

FY2023 Medium-Term Management Plan

Electronic Devices Business

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Electronic Devices

Business Policy / Business Plan

Business Policy

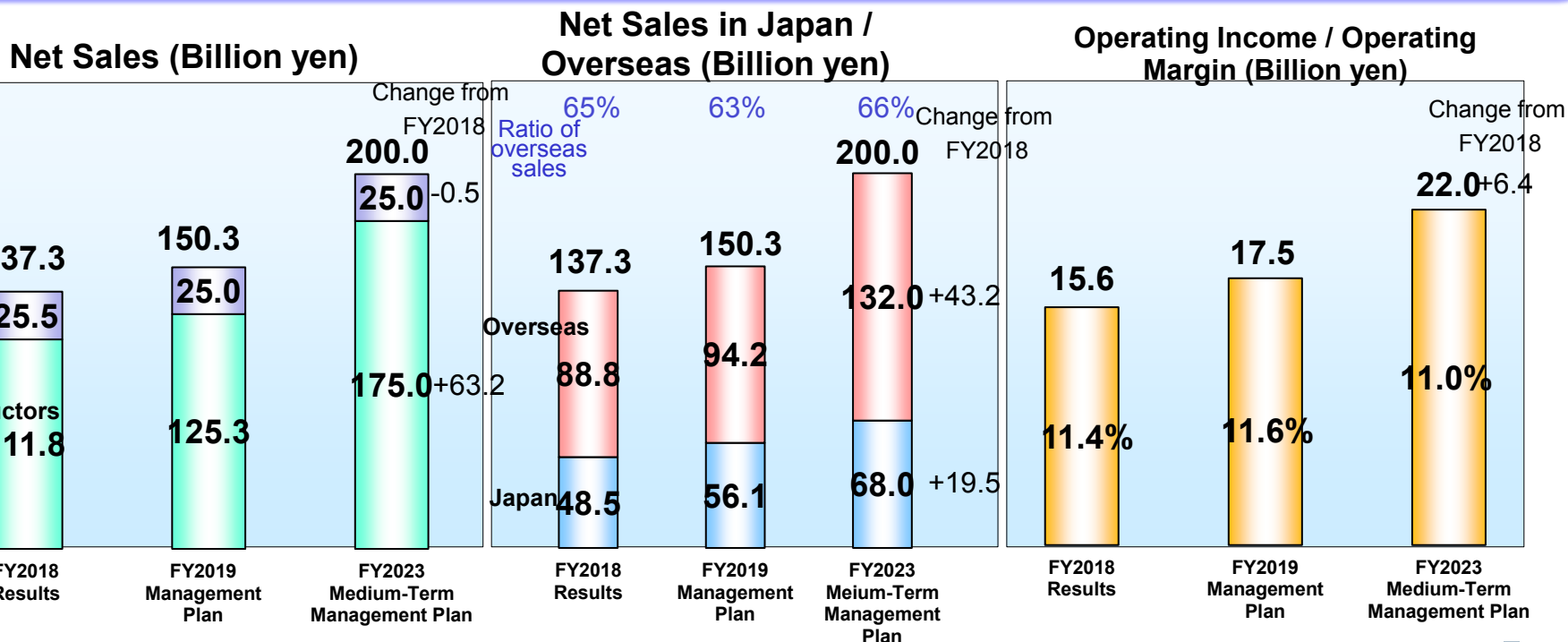
Increase sales and income through a focus on mainstay IGBTs and proactive investment in growth market

