AccessionIndex: TCD-SCSS-T.20250918.001
Accession Date: 18-Sep-2025
Accession By: Dr.Brian Coghlan and Erturk Kocalar
Object name: Intel 8008 microprocessor
Vintage: 1972
Synopsis: Intel's first and very early 8-bit microprocessor.

Description:
The Intel 8008 [1] is one of the earliest microprocessors, and Intel's first 8-bit microprocessor. Its design had a very convoluted history [2][3][4][5]. *Computer Terminal Corporation* (*CTC*) proposed the architecture as a single-chip replacement of the logic of their *Datapoint 3300* desktop calculator, and approached Intel, where Stan Mazor suggested a single-chip 8-bit microprocessor instead. Although not enthusiastic, Intel contracted in early 1970 to make the *Intel 1201*, with Texas Instruments for a second source *TMX1795*. Intel's samples were delayed, and T.I.'s were rejected, so CTC reverted to discrete logic for their *Datapoint 2200*, and halted the 1201 contract with Intel. Then in 1971, after interest from Seiko, Federico Faggin, the designer of the 4004, became the 1201 project leader, supervising Hal Feeney, and after some redesign the new 1201 was completed in late 1971. As happened with Intel's 4004 contract with Busicom, CTC gave the 1201 intellectual property to Intel in exchange for waving the contract fees due to Intel. Intel then renamed it the 8008, an 8-bit echo of the 4-bit 4004.

The 8008 used 3,500 transistor in 10μm silicon-gate enhancement-mode pMOS logic. The early 8008 ran at 500kHz (the later 8008-1 at 800kHz), and while instructions executed slower, applications ran faster than on the 4-bit 4004. Intel had a policy of using small packages, so chose to multiplex address and data for both the 16-pin 4004 and 18-pin 8008, meaning even a simple 8008 memory interface needed about 30 external logic chips (the 4004 had its 4003 memory chip, whereas the next generation, the 8080, overcame this disadvantage by using a 40-pin package, but was not binary compatible with the 8008, while the next generation again, the 8086, was a non-strict extension of the 8080). Another disadvantage was that when an interrupt was signaled on the INT pin, there was no way to save the 8008 state; again external hardware was needed. Nonetheless it became a successful product, and, much more importantly, the philosophical foundation of the hugely successful *x86* family that has powered and still does power a large proportion of personal computers (PCs), laptop derivatives, and computer-centre and datacenter servers.

Many thanks to Brian Coghlan and Erturk Kocalar for donating these items.

The homepage for this catalog is at: https://www.scss.tcd.ie/SCSSTreasuresCatalog/
Click *'Accession Index'* (1st column listed) for related folder, or *'About'* for further guidance.
Some of the items below may be more properly part of other categories of this catalog,
but are listed here for convenience.

Accession Index	Object with Identification
TCD-SCSS-T.20250918.001	Intel 8008 microprocessor. Intel's first and very early 8-bit microprocessor.
TCD-SCSS-T.20250918.001.01	Intel D8008 microprocessor [Erturk Kocalar].
TCD-SCSS-T.20250918.001.02	Intel D8008-1 microprocessor [Brian Coghlan].
TCD-SCSS-T.20250918.002	Arduino shield for Intel 8008. A board that enables execution of software by the 8008, Intel's first and a very early 8-bit microprocessor, S/N: ???, 2025.
TCD-SCSS-T.20250916.001	Intel 4004 microprocessor and associated chips. The first commercially successful microprocessor. 1971.
TCD-SCSS-T.20250918.003	Intel 8080 microprocessor and associated chips. Intel's second and very successful early 8-bit microprocessor. 1972.
TCD-SCSS-T.20250918.004	Intel 8086 microprocessor and associated chips. Intel's very successful early 16-bit microprocessor. 1978.
TCD-SCSS-T.20250918.005	Intel MCS-48 microcontrollers and associated chips. Intel's 8048, 8035 and 8748 microcontroller series. 1976.
TCD-SCSS-T.20250918.006	Intel MCS-48 microcontrollers and associated chips. Intel's 8051, 8052, 8751, 8752, 8031 and 8032 and 8044 microcontroller series. 1980.
TCD-SCSS-T.20250918.007	Zilog Z80 microprocessor and associated chips. Zilog's Z80 superset of the Intel 8080 microprocessor. 1976.
TCD-SCSS-T.20250919.001	Motorola MC14500 microprocessor and associated chips. A very interesting 1-bit microprocessor designed for industrial control applications. 1977.
TCD-SCSS-T.20250919.003	MOS Technology 6500 microprocessor and associated chips. A highly successful early 8-bit microprocessor family. 1975.
TCD-SCSS-T.20250919.005	Motorola 6800 microprocessor and associated chips. An early big-endian 8-bit microprocessor. 1974.
TCD-SCSS-T.20250919.007	Motorola 68000 microprocessor and associated chips. A complex instruction set big-endian 32-bit microprocessor. 1979.
TCD-SCSS-T.20250921.001	Signetics 2650 microprocessor. An early 8-bit microprocessor designed by John Kessler modelled on the IBM 1130. 1975.
TCD-SCSS-T.20250921.003	Signetics 8X300. An early 8-bit microprocessor designed by SMS for signal processing. 1975.
TCD-SCSS-T.20250922.001	Intel C3000 bit-slice chipset. Intel's bipolar microcoded bit-slice processor. 1973.
TCD-SCSS-T.20250922.002	AMD 2900 bit-slice chipset. AMD's very successful bipolar microcoded bit-slice processor. 1975.
TCD-SCSS-T.20250922.003	Monolithic Memories 6700 bit-slice chipset. A bipolar microcoded bit-slice processor. 1974.
TCD-SCSS-T.20251001.001	InMOS Transputers and associated chips. Very interesting parallel processing chips comprising RISC-style stack-

