

Inflection Point Indicator Report

Insight and Analysis For The Semiconductor Industry Professional

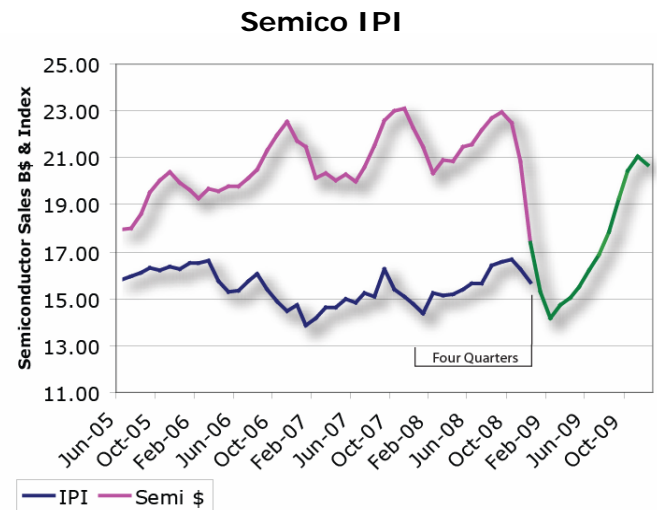
Volume VI, Issue II, February 2009

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IPI Indicates Semiconductor Sales Down 15.3% First Quarter 2009

Semico developed the IPI (Inflection Point Indicator) to assist in forecasting semiconductor revenues approximately three quarters in advance. The IPI, combined with end-market analysis and primary research has helped Semico Research accurately forecast the industry sooner than others.



The Semico IPI was 15.69 in December, a 3.6% decrease from November's 16.28.

Source: Semico Research Corp.

The previous twelve months on the blue line is the forecast for the pink and green line. On the graph above, the blue line is showing a sharp decline, followed by a recovery. Semico forecasts the second quarter of 2009 will grow 9.8%, helping 2009 decline only 14.4%.

2009 Semiconductor Revenue Forecast: Down 14.4%

Semiconductor sales for December were low, lower than the average December sales of ~\$20B. December declined 6.4%, and was the weakest December since 2002. Year-over-year December decreased 32.2%. Revenues declined to \$15.9B from \$16.9B in November.

Now that the downturn is in full swing, we can say that the recovery will start in the second half of 2009, with another slight down ward slide in the 4th quarter. This estimate is based on the many conversations we've had with clients as well as their own assessments of the industry. This does not mean that companies across the supply chain will not be forced to re-evaluate their positions.

Consumers are showing a concern for quality over quantity, so those companies that are expanding and continuing their innovations will come out of this decline on top. As usual, small price CE products will do fine,

and new energy technology will drive the manufacturing markets.

Semico forecasts the total worldwide semiconductor revenue will reach \$212.8 billion, a 14.4% decrease from last year.

PCB Book-to-Bill Ratios

The combined book-to-bill ratio decreased to 0.9 in December, a 14.5% decline from the previous year. Rigid PCB was 0.89, a decrease from November. Year-over-year Rigid PCB shipments decreased 14.2%. Flexible PCB increased to 1.08. Year-over-year, Flexible PCB shipments decreased 17.1%. Flexible PCB numbers over 1.00 indicate higher sales in the consumer and portable device markets.

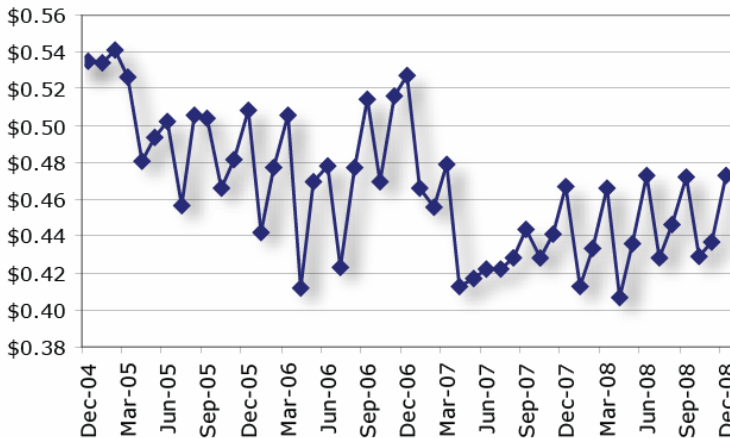
December Semiconductor Sales

Semiconductor unit shipments decreased 13.47% month-over-month in December. All regions declined this month, with China leading the way with a 21.7% decline. Closely following were Asia Pac and Europe which both declined about 14%. Japan declined 9.5% and the Americas declining 4.9%

As shown below, ASPs increased 8.2% to \$0.473 from \$0.437 in November. December is usually a positive month for ASPs every year.