Business Plan

FY2023 targets

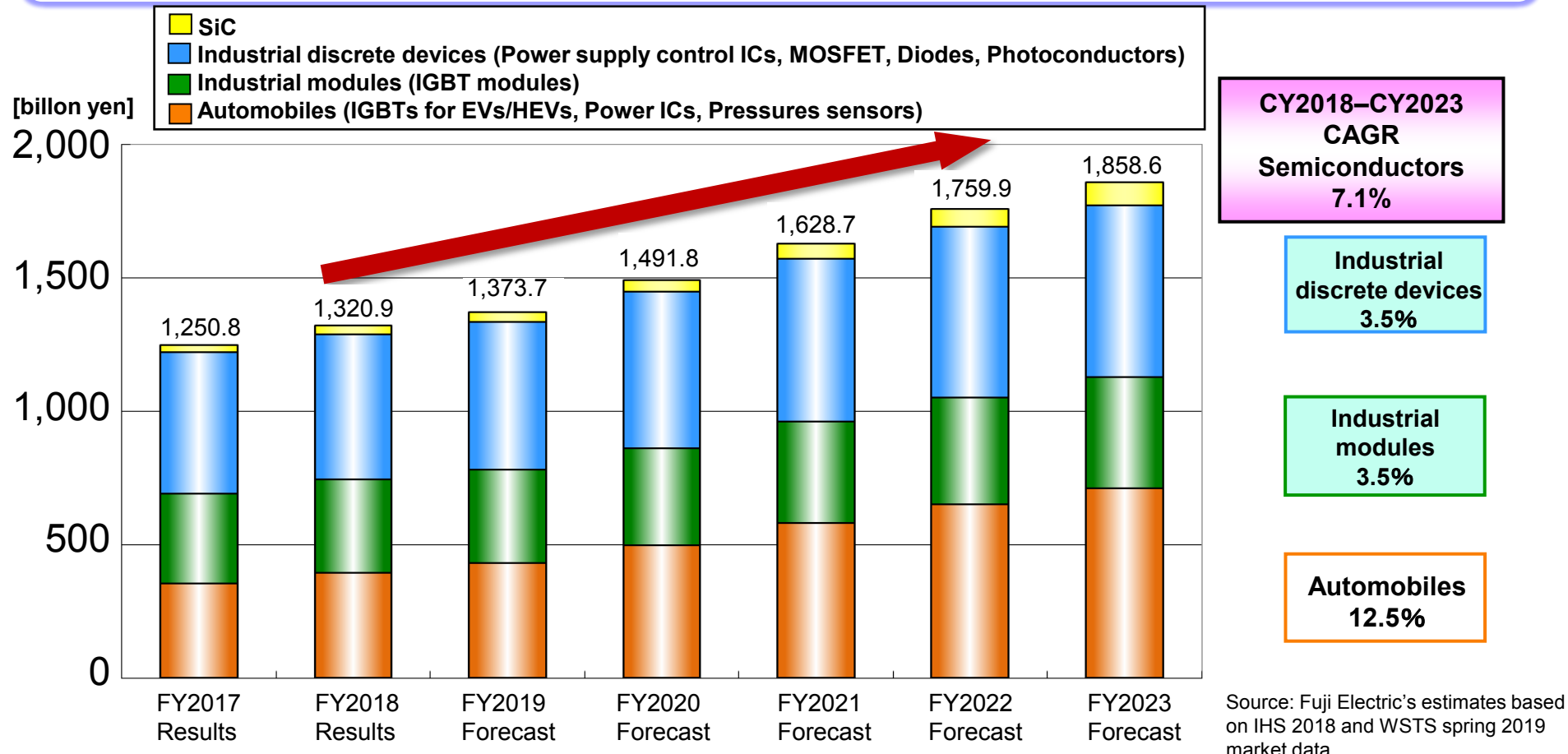
Net sales: ¥200.0 billion; Ratio of overseas sales: 66%

Operating income: ¥22.0 billion; Operating margin: 11%



Power Semiconductor Market Forecasts (Market Segments Targeted by Fuji Electric)

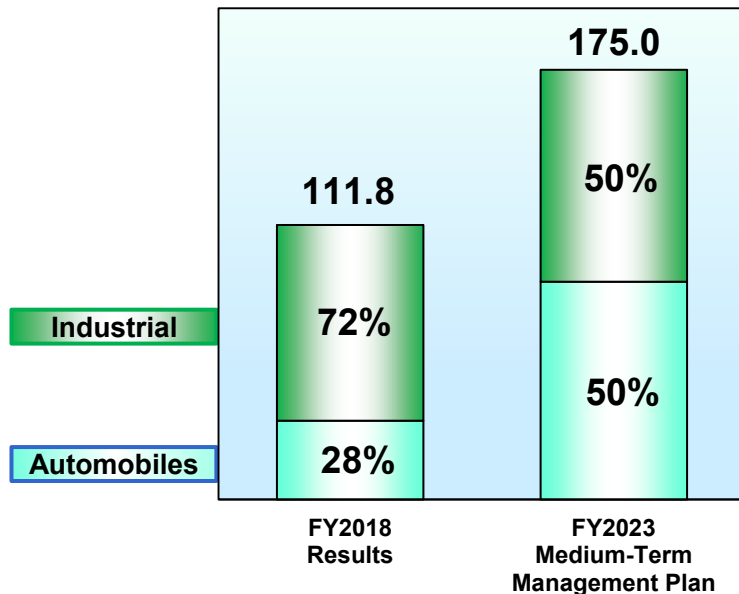
- Annual growth of **approximately 7%** in overall semiconductor market
- Strong annual growth of **approximately 13%** projected in automobile market



