulation of Efficient Supercapacitor Model

May 14, 2025 · The supercapacitor model is simulated in this study by using MATLAB/Simulink, and the efficiency of the model is improved by verifying and evaluating the parameters. Also, ...

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Designing with Supercapacitors

May 23, 2024 · The JESD specification emphasizes backup power for Storage Array Cards and their associated power requirements. However, this specification could be scaled to any power ...

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A comprehensive analysis of supercapacitors with current ...

Oct 14, 2024 · Supercapacitor technology has been continuously advancing to improve material performance and energy density by utilizing new technologies like hybrid materials and ...

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