

Semiconductors, Printed Circuit Boards, Other Electronic Components

2000

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Information about the scope of the survey, methodology, explanation of terms and historical notes for this survey may be found in the introduction of the 1998 Manufacturing Profiles, issued December 2000.

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NOTE. Data are now published on the new North American Industry Classification System (NAICS) basis and therefore are not always comparable

to the old Standard Industrial Classification (SIC) code. For further information on NAICS, see www.census.gov/epcd/www/naics.html.

SUMMARY OF FINDINGS

During 2000, the total value of shipments of semiconductors, printed circuit boards, and other electronic components was \$168,268.3 million. This represents an 18.8-percent increase from the revised 1999 total of \$141,659.9 million. The 2000 data include electron tubes and parts, \$4,306.4 million, a decrease of 1.8 percent from 1999; printed circuit boards, \$11,129.1 million, an increase of 21.6 percent from 1999; semiconductors and related devices, \$90,383.3 million, an increase of 17.9 percent over the revised total from 1999. Capacitors increased 30.8 percent to \$2,662.7 million; resistors increased by 5.7 percent to \$1,026.1 million; coils and transformers had an 18.1-percent increase to \$1,679.7 million; electronic connectors was \$6,712.1 million in 2000, compared to \$4,988.4 million in 1999, an increase of 34.5 percent; and other electronic components increased to \$50,368.9 million, from a revised 1999 total of \$42,059.9 million, an increase of 19.7 percent.

Address inquiries concerning these data to Investment Goods Industries Branch, Manufacturing and Construction Division (MCD), Washington, DC 20233-6900, or call Philippe S.J. Morris, 301-457-4819.

For mail or fax copies of this publication, please contact the Information Services Center, MCD, Washington, DC 20233-6900, or call 301-457-4673.

U S C E N S U S B U R E A U

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Table 1. Value of Shipments of Semiconductors, Printed Circuit Boards, and Other Electronic Components
by Class of Product: 1995 to 2000
[Value in million of dollars]

Product code	Product description	2000	1999	1998	1997	1996	1995
3344111	Transmittal, industrial, and special-purpose electron tubes (except x-ray).....	705.5	672.9	629.5	655.9	611.4	854.9
3344114	Receiving type electron tubes and cathode ray picture tubes.....	3,457.5	3,578.5	3,367.1	3,433.6	3,272.0	2,907.0
3344117	Electron tube parts.....	143.4	136.4	146.6	161.0	153.1	120.2
3344120	Printed circuit boards.....	11,129.1	9,149.9	8,473.2	8,702.4	8,216.8	8,367.3
3344131	Integrated microcircuits (semiconductor networks).....	76,508.0	62,868.4	57,643.5	57,019.4	52,639.3	48,437.9
3344134	Transistors.....	1,375.3	993.7	887.0	1,500.2	945.9	942.5
3344137	Diodes and rectifiers.....	629.1	1,038.3	907.6	1,190.5	861.4	1,066.7
334413A	Other semiconductor devices.....	11,870.9	11,745.4	11,055.8	10,262.3	10,976.1	12,639.4
3344140	Capacitors for electronic applications.....	2,662.7	2,035.1	1,946.9	2,098.7	1,653.4	1,785.3
3344150	Resistors.....	1,026.1	970.6	944.6	993.4	911.9	953.2
3344160	Coils, transformers, reactors, and chokes for electronic applications.....	1,679.7	1,422.5	1,368.3	1,425.7	1,435.6	1,411.8
3344171	Coaxial connectors.....	781.7	630.5	590.3	581.0	656.9	731.6
3344174	Cylindrical connectors.....	658.7	549.5	579.5	554.9	642.5	552.9
3344177	Rack and panel connectors.....	676.2	391.4	745.6	657.9	530.7	540.5
334417A	Printed circuit connectors.....	2,389.3	1,375.8	1,124.8	1,276.5	1,095.3	1,026.4
334417D	Other connectors, including parts.....	2,206.2	2,041.2	1,973.1	2,208.8	1,617.1	1,401.9
3344191	Filters (except microwave) and piezoelectric devices.....	1,075.6	857.5	797.5	814.7	719.3	729.2
3342207	Microwave components and devices.....	2,449.8	1,621.6	1,580.7	1,439.8	1,251.4	1,233.4
3344194	Transducers, electrical/electronic input or output.....	1,408.3	1,330.7	1,372.7	1,219.6	1,104.8	1,111.3
3344197	Switches, mechanical types for electronic circuitry.....	901.3	883.4	882.5	791.2	738.0	666.3
334418A	Printed circuit assemblies.....	35,992.3	30,090.9	26,046.5	27,040.2	24,937.3	24,447.7
334419D	All other electronic components, n.e.c.....	8,541.6	7,275.7	7,322.4	7,484.7	7,199.1	6,978.1

n.e.c. Not elsewhere classified.

Table 2. Quantity and Value of Shipments of Semiconductors, Printed Circuit Boards, and Other Electronic Components: 2000 and 1999
 [Quantity in thousands of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	2000		1999	
			Quantity	Value	Quantity	Value
334411	Electron tubes.....	(NA)	(X)	4,306,350	(X)	4,387,727
3344111	Transmittal, industrial, and special purpose electron tubes (except X-ray).....	34	(X)	705,516	(X)	672,877
	Power and special purpose tubes:					
3344111105	High vacuum tubes, including triodes, multigrid external and internal anodes, diodes, and other.....	6	85	69,282	102	68,720
3344111110	Gas and vapor tubes, including Ignitron, gas duplexers, spark gaps and others.....	10	648	31,796 r/	369 r/	31,657
3344111115	Klystrons, including amplifier, reflex, and other.....	6	298	55,274	285	51,480
3344111120	Magnetrons, including pulsed, fixed, tunable, cross-field, continuous wave and other.....	4	17	43,729	18	39,698
	Traveling wave tubes (TWT):					
	Forward wave:					
	Continuous wave (CW):					
3344111225	Up to and including 10 watts CW power output rating 1/.....	1	(D)	(D)	(D)	(D)
3344111230	Over 10 watts CW power output rating 1/.....	4	3,383	97,785	3,154	95,781
	Pulsed power:					
3644111235	Up to and including 1 kW peak power output rating 2/.....	2	(D)	(D)	(D)	(D)
3344111240	Over 1 kW peak power output rating 2/.....	5	1,078	84,567	1,029	84,343
3344111265	Backward wave	-	-	-	-	-
	Light sensing tubes:					
3344111345	Camera tubes, photo emissive and photo conductive 3/.....	3	(D)	(D)	(D)	(D)
3344111350	Image intensifiers and converters 3/.....	3	(D)	(D)	(D)	(D)
3344111355	Photo multipliers and other 3/.....	3	95	103,832	85	88,585
3344111360	Light emitting devices, including storage tubes all sizes, cathode ray tubes, color and monochrome (industrial and military), special display devices, including alphanumeric readout tubes, figure indicating tubes, and other.....	10	1,564	118,006	2,133	127,491
3344111370	Miscellaneous special-purpose tubes (reference cavities, radiation detection (geiger, neutron counters, etc.), beam deflection, decade counters, orbital beam, vacuum gauges, vacuum capacitors, switches, relays, etc.).....	8	(X)	101,245	(X) r/	85,122
3344114	Receiving type electron tubes and cathode ray picture tubes.....	(NA)	(X)	3,457,465	(X)	3,578,490
3344114005	Receiving type electron tubes, all types, including rebuilt	2	(D)	(D)	(D)	(D)
	Television tubes, including any defective tube that has been rebuilt:					
	Color having a video display diagonal of:					
3344114010	50 cm and under (20 inches and under) 4/.....	6	(D)	(D)	(D)	(D)
3344114015	Over 50 cm but not exceeding 63 cm (21 through 25 inches) 4/.....	2	12,965	1,026,361 r/	12,348 r/	1,091,285
3344114020	Exceeding 63 cm (26 inches and over).....	9	18,103	2,357,063 r/	17,159 r/	2,415,077
3344114025	Other, including rebuilt color and new and rebuilt black and white.....	5	(D)	(D)	(D)	(D)
3344117030	Electron tube parts (except glass blanks): bases, getters, cathodes, headers, guns.....	16	(X)	143,369	(X)	136,360
334412	Printed-circuit (wiring) boards.....	542	(X)	11,129,098	(X)	9,149,931
3344120105	Single-sided glass printed.....	265	(X)	404,665	(X) r/	331,639
3344120210	Double-sided glass printed.....	361	(X)	1,573,898	(X)	1,254,604
3344120315	Multilayer glass printed.....	352	(X)	6,040,174	(X)	4,943,590
3344120420	Single-sided flex printed.....	47	(X)	196,369	(X) r/	170,862
3344120425	Double-sided flex printed.....	45	(X)	118,475	(X)	140,965
3344120430	Multilayer flex and rigid/flex printed.....	56	(X)	285,192	(X) r/	273,065
3344120435	All paper/mat/composite printed boards.....	16	(X)	36,981	(X)	39,342
3344120440	Other substitute printed boards.....	64	(X)	1,484,874	(X) r/	1,318,885
3344120545	Receipts for contract work on printed circuit boards (etching, dip-soldering, imprinting, etc.), but not printed board assembly.....	72	(X)	988,470	(X) r/	676,979