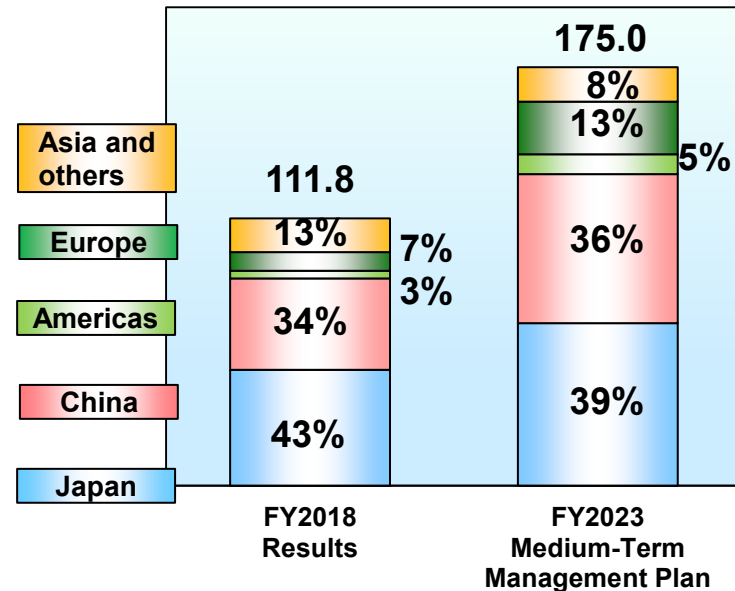
Semiconductors Business Plan

- **FY2023 Target: Net sales of ¥175.0 billion**
- **Expansion of sales to automotive market**
(Ratio of sales to automotive market: 28% in FY2018 → 50% in FY2023)
- **Growth of overseas sales**
(Ratio of overseas sales: 57% in FY2018 → 61% in FY2023)

Net Sales by Business Fields
(Billion yen)



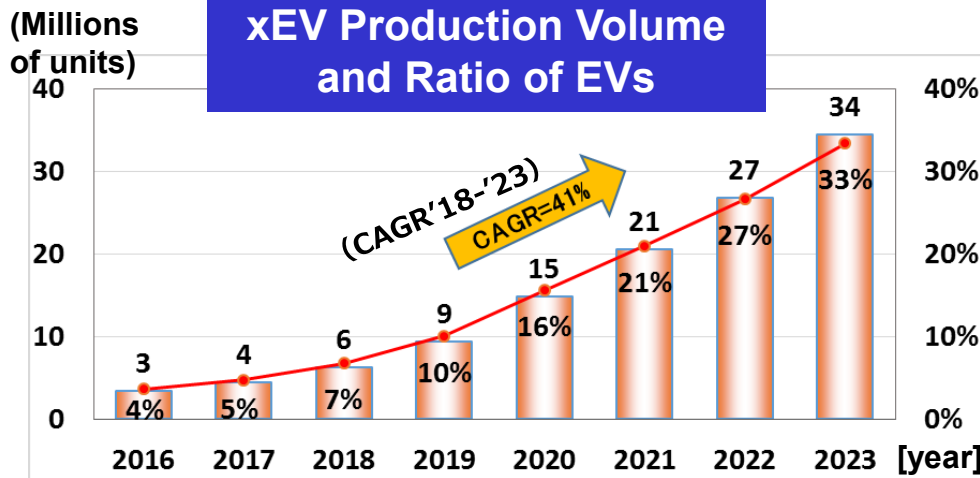
Net sales in Japan / Overseas
(Billion yen)



- **Automotive field: Increase sales of products for EVs**
 - **Bolster product competitiveness through application of RC-IGBTs***
 - **Commence mass production of 4th-generation direct liquid-cooling modules** * Reverse conducting Insulated Gate Bipolar Transistor Modules, combining IGBTs and diodes
- **Industrial field: Increase sales in growth markets**
 - **Grow sales of products for renewable energy applications (large capacity) and for air conditioner market (small capacity)**
 - **Bolster sales of 7th-generation IGBTs**
- **Enhance manufacturing capabilities**
 - **Boost 8-inch wafer production capacity and promote automation and in-house production**
 - **Expand overseas production in back-end processes (assembly)**
- **Create new competitive products**
 - **Accelerate development of products utilizing RC-IGBTs**
 - **Shift resources to automotive field**

