Surge Supercapacitors
Switching on the future of Power

SUPERCAPACITOR-BASED ENGINE START MODULE DATA SHEET

High-performance supercapacitor-based engine start modules provide reliable cranking power for various applications requiring multiples of 12 V systems. Designed for extreme temperature operation and rapid charge/discharge cycles, these modules offer a superior alternative to traditional batteries for engine starting applications.

- Discharge Temperature Range: -20°C to +40°C
- Can go up to a CCA of 3000 A
- Self-discharge Rate: <5% per month at 25°C
- Maintenance-free
- High-vibration environment
- Heavy-duty diesel engines / Marine Engines
- Construction equipment
- Mining machinery
- Cold weather starting applications
- Instant high-current delivery for reliable starting

Module No. / Parameter	SSCESM12V500A	SSCESM12V1000A	SSCESM12V1500A	SSCESM12V2000A
Surge Voltage	12.4 V			
Nominal Voltage	12 V			
Total Capacitance	160 F	300 F	450 F	850 F
End-to-End ESR	<3 mΩ	<2 mΩ	<2 mΩ	<1 mΩ
Max. Stored Energy	3.2 Wh	6 Wh	9 Wh	17 Wh
Max. Power	12 kW	18 kW	18 kW	36 kW
Charging Time (0-100% @ 55A)	35 s	66 s	99 s	186 s
Discharge time	4 s (@500 A)	4 s (@1000 A)	4 s (@1500 A)	5 s (@2000 A)
Starts Per Charge	2-3	2-3	2-3	2-3
Weight	2 kg	3 kg	3 kg	4 kg
Dimensions (L×W×H) mm	320×70×180			
Communication	CAN Bus (Optional)			
Balancing	Active and Passive			
Operating Temp. Range	– 40°C to +65°C			
Cycle Life	>1,000,000 cycles			
Configuration	4S1P			

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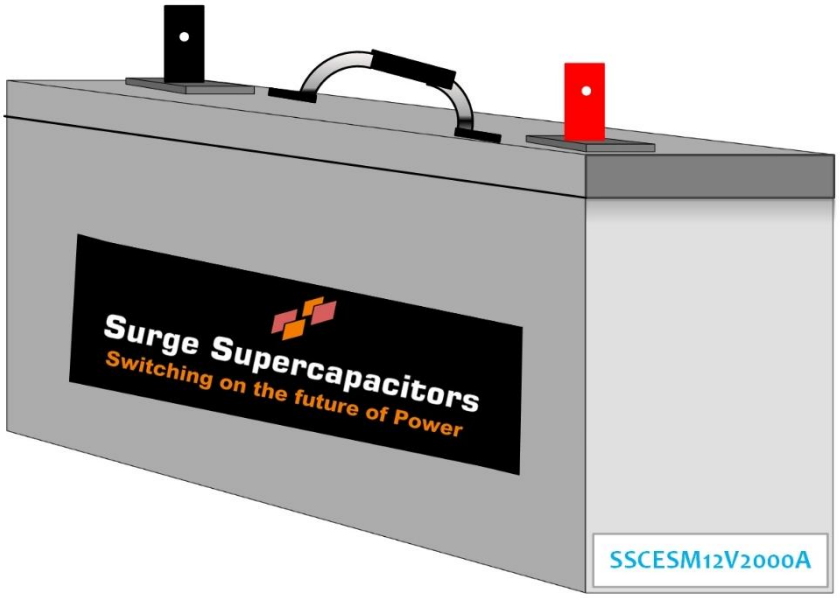
Scalability to Higher Voltages

- Modules can be connected in series for 24V, 36V, 48V, 60V, and 72V systems.
- Each additional module increases voltage by 12V.
- Optional: Include modular BMS for voltage, temperature, and current monitoring.



Target Applications

- Heavy-duty trucks
- Military & off-road vehicles
- Industrial gensets
- Cold-climate fleet vehicles
- Engine starting in hybrid or idle-start-stop systems

Installation Guidelines

- Mount in well-ventilated area
- Use appropriate cable gauge for high-current applications
- Ensure proper terminal connections with specified torque
- Protect from direct exposure to heat sources

Features & Benefits

- Instant high-current delivery for reliable starting
- Rapid recharge capability
- Extended cycle life compared to batteries
- Excellent performance in extreme temperatures
- Low maintenance requirements
- Environmentally friendly (no toxic materials)
- Compact design for flexible installation
- Vibration and shock resistant

Customization Options:

- Tailored capacitance and configurations available to meet specific customer requirements. Our expert team provides complete technical guidance and support for seamless integration into your systems.

Notes

- These current values represent the beginning-of-life conditions of the product; for system design, an ESR margin of 200% should be considered.

All information provided in this datasheet and all subsequent sales and testing of supercapacitors are subject to our Standard Terms of Service (ToS).

For details, Sales and service please refer to the document General Terms of Sale available at www.surgesupercap.com.