Continued

Table 2. Quantity and Value of Shipments of Semiconductors, Printed Circuit Boards, and Other Electronic Components: 2000 and 1999
 [Quantity in thousands of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	2000		1999	
			Quantity	Value	Quantity	Value
334413	Semiconductors and related devices.....	(NA)	(X)	90,383,333	(X)	76,645,796
3344131	Monolithic integrated circuits.....	217	19,169,902	76,507,982	16,165,544	62,868,410
	Monolithic integrated circuits, digital, nonsilicon (e.g., gallium arsenide):					
3344131036	Memory	4	(D)	(D)	(D)	(D)
3344131048	Logic and other.....	11	329,676	1,667,833 r/	253,508	1,322,422
	Monolithic integrated circuits, digital, silicon:					
	Bipolar transistors, memory:					
3344131015	Static read-write random access (SRAM) 5/.....	6	(D)	(D)	(D)	(D)
3344131021	Other memory 5/.....	5	5,854	9,208	3,695 r/	5,535
	Other bipolar transistors, including logic:					
3344131024	Transistor-transistor logic (TTL).....	12	232,553	238,148	370,150	178,963
3344131027	Emitter coupled logic (ECL).....	5	(D)	(D)	(D)	(D)
3344131030	Other.....	9	1,361,860	1,395,060	(D)	(D)
	Metal oxide semiconductor (MOS) field effect transistors:					
	Volatile memory DRAMS (dynamic read-write random access):					
3344131064	Not over 80 k	6	(D)	(D)	(D)	(D)
3344131066	Over 80 k but not over 300 k	4	(D)	(D)	(D)	(D)
3344131068	Over 300 k but not over 3 MB	2	(D)	(D)	(D)	(D)
3344131070	Over 3 MB but not over 15 MB	4	(D)	(D)	(D)	(D)
3344131072	Over 15 MB.....	8	(D)	(D)	502,725	3,625,418
	Volatile memory SRAMS (static read-write random access):					
3344131082	Not over 40 k.....	6	123,001	192,830 r/	75,154 r/	224,129
3344131084	Over 40 k but not over 80 k.....	8	31,736	88,083	48,640	123,664
3344131086	Over 80 k but not over 300 k	11	35,685	161,008	63,392 r/	275,832
3344131088	Over 300 k but not over 3MB	9	191,828	609,190	31,533	190,209
3344131090	Over 3 MB	8	51,918	957,931	(D) r/	(D)
	Nonvolatile EEPROMs (electrically erasable programmable read-only memory):					
3344131092	Not over 80 k 6/.....	7	(D)	(D)	370,113	307,034
3344131094	Over 80 k but not over 900 k 6/	6	(D)	(D)	30,731	149,860
3344131096	Over 900 k 6/.....	6	1,016,272	943,830 r/	1,484 r/	40,252
	Nonvolatile EPROMs (erasable, except electrically, programmable read-only memory):					
3344131074	Not over 80 k.....	5	9,268	33,872	(D)	(D)
3344131076	Over 80 k but not over 900 k.....	11	(D)	(D)	(D)	(D)
3344131078	Over 900 k.....	7	52,754.0	95,598	(D)	(D)
3344131080	Other nonvolatile memory.....	13	1,210,165	4,998,580	650,434	2,901,252
	Other, including microprocessors, controllers, application specific integrated circuits (ASIC's), and programable logic arrays (PLA's):					
3344131054	Microprocessors having an internal data bus of 8 bits or less.....	13	1,220,734	990,386	557,227	952,111
3344131057	Microprocessors having an internal data bus of 16 bits.....	12	190,694	1,370,425	(D)	(D)
3344131060	Microprocessors having an internal data bus of 32 bits or more.....	20	(D)	(D)	(D)	(D)
3344131033	Other (microcontrollers, ASIC's, PLA's, etc.).....	36	1,226,538	9,757,107	1,321,030	9,312,414
	Other digital, silicon, including bipolar combined with MOS:					
3344131039	Complementary BiMOS (BiCMOS).....	4	(D)	(D)	174,428	669,527
3344131042	Other complementary BiMOS(BiCMOS), including logic.....	11	1,072,277	766,917	755,393	480,582
3344131045	Other digital silicon ICs.....	21	3,083,492	2,944,642 r/	444,934 r/	1,721,012
	Nondigital silicon monolithic integrated circuits (e.g., linear, analog):					
3344131062	Radio frequency.....	5	(D)	(D)	1,304,689 r/	156,071
3344131003	Other, analog.....	25	2,488,148	3,009,360 r/	2,770,449	2,983,393
3344131006	Other, including mixed signal (analog and digital), logic.....	10	540,059	1,008,978	(D)	(D)
3344131009	Other, including mixed signal (analog and digital), other.....	22	1,002,748	4,423,374 r/	754,475	3,404,558
	Hybrid integrated circuits:					
3344131018	Radio frequency.....	25	367,554	334,789	129,024	426,941
3344131051	Other.....	51	123,718	722,484	95,695	726,047
3344131012	Other.....	54	1,014,879	4,089,059	3,685,154 r/	4,947,746
3344134	Transistors.....	34	(X)	1,375,314	(X)	993,745
3344134005	Signal (less than 1 watt dissipation) 7/.....	17	(X)	(D)	(X)	187,850
3344134010	Power (1 watt or greater dissipation) 7/.....	29	(X)	1,375,314	(X) r/	805,895

Continued

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 [Quantity in thousands of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	2000		1999	
			Quantity	Value	Quantity	Value
3344137	Diodes and rectifiers.....	51	506,593	629,125	5,286,347	1,038,280
3344137010	Signal diodes and assemblies thereof (maximum current 0.5 amps).....	19	31,752	15,164	39,229	18,895
3344137015	Semiconductor rectifiers/power diodes and assemblies thereof (current rating greater than 0.5 amps).....	28	147,634	149,191	1,172,423 r/	560,109
3344137025	Zener diodes (voltage regulator and voltage reference diodes) 8/.....	20	(D)	(D)	(D)	(D)
3344137005	Selenium rectifiers 8/.....	3	137,680	73,403	3,539,963	215,740
3344137020	Microwave diodes (mixers, detectors, varactors, parametric, harmonic generators, etc.).....	14	189,527	391,367	534,732 r/	243,536
334413A	Other semiconductor devices.....	180	(X)	11,870,912	(X)	11,745,361
	Light-sensitive and light-emitting devices:					
334413A005	Solar cells.....	16	(X)	123,792	(X) r/	161,371
334413A010	Photovoltaic modules.....	11	(X)	122,242	(X) r/	99,760
	Light-emitting diodes (LED)					
334413A015	Discrete, infrared and laser.....	19	(X)	271,064	(X) r/	153,157
334413A020	Alpha or numeric displays.....	7	(X)	(D)	(X) r/	80,634
334413A025	Photodiodes, including infrared detectors.....	17	(X)	132,353	(X) r/	104,544
334413A030	Optical coupled isolators, including sensors and emitters.....	5	(X)	(D)	(X)	375,433
334413A035	Other light sensitive and light-emitting devices, including photovoltaic devices and photoelectric-magnetic devices.....	12	(X)	1,083,196	(X) r/	1,021,242
	Other semiconductor devices:					
334413A040	Thyristors (SCR's, triacs, PNP diodes).....	8	(X)	(D)	(X)	148,253
334413A045	Hall effect devices.....	-	(X)	-	(X)	-
334413A050	All other semiconductor devices (tunnel diodes, thermoelectric semiconductor junctions, metal-oxide varistors, solidstate transducers, and special semiconductor devices, n.e.c.).....	19	(X)	(D)	(X)	2,322,724
	Semiconductor parts:					
	Chips and wafers:					
334413A055	For integrated circuits (IC's).....	47	(X)	4,763,169	(X) r/	3,982,122
334413A060	For discrete semiconductors.....	37	(X)	540,237	(X) r/	1,530,002
334413A065	All other semiconductor parts (headers, packages, heat sinks, other accessories, etc.).....	46	(X)	1,938,341	(X)	1,766,119
334414	Capacitors.....	100	(X)	2,662,693	(X)	2,035,076
	Paper, plastic (film), metalized, and dual (film/paper) dielectric capacitors, fixed:					
	Ac types:					
3344140103	Less than 300 volts.....	18	18,118	34,662	18,693	35,410
3344140106	300 volts to 599 volts.....	18	43,013	80,150	48,388	88,767
3344140109	600 volts to 999 volts.....	13	4,923	11,937	6,624	10,871
3344140112	1,000 volts or over.....	10	1,054	10,459	2,070	13,359
	Capacitors having a reactive power handling capacity of 0.5 kVAR or less:					
	Dc types/other:					
3344140215	Axial lead.....	21	39,762	46,846	39,800	41,266
3344140218	Radial lead	10	69,162	29,758	84,348	24,099
3344140221	Chips and other leaded devices.....	2	(D)	(D)	(D)	(D)
	Tantalum electrolytic:					
3344140324	Metal case, including foil and wet 9/.....	10	(D)	(D)	(D)	(D)
3344140327	Dipped 9/	5	(D)	(D)	(D)	(D)
3344140330	Chips 9/.....	8	(D)	(D)	(D)	(D)
3344140333	Other leaded (molded axial and molded radial) 9/.....	2	1,671,127	430,506	2,114,463	303,866
	Aluminum electrolytic:					
3344140436	Less than 18 mm through 35 mm	4	(D)	(D)	(D)	(D)
3344140439	Small can style (over 35mm through 51 mm)	4	628	3,192	582	2,263
3344140442	Other can style (over 51 mm)	6	10,867	69,327	7,801	58,014
3344140445	Ac motor start	1	(D)	(D)	(D)	(D)
	Ceramic dielectric, single layer:					
3344140554	Axial and radial 10/	8	(D)	(D)	(D)	(D)
3344140548	Chips 10/.....	3	175,353	24,677	150,292	23,383
	Ceramic dielectric, multilayer:					
3344140551	Axial leads 11/.....	4	(D)	(D)	(D)	(D)

