

BATTERY SOLUTIONS

Powering Environment Sustainability

For almost half a century, Lithium-ion batteries have been at the back end of scripting the next chapter in serving the world's energy demand. The pressing need to achieve the 2°C goal of the Paris Agreement and effective carbon management has put lithium-ion batteries at the centre stage of powering the modern-day world. The 2019 Nobel Prize for chemistry awarded to three scientists behind the development of rechargeable batteries has brought forth the potential of lithium ion batteries that are used in everything from large grid-scale storage replacing fossil fuel plants to encourage the surge in demand for electric transportation.



Mr. Tomohiko Okada
Managing Director
Toshiba India Pvt Ltd

Toshiba's inspiration of sustainable development is to create equilibrium across society, economy and the environment. Our business solutions are aimed at sustainable development and growth, which are conscious of delivering environment friendly products and solutions that do not have inimical effects on earth's ecosystem. Through our technological developments and innovation, Toshiba SCiB™ batteries can deliver an unprecedented socioeconomic potential. Presenting many industries an opportunity to de-carbonize their energy consumption with its wide industrial and infrastructure applications, Toshiba's SCiB™ batteries can minimize environmental impact and create an economic value. To ensure that the demand is matched by immediate and far-reaching collaborative action, we are ready to collaborate with the central and state government agencies to set up manufacturing operations that will contribute to carbon management in accordance with India's Paris climate agreement goals.

Toshiba's SCiB™ rechargeable battery uses Lithium Titanium Oxide (LTO) in its anode to achieve safety, long life, low-temperature performance, rapid charging, high input/output power and large effective capacity.

Being safe and having a long life with high performance, Toshiba's rechargeable battery SCiB™ has a very wide range of application from small-scale (KW) stationary storage for telecom towers, self-sustaining solar cameras for security, residential / community energy storage, to automobiles, buses, railroad cars, elevators, power plants and large storage (MW Scale) for power grid, smart grid, solar power, etc.

What is SCiB™?

Toshiba SCiB™ is a highly safe rechargeable battery with six outstanding characteristics. By using oxide-based materials (Lithium Titanium Oxide), SCiB™ is designed to prevent thermal runaway resulting from short circuiting caused by physical stress. Furthermore, SCiB™ has various superior characteristics, including a long life exceeding 20,000 charge/discharge cycles, rapid charging time of 6 minutes, input/output current densities comparable with capacitors, and operation at temperatures as low as -30°C up to 55°C.



Safety: SCiB™ uses lithium titanium oxide (LTO) which has a very low risk of fire or explosion from internal short circuit caused by external pressure or other factors. SCiB™ is not prone to fire or explosion even if an internal short-circuit is forced. Therefore, SCiB™ is suitable for various applications requiring high levels of safety and reliability, such as automobiles, industrial equipment and stationary systems.

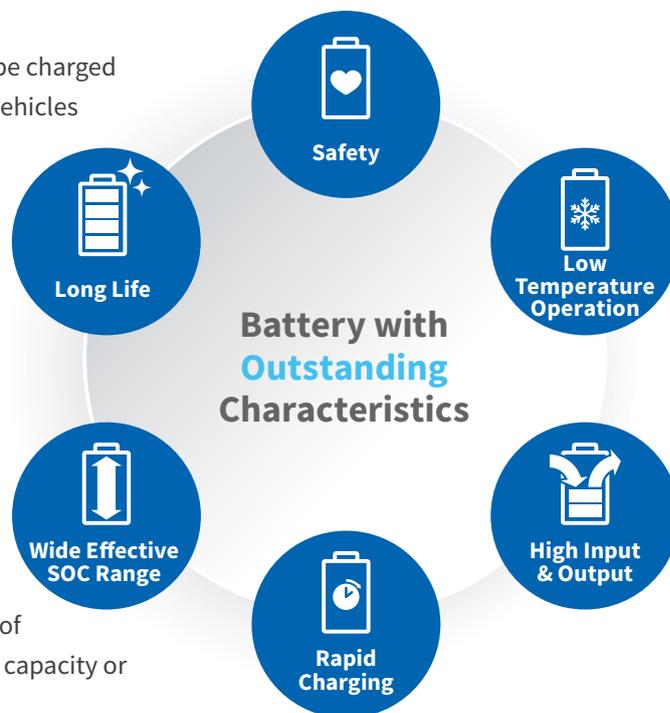
Long life: Only a small degree of capacity degradation occurs even after more than 20,000 cycles* of 60A charging and discharging. SCiB™ also requires low maintenance even when it is used in applications that perform frequent charging/discharging such as large-scale storage battery systems, hence being environment-friendly.

Low-temperature operation: SCiB™ exhibits low degradation even when it is charged and discharged at -30°C. Thus, SCiB™ can be used for applications that are exposed to low temperatures, such as home battery storage systems and street lamps.

Rapid charging: Rechargeable in just 6 minutes** SCiB™ can be charged with large current, enabling it to be used in buses and other vehicles that require quick charging similar to refilling a gasoline car. Also, frequent rapid charging does not cause significant deterioration in the SCiB™ performance.

High input/output: SCiB™ can be charged and discharged at high current rate. Therefore, SCiB™ can accept a large amount of regenerative energy in a short time as produced by a train or an automobile when the brake is being applied, and supply a large current to the motor during vehicle start-up/acceleration.

Wide effective State of Charge (SOC) range: SCiB™ exhibits excellent input/output characteristics over a wide SOC range of 0-100%. This makes it possible to reduce the nominal battery capacity or amount of batteries necessary for a system.



*Measured by Toshiba using a 20Ah cell under specific conditions. **Measured with a particular single cell under specific conditions.

SCiB™: For Multiple Applications

Toshiba's SCiB™ lithium-ion rechargeable battery provides outstanding safety and environmental robustness. SCiB™ is widely used in transportation systems, railway, electric power equipment, general battery-driven industrial equipment and emergency backup power supplies, as well as in large-scale stationary battery energy storage systems (BESS) used for frequency regulation at power stations.



Incorporates a thin and lightweight 5S battery pack with long life and reliable low-temperature performance

This self-sustaining solar camera system with LED lighting stores electricity produced by a solar photovoltaic (PV) panel and uses it to power an all-night light and a camera. This system is suitable for use at places where it is difficult to run a mains power line, and can be used at no electricity cost.

A light and thin battery pack is attached on the back side of the solar PV panel. Therefore reduces the risk of battery pack being inundated in case of flood damage.



SCiB™ has been adopted by Solaris Bus & Coach S.A. for its fast charge electric bus in Europe

Solaris Bus & Coach S.A. has adopted SCiB™ for its fast charging electric bus. (Its battery system is manufactured by Impact Clean Power Technology .)

The electric buses are operating in Hannover and Hamburg (Germany), Barcelona (Spain), and Tampere (Finland), etc. and are contributing to zero-emission urban transportation.



Toshiba Group has signed an Expression of Interest (EOI) with the Kerala Government for technology transfer and manufacturing SCiB for electric vehicles. The EOI was signed at the Kerala State Investment Promotion Seminar organized in Tokyo which saw the participation of a high-level delegation of the Kerala government led by Chief Minister Mr. Pinarayi Vijayan.