

# Microcontroller Shipments—Fourth Quarter 1985

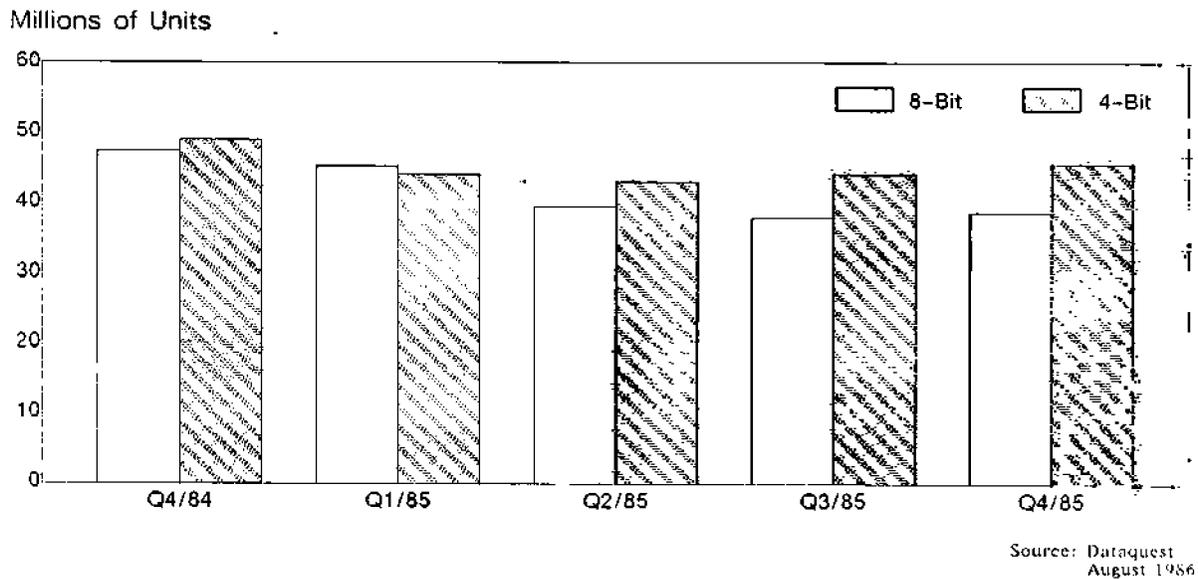
## FOURTH QUARTER 1985 WORLDWIDE UNIT SHIPMENTS

During the fourth quarter of 1985, microcontroller unit shipments increased approximately 2 million units or 2.6 percent from third quarter 1985 shipments. Estimated worldwide shipments of all microcontrollers totaled approximately 84.4 million units. Shipments of all types of microcontrollers increased slightly. Shipments of 8-bit MCU devices accounted for approximately 46 percent of total microcontrollers shipped in fourth quarter 1985.

Figure 1 illustrates the growth in 4- and 8-bit microcontroller shipments from the fourth quarter of 1984 through the fourth quarter of 1985.

Figure 1

4- AND 8-BIT MICROCONTROLLER UNIT SHIPMENTS  
FOURTH QUARTER 1984 THROUGH FOURTH QUARTER 1985  
(Millions of Units)



# Microcontroller Shipments—Fourth Quarter 1985

Table 1 shows the change in total microcontroller unit shipments from the third quarter of 1985 through the fourth quarter of 1985. The 8048 lost the greatest market share during this quarter while the 6805 displayed significant growth. Figure 2 illustrates the percent change in 8-bit microcontrollers from the fourth quarter of 1984 through the fourth quarter of 1985. Table 2 shows the change in leading 8-bit MCU shipments from the third quarter of 1985 through the fourth quarter of 1985.