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 [Quantity in thousands of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	2000		1999	
			Quantity	Value	Quantity	Value
3344140557	Radial leads 11/.....	9	4,582,874	184,604	3,493,724	132,844
3344140560	Chips.....	18	60,588,458	923,687	49,178,519	640,957
	Other:					
3344140663	Mica dielectric.....	7	10,635	8,937 r/	11,699	8,717
3344140666	All other fixed.....	20	240,252	109,913	205,362 r/	91,665
	Variable:					
3344140769	Mica, ceramic or glass dielectric 12/.....	4	(D)	(D)	(D)	(D)
3344140772	Other 12/.....	6	25,280	47,130 r/	22,260 r/	36,402
3344140875	Parts of capacitors, including unfinished chips for further finishing and assembly.....	11	(X)	(D)	(X)	(D)
334415	Resistors.....	95	(X)	1,026,122	(X)	970,587
3344150104	Fixed carbon resistors, composition or film types.....	12	49,876	18,993	46,919	15,211
	Other fixed resistors (power capacity 20W or less):					
	Surface mounted, having two terminals:					
3344150208	Flat resistor chips.....	23	464,552	84,687	344,827	60,388
3344150212	Cylindrical leadless resistors, including metal film, metal oxide, and thick cermet film.....	6	(D)	(D)	(D)	(D)
	Surface mounted, having more than two terminals (resistor networks):					
3344150216	Dual-in-line package.....	6	180,243	44,674	148,217	39,186
3344150220	Other, including flat packs.....	10	13,384	14,458	78,780	24,020
	Resistors, having two leads:					
3344150224	Wirewound.....	22	109,295	74,646	122,089	69,815
3344150228	Other, including metal film, metal oxide, and thick cermet film.....	18	558,980	100,650	556,098	88,733
	Resistor networks, having more than two leads:					
3344150232	Single-in-line.....	18	108,343	47,399	224,273	53,485
3344150236	Dual-in-line.....	7	30,782	11,284	30,553	9,626
3344150240	Other.....	11	67,650	65,627	75,672	70,182
	Variable, nonwirewound:					
	Trimmers:					
3344150344	Single-turn, carbon and other film 13/.....	7	(D)	(D)	(D)	(D)
3344150348	Multiturn, carbon and other film 13/.....	4	12,655	21,039	42,344 r.	30,477
3344150356	Surface mounted.....	-	-	-	-	-
	Potentiometers:					
3344150352	Precision type 14/.....	12	(D)	(D)	(D)	(D)
3344150360	Panel type 14/.....	2	16,443	81,949 r.	16,835 r.	84,474
	Variable, wirewound:					
3344150468	Variable wirewound (except potentiometers), including nonprecision and trimmers.....	3	(D)	(D)	(D)	(D)
3344150464	Potentiometers, precision type 15/.....	9	(D)	(D)	(D)	(D)
3344150472	Potentiometers panel type 15/.....	3	2,185	23,714	2,485	29,473
	Miscellaneous:					
3344150576	Varistors.....	7	(D)	(D)	(D)	(D)
3344150580	Thermistors, bead type, disc, rod.....	13	468,178	130,681	433,768	117,950
3344150684	Parts for resistors.....	9	(X)	207,832	(X)	(D)
334416	Coils, transformers, reactors, and chokes for electronic applications.....	246	(X)	1,679,734	(X)	1,422,547
3344160020	Audio frequency (AF) transformers.....	84	65,608	145,437	58,750	134,092
3344160025	Low frequency (LF) chokes.....	93	26,799	108,688	12,127	70,502
3344160030	Plate and filament transformers, including auto-transformers (except toroidal).....	61	13,186	129,222	15,183	129,227
3344160035	Pulse transformers, computer, and other types.....	87	45,731	160,663	42,496	131,581
3344160005	Radio frequency (RF) chokes.....	40	61,238	43,726 r/	46,816 r/	38,072
3344160010	Radio frequency (RF) coils.....	40	221,491	108,189	191,350	90,291
3344160015	Intermediate frequency (IF) transformers.....	40	76,021	123,316 r/	23,591 r/	72,781
3344160040	Television transformers and reactors (horizontal output, vertical deflection, focus coils, deflection yokes, etc.).....	20	18,838	173,856 r/	18,164	162,351
3344160045	Toroidal windings (transformers and reactors) (except complete magnetics amplifiers).....	113	188,413	239,585 r/	125,968 r/	198,885
3344160050	Other (balun coils, permeability tuning devices, etc.).....	86	(X)	447,052	(X)	394,765
334417	Electronic connectors.....	(NA)	(X)	6,712,099	(X)	4,988,397
3344171	Coaxial (RF) connectors.....	55	899,815	781,688	644,000	630,507
3344171005	Miniature (BNC, PNC, MHB).....	31	86,163	146,066 r/	23,089	69,411
3344171010	Subminiature (SMA, SMB, SMC).....	27	100,523	148,170 r/	31,649 r/	66,316
3344171015	Other standard and precision.....	44	713,129	487,452	589,262 r/	494,780

