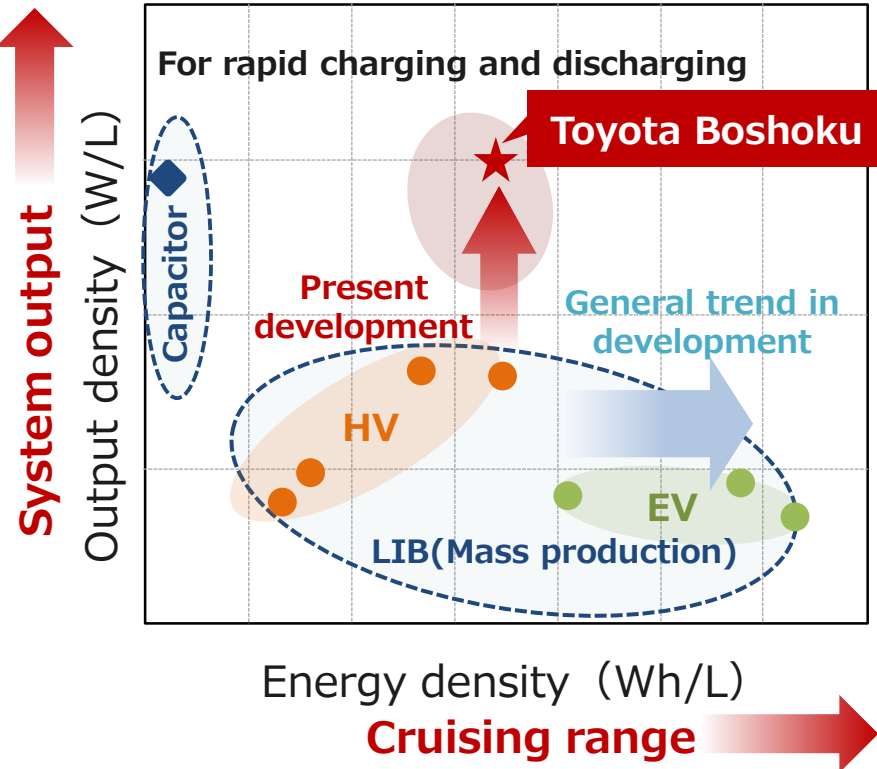


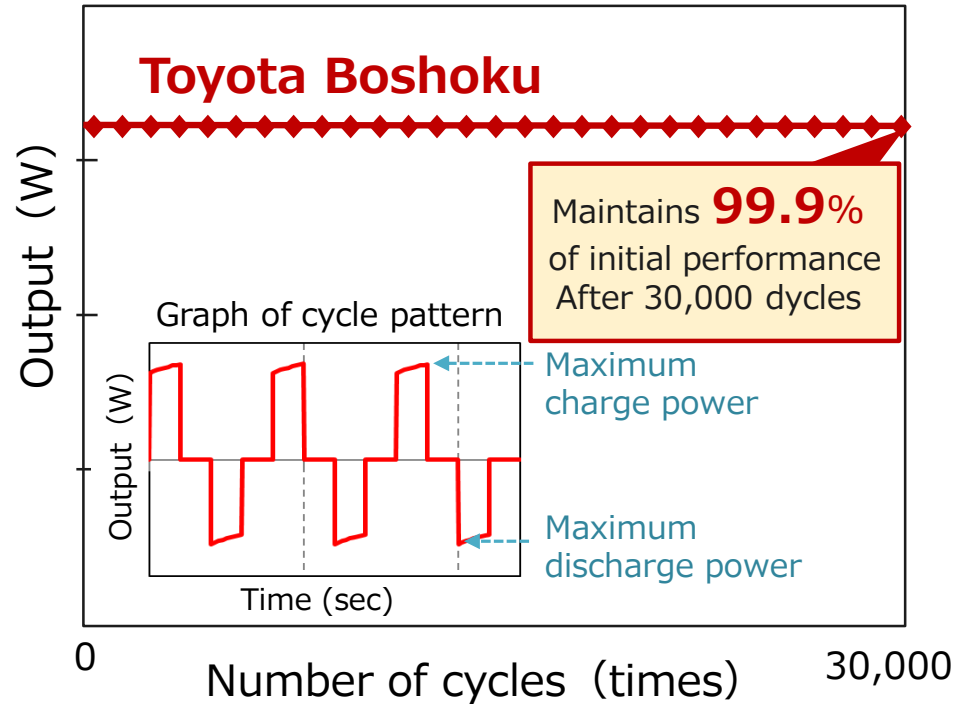


# Lithium-ion Battery

# Features of Toyota Boshoku Lithium-ion battery (high output and high reliability)