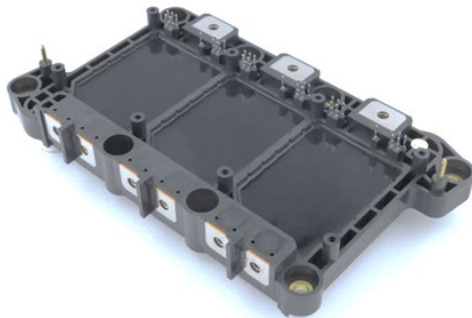
EV Market Trends and Fuji Electric's Initiatives

- Annual market growth rate of 41% projected
- Differentiation to be pursued with 4th-generation direct liquid-cooling modules and RC-IGBTs

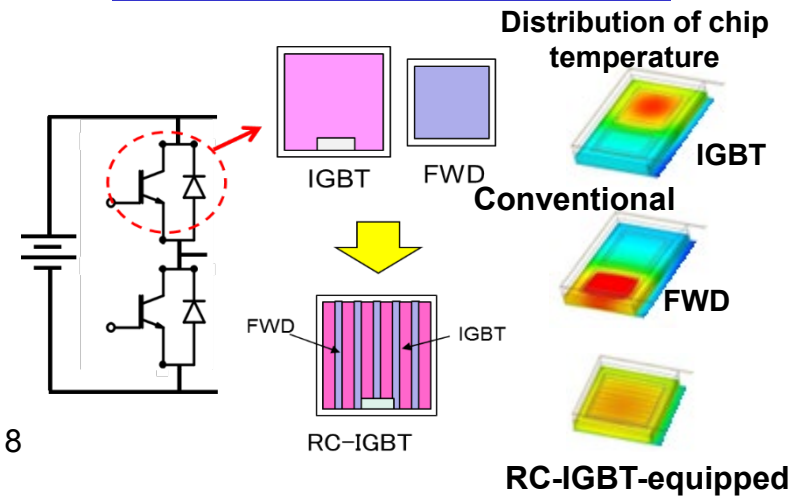


Source: IHS2018

4th-generation direct liquid-cooling module



RC-IGBT



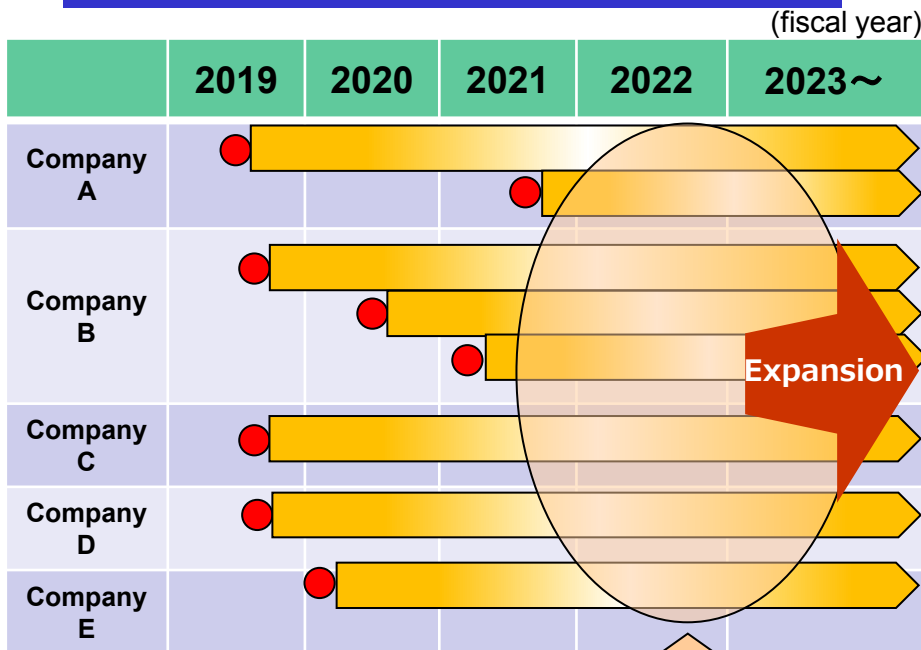
Benefits of utilizing RC-IGBTs:

- **Chip mounting area: 25% reduction*** (miniaturization)
- **Chip heat generation: 33% reduction*** (increased reliability)

* Comparison between IGBT+FWD and RC-IGBT under theoretical conditions

- Expand of sales with new IGBT product
- Grow sales of products for automotive applications to represent 50% of all semiconductor sales

