Semiconductors, Printed Circuit Boards, Other Electronic Components: 2004

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SUMMARY OF FINDINGS

During 2004, the total value of shipments of semiconductors, printed cirucit boards, and other electronic components was $115.3 billion. This represents a 11.5-percent decrease from the revised 2003 total of $103.4 billion. The 2004 data include electron tubes and parts, $1.8 billion, a decrease of 20.3 percent from 2003; printed circuit boards, $5.0 billion, an increase of 1.9 percent from 2003; semiconductorss and related devices, $74.2 billion, an increase of 19.0 percent over the revised total from 2003. Capacitors decreased 1.8 percent to $1.2 billion; resistors increased by 12.3 percent to $714.4 million; coils and transformers had a 9.5-percent increase to $1.0 billion; electronic connectors had $3.4 billion in 2004, compared to $3.5 billion in 2003, a decrease of 1.4 percent; and other electronic components increased to $28.1 billion from a revised 2003 total of $27.7 billion, an increase of 1.1 percent.

For general CIR information, explanation of general terms and historical note, see the appendix.

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, 301-763-4819.
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Table 2. Quantity and Value of Shipments of Semiconductors, Printed Circuit Boards, and Other Electronic Components: 2004 and 2003
[Quantity in thousands of units. Values in thousands of dollars]

Product code	Product description	No. of cos.	2004 Quantity	2004 Value	2003 Quantity	2003 Value
334411	Electron tubes	(NA)	(X)	1,754,196	(X)	2,200,097
3344111	Transmittal, industrial, and special-purpose electron tubes (except X-ray)	28	(X)	637,690	(X)	628,766
	Power and special-purpose tubes:					
3344111105	High vacuum tubes, including triodes, multigrid external and internal anodes, diodes, and other	7	235	111,112	65	68,660
3344111110	Gas and vapor tubes, including ignitrona, gas duplexers, spark gaps and others	8	458	36,000	406	31,193
3344111115	Klystrons, including amplifier, reflex, and other	5	(D)	(D)	(D)	(D)
3344111120	Magnetrons, incuding pulsed, fixed, tunable, cross-field, continuous wave and other	4	8	53,161	9	49,888
	Traveling wave tubes (TWT):					
	Forward wave:					
3344111222	Continuous wave (CW)	4	(D)	119,052	(D)	109,667
3344111232	Pulsed power	5	(D)	109,597	836	105,368
3344111265	Backward wave	-	-	-	-	-
3344111340	Light sensing tubes	5	(D)	(D)	(D)	(D)
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	6	395	40,835	r/ 601	r/ 41,508
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.)	6	(X)	19,020	(X)	69,715
3344114	Receiving type electron tubes and cathode ray picture tubes	(NA)	(X)	1,048,585	(X)	r/ 1,507,981
3344114105	Receiving type electron tubes, all types, including rebuilt	1	(D)	(D)	r/ (D)	r/ (D)
	Television tubes, including any defective tube that has been rebuilt:					
	Color having a video display diagonal of:					
3344114110	50 cm and under (20 inches and under)	5	(D)	(D)	r/ 10,470	r/ 380,225
3344114115	Over 50 cm but not exceeding 63 cm (21 through 25 inches)	2	(D)	(D)	(D)	(D)
3344114120	Exceeding 63 cm (26 inches and over)	5	(D)	(D)	4,398	966,088
3344114125	Other, including rebuilt color and new and rebuilt black and white	3	(D)	(D)	(D)	(D)
3344117130	Electron tube parts (except glass blanks): bases, getters, cathodes, headers, guns	12	(X)	67,921	(X)	r/ 63,350
3344120	Printed-circuit (wiring) boards	418	(X)	4,964,949	(X)	4,871,075
3344120105	Single-sided glass printed	201	(X)	114,911	(X)	r/ 125,231
3344120110	Double-sided glass printed	272	(X)	654,336	(X)	r/ 633,903
3344120115	Multilayer glass printed	265	(X)	2,449,435	(X)	2,586,328
3344120120	Single-sided flex printed	48	(X)	468,438	(X)	474,090
3344120125	Double-sided flex printed	54	(X)	(D)	(X)	(D)
3344120130	Multilayer flex and rigid/flex printed	56	(X)	274,249	(X)	181,081
3344120132	Back-bared flex printed boards	-	(X)	-	(X)	(D)
3344120133	Sculptured flex printed boards	1	(X)	(D)	(X)	(D)
3344120135	All paper/mat/composite printed boards	11	(X)	24,501	(X)	21,937
3344120140	Other substitute printed boards	50	(X)	574,282	(X)	481,545
3344120145	Receipts for contract work on printed circuit boards (etching, dip-soldering, imprinting, etc.), but not printed board assembly	56	(X)	243,731	(X)	r/ 231,042
334413	Semiconductors and related devices	(NA)	(X)	74,188,726	(X)	62,348,475
3344131	Monolithic integrated circuits	154	(X)	65,949,959	(X)	54,830,356
	Monolithic integrated circuits, digital, nonsilicon (e.g., gallium arsendide):					
3344131136	Memory	6	(D)	734,677	(D)	(D)
3344131148	Logic and other	9	(D)	215,033	156,670	344,832
	Monolithic integrated circuits, digital, silicon:					
	Bipolar transistors, memory:					
3344131115	Static read-write random access (SRAM)	8	(D)	(D)	(D)	(D)
3344131121	Other memory	4	(D)	(D)	(D)	(D)
	Other bipolar transistors, including logic:					
3344131124	Transistor-transistor logic (TTL)	11	(D)	(D)	(D)	(D)
3344131132	Other, including emitter couple logic (ECL)	11	2,177,079	1,793,395	1,812,915	1,477,570
	Metal oxide semiconductor (MOS) field effect transistors:					
	Volatile memory DRAMS (dynamic read-write random access):					
3344131168	Not over 3 MB 1/	6	(D)	(D)	(D)	(D)
3344131170	Over 3 MB but not over 15 MB 1/	3	(D)	(D)	(D)	(D)
3344131172	Over 15 MB 1/	8	1,539,047	7,211,049	1,733,227	r/ 5,975,426