Continued

Table 2. Quantity and Value of Shipments of Semiconductors, Printed Circuit Boards, and Other Electronic Components: 2000 and 1999
 [Quantity in thousands of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	2000		1999	
			Quantity	Value	Quantity	Value
3344174	Cylindrical connectors.....	48	166,007	658,736	114,411	549,475
3344174005	Heavy duty and standard.....	35	116,888	393,656	72,882	317,169
3344174010	Miniature.....	20	17,874	108,139	14,820	91,031
3344174015	Subminiature.....	16	31,245	156,941 r/	26,709 r/	141,275
3344177	Rack and panel (rectangular) connectors.....	44	1,818,648	676,230	889,173	391,408
3344177005	Integral shell, Mil-C-22857 (8434) and similar types.....	27	1,112,266	319,602	362,819	136,286
	Subminiature:					
3344177010	Ribbon, including planar cable type 16/.....	8	(D)	(D)	(D)	(D)
3344177015	D-Subminiature, including planar cable type 16/.....	21	694,058	307,862	515,319	212,488
3344177020	Microminiatures.....	10	12,324	48,766 r/	11,035 r/	42,634
334417A	Printed circuit connectors.....	66	5,673,203	2,389,277	4,919,273	1,375,841
334417A005	Card insertion types.....	35	954,099	413,075	525,248 r/	96,479
	Two-piece types:					
334417A010	Post, header and receptacle type.....	37	3,794,243	777,884	3,794,972	575,671
334417A015	Other two-piece types.....	34	924,861	1,198,318 r/	599,053 r/	703,691
334417D	Other connectors, including parts.....	117	(X)	2,206,168	(X)	2,041,166
334417D005	Hermetic sealed (except single-contact and coaxial types).....	21	210,757	166,443	237,699	134,520
334417D010	Plate module types.....	6	10,022	37,075	9,477	33,373
334417D015	Fiber optic connectors 17/.....	15	(D)	(D)	(D)	(D)
334417D030	Other planar cable (flat conductor or ribbon cable), excluding rack and panel (rectangular types) 17/.....	26	360,078	493,757	416,841	438,435
334417D020	Miscellaneous special purpose.....	68	2,207,995	1,234,437 r/	1,541,194 r/	1,170,094
334417D025	Parts for connectors (connectors shipped but still requiring further manufacture).....	31	(X)	274,456	(X)	264,744
334419	Electronic components and subassemblies, n.e.c.....	(NA)	(X)	50,368,921	(X)	42,059,878
3344191	Filters (except microwave) and piezoelectric devices..	118	359,705	1,075,556	287,960	857,456
33441911	Filters (except microwave).....	(NA)	172,315	344,553	157,200	304,303
3344191105	Mechanical, excluding optical lenses (germanium silicon, fused quartz, rock salt, and other).....	9	677	45,211 r/	525 r/	33,381
	Radio frequency interference/electro magnetic interference (RFI/EMI) control filters:					
3344191110	Ceramic dielectric.....	15	145,478	151,540	139,246	139,606
3344191115	Combination or other dielectric.....	20	25,478	109,261	14,233 r/	99,651
3344191120	Electronic wave filters (LC band and high pass).....	19	682	38,541	3,196	31,665
33441912	Piezoelectric devices.....	(NA)	187,390	731,003	130,760	553,153
	Oscillator crystals:					
3344191225	AT-cut.....	29	10,338	51,987 r/	8,615 r/	39,834
3344191230	Other.....	9	52,471	66,114	53,767 r/	67,545
	Crystal oscillators:					
3344191235	Oven.....	9	360	43,625	137	25,107
3344191240	TCXO/VCXO.....	11	2,308	40,107	2,768	38,669
3344191245	Hybrid.....	14	9,263	69,892 r/	6,026	53,716
3344191250	Other.....	6	3,103	28,591	2,545	22,472
	Crystal filters:					
3344191255	Monolithic, including filter crystals and/or monolithic filter units not assembled into filters...	5	691	9,054 r/	587 r/	9,864
3344191260	Packaged AT-cut, including monolithic, tandem monolithic, and resonator filter assemblies.....	7	71	2,569 r/	49 r/	1,910
3344191265	Other.....	8	76,111	128,259	33,837 r/	87,061
	Crystal blanks:					
3344191270	AT-cut.....	7	5,863	11,471 r/	4,090 r/	7,469
3344191275	Other.....	18	26,811	279,334 r/	18,339	199,506
3342207	Microwave components and devices (except antenna), tubes, and semiconductors.....	130	(X)	2,449,843	(X)	1,621,571
3342207005	Ferrite, including yttrium garnets, microwave components (circulators, isolators, phase shifters, attenuators, equalizers, limiters, mixers, etc.).....	40	(X)	1,104,009	(X) r/	499,177
	Microwave devices, other than ferrite and solid state:					
3342207010	Attenuators (dummy loads, high and low-power terminations, etc.).....	37	(X)	135,465	(X)	92,378
3342207015	Cavities (amplifier cavities, coaxial tuned cavities, etc.).....	17	(X)	51,946	(X) r/	62,443

Continued

Table 2. Quantity and Value of Shipments of Semiconductors, Printed Circuit Boards, and Other Electronic Components: 2000 and 1999
 [Quantity in thousands of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	2000		1999	
			Quantity	Value	Quantity	Value
3342207020	Couplers (directional couplers, hybrid junctions, etc.).....	29	(X)	60,741	(X)	64,156
3342207025	Reactive microwave components, n.e.c.....	37	(X)	245,964	(X)	185,026
3342207030	Switches, coaxial and waveguide.....	33	(X)	85,673	(X)	67,412
3342207035	Rigid waveguide and fittings (bend and twists, couplings, flanges, other simple waveguide components, n.e.c.).....	21	(X)	54,705	(X)	52,383
3342207040	Flexible waveguides and fittings.....	13	(X)	50,108	(X)	56,541
3342207045	Other microwave components (except ferrite devices) (coaxial to waveguide and other transitions, duplexers and diplexers, holders and mounts, linear and circular polarizers, magnetron test plumbing, rotary joints and sector scan joints, mixer arrays, shutters, tuners, windows, etc.).....	37	(X)	291,422	(X)	208,733
3342207050	Microwave subassemblies, including parametric amplifiers and other solid-state assemblies.....	28	(X)	369,810	(X)	333,322
3344194	Transducers, electrical/electronic I/O, n.e.c.....	92	122,050	1,408,305	123,398	1,330,718
3344194005	Electroacoustic (sonar, ultrasonic, vibration*, etc.).....	16	19,619	127,259 r/	22,717 r/	130,532
	Electromechanical:					
3344194010	Accelerometers*.....	12	5,781	177,424 r/	4,588 r/	170,429
3344194015	Pressure*.....	40	62,191	532,468	55,956	534,837
3344194020	Strain gauges and other mechanical*.....	24	1,866	154,594	1,637 r/	140,734
3344194025	Thermoelectric (pyrometers, thermocouples*, etc.).....	8	2,772	65,901	2,372	52,749
3344194030	Other (optical, chemical, magnetic, nuclear*, etc.).....	25	29,821	350,659	36,128	301,437
3344197	Switches, mechanical types for electronic circuitry.....	81	(X)	901,292	(X)	883,438
3344197020	Slide, including rocker, miniature and subminiature*..	15	(X)	72,850	(X)	57,428
3344197025	Rotary selector, including lever and jog-lever, miniature and subminiature*.....	20	(X)	65,700	(X)	53,425
3344197030	Keyboard*.....	10	(X)	61,057	(X)	56,777
3344197035	Pushbutton*.....	23	(X)	89,239	(X) r/	84,175
3344197040	Snap-action*.....	11	(X)	37,575	(X)	46,081
3344197045	Thumbwheel*.....	6	(X)	19,593	(X) r/	17,379
3344197015	Membrane.....	18	(X)	96,836	(X)	82,345
3344197005	Toggle standard type 18/.....	11	(X)	(D)	(X)	(D)
3344197010	Toggle miniature and subminiature 18/.....	6	(X)	67,090	(X) r/	67,384
3344197050	DIP.....	10	(X)	54,782	(X)	41,840
3344197055	Other.....	38	(X)	336,570	(X) r/	376,604
334418A	Printed circuit assemblies (loaded boards, subassemblies and modules) 19/.....	748	(X)	35,992,320	(X)	30,090,948
334418A005	Computer and peripheral printed board assemblies 19/.....	285	(X)	15,076,622	(X)	12,935,735
334418A010	Communications printed board assemblies 19/.....	254	(X)	10,112,581	(X) r/	7,195,560
334418A015	Industrial process control board assemblies 19/.....	228	(X)	924,581	(X)	907,261
334418A020	Instrumentation printed board assemblies (except industrial process) 19/.....	190	(X)	2,319,804	(X) r/	2,281,213
334418A025	Search and detection printed board assemblies 19/.....	59	(X)	106,886	(X) r/	114,055
334418A030	Consumer electronics, printed board assemblies 19/.....	137	(X)	548,747	(X)	498,995
334418A035	Other electronics, printed board assemblies, including office equipment and point of sales 19/.....	325	(X)	6,903,099	(X) r/	6,158,129
334419D	Electronic components and subassemblies, n.e.c.....	565	(X)	8,541,605	(X)	7,275,747
	Antenna systems (except structural towers sold separately):					
334419D108	Home antenna.....	9	33,186	363,821 r/	24,158 r/	297,795
334419D110	Auto antenna.....	13	24,285	87,062	23,452	78,369
334419D115	Antenna accessories, sold separately (pedestals, drives, passive reflectors, rotators, radomes, etc.).....	22	(X)	95,584	(X) r/	93,041
334419D220	Delay lines (distributed constant, lumped constant, magnetostrictive, ultrasonic, etc.).....	14	7,929	51,891 r/	7,187	39,922
334419D325	Oscillators (except instrumentation and crystal types).....	21	19,053	282,908	4,571 r/	153,648
3342203051	Magnetic recording and reproducing heads, including audio, video, digital and instrumentation.....	12	(D)	(D)	(D)	(D)

Continued

Table 2. Quantity and Value of Shipments of Semiconductors, Printed Circuit Boards, and Other Electronic Components: 2000 and 1999
 [Quantity in thousands of units. Value in thousands of dollars]