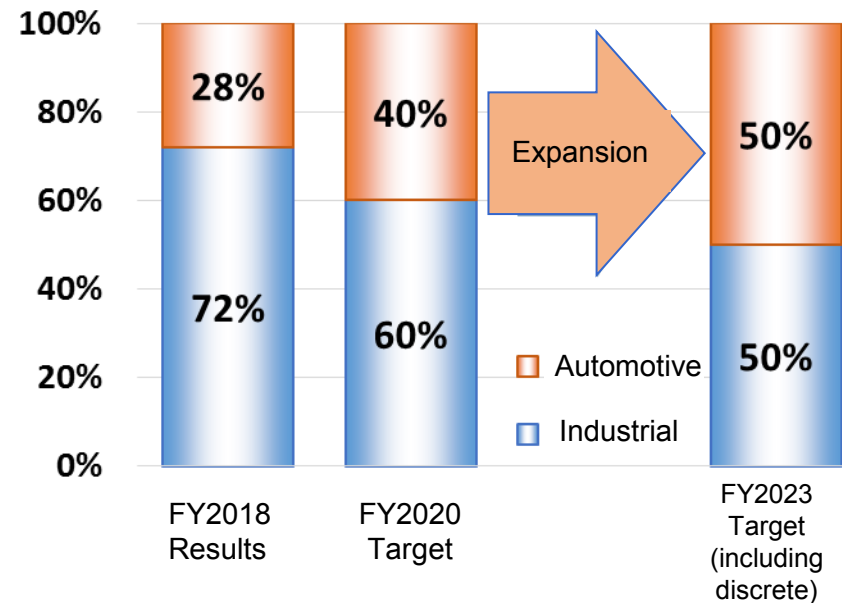
Plan for Growing Sales of New Automotive IGBT Products



