

16-Bit Microcontrollers--Product Analysis

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16-Bit Microcontrollers--Product Analysis

Table 1

**Estimated Market Share by Product Type
for 16-Bit Microcontrollers
1985-1987**

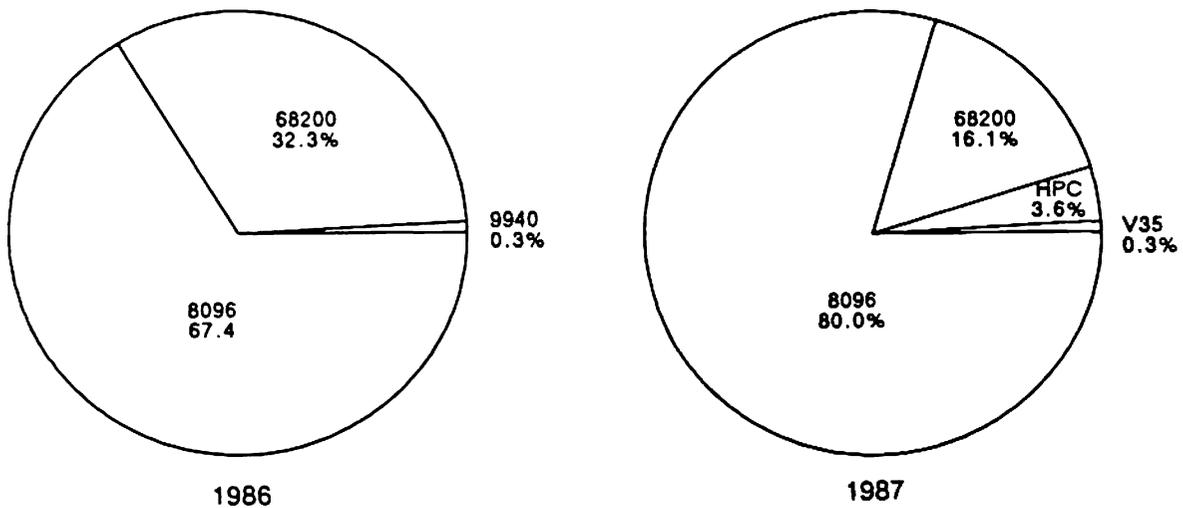
	<u>1985</u>	<u>1986</u>	<u>1987</u>
8096	62.5%	67.4%	80.0%
V35	0	0	0.3
HPC	0	0	3.6
68200	5.2	32.3	16.1
9940	<u>32.3</u>	<u>0.3</u>	<u>0</u>
Total 16-Bit MCUs	100.0%	100.0%	100.0%

Note: Columns may not add to totals shown because of rounding.

Source: Dataquest
April 1989

Figure 1

**Estimated Market Share by Product Type
for 16-Bit Microcontrollers
1986 and 1987**



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Source: Dataquest
April 1989

16-Bit Microcontrollers--Product Analysis

Table 2

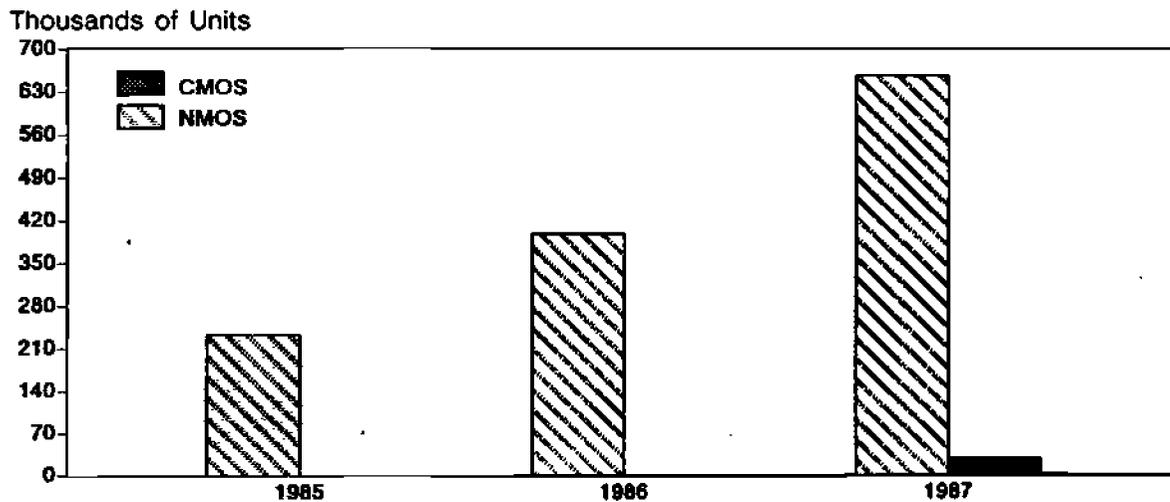
Estimated Market Share by Process Technology
for 16-Bit Microcontrollers
1985-1987
(Thousands of Units)

	1985	1986	1987
NMOS			
Shipments	232	399	658
Percent	100.0%	100.0%	96.1%
CMOS			
Shipments	0	0	27
Percent	0	0	3.9%
Total Shipments	232	399	685

Source: Dataquest
April 1989

Figure 2

Estimated Market Share by Process Technology
for 16-Bit Microcontrollers
1985-1987



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Source: Dataquest
April 1989