Product code	Product description	No. of cos.	2000		1999	
			Quantity	Value	Quantity	Value
	Static power supply converters for electronic applications, sold separately:					
334419D530	Regulated.....	73	49,024	1,743,297 r/	45,733	1,383,527
334419D535	Other (unregulated, variable frequency, ac, dc, converters and inverters, vibrator, etc.).....	48	(X)	995,560	(X) r/	789,681
334419D640	Electronic cable harnesses and cable assemblies.....	265	(X)	2,449,738	(X)	1,965,416
334419D745	Cryogenic cooling devices (cryostats, etc.) for infrared detectors, masers.....	4	(X)	14,150	(X)	16,021
334419D850	Liquid crystal displays (LCD) and other liquid devices.....	15	(X)	80,306	(X)	76,498
334419D955	Magnetic cores.....	16	(X)	348,451	(X) r/	305,800
	Electronic parts, n.e.c. and specialized electronic hardware:					
	Sockets for electronic component insertion:					
334419DA65	Integrated circuit sockets.....	14	(X)	143,190	(X)	130,024
334419DA60	Other, including tube, relay, discrete semiconductors, ac and dc converters and inverters, etc.....	15	(X)	99,914	(X) r/	91,103
336322C119	Electronic control modular chips for motor vehicles.....	3	(X)	(D)	(X)	(D)
334419D870	All other electronic parts and specialized electronic hardware, n.e.c.....	133	(X)	1,530,364	(X) r/	1,525,398
	Electronic research, development, testing, and evaluation (receipts or billings, not reported as shipments of specific products):					
99980 42	Systems.....	17	(X)	104,504	(X)	115,147
99980 43	Equipment and subassemblies.....	29	(X)	240,141	(X)	249,466
99980 44	Component parts.....	27	(X)	155,958	(X) r/	231,544
99980 46	Basic scientific electronic research.....	18	(X)	72,879	(X)	71,038
99980 47	Design and engineering services.....	66	(X)	486,118	(X)	468,340
99980 48	Software.....	5	(X)	(D)	(X)	(D)
99980 49	Testing.....	12	(X)	24,314	(X)	23,414
99980 50	Supplies and accessories sold with components.....	7	(X)	1,628	(X) r/	3,754

*Similar products are collected on Current Industrial Report Series MA335A, "Switchgear and Industrial Controls" and MA335K, "Wiring Devices and Supplies." - Represents zero. D Withheld to avoid disclosing data for individual companies. NA Not available. n.e.c. Not else where classified. r/Revised by 5 percent or more from previously published data. X Not applicable.

- 1/Product code 3344111225 is combined with product code 3344111230 to avoid disclosing data for individual companies.
- 2/Product code 3344111235 is combined with product code 3344111240 to avoid disclosing data for individual companies.
- 3/Product codes 3344111345 and 3344111350 are combined with product code 3344111355 to avoid disclosing data for individual companies.
- 4/Product code 3344114010 is combined with product code 3344114015 to avoid disclosing data for individual companies.
- 5/Product code 3344131015 is combined with product code 3344131021 to avoid disclosing data for individual companies.
- 6/For 2000, product codes 3344131092 and 3344131094 are combined with product code 334413096 to avoid disclosing data for individual companies.
- 7/For 2000, value data for product code 3344134005 is combined with product code 334414010 to avoid disclosing data for individual companies.
- 8/Product code 3344137025 is combined with product code 3344137005 to avoid disclosing data for individual companies.
- 9/Product codes 3344140324, 3344140327, and 3344140330 are combined with product code 3344140333 to avoid disclosing data for individual companies.
- 10/Product code 3344140554 is combined with product code 3344140548 to avoid disclosing data for individual companies.
- 11/Product code 3344140551 is combined with product code 3344140557 to avoid disclosing data for individual companies.
- 12/Product code 3344140769 is combined with product code 3344140772 to avoid disclosing data for individual companies.
- 13/Product code 3344150344 is combined with product code 3344150348 to avoid disclosing data for individual companies.
- 14/Product code 3344150352 is combined with product code 3344150360 to avoid disclosing data for individual companies.
- 15/Product code 3344150464 is combined with product code 3344150472 to avoid disclosing data for individual companies.
- 16/Product code 3344177010 is combined with product code 3344177015 to avoid disclosing data for individual companies.
- 17/Product code 334417D015 is combined with product code 334417D030 to avoid disclosing data for individual companies.
- 18/Product code 3344197005 is combined with product code 3344197010 to avoid disclosing data for individual companies.
- 19/These data are collected on two Current Industrial Report forms, MA334R, "Computers and Office and Accounting Machines," and MA334Q, "Semiconductors, Printed Circuit Boards, and Other Electronic Components."

Table 3. Shipments, Exports, and Imports of Semiconductors, Printed Circuit Boards, and Other Electronic Components: 2000
 [Values in thousands of dollars]

Product code	Product description	Manufactures' shipments (value, f.o.b. plant)	Exports of domestic merchandise (value at port) 1/	Imports for consumption 2/
3344111105	High vacuum tubes.....	69,282	57,923	17,988
3344111110	Gas and vapor tubes.....	31,796	12,218	765
3344111115	Klystrons, including amplifier, reflex and other.....	55,274	28,959	50,432
3344111120	Magnetrons, including pulsed, fixed, tunable, cross-field, continuous wave and other.....	43,729	10,628	35,753
3344111345, 350	Light sensing tubes, including camera tubes, photo emissive and photo conductive, and image intensifiers and converters 3/.....	(D)	89,893	30,257
3344111355	Light sensing tubes, n.e.c., including photo multipliers 3/.....	103,832	35,216	48,130
3344114005	Receiving type electron tubes, including rebuilt.....	(D)	10,839	5,613
3344114010, 015, 020, 025	Television tubes, color, and black and white new and rebuilt.....	(D)	2,014,756	148,656
3344117030	Electron tube parts (except glass blanks).....	143,369	121,785	364,215
3344120105, 210, 315, 420, 425, 430, 435, 440	Printed circuit boards.....	10,140,628	2,864,694	3,070,906
3344131048	Monolithic integrated circuits, digital (except memory and silicon).....	1,667,833	684,236	127,424
3344131036	Monolithic integrated circuits, digital, memory (except silicon).....	(D)	554,293	443,659
3344131015	Monolithic integrated circuits, digital, silicon, bipolar transistors, memory, static random access memory (SRAM) 4/.....	(D)	81,861	10,457
3344131021	Monolithic integrated circuits, digital, silicon, bipolar transistors, memory (except static random access memory (SRAM)) 4/.....	9,208	26,718	16,563
3344131027	Monolithic integrated circuits, digital, silicon, bipolar transistors (except memory, emitter logic (ECL)).....	(D)	48,026	129,265
3344131024	Monolithic integrated circuits, digital, silicon, bipolar transistors (except memory, transistor-transistor logic (TTL)).....	238,148	19,426	91,590
3344131030	Monolithic integrated circuits, digital, silicon, bipolar transistors (except memory, n.e.c.).....	1,395,060	130,721	176,747
3344131064, 066	Monolithic integrated circuits, digital, silicon, metal oxide (MOS) field effect transistors: With volatile memory (DRAM), not over 300 k	(D)	196,259	59,620
3344131068, 070, 072	With volatile memory (DRAM), over 300 k	(D)	2,501,992	6,490,651
3344131082, 084, 086	With volatile memory (SRAM), not over 300 k	441,921	236,357	348,482
3344131088, 090	With volatile memory (SRAM), over 300 k	1,567,121	337,777	1,799,223
3344131092, 094, 096	Except volatile memory, electrically (EEPROM).....	943,830	625,383	2,702,150
3344131074, 076, 078	Except volatile memory (except electrically (EEPROM)).....	(D)	158,885	428,607
3344131080	Except volatile memory, n.e.c.	4,998,580	936,411	1,494,055
3344131054	Monolithic integrated circuits, digital, silicon, metal oxide (MOS) field effect transistors (except memory type): Microprocessors 8 bits or less.....	990,386	182,850	1,201,960
3344131057	Microprocessors 16 bits.....	1,370,425	88,096	600,732
3344131060	Microprocessors 32 bits or more.....	(D)	1,411,389	3,068,735
3344131033	Other (microcontrollers, ASIC's PLA's, etc.).....	9,757,107	2,335,528	10,811,950

Continued

Table 3. Shipments, Exports, and Imports of Semiconductors, Printed Circuit Boards, and Other Electronic Components: 2000
 [Values in thousands of dollars]