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	Volatile memory SRAMS (static read-write random access):					
3344131182	Not over 40 k	1	(D)	(D)	(D)	(D)
3344131184	Over 40 k but not over 80 k	1	(D)	(D)	(D)	(D)
3344131186	Over 80 k	10	(D)	597,975	(D)	505,949
	Nonvolatile EEPROMs (electrically erasable programable read-only memory):					
3344131192	Not over 80 k 2/	6	(D)	(D)	(D)	(D)
3344131194	Over 80 k 2/	8	2,233,554	2,009,574	1,992,580	1,007,712
3344131179	Nonvolatile EPROMs (erasable, except electrically, programable read-only memory)	6	35,465	57,619	35,934	59,361
3344131180	Other nonvolatile memory	12	1,287,446	3,246,191	439,773	864,655
	Other, including microprocessors, controllers, application specific integrated circuits (ASIC's), and programable logic arrays (PLA's):					
3344131154	Microprocessors having an internal data bus of 8 bits or less	13	1,125,260	1,067,323	991,063	901,786
3344131157	Microprocessors having an internal data bus of 16 bits 3/	12	(D)	(D)	(D)	(D)
3344131160	Microprocessors having an internal data bus of 32 bits or more 3/	12	325,571	29,010,519	272,917	21,535,894
3344131133	Other (microcontrollers, ASICs, PLA's, etc.)	26	1,999,624	6,568,575	1,533,072	6,837,195
	Other digital, silicon, including bipolar combined with MOS:					
3344131139	Complementary BiMOS (BiCMOS) 4/	4	(D)	(D)	(D)	(D)
3344131142	Other complementary BiMOS(BiCMOS), including logic 4/	5	8,062,702	1,032,192	6,409,956	1,123,031
3344131145	Other digital silicon ICs	20	404,256	2,725,192	1,761,624	4,860,365
	Nondigital silicon monolithic integrated circuits (e.g., linear, analog):					
3344131162	Radio frequency	8	186,362	383,886	151,704	352,365
3344131103	Other, analog	22	3,404,111	1,976,329	2,373,943	1,553,893
3344131106	Other, including mixed signal (analog and digital), logic	13	514,979	950,363	450,497	749,025
3344131109	Other, including mixed signal (analog and digital), other	22	1,341,579	2,963,561	1,260,047	2,878,359
	Hybrid integrated circuits:					
3344131118	Radio frequency	26	30,838	157,031	106,038	r/ 167,093
3344131151	Other	39	129,565	691,539	126,588	684,680
3344131112	Other	39	1,609,030	2,055,820	1,107,450	1,879,391
3344134	Transistors	29	(X)	656,025	(X)	r/ 607,757
3344134105	Signal (less than 1 watt dissipation)	18	(X)	102,213	(X)	75,438
3344134110	Power (1 watt or greater dissipation)	25	(X)	553,812	(X)	r/ 532,319
3344137	Diodes and rectifiers	50	479,023	406,810	r/ 382,356	391,158
3344137110	Signal diodes and assemblies thereof (maximum current 0.5 amps)	15	10,544	10,558	r/ 18,154	r/ 21,197
3344137115	Semiconductor rectifiers/power diodes and assemblies thereof (current rating greater than 0.5 amps)	32	345,146	190,000	r/ 249,352	r/ 188,390
3344137125	Zener diodes (voltage regulator and voltage reference diodes) 5/	21	(D)	(D)	35,362	49,359
3344137105	Selenium rectifiers 5/	5	27,565	52,353	4,606	6,725
3344137120	Microwave diodes (mixers, detectors, varactors, parametric, harmonic generators, etc.)	10	95,768	153,899	74,882	125,487
334413A	Other semiconductor devices	149	(X)	7,175,932	(X)	6,519,204
334413A105	Solar cells	10	(X)	79,113	(X)	81,036
334413A110	Photovoltaic modules	8	(X)	181,955	(X)	178,063
	Light-emitting diodes (LEDs):					
334413A115	Discrete, infrared and laser	22	(X)	371,772	(X)	326,101
334413A120	Alpha or numeric displays	5	(X)	(D)	(X)	(D)
334413A125	Photodiodes, including infrared detectors	14	(X)	97,442	(X)	89,331
334413A130	Optical coupled isolators, including sensors and emitters	2	(X)	(D)	(X)	(D)
334413A135	Other light sensitive and light-emitting devices, including photovoltaic devices and photoelectric-magnetic devices	8	(X)	362,869	(X)	107,527
	Other semiconductor devices:					
334413A140	Thyristors (SCR's, triacs, PNPN diodes)	7	(X)	73,873	(X)	101,334
334413A150	All other semiconductor devices (tunnel diodes, thermo-electric semiconductor junctions, metal-oxide varistors, solidstate transducers, and special semiconductor devices)	14	(X)	429,069	(X)	352,961
	Semiconductor parts:					
	Chips and wafers:					
334413A155	For integrated circuits (IC's)	41	(X)	3,880,590	(X)	3,705,174
334413A160	For discrete semiconductors	31	(X)	482,997	(X)	r/ 484,605
334413A165	All other semiconductor parts (headers, packages, heat sinks, other accessories, etc.)	35	(X)	1,113,778	(X)	r/ 1,028,352

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3344140	Capacitors	83	(X)	1,169,575		(X)		1,191,556
	Paper, plastic (film), metalized, and dual (film/paper) dielectric capacitors, fixed:							
	Ac types:							
3344140103	Less than 300 volts	17	9,948	19,784		9,357		19,189
3344140106	300 volts to 599 volts	17	28,491	61,808	r/	28,186	r/	64,601
3344140109	600 volts to 999 volts	10	4,183	8,656		4,255		19,490
3344140112	1,000 volts or over	8	968	8,842		877		6,198
	Capacitors having a reactive power handling capacity of 0.5 kVAR or less:							
	Dc types/other:							
3344140115	Axial lead	16	12,564	33,165		13,749		33,509
3344140118	Radial lead	7	54,735	21,760		53,105		21,426
3344140121	Chips and other leaded devices	-	-	-		-		-
3344140131	Tantalum electrolytic	10	(D)	(D)		(D)		(D)
3344140133	Other leaded (molded axial and molded radial)	1	(D)	(D)		(D)		(D)
	Aluminum electrolytic:							
3344140136	Less than 18 mm through 35 mm	6	(D)	(D)		(D)		(D)
3344140139	Small can style (over 35mm through 51 mm)	5	(D)	(D)		388		1,642
3344140142	Other can style (over 51 mm)	5	(D)	(D)		4,794		40,922
3344140145	Ac motor start	-	-	-		(D)		(D)
3344140150	Ceramic dielectric, single layer	6	(D)	11,856		(D)		9,147
	Ceramic dielectric, multilayer:							
3344140155	Axial leads and radial leads	10	(D)	34,090		(D)		33,247
3344140160	Chips	17	31,050,244	380,373		38,925,132		399,911
	Other:							
3344140163	Mica dielectric	8	(D)	8,276		(D)		7,746
3344140166	All other fixed	19	87,718	65,279	r/	78,097		64,367
	Variable:							
3344140169	Mica, ceramic or glass dielectric 6/	3	(D)	(D)		(D)		(D)
3344140172	Other 6/	6	10,982	49,751	r/	16,954		73,712
3344140175	Parts of capacitors, including unfinished chips for further finishing and assembly	9	(X)	263,461		(X)		(D)
3344150	Resistors	83	(X)	714,432		(X)		636,288
3344150104	Fixed carbon resistors, composition or film types	14	65,155	26,058		47,029		17,492
	Other fixed resistors (power capacity 20W or less):							
	Surface mounted, having two terminals:							
3344150108	Flat resistor chips	20	176,299	58,463		165,471		48,323
3344150112	Cylindrical leadless resistors, including metal film, metal oxide, and thick cermet film	5	(D)	17,422		(D)		9,889
	Surface mounted, having more than two terminals (resistor networks):							
3344150116	Dual-in-line package	7	30,030	13,033		(D)		8,207
3344150120	Other, including flat packs	10	(D)	7,552		(D)		5,244
	Resistors, having two leads:							
3344150124	Wirewound	15	59,171	45,276		53,878		47,415
3344150128	Other, including metal film, metal oxide, and thick cermet film	12	213,073	64,936		221,378		56,891
	Resistor networks, having more than two leads:							
3344150132	Single-in-line	13	4,559	7,850		4,088		7,232
3344150136	Dual-in-line	5	(D)	(D)		(D)		(D)
3344150140	Other	7	(D)	16,086		(D)		16,658
	Variable, nonwirewound:							
	Trimmers:							
3344150144	Single-turn, carbon and other film	6	(D)	14,851		(D)		7,690
3344150148	Multiturn, carbon and other film	3	(D)	(D)		(D)		(D)
3344150159	Potentiometers, precision and panel type	11	12,247	77,300		10,408		71,190
	Variable, wirewound:							
3344150168	Variable wirewound (except potentiometers), including nonprecision and trimmers	3	(D)	(D)		(D)		(D)
3344150169	Potentiometers, precision and panel type	10	2,682	32,535		2,189		27,273
	Miscellaneous:							
3344150176	Varistors	6	(D)	(D)		(D)		(D)
3344150180	Thermistors, bead type, disc, rod	12	141,025	78,167		136,943		71,490
3344150184	Parts for resistors	11	(X)	192,390		(X)	r/	196,389
3344160	Coils, transformers, reactors, and chokes for electronic applications	208	(X)	1,047,659		(X)		956,519
3344160120	Audio frequency (AF) transformers	69	5,606	60,634		6,188		57,895
3344160125	Low frequency (LF) chokes	79	8,954	52,363	r/	9,672	r/	51,456
3344160130	Plate and filament transformers, including autotransformers (except toroidal)	51	11,835	108,727		11,857		95,955