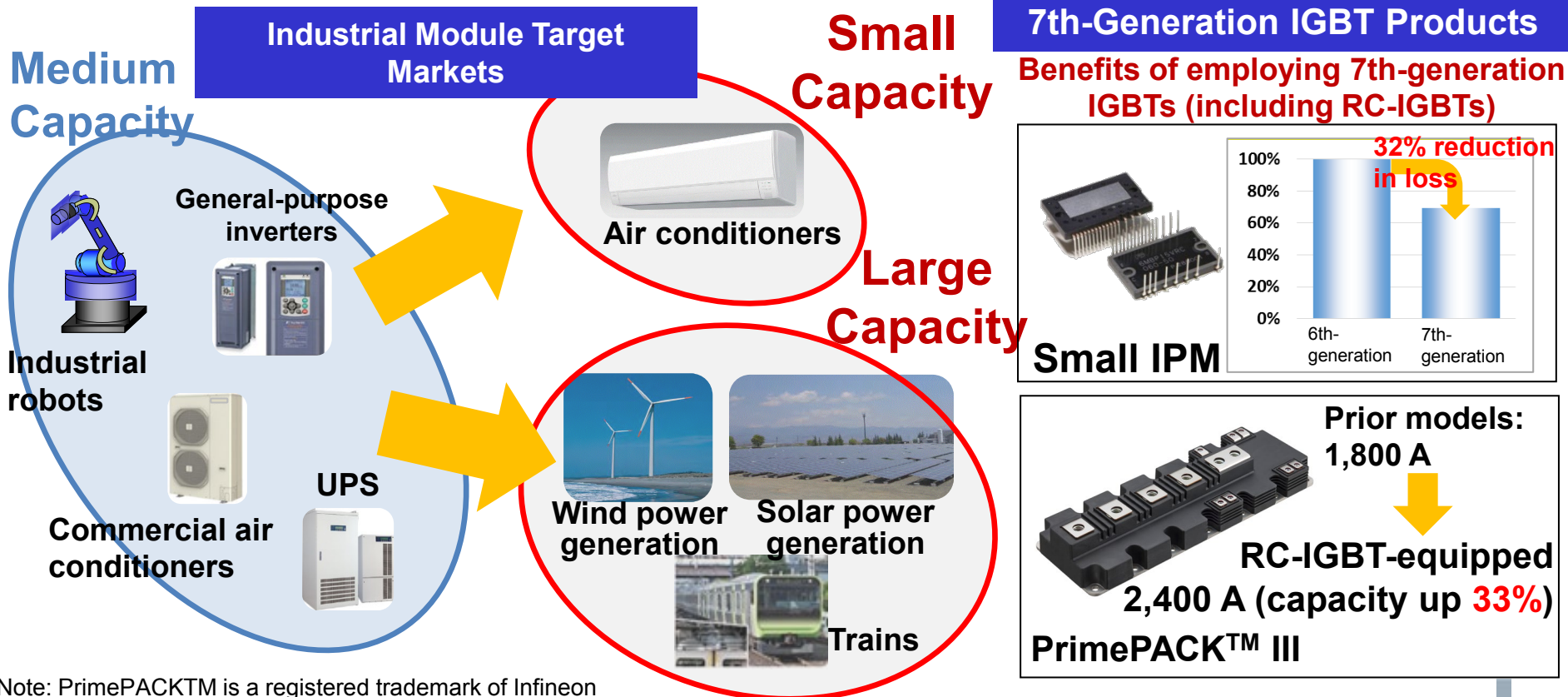
● Commencement of mass production

Systematic introduction of new products

Ratio of Sales from Products for Automotive Applications



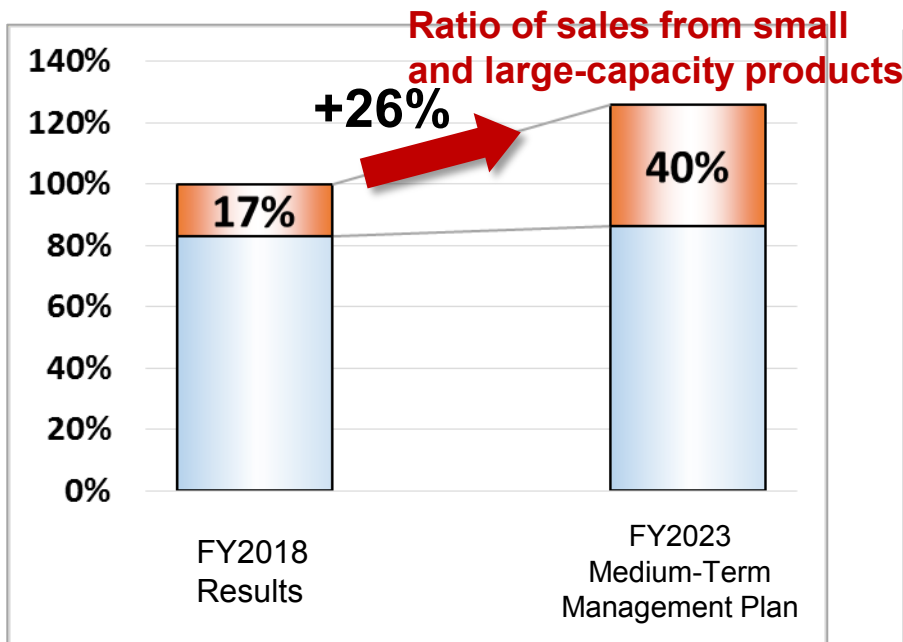
- Work to have proposed specifications accepted by utilizing 7th-generation IGBTs (low loss, high efficiency) and RC-IGBTs (miniaturization, high reliability)
- Develop series of large-scale package offerings employing 7th-generation IGBTs for air conditioner market
- Employ RC-IGBTs for the renewable energy market and introduce additional proprietary Fuji Electric products with large capacities



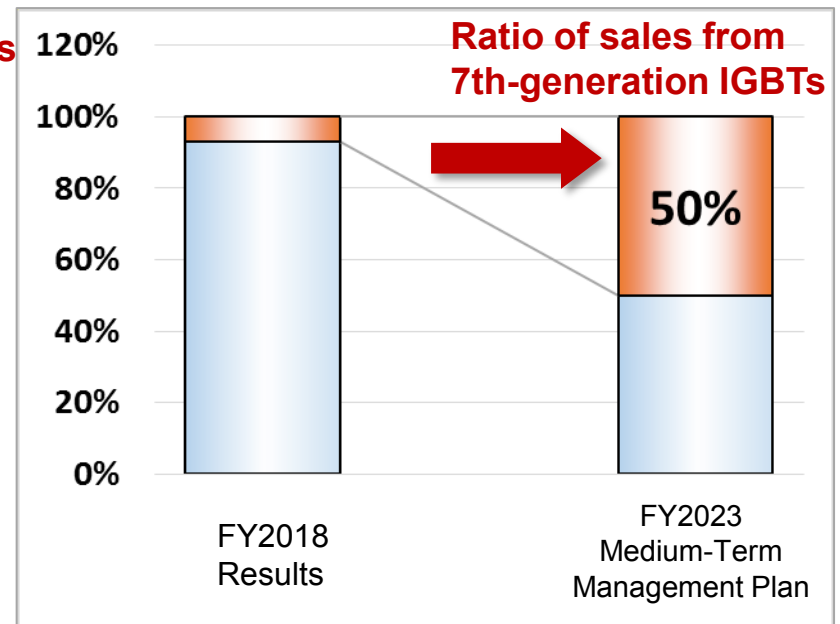
Industrial Module Sales Targets

- Achieve 26% increase in industrial module sales from FY2018 (FY2023)
- Raise sales of small- and large-capacity products to represent 40% of total sales (FY2023)
- Increase sales of 7th-generation IGBTs to represent 50% of total sales (FY2023)