	oriented CPU, memory, 20Mbps serial links and a realtime embedded kernel based on CSP process calculus. 1984.
TCD-SCSS-T.20251002.001	Fairchild resistor-transistor (RTL) chips. First digital logic family to be produced as monolithic integrated circuits.
TCD-SCSS-T.20251002.002	Motorola diode-transistor (DTL) chips. Second generation of monolithic digital logic integrated circuits. 1962.
TCD-SCSS-T.20251002.003	Texas Instruments 7400 series transistor-transistor (TTL) chips. Medium-scale-integration (MSI) logic. 1963.
TCD-SCSS-T.20251002.004	UV-erasable programmable read-only memory (EPROM) chips. Non-volatile memory for software and data storage. 1971.
TCD-SCSS-T.20251002.005	Static random-access memory (SRAM) chips. Memory that does not require regular refresh.
TCD-SCSS-T.20251002.006	Dynamic random-access memory (DRAM) chips. Memory that requires regular refresh. 1970.
TCD-SCSS-T.20251002.007	Miscellaneous digital computer and logic chips. Sundry monolithic digital integrated circuits that are not members of the other chip families in this catalog. 197x.
TCD-SCSS-T.20251002.008	Miscellaneous analog chips. Sundry monolithic and hybrid analog integrated circuits. 197x.
TCD-SCSS-T.20251002.009	Programmable logic chips. PAL, GAL, etc, integrated circuits that provide programmable logic. 1978.
TCD-SCSS-T.20251003.001	Early calculator chips. Integrated circuits for early desktop and hand-held calculators. 1971.
TCD-SCSS-T.20251005.001	Fairchild PPS25 microprocessor and associated chips. Fairchild's first and very early 4-bit microprocessor. 1971.
TCD-SCSS-T.20251005.002	Fairchild F8 microprocessor and associated chips. Fairchild's earliest 8-bit microprocessor. 1975.
TCD-SCSS-T.20251006.001	National Semiconductor's COP microprocessors and associated chips. NatSemi's earliest microprocessors. 197x.
TCD-SCSS-T.20251006.002	National Semiconductor's SC/MP microprocessors. NatSemi's earliest 8-bit microprocessors. 1976.
TCD-SCSS-T.20251006.003	National Semiconductor's 32000 series microprocessors and associated chips. NatSemi's 32-bit microprocessors, the first with virtual memory. 1981.

References:

1. Wikipedia, *Intel 8008*, see:
   https://en.wikipedia.org/wiki/Intel_8008
   Last browsed to on 18-Sep-2025.

2. Roger Arrick, *Interview of Ken Burgett on 1972 interest in 8008*, 10th November, 2017, see:
   https://www.rogerarrick.com/osiris/burgett.txt
   Also: https://treasures.scss.tcd.ie/hardware/TCD-SCSS-T.20250918.001/Interview-KenBurgett-on 1972-interest-in-8008-by-RogerArrick-10Nov2017.pdf
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3. Don Hoefler, *Silicon Valley U.S.A.*, Electronic News, 11th January, 1971, see:
   https://treasures.scss.tcd.ie/hardware/TCD-SCSS-T.20250918.001/SiliconValleyUSA-DonHoefler-11Jan1971-ElectronicNews-102689013-01-05-acc.pdf
   Last browsed to on 18-Sep-2025.

4. Stan Mazor, *The History of the Microcomputer Invention and Evolution*, Vol.83, No.12, Proc.IEEE, December, 1995, see:
   https://treasures.scss.tcd.ie/hardware/TCD-SCSS-T.20250918.001/The-History-of-the-Microcomputer-Invention-and-Evolution-StanMazor-ProcIEEE-Vol83-No12-Dec1995.pdf
   Last browsed to on 18-Sep-2025.

5. David Laws, *Who invented the microprocessor*, Computer History Museum, 16th September, 2025, see:
   https://treasures.scss.tcd.ie/hardware/TCD-SCSS-T.20250918.001/Who-invented-the-microprocessor-DavidLaws-CHM-20250916.pdf
   Last browsed to on 18-Sep-2025.