Semiconductor revenue growth also decreased across all regions with Europe having the largest decline at 11.7% followed by Asia Pac and China with about a 7% decline. Japan decreased 4.5% and the Americas decreased 1.5%.

Worldwide Semiconductor Aggregate ASPs



Source: Semico Research Corp.

From a categorical standpoint, Computing had a decent month with revenues increasing 6.6%

due to a 17.4% increase in ASPs. The Consumer segment didn't fare so well with revenues decreasing 5.1% due to a 6.1% increase in ASPs. Wireless Communications decreased 1.5% with ASPs increasing 3.1%. Wired Communications increased 11.7% due to ASPs increasing 20%.

Total Flash Memory had a down month in every region except the Americas which grew 1.3%. The largest decline was in Europe with a 39% decline followed by Japan at 26.3%. Asia Pac decreased 19.8%.

NOR Market: Challenging Market Times Continue

General Trends

- ASPs are down 22% from last year, 3Q08 compared to 3Q07.
- ASPs are down 22% from last quarter, 3Q08 compared to 2Q08.
- Prices are forecast to drop in 2008 by 20%.
- Unstable economic conditions will continue through much of 2009.
- Disappointing cell phone sales limit NOR sales.
- Unit shipments will be 3.9 billion for 2008, up 4% from 2007.
- Revenues in 2008 will fall 17% to \$6.6 billion, the result of plummeting ASPs and weakening demand throughout the year.
- Wireless communications applications—primarily cell phones—drive almost three quarters of the total NOR megabyte shipments.
- Five densities, 32Mb through 512Mb, will make up almost 78% of 2008's total revenue shipments and 55% of the total unit shipments.
- Megabyte growth will be a respectable 12% in 2008—higher density NOR products

shipping at lower ASPs.

- Economic recovery is expected to elude the NOR market in 2009 with a revenue decline of 6%.
- NOR unit shipments are forecast to be virtually flat in 2009—1% down.
- 2009 ASPs are forecast to decline 5%, a slower rate than 2008.

Market Update

- The market news may not have been good, but there has been lots of activity in the NOR marketplace. Here are some recent developments that have an impact on the NOR market.
- October 2008: Numonyx BV and Elpida Memory Inc. signed a foundry agreement to enable Numonyx to manufacture NOR flash in Elpida's 300mm Hiroshima wafer fab. Numonyx will have access to 65nm production and the 45nm process in the future. This agreement will allow Numonyx to manufacture high-density NOR flash for the mobile phone and embedded markets.
- Spansion continues to strengthen its alliances. Spansion signed a non-binding Memorandum of Understanding with ASE (Advanced Semiconductor Engineering Inc.) for assembly and test services. The companies plan to have a joint venture including the Spansion Suzhou, China back-end facility. Both firms consider this a reasonable way to increase asset utilization and reduce capital expenditures in a difficult market.
- SMIC has received US export licenses for 32nm technologies. Under the licenses, SMIC can start 32nm flash R&D in January 2009 that will enable it to produce NOR flash for Spansion in 2010.
- November 2008: Spansion announced in November that it was "filing two separate patent infringement complaints against Samsung with the International Trade Commission and in the U.S. District Court in Delaware. In one of the largest patent infringement claims ever filed, Spansion is seeking the exclusion from the U.S. market of well over one hundred million mp3

players, cell phones, digital cameras and other consumer electronic devices containing

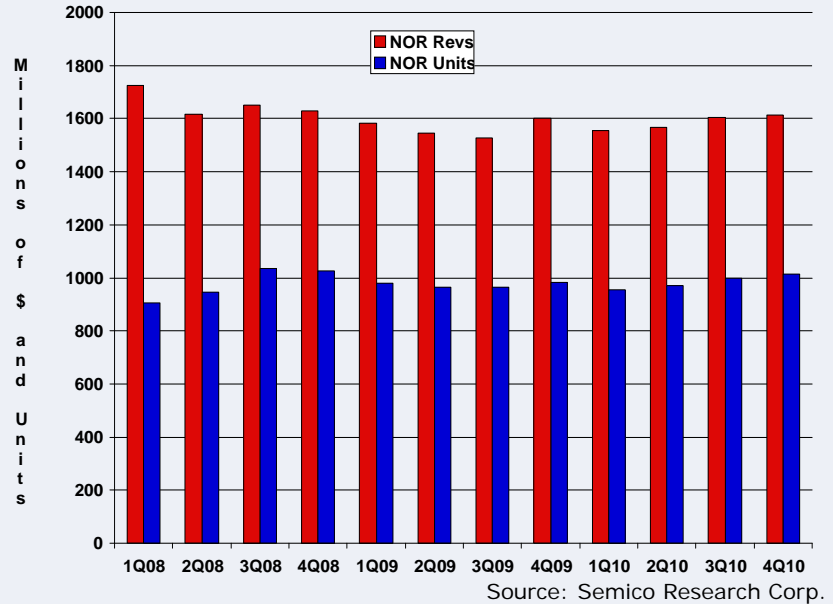
Samsung's infringing flash memory components. The complaint in the US District Court in Delaware also seeks an injunction and treble damages for patent violations relating to Samsung flash memory, that Spansion estimates has accounted for more than \$30 billion in Samsung's global revenues since 2003."

