

Microcontroller Market Analysis

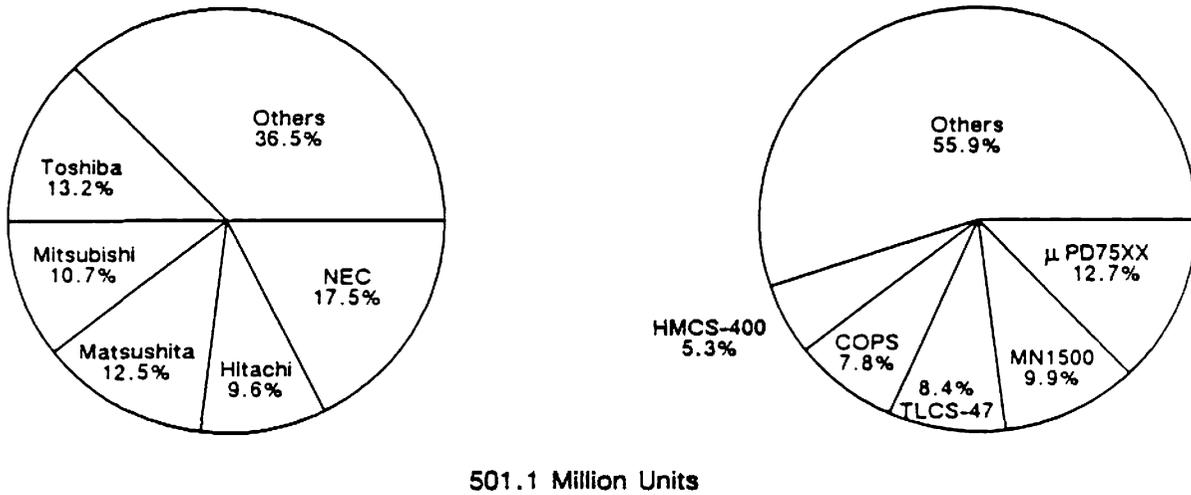
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- Figure 2 Estimated Market Shares of Leading Manufacturers and Products for 8-Bit Microcontrollers, 1988
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- Table 2 Estimated Market Share by Word Length for Microcontrollers, 1980-1984
- Table 3 Estimated Market Share by Word Length for Microcontrollers, 1985-1988
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Figure 1

**Estimated Market Shares of Leading Manufacturers and Products for 4-Bit Microcontrollers
1988**

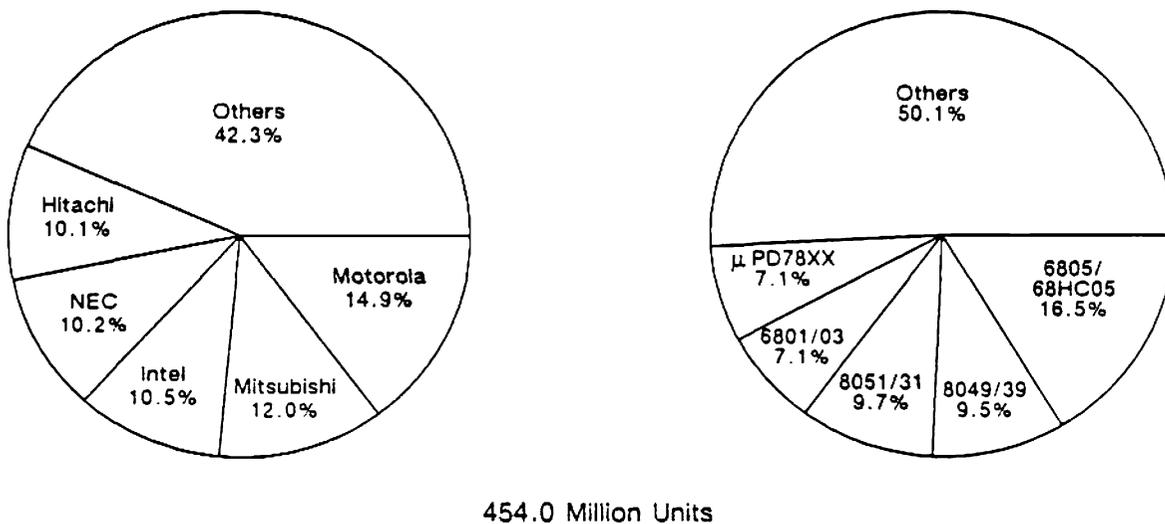


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Source: Dataquest
September 1989

