Moore's law

**Moore's law** is the observation that [the number](https://en.wikipedia.org/wiki/Transistor_count) of [transistors](https://en.wikipedia.org/wiki/Transistor) in a dense [integrated circuit](https://en.wikipedia.org/wiki/Integrated_circuit) (IC) doubles about every two years. Moore's law is an [observation](https://en.wikipedia.org/wiki/Observation) and [projection](https://en.wikipedia.org/wiki/Forecasting) of a historical trend. Rather than a [law of physics](https://en.wikipedia.org/wiki/Physical_law), it is an [empirical relationship](https://en.wikipedia.org/wiki/Empirical_relationship) linked to [gains from experience](https://en.wikipedia.org/wiki/Wright's_Law) in production.

The observation is named after [Gordon Moore](https://en.wikipedia.org/wiki/Gordon_Moore), the co-founder of [Fairchild Semiconductor](https://en.wikipedia.org/wiki/Fairchild_Semiconductor) and [Intel](https://en.wikipedia.org/wiki/Intel) (and former CEO of the latter), who in 1965 posited a [doubling every year](https://en.wikipedia.org/wiki/Exponential_growth) in the number of components per integrated circuit,[[a]](https://en.wikipedia.org/wiki/Moore's_law" \l "cite_note-2) and projected this rate of growth would continue for at least another decade. In 1975, looking forward to the next decade, he revised the forecast to doubling every two years, a [compound annual growth rate](https://en.wikipedia.org/wiki/Compound_annual_growth_rate) (CAGR) of 41%. While Moore did not use empirical evidence in forecasting that the historical trend would continue, his prediction held since 1975 and has since become known as a "law."

Moore's prediction has been used in the [semiconductor industry](https://en.wikipedia.org/wiki/Semiconductor_industry) to guide long-term planning and to set targets for [research and development](https://en.wikipedia.org/wiki/Research_and_development), thus functioning to some extent as a [self-fulfilling prophecy](https://en.wikipedia.org/wiki/Self-fulfilling_prophecy). Advancements in [digital electronics](https://en.wikipedia.org/wiki/Digital_electronics), such as the reduction in [quality-adjusted](https://en.wikipedia.org/wiki/Price_index" \l "Quality_change) [microprocessor](https://en.wikipedia.org/wiki/Microprocessor) prices, the increase in [memory capacity](https://en.wikipedia.org/wiki/Computer_memory) ([RAM](https://en.wikipedia.org/wiki/Random-access_memory) and [flash](https://en.wikipedia.org/wiki/Flash_memory)), the improvement of [sensors](https://en.wikipedia.org/wiki/Digital_sensor), and even the number and size of [pixels](https://en.wikipedia.org/wiki/Pixel) in [digital cameras](https://en.wikipedia.org/wiki/Digital_camera), are strongly linked to Moore's law. These step changes in digital electronics have been a driving force of technological and social change, [productivity](https://en.wikipedia.org/wiki/Productivity), and economic growth.

Industry experts have not reached a consensus on exactly when Moore's law will cease to apply. Microprocessor architects report that semiconductor advancement has slowed industry-wide since around 2010, below the pace predicted by Moore's law. However, as of 2018, leading semiconductor manufacturers have developed [IC fabrication processes](https://en.wikipedia.org/wiki/Semiconductor_device_fabrication) in mass production which are claimed to keep pace with Moore's law.