- "The Spansion patents named in these lawsuits are fundamental to floating gate technology, which is the foundation for approximately 90 percent of the flash memory market. Spansion is also leading the industry with MirrorBit, a charge-trapping technology, that represents a growing share of the flash memory market and is expected to replace floating gate technology in the future. Flash memory companies including Samsung have publicly announced their plans to transition to charge-trapping type technologies for their future generation products."
 - Spansion announced progress on the EcoRAM architecture introduction. Spansion "licensed the Virident GreenGateway Platform(TM) to create the Spansion EcoRAM Accelerator — an innovative memory controller — in a standard x86 processor socket." As explained in Spansion company data, "the integration of the Spansion EcoRAM Accelerator allows the system to read from Spansion EcoRAM DIMMs at DRAM speeds and latency.
- The architecture leverages memory access techniques that have been used in the high-end server world to allow microprocessors to use system memory more efficiently." This approach targets the server market and aims to lower power consumption while enabling high performance and capacity. Power consumption is a major issue for any company running large numbers of servers.
- The initial implementation from Spansion and Virident will support Linux-based environments.
 - Numonyx concentrates on alliances to further its research and development efforts. It participates in two European research programs—ENIAC (European Nanoelectronics Initiative Advisory Council) and CATRENE (Cluster of Application and Technology Research in Europe on NanoElectronics).

- ENIAC is tasked with supporting all Nanoelectronics research activities. Numonyx is a corporate member of AENEAS, a non-profit group that supports ENIAC.
- CATRENE is a European cooperative advanced R&D program to develop microelectronic technology and applications. Numonyx is a member of the Steering Group Technology of CATRENE.
- Additionally, Numonyx participates with research programs in Europe and the US through universities and major research institutions. One such program is CNR-MDM, an Italian Nanoelectronics research group that is located in the Numonyx facility in Agrate Brianza, Milan.
- December 2008: Good news for Spansion, Qualcomm Inc., and Motorola Inc. on the legal front. A patent lawsuit has been filed by Tessera with the International Trade Commission (ITC). In December, the judge ruled in an Initial Determination that Spansion's flash memory products do not infringe on the Tessera patents at issue in the lawsuit.
- Spansion Inc. announced in mid-December that 65nm 3-volt 512Mb and 1Gb MirrorBit(R) NOR are now in production on 300mm wafers at its SP1 facility. The company stated that first shipments were made to customers earlier in the fourth quarter. These NOR products are used in consumer and industrial applications such as automotive navigation systems, communications infrastructure equipment, gaming and industrial control, according to Spansion.
- Numonyx confirmed that its high density NOR flash memory products will move to its 65nm process lithography. High-volume production is scheduled for the first half of 2009, according to company sources