Figure 2

**Estimated Market Shares of Leading Manufacturers and Products for 8-Bit Microcontrollers
1988**



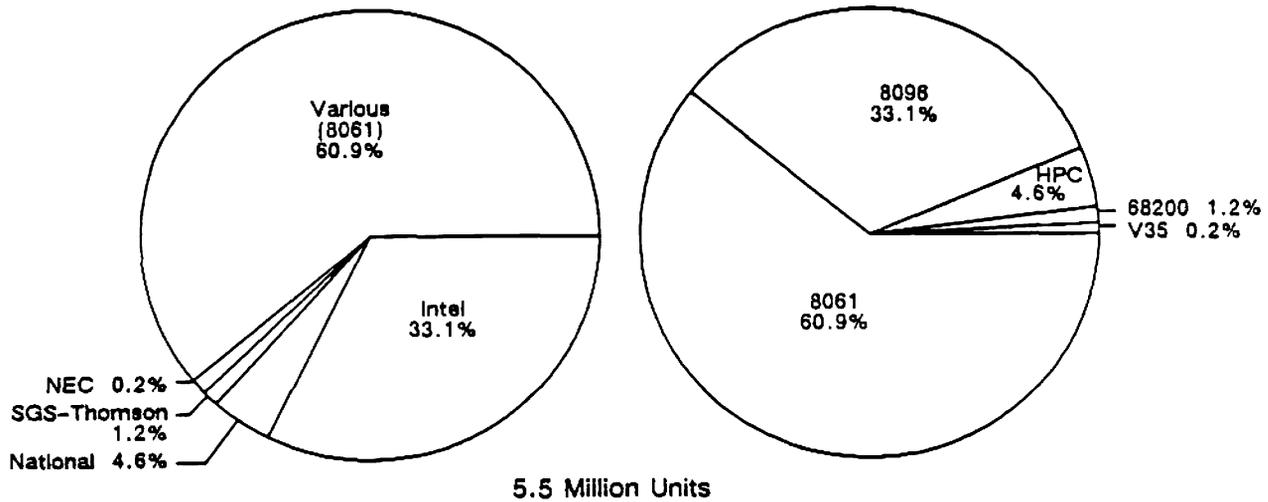
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Source: Dataquest
September 1989

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Figure 3

Estimated Market Shares of Leading Manufacturers and Products for 16-Bit Microcontrollers
1988



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Source: Dataquest
September 1989

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Table 1

Estimated Market Share by Word Length
for Microcontrollers
1975-1979
(Thousands of Units)

	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>
4-Bit					
Shipments	500	760	3,400	15,959	50,525
Percent	94.0%	75.2%	79.3%	87.8%	81.3%
8-Bit					
Shipments	32	251	885	2,218	11,592
Percent	6.0%	24.8%	20.7%	12.2%	18.7%
16-Bit					
Shipments	0	0	0	0	5
Percent	0	0	0	0	*
Total Shipments	532	1,011	4,285	18,177	62,122

*Calculated value is less than 0.1%.

Source: Dataquest
September 1989

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Table 2

**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
September 1989

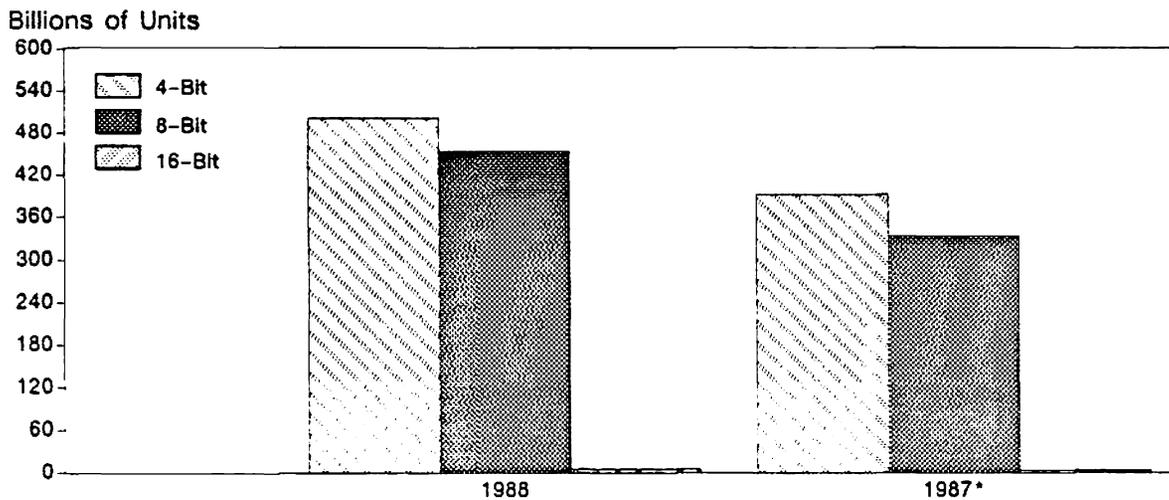
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Table 3
Estimated Market Share by Word Length
for Microcontrollers
1985-1988
(Thousands of Units)

