Industry Analysis

Semiconductors

Q3 2011

Industry Overview

The semiconductor industry consists of manufacturers of semiconductor integrated circuits (ICs), also known as microchips. Semiconductors, in a scientific sense, are substances (usually solid elements) that can conduct electricity under some conditions, and have insulator properties. More commonly, semiconductors refer to electronic devices made from semiconductor materials, mostly silicon wafers from which many chips are made. A semiconductor device can perform the function of a vacuum tube having hundreds of times its volume. A single IC, such as a microprocessor chip for personal computers (PCs), can do the work of a set of vacuum tubes that would fill a large building and requires its own electric generating plant, not to mention frequent downtime and maintenance costs.

Semiconductors are used in many more products than just computers, although computers represented the majority of semiconductor sales as late as 1998. For 2010, computers are estimated to represent 40 percent of the semiconductor end-use market, consumer electronics 20 percent, and wireless handsets 20 percent. The remaining 20 percent was mostly from industrial and military uses, automobiles, and wired communication equipment. Semiconductors have almost become ubiquitous, with products from complex industrial machinery, to consumer electronics, to airplanes, to children's toys, all containing semiconductors.

Latest Activity. The semiconductor industry began to rebound in 2010 after crashing during the onset of the economic crisis in late-2008, a crash in chip sales only to be outdone by the technology-implosion of 2001 and 2002. In 2009, global semiconductor sales fell 9 percent to $226 billion. The previous downturn saw revenue drop from over $200 billion in 2000 to about $140 billion in 2001 and 2002. In 2010, after a disastrous 2009, global revenue grew at an astounding 32 percent, reaching $298 billion, and all-time high. IC sales began to rebound in late-2009 and continued throughout most of 2010, but fell off a bit in the fourth quarter of 2010 on continued sluggish economic growth. Most see growth over 2010's highs being tough for 2011, but good growth is seen in the coming years on increased demand for chips in end uses of mobile handsets, tablet PCs, and other consumer electronics.

History and Moore's Law. In the early 1900s to 1950s, vacuum tubes were the primary electronic components of electrical products. But they were fragile, hulky, unreliable, power-hungry, and produced excessive heat. In 1948, Bell Labs invented transistors, which offered electrical functioning of vacuum tubes, but in a solid state, which required no vacuum, and were small and low weight, had low power requirements, and had a long life. Then in 1958, Texas Instruments integrated a transistor with resistors and capacitors on a single semiconductor chip, called the integrated circuit (IC). In 1971, Intel put key elements of programmable computers on a single chip, the Intel 4004 microprocessor, which ran at 108 kilohertz and was a component used in calculators. In 1974, Intel offered the more powerful 8080 microprocessor, which led to the advent of PCs.

Underlying the persistent improvement in chip performance over the years is Moore's Law. Moore's Law was named after Dr. Gordon Moore, co-founder of Intel. In 1965, Dr. Moore noted that since the invention of ICs, the number of transistors on chips doubled every year, and predicted it will continue at this pace. This held true through 1975, when he then revised his prediction to doubling transistors every two years. This turned out to be every 18 months, and holds true through today. In the early 1970s, chips had line-widths of 10 microns. Today, leading chipmakers are making the transition from 45 nanometers (nm) to 32 nm, where 1,000 nm equal 1 micron. To place this in perspective, one nanometer equals one-billionth of a meter. Intel and others are currently developing 22 nm processing technology.

Cyclicality Driven by Supply and Demand. Due to lower chip prices, smaller chip sizes, and higher performance levels, semiconductors have become nearly ubiquitous. They are the brains behind not just computers and communication equipment, but also a full range of consumer products, from household appliances to talking dolls. Semiconductor demand has always been cyclical, fluctuating with sales of computers, but given today's broad range of end markets the industry is more exposed to general economic cycles.

Historically, however, the largest fluctuations in semiconductor prices and revenue have been the result of supply lagging demand swings. Periods of inventory corrections and imbalances drive price shifts. Long lead times between semiconductor orders and delivery cause electronics manufacturers to order semiconductors well in advance. If projections are off, manufacturers either have a glut or shortage of chips. It takes two years to build new wafer fabrication plants (wafer fabs) to increase capacity. So if electronics manufacturers under-estimate demand in their orders, chipmakers hold back on building new plants, which cause a two-year period of chip shortages and price spikes. If electronics manufacturers over-estimate chip needs, their oversupply will prevent them from buying new chips until either they sell out or the chips become obsolete. Meanwhile, chipmakers will often begin production of new wafer fabs, which could sit idle. This overcapacity causes chip prices to plummet.

The previous economic downturn resulted in a classic overcapacity/glut market, with low prices and many wafer fabs idled. The most recent downturn resulted in a swift capacity pullback from chipmakers, expecting a prolonged economic downturn. Given that demand for products with the latest chips rebounded more quickly than anticipated, many feel that the pullback in capacity was overdone, so prices might be strong in the coming year.

Cost Structure. Capital expenditures on new wafer fabs and equipment are the largest fixed cost for chipmakers. Today, it costs $3 billion to $8 billion to build a new plant, up from $10 million in 1984. By 2015, according to International Samatech (an industry trade group) the cost for new wafer fabs could rise to $10 billion, becoming the most expensive facility in the world. Intense chip making competition makes aggressive investment in leading edge technology critical. Factors for location of plants include the availability of a skilled labor force, proximity to customers and costs.

Research and development (R&D) expenses are also substantial. Most of these costs are borne by market leaders, such as Intel and Micron. The benefits of these expenses are higher gross margins enjoyed by the most innovative designs. Contract manufacturers, or foundries, produce chips for fabless firms, and do some work for firms that own their own wafer fabs when demand outstrips capacity at their plants, such as Intel. Foundries mostly avoid R&D expenses by tapping into the R&D of firms they are contracted with, or produce last-generation chips, but pay for this savings in lower margins.

Industry Trends

Intense competition drives this high-tech industry, resulting in trends that will shape it for years to come. Trends, opportunities, and threats in this industry's environment follow:

- **Shifting Strategies** – The semiconductor industry has been known for rapid change and constantly improving technology driven by fierce competition and the quest for ever-improving revenue growth. Throughout its first four decades, through 2000, revenue had grown at a 17% CAGR. Many believe, however, this will slow to 8 percent to 10 percent over the long-term, reflecting a larger industry selling chips

for more competitive end-uses. Others even doubt if ICs can keep up with Moore's Law, doubling the number of transistors per chip every 18 months, in the not-too-distant future. This change in the semiconductor market outlook has caused most industry players to shift strategies in recent years. Most have realigned their operations to take advantage of new demand for the latest electronics.

Many conglomerates have been spinning off chip-making units to stabilize parent profitability, such as Siemens spinning off Infineon Technologies in 1999 and Lucent Technologies spinning off Agere Systems in 2001. Motorola spun off Freescale Semiconductor in 2004, and in 2006, Philips Electronics spun off its semiconductor unit to a private equity consortium. As independent companies, these semiconductor spin-off firms are free to sell to a growing list of end markets, including firms that were previously competitors. Furthermore, these smaller firms no longer need the resources of large firms given the proliferation of contract manufacturers, or fables firms.

