Prismatic Supercapacitors

SCPA, SCPB, SCPC

SCHURTER
ELECTRONIC COMPONENTS

Application Trends

The transition to an all-electric society is replacing fossil fuels with electricity. This is leading to massive growth in electric energy applications such as renewable energy, electric vehicles and electric heating.

- Disruptive technology change e.g. automotive
- High investments in new technologies
- Growing demand for energy conversion and storage devices

SCHURTER
ELECTRONIC COMPONENTS

Supercapacitors

Supercapacitor also known as Ultracapacitor or Electric Double-Layer Capacitor (EDLC)

A supercapacitor is a high-capacity capacitor with a capacitance value much higher than that of solid state capacitors, but with lower voltage limits. It bridges the gap between electrolytic capacitors and rechargeable batteries.

Supercapacitors

> typically stores 10 to 100 times more energy per volume than electrolytic capacitors ✓

> can accept and deliver charge much faster than batteries ✓

> can tolerate many more charge and discharge cycles than rechargeable batteries ✓

Supercapacitors – Technology Comparision

Capacitor

- Low Energy (stores a small amount of energy as static electricity)
- Very High Power (releases it very quickly)

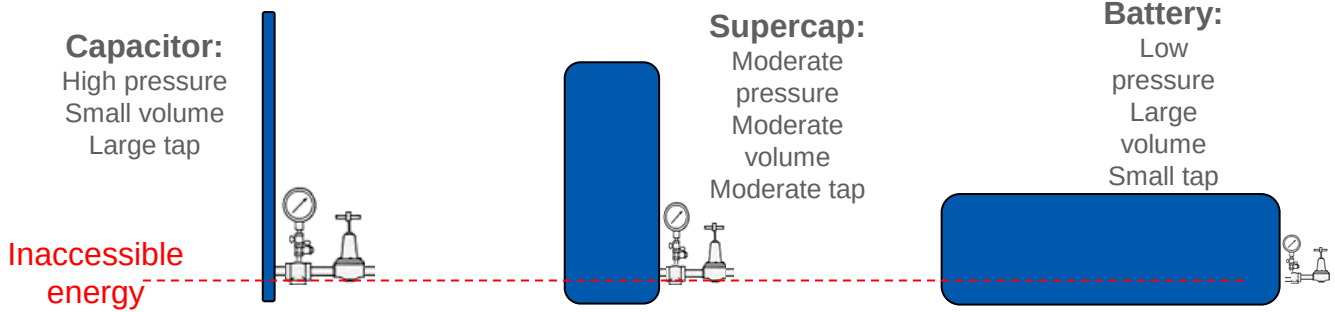
Supercapacitor

- Moderate Energy (stores a medium amount of energy as static electricity)
- High Power (releases it quickly)

Battery

- High Energy (stores a large amount of energy as a chemical reaction)
- Low Power (releases it slowly)

The water tank analogy



SCHURTER ELECTRONIC COMPONENTS

Prismatic Supercapacitors

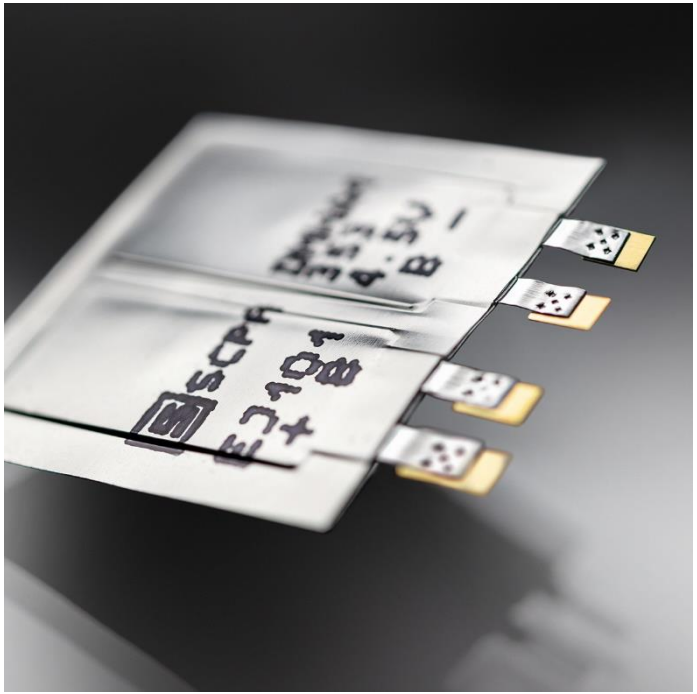
- World thinnest supercapacitors
- High power density
- Low ESR with high current handling
- Very low self discharge

RoHS COMPLIANT

SCHURTER
ELECTRONIC COMPONENTS

Supercapacitor – Ultra-compact Package

World thinnest supercapacitor!