Change in output from repeated charging

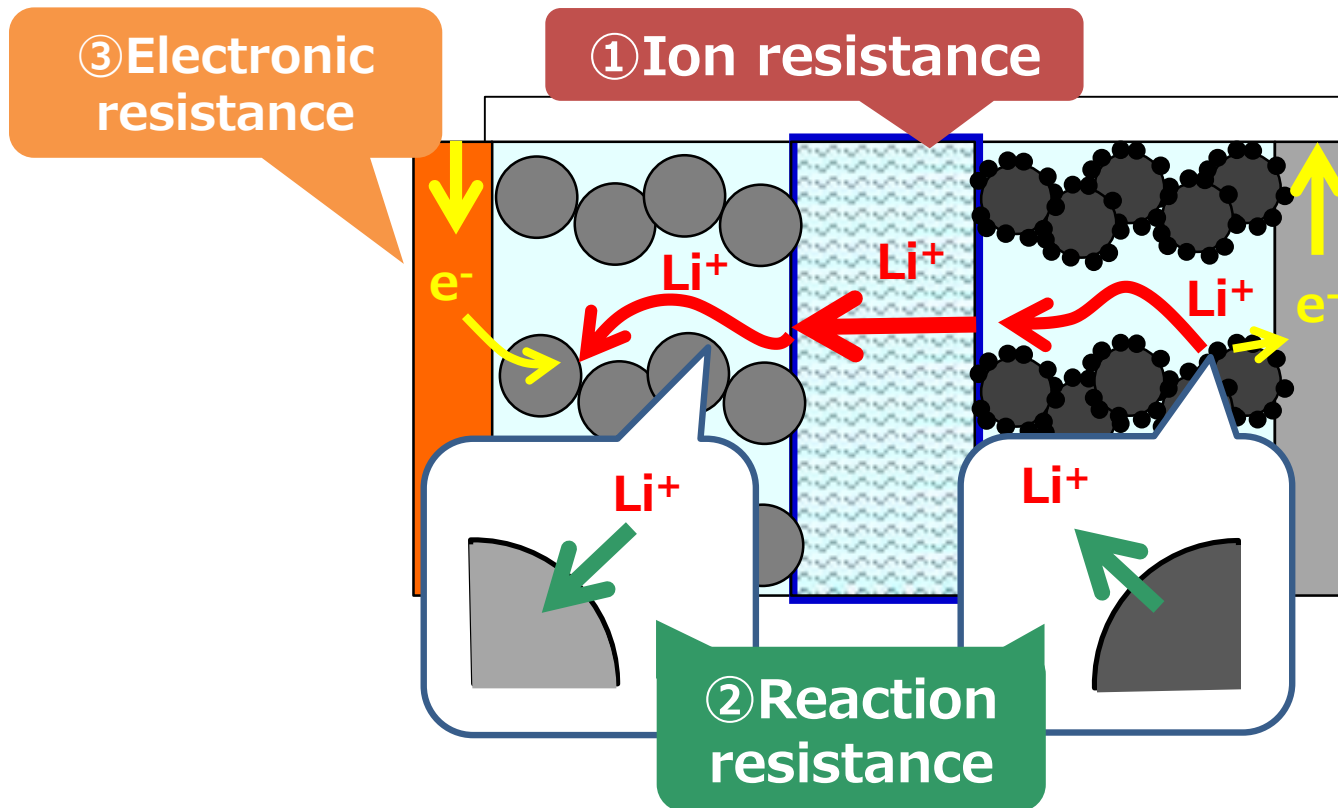


Features size and capacity comparable to HV batteries along with output characteristics of capacitors