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3344160135	Pulse transformers, computer, and other types	73	12,513	68,464	r/	12,127		68,016
3344160105	Radio frequency (RF) chokes	35	14,286	23,124	r/	26,404	r/	20,332
3344160110	Radio frequency (RF) coils	37	135,242	55,808		146,548		50,421
3344160115	Intermediate frequency (IF) transformers	32	4,545	27,641		4,498		25,471
3344160140	Television transformers and reactors (horizontal output, vertical deflection, focus coils, deflection yokes, etc.)	17	12,957	68,583		10,035		65,203
3344160145	Toroidal windings (transformers and reactors) (except complete magnetics amplifiers)	100	16,944	112,461		16,001		109,184
3344160150	Other (balun coils, permeability tuning devices, etc.)	76	(X)	469,854		(X)		412,586
334417	Electronic connectors	(NA)	(X)	3,437,579		(X)		3,485,996
3344171	Coaxial (RF) connectors	52	381,327	400,493		368,693	r/	402,323
3344171105	Miniature (BNC, PNC, MHB)	23	17,891	30,922	r/	22,546	r/	31,118
3344171110	Subminiature (SMA, SMB, SMC)	26	58,230	73,298	r/	51,591		63,146
3344171115	Other standard and precision	46	305,206	296,273		294,556	r/	308,059
3344174	Cylindrical connectors	40	138,576	630,978		129,456		563,410
3344174105	Heavy duty and standard	26	91,950	366,271		88,153		339,076
3344174110	Miniature	17	13,824	102,744		12,347		86,432
3344174115	Subminiature	17	32,802	161,963		28,956		137,902
3344177	Rack and panel (rectangular) connectors	42	(D)	290,310	r/	362,421		268,134
3344177105	Integral shell, Mil-C-22857 (8434) and similar types	23	20,593	46,057	r/	91,617	r/	65,532
	Subminiature:							
3344177110	Ribbon, including planar cable type	6	(D)	(D)		(D)		(D)
3344177115	D-Subminiature, including planar cable type	19	(D)	(D)		(D)		(D)
3344177120	Microminiatures	13	19,005	91,734	r/	25,021	r/	106,491
334417A	Printed circuit connectors	52	4,398,684	1,015,298		(D)		833,732
334417A105	Card insertion types	28	(D)	64,079		(D)		69,604
	Two-piece types:							
334417A110	Post, header and receptacle type	31	(D)	380,295		(D)		318,848
334417A115	Other two-piece types	26	520,068	570,924		421,358		445,280
334417D	Other connectors, including parts	93	(X)	1,100,500		(X)		1,418,397
334417D105	Hermetic sealed (except single-contact and coaxial types)	18	(D)	108,319		(D)		150,238
334417D110	Plate module types	5	1,868	30,518		8,387		41,290
334417D115	Fiber optic connectors	12	27,441	61,169		73,328		231,994
334417D130	Other planar cable (flat conductor or ribbon cable), excluding rack and panel (rectangular types)	26	406,670	123,832		(D)	r/	87,008
334417D120	Miscellaneous special purpose	52	761,275	609,196		822,061		722,276
334417D125	Parts for connectors (connectors shipped but still requiring further manufacture)	22	(X)	167,466		(X)		185,591
334419	Electronic components and subassemblies	(NA)	(X)	28,062,626		(X)		27,748,024
3344191	Filters (except microwave) and piezoelectric devices	98	387,815	618,502		386,928		600,549
33441911	Filters (except microwave)	(NA)	55,499	151,177		68,214		164,290
3344191105	Mechanical, excluding optical lenses (germanium silicon, fused quartz, rock salt, and other)	7	462	12,376		(D)		35,149
	Radio frequency interference/electro magnetic interference (RFI/EMI) control filters:							
3344191110	Ceramic dielectric	13	(D)	86,472		(D)		84,835
3344191115	Combination or other dielectric	18	4,911	25,928		4,744		23,078
3344191120	Electronic wave filters (LC band and high pass)	18	(D)	26,401		(D)		21,228
33441911	Piezoelectric devices	(NA)	332,316	467,325		318,714		436,259
	Oscillator crystals:							
3344191125	AT-cut	20	1,662	15,019		2,359		18,052
3344191130	Other	7	(D)	60,004		(D)		57,733
	Crystal oscillators:							
3344191135	Oven	6	87	18,609		104		19,661
3344191140	TCXO/VCXO	10	(D)	56,595		3,385		42,961
3344191145	Hybrid	10	2,255	52,972		2,256		45,458
3344191150	Other	9	3,094	51,180	r/	5,546	r/	63,561
	Crystal filters:							
3344191155	Monolithic, including filter crystals and/or monolithic filter units not assembled into filters	3	(D)	(D)		(D)		(D)
3344191160	Packaged AT-cut, including monolithic, tandem monolithic, and resonator filter assemblies	4	22	1,240		26		1,147
3344191165	Other	8	(D)	(D)		(D)		(D)
	Crystal blanks:							
3344191170	AT-cut	6	4,045	7,019		3,795		6,196
3344191175	Other	12	10,134	115,833	r/	9,787		102,831
3344194	Transducers, electrical/electronic I/O	81	276,231	1,464,196	r/	204,709		1,218,528
3344194105	Electroacoustic (sonar, ultrasonic, vibration*, etc.)	14	(D)	275,649	r/	30,456	r/	113,986
	Electromechanical:							
3344194110	Accelerometers*	8	(D)	174,794		(D)		171,931
3344194115	Pressure*	34	82,633	473,190	r/	71,176	r/	429,915
3344194120	Strain gauges and other mechanical*	18	1,534	113,064	r/	1,434	r/	107,217