Industrial Module Sales Plan



7th-Generation IGBT Sales Plan

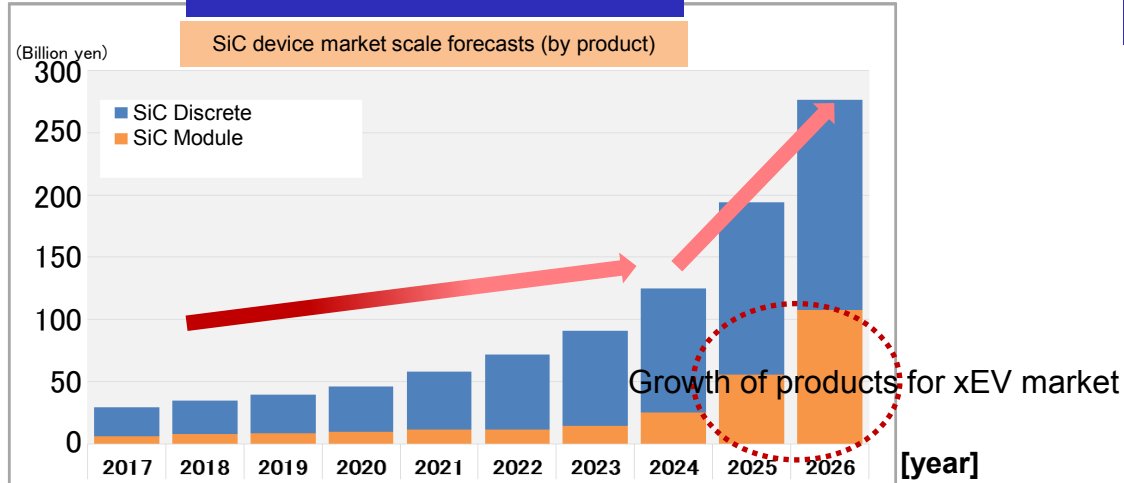


* Ratios of sales from small and large-capacity products are calculated using FY2018 as the base year.

SiC Development

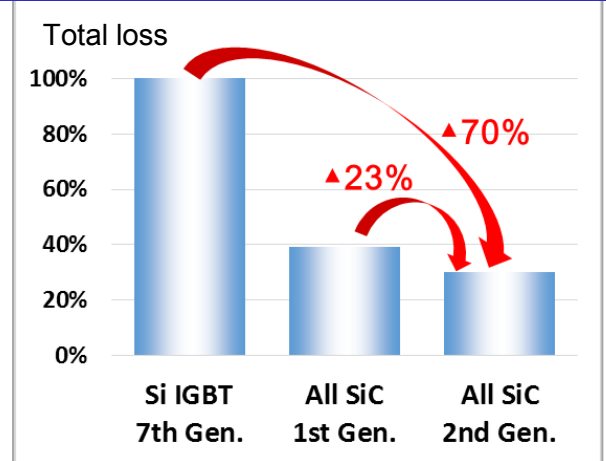
- Introduce additional package series matched to applications
- Expand sales with 2nd-generation trench MOSFETs (featuring 23% less loss than 1st generation)