Ensures high reliability even with rapid charging and discharging at high power

# High-Output Mechanism

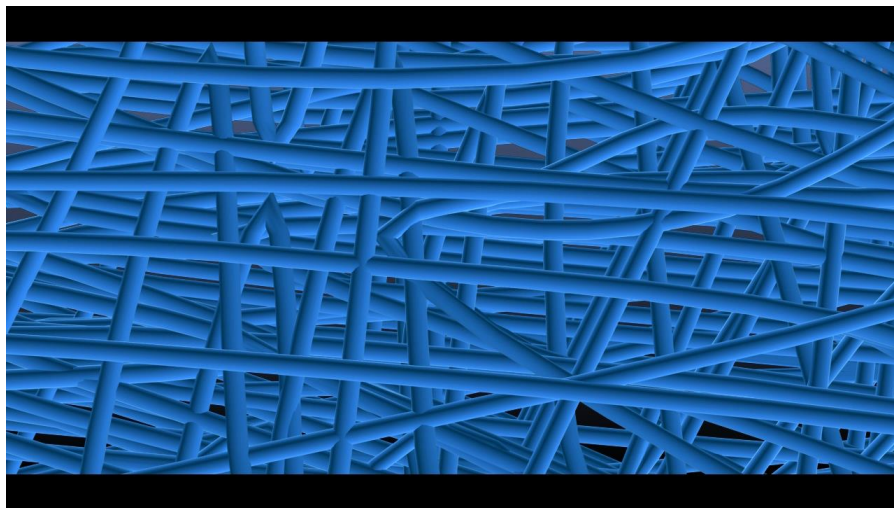
Three resistive components in the battery



