

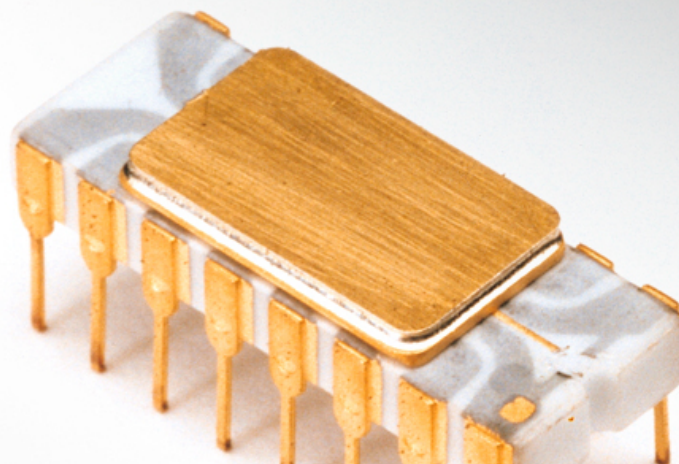
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The Story of the Intel® 4004

Tagged As [Intel Museum](#), [History](#)

Intel's First Microprocessor

Its invention, introduction, and lasting influence



1969: The assignment

In 1969, Nippon Calculating Machine Corporation approached Intel to design 12 custom chips for its new Busicom 141-PF printing calculator. Intel engineers suggested a family of just four chips, including one that could be programmed for use in a variety of products, setting in motion an engineering feat that dramatically altered the course of electronics.

The Intel solution

Intel designed a set of four chips known as the MCS-4. It included a central processing unit (CPU) chip—the 4004—as well as a supporting read-only memory (ROM) chip for the custom applications programs, a random-access memory (RAM) chip for processing data, and a shift-register chip for the input/output (I/O) port.

1971: Era of integrated electronics

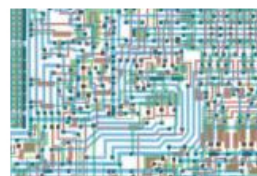
Intel purchased the rights from Nippon Calculating Machine Corporation and launched the Intel® 4004 processor and its chipset with an advertisement in the November 15, 1971 issue of Electronic News "Announcing A New Era In Integrated Electronics."

That's when the Intel® 4004 became the first general-purpose programmable processor on the market—a "building block" that engineers could purchase and then customize with software to perform different functions in a wide variety of electronic devices.

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Powerfully small, even in 1971

This revolutionary microprocessor, the size of a little fingernail, delivered the same computing power as the first electronic computer built in 1946, which filled an entire room.



Initial transistor count

In 1971, the Intel 4004 processor held 2,300 transistors. By 2010, an Intel® Core™ processor with a 32nm processing die and second-generation high-k metal gate silicon technology held 560 million transistors.

Early manufacturing

The first Intel 4004 microprocessor was produced on two-inch wafers compared to the 12-inch wafers commonly used for today's products. The Intel 4004 microprocessor is unique in that it is one of the smallest microprocessor designs that ever went into commercial production.



Slimmer than a human hair

The Intel 4004 microprocessor circuit line width was 10 microns, or 10,000 nanometers. Today, the circuit features of Intel microprocessors range between 45 and 32 nanometers. By comparison, an average human hair is 100,000 nanometers wide.

Explore other online exhibits

If you can't make it to the [Intel Museum](#), you can still enjoy a tour of Intel history with these online versions of the exhibits.





Robert Noyce

Intel's co-founder and the co-inventor of the integrated circuit, he made numerous contributions to the advancement of technology.

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Moore's Law

Four decades ago, Intel's co-founder Gordon Moore made a bold prediction that has set the pace for ongoing innovation ever since.

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Making silicon chips

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Videos



Robert Noyce: The Man Behind the Microchip

Biography and historical still collection of Robert Noyce, inventor of the first practical microchip.



Inside the Intel Museum: New Exhibits

Museum staff and visitors describe their favorite new interactive exhibits at the Intel Museum.



Intel Celebrates 40 Years of Impacting the World

A driving force behind the global technology revolution, Intel shapes the future today. (9:33)

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Biography and historical still collection of Robert Noyce, inventor of the first practical microchip.



Moore's Law Fun Facts

Factsheet describes Moore's Law and illustrates how transistor size and structure change over time.
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