	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>
4-Bit				
Shipments	177,038	271,883	392,332	501,075
Percent	51.9%	54.8%	53.8%	51.9%
8-Bit				
Shipments	163,599	224,001	333,362	454,022
Percent	48.0%	45.1%	45.7%	47.0%
16-Bit				
Shipments	232	399	3,311	5,461
Percent	0.1%	0.1%	0.5%	0.6%
Total Shipments	340,869	496,283	729,005	966,019

Source: Dataquest
September 1989

Figure 4
Estimated Market Share by Word Length
for Microcontrollers
1980-1988



* Revised Data
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Source: Dataquest
September 1989

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Table 4

**Estimated Market Share by Region
for 4-, 8-, and 16-Bit Microcontrollers
1975-1979
(Thousands of Units)**

	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>
4-Bit Shipments	500	760	3,400	15,959	50,525
U.S. Companies (%)	100.0%	100.0%	100.0%	88.0%	73.8%
Japanese Companies (%)	0	0	0	12.0%	26.2%
European Companies (%)	0	0	0	0	0
8-Bit Shipments	32	251	885	2,218	11,592
U.S. Companies (%)	100.0%	100.0%	100.0%	99.3%	91.1%
Japanese Companies (%)	0	0	0	0.7%	8.5%
European Companies (%)	0	0	0	0	0.4%
16-Bit Shipments	0	0	0	0	5
U.S. Companies (%)	0	0	0	0	100.0%
Japanese Companies (%)	0	0	0	0	0
European Companies (%)	0	0	0	0	0
Total Shipments	532	1,011	4,285	18,177	62,122
U.S. Companies (%)	100.0%	100.0%	100.0%	89.4%	77.1%
Japanese Companies (%)	0	0	0	10.6%	22.9%
European Companies (%)	0	0	0	0	0.1%