Table 1

**TOTAL MICROCONTROLLER UNIT SHIPMENTS  
THIRD QUARTER 1985 THROUGH FOURTH QUARTER 1985  
(Thousands of Units)**

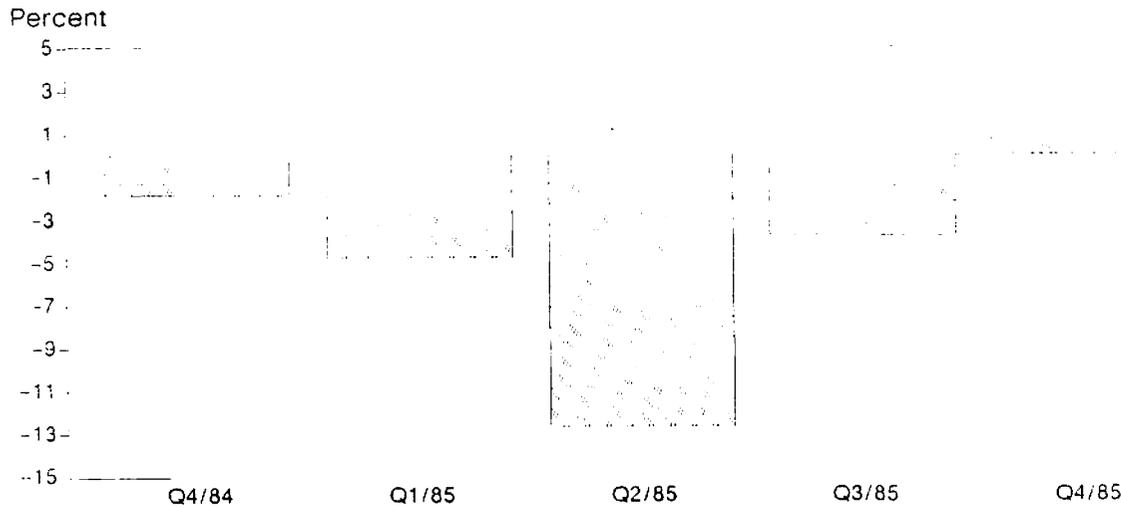
<u>MCU</u>	<u>03/1985</u>		<u>04/1985</u>		<u>Percent Growth Q3 to Q4</u>
	<u>Units</u>	<u>Percent of Shipments</u>	<u>Units</u>	<u>Percent of Shipments</u>	
4-Bit	44,187	53.7%	45,635	54.0%	3.3%
8-Bit	38,060	46.2	38,726	45.9	1.8%
16-Bit	<u>56</u>	<u>0.1</u>	<u>71</u>	<u>0.1</u>	26.8%
Total	82,303	100.0%	84,432	100.0%	2.6%

Source: Dataquest  
September 1986

# Microcontroller Shipments—Fourth Quarter 1985

Figure 2

**QUARTERLY PERCENT CHANGE IN 8-BIT MICROCONTROLLER UNIT SHIPMENTS  
FOURTH QUARTER 1984 THROUGH FOURTH QUARTER 1985  
(Percent)**



Source: Dataquest  
August 1986

Table 2

**LEADING 8-BIT MICROCONTROLLER UNIT SHIPMENTS  
THIRD QUARTER 1985 THROUGH FOURTH QUARTER 1985  
(Thousands of Units)**

Ranking	Device	Q3/1985		Q4/1985		Percent Growth Q3 to Q4
		Units	Percent of Shipments	Units	Percent of Shipments	
1	6805	5,505	14.5%	6,776	17.5%	23.1%
2	8049	6,520	17.1	5,902	15.2	(9.5%)
3	8051	3,931	10.3	3,930	10.2	-
4	8048	4,241	11.1	3,280	8.5	(22.7%)
5	Others	<u>17,863</u>	<u>47.0</u>	<u>18,838</u>	<u>48.6</u>	5.5%
	Total	38,060	100.0%	38,726	100.0%	1.7%

Source: Dataquest  
September 1986

## Microcontroller Shipments—Fourth Quarter 1985

The key 8-bit microcontrollers in fourth quarter 1985--the 6805, 8049, 8051, and 8048--had approximately 51.4 percent of the total 8-bit MCU market. During this period, Japanese manufacturers shipped more than 66 percent of 8048 and 8049 devices worldwide, while U.S. manufacturers shipped approximately 77 percent of 8051 and 6805 devices worldwide.

Table 3 shows the market share changes in shipments (not consumption) by geographical region for 4- and 8-bit MCUs, from the fourth quarter of 1984 through the fourth quarter of 1985.