Separator reduces ion resistance  
to achieve high output

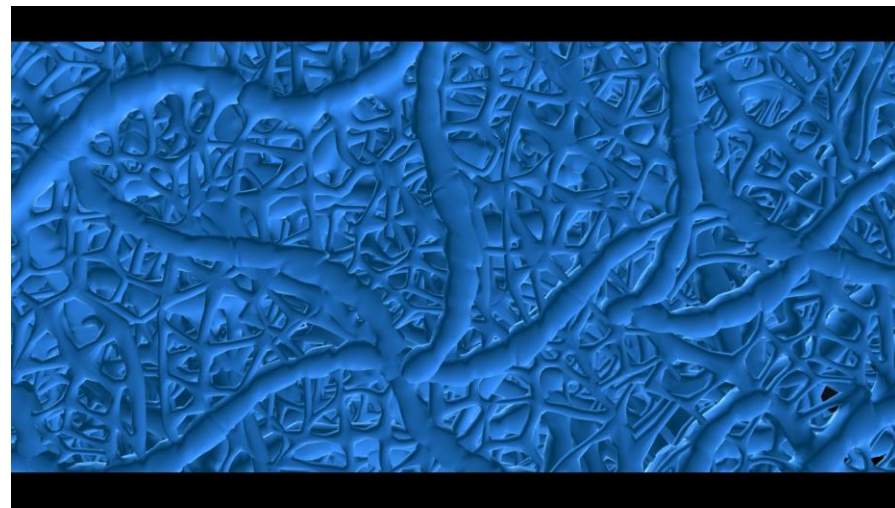
# High-output Mechanism

## Toyota Boshoku



**Lithium ion flow :**  
**Unrestrained**

## Other company



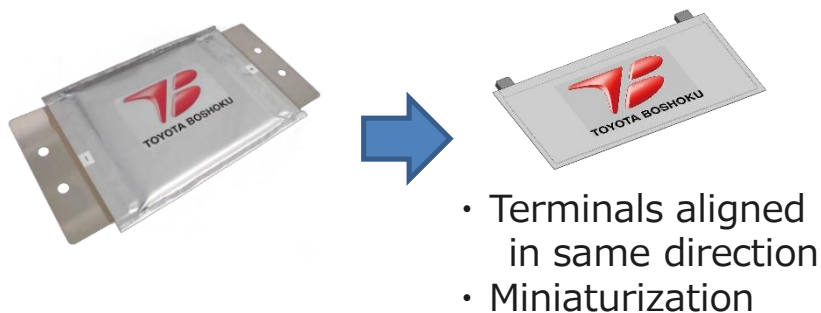
**Lithium ion flow :**  
**Restrained**

# Current Endeavors (Cell Improvements/Module Development)

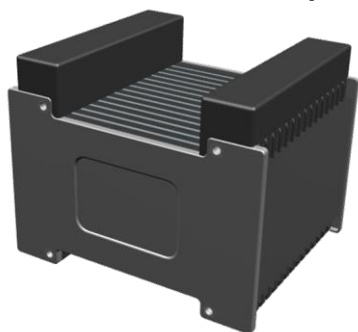
We are working on module development and cell shapes to enable full utilization of high-output cells installed in vehicles.

The cell is characterized by low heat generation due to high output that is approximately equal to low resistance.