Product code	Product description	Manufactures' shipments (value, f.o.b. plant)	Exports of domestic merchandise (value at port) 1/	Imports for consumption 2/
3344131039	Monolithic integrated circuits, digital, silicon, metal oxide (MOS) field effect transistors, complementary BiMOS, memory type.....	(D)	39,097	152,047
3344131042	Monolithic integrated circuits, digital, silicon, metal oxide (MOS) field effect transistors, complementary BiMOS (except memory type).....	766,917	75,874	180,743
3344131045	Monolithic integrated circuits, digital, silicon, metal oxide (MOS) field effect transistors, complementary BiMOS, n.e.c., including logic type (except memory types).....	2,944,642	546,854	292,290
3344131062, 003, 006, 009	Monolithic integrated circuits, nondigital, silicon, including linear, analog, radio frequency, etc.	(D)	3,423,988	6,792,640
3344131018, 051	Hybrid integrated circuits.....	1,057,273	946,946	1,212,281
3344140324	Capacitors, fixed, tantalum electrolytic, metal case, including foil and wet 5/.....	(D)	32,425	25,382
3344140327	Capacitors, fixed, tantalum electrolytic, dipped 5/.....	(D)	15,033	44,335
3344140330	Capacitors, fixed, tantalum electrolytic, chips 5/.....	(D)	164,211	472,496
3344140333	Capacitors, fixed, tantalum electrolytic, n.e.c., including leaded 5/.....	430,506	167,280	271,881
3344140436	Capacitors, fixed, aluminum electrolytic, not exceeding 35 mm.....	(D)	97,472	348,259
3344140439, 442, 445	Capacitors, fixed, aluminum electrolytic, over 35 mm.....	(D)	14,564	45,996
3344140548	Capacitors, fixed, ceramic dielectric, single layer, chips 6/.....	24,677	57,004	32,063
3344140554	Capacitors, fixed, ceramic dielectric, single layer, axial and radial 6/.....	(D)	24,250	62,443
3344140551	Capacitors, fixed, ceramic dielectric, multilayer, axial leads 7/.....	(D)	74,390	27,867
3344140557	Capacitors, fixed, ceramic dielectric, multilayer, radial leads 7/.....	184,604	77,330	91,598
3344140560	Capacitors, fixed, ceramic dielectric, multilayer, chips.....	923,687	570,401	1,006,560
3344140663	Capacitors, fixed, mica dielectric	8,937	2,312	4,895
3344140666	Capacitors, fixed, n.e.c.	109,913	568,401	123,111
3344140769	Capacitors, variable, mica/ceramic/glass dielectric 8/.....	(D)	11,879	7,903
3344140772	Capacitors, variable, n.e.c. 8/.....	47,130	113,876	40,486
3344140875	Capacitors, parts, including unfinished chips for further finishing.....	(D)	443,210	71,613
3344140103	Capacitors, fixed, ac type, less than 300 volts.....	34,662	9,517	30,142
3344140106	Capacitors, fixed, ac type, 300-599 volts.....	80,150	3,180	39,487
3344140109	Capacitors, fixed, ac type, 600-999 volts.....	11,937	67	3,771
3344140112	Capacitors, fixed, ac type, 1,000 volts or more.....	10,459	8,731	1,529
3344140215	Capacitors, fixed, dc type, axial	46,846	2,073	4,309
3344140218	Capacitors, fixed, dc type, radial	29,758	6,991	85,246
3344140221	Capacitors, fixed, dc type, chips and other leaded.....	(D)	44,220	35,591
3344134005	Transistors, signal, less than 1 watt dissipation 9/.....	(D)	159,212	496,493
3344134010	Transistors, signal, 1 watt or greater dissipation 9/.....	1,375,314	320,925	1,111,896
3344137010	Signal diodes and assemblies.....	15,164	31,602	80,868
3344137025	Zener diodes.....	(D)	50,214	121,360
3344137015, 005	Diodes and rectifiers, n.e.c.....	(D)	418,643	754,217
3344137020	Microwave diodes.....	391,367	67,968	49,973
334413A005	Solar cell.....	123,792	184,865	70,864

Continued

Table 3. Shipments, Exports, and Imports of Semiconductors, Printed Circuit Boards, and Other Electronic Components: 2000
 [Values in thousands of dollars]

Product code	Product description	Manufactures' shipments (value, f.o.b. plant)	Exports of domestic merchandise (value at port) 1/	Imports for consumption 2/
334413A015, 020	Light-emitting diodes.....	(D)	397,370	1,000,389
334413A030	Optical coupled isolators.....	(D)	88,568	161,113
334413A035	Other light-sensitive and light-emitting devices.....	1,083,196	249,584	249,106
334413A040	Thyristors, SCR's, triacs, and PNP diodes.....	(D)	60,292	201,282
334413A055	Chips and wafers for integrated circuits.....	4,763,169	21,920,717	2,826,345
334413A060	Chips and wafers for discrete semiconductors.....	540,237	1,900,890	300,622
334413A065	Other semiconductor parts.....	1,938,341	445,059	253,556
3344150104	Carbon resistors, fixed, composition or film types, designed for surface mounting (SMD) by contact, having two terminals, cylindrical leadless having two leads, carbon composition, and carbon film.....	18,993	46,467	42,180
3344150208, 212	Carbon resistors, fixed, with a power capacity of 20 watts or less, surface mounted (SMD), having two terminals, flat resistor chips, and cylindrical leadless resistors.....	(D)	40,625	201,698
3344150216, 220	Carbon resistors, fixed, with a power capacity of 20 watts or less, surface mounted (SMD), having more than two terminals, resistor, resistor-capacitor networks.....	59,132	14,524	40,264
3344150224	Resistors, fixed, with a power capacity of 20 watts or less, wirebound, having two leads.....	74,646	29,468	52,515
3344150228	Resistors, fixed, with a power capacity of 20 watts or less, other than wirebound, having two leads.....	100,650	58,233	88,645
3344150232, 236, 240	Resistors, fixed, with a power capacity of 20 watts or less, resistor networks, having more than two leads.....	124,310	48,308	45,611
3344150468, 464, 472	Resistors, variable, wirewound, including rheostats and potentiometers, for a power handling capacity not exceeding 20 watts.....	(D)	7,217	23,756
3344150344, 348, 356, 352, 360, 576, 580	Resistors, variable, n.e.c.	(D)	248,579	317,466
3344150684	Resistors, parts	207,832	110,109	59,708
3344191225, 230, 235, 240, 245, 250, 255, 260, 265	Piezoelectric devices (except crystal blanks).....	440,198	289,305	888,074
3344191270, 275	Piezoelectric devices, crystal blanks.....	290,805	22,819	14,653
3344160040	Television transformers and reactors.....	173,856	20,928	133,347
3344160020, 030, 035, 010, 015, 045, 050	Coils, transformers, reactors, and chokes for electronic applications, n.e.c.	1,353,464	419,133	1,089,995
3344171000	Connectors, coaxial.....	781,688	189,898	332,569
3344174000	Connectors, cylindrical	658,736	36,027	104,816
3344177000	Connectors, rack and panel	676,230	25,164	72,370
334417A000	Connectors, printed circuit	2,389,277	376,267	586,192
334419D108, 110, 115	Antenna systems (except structural towers, sold separately).....	546,467	40,083	46,485
3342203051	Magnetic recording and reproducing heads.....	(D)	13,692	9,655
3344197025	Switches, rotary selector.....	65,700	37,647	16,477
3344197035	Switches, pushbutton.....	89,239	80,815	157,891
3344197020	Switches, slide, including rocker, miniature and subminiature.....	72,850	4,125	20,440

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Table 3. Shipments, Exports, and Imports of Semiconductors, Printed Circuit Boards, and Other Electronic Components: 2000
 [Values in thousands of dollars]

Product code	Product description	Manufacturers' shipments (value, f.o.b. plant)	Exports of domestic merchandise (value at port) 1/	Imports for consumption 2/
3344197040	Switches, snap-action.....	37,575	23,160	102,031
3344197030, 045, 015, 005, 010, 050, 055	Switches, other.....	635,928	843,675	1,176,200

D Withheld to avoid disclosing data for individual companies. n.e.c. Not elsewhere classified.

1/Source: Census Bureau report EM 545, U.S. Exports.

2/Source: Census Bureau report IM 145, General Imports for Consumption.

3/Manufacturers' shipments for "Light sensing tubes, including camera tubes, photo emissive and photo conductive, and image intensifiers and converters" and "Light sensing tubes, n.e.c., including photo multipliers" are combined to avoid disclosing data for individual companies.

4/Manufacturers' shipments for "Monolithic integrated circuits, digital, silicon, bipolar transistors, memory, static random access memory (SRAM)" and "Monolithic integrated circuits, digital, silicon, bipolar transistors, memory (except static random access memory (SRAM))" are combined to avoid disclosing data for individual companies.

5/Manufacturers' shipments for "Capacitors, fixed, tantalum electrolytic, metal case, including foil and wet," "Capacitors, fixed, tantalum electrolytic, dipped," "Capacitors, fixed, tantalum electrolytic, chips" and "Capacitors, fixed, tantalum electrolytic, n.e.c., including leaded" are combined to avoid disclosing data for individual companies.

6/Manufacturers' shipments for "Capacitors, fixed, ceramic dielectric, single layer, chips" and "Capacitors, fixed, ceramic dielectric, single layer, axial and radial" are combined to avoid disclosing data for individual companies.

7/Manufacturers' shipments for "Capacitors, fixed, ceramic dielectric, multilayer, axial leads" and "Capacitors, fixed, ceramic dielectric, multilayer, radial leads" are combined to avoid disclosing data for individual companies.

8/Manufacturers' shipments for "Capacitors, variable, mica/ceramic/glass dielectric" and "Capacitors, variable, n.e.c." are combined to avoid disclosing data for individual companies.

9/Manufacturers' shipments for "Transistors, signal, less than 1 watt dissipation" and "Transistors, signal, 1 watt or greater dissipation" are combined to avoid disclosing data for individual companies.