Table 2. Quantity and Value of Shipments of Semiconductors, Printed Circuit Boards, and Other Electronic Components: 2004 and 2003
[Quantity in thousands of units. Values in thousands of dollars]

Product code	Product description	No. of cos.	2004 Quantity	2004 Value		2003 Quantity		2003 Value
3344194125	Thermoelectric (pyrometers, thermocouples*, etc.)	7	(D)	85,991		(D)		72,428
3344194130	Other (optical, chemical, magnetic, nuclear*, etc.)	23	92,806	341,508	r/	89,100	r/	323,051
3344197	Switches, mechanical types for electronic circuitry	69	(X)	728,717		(X)		739,084
3344197120	Slide, including rocker, miniature and subminiature*	12	(X)	22,902		(X)		22,025
3344197125	Rotary selector, including lever and jog-lever, miniature and subminiature*	18	(X)	59,536		(X)		52,423
3344197130	Keyboard*	5	(X)	(D)		(X)		(D)
3344197135	Pushbutton*	19	(X)	66,692		(X)		58,976
3344197140	Snap-action*	11	(X)	25,132		(X)		31,121
3344197145	Thumbwheel*	2	(X)	(D)		(X)		(D)
3344197115	Membrane	13	(X)	61,917		(X)		63,800
3344197105	Toggle standard type	7	(X)	22,670		(X)		19,603
3344197110	Toggle miniature and subminiature	5	(X)	(D)		(X)		(D)
3344197150	DIP	4	(X)	(D)		(X)		(D)
3344197155	Other	36	(X)	(D)		(X)		(D)
334418B	Printed circuit assemblies (loaded boards, subassemblies and modules) 7/	615	(X)	19,838,256		(X)		19,714,661
334418B105	Computer and peripheral printed board assemblies	217	(X)	8,354,607		(X)		7,859,142
334418B110	Communications printed board assemblies	196	(X)	4,337,689		(X)		4,921,208
334418B115	Industrial process control board assemblies	204	(X)	1,181,657		(X)		920,379
334418B120	Instrumentation printed board assemblies (except industrial process)	171	(X)	1,277,635		(X)		1,266,868
334418B125	Search and detection printed board assemblies	62	(X)	(D)		(X)		(D)
334418B130	Consumer electronics, printed board assemblies	111	(X)	568,348		(X)		789,968
334418B132	Plotter controllers	2	(X)	(D)				(D)
334418B135	Other electronics, printed board assemblies, including office equipment and point of sales	280	(X)	3,934,280		(X)		3,783,930
334419A	Microwave components and devices (except antenna), tubes, and semiconductors	103	(X)	1,302,818		(X)		1,414,822
334419A105	Ferrite, including yttrium garnets, microwave components (circulators, isolators, phase shifters, attenuators, equalizers, limiters, mixers, etc.)	32	(X)	147,095		(X)		141,507
	Microwave devices, other than ferrite and solid state:							
334419A110	Attenuators (dummy loads, high and low-power terminations, etc.)	29	(X)	110,498		(X)	r/	108,789
334419A115	Cavities (amplifier cavities, coaxial tuned cavities, etc.)	12	(X)	42,485		(X)		41,501
334419A120	Couplers (directional couplers, hybrid junctions, etc.)	23	(X)	53,498		(X)		45,223
334419A125	Reactive microwave components	32	(X)	203,159		(X)		379,267
334419A130	Switches, coaxial and waveguide	28	(X)	88,724		(X)		81,499
334419A135	Rigid waveguide and fittings (bend and twists, couplings, flanges, other simple waveguide components)	19	(X)	76,925		(X)		49,935
334419A140	Flexible waveguides and fittings	8	(X)	30,495		(X)		28,330
334419A145	Other microwave components (except ferrite devices) (coaxial to waveguide and other transitions, duplexers and diplexers, holders and mounts, linear and cirular polarizers, magnetron test plumbing, rotary joints and sector scan joints, mixer arrays, shutters, tuners, windows, etc.)	34	(X)	243,922		(X)		220,830
334419A150	Microwave subassemblies, including parametric amplifiers and other solid-state assemblies	23	(X)	306,017		(X)		317,941
334419E	Electronic components and subassemblies	427	(X)	4,110,137		(X)		4,060,380
334419E102	Magnetic recording and reproducing heads, including audio, video digital and instrumentation	5	1,835	24,473		1,399		22,069
334419E120	Delay lines (distributed constant, lumped constant, magneto-strictive, ultrasonic, etc.)	11	1,635	12,969		2,498		15,175
334419E125	Oscillators (except instrumentation and crystal types)	16	3,177	88,950	r/	1,928	r/	85,974
	Static power supply converters for electronic applications, sold separately:							
334419E130	Regulated	44	10,463	622,371	r/	9,237	r/	591,447
334419E135	Other (unregulated, variable frequency, ac, dc, converters and inverters, vibrator, etc.)	32	(X)	291,327		(X)		276,429
334419E140	Electronic cable harnesses and cable assemblies	234	(X)	1,735,823		(X)		1,573,212
334419E145	Cryogenic cooling devices (cryostats, etc.) for infrared detectors, masers	3	(X)	16,850		(X)		13,468
334419E150	Liquid crystal displays (LCD) and other liquid devices	15	(X)	58,986		(X)		55,924
334419E155	Magnetic cores	11	(X)	139,795		(X)		121,392
	Electronic parts, n.e.c. and specialized electronic hardware:							
	Sockets for electronic component insertion:							
334419E165	Integrated circuit sockets	21	(X)	76,959		(X)		45,858
334419E160	Other, including tube, relay, discrete semiconductors, ac and dc converters and inverters, etc.	15	(X)	39,789		(X)		34,777
334419E170	All other electronic parts and specialized electronic hardware	108	(X)	1,001,845		(X)	r/	1,217,255

Table 2. Quantity and Value of Shipments of Semiconductors, Printed Circuit Boards, and Other Electronic Components: 2004 and 2003
[Quantity in thousands of units. Values in thousands of dollars]

Product code	Product description	No. of cos.	2004 Quantity	2004 Value	2003 Quantity		2003 Value
	Electronic research, development, testing, and evaluation (receipts or billings, not reported as shipments of specific products):						
9998042	Systems	11	(X)	19,844	(X)		25,844
9998043	Equipment and subassemblies	22	(X)	122,407	(X)		139,011
9998044	Component parts	14	(X)	9,906	(X)		9,640
9998046	Basic scientific electronic research	13	(X)	57,268	(X)	r/	58,880
9998047	Design and engineering services	54	(X)	(D)	(X)		(D)
9998048	Software	5	(X)	(D)	(X)		(D)
9998049	Testing	12	(X)	9,896	(X)	r/	9,770
9998050	Supplies and accessories sold with components	5	(X)	657	(X)		697

*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. r/Revised by 5 percent or more from previously published data. X Not applicable.

