

Microcontroller Market Analysis

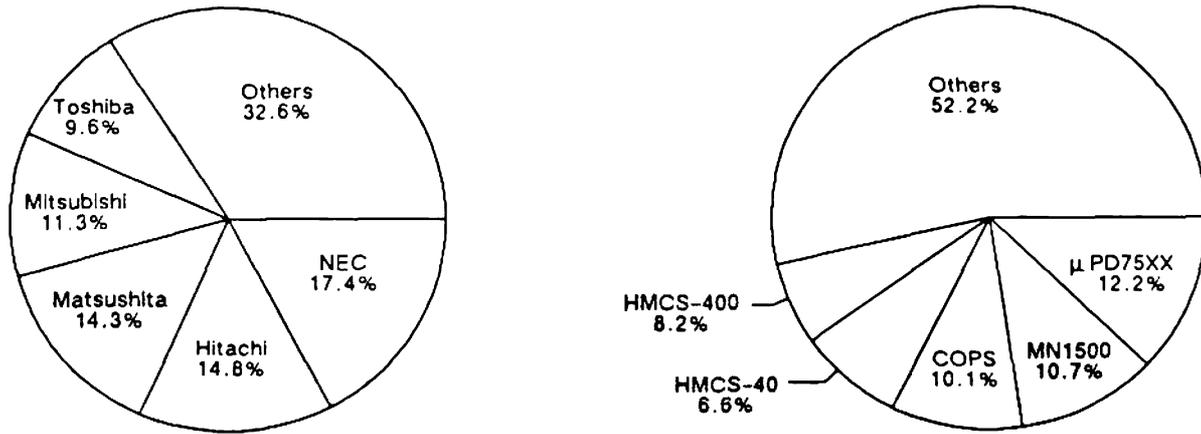
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Figure 1

Estimated Market Shares of Leading Manufacturers and Products for 4-Bit Microcontrollers 1987



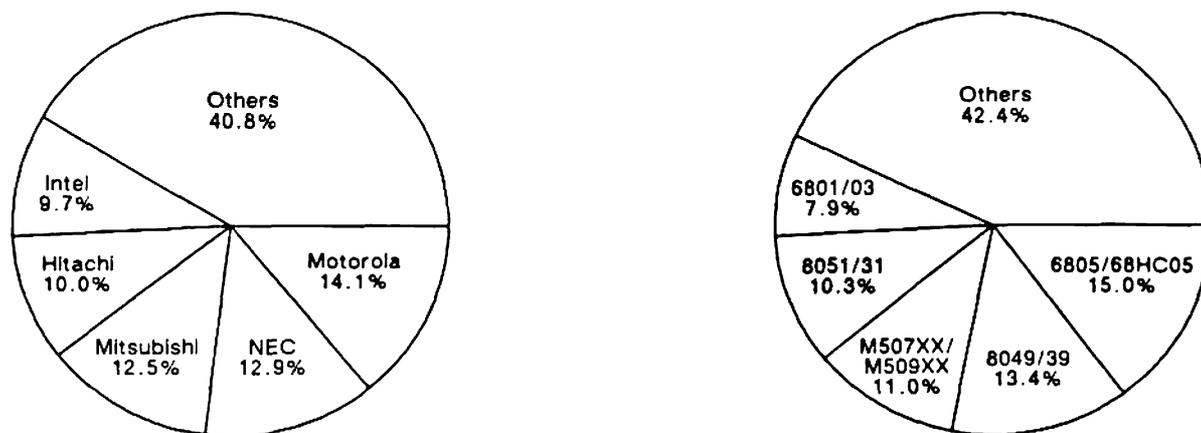
392.3 Million Units

0003601-1

Source: Dataquest
April 1989

Figure 2

Estimated Market Shares of Leading Manufacturers and Products for 8-Bit Microcontrollers 1987



