Supply Chain Explorer

By the Emerging Technology Observatory

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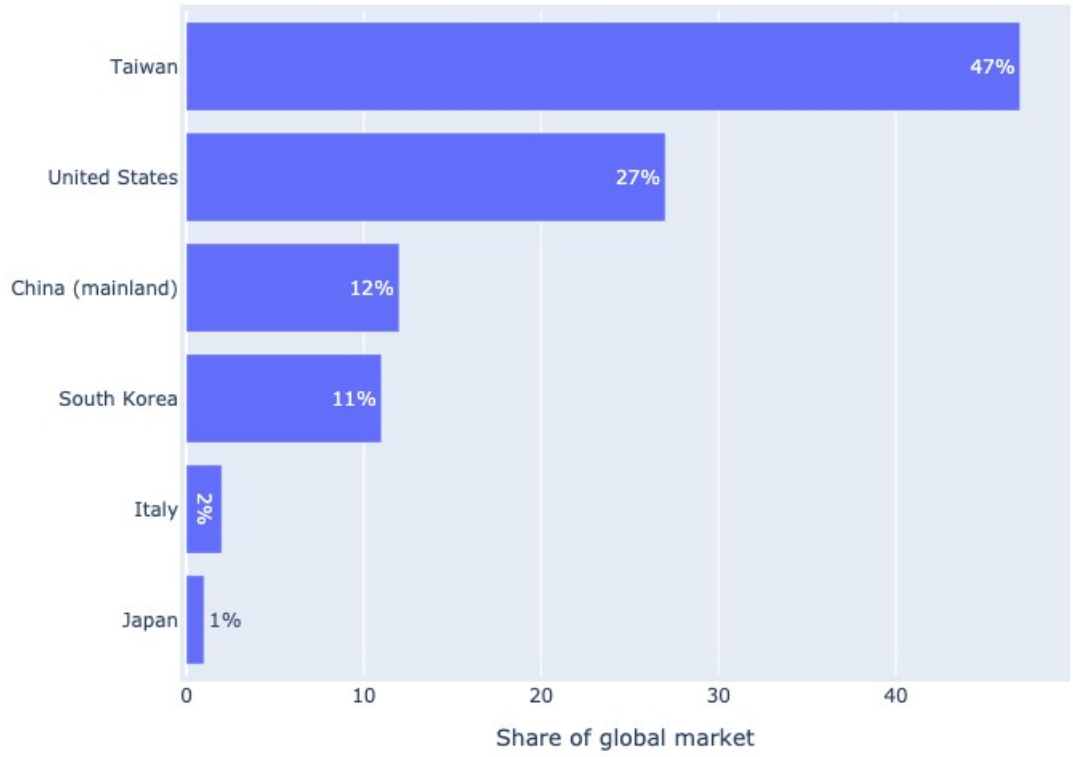
Fabrication

Fabrication turns designs into chips. Semiconductor fabrication facilities ("fabs,") make chips in these wafers in two steps: forming transistors and other electrical devices in material layers within silicon wafers; and forming metal interconnects between the electrical devices in insulating layers above the silicon.

There are two business models for fabs: (1) fabs owned by integrated device manufacturers ("IDMs"), which manufacture chips based on their own designs; and (2) foundries, i.e., fabs operating independently and manufacturing chips for third-party customers. Firms headquartered in the United States, Taiwan, South Korea, Japan, and China control the vast majority of the world's fab market share and fab capacity-most of which is also physically located in these countries. Three firms - headquartered in the United States (Intel), Taiwan (TSMC), and South Korea (Samsung) - control virtually all of the world's advanced logic fab capacity, with the most cutting-edge fabs concentrated in Taiwan and South Korea.

Country provision



Notable supplier companies

- GlobalFoundries - United States
- Hua Hong - China (mainland)
- Intel - United States
- Kioxia - Japan
- Microchip - United States
- NXP - Netherlands
- Powerchip - Taiwan

- Renesas (negligible market share) - Japan
- SMIC - China (mainland)
- STMicroelectronics - Switzerland
- Samsung - South Korea
- TSMC - Taiwan
- UMC - Taiwan