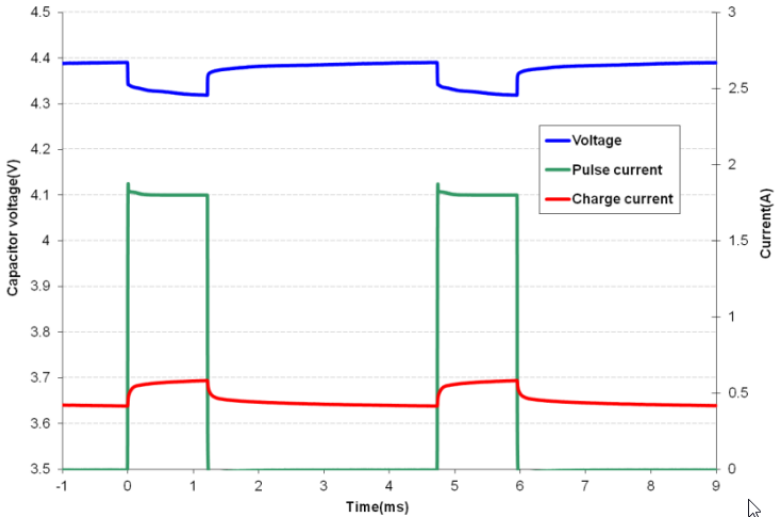


SCPA, 3-153-409, 4.5V, 35mF, 0.4mm thick

Ultra-compact Design

- Prismatic supercapacitors have an extremely flat design
- For application with limited space
- Perfect fit to replace slim battery cells
- SCPA dual cell super flat design 0.4 mm thick!
- Dual cell side by side for series or parallel operation

Supercapacitor – Performance



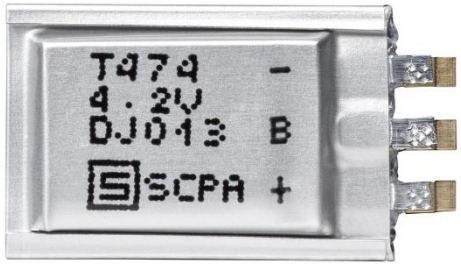
SCPB 5V, 520 mF

Pulse Response

- Supercapacitors provide energy pulses in very short time
- Example: GPRS (General Packet Radio Service)
- Pulse 1.8 A, 1.1 ms, thanks to low ESR
- Source current limited to 0.6 A
- Supply voltage only ~80 mV drop
- Very low leakage current <1 µA
- Ultra-low minimum charge current <20 µA

SCHURTER
ELECTRONIC COMPONENTS

Prismatic Supercapacitors



> Rated voltage	2.5 – 5.5 V
> Rated capacity	35 – 2400 mF
> ESR	15 – 300 mOhm
> Peak current	5 – 30 A
> Operating temperatures	-40 – 85 °C

Product types

> SCPA data sheet	super thin
> SCPB data sheet	excellent low temperature performance
> SCPC data sheet	high temperature rating

SCHURTER
ELECTRONIC COMPONENTS

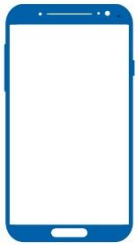
Prismatic Supercapacitor – Cross Reference

Manufacturer	SCHURTER	Kyocera	Vinatech
	www.schurter.com	www.kyocera-avx.com	www.vinatech.com
Type	SCPA, SCPB, SCPC	PrizmaCap™ – SCP Series	VPC Pouch
			
Product Types	3	3	1
Articles	46	9	16
Capacity	0.035 - 2.4F	3.5 - 20F	50 - 25'000F
Voltage	2.5 - 5.5V	2.1 - 2.5V	3.8V
ESR	15 - 300mOhm	30 - 110mOhm	0.6 - 1200mOhm
Temperature	-40 - 85°C	-40 - 85°C	-20 - 60°C
Lenght	20 - 39mm	43 - 55mm	28 - 136mm
Wide	14 - 20mm	46mm	28 - 122mm
Thickness	0.4 - 3.9mm	0.8 - 3.4mm	1 - 18mm

Cross reference only for flat supercapacitors no cylindrical types

SCHURTER ELECTRONIC COMPONENTS

Supercapacitor – Applications



Mobile devices

Mobile medical devices

Smart meters

Wireless sensors

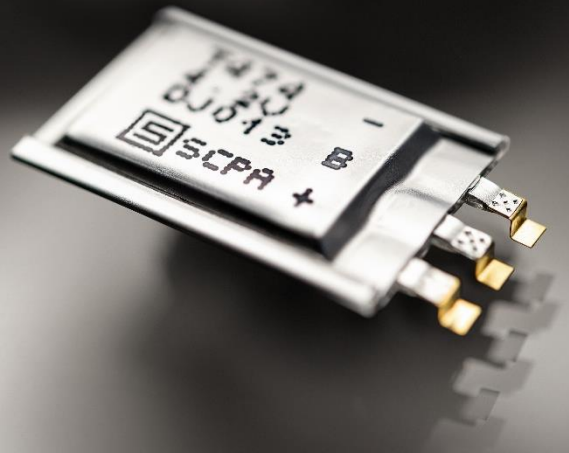
Automotive devices

Internet of Things

Prismatic Supercapacitor

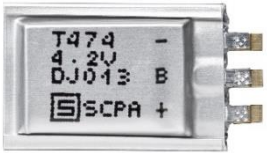
- 2.5 – 5.5 V
- 35 – 2400 mF
- Super thin design

new



SCHURTER Supercapacitors

For mobile applications with limited space.



SCPA

- Super thin
- 4.2 / 5.5 V
- 35 -1000 mF
- -40 – 85 °C
  -40 – 70 °C (5.5 V)

SCPB

- Excellent low temperature performance
- 2.5 / 5 V
- 90 – 2400 mF
- -40 – 70 °C

SCPC

- High temperature rating
- 2.75 / 5.5 V
- 120 – 2400 mF
- -40 – 85 °C

SCHURTER
ELECTRONIC COMPONENTS

Supercapacitor - Further Information

Additional Information

- Data Sheet: SCPA data sheet, SCPB data sheet, SCPC data sheet
- On Digital Asset Management System DAM to download:
  - Latest press release
  - Training presentation

Technical Assistance

- For general product questions, contact your Inside Sales Representative.