333.4 Million Units

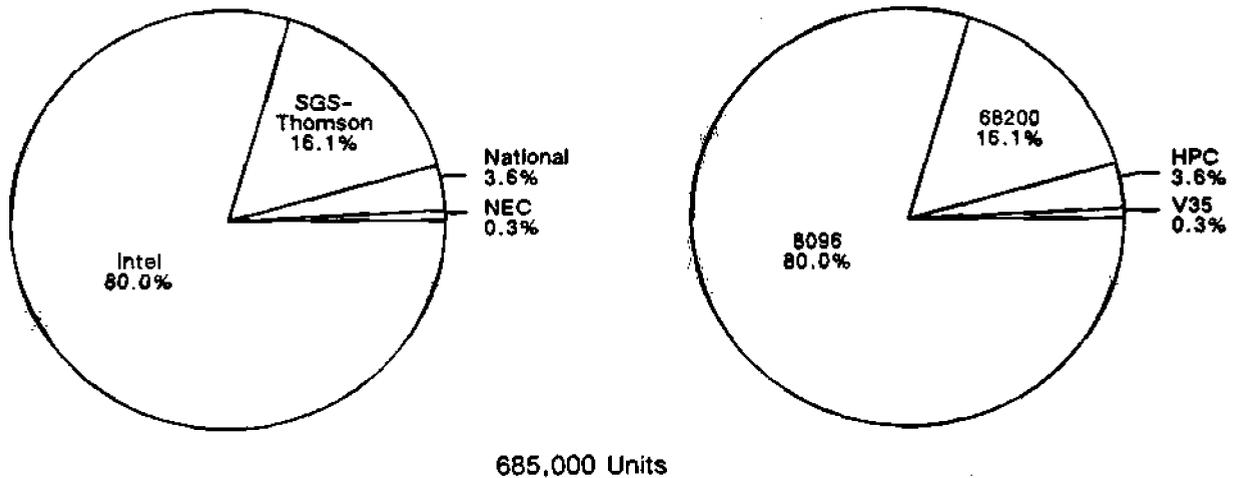
0003601-2

Source: Dataquest
April 1989

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Figure 3

Estimated Market Shares of Leading Manufacturers
and Products for 16-Bit Microcontrollers
1987



0003801-3

Source: Dataquest
April 1989

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Table 1

Estimated Market Share by Word Length
for Microcontrollers
1980-1984
(Thousands of Units)

	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>
4-Bit					
Shipments	96,080	133,549	158,183	171,945	193,435
Percent	81.5%	79.3%	74.5%	65.5%	54.2%
8-Bit					
Shipments	21,740	34,931	54,114	90,615	163,510
Percent	18.5%	20.7%	25.5%	34.5%	45.8%
16-Bit					
Shipments	8	36	50	89	123
Percent	*	*	*	*	*
Total Shipments	117,828	168,516	212,347	262,649	357,068

*Calculated value is less than 0.1%.

Source: Dataquest
April 1989

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Table 2

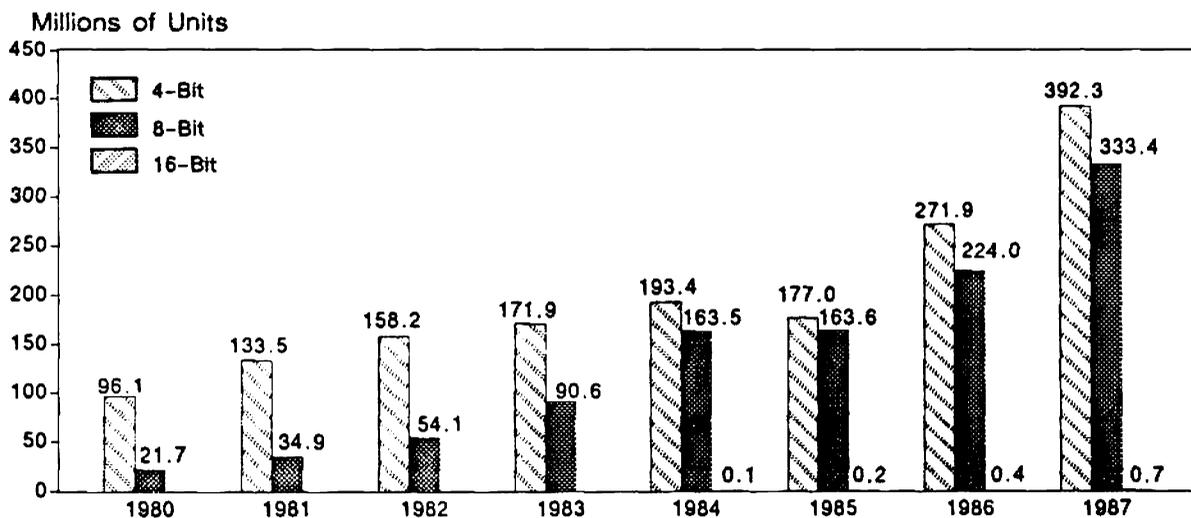
**Estimated Market Share by Word Length
for Microcontrollers
1985-1987
(Thousands of Units)**

