JSMC Vision

October 31, 2023

JSMC Vision

In the 28-55nm range, where high demand is expected to continue, we strive to improve Japan's semiconductor competitiveness through JSMC's unique initiatives in supply chain, IP, and human resources.

[1. Supply Chain]
Prioritizing Japanese semiconductor IC production infrastructure and constructing a supply chain .
Ensuring a stable supply of specialty semiconductors.

- Target process node and production capacity
- Competitive customize process

[2. Business]
Target automotive and industrial, which are the main markets in Japan.
Target AI and communications, which are growth markets.

- Customize process for automotive and industrial
- Lineup WoW for Edge AI

JSMC Vision

[3. IP]
Developing and collaborating with Japanese customers research institutes for advanced integration package technology.

- IP developed by JSMC is owned by JSMC
- 3D stacking technology development (logic + memory)
- Semiconductor advanced process technology development (advanced process such as below 28nm)

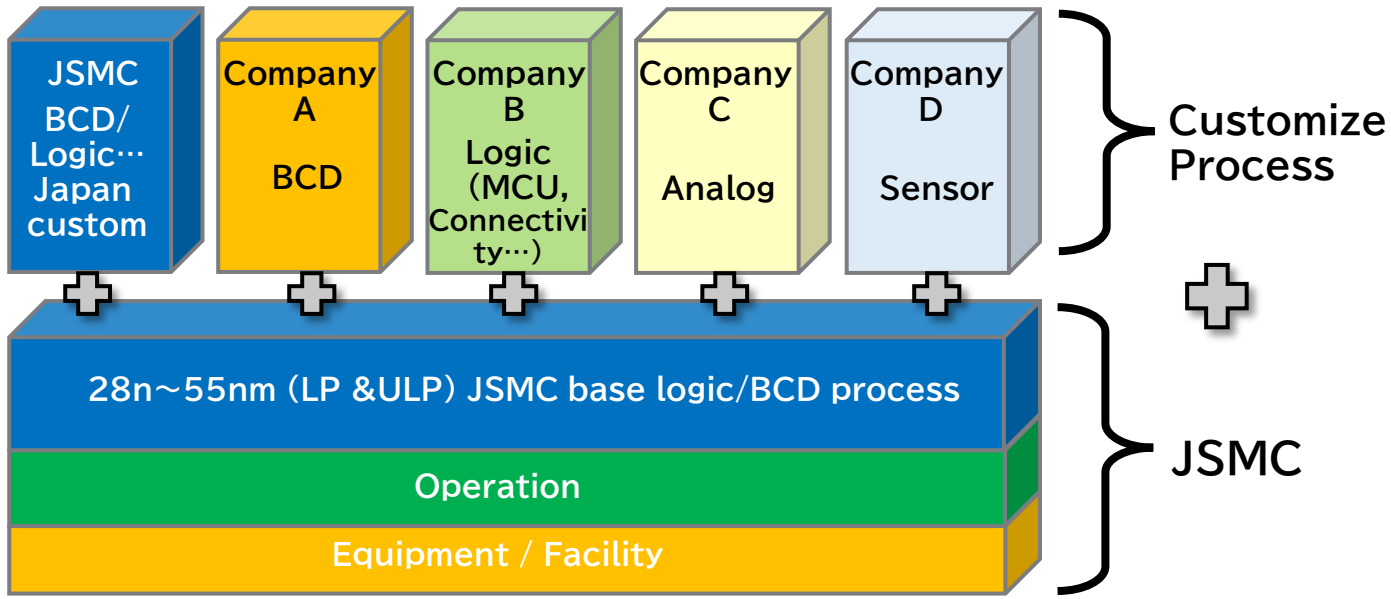
[4. Human resource]
Promoting the development of human resources in Japan’s semiconductor industry and Design House supporting.