Table 3

### MARKET SHARE BY REGION FOR 4- AND 8-BIT MICROCONTROLLERS FOURTH QUARTER 1984 THROUGH FOURTH QUARTER 1985

<u>Device Type</u>	<u>Region</u>	<u>Q4/84</u>	<u>Q1/85</u>	<u>Q2/85</u>	<u>Q3/85</u>	<u>Q4/85</u>
4-Bit	United States	18.8%	17.5%	16.5%	16.3%	14.3%
	Japan	78.7	79.5	80.5	80.7	82.8
	Europe	<u>2.5</u>	<u>3.0</u>	<u>3.0</u>	<u>3.0</u>	<u>2.9</u>
	Total	100.0%	100.0%	100.0%	100.0%	100.0%
8-Bit	United States	46.7%	44.8%	42.2%	44.7%	43.8%
	Japan	41.5	42.3	44.0	41.5	42.6
	Europe	<u>11.8</u>	<u>12.9</u>	<u>13.8</u>	<u>13.8</u>	<u>13.6</u>
	Total	100.0%	100.0%	100.0%	100.0%	100.0%

Source: Dataquest  
September 1986

We saw the U.S. manufacturers continue to lose market share of the 8-bit microcontroller market in the third quarter of 1985 from the same quarter a year earlier, but at a slower pace from that experienced from the second quarter of 1984 to the second quarter of 1985.

## 4-Bit Microcontrollers—Product Analysis

The tables and figures in this section are organized as follows:

- Table 1      Estimated Market Share by Product Type for 4-Bit Microcontrollers, 1975-1979
- Table 2      Estimated Market Share by Product Type for 4-Bit Microcontrollers, 1980-1984
- Table 3      Estimated Market Share by Product Type for 4-Bit Microcontrollers, 1985-1988
- Figure 1     Estimated Market Share by Product Type for 4-Bit Microcontrollers, 1987 and 1988
- Table 4      Estimated Market Share by Process Technology for 4-Bit Microcontrollers, 1975-1979
- Table 5      Estimated Market Share by Process Technology for 4-Bit Microcontrollers, 1980-1984
- Table 6      Estimated Market Share by Process Technology for 4-Bit Microcontrollers, 1985-1988
- Figure 2     Estimated Market Share by Process Technology for 4-Bit Microcontrollers, 1980-1988

# 4-Bit Microcontrollers--Product Analysis

Table 1

Estimated Market Share\* by Product Type  
for 4-Bit Microcontrollers  
1975-1979

	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>
TMS1000	10.0%	40.8%	83.1%	58.9%	51.7%
uCOM-4	0	0	0	9.4	15.4
COPS	0	0	0	14.6	11.1
MN1400	0	0	0	0	8.7
PPS-4	90.0	59.2	16.9	14.3	7.7
S2000	0	0	0	0.2	2.8
HMCS-40	0	0	0	2.6	1.3
SM-3	0	0	0	0	0.7
14100	<u>0</u>	<u>0</u>	<u>0</u>	<u>0.1</u>	<u>0.6</u>
Total	100.0%	100.0%	100.0%	100.0%	100.0%

\*Based on units shipped

Source: Dataquest  
July 1989

# 4-Bit Microcontrollers--Product Analysis

Table 2

Estimated Market Share\* by Product Type  
for 4-Bit Microcontrollers  
1980-1984

	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>
uPD75XX	0	2.4%	5.1%	8.8%	16.3%
COPS	12.0%	8.6	10.4	12.7	15.2
HMCS-40	1.5	14.2	13.0	12.0	11.6
MN1400	10.7	8.4	9.2	10.7	10.5
uCOM-4	15.4	14.8	16.2	12.2	8.8
SM-5	5.0	8.0	5.9	6.0	6.3
MN1500	0	0.9	1.0	3.7	4.4
TMS1000	45.8	29.6	16.4	6.9	4.3
TLCS-43	0	0	2.1	5.4	4.1
Series-40	0.1	0.4	1.5	3.2	3.3
TLCS-47	0	0	0.4	1.8	3.3
MB884X	0	6.9	6.3	4.4	3.2
T Series	0	0	5.2	5.7	3.1
TLCS-46	0	0	1.8	2.1	1.7
B885X	0.2	1.5	2.0	1.8	1.4
PPS-4	6.0	1.9	1.1	1.0	1.1
SM-4	1.2	1.2	1.2	1.0	1.0
SM-3	0.6	0.7	0.6	0.5	0.4
141000	0.2	0.1	0.1	0.1	0
S2000	<u>1.2</u>	<u>0.3</u>	<u>0.4</u>	<u>0.1</u>	<u>0</u>
Total	100.0%	100.0%	100.0%	100.0%	100.0%