	<u>1985</u>	<u>1986</u>	<u>1987</u>
4-Bit			
Shipments	177,038	271,883	392,332
Percent	51.9%	54.8%	54.0%
8-Bit			
Shipments	163,599	224,001	333,362
Percent	48.0%	45.1%	45.9%
16-Bit			
Shipments	232	399	685
Percent	0.1%	0.1%	0.1%
Total Shipments	340,869	496,283	726,379

Source: Dataquest
April 1989

Figure 4

**Estimated Market Share by Word Length
for Microcontrollers
1980-1987**



0003601-4

Source: Dataquest
April 1989

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Table 3

**Estimated Market Share by Region
for 4-, 8-, and 16-Bit Microcontrollers
1980-1984
(Thousands of Units)**

	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>
4-Bit Shipments	96,080	133,549	158,183	171,945	193,435
U.S. Companies (%)	65.2%	40.5%	28.2%	0.3%	19.2%
Japanese Companies (%)	34.8%	59.5%	71.7%	79.2%	79.3%
European Companies (%)	0	0	0.1%	0.5%	1.4%
8-Bit Shipments	21,740	34,931	54,114	90,615	163,510
U.S. Companies (%)	73.3%	68.3%	61.0%	57.6%	51.7%
Japanese Companies (%)	15.5%	20.1%	27.1%	31.3%	36.6%
European Companies (%)	11.2%	11.7%	11.8%	11.0%	11.7%
16-Bit Shipments	8	36	50	89	123
U.S. Companies (%)	100.0%	100.0%	100.0%	100.0%	100.0%
Japanese Companies (%)	0	0	0	0	0
European Companies (%)	0	0	0	0	0
Total Shipments	117,828	168,516	212,347	262,649	357,068
U.S. Companies (%)	66.7%	46.2%	36.6%	33.2%	34.1%
Japanese Companies (%)	31.2%	51.3%	60.3%	62.7%	59.7%
European Companies (%)	2.1%	2.4%	3.1%	4.1%	6.2%