Other companies with semiconductor operations, primarily from the computers and consumer electronics industries, have decided to stay involved in this industry, but in different capacities. Hitachi and NEC combined dynamic random access memory (DRAM) chip operations in 2000 into Elpida Memory Inc. In 2003, Hitachi and Mitsubishi Electric combined their chip-making operations into a joint venture called Renesas Technology Corp. Then in April 2010, NEC Electronics joined the joint venture, which changed its name to Renesas Electronics Corporation. Also in 2003, Fujitsu and Advanced Micro Devices formed a joint venture called Spansion Inc., to create flash memory chips. This company has run into problems during the recent downturn, and has emerged from bankruptcy in May 2010. IBM is now looking to sell off its unprofitable foundry operations. Out of these kinds of companies, only Samsung Electronics and Toshiba Semiconductor have remained fully in the semiconductor arena, and are on the leading-edge much like Intel. These joint ventures allow their parent firms to share technology and gain competitive advantages over other rivals, while reducing costs and risks of this industry. Joint ventures, however, are not the only form of arrangement pursued by these companies. Alliances are being increasingly used to develop new technology, particularly with large consumer electronics manufacturers.

- **Microprocessors and Beyond.** Computers no longer represent the majority of end-uses for semiconductors, going down to 40% of end-uses in 2010. In fact, analog chips and past microprocessors as far as the revenue by chip-type in 2010. Oddly enough, demand for digitized information has spurred analogue chip growth. In 2009, special-purpose logic chips surpassed microprocessors as the No. 1 selling chip-type, and this is expected to continue. Special-purpose logic chips perform a fixed set of steps that cannot be changed, as opposed to general-purpose logic chips (or microprocessors) that follow instructions according to a software program. Special-purpose logic chips are faster, less expensive and smaller, so are used in a mushrooming set of products with fixed uses, from dolls to clocks to remote controls. The sale of DRAM chip caught up with microprocessors in 2010.

  The complexity of microprocessors, and the importance for corporations to have the top computing technology, offers opportunities for these chipmakers to earn value-added returns. High-end central processing units (CPUs, or the microprocessor chip in computers) power servers manufactured by large computer vendors such as IBM and Hewlett-Packard. Corporations are willing to pay-up for desktop PCs, servers, and workstations with the fastest chips. Consumers want faster chips to enhance new software and Internet capabilities, but corporations are the main focus of chipmakers because they demand high-speed processors the most, and are willing to pay for them. Furthermore, the expected continued growth of broadband and wireless uses is expected to keep the microprocessor market growing for some time. It's important to note that computing remains the No. 1 end-use market for microchips.

  Intel and other microprocessor makers are diversifying into other semiconductor areas. Although microprocessors remain important, and have growth areas such as wireless semiconductors, growth must be sought in other end markets. They need to mitigate the risk of being overexposed in this one area of computers, and cannot ignore the growth opportunities in consumer electronics

and mobile phones. Also, other chip attributes than just speed are becoming more important for PC makers, such as longer battery life for laptops, and designs to effectively handle multimedia tasks, such as movies, music, and the Internet. Many consumer electronics use an increasing number of advanced chips, including HDTVs, videogame consoles, handhelds, set-top boxes, DVRs and MP3 players. As computers continue to converge with these areas, chipmakers will need to deal with overlapping issues, presenting both growth opportunities and competition. It is not easy, however, as witnessed by Intel's anemic entrance into the handset and tablet markets, where ARM Holdings dominates through partnerships with Microsoft, Google, and Apple.

- **Outsourcing on the Rise.** The trend of outsourcing chip manufacturing started in the 1980s, expanded in the 1990s, took off during the 2000 to 2002 downturn, and intense competitive pressures will keep the trend proceeding. It takes two years and $3 billion to $8 billion to build a new wafer fabrication plant. This number is expected to reach $10 billion by 2015. Building new plants adds a substantially high fixed-cost to the cost structures of chipmakers, and creates risks of idle plants during slow times.

  Many firms now focus their talents and resources on designing innovative chips, using contract manufacturers, or foundries, to manufacture their chips. These firms have been dubbed "fabless," referring to the fact that they do not own wafer fabs. Chipmakers that own wafer fabs are called integrated device manufacturers (IDMs). IDMs are increasingly using foundries to ease manufacturing burdens during high-demand times. This helps to soften the overhead burden when the chip market inevitably falls. Most IDMs use foundries for certain low-tech back-end operations during all parts of the chip market cycle, such as assembling, packaging and testing. These IDMs, however, perform most of their own wafer processing work to keep proprietary methods secret, control access to capacity during hot demand times, and keep premiums that would ordinarily be paid to foundries.

  Fabless firms have some advantages over IDMs due to lower capital expenditures, creating higher profit margins and stronger free cash flow (i.e., operating cash flow less capital expenditures). This also allows them to devote a higher percentage of resources to R&D, which can lead to innovative chips with smaller line-widths. They also have disadvantages. Access to foundry space can be limited during times of rapid industry growth. So when demand is strong and prices are high, fabless firms might not take advantage of these market conditions. Furthermore, fabless firms risk their reputation on the skills and dedication of foundries, in an industry with complex operations.

  The Global Semiconductor Association estimates that 24 percent of semiconductor revenue came from fabless firms in 2009, up from 5 percent in 2006. Some of the top fabless companies are Qualcomm Inc., Broadcom Corp., and Nvidia Corp. Since more chipmakers are using foundries to manufacture chips, foundries are picking up a heavier share of capital expenditures for semiconductor equipment. Taiwan Semiconductor Manufacturing Company is the world's largest foundry.

- **Asia Market Outstrips All Others.** Most foundry business is going to Asia (excluding Japan). Growing incomes of the region, a cultural affinity for electronics, low capital costs, and inexpensive skilled labor has prompted computer and consumer electronics makers to enter the region. Semiconductor companies have been moving to the region, following their customers for proximity and at the same time lowering operating costs by tapping into this inexpensive skilled labor. Wafer fabs are substantially less expensive to build in this region, creating a lower cost structure for these foundries.

  Chip consumption began shifting to the Asia-Pacific region in the late 1990s. In 1999, the Asia-Pacific region (excluding Japan) consisted of 25 percent of the market, while the Americas was over 30 percent. By 2001, the Asia-Pacific region passed the Americas, and eventually reaching 54 percent in 2010 to the Americas' 18 percent. Electronics makers have set up shop in China, Malaysia, South Korea, Taiwan and Singapore. Large computer and cell phone makers are also in Asia, including Hewlett-Packard, Dell and Motorola.

Today, most new wafer fab plants are being built in Asia. Most growth in Asia is coming from foundries in Taiwan, and increasingly from China. Low costs for labor, land, and materials, as well as government subsidies, tax breaks, a rapidly growing internal electronics market, and an even more rapidly growing electronics manufacturing base for export, all have set China up for growth in the chip foundry business. China's manufacturing base has been evolving from low-end assembly into higher technology processes, and chip-making is the next step. Foundries are not the only chip-makers sprouting up in China. Intel already derives more revenue from China than anywhere outside of the US, so it decided to invest $2.5 billion in a 300-millimeter fab facility in China, which began operations in late-2010.