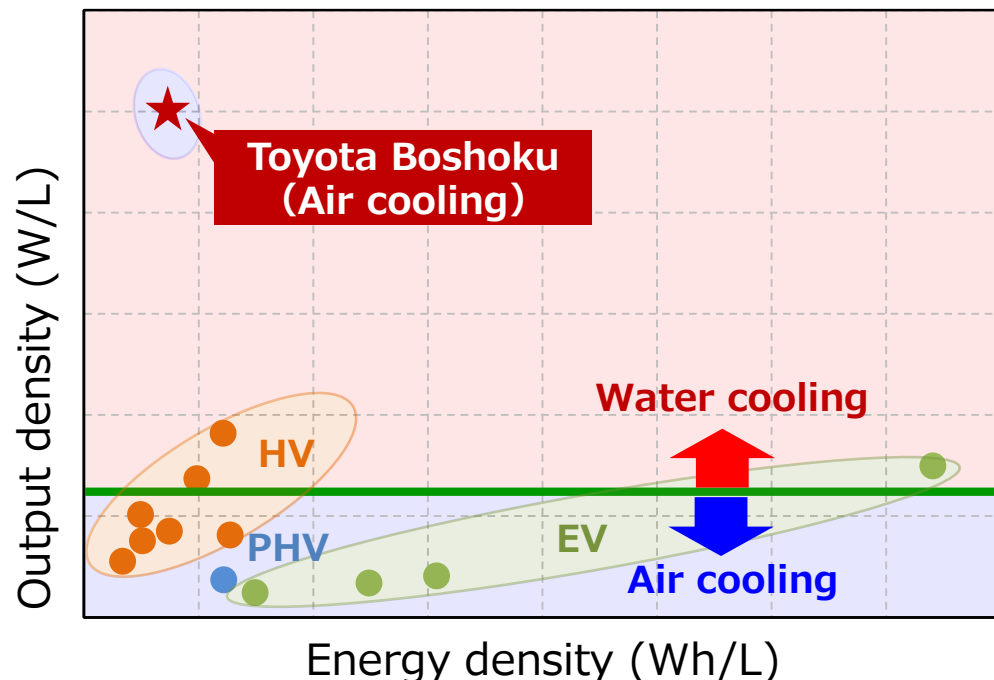
## <Cell Improvements>



## <Module Concept>

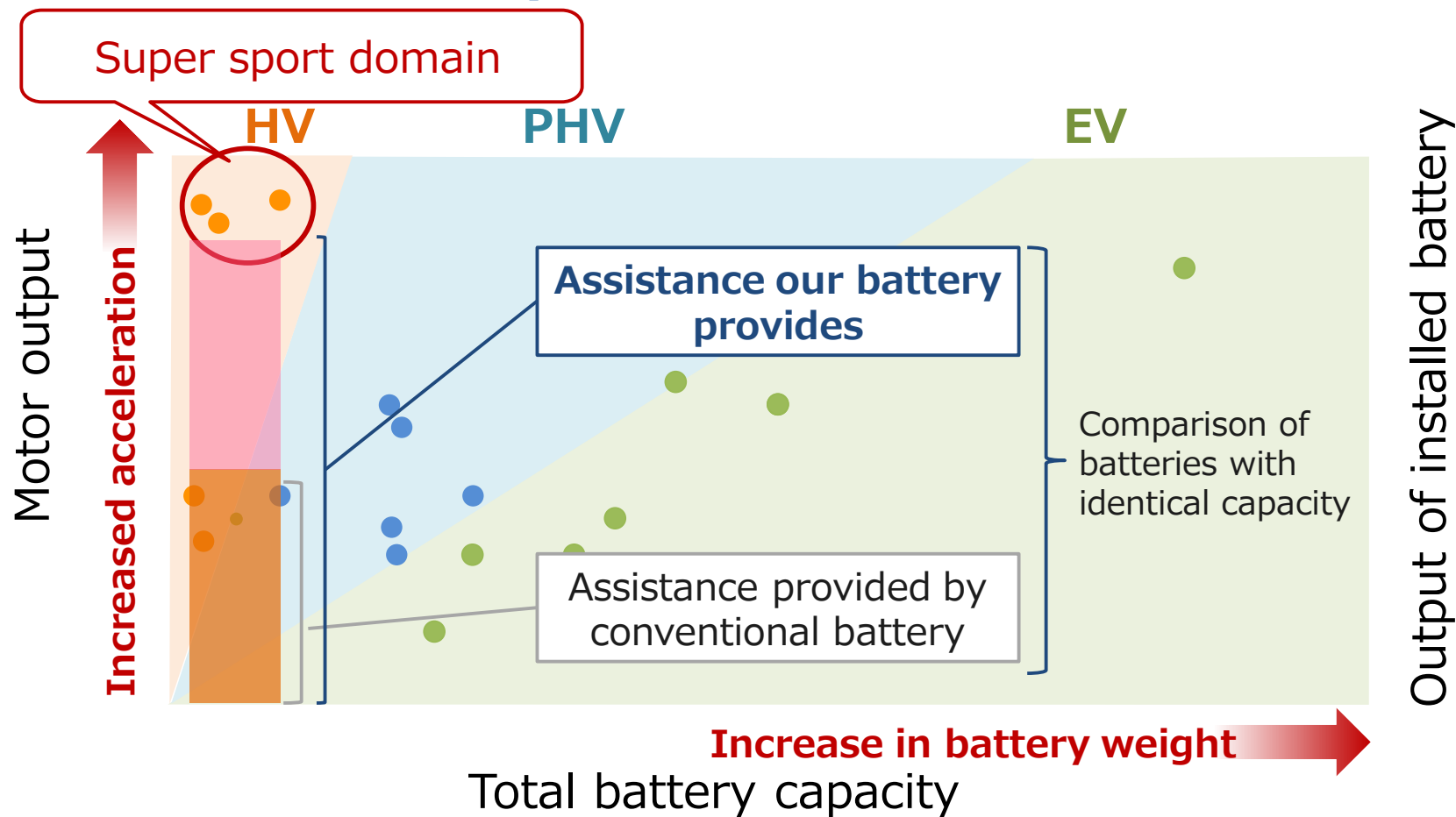


## Ragone Plot



**Due to low heat generation from the cell, module expected to use air cooling**

# Suggested applications for Toyota Boshoku lithium-ion battery



**Enables maximum motor output using battery with capacity comparable to conventional HV vehicle batteries**

# Summary of Toyota Boshoku Lithium-ion battery features

## Feature①

Size and capacity of HV batteries with capacitor output characteristics



**Enables full use of high-output motors, even with HV batteries**

Enables 30-second assist during acceleration, equivalent to 100 kW, in HV equipped with 1-kWh battery

## Feature②

High reliability



Even with full acceleration and deceleration, can be used for **over 30,000 cycles**

(comparable to vehicle's service life)

## Feature③

Low heat generation from the cell



Module expected to use **Compact air cooling**



**High output for HV vehicles**

Contributes to super sport and premium vehicle driving

# Future Plans

**1 Verify productivity for commercialization**

**2 Entry into the super sport and premium markets with small volume production of high-value added products**

- Currently offering proposals domestic and overseas super sport car manufacturers