Source: Dataquest
September 1989

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Table 5

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
September 1989

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Table 6

**Estimated Market Share by Region
for 4-, 8-, and 16-Bit Microcontrollers
1985-1988
(Thousands of Units)**

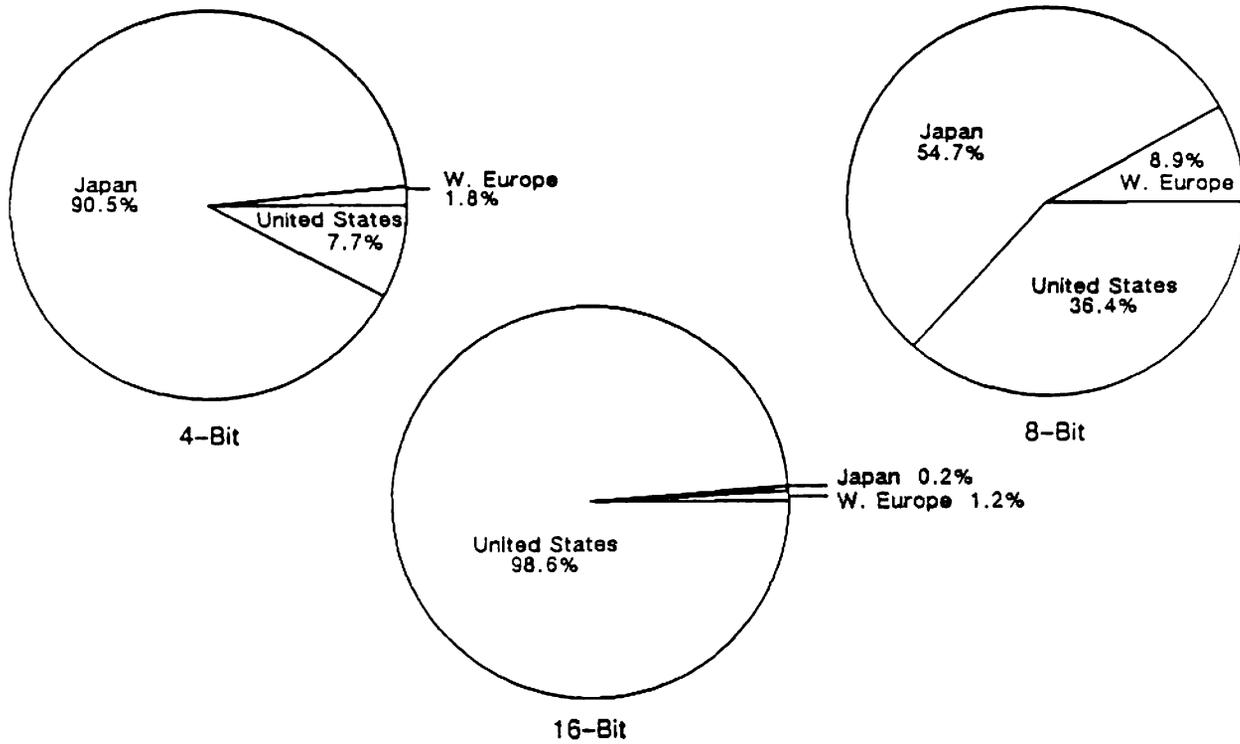
	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>
4-Bit Shipments	177,038	271,883	392,332	501,075
U.S. Companies (%)	16.3%	17.8%	11.8%	7.7%
Japanese Companies (%)	80.8%	79.8%	86.3%	90.5%
European Companies (%)	3.0%	2.3%	1.9%	1.8%
8-Bit Shipments	163,599	224,001	333,362	454,022
U.S. Companies (%)	42.7%	34.8%	35.3%	36.4%
Japanese Companies (%)	43.2%	50.0%	53.1%	54.7%
European Companies (%)	14.1%	15.2%	11.6%	8.9%
16-Bit Shipments	232	399	3,311	5,461
U.S. Companies (%)	94.8%	67.7%	96.6%	98.6%
Japanese Companies (%)	0	0	0.1%	0.2%
European Companies (%)	5.2%	32.3%	3.3%	1.2%
Total Shipments	340,869	496,283	729,005	960,558
U.S. Companies (%)	29.0%	25.5%	22.9%	38.4%
Japanese Companies (%)	62.7%	66.3%	70.7%	73.1%
European Companies (%)	8.3%	8.2%	6.4%	5.1%

Source: Dataquest
September 1989

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Figure 5

Estimated Market Share by Region
for 4-, 8-, and 16-Bit Microcontrollers
1988



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Source: Dataquest
September 1989

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Table 7

**Estimated Market Share by Process Technology
for 4-, 8-, and 16-Bit Microcontrollers
1975-1979
(Thousands of Units)**

	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>
4-Bit	500	760	3,400	15,959	50,525
Percent PMOS	100.0%	100.0%	100.0%	80.4%	75.3%
Percent NMOS	0	0	0	14.9%	14.9%
Percent CMOS	0	0	0	4.7%	9.8%
8-Bit	32	251	885	2,218	11,592
Percent NMOS	100.0%	100.0%	100.0%	100.0%	100.0%
Percent CMOS	0	0	0	0	0
16-Bit	0	0	0	0	5
Percent NMOS	0	0	0	0	100.0%
Percent CMOS	0	0	0	0	0
Total Shipments	532	1,011	4,285	18,177	62,122
Percent PMOS	94.0%	75.2%	79.3%	70.6%	61.2%
Percent NMOS	6.0%	24.8%	20.7%	25.3%	30.8%
Percent CMOS	0	0	0	4.2%	8.0%