China doesn't come without its risks. Political risks loom large, as arbitrary enforcement of property rights can devastate business operations. The government in China prefers joint ventures, forcing semiconductor firms to share proprietary technology. Piracy is rampant, so many chipmakers have been reluctant to share cutting-edge chip design with partners in China due to insufficient legal protections of intellectual property. For example, the recent Intel investment in China is for chip-sets that support microprocessors. Intel will not produce their advanced microprocessors in China. Furthermore, for all of the opportunities that Asia provides for this industry, the threat of greater competition from Asia could outweigh the benefits.

- **New Technology Drives Future Growth.** Chip manufacturing technology is critical for boosting manufacturing efficiency and making chips more powerful. Scientists and engineers work tirelessly to shrink the size of transistors on chips, while boosting electrical integrity. They generally work on three areas of improvement: smaller line-widths of chips, more reliable interconnects, and larger wafer sizes. Chipmakers are currently working on reducing line-widths to 22 nm. However, many experts have expressed doubts if Moore's Law can hold up beyond the coming decade, and that semiconductor technology may be reaching its apex. A problem facing the prospect of ever-smaller chips is leakage of electrical current from transistors. Below two nanometers, the transistors leaks electrons, which drains power and creates heat. Advanced chipmakers, like Intel and IBM, are developing new mediums to make chips out of and new alloys for transistors to alleviate this problem.

  Perhaps just as important as these technological advances are the advances being made in end-user technologies. Although areas of computers show signs of growth, like laptops and high-end servers, computers are mostly in a mature market. Consumer electronics like game consoles, mobile phone handsets, and other handheld devices are growing areas for chipmakers, particularly where computers and consumer electronics are converging. These areas represent growth for industry players, but the same dominance displayed by Intel in the PC market is doubted as competition is likely to come from all corners.

SIC Codes in this Sub-Industry:

Sub-Industry:	**Semiconductors (45301020)** Manufacturers of semiconductors and related products.	
SIC Codes:		
	3675	Electronic Capacitors
	3677	Electronic Coils, Transformers And Other Inductors
	3679	Electronic Components, Nec
	3678	Electronic Connectors
	3676	Electronic Resistors
	3674	Semiconductors And Related Devices

Competitors

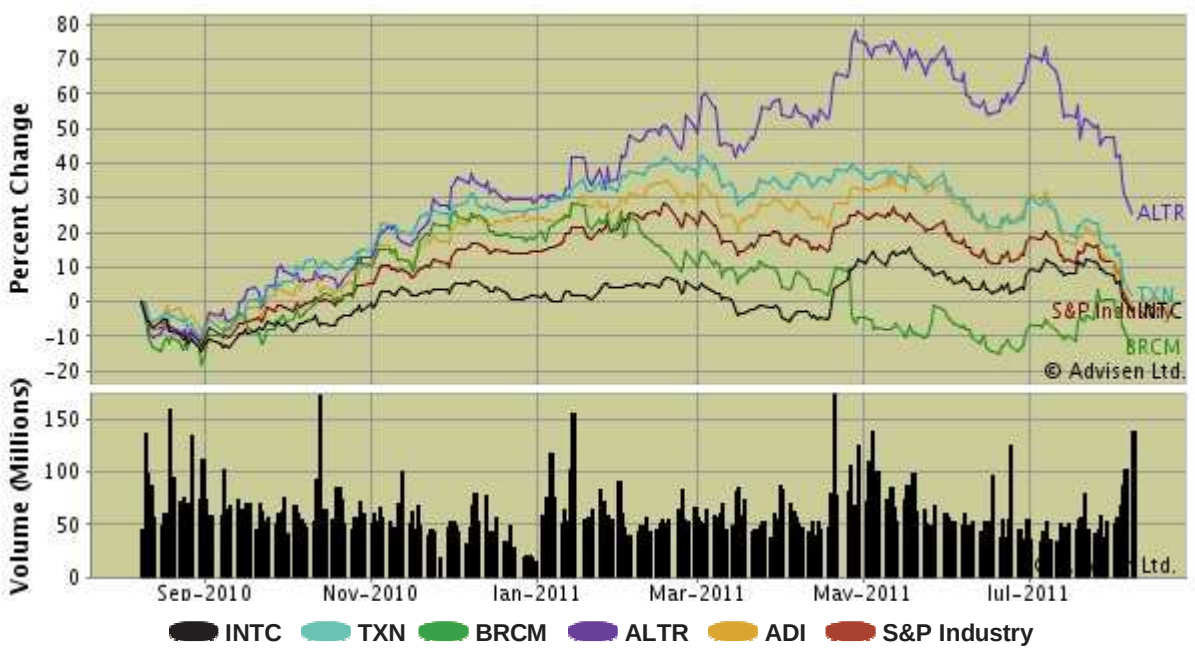
Top 20 U.S. Public Companies Sorted by Market Cap

Ticker	Company Name	Market Cap (in Millions)	Sales (in Millions)	Employees	Sales Per Employee	Net Income	Price Earnings Ratio
INTC	Intel Corporation	107306.96	43623.00	82500.00	528763.63	11464.00	8.98
TXN	Texas Instruments Incorporated	30257.86	13966.00	28412.00	491552.86	3228.00	9.74
BRCM	Broadcom Corporation	17114.65	6818.32	8950.00	761823.35	1081.80	16.93
ALTR	Altera Corp	11278.47	1954.43	2666.00	733093.02	782.88	12.48
ADI	Analog Devices Inc.	9042.95	2761.50	8500.00	324882.70	712.08	10.23
FSLR	First Solar Inc.	8618.75	2563.52	6100.00	420248.36	664.20	13.99
XLNX	Xilinx Inc.	7665.94	2369.45	3099.00	764583.73	641.88	11.83
NVDA	NVIDIA Corporation	7161.44	3543.31	6029.00	587710.89	253.15	28.40
NSM	National Semiconductor Corp	6215.32	1520.40	5700.00	266736.84	298.80	19.79
MXIM	Maxim Integrated Products Inc.	6214.68	1997.60	9200.00	217130.76	125.14	14.95
LLTC	Linear Technology Corp	5939.30	1169.99	4191.00	279166.78	361.34	11.00
MCHP	Microchip Technology Inc	5745.18	1487.21	6970.00	213372.30	418.95	13.20
MU	Micron Technology Inc.	5732.73	8482.00	25900.00	327490.34	1850.00	8.78
ATML	Atmel Corp	4212.57	1644.06	5200.00	316165.38	423.08	8.82
AMD	Advanced Micro Devices Inc	4080.78	6494.00	11100.00	585045.04	471.00	5.94
LSI	LSI Corp	3773.20	2570.05	5718.00	449466.07	39.97	124.60
SWKS	Skyworks Solutions Inc.	3610.17	1071.85	3700.00	289688.91	137.29	18.12
ONNN	ON Semiconductor	3079.95	2313.40	14307.00	161697.07	290.50	9.68
CREE	Cree Inc.	2917.48	867.29	4298.00	201788.50	152.29	16.05
CY	Cypress Semiconductor Corp	2856.30	877.53	3500.00	250723.42	75.74	23.49

