

What is a Supercapacitor?

A supercapacitor (also called supercap or ultracapacitor) is a high-performance energy storage device designed for fast charging and discharging. It combines the quick power delivery of traditional capacitors with the energy storage capacity of batteries, making it ideal for demanding applications.

How Does a Supercapacitor Work?

Supercapacitors use two porous electrodes separated by an electrolyte. When voltage is applied, ions in the electrolyte accumulate at the electrode surfaces, creating two charged layers – a principle known as electric double-layer capacitance (EDLC). This structure allows for rapid energy storage and release without the wear and tear of chemical reactions.

Key Features:

- **Rapid power delivery:** Supercaps can deliver power much faster than batteries.
- **Fast charging/discharging:** charges in seconds to minutes.
- **Long lifespan:** can last for up to 1,000,000 charge/discharge cycles.
- **Temperature resilience:** operates effectively in extreme conditions.
- **Environmentally friendly:** no toxic or harmful chemicals.

Supercapacitors vs. Batteries:

Features	Supercapacitors	Batteries
Energy Density	Lower (good for short bursts)	Higher (better for long-term storage)
Power Density	Higher (quick power delivery)	Lower
Lifespan	Long (up to a million cycles)	Shorter (typically a few thousand cycles)
Charging Time	Seconds to minutes	Hours
Maintenance	Minimal	Requires monitoring

SCHURTER Prismatic Supercapacitors

The Best Choice for fast Power Storage and Immediate Power Delivery



Advantages



Ultra Compact Design



High Power Density



Low ESR with High Current Handling



Very Low Self Discharge

Supercapacitor Product Lines

SCPA:

3 - 5.5 V | 35 - 1000 mF
World's Thinnest Supercaps - only 0.4 mm



SCPB:

2.5 - 5 V | 90 - 2400 mF
Excellent Low Temperature Performance



SCPC:

2.75 - 5.5 V | 120 - 2400 mF
High Temperature Rating



Applications



Peak Power for Pulse Loads



Mission-critical Low Voltage Ride Through Power



Quick Power Charges



Application Markets

- Renewable Energy
- Medical
- Industrial
- Smart Grid / IoT
- Transportation

Use Case

Energy Harvesting Wireless Sensors