\*Based on units shipped

Source: Dataquest  
July 1989

# 4-Bit Microcontrollers--Product Analysis

**Table 3**

**Estimated Market Share\* by Product Type  
for 4-Bit Microcontrollers  
1985-1988**

	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>
uPD75XX	17.8%	15.4%	12.2%	12.7%
MN1500	6.4	10.2	10.7	9.9
TLCS-47	4.4	8.3	6.0	8.4
COPS	16.2	13.8	10.1	7.8
HMCS-400	0	0	8.2	5.3
HMCS-40	12.6	8.1	6.6	4.3
SM (4-Bit)	5.9	3.4	2.4	4.3
M5046X/56X	0	0	3.3	4.0
uCOM75X	0	1.4	4.3	3.6
M5072/76	0	0	3.8	2.8
T SERIES	3.2	1.7	1.6	2.8
M5043X/44X	0	0	3.6	2.6
uCOM-4	5.6	2.1	0.9	1.3
MN1400	11.6	6.4	3.0	1.7
TMS1000	2.2	5.9	3.4	1.6
SERIES-40	3.7	2.7	1.7	1.5
MB884X	3.2	2.4	1.8	1.4
M509X	0	0	0.5	1.3
TLCS-42	0.7	1.4	1.0	0.9
TLCS-43	3.2	1.0	0.6	0.9
MN1700	0	0	0.5	0.9
MB885X	1.2	1.3	1.0	0.8
MB8850X	0	0	0.1	0.7
MB8840X	0	0	0.5	0.4
MB882XX	0	0	0.2	0.3
TLCS-46	1.2	0.1	0.1	0.1
PPS-4	0.8	0.4	0.2	0.1
TLCS-470	0	0.1	0.3	0
141000	0	0	0	0
Unspecified	<u>0</u>	<u>3.7</u>	<u>11.3</u>	<u>17.7</u>
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

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

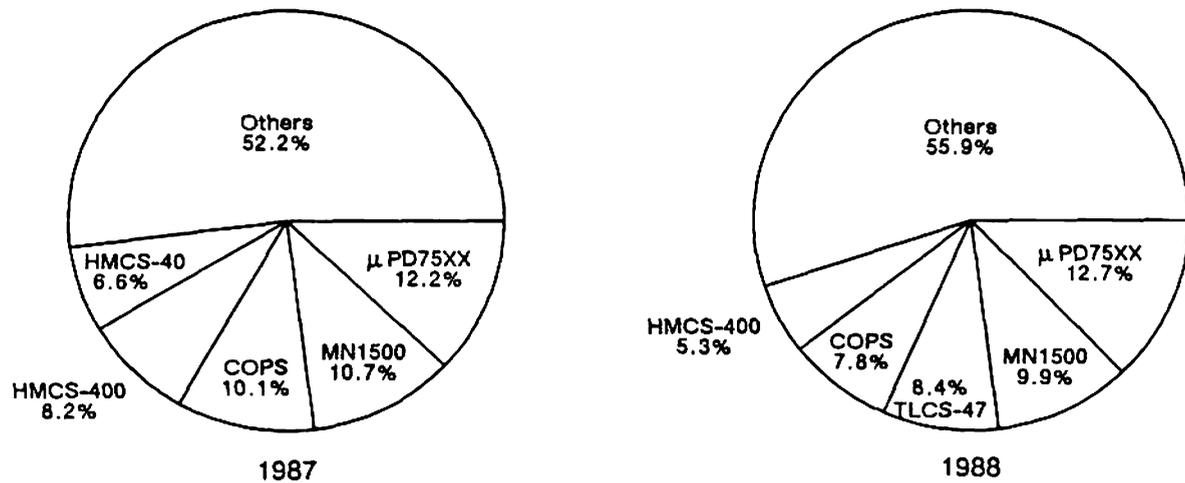
\*Based on units shipped

Source: Dataquest  
July 1989

# 4-Bit Microcontrollers--Product Analysis

Figure 1

**Estimated Market Share\* by Product Type  
for 4-Bit Microcontrollers  
1987 and 1988**



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Source: Dataquest  
July 1989

Table 4

**Estimated Market Share by Process Technology  
for 4-Bit Microcontrollers  
1975-1979  
(Thousands of Units)**

	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>
<b>NMOS</b>					
Shipments	0	0	0	2,375	7,530
Percent	0	0	0	14.9%	14.9%
<b>CMOS</b>					
Shipments	0	0	0	755	4,961
Percent	0	0	0	4.7%	9.8%
<b>PMOS</b>					
Shipments	500	760	3,400	12,829	38,034
Percent	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>80.4%</u>	<u>75.3%</u>
<b>Total Shipments</b>	<b>500</b>	<b>760</b>	<b>3,400</b>	<b>15,959</b>	<b>50,525</b>

