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# 1971
# 4-bit microprocessor (Intel, U.S.A.)
## ~ Integrated Circuit ~

The development of the world's first commercially available microprocessor was set in motion in 1969, when Intel received an order from Nippon Calculating Machine Corporation (commonly known as Busicom), a Japanese calculator manufacturer, to design and manufacture LSIs for calculators. Through discussions in the joint Intel and Busicom engineering team, the original concept of various specialized LSI systems corresponding to each calculator model evolved into a more versatile LSI chipset on the basis of a general-purpose CPU architecture. The Intel 4004 was developed as the CPU for this chipset, becoming the world's first general-purpose microprocessor.

The LSI chipset consisted of four chips: the 4004 as the CPU, the 4003 for input/output expansion, the 4002 for RAM and output ports, and the 4001 for ROM and I/O ports. The 4004 CPU contained approximately 2,300 transistors and was developed and manufactured using a 10-μm P-channel MOS (PMOS) silicon-gate process.

Subsequently, the contractual agreement between Intel and Busicom concerning the 4004 chipset was revised, enabling Intel to market the chipset broadly across all the fields throughout the world. This commercial release of the 4004 chipset by Intel prompted other semiconductor companies to begin developing and commercializing versatile semiconductor microprocessor products. These semiconductor microprocessors spread into a wide range of application fields, where numerous microcomputer-based products were developed and commercialized. Semiconductor microprocessors consequently became an important and rapidly growing product category, both within the semiconductor industries and across the many fields in which they were applicable.

In 1997, the Kyoto Prize, an international award established in 1984 by Kazuo Inamori, the founder of Kyocera, was awarded in recognition of contributions to the development of this remarkable technology. The four recipients were Federico Faggin, Edward (Ted) Hoff, Stanley Mazor, and Masatoshi Shima, all of whom had been involved in the development of the 4004.

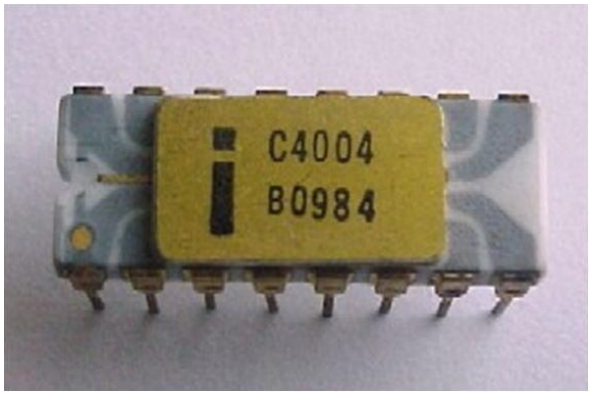


Fig.1 The world’s first 4-bit microprocessor, 4004, by Intel
(By courtesy of Intel)

Fig.2　4001: ROM, 4002:RAM and Registers, 4003: Input/Output Control
(By courtesy of Chip Museum)

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【References】

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