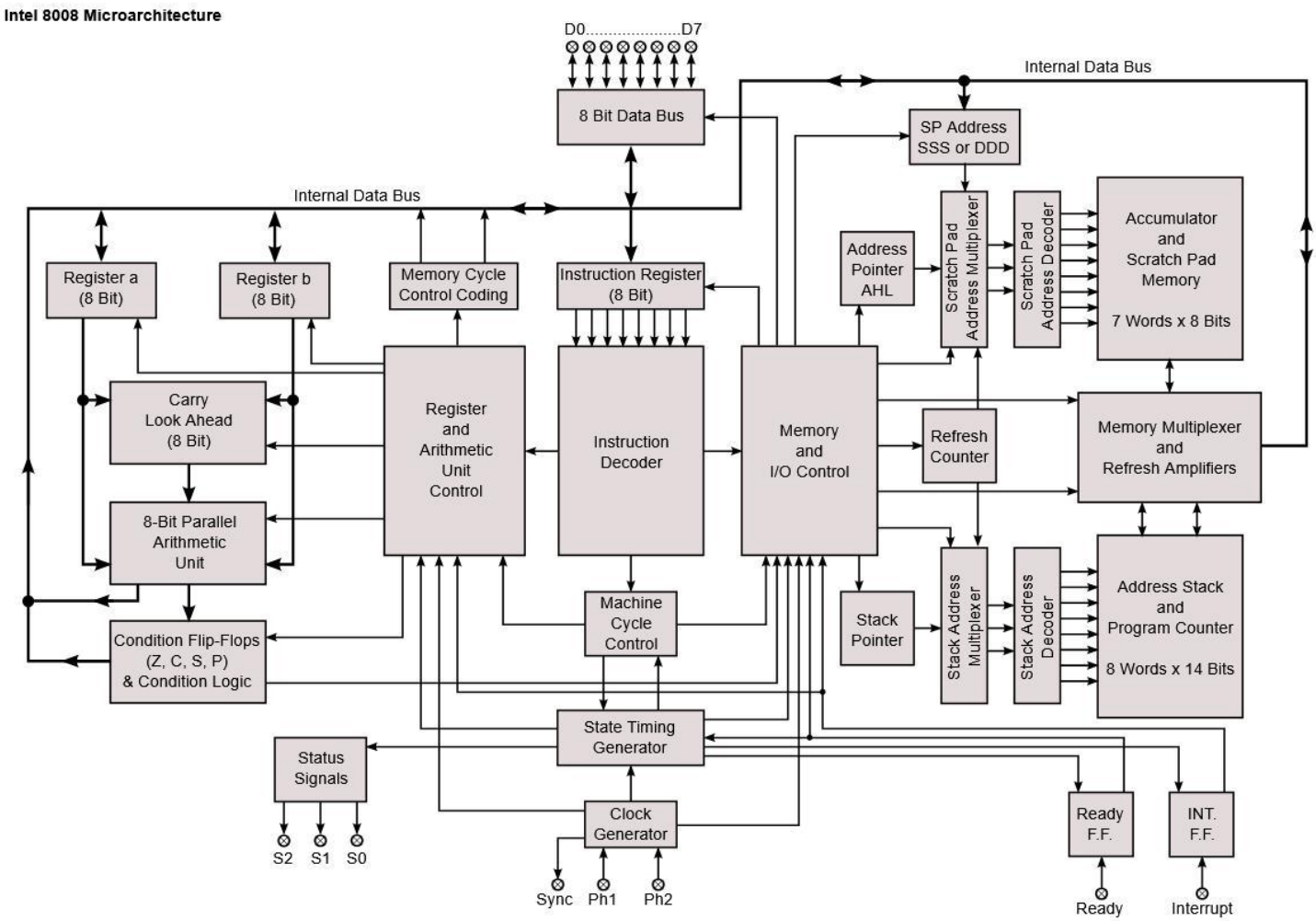

Figure 1: Intel 8008 architecture (from Wikipedia)

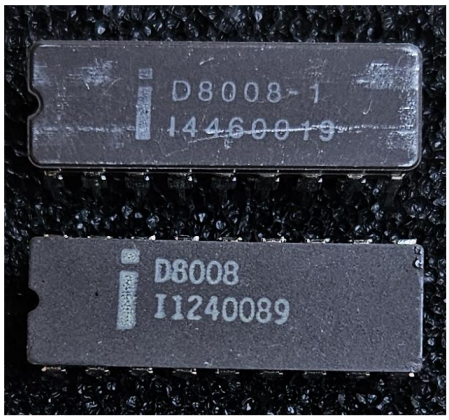

Figure 21: Intel 8008 (500kHz clock) and Intel 8008-1 (800kHz clock)