Table 4. Comparison of North American Industry Classification System-Based Product Codes with Schedule B Export Numbers, and HTSUSA Import Numbers: 2000

Product code	Product description	Export numbers	Import numbers
3344114005	Receiving-type electron tubes.....	8540.81.0000	8540.81.0000
3344114010, 015, 015, 020, 025	Television tubes, color, black and white, new and rebuilt.....	8540.11.0035 8540.11.0070 8540.11.0080 8540.12.0000	8540.11.1030 8540.11.1040 8540.11.1050 8540.11.1055 8540.11.1065 8540.11.1080 8540.11.2400 8540.11.2800 8540.11.3000 8540.11.4400 8540.11.4800 8540.11.5000 8540.12.1040 8540.12.1080 8540.12.2000 8540.12.5040 8540.12.5080 8540.12.7000
3344111110	Gas and vapor tubes.....	8540.89.0020	8540.89.0020
3344111115	Klystrons, including amplifiers, reflex, and other.....	8540.72.0000 8540.79.0000	8540.72.0000 8540.79.0000
3344111120	Magnetrons, including pulsed, fixed, tunable, cross-field, continuous wave and other.....	8540.71.2000 8540.71.4000	8540.71.2000 8540.71.4000
3344111345, 350	Light-sensing tubes, including camera tubes, photo emissive and photo conductive, and image intensifiers and converters.....	8540.20.2000 8540.20.4000	8540.20.2040 8540.20.2080 8540.20.4000
3344111355	Light-sensing tubes, n.e.c., including photo multipliers..	8540.89.0060	8540.89.0060
3344111105	High vacuum tubes, including triodes, multigrid external and internal anodes, diodes and others.....	8540.89.0040 8540.89.0080	8540.89.0040 8540.89.0080
3344117030	Electron tube parts (except glass blanks).....	8540.91.2000 8540.91.4000 8540.99.0000	8540.91.1500 8540.91.2000 8540.91.5000 8540.99.8000
3344131036	Monolithic integrated circuits, digital, memory (except silicon).....	8542.13.8092 8542.13.8096	8542.13.8092 8542.13.8096
3344131048	Monolithic integrated circuits, digital (except memory and silicon).....	8542.13.8010	8542.13.8010
3344131015	Monolithic integrated circuits, digital, silicon, bipolar transistors, memory, SRAM.....	8542.14.8004	8542.14.8004
3344131021	Monolithic integrated circuits, digital, silicon, bipolar transistors, memory (except SRAM).....	8542.14.8007	8542.14.8007

Continued

Table 4. Comparison of North American Industry Classification System-Based Product Codes with Schedule B Export Numbers, and HTSUSA Import Numbers: 2000

Product code	Product description	Export numbers	Import numbers
3344131024	Monolithic integrated circuits, digital, silicon, bipolar transistors (except memory, transistor-transistor logic (TTL)).....	8542.14.8011	8542.14.8011
3344131027	Monolithic integrated circuits, digital, silicon, bipolar transistors (except memory, emitter coupled logic (ECL)).....	8542.14.8012	8542.14.8012
3344131030	Monolithic integrated circuits, digital, silicon, bipolar transistors (except memory, n.e.c.).....	8542.14.8017	8542.14.8017
3344131064, 066	Monolithic integrated circuits, digital, silicon, metal oxide (MOS) field effect transistors volatile memory, (DRAM), not over 300,000 bits.....	8542.13.8027	8542.13.8021 8542.13.8022 8542.13.8023
3344131068, 070, 072	Monolithic integrated circuits, digital, silicon, metal oxide (MOS) field effect transistors volatile memory, (DRAM), over 300,000 bits.....	8542.13.8028	8542.13.8024 8542.13.8026 8542.13.8034
3344131082, 084, 086	Monolithic integrated circuits, digital, silicon, metal oxide (MOS) field effect transistors volatile memory, (SRAM), not over 300,000 bits.....	8542.13.8043	8542.13.8037 8542.13.8038 8542.13.8039
3344131088, 090	Monolithic integrated circuits, digital, silicon, metal oxide (MOS) field effect transistors volatile memory (SRAM), over 300,000 bits.....	8542.13.8044	8542.13.8041 8542.13.8049
3344131092, 094, 096	Monolithic integrated circuits, digital, silicon, metal oxide (MOS) field effect transistors (except volatile memory (EEPROM)).....	8542.13.8056	8542.13.8051 8542.13.8052 8542.13.8057
3344131074, 076, 078	Monolithic integrated circuits, digital, silicon, metal oxide (MOS) field effect transistors (except volatile memory (EEPROM)).....	8542.13.8061	8542.13.8058 8542.13.8059 8542.13.8060
3344131080	Monolithic integrated circuits, digital, silicon, metal oxide (MOS) field effect transistors (except volatile memory, n.e.c.).....	8542.13.8065	8542.13.8065
3344131054	Monolithic integrated circuits, digital, silicon, metal oxide (MOS) field effect transistors, (except memory type, including microprocessors having an internal data bus of 8 bits or less).....	8542.13.8066	8542.13.8066
3344131057	Monolithic integrated circuits, digital, silicon, metal oxide (MOS) field effect transistors (except memory type, including microprocessors having an internal data bus of 16 bits).....	8542.13.8067	8542.13.8067
3344131060	Monolithic integrated circuits, digital, silicon, metal oxide (MOS) field effect transistors (except memory type, including microprocessors having an internal data bus of 32 bits).....	8542.13.8068	8542.13.8068

Table 4. Comparison of North American Industry Classification System-Based Product Codes with Schedule B Export Numbers, and HTSUSA Import Numbers: 2000

Product code	Product description	Export numbers	Import numbers
3344131033	Monolithic integrated circuits, digital, silicon, metal oxide (MOS) field effect transistors, (except memory type: controllers, application specific intergrated circuits and programmable logic arrays (except microprocessors).....	8542.13.8072	8542.13.8072
3344131039	Monolithic integrated circuits, digital, silicon, other than metal oxide (MOS) field effect transistors, complementary BiMOS, memory type.....	8542.19.8073	8542.19.8073
3344131042	Monolithic integrated circuits, digital, silicon, other than metal oxide (MOS) field effect transistors, complementary BiMOS, n.e.c., including logic type (except memory types).....	8542.19.8078	8542.19.8078
3344131045	Monolithic integrated circuits, digital, silicon, other than metal oxide (MOS) field effect transistors, complementary BiMOS, n.e.c., including logic type (except memory types).....	8542.19.8079	8542.19.8079
3344131062, 003, 006, 009	Monolithic integrated circuits, nondigital, silicon, including linear, analog, radio frequency, etc.	8542.30.0040 8542.30.0060 8542.30.0065 8542.30.0080 8542.30.0090	8542.30.0040 8542.30.0060 8542.30.0065 8542.30.0080 8542.30.0090
3344131018, 051	Hybrid integrated circuits.....	8542.40.0075 8542.40.0095	8542.40.0075 8542.40.0095
3344140324	Capacitors, fixed, tantalum electrolytic, metal case, including foil and wet.....	8532.21.0020	8532.21.0020
3344140327	Capacitors, fixed, tantalum electrolytic, dipped.....	8532.21.0040	8532.21.0040
3344140330	Capacitors, fixed, tantalum electrolytic, chips.....	8532.21.0050	8532.21.0050
3344140333	Capacitors, fixed, tantalum electrolytic, n.e.c., including leaded (molded axial and molded radial).....	8532.21.0080	8532.21.0080
3344140436	Capacitors, fixed, aluminum electrolytic, not exceeding 35mm.....	8532.22.0020 8532.22.0040	8532.22.0020 8532.22.0040
3344140439, 442, 445	Capacitors, fixed, aluminum electrolytic, over 35 mm.....	8532.22.0055 8532.22.0085	8532.22.0055 8532.22.0085
3344140548	Capacitors, fixed, ceramic dielectric, single layer, chips...	8532.23.0020	8532.23.0020
3344140554	Capacitors, fixed, ceramic dielectric, single layer, axial and radial.....	8532.23.0040 8532.23.0060	8532.23.0040 8532.23.0060
3344140551	Capacitors, fixed, ceramic dielectric, multilayer axial leads.....	8532.24.0040	8532.24.0040
3344140557	Capacitors, fixed, ceramic dielectric, multilayer radial leads.....	8532.24.0060	8532.24.0060

Continued

Table 4. Comparison of North American Industry Classification System-Based Product Codes with Schedule B Export Numbers, and HTSUSA Import Numbers: 2000