Source: Dataquest
April 1989

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Table 4

**Estimated Market Share by Region
for 4-, 8-, and 16-Bit Microcontrollers
1985-1987
(Thousands of Units)**

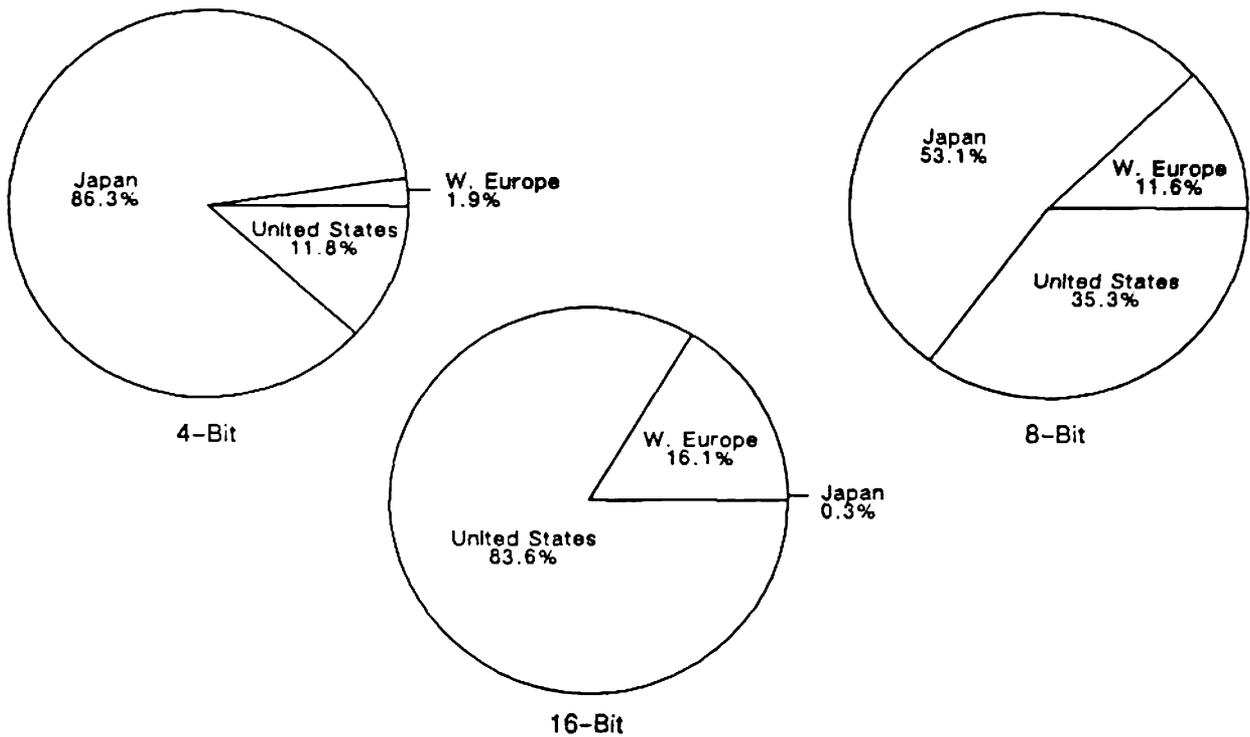
	<u>1985</u>	<u>1986</u>	<u>1987</u>
4-Bit Shipments	177,038	271,883	392,332
U.S. Companies (%)	16.3%	17.8%	11.8%
Japanese Companies (%)	80.8%	79.8%	86.3%
European Companies (%)	3.0%	2.3%	1.9%
8-Bit Shipments	163,599	224,001	333,362
U.S. Companies (%)	42.7%	34.8%	35.3%
Japanese Companies (%)	43.2%	50.0%	53.1%
European Companies (%)	14.1%	15.2%	11.6%
16-Bit Shipments	232	399	685
U.S. Companies (%)	94.8%	67.7%	83.6%
Japanese Companies (%)	0	0	0.3%
European Companies (%)	5.2%	32.3%	16.1%
Total Shipments	340,869	496,283	726,379
U.S. Companies (%)	29.0%	25.5%	22.6%
Japanese Companies (%)	62.7%	66.3%	71.0%
European Companies (%)	8.3%	8.2%	6.4%

Source: Dataquest
April 1989

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Figure 5

Estimated Market Share by Region
for 4-, 8-, and 16-Bit Microcontrollers
1987



0003601-5

Source: Dataquest
April 1989

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Table 5

**Estimated Market Share by Process Technology
for 4-, 8-, and 16-Bit Microcontrollers
1980-1984
(Thousands of Units)**

	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>
4-Bit Shipments	96,080	133,549	158,183	171,945	193,435
Percent PMOS	66.3%	52.0%	35.2%	22.0%	14.9%
Percent NMOS	14.4%	19.4%	23.5%	30.5%	32.2%
Percent CMOS	19.3%	28.6%	41.3%	47.5%	52.9%
8-Bit Shipments	21,740	34,931	54,114	90,615	163,510
Percent NMOS	100.0%	99.7%	96.8%	91.4%	90.0%
Percent CMOS	0	0.3%	3.2%	8.6%	10.0%
16-Bit Shipments	8	36	50	89	123
Percent NMOS	100.0%	100.0%	100.0%	100.0%	100.0%
Percent CMOS	0	0	0	0	0
Total Shipments	117,828	168,516	212,347	262,649	357,068
Percent PMOS	54.1%	41.2%	26.2%	14.4%	8.1%
Percent NMOS	30.2%	36.1%	42.2%	51.5%	58.7%
Percent CMOS	15.8%	22.7%	31.6%	34.1%	33.3%