Top 8 U.S. Private Companies Sorted by Sales

Company Name	Sales (in Millions)	Employees	Sales Per Employee
Tyco International Us Inc	40960.00	247900.00	165227.91
Telcom Devices Corporation	9918.00	68000.00	145852.94
Freescale Semiconductor Holdings I Ltd	4458.00	19000.00	234631.57
Altera Corporation	4000.00	2164.00	1848428.83
Harris Corporation - Government Communications Systems Division	2092.70	7000.00	298957.14
Agility Communications Inc.	1600.00	99.00	16161616.16
Perfect 10 Antenna Company	1000.00	267.00	3745318.35
World Vision Technology Inc.	1000.00	15.00	66666666.66

Stock and Financial Performance Trends



Semiconductors Income Statement

	Intel Corporation	Texas Instruments Incorporated	Broadcom Corporation	Altera Corp	Analog Devices Inc.	Average Industry
Most Recent Quarter Date	**03/31/2011**	**06/30/2011**	**06/30/2011**	**06/30/2011**	**04/30/2011**	**03/31/2011**
Sales	$ 12,877.00M	$ 3,457.00M	$ 1,796.00M	$ 548.38M	$ 790.78M	$ 34.06M
Cost of Goods Sold	$ 3,215.00M	$ 1,479.00M	$ 835M	$ 152.06M	$ 226.76M	$ 12.28M
Selling, General and Administrative Expense	$ 3,691.00M	$ 834M	$ 686M	$ 150.5M	$ 235.73M	$ 9.89M
Operating Income Before Depreciation	$ 5,971.00M	$ 1,144.00M	$ 275M	$ 245.82M	$ 328.29M	$ 11.9M
Depreciation and Amortization	$ 1,442.00M	$ 226M	$ 50M	$ 7.65M	$ 29.81M	$ 3.11M
Operating Income After Depreciation	$ 4,529.00M	$ 918M	$ 225M	$ 238.17M	$ 298.49M	$ 8.77M
Interest Expense	$ 6M	$ 6M		$ 0.87M	$ 4.08M	$ 0.16M
Non-operating Income (Expense)	$ 55M	$ 9M	$ (73)M	$ 1.01M	$ 2.35M	$ 0.14M
Special items	$ (207)M	$ (13)M	$ 20M	$ 0M	$ 0M	$ 0.16M
Pretax Income	$ 4,371.00M	$ 908M	$ 172M	$ 238.31M	$ 296.76M	$ 8.91M

Income Taxes - Total	$ 1,211.00M	$ 236M	$ (3)M	$ 23.68M	$ 54.93M	$ 1.93M
Minority Interest	$ 0M	$ 0M	$ 0M	$ 0M	$ 0M	$ 0M
Income Before Extraordinary Items	$ 3,160.00M	$ 672M	$ 175M	$ 214.63M	$ 241.83M	$ 6.97M
Dividends - Preferred	$ 0M	$ 0M	$ 0M	$ 0M	$ 0M	$ 0M
Income Before Extraordinary Items - Available for Common	$ 3,160.00M	$ 672M	$ 175M	$ 214.63M	$ 241.83M	$ 6.97M
Common Stock Equivalents - Dollar Savings	$ 0M	$ (11)M	$ 0M	$ 0M	$ 0M	$ (0.01)M
Income Before Extraordinary Items - Adjusted for Common Stock Equivalents	$ 3,160.00M	$ 661M	$ 175M	$ 214.63M	$ 241.83M	$ 6.96M
Net Income (Loss)	$ 3,160.00M	$ 672M	$ 175M	$ 214.63M	$ 241.83M	$ 6.96M

Semiconductors Report Balance Sheet

	Intel Corporation	Texas Instruments Incorporated	Broadcom Corporation	Altera Corp	Analog Devices Inc.	Average Industry
Most Recent Quarter Date	**03/31/2011**	**06/30/2011**	**06/30/2011**	**06/30/2011**	**04/30/2011**	**03/31/2011**
Assets						
Cash and Short Term Investments	$ 11,978.00M	$ 6,400.00M	$ 2,626.00M	$ 3,267.37M	$ 3,431.36M	$ 48.54M
Accounts Receivable/ Debtors-Total	$ 3,542.00M	$ 1,672.00M	$ 680M	$ 383.51M	$ 414.58M	$ 13.81M
Inventories – Total	$ 4,099.00M	$ 1,762.00M	$ 546M	$ 123.31M	$ 293.78M	$ 14.39M
Current Assets – Other – Total	$ 3,176.00M	$ 1,026.00M	$ 125M	$ 214.66M	$ 153.01M	$ 7.72M
Current Assets – Total	$ 22,795.00M	$ 10,860.00M	$ 3,977.00M	$ 3,988.86M	$ 4,292.74M	$ 84.45M
Property, Plant and Equipment – Total (Net)	$ 19,559.00M	$ 3,714.00M	$ 319M	$ 162.3M	$ 473.66M	$ 43.41M
Intangible Assets – Total						N/A
Assets – Other – Total	$ 23,198.00M	$ 2,524.00M	$ 3,539.00M	$ 56.6M	$ 394M	$ 48.1M
Assets – Total	$ 65,552.00M	$ 17,098.00M	$ 7,835.00M	$ 4,207.75M	$ 5,160.40M	$ 175.96M
Liabilities and Net Worth						
Debt in Current Liabilities – Total	$ 54M	$ 0M	$ 0M	$ 0M	$ 14.5M	$ 0.8M
Current Liabilities – Other	$ 8,025.00M	$ 1,065.00M	$ 571M	$ 543.9M	$ 450.21M	$ 17.42M
Current Liabilities – Total	$ 11,565.00M	$ 1,753.00M	$ 1,054.00M	$ 596.58M	$ 588.16M	$ 28.27M

Long-Term Debt – Total	$ 2,083.00M	$ 3,498.00M	$ 697M	$ 500M	$ 892.43M	$ 12.98M
Long-Term Debt Due in One Year	N/A	N/A	N/A	N/A	N/A	N/A
Account Payable/ Creditors – Trade	$ 2,757.00M	$ 623M	$ 471M	$ 52.69M	$ 121.45M	$ 8.75M
Deferred Taxes – Balance Sheet	$ 1,783.00M	$ 92M	$ 78M	$ 0M	$ 1.53M	$ 3.52M
Liabilities – Other	$ 2,772.00M	$ 852M	$ 129M	$ 254.07M	$ 96.28M	$ 7.96M
Income Taxes Payable	$ 729M	$ 65M	$ 12M	$ 0M	$ 2M	$ 1.29M
Liabilities – Total	$ 18,203.00M	$ 6,195.00M	$ 1,958.00M	$ 1,350.66M	$ 1,578.40M	$ 54.22M
Minority Interest	$ 0M	$ 0M	$ 0M	$ 0M	$ 0M	$ 0M
Preferred/ Preference Stock (Capital) – Total	$ 0M	$ 0M	$ 0M	$ 0M	$ 0M	$ 0M
Common/Ordinary Equity – Total	$ 47,349.00M	$ 10,903.00M	$ 5,877.00M	$ 2,857.09M	$ 3,582.00M	$ 121.74M
Common/Ordinary Stock (Capital)	$ 5.36M	$ 1,741.00M	$ 0M	$ 0.32M	$ 49.94M	$ 4.28M
Treasury Stock – Total (All Capital)	$ 0M	$ 16,986.00M	$ 0M	$ 0M	$ 0M	$ 25.69M
Capital Surplus/ Share Premium Reserve	$ 16,265.64M	$ 1,108.00M	$ 11,617.00M	$ 1,047.69M	$ 330.08M	$ 84.36M
Retained Earnings	$ 31,078.00M	$ 25,040.00M	$(5,740.00)M	$ 1,809.07M	$ 3,201.98M	$ 58.85M
Shareholders Equity-Total	$ 47,349.00M	$ 10,903.00M	$ 5,877.00M	$ 2,857.09M	$ 3,582.00M	$ 121.74M