Product code	Product description	Export numbers	Import numbers
3344140560	Capacitors, fixed, ceramic dielectric, multilayer chips.....	8532.24.0020	8532.24.0020
3344140663	Capacitors, fixed, mica dielectric.....	8532.29.0020	8532.29.0020
3344140666	Capacitors, fixed, n.e.c.	8532.29.0040	8532.29.0040
3344140769	Capacitors, variable, mica/ceramic/glass dielectric.....	8532.30.0010	8532.30.0010
3344140772	Capacitors, variable, n.e.c.	8532.30.0090	8532.30.0090
3344140875	Capacitors, parts, including unfinished chips for further finishing and assembly.....	8532.90.0000	8532.90.0000
3344140103	Capacitors, fixed, paper, plastic (film), metalized, and dual film/paper dielectric, ac types, less than 300 volts.....	8532.25.0010	8532.25.0010
3344140106	Capacitors, fixed, paper, plastic (film), metalized, and dual film/paper dielectric, ac types, 300 volts to 599 volts.....	8532.25.0020	8532.25.0020
3344140109	Capacitors, fixed, paper, plastic (film), metalized, and dual film/paper dielectric, ac types, 600 volts to 999 volts.....	8532.25.0030	8532.25.0030
3344140112	Capacitors fixed, paper, plastic (film), metalized, and dual film/paper dielectric, ac types, 1000 volts or over.....	8532.25.0040	8532.25.0040
3344140215	Capacitors, fixed, paper, plastic (film), metalized, and dual film/paper dielectric, dc types, axial lead.....	8532.25.0060	8532.25.0060
3344140218	Capacitors, fixed, paper, plastic(film), metalized, and dual film/paper dielectric, dc types, radial lead.....	8532.25.0070	8532.25.0070
3344140221	Capacitors, fixed, paper, plastic(film), metalized, and dual film/paper dielectric, dc types, chips and other leaded devices.....	8532.25.0050 8532.25.0080	8532.25.0080
3344134005	Transistors, signal, less than 1 watt dissipation.....	8541.21.0080	8541.21.0075 8541.21.0095
3344134010	Transistors, power, 1 watt or greater dissipation.....	8541.29.0080	8541.29.0075 8541.29.0095
3344137025	Zener diodes.....	8541.10.0050	8541.10.0050
3344137020	Microwave diodes.....	8541.10.0060	8541.10.0060
3344137010	Signal diodes and assemblies.....	8541.10.0070	8541.10.0070
3344137015, 005	Diodes and rectifiers, n.e.c.	8541.10.0080	8541.10.0080

Continued

Table 4. Comparison of North American Industry Classification System-Based Product Codes with Schedule B Export Numbers, and HTSUSA Import Numbers: 2000

Product code	Product description	Export numbers	Import numbers
334413A005	Solar cell.....	8541.40.6020 8541.40.6030	8541.40.6020 8541.40.6030
334413A015, 020	Light-emitting diodes.....	8541.40.2000	8541.40.2000
334413A030	Optical coupled isolators, including sensors and emitters.....	8541.40.8000	8541.40.8000
334413A040	Thyristors, SCR's, triacs, and PNP diodes.....	8541.30.0080	8541.30.0080
334413A035	Other light-sensitive and light-emitting devices.....	8541.40.7080 8541.40.9500	8541.40.7080 8541.40.9500
334413A060	Chips and wafers for discrete semiconductors.....	8541.10.0040 8541.21.0040 8541.29.0040 8541.30.0040 8541.40.6010 8541.40.7040 8541.50.0040 8541.50.0080	8541.10.0040 8541.21.0040 8541.29.0040 8541.30.0040 8541.40.6010 8541.40.7040 8541.50.0040 8541.50.0080
334413A055	Chips and wafers for integrated circuits.....	8542.13.8005 8542.13.8010 8542.14.8001 8542.14.8002 8542.19.8001 8542.19.8002 8542.30.0040	8542.13.8005 8542.13.8010 8542.14.8001 8542.14.8002 8542.19.8001 8542.19.8002 8542.30.0004
334413A065	Semiconductor parts, n.e.c., including headers, packages, heat sinks, accessories, etc.	8541.90.0000	8541.90.0000
3344150104	Resistors, fixed, carbon, composition or film types, designed for surface mounting (SMD) by contact, having two terminals, cylindrical leadless having two leads, carbon composition, and carbon film.....	8533.10.0042 8533.10.0070	8533.10.0042 8533.10.0060 8533.10.0065
3344150208, 212	Resistors, fixed, with a power capacity of 20 watts or less, surface mounted (SMD), having two terminals, including bith flat resistor chips, and cylindrical leadless resistors.....	8533.21.0045	8533.21.0030 8533.21.0040
3344150216, 220	Resistors, fixed, with a power capacity of 20 watts or less, surface mounted (SMD), having more than two terminals: resistor, resistor-capacitor networks.....	8533.21.0025	8533.21.0010 8533.21.0020
3344150224	Resistors, fixeds, with a power capacity of 20 watts or less, wirewound, having two leads.....	8533.21.0080	8533.21.0080
3344150228	Resistors, fixed, with a power capacity of 20 watts or less, other than wirewound, having two leads.....	8533.21.0090	8533.21.0090

Continued

Table 4. Comparison of North American Industry Classification System-Based Product Codes with Schedule B Export Numbers, and HTSUSA Import Numbers: 2000

Product code	Product description	Export numbers	Import numbers
3344150232, 236, 240	Resistors, fixed, with a power capacity of 20 watts or less, resistor networks, having more than two leads.....	8533.10.0020 8533.10.0057 8533.21.0075	8533.10.0020 8533.10.0057 8533.21.0050 8533.21.0060 8533.21.0070
3344150468, 464 472	Resistors, variable, wirewound, including rheostats and potentiometers, for a power handling capacity not exceeding 20 watts.....	8533.31.0000	8533.31.0000
3344150344, 348, 356, 352, 360, 576, 580	Resistors, variable, n.e.c.	8533.40.0080	8533.40.8050 8533.40.8060 8533.40.8070
3344150684	Resistors, parts.....	8533.90.0000	8533.90.4000 8533.90.8000
3344191225, 230, 235, 240, 245, 250, 255, 260, 265	Piezoelectric devices (except crystal blanks).....	8541.60.0025 8541.60.0060 8541.60.0080	8541.60.0010 8541.60.0020 8541.60.0030 8541.60.0050 8541.60.0060 8541.60.0080
3344191270, 275	Piezoelectric devices, crystal blanks.....	7104.10.0000	7104.10.0000
3344120105, 210, 315, 420, 425, 430, 435, 440	Printed circuit boards.....	8534.00.0020 8534.00.0040 8534.00.0050 8534.00.0070 8534.00.0080 8534.00.0085 8534.00.0095	8534.00.0020 8534.00.0040 8534.00.0050 8534.00.0070 8534.00.0080 8534.00.0085 8534.00.0095
3344160040	Television transformers and reactors (horizontal) output, vertical deflection, focus coils, deflection yokes, etc.	8529.90.3540 8540.91.2000	8529.90.3600 8540.91.2000
3344160020, 030, 035, 010, 015, 045, 050	Coils, transformers, reactors, and chokes for electronic applications, n.e.c.	8504.31.2000 8504.31.4035 8504.31.4065 8504.31.6000 8504.32.0000 8504.33.0020 8504.33.0040 8504.34.0000	8504.31.2000 8504.31.4035 8504.31.4065 8504.31.6000 8504.32.0000 8504.33.0020 8504.33.0040 8504.34.0000
3344171000	Connectors, coaxial.....	8536.69.4010	8536.69.4010
3344174000	Connectors, cylindrical.....	8536.69.4020	8536.69.4020
3344177000	Connectors, rack and panel.....	8536.69.4030	8536.69.4030

Continued

Table 4. Comparison of North American Industry Classification System-Based Product Codes with Schedule B Export Numbers, and HTSUSA Import Numbers: 2000

Product code	Product description	Export numbers	Import numbers
334417A000	Connectors, printed circuit.....	8536.69.4040	8536.69.4040
334419D108, 110, 115	Antenna systems (except structural towers sold separately).....	8529.10.2020	8529.10.2020
3342203051	Magnetic recording and reproducing heads, including audio, video, digital and instrumentation.....	8522.90.0010	8522.90.5540 8522.90.7540
3344197025	Rotary selector switches for electronic circuitry, including lever and jog-levers, miniature and subminiature.....	8536.50.9020 8536.50.9025	8536.50.9020
3344197035	Pushbutton switches for electronic circuitry.....	8536.50.9030 8536.50.9035	8536.50.9031 8536.50.9032 8536.50.9033 8536.50.9035
3344197020	Slide switches, including rocker for electronic circuitry, both miniature and subminiature.....	8536.50.9050**	8536.50.9050**
3344197040	Snap-action switches for electronic circuitry.....	8536.50.9040**	8536.50.7000** 8536.50.9040**
3344197030, 045, 015, 005, 010, 050, 055	Switches for electronic circuitry, n.e.c.	8536.50.9045** 8536.50.9055 8536.50.9065	8536.50.9055 8536.50.9065

**Harmonized System codes include switches of product class 36433. n.e.c. Not elsewhere classified.