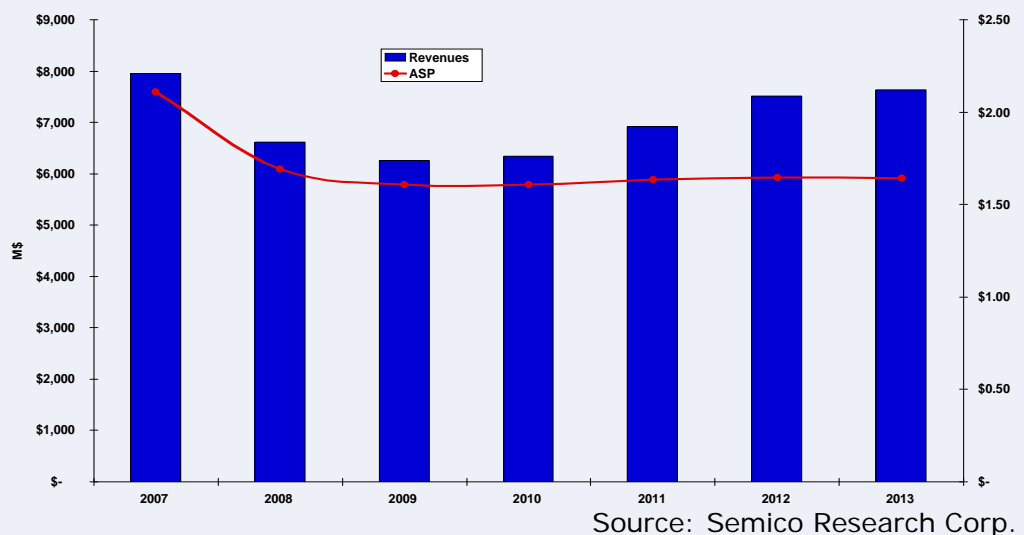
Quarterly Forecast Predictions

As the market adjusts to signs that the recession will likely continue through 2009, companies are adjusting their manufacturing investments downward. This is true in the NOR segment as well as all other memory segments. NOR proves it is still a commodity memory market tied to the fundamentals of the economy, supply and demand.



The figure above illustrates the seasonal nature of the NOR industry. Units increased by 8% in 3Q08 on top of the 4% growth of 2Q08. A 1% decline is forecast for 4Q08. 1Q09 and 2Q09 are expected to show further small declines of 4% and 2% respectively. The second half of 2009 manages a dead flat 0% change over its first half. A strong but exceedingly unlikely recovery in 1H09 could change that scenario. Total unit shipments in 2009 are expected to decline by a mere 1%.

On the revenue side, growth continues to elude the market, with revenues falling 18% in 1H08 over

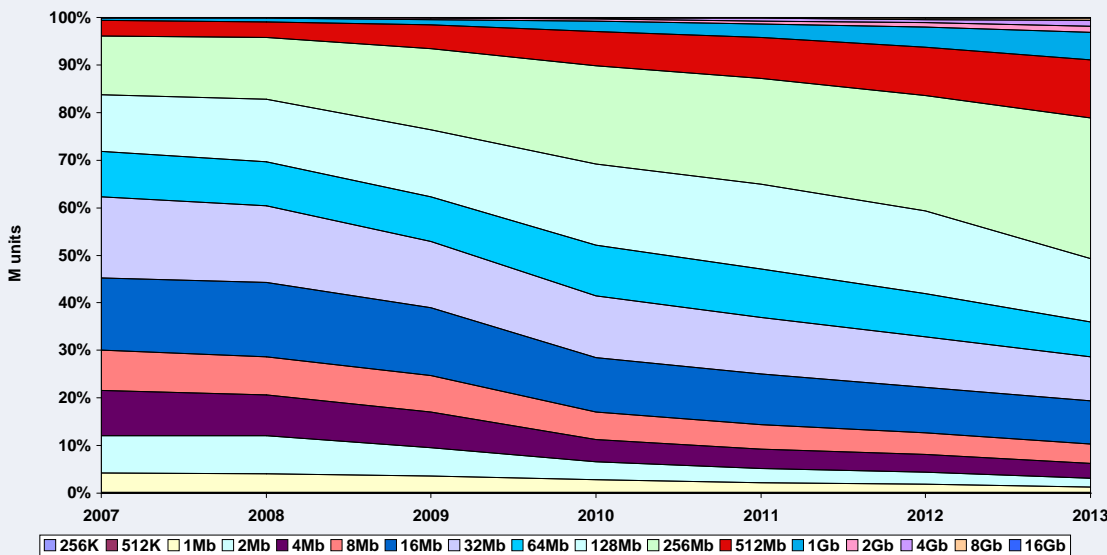


2H07. The 2% revenue growth of 3Q08 along with the projected negative 1% for 4Q08 was not enough to turn the market around. Revenue for 2009 will decline by 17%. The aggregate ASPs declined 7% between 2Q08 and 3Q08. This trend is expected to slow to a 0.5% decline for 4Q08. Aggregate ASPs will decline by 20% for 2008 year-over-year.

Despite a migration to higher densities, revenue in 2009 will decline by 6%. Market recovery will take until 2010 in the forecast.

The annual forecast shows that the next four years will bring slow unit growth through 2013, with a CAGR of 4%. New memory technologies will encroach on NOR's territory by the outer years of the forecast. The CAGR for revenues from 2008—2013 will be only 3%. As the market becomes even more challenging, the aggregate ASP will flatten out, staying at or just below \$1.65 through 2013.