Source: Dataquest
September 1989

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Table 8

**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
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Table 9

**Estimated Market Share by Process Technology
for 4-, 8-, and 16-Bit Microcontrollers
1985-1988
(Thousands of Units)**

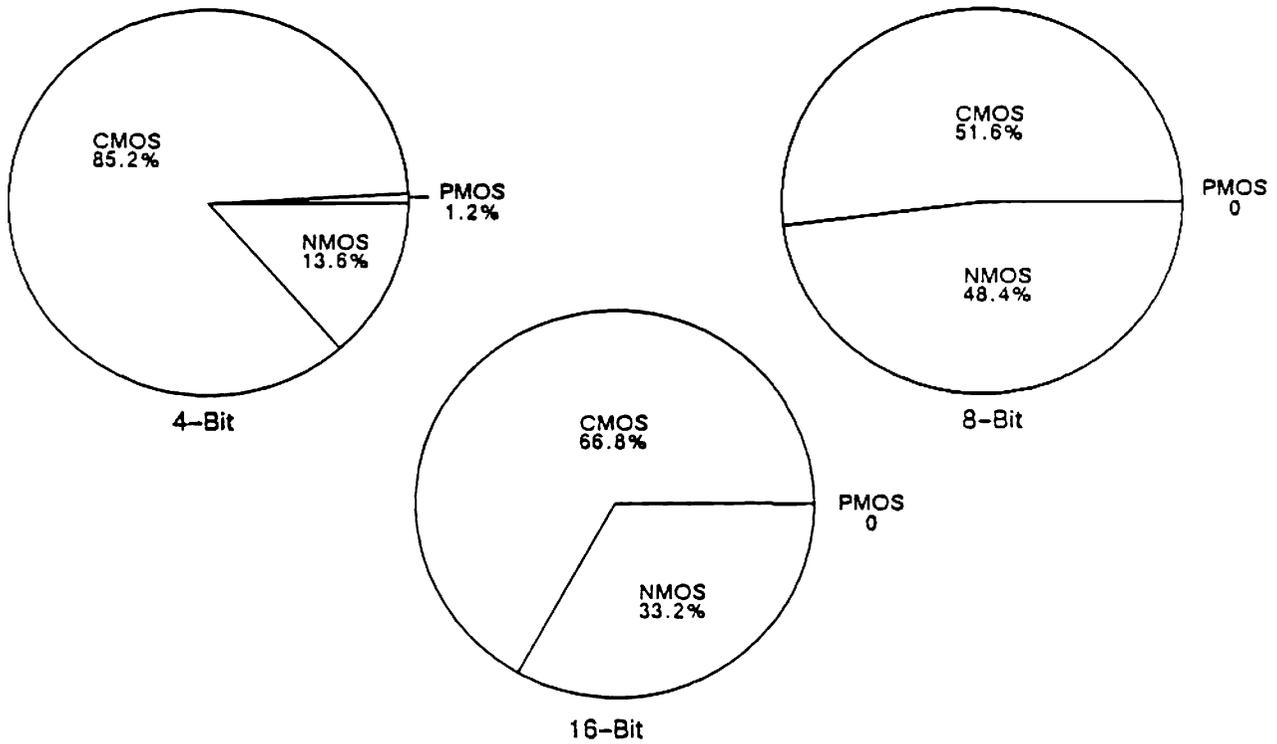
	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>
4-Bit Shipments	177,038	271,883	392,332	501,075
Percent PMOS	10.0%	4.9%	2.5%	1.2%
Percent NMOS	34.8%	29.8%	24.3%	13.6%
Percent CMOS	55.2%	65.2%	73.2%	85.2%
8-Bit Shipments	163,599	224,001	333,362	454,022
Percent NMOS	79.5%	67.8%	59.2%	48.4%
Percent CMOS	20.5%	32.2%	40.8%	51.6%
16-Bit Shipments	232	399	3,311	5,461
Percent NMOS	100.0%	100.0%	19.9%	33.2%
Percent CMOS	0	0	80.1%	66.8%
Total Shipments	340,869	496,283	729,005	960,558
Percent PMOS	5.2%	2.7%	1.3%	0.6%
Percent NMOS	56.3%	47.0%	40.2%	30.1%
Percent CMOS	38.5%	50.3%	58.4%	69.2%

Source: Dataquest
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Figure 6

Estimated Market Share by Process Technology
for 4-, 8-, and 16-Bit Microcontrollers
1988



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Source: Dataquest
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