Market Trends



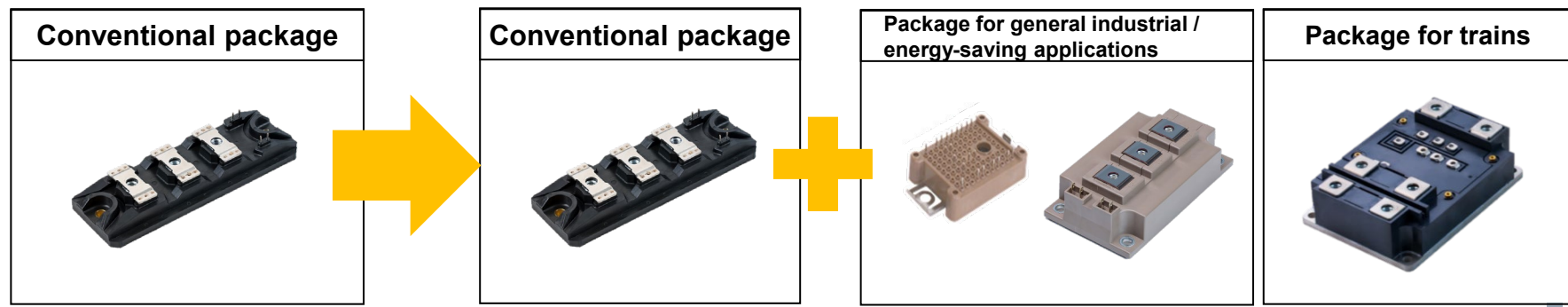
Source: Fuji Electric's projections based on IHS 2018

Performance of 2nd-Generation Trench MOSFETs

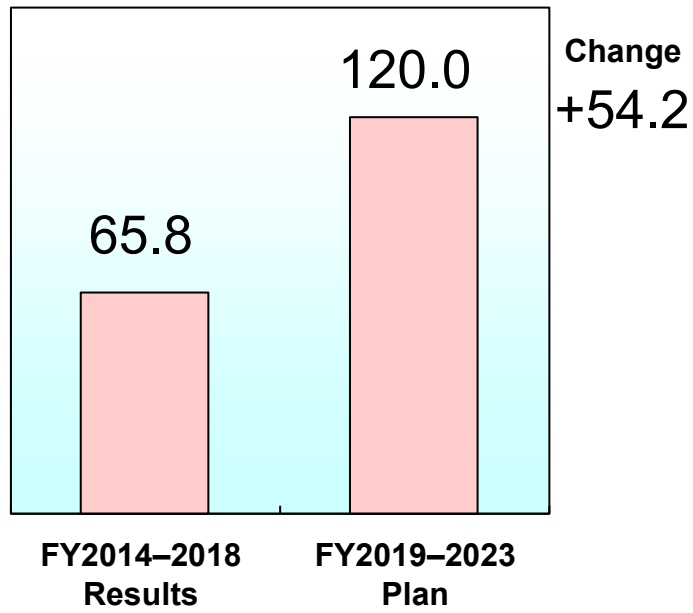


Note: Calculation based on use of 15 kW inverter

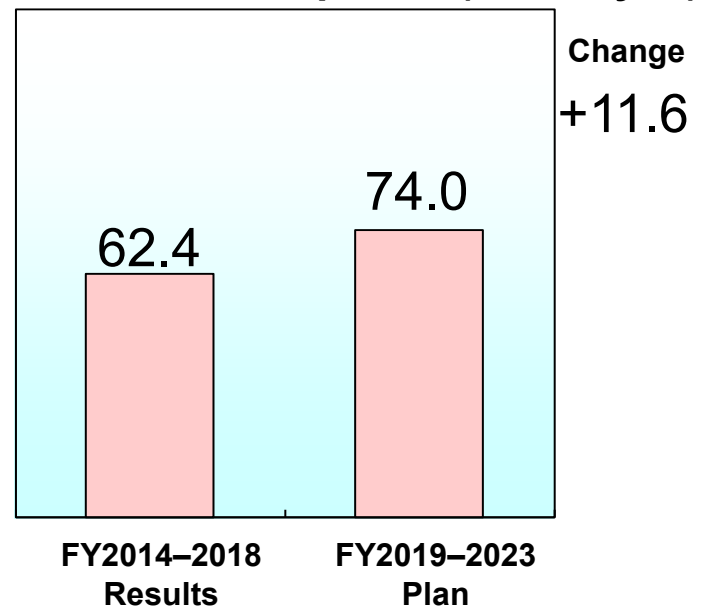
Application-Specific Packages



Capital Investment (Billion yen)



Research and Development (Billion yen)



Semiconductors

- Rationalization and production capacity increases
 - Front-end: Expansion of 8-inch wafer production (3 times higher than in 2018)
 - Back-end: Automotive IGBTs, discrete devices, and industrial IGBTs (large capacity, air conditioners)
- Expansion of overseas production

Semiconductors

- Automotive IGBTs and discrete devices
- Expansion of 7th-generation IGBT series
- Development of 8th-generation IGBT technologies
- SiC devices and modules

Note: R&D expenditure figures above represent expenditures that have been allocated to segments based on theme and may therefore differ from figures contained in consolidated financial reports.

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