Source: Dataquest  
July 1989

# 4-Bit Microcontrollers--Product Analysis

**Table 5**

**Estimated Market Share by Process Technology  
for 4-Bit Microcontrollers  
1980-1984  
(Thousands of Units)**

	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>
NMOS					
Shipments	13,813	25,970	37,167	52,468	62,240
Percent	14.4%	19.4%	23.5%	30.5%	32.2%
CMOS					
Shipments	18,574	38,129	65,382	81,638	102,358
Percent	19.3%	28.6%	41.3%	47.5%	52.9%
PMOS					
Shipments	63,693	69,450	55,634	37,839	28,837
Percent	66.3%	52.0%	35.2%	22.0%	14.9%
<b>Total Shipments</b>	<b>96,080</b>	<b>133,549</b>	<b>158,183</b>	<b>171,945</b>	<b>193,435</b>

Source: Dataquest  
July 1989

# 4-Bit Microcontrollers--Product Analysis

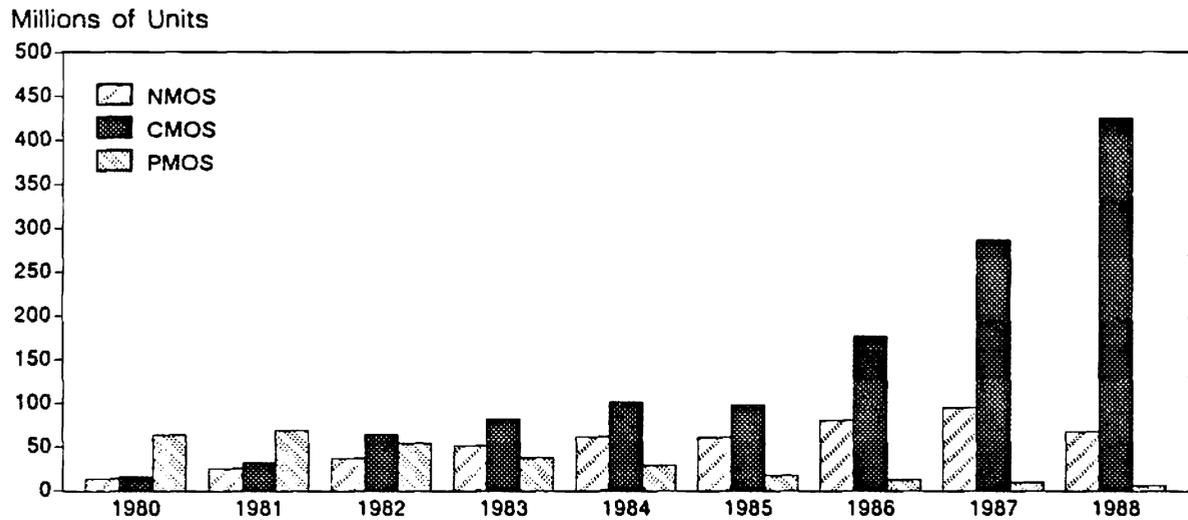
**Table 6**  
**Estimated Market Share by Process Technology**  
**for 4-Bit Microcontrollers**  
**1985-1988**  
**(Thousands of Units)**

	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>
<b>NMOS</b>				
Shipments	61,576	81,153	95,288	68,117
Percent	34.8%	29.8%	24.3%	14.5%
<b>CMOS</b>				
Shipments	97,694	177,357	287,360	426,966
Percent	55.2%	65.2%	73.2%	85.2%
<b>PMOS</b>				
Shipments	17,768	13,373	9,684	5,992
Percent	<u>10.0%</u>	<u>4.9%</u>	<u>2.5%</u>	<u>1.3%</u>
<b>Total Shipments</b>	<b>177,038</b>	<b>271,883</b>	<b>392,332</b>	<b>501,075</b>

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

Source: Dataquest  
July 1989

**Figure 2**  
**Estimated Market Share by Process Technology**  
**for 4-Bit Microcontrollers**  
**1980-1988**



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Source: Dataquest  
July 1989

# 4-Bit Microcontrollers--Product Analysis

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