Semiconductors Sub-Industry Report Cash Flow

	Intel Corporation	Texas Instruments Incorporated	Broadcom Corporation	Altera Corp	Analog Devices Inc.	Average Industry
Most Recent Annual Date	**12/31/2010**	**12/31/2010**	**12/31/2010**	**12/31/2010**	**10/31/2010**	**12/31/2010**
Operating Activities (Indirect)						
Depreciation and Amortization	$ 4,638.00M	$ 913M	$ 137.33M	$ 27.54M	$ 120.91M	$ 11.3M
Operating Activities - New Cash Flow	$ 16,692.00M	$ 3,820.00M	$ 1,370.83M	$ 856.7M	$ 991.18M	$ 38.07M
Investing Activities						
Investing Activities - Net Cash Flow	$(10,539.00)M	$ (1,057.00)M	$(2,178.03)M	$ (22.95)M	$ (485.82)M	$ (22.45)M
Capital Expenditures	$ 5,207.00M	$ 1,199.00M	$ 108.92M	$ 12.44M	$ 111.56M	$ 11.08M
Financing Activities						
Cash Dividends (Cash Flow)	$ 3,503.00M	$ 592M	$ 163.43M	$ 67.77M	$ 249.96M	$ 6.29M
Financing Activities - Net Cash Flow	$ (4,642.00)M	$ (2,626.00)M	$ 1,032.54M	$ 384.78M	$ (72.64)M	$ (10.71)M

Semiconductors Financial Ratios Comparisons

Valuation Ratios						
	Intel Corporation	Texas Instruments Incorporated	Broadcom Corporation	Altera Corp	Analog Devices Inc.	Average Industry
Price to Earnings (TTM)	8.98	10.30	16.93	12.48	10.23	10.25
Price to Sales (TTM)	2.32	2.22	2.32	5.20	3.00	2.21
Profitability Ratios(%)						
	Intel Corporation	Texas Instruments Incorporated	Broadcom Corporation	Altera Corp	Analog Devices Inc.	Average Industry
Operating Margin (TTM)	35.17	26.55	12.53	43.43	37.75	25.74
Operating Margin (TTM) 3 Year Avg.	26.25	25.39	10.32	36.94	28.17	
EBITDA Margin (TTM)	46.37	33.09	15.31	44.83	41.51	35.71
EBITDA Margin (TTM) 3 Year Avg.	39.60	32.90	12.65	38.72	33.41	28.67
Pretax Margin (TTM)	0.00	0.01	0.01	0.08	0.05	27.32
Pretax Margin (TTM) 3 Year Avg.	0.00	0.01	0.01	0.09	0.04	14.08
Effective Tax Rate (Annual)	27.71	25.99	(1.74)	9.94	18.51	22.02
Effective Tax Rate (Annual) 3 Year Avg.	28.23	26.86	2.15	12.49	20.45	12.38
Management Effectiveness Ratios						
	Intel Corporation	Texas Instruments Incorporated	Broadcom Corporation	Altera Corp	Analog Devices Inc.	Average Industry
Return on Assets	20.08	21.45	14.79	24.69	19.41	17.15
Return on Assets (3 Year Avg.)	13.58	17.17	8.47	19.25	14.91	
Return on Equity	27.00	30.39	19.29	39.88	27.25	24.94
Return on Equity (3 Year Avg.)	0.00	0.00	0.00	0.00	0.00	12.63

Coverage & Leverage Ratio						
	Intel Corporation	**Texas Instruments Incorporated**	**Broadcom Corporation**	**Altera Corp**	**Analog Devices Inc.**	**Average Industry**
Times Interest earned (TTM)	754.83	153.00		273.76	73.19	52.91
EBITDA/ Interest(TTM)	995.17	190.67		282.55	80.50	69.86
EBITDA - Capex/ Interest (TTM)	541.33	112.33		271.29	65.87	49.33
Debt to Capital (MRQ)	0.04	0.24	0.11	0.15	0.20	0.10
Debt to Equity (MRQ)	0.05	0.32	0.12	0.18	0.25	0.11
Debt (avg. 12 mos.) to EBITDA (TTM)	0.10	0.35	0.27	0.50	0.53	0.31
Free CF (TTM) to Total Debt (avg. 12 mos.)	265.41	110.29	398.89	168.05	79.45	1.73
Liquidity & Activity Ratios						
	Intel Corporation	**Texas Instruments Incorporated**	**Broadcom Corporation**	**Altera Corp**	**Analog Devices Inc.**	**Average Industry**
Current Ratio (MRQ)	1.97	6.20	3.77	6.69	7.30	2.98
Quick Ratio (MRQ)	1.34	4.60	3.14	6.12	6.54	2.20
AR Turnover (MRQ)	16.11	8.33	10.76	5.84	8.06	10.49
Inventory Turnover	3.13	3.73	6.69	5.34	3.24	3.73
AP Turnover	4.75	9.97	6.87	7.33	7.78	6.54

MSCAd Industry Large Losses

Advisen's Master Significant Case & Action database (MSCAd) compiles details and statistics on significant large losses, including management liability cases such as securities class actions, auditing and other management malpractice, state and federal government regulatory fines, employment liability cases and errors and omissions litigation. This also includes EEOC settled litigation, ERISA/Fiduciary Duty, Malpractice, Anti-Trust, Fraud, Trade Practices, and Contract Cases.

MSCAd is the most comprehensive, accurate source of this data available to the industry. Our information is compiled by a dedicated research team using numerous sources such as Stanford Securities, Federal agencies such as the Department of Justice, the EEOC, and the Securities & Exchange Commission, research tools such as LEXIS/NEXIS, major law firms and claims administrators, State insurance commissioners and attorneys general, and other sources. The consolidated data is subject to ongoing review and rigorous audit procedures to ensure both accuracy and timeliness.

