



OVERVIEW

CRRC's 3V 12000F Supercapacitor was developed from our previous 2.7V 9500F product. It has an energy density up to 10.71Wh/kg and power density of 19.01kW/kg, features a 30s quick charge, and is suitable for application on 100% low-floor trams among others.

WORKING WITH YOU TO
CONNECT THE WORLD



A RANGE OF SUPER CAPACITORS

High capacity makde possible



Address: No.16 West 4th-Ring Mid Road, Haidian District, Beijing
Zip Code: 100036
English-Tel: +86 10 51897295
Deutsch-Tel: +86 10 51897284
Русский-Tel: +86 10 51897300
E-mail: gjjy@crrogc.cc
Fax: +86 10 52608280
http://www.crrogc.cc/





MAIN FEATURES

▶ ACCLIMATIZATION

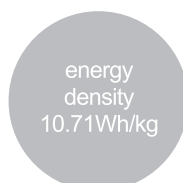
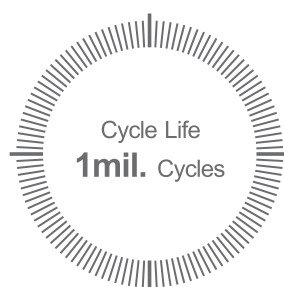
Excellent acclimatization. Our 3V 12000F Supercapacitor can work well in temperatures ranging from -40°C ~ +65°C, with a capacity retention rate that exceeds 80%.

▶ SAFETY AND RELIABILITY

Our 3V 12000F Supercapacitor is a safe energy storage option. Its totally enclosed structure and check valve guarantee resistance to fire and explosion in case of short-circuit, overload or burning. It passes tests on crush, shock, and drop impact and flame tests performed by a third party laboratory, in compliance with QC/T741-2014 standard.

▶ LIFECYCLE

The 3V12000F Supercapacitor has a long service life of up to 10 years, free maintenance, and 1 million times charge-discharge circulation.



COMMERCIAL VALUE AND MARKET APPLICATION

Supercapacitors are widely used in many industries due to their high capacity, high power, safety and reliability, free maintenance, long service life, recyclability, energy saving and environmentally friendly properties. Applications include:

▶ ENERGY-STORAGE TRAM

As the main power for energy-storage trams, supercapacitors enable 30s quick charge during operation and circulation of braking energy up to 30%, making this an energy-saving and green urban transport solution.

▶ CHARGE STATION

Charge stations serve as the charge systems in bus stops suitable for energy-storage trams. They include several sets of supercapacitor units as the core and two output circuits, each of which could supply output power up to 600kW. The stations allow a charge time no longer than 120s, ensure separate operation of input and output, which could reduce and eliminate load impact to power grids.

▶ PETROLEUM MACHINE/PORT CRANE

Some of the features of supercapacitors, such as high power, free maintenance and quick charge, could be used to supply transient power for machinery. The capacitor allows for a maximum energy of 27.3Mj and highest working current of 2000A, with a design service life of 10 years. This would greatly help to alleviate the pressure on power grids (or diesel generators).



▶ Port crane

▶ HYBRID BUS

In practice, a bus starts and brakes frequently during service. Supercapacitors can be used to efficiently recycle the braking energy and assist startup. While the bus starts, if the speed is lower than the set value, the motor will drive the bus independently; if the speed reaches the set value, the motor will be switched off and the engine will drive the bus independently, while the redundant power will recharge the supercapacitor. While the bus accelerates, runs uphill, or runs at heavy loads, both the engine and the motor will jointly drive the bus. When the bus brakes, the motor will be converted to engine and will recycle braking energy. Supercapacitor modules can store energy of 2.2Wh, with a capacity of 13.75F.

▶ ASSISTED DIESEL ENGINE STARTING

Compared to lead-acid batteries commonly used in assisting diesel engine starting, supercapacitors are able to achieve long service operation thanks to their low internal resistance and high power. The DC resistance of supercapacitors is less than 8mΩ, instantaneous discharge current is greater than 2,700A, and leakage current is less than 5mA, which reduce idling the engine, saves fuel and prolongs service life.

▶ WIND GENERATOR

Supercapacitors provide instantaneous power for the pitch systems of wind generators thanks to a maximum energy storage of 0.32Mj, less than 8.4mΩDC inner resistance and more than 98% recharge-discharge efficiency. The power of the impeller can satisfy the motor's requirement. Set pitch angle to suit wind speed to ensure optimal operation of the wind generator.



▶ Wind generator

MAIN TECHNICAL PARAMETERS

TECHNICAL PARAMETERS OF CRRC'S 3V 12000F SUPERCAPACITOR

Items	Specifications
Product Name	12,000F Super capacitor cell
Model	CRRC-12000-P5-3R0
Working Voltage	3.0V DC
Surge Voltage	3.2V DC
Capacitance	12,000F
ESR Maximum equivalent series resistance/ESR (AC@1kHz)	≤0.13mΩ
ESR Maximum equivalent series resistance/ESR (DC)	≤0.19mΩ
Leakage Current @25°C&72h	≤15mA
Weight	1,320±10g
Energy Density	11.36±0.8%wh/kg
Power Density	8.97±0.8% kw/kg
Capacitance Fluctuation	0%±10% (25°C)
Working Temp. Range	-40°C~+65°C
Storage Temp. Range	-40°C~+70°C
Cycle Life	1mil. cycles
Dimensions - Length (L)	79mm
Dimensions - Width (W)	56mm
Height (H)	231mm

▶ Energy-storage tram

