

# Supply Chain Explorer

By the Emerging Technology Observatory

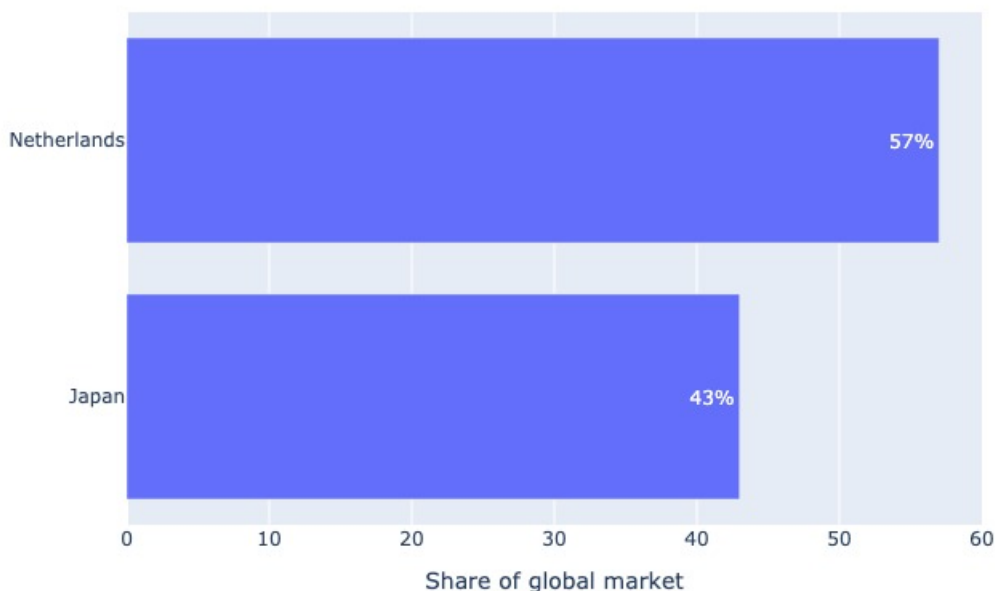
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## ArF scanners

Photolithography scanners use ultraviolet light to draw intricate, nanoscale patterns into semiconductor wafers, creating the billions of tiny circuits contained in a single advanced logic chip. Argon fluoride (ArF) scanners and argon fluoride immersion scanners refract 193 nm ultraviolet light through a photomask, transferring that pattern to a photoresist chemical applied as a layer on the chip. The light dissolves parts of the photoresist in the circuit pattern. The newly created photoresist pattern is etched into a permanent chip substrate below the photoresist. Throughout this process, the scanner precisely moves the wafer and the photomask help build the design.

ArF scanners and ArF immersion scanners are among the most advanced photolithography equipment currently used in mass semiconductor production, second only to EUV scanners. EUV and ArF immersion scanners are the only lithography tools capable of mass-producing chips at near-cutting edge scale (the absolute cutting edge requires EUV). Only the Dutch firm ASML and the Japanese firm Nikon produce ArF scanners or ArF immersion scanners capable of mass production.

### Country provision



### Notable supplier companies

- ASML - Netherlands
- Nikon - Japan
- SMEE (negligible market share) - China (mainland)