Cases Filtered For:	
Industry Filters	
Dates:	2011, 2010, 2009, 2008, 2007
Industries:	3675 - Electronic Capacitors 3677 - Electronic Coils, Transformers And Other Inductors 3679 - Electronic Components, Nec 3678 - Electronic Connectors 3676 - Electronic Resistors 3674 - Semiconductors And Related Devices
Case Count:	**196**

MSCAd Large Losses – 5 Year Trend

Total Number of Listed Cases

	My Filters
2007	47
2008	33
2009	31
2010	44
2011	41
Total:	196
Annual Average:	39.20

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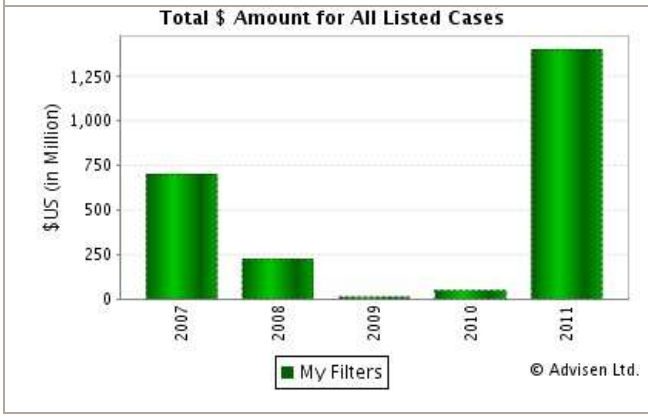

Total $ Amount for All Listed Cases

	My Filters
2007	702M
2008	225M
2009	9M
2010	47M
2011	1,404M
Total:	2,388M
Annual Average:	477.58M

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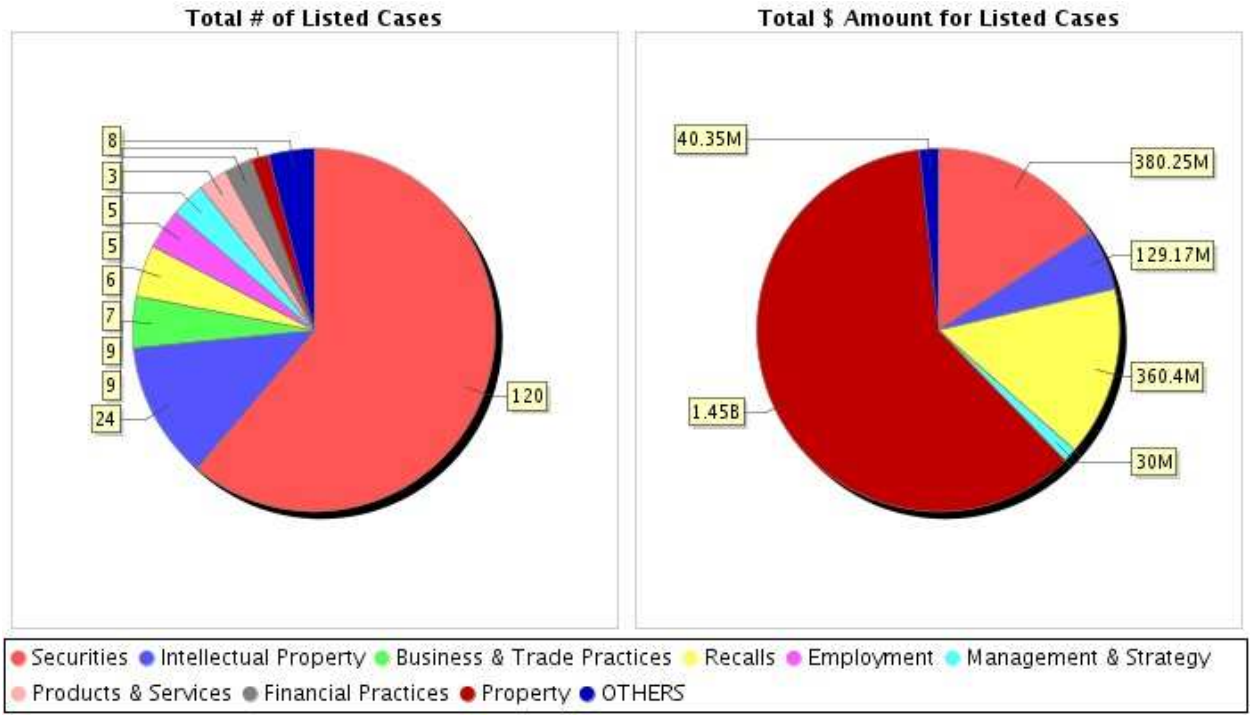
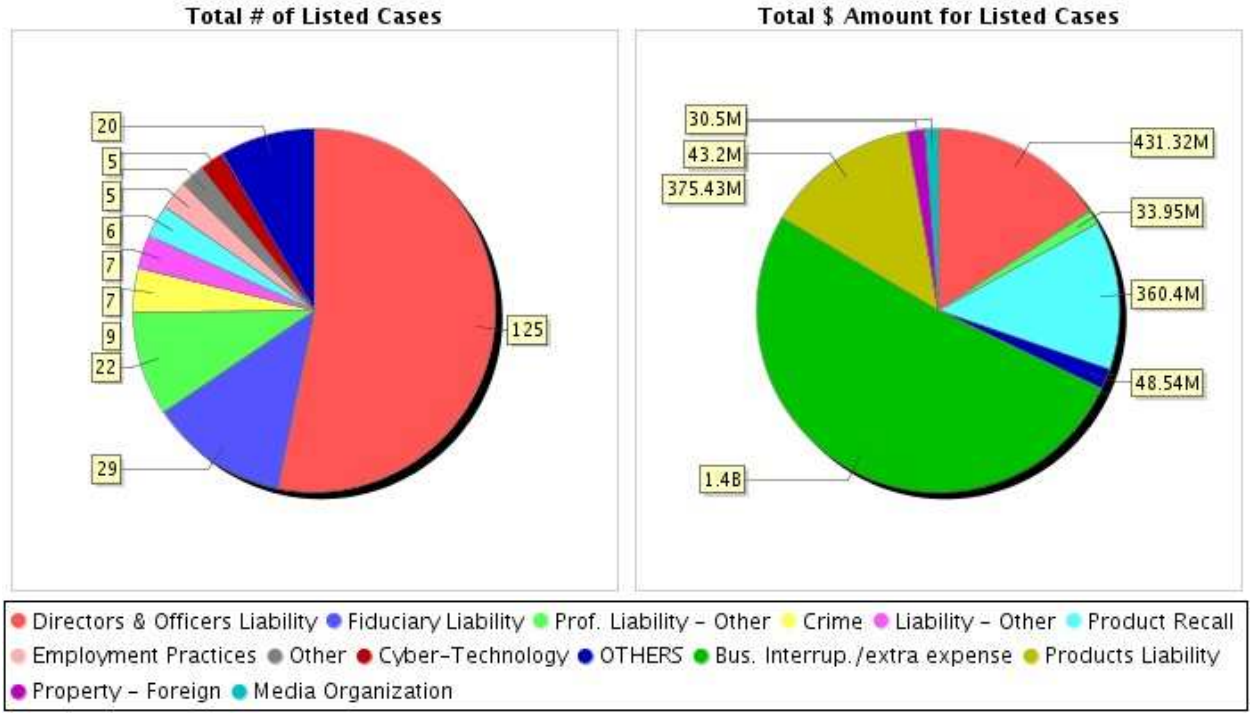
MSCAd Large Losses – Case Category Breakdown