1/Product code 3344131168 and 3344131170 are combined with product code 3344131172 to avoid disclosing data for individual companies.
2/Product code 3344131192 is combined with product code 3344131194 to avoid disclosing data for individual companies.
3/Product code 3344131157 is combined with product code 3344131160 to avoid disclosing data for individual companies.
4/Product code 3344131139 is combined with product code 3344131142 to avoid disclosing data for individual companies.
5/Product code 3344137125 is combined with product code 3344137105 to avoid disclosing data for individual companies for 2004.
6/Product code 3344140169 is combined with product code 3344140172 to avoid disclosing data for individual companies.
7/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 Electronics Components: 2004
[Values in thousands]

Product code	Product description	Manufactures' shipments (value, f.o.b. plant)	Exports of domestic merchandise (value at port) 1/	Imports for consumption 2/3/
3344111105	High vacuum tubes	111,112	40,470	16,688
3344111110	Gas and vapor tubes	36,000	9,397	1,243
3344111115	Klystrons, including amplifier, reflex and other	(D)	41,357	48,757
3344111120	Magnetrons, incuding pulsed, fixed, tunable, cross-field, continuous wave and other	53,161	11,498	21,397
3344111340	Light sensing tubes	(D)	49,740	96,915
3344114105	Receiving type electron tubes, including rebuilt	(D)	12,126	12,926
3344114110, 115, 120, 125	Television tubes, color, and black and white new and rebuilt	(D)	849,471	474,077
3344117130	Electron tube parts (except glass blanks)	67,921	89,777	172,746
3344120105, 110, 115, 120, 125, 130, 132, 133, 135, 140	Printed circuit boards	4,964,949	1,838,699	1,759,054
3344131136, 148	Monolithic integrated circuits, digital, nonsilicon	949,710	400,449	74,578
3344131124, 132, 133, 142, 145	Monolithic integrated circuits, digital, silicon	(D)	2,217,916	2,511,212
	Monolithic integrated circuits, digital, silicon:			
3344131168, 170, 172	With volatile memory (DRAM)	7,211,049	1,227,257	2,764,266
3344131115, 182, 184, 186	With volatile memory (SRAM)	(D)	508,904	458,453
3344131192, 194	Except volatile memory, electrically (EEPROM)	2,009,574	443,339	1,767,937
3344131179	Except volatile memory (except electrically (EPROM))	57,619	92,042	61,075
3344131121, 139, 180	Except volatile memory	(D)	218,454	318,983
	Monolithic integrated circuits, digital, silicon, metal oxide (MOS) field effect transistors (except memory type):			
3344131154	Microprocessors 8 bits or less	1,067,323	122,614	603,180
3344131157	Microprocessors 16 bits 4/	(D)	87,620	390,130
3344131160	Microprocessors 32 bits or more 4/	29,010,519	1,319,335	2,526,306
3344131162, 103, 106, 109	Monolithic integrated circuits, nondigital, silicon, including linear, analog, radio frequency, etc.	6,274,139	1,758,522	4,864,947
3344131118, 151	Hybrid integrated circuits	848,570	514,124	493,090
3344140131	Capacitors, fixed, tantalum electrolytic, metal case, dipped, chips, including foil and wet	(D)	32,717	217,311
3344140133	Capacitors, fixed, tantalum electrolytic, including leaded	(D)	107,299	50,458
3344140136	Capacitors, fixed, aluminum electrolytic, not exceeding 35 mm	(D)	65,616	250,178
3344140139, 142, 145	Capacitors, fixed, aluminum electrolytic, over 35 mm	(D)	27,918	34,271
3344140150	Capacitors, fixed, ceramic dielectric, single layer	11,856	39,041	31,612
3344140155	Capacitors, fixed, ceramic dielectric, multilayer, axial leads and radial leads	34,090	47,758	72,757
3344140160	Capacitors, fixed, ceramic dielectric, multilayer, chips	380,373	239,939	411,670
3344140163	Capacitors, fixed, mica dielectric	8,276	5,407	2,644
3344140166	Capacitors, fixed	65,279	108,915	55,861
3344140769	Capacitors, variable, mica/ceramic/glass dielectric 5/	(D)	229,134	3,731
3344140772	Capacitors, variable 5/	49,751	23,584	23,494
3344140175	Capacitors, parts, including unfinished chips for further finishing	263,461	183,497	26,297
3344140103	Capacitors, fixed, ac type, less than 300 volts	19,784	5,817	18,284
3344140106	Capacitors, fixed, ac type, 300-599 volts	61,808	1,311	26,982
3344140109	Capacitors, fixed, ac type, 600-999 volts	8,656	126	969
3344140112	Capacitors, fixed, ac type, 1,000 volts or over	8,842	10,596	1,224
3344140115	Capacitors, fixed, dc type, axial	33,165	2,671	1,906
3344140118	Capacitors, fixed, dc type, radial	21,760	3,463	38,584
3344140121	Capacitors, fixed, dc type, chips and other leaded	-	13,802	20,631
3344134105	Transistors, signal, less than 1 watt dissipation	102,213	154,778	206,859
3344134110	Transistors, signal, 1 watt or greater dissipation	553,812	210,209	841,679
3344137110	Signal diodes and assemblies	10,558	23,980	34,632
3344137125	Zener diodes	(D)	56,119	88,638
3344137115, 105	Diodes and rectifiers	(D)	268,594	486,854
3344137120	Microwave diodes	153,899	76,079	101,949
334413A105	Solar cell	79,113	296,838	121,853
334413A115, 120	Light-emitting diodes	(D)	553,067	627,719
334413A130	Optical coupled isolators, including sensors and emitters	(D)	35,398	183,729
334413A135	Other light-sensitive and light-emitting devices	362,869	106,401	128,266
334413A140	Thyristors, SCR's, triacs, and PNPN diodes	73,873	46,069	233,934
334413A155	Chips and wafers for integrated circuits	3,880,590	22,220,700	3,114,569
334413A160	Chips and wafers for discrete semiconductors	482,997	1,516,436	379,595
334413A165	All other semiconductor parts (headers, packages, heat sinks, other accessories, etc.	1,113,778	324,052	136,552

Table 3. Shipments, Exports, and Imports of Semiconductors, Printed Circuit Boards, and Other Electronics Components: 2004
[Values in thousands]