- Human resource development program
- Design House supporting
- Semiconductor Academy

1. Supply Chain and Stability

Establishing 28-55nm process lines, which are in short supply in Japan, and combining it with JSMC's customize process to contribute to the stable supply of semiconductors in Japan.
Monthly output of 40,000 Wafers

JSMC Customize Process



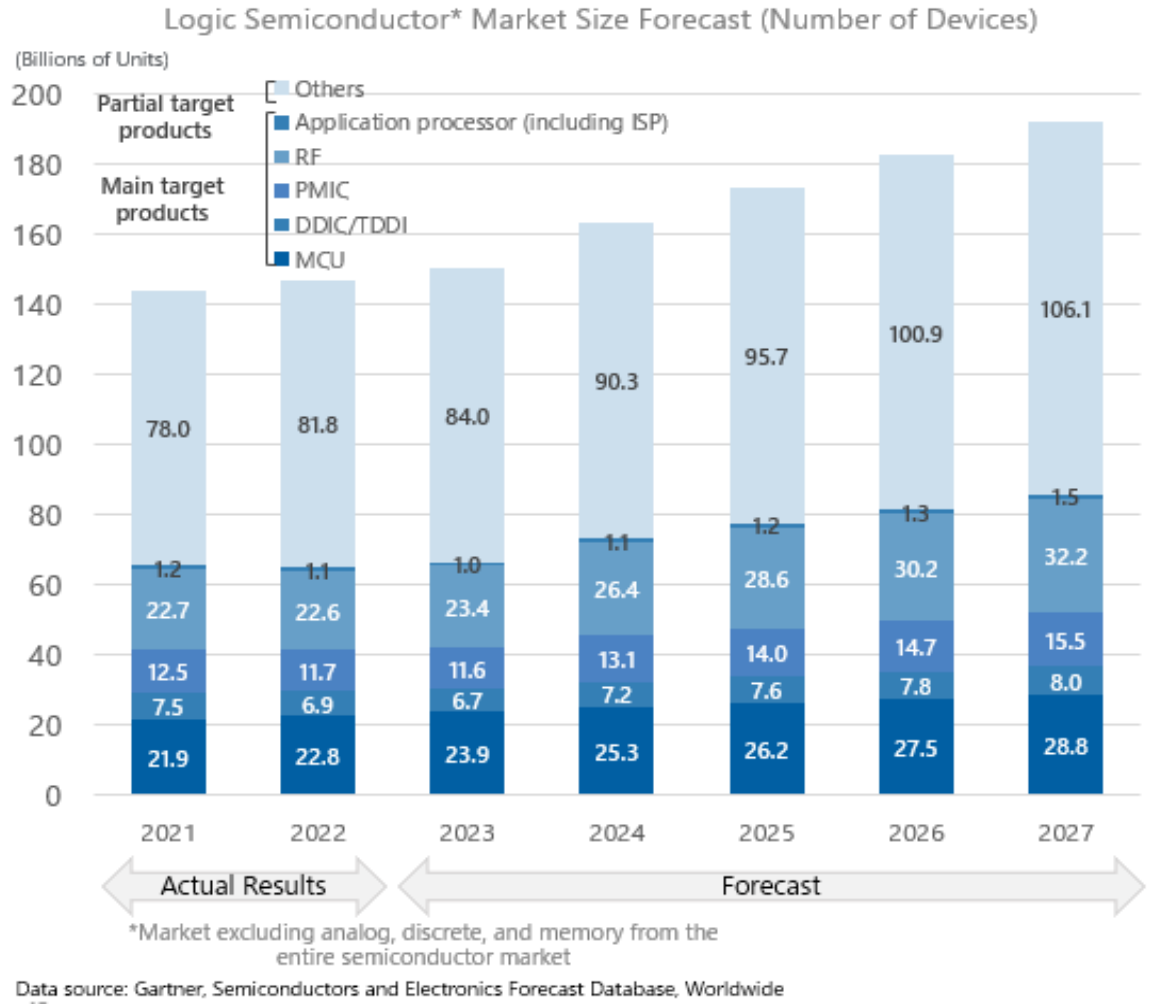
Benefits of Custom Process

Customizability	■ Users can customize and optimize products by adding their own elements based on the JSMC process
Speed& Cost	■ By utilizing JSMC's base process, it can achieve development in a short period of time and at a low cost