MSCAd Large Losses – Line of Business



MSCAd Large Losses – Recent 10 cases

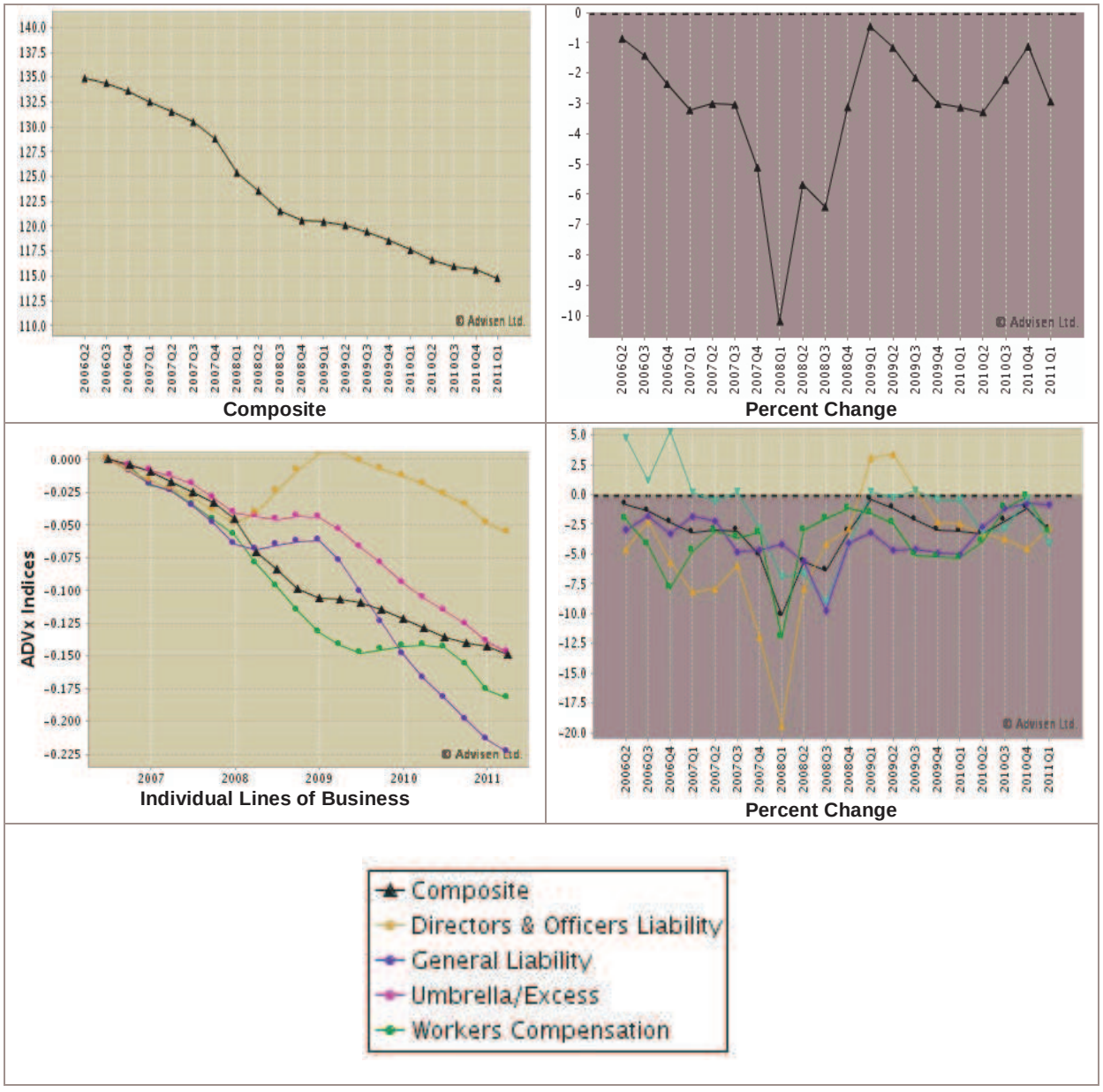
Case ID	Company Name	Company ID	Category/ Type	Accident Date	Filling Date	Status	Total Amounts ($)
661882	Hynix Semiconductor Inc.	1120408	Intellectual Property/ Patent Infringement	01/01/2009	07/11/2011	Pending	
661350	Monolithic Power Systems Inc	1447179	Securities/Breach of Fiduciary Duties: Securities		07/06/2011	Investigation	
661705	Fairchild Semiconductor Corporation	3256018	Environment/ Land/Ground water	06/28/1981	07/05/2011	Tentative Settlement	
661244	Oclaro Inc	1107732	Securities/ Derivative Shareholder Action		06/27/2011	Pending	
660971	Samsung Electronics Co Ltd	1135654	Intellectual Property /Patent Infringement	04/15/2011	06/24/201	Pending	
65963	Intersil Corp	1049506	Securities/ Breach of Fiduciary Duties: Securities		06/09/201	Investigation	
659628	Cree Inc.	1055828	Securities/ Breach of Fiduciary Duties: Securities		06/09/201	Investigation	
659002	Advanced Analogic Technologies Inc	1478980	Securities/ Breach of Fiduciary Duties: Class Action		06/06/201	Pending	
661339	SunPower Corp	1465756	Securities/ Derivative Shareholder Action		06/03/2011	Pending	
658331	Oclaro Inc	1107732	Securities /Securities Class Action		05/19/201	Pending	

MSCAd Large Losses – Top 10 by Settlement Amount ($)

Case ID	Company Name	Company ID	Category/ Type	Accident Date	Filling Date	Status	Total Amounts ($)
659110	Renesas Electronics Corporation	1479164	Property/Manufacturing Plant	03/11/2011		Estimate	$1,400,000,000
627454	NVIDIA Corp	1064894	Recalls/ Voluntary	11/08/200		Estimate	$360,400,000
621324	Maxim Integrated Products, Inc.	1046196	Securities/ Securities Class Action		02/06/200	Settled	$173,000,000
423799	Artesyn Technologies, Inc.	1025048	Intellectual Property/Patent Infringement	01/01/200	11/13/200	Award	$95,224,863
604281	International Rectifier Corporation	1023756	Securities/ Securities Class Action		04/17/200	Settled	$90,000,000
606001	Samsung Electronics Co., Ltd.	1135654	Property/ Building	08/03/200		Award	$43,200,000
608103	Taiwan Semiconductor Manufacturing Company Ltd.	1140655	Intellectual Property/Trade Secrets	09/26/200		Award	$30,500,000
651285	Hannstar Display Corporation	6302651	Management & Strategy/ Price Fixing		06/30/201	Settled	$30,000,000
612603	Semtech Corporation	1010196	Securities/ Securities Class Action		08/10/2007	Settled	$20,000,000
603654	LG Display Co Ltd	2677036	Securities/ Securities Class Action		02/07/200	Settled	$18,000,000

Insurance Program Pricing

ADVx tracks changes in average premiums paid upon the renewal of commercial lines insurance policies. The index is the composite of four lines of business: domestic property, general liability, workers compensation and directors & officers liability, weighted by their relative premium volume as reported in Best's Aggregates and Averages. Premiums are adjusted to 2000 dollar value. Policy renewal data are collected and compiled by Advisen from retail and wholesale insurance brokers and risk managers.