16-Bit Microcontrollers--Product Analysis

Table 3

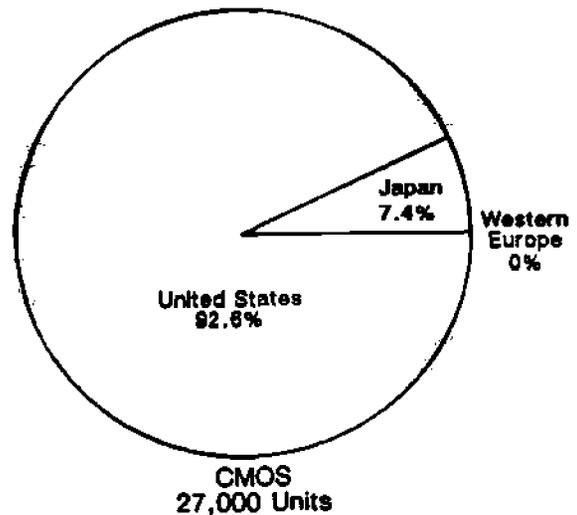
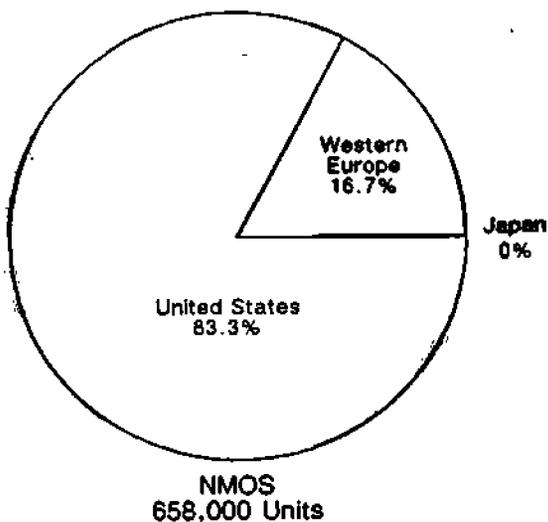
**Estimated Market Share by Process Technology by Region
for 16-Bit Microcontrollers
1985-1987**

	<u>1985</u>	<u>1986</u>	<u>1987</u>
NMOS			
United States	94.8%	67.7%	83.3%
Japan	0	0	0
Western Europe	<u>5.2</u>	<u>32.3</u>	<u>16.7</u>
Total NMOS	100.0%	100.0%	100.0%
CMOS			
United States	0	0	92.6%
Japan	0	0	7.4
Western Europe	<u>0</u>	<u>0</u>	<u>0</u>
Total CMOS	0	0	100.0%

Source: Dataquest
April 1989

Figure 3

**Estimated Market Share by Process Technology by Region
for 16-Bit Microcontrollers
1987**



Source: Dataquest
April 1989

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16-Bit Microcontroller Analysis

16-BIT MICROCONTROLLERS

The 16-bit microcontroller offers a high level of system integration on a single chip. With 16-bit CPU performance, high-speed math processing, and high-speed I/O, the 16-bit microcontroller will open up applications that previously required many chips. The 16-bit microcontrollers on the market today are designed to fit the needs of a wide variety of control applications that require high-performance operation such as industrial control, instrumentation, and intelligent computer peripherals. Table 1 shows 16-bit MCU applications in various industry segments.

Evolution

Users of 8-bit microcontrollers have become increasingly sophisticated, thus placing greater demands on chip suppliers for improved microcontrollers. Before the 16-bit MCU, designers depended on complex multiple-chip solutions to achieve high performance. The 16-bit chip offers a better solution. Even though the 8-bit and 16-bit MCUs are used in similar types of applications, the 16-bit MCU chips can also be used in higher-performance applications.

Approximately 232,000 16-bit microcontroller units were shipped in 1985, less than 1 percent of all microcontrollers shipped. We expect the unit shipments of these devices to grow at about 150 percent CAGR, during the next six years.

Table 2 shows 16-bit microcontrollers and potential applications.

16-Bit Microcontroller Analysis

Table 1

16-BIT MICROCONTROLLER APPLICATIONS

INDUSTRIAL

- Motor Control
- Robotics
- Discrete and Continuous Process Control
- Numerical Control
- Intelligent Transducers

INSTRUMENTATION

- Medical Instrumentation
- Liquid and Gas Chromatographs
- Oscilloscopes

CONSUMER

- Video Recorders
- Laser Disk Drives
- High-End Video Games

GUIDANCE AND CONTROL

- Missile Control
- Torpedo Guidance Control
- Intelligent Ammunition
- Aerospace Guidance Systems

DATA PROCESSING

- Plotters
- Copiers
- Disk Drives
- Tape Drives
- High-Range Printers

TELECOMMUNICATIONS

- Modems
- Intelligent Line Card Control

AUTOMOTIVE

- Ignition Control
- Transmission Control
- Antiskid Braking
- Emission Control

Source: Dataquest
December 1986

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Table 2

16-BIT MICROCONTROLLERS AND POTENTIAL APPLICATIONS

<u>Product</u>	<u>Application</u>
8096 8796 (EPROM)	Engine Control/High-Speed Peripherals
HPC-16040 (CMOS)	Data Communications
V25 (CMOS)	Dedicated to Automotive
78312	General Purpose
68200	Real-Time Applications Industrial Control Robotics Instrumentation
Z800	General Purpose
TMS-9940	General Purpose

Source: Dataquest
December 1986