Put the highest priority to Japanese customers (IDM, fabless, etc.) by utilizing the above process

2. Target Business (1/2)

The logic semiconductor market is forecasted to expand over the medium to long term; among these, stable demand is expected for the main products being manufactured



Data source: Gartner, Semiconductors and Electronics Forecast Database, Worldwide

Logic Semiconductor Market Overview

- Due to the demand for electric vehicles, and communications infrastructure, the logic semiconductor market is expected to grow over the medium to long term
- The market size of the main target products manufactured by the JSMC is expected to expand in the future, and the stable demand remains

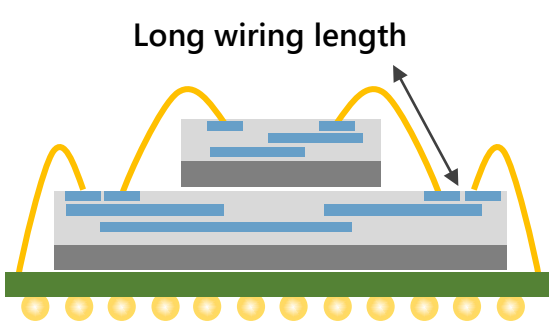
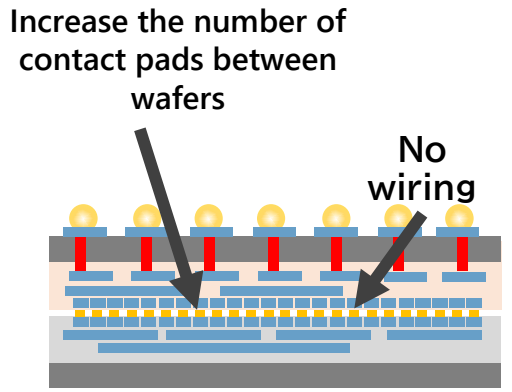
2. Target Business (2/2)

JSMC's main target is logic semiconductors, with plans to manufacture MCU and PMIC for automotive and industrial, and AI using WoW technology

Product type	Main product usage	Production line			
		L55	L40	L28	WoW
MCU (Micro Controller Unit)	Automotive microcontroller	●	●	●	–
PMIC (Power management IC)	Power management IC. Mainly for automotive use	●	–	–	–
Communication RF	Wireless transmitter and receiver for 5G/6G communications	●	–	●	–
ISP (Image Signal Processor)	Image signal processor for cameras	–	●	●	●
AI semiconductor	AI semiconductor which combines AI Accelerator and Memory	–	–	●	●

3. IP (3D Stacking WoW) (1/2)

WoW which is a technology by bonding wafers together that is to be introduced at JSMC can reduce memory interface power consumption to 1/10 and achieve excellent performance with about 10 times faster transmission speed, and is expected to be a green semiconductor with high energy efficiency

Characteristics of WoW	Description	Image of conventional technology	Image of WoW technology
Low power consumption	■ **WoW is not necessary to require wiring** ⇒ Memory interface power consumption can be reduced to 1/10 compared with HBM	 Wire bonding	 WoW (hybrid bonding)
High-speed transmission	■ **Increase the number of contacts through pads** ⇒ Possible to achieve more than 10 times the speed of HBM in terms of data transmission per unit memory		

- ✓ WoW's wafer is available in three combinations: logic + logic, logic + memory, and memory + memory
- ✓ Logic wafers can be provided by other foundry customers

3. IP (3D Stacking WoW) (2/2)

WoW technology, which can achieve higher computing performance and lower memory interface power consumption than conventional devices is expected to have broad applications, especially in fields like automotive, AI and chatbots (generative AI).