Recent Industry News of Top 5 Competitors

Entropic Communications Inc And Intel Corporation Announces Technology Collaboration
2011-08-08
Entropic Communications Inc along with SMC Networks and Intel, announced their technology collaboration to accelerate the development of a new class of MoCA (Multimedia over Coax) 2.0-enabled DOCSIS 3.0 gateways for service providers. As service providers look to deliver faster broadband speeds to enable future services and applications, the need to distribute this bandwidth around the home becomes increasingly more important. The cooperation between Entropic, SMC and Intel leverages the power of Intel's Puma(TM) 5 family of DOCSIS 3.0 cable modems, SMC's expertise in producing advanced DOCSIS data gateways and Entropic's complete MoCA 2.0 silicon and software solution to enable an unprecedented level of performance that can be delivered over coax cables for home entertainment services. By combining the unparalleled performance of MoCA 2.0 with Intel's DOCSIS 3.0 Gateway Linux-based System-on-a-Chip (SoC) and SMC's DOCSIS 3.0 gateway, service providers can deploy a future-proof, cost-effective, robust, highly-reliable solution that delivers, advanced services and new applications throughout the home without the worry of bandwidth constraints.

Intel Corporation's Intel Capital Announces Investment In China Digital TV Holding Co., Ltd.'s Beijing JoySee Technology
2011-08-03
Intel Corporation and China Digital TV Holding Co., Ltd. jointly announced an Intel Capital investment in Beijing JoySee Technology Co., Ltd (JoySee), a subsidiary of China Digital TV. Established in 2011 as a subsidiary of China Digital TV, JoySee is engaged in the research and development of high-definition (HD) smart TV/cable smart set top boxes (STB). The funding from Intel Capital will be used to further develop JoySee's HD smart TV and cable smart STB products, which will use Intel Atom processor CE4100 to provide end users with a highly secure and reliable HD experience. Intel Capital will appoint an authorized representative to observe on JoySee's Board of Directors.

Intel Corporation Declares Quarterly Cash Dividend
2011-07-27
Intel Corporation announced that its board of directors has declared a $0.21 per share ($0.84 per share on an annual basis) quarterly dividend on the Company's common stock, reflecting the previously announced 16% increase from May 11. The dividend will be payable on September 1, 2011 to stockholders of record on August 7, 2011.

Texas Instruments Incorporated Issues Q3 2011 Guidance In Line With Analysts' Estimates
2011-07-25
Texas Instruments Incorporated announced that for the third quarter of 2011, it expects revenue to be between $3.40-$3.70 billion, earnings per share (EPS) is expected to be between $0.55-$0.65. According to I/B/E/S Estimates, analysts are expecting the Company to report revenue of $3.6 billion and EPS of $0.64 for the third quarter of 2011.

Texas Instruments Incorporated Declares Quarterly Dividend
2011-07-21
Texas Instruments Incorporated announced that the Board of Directors declared a quarterly cash dividend of $0.13 per share of common stock, payable August 22, 2011, to stockholders of record on August 1, 2011.

Wi-LAN Inc. And Texas Instruments Reach Agreement To End Litigation
2011-07-04
Wi-LAN Inc. announced that the Company and Texas Instruments, Incorporated reached an agreement to end litigation regarding Bluetooth (No. 2:10-cv-00124) in the U.S. District Court for the Eastern District of Texas. Terms of the agreement, including financial amounts to be paid to WiLAN, are confidential.

Broadcom Corporation Issues Q3 2011 Revenue Guidance In Line With Analysts' Estimates
2011-07-25
Broadcom Corporation announced that for the third quarter of 2011, it expects revenue to be in the range of $1.9-$2 billion. According to I/B/E/S Estimates, analysts are expecting the Company to report revenues of $1.9 billion for the third quarter of 2011.

Alcatel-Lucent Selects Broadcom Corporation's Broadcom Premier Custom IC Program
2011-06-30
Broadcom Corporation announced that Alcatel-Lucent utilized the Broadcom Premier Custom IC Program to develop and deploy the 400 gigabit-per-second (Gbps) FP3 Network Processor.

Broadcom Corporation Completes Acquisition Of SC Square Ltd.
2011-05-23
Broadcom Corporation announced that it has completed the acquisition of SC Square Ltd., a Israel-based security software developer. In connection with the acquisition, Broadcom paid approximately $41.9 million net of cash assumed to acquire all of the outstanding shares of capital stock and other equity rights of SC Square Ltd. The purchase price was paid in cash, with a portion of the consideration placed into escrow. Excluding any purchase accounting related adjustments and fair value measurements, Broadcom expects the acquisition of SC Square Ltd. to be dilutive to earnings for the remainder of 2011 by approximately $0.01.

Altera Corporation Issues Q3 2011 Revenue Guidance Above Analysts' Estimates-Conference Call
2011-07-19
Altera Corporation announced that for the third quarter of 2011, it expects revenue to increase sequentially 2% to 6%. The Company reported revenues of $548.38 million in the second quarter of 2011. According to I/B/E/S Estimates, analysts were expecting the Company to report revenues of $549.04 million for the third quarter of 2011.

Altera Corporation Declares Dividend
2011-07-19
Altera Corporation announced that the Board of Directors has increased the company's quarterly cash dividend to $0.08 per share, up from the previous dividend of $0.06 per share. The board of directors has declared that the next quarterly dividend will be paid on September 1, 2011 to stockholders of record on August 10, 2011.

Altera Corporation Reaffirms Q2 2011 Revenue Guidanc
2011-06-02
Altera Corporation announced that sales for the second quarter of 2011 will be in line with its previous guidance for flat to 5% sequential growth. The Company reported revenues of $535.8 million for the first quarter of 2011. According to Reuters Estimates, analysts are expecting the Company to report revenues of $545.8 million for the second quarter of 2011.

Analog Devices, Inc. Issues Q3 2011 Guidance Above Analysts' Estimates; Increases Dividend 14%
2011-05-17
Analog Devices, Inc. announced that for the third quarter of 2011, it expects revenue between $765-$795 million, diluted earnings per share (EPS) from continuing operations is expected to be between $0.70-$0.75. According to Reuters Estimates, analysts are expecting the Company to report revenues of $759 million and EPS of $0.69 for the third quarter of 2011. The Company also announced that the Board of Directors increased the quarterly dividend by 14% to $0.25 per outstanding share of common stock, which will be paid on June 15, 2011 to all shareholders of record at the close of business on May 27, 2011.

Analog Devices, Inc. Introduces First Single-Chip 5-kVrms Signal And Power Isolated RS-485 Transceivers For Safe High-Voltage Systems
2011-05-17
Analog Devices, Inc. announced that it has introduced the ADM2682E and ADM2687E, the industryaCOs first single-chip 5-kVrms signal- and power-isolated RS-485 data transceivers that meet the safety isolation requirements of high voltage systems in motor, power and energy control systems.

Analog Devices, Inc. Devices Prices $375 Million Senior Unsecured Notes Offering
2011-03-30
Analog Devices announced that it has priced an offering of $375 million aggregate principal amount of 3% senior unsecured notes due April 15, 2016. Analog Devices intends to use the net proceeds from this offering for general corporate purposes, which may include repurchases of common stock under its stock repurchase program, acquisitions, dividend payments and capital expenditures. The joint book-running managers for the offering are Credit Suisse Securities (USA) LLC and Merrill Lynch, Pierce, Fenner & Smith Incorporated, and the co-manager is Goldman, Sachs & Co.