Product code	Product description	Manufactures' shipments (value, f.o.b. plant)	Exports of domestic merchandise (value at port) 1/	Imports for consumption 2/3/
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	26,058	30,188	17,779
3344150108, 112	Resistors, fixed, with a power capacity of 20 watts or less, surface mounted (SMD), having two terminals, including both flat resistor chips, and cylindrical leadless resistors	75,885	20,656	157,665
3344150116, 120	Resistors, fixed, with a power capacity of 20 watts or less, surface mounted (SMD), having more than two terminals: flat resistor, resistor-capacitor networks	20,585	13,465	23,858
3344150124	Resistors, fixed, with a power capacity of 20 watts or less, wire-bound, having two leads	45,276	6,163	27,882
3344150128	Resistors, fixed, with a power capacity of 20 watts or less, other than wirebound, having two leads	64,936	53,269	55,694
3344150132, 136, 140	Resistors, fixed, with a power capacity of 20 watts or less, resistor networks, having more than two leads	(D)	21,974	18,028
3344150168, 169	Resistors, variable, wirewound, including rheostats and potentiometers, for a power handling capacity not exceeding 20 watts	(D)	10,431	28,592
3344150144, 148, 159, 176, 180	Resistors, variable	(D)	151,430	273,221
3344150184	Resistors, parts	192,390	64,659	19,592
3344191125, 130, 135, 140, 145, 150, 155, 160, 165	Piezoelectric devices (except crystal blanks)	(D)	168,065	401,284
3344191170, 175	Piezoelectric devices, crystal blanks	122,852	11,244	4,147
3344160140	Television transformers and reactors (horizontal) output, vertical deflection, focus coils, deflection yokes, etc.	68,583	7,836	153,568
3344160120, 130, 135, 110, 115, 145, 150	Coils, transformers, reactors, and chokes for electronic applications	903,589	238,180	653,034
3344171	Connectors coaxial	400,493	165,360	253,923
3344174	Connectors, cylindrical	630,978	48,528	193,165
3344177	Connectors, rack and panel	290,310	65,998	64,378
334417A	Connectors, printed circuit	1,015,298	457,177	427,565
334419E102	Magnetic recording and reproducing heads, including audio, video, digital and instrumentation	24,473	8,403	5,198
3344197125	Switches, rotary selector	59,536	98,051	108,791
3344197135	Switches, pushbutton	66,692	64,916	165,131
3344197120	Switches, slide, including rocker, miniature and subminiature	22,902	16,309	26,207
3344197140	Switches, snap-action	25,132	21,296	144,621
3344197130, 145, 115, 105, 110, 150, 155	Switches, other	(D)	564,256	1,285,627

- Represents zero. D Withheld to avoid disclosing data for individual companies.

1/Source: Census Bureau report EM 545, U.S. Exports.
2/Source: Census Bureau report IM 145, General Imports for Consumption.
3/Value represents the c.i.f. (cost, insurance, and freight) value at port of entry in the United States plus import duties.
4/Manufacturers' shipments for product codes 3344131157 and 3344131160 are combined to avoid disclosing data for individual companies.
5/Manufacturers' shipments for product codes 3344140769 and 3344140772 are combined to avoid disclosing data for individual companies.

Note: For comparison of the North American Industry Classification System (NAICS)-based product codes with Schedule B export codes, and HTSUSA import codes, see Table 4.

Table 4. Comparison of North American Industry Classification System (NAICS)-Based Product Codes with Schedule B Export Codes, and HTSUSA Import Codes: 2004

Product code	Product description	Export code 1/	Import code 2/
3344111105	High vacuum tubes	8540.89.0040 8540.89.0080	8540.89.0040 8540.89.0080
3344111110	Gas and vapor tubes	8540.89.0020	8540.89.0020
3344111115	Klystrons, including amplifier, reflex and other	8540.72.0000 8540.79.0000	8540.72.0000 8540.79.0000
3344111120	Magnetrons, incuding pulsed, fixed, tunable, cross-field, continuous wave and other	8540.71.2000 8540.71.4000	8540.71.2000 8540.71.4000
3344111340	Light sensing tubes	8540.20.2000 8540.20.4000 8540.89.0060	8540.20.2040 8540.20.2080 8540.20.4000 8540.89.0060
3344114105	Receiving type electron tubes, including rebuilt	8540.81.0000	8540.81.0000
3344114110, 115, 120, 125	Television tubes, color, and 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 8540.11.2401 8540.11.2801 8540.11.3000 8540.11.4401 8540.11.4801 8540.11.5000 8540.12.1040 8540.12.2000 8540.12.5040 8540.12.5080 8540.12.7000
3344117130	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
3344120105, 210, 315, 420, 425, 430, 432, 433, 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
3344131136, 148	Monolithic integrated circuits, digital, nonsilicon	8542.21.8091 8542.21.8099	8542.21.8091 8542.21.8099
3344131124, 132, 133, 142, 145	Monolithic integrated circuits, digital, silicon	8542.21.8088	8542.21.8081 8542.21.8082
3344131168, 170, 172	Monolithic integrated circuits, digital, silicon, metal oxide (MOS) effect transistors volatile memory, (DRAM)	8542.21.8021 8542.21.8028	8542.21.8021 8542.21.8022 8542.21.8023 8542.21.8024 8542.21.8025 8542.21.8029
3344131115, 182, 184, 186	Monolithic integrated circuits, digital, silicon, memory (SRAM)	8542.21.8031 8542.21.8038	8542.21.8031 8542.21.8032 8542.21.8039

Table 4. Comparison of North American Industry Classification System (NAICS)-Based Product Codes with Schedule B Export Codes, and HTSUSA Import Codes: 2004

Product code	Product description	Export code 1/	Import code 2/
3344131192, 194	Monolithic integrated circuits, digital, silicon, metal oxide (MOS) field effect transistors (except volatile memory (EEPROM))	8542.21.8048	8542.21.8041 8542.21.8042 8542.21.8049
3344131179	Monolithic integrated circuits, digital, silicon, metal oxide (MOS) field effect transistors (except volatile memory (EPROM))	8542.21.8058	8542.21.8051 8542.21.8052 8542.21.8059
3344131121, 139, 180	Monolithic integrated circuits, digital, silicon, memory	8542.21.8060	8542.21.8060
3344131154	Monolithic integrated circuits, digital, silicon, metal oxide (MOS) field effect transistors, except memory type, including micro-processors having an internal data bus of 8 bits or less	8542.21.8071	8542.21.8071
3344131157	Monolithic integrated circuits, digital, silicon, metal oxide (MOS) field effect transistors, except memory type, including micro-processors having an internal data bus of 16 bits	8542.21.8072	8542.21.8072
3344131160	Monolithic integrated circuits, digital, silicon, metal oxide (MOS) field effect transistors, except memory type, including micro-processors having an internal data bus of 32 bits or more	8542.21.8079	8542.21.8079
3344131162, 103, 106, 109	Monolithic integrated circuits, nondigital, including linear, analog, radio frequency, etc.	8542.29.0020 8542.29.0030 8542.29.0040 8542.29.0050	8542.29.0020 8542.29.0030 8542.29.0040 8542.29.0050
3344131118, 151	Hybrid integrated circuits	8542.60.0075 8542.60.0095	8542.60.0075 8542.60.0095
3344140131	Capacitors, fixed, tantalum electrolytic, metal case, including foil and wet, dipped and chips	8532.21.0020 8532.21.0040 8532.21.0050	8532.21.0020 8532.21.0040 8532.21.0050
3344140133	Capacitors, fixed, tantalum electrolytic, including leaded	8532.21.0080	8532.21.0080
3344140136	Capacitors, fixed, aluminum electrolytic, not exceeding 35 mm	8532.22.0020 8532.22.0040	8532.22.0020 8532.22.0040
3344140139, 142, 145	Capacitors, fixed, aluminum electrolytic, over 35 mm	8532.22.0055 8532.22.0085	8532.22.0055 8532.22.0085
3344140150	Capacitors, fixed, ceramic dielectric, single layer	8532.23.0020 8532.23.0040 8532.23.0060	8532.23.0020 8532.23.0040 8532.23.0060
3344140155	Capacitors, fixed, ceramic dielectric, multilayer, axial leads and radial leads	8532.24.0040 8532.24.0060	8532.24.0040 8532.24.0060
3344140160	Capacitors, fixed, ceramic dielectric, multilayer, chips	8532.24.0020	8532.24.0020
3344140163	Capacitors, fixed, mica dielectric	8532.29.0020	8532.29.0020
3344140166	Capacitors, fixed	8532.29.0040	8532.29.0040
3344140169	Capacitors, variable, mica/ceramic/glass dielectric	8532.30.0010	8532.30.0010
3344140172	Capacitors, variable	8532.30.0090	8532.30.0090