·Edge AI	·Learning/Reasoning	·Extension of operating hours	·Lower power consumption	· Parallelization of memory operations

Drones

Smart Glasses

Automotive AI

6 G

Supercomputer

Mining

Chatbot (Generative AI)

● JSMC Proposal

- ✓ Increase contact pads between wafers using WoW → Reduce Process Costs
  Improve data transfer rate
- ✓ Provide Customize Memory such as DRAM、FLASH、SRAM → Support by PSMC Group
- ✓ Optimal proposals can be made from many WoW methods → In the process of developing optimal process
- ✓ Provide optimal cooperative design standards → Foundries for both logic and memory(PSMC)
  for logic and DRAM solution to WoW
- ✓ Proposals for 3D DRAM solution → Reduce memory development costs

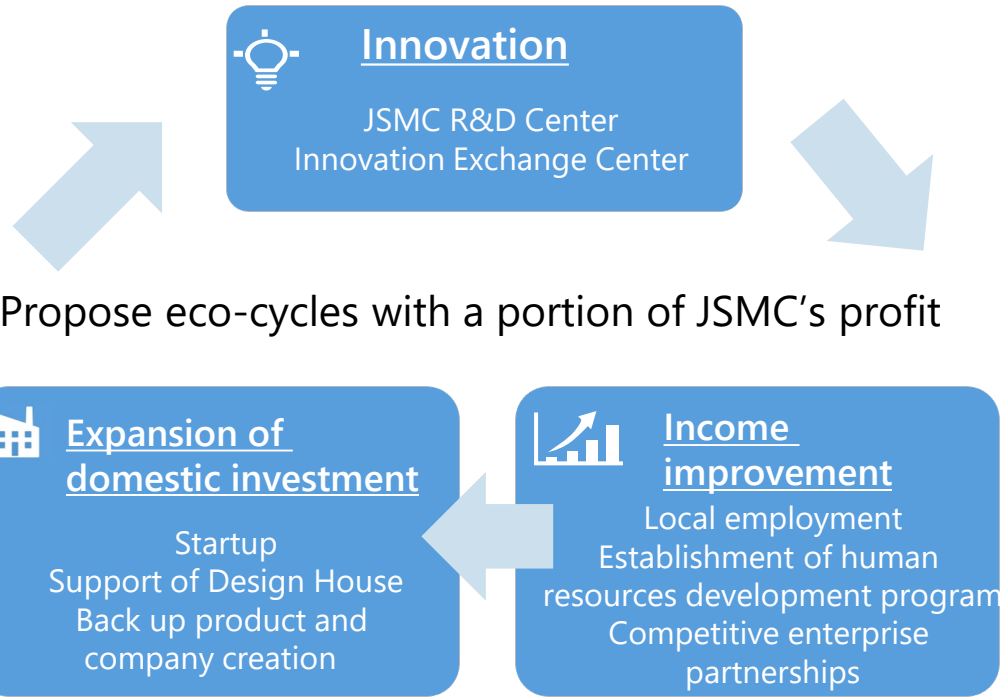
4. Human Resources

By supporting the development of human resources in the semiconductor field and the establishment of Design Houses in Japan, we contribute to fostering a virtuous cycle in which innovation is nurtured in the domestic semiconductor industry in Japan and business is thereby expanded.

Initiatives related to Human Resources Development

1. 200-250 experienced employees from Taiwan come to Japan, providing immediate manpower and training newcomers.
2. Recruit Japanese engineers and provide 6 months to 1-year technical training at PSMC Taiwan
3. Recruit Japanese people experienced in the semiconductor field from abroad
4. Support startup design houses to motivate entrepreneurship and reach mutual growth
5. Cooperate with government, corporations, and universities and establish a human resources development program

Virtuous cycle in the Semiconductor Industry



Thank you