Source: Dataquest
April 1989

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Table 6

**Estimated Market Share by Process Technology
for 4-, 8-, and 16-Bit Microcontrollers
1985-1987
(Thousands of Units)**

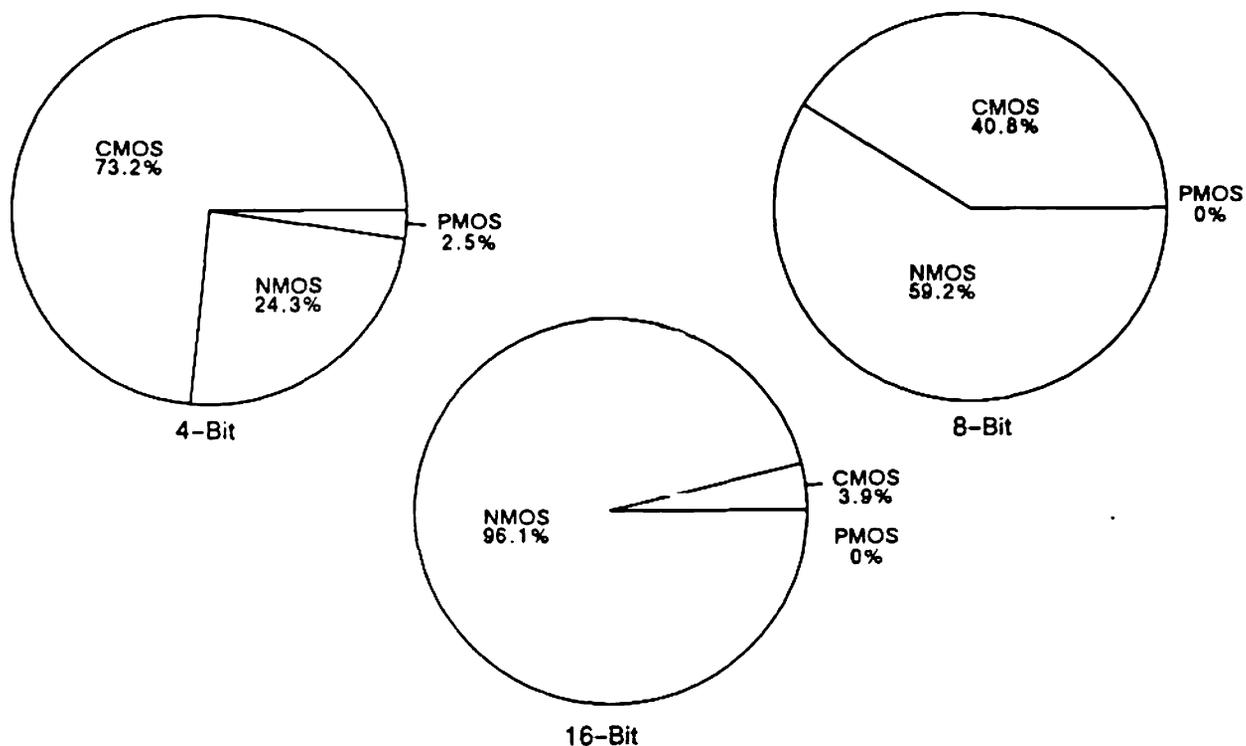
	<u>1985</u>	<u>1986</u>	<u>1987</u>
4-Bit Shipments	177,038	271,883	392,332
Percent PMOS	10.0%	4.9%	2.5%
Percent NMOS	34.8%	29.8%	24.3%
Percent CMOS	55.2%	65.2%	73.2%
8-Bit Shipments	163,599	224,001	333,362
Percent NMOS	79.5%	67.8%	59.2%
Percent CMOS	20.5%	32.2%	40.8%
16-Bit Shipments	232	399	685
Percent NMOS	100.0%	100.0%	96.1%
Percent CMOS	0	0	3.9%
Total Shipments	340,869	496,283	726,379
Percent PMOS	5.2%	2.7%	1.3%
Percent NMOS	56.3%	47.0%	40.4%
Percent CMOS	38.5%	50.3%	58.3%

Source: Dataquest
April 1989

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Figure 6

Estimated Market Share by Process Technology
for 4-, 8-, and 16-Bit Microcontrollers
1987



0003601-6

Source: Dataquest
April 1989

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