Table 4. Comparison of North American Industry Classification System (NAICS)-Based Product Codes with Schedule B Export Codes, and HTSUSA Import Codes: 2004

Product code	Product description	Export code 1/	Import code 2/
3344140175	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 dialectric, ac types, less than 300 volts	8532.25.0010	8532.25.0010
3344140106	Capacitors, fixed, paper, plastic (film), metalized, and dual film/paper dialectric, ac types, 300 volts to 599 volts	8532.25.0020	8532.25.0020
3344140109	Capacitors, fixed, paper, plastic (film), metalized, and dual film/paper dialectric, ac types, 600 volts to 999 volts	8532.25.0030	8532.25.0030
3344140112	Capacitors, fixed, paper, plastic (film), metalized, and dual film/paper dialectric, ac types, 1,000 volts or over	8532.25.0040	8532.25.0040
3344140115	Capacitors, fixed, paper, plastic (film), metalized, and dual film/paper dialectric, dc types, axial lead	8532.25.0060	8532.25.0060
3344140118	Capacitors, fixed, paper, plastic (film), metalized, and dual film/paper dialectric, dc types, radial lead	8532.25.0070	8532.25.0070
3344140121	Capacitors, fixed, paper, plastic (film), metalized, and dual film/paper dialectric, dc types, chips and other leaded devices	8532.25.0080	8532.25.0080
3344134105	Transistors, signal, less than 1 watt dissipation	8541.21.0080	8541.21.0075 8541.21.0095
3344134110	Transistors, signal, 1 watt or greater dissipation	8541.29.0080	8541.29.0075 8541.29.0095
3344137110	Signal diodes and assemblies	8541.10.0070 8541.10.0080	8541.10.0070 8541.10.0080
3344137125	Zener diodes	8541.10.0050	8541.10.0050
3344137115, 105	Diodes and rectifiers	8541.40.6050	8541.40.6050
3344137120	Microwave diodes	8541.10.0060	8541.10.0060
334413A105	Solar cell	8541.40.6020 8541.40.6030	8541.40.6020 8541.40.6030
334413A115, 120	Light-emitting diodes	8541.40.2000	8541.40.2000
334413A130	Optical coupled isolators, including sensors and emitters	8541.40.8000	8541.40.8000
334413A135	Other light-sensitive and light-emitting devices	8541.40.7080 8541.40.9500	8541.40.7080 8541.40.9500
334413A140	Thyristors, SCR's, triacs, and PNPN diodes	8541.30.0080	8541.30.0080
334413A155	Chips and wafers for integrated circuits	8542.10.0000 8542.21.8005 8542.21.8010 8542.29.0010 8542.90.0000	8542.10.0000 8542.21.8005 8542.21.8010 8542.29.0010 8542.90.0000
334413A160	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

Table 4. Comparison of North American Industry Classification System (NAICS)-Based Product Codes with Schedule B Export Codes, and HTSUSA Import Codes: 2004

Product code	Product description	Export code 1/	Import code 2/
334413A165	All other semiconductor parts, including headers, packages, and 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
3344150108, 112	Resistors, fixed, with a power capacity of 20 watts or less, surface mounted (SMD), having two terminals, including both flat resistor chips and cylindrical leadless resistors	8533.21.0045	8533.21.0030 8533.21.0040
3344150116, 120	Resistors, fixed, with a power capacity of 20 watts or less, surface mounted (SMD), having more than two terminals: flat resistor, resistor-capacitor networks	8533.21.0025	8533.21.0010 8533.21.0020
3344150124	Resistors, fixed, with a power capacity of 20 watts or less, wirebound, having two leads	8533.21.0080	8533.21.0080
3344150128	Resistors, fixed, with a power capacity of 20 watts or less, other than wirebound, having two leads	8533.21.0090	8533.21.0090
3344150132, 136, 140	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
3344150168, 169	Resistors, variable, wirewound, including rheostats and potentiometers, for a power handling capacity not exceeding 20 watts	8533.31.0000	8533.31.0000
3344150144, 148, 159, 176, 180	Resistors, variable	8533.39.0080 8533.40.0080	8533.39.0080 8533.40.8050 8533.40.8060 8533.40.8070
3344150184	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
3344160140	Television transformers and reactors (horizontal) output, vertical deflection, focus coils, deflection yokes, etc.	8529.90.3540 8540.91.2000	8529.90.3300 8529.90.3600 8540.91.2000
3344160120, 130, 135, 110, 115, 145, 150	Coils, transformers, reactors, and chokes for electronic applications	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

Table 4. Comparison of North American Industry Classification System (NAICS)-Based Product Codes with Schedule B Export Codes, and HTSUSA Import Codes: 2004

Product code	Product description	Export code 1/	Import code 2/
3344171100	Connectors coaxial	8536.69.4010	8536.69.4010
3344174100	Connectors, cylindrical	8536.69.4020	8536.69.4020
3344177100	Connectors, rack and panel	8536.69.4030	8536.69.4030
334417A100	Connectors, printed circuit	8536.69.4040	8536.69.4040
334419E102	Magnetic recording and reproducing heads, including audio, video, digital and instrumentation	8522.90.0010	8522.90.5540 8522.90.7540
3344197125	Rotary selector switches for electronic circuitry, including lever and jog-levers, miniature and subminiature	8536.50.7000 8536.50.9020 8536.50.9025	8536.50.7000 8536.50.9020 8536.50.9025
3344197135	Pushbutton switches for electronic circuitry	8536.50.9030 8536.50.9035	8536.50.9031 8536.50.9032 8536.50.9033 8536.50.9035
3344197120	Slide switches, including rocker for electronic circuitry, both miniature miniature and subminiature	8536.50.9050	8536.50.9050 **
3344197140	Snap-action switches for electronic circuitry	8536.50.9040	8536.50.9040 **
3344197130, 145, 115, 105, 110, 150, 155	Switches for electronic circuitry	8536.50.9045 8536.50.9055 8536.50.9065	8536.50.9045 ** 8536.50.9055 8536.50.9065

** HS codes include switches of product class 36433.

1/Source: 2004 edition, Harmonized System-based Schedule B, Statistical Classification of Domestic and Foreign Commodities Exported from the United States.
2/Source: Harmonized Tariff Schedule of the United States, Annotated (2004).

Appendix.
General CIR Survey Information, Explanation of General Terms and Historical Note

GENERAL

The CIR program has been providing monthly, quarterly, and annual measures of industrial activity for many years. Since 1904, with its cotton and fats and oils surveys, the CIR program has formed an essential part of an integrated statistical system involving the quinquennial economic census, manufacturing sector, and the annual survey of manufactures. The CIR surveys, however, provide current statistics at a more detailed product level than either of the other two statistical programs.

The primary objective of the CIR program is to produce timely, accurate data on production and shipments of selected products. The data are used to satisfy economic policy needs and for market analysis, forecasting, and decision making in the private sector. The product-level data generated by these surveys are used extensively by individual firms, trade associations, and market analysts in planning or recommending marketing and legislative strategies, particularly if their industry is significantly affected by foreign trade. Although production and shipments information are the two most common data items collected, the CIR program collects other measures also such as inventories, orders, and consumption. These surveys measure manufacturing activity in important commodity areas such as textiles and apparel, chemicals, primary metals, computer and electronic components, industrial equipment, aerospace equipment, and consumer goods.

The CIR program uses a unified data collection, processing, and publication system. The U.S. Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic census, manufacturing sector. The manufacturing sector provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is too large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. The CIR program includes a group of mandatory and voluntary surveys. Typically the monthly and quarterly surveys are conducted on a voluntary basis. Those companies that choose not to respond to the voluntary surveys are required to submit a mandatory annual counterpart corresponding to the more frequent survey.

NORTH AMERICAN INDUSTRY CLASSIFICATION SYSTEM (NAICS), 1997

The adoption of the North American Industry Classification System (NAICS) in the 1997 Economic Census has had a major impact on the comparability of current and historic data. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those that left manufacturing are logging and portions of publishing. Prominent among the industries that came into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. The net effect of the classification changes are such that if the 1997 value of shipments data for all manufacturers were tabulated on an SIC basis, it would be approximately 3 percent higher.

Listed below are the NAICS sectors:

21 Mining
22 Utilities
23 Construction
31-33 Manufacturing
42 Wholesale Trade
44-45 Retail Trade
48-49 Transportation and Warehousing
51 Information
52 Finance and Insurance
53 Real Estate and Rental and Leasing
54 Professional, Scientific, and Technical Services
55 Management of Companies and Enterprises
56 Administrative and Support and Waste Management and Remediation Services
61 Educational Services
62 Health Care and Social Assistance
71 Arts, Entertainment, and Recreation
72 Accommodation and Food Services
81 Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

FUNDING

The Census Bureau funds most of the surveys. However, a number of surveys are paid for either fully or partially by other Federal Government agencies or private trade associations. A few surveys are mandated, but all are authorized by Title 13 of the United States Code.

RELIABILITY OF DATA

Survey error may result from several sources including the inability to obtain information about all cases in the survey, response errors, definitional difficulties, differences in the interpretation of questions, mistakes in recording or coding the reported data, and other errors of collection, response, coverage, and estimation. These nonsampling errors also occur in complete censuses. Although no direct measurement of the biases due to these nonsampling errors has been obtained, precautionary steps were taken in all phases of the collection, processing, and tabulation of the data in an effort to minimize their influence.

A major source of bias in the published estimates is the imputing of data for nonrespondents, for late reporters, and for data that fail logic edits. Missing figures are imputed based on period-to-period movements shown by reporting firms. A figure is considered to be an impute if the value was not directly reported on the questionnaire, directly derived from other reported items, directly available from supplemental sources, or obtained from the respondent during the analytical review phase. Imputation generally is limited to a maximum of 10 percent for any one data cell. Figures with imputation rates greater than 10 percent are suppressed or footnoted. The imputation rate is not an explicit indicator of the potential error in published figures due to nonresponse, because the actual yearly movements for nonrespondents may or may not closely agree with the imputed movements. The range of difference between the actual and imputed figures is assumed to be small. The degree of uncertainty regarding the accuracy of the published data increases as the percentage of imputation increases. Figures with imputation rates above 10 percent should be used with caution.

DATA REVISIONS

Statistics for previous years may be revised as the result of corrected figures from respondents, late reports for which imputations were originally made, or other corrections. Data that have been revised by more than 5 percent from previously published data are indicated by footnotes.

DISCLOSURE

The Census Bureau collects the CIR data under the authority of Title 13, United States Code, which specifies that the information can only be used for statistical purposes and cannot be published or released in any manner that would identify a person, household, or establishment. "D" indicates that data in the cell have been suppressed to avoid disclosure of information pertaining to individual companies.

EXPLANATION OF GENERAL TERMS

Capacity. The maximum quantity of a product that can be produced in a plant in 1 day if operating for 24 hours. Includes the capacity of idle plants until the plant is reported to be destroyed, dismantled, or abandoned.

Consumption. Materials used in producing or processing a product or otherwise removing the product from the inventory.

Exports. Includes all types of products shipped to foreign countries, or to agents or exporters for reshipment to foreign countries.

Gross shipments. The quantity or value of physical shipments from domestic establishments of all products sold, transferred to other establishments of the same company, or shipped on consignment, whether for domestic or export sale or use. Shipments of products purchased for resale are omitted. Shipments of products made under toll arrangements are included.

Interplant transfers. Shipments to other domestic plants within a company for further assembly, fabrication, or manufacture.

Inventories. The quantity or value of finished goods, work in progress, and materials on hand.

Machinery in place. The number of machines of a particular type in place as of a particular date whether the machinery was used for production, prototype, or sampling, or was idle. Machinery in place includes all machinery set up in operating positions.

Net receipts. Derived by subtracting the materials held at the end of the previous month from the sum of materials used during the current month.

Production. The total volume of products produced, including: products sold; products transferred or added to inventory after adjustments for breakage, shrinkage, and obsolescence, plus any other inventory adjustment; and products that undergo further manufacture at the same establishment.

Quantities produced and consumed. Quantities of each type of product produced by a company for internal consumption within that same company.

Quantity and value of new orders. The sales value of orders received during the current reporting period for products and services to be delivered immediately or at some future date. Also represents the net sales value of contract change documents that increase or decrease the sales value of the orders to which they are related, when the parties concerned are in substantial agreement as to the amount involved. Included as orders are only those that are supported by binding legal documents such as signed contracts or letter contracts.

Quantity and value of shipments. The figures on quantity and value of shipments represent physical shipments of all products sold, transferred to other establishments of the same company, or shipped on consignment, whether for domestic or export sale. The value represents the net sales price, f.o.b. plant, to the customer or branch to which the products are shipped, net of discounts, allowances, freight charges, and returns. Shipments to a company's own branches are assigned the same value as comparable appropriate allocation of company overhead and profit. Products bought and resold without further manufacture are excluded.

Stocks. Total quantity of ending finished inventory.

Unfilled orders (backlog). Calculated by adding net new orders and subtracting net sales from the backlog at the end of the preceding year.

HISTORICAL NOTE

Data on selected electronic and associated products have been collected by the Census Bureau since 1961 on survey MA36N, Selected Electronics and Associated Products. In 1985, survey MA36N was divided into three annual surveys which are presently collected as: MA334P, Communication Equipment, Including Telephone, Telegraph, and Other Electronic Systems and Equipment; MA334Q, Semiconductors, Printed Circuit Boards, and Other Electronic Components; and MA334S, Electromedical Equipment and Irradiation Equipment (Including X-Ray). Historical data may be obtained from Current Industrial Reports available at your local Federal Depository Library.