The following chart depicts the product roadmap for NOR flash through 2013. The bars on this chart are basically horizontal, indicating that NOR densities, much like those of SRAM, last for a very long time before they are phased out. A comparable chart for NAND would show bars that are almost vertical, indicating that NAND densities are phased out very quickly, because the cheapest part in terms of cost-per-bit changes more frequently.



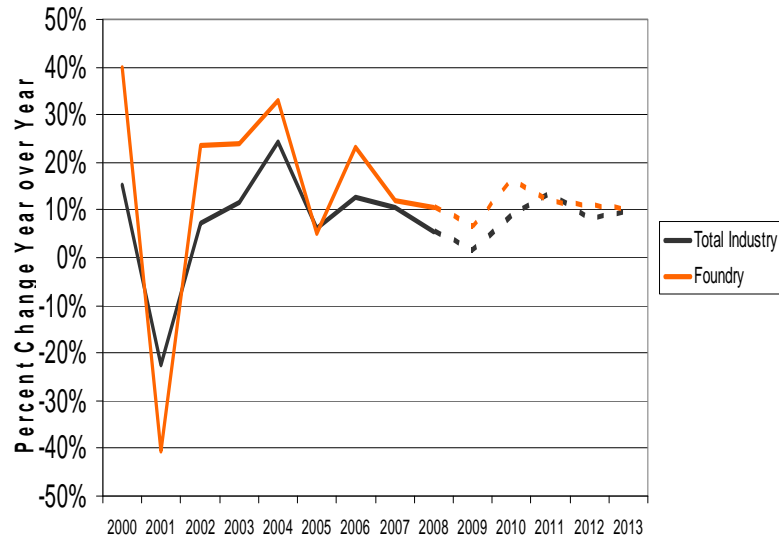
Source: Semico Research Corp.

The sweet spot of the market is made up of five different densities—16Mb, 32Mb, 64Mb, 128Mb, and 256Mb—that will total 67% of 2008's unit shipments and 69% of 2009 unit shipments. The NOR sweet spot moves slowly; not until 2012 will it start to shift up a notch to the 32Mb – 512Mb range. Spansion's goal is to accelerate its

development of higher-density parts to stimulate new applications that increase demand. Spansion should be able to do that, given its technological lead.

Foundry Market Forecast First Quarter 2009

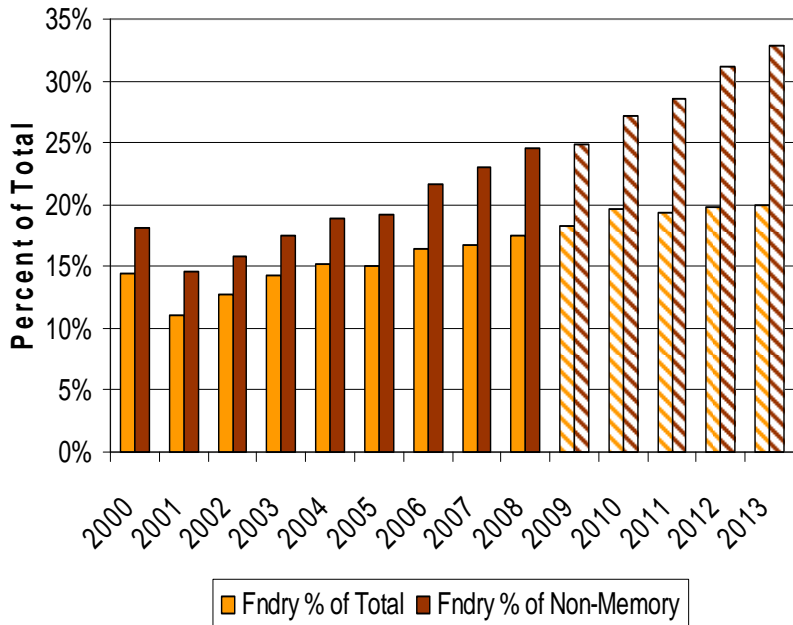
Foundry Market Overview



Source: Semico Research Corp.

Most semiconductor manufacturers and foundries are approaching 2009 with extra caution. The global economic situation and the financial market collapse slammed the brakes on electronic sales. Foundries began seeing the reduction in orders in the third quarter 2008 and continue to experience declining orders going into 2009. With the exception of 2001, the foundry market has grown faster than the overall semiconductor wafer demand. Ten years ago it was the start-up fabless companies that boosted foundry sales higher than the overall industry. In the past few years, growth has also been fueled by the movement of IDMs to a fab-lite or fabless model. The broadening of the foundry customer base now means the foundry market more closely mirrors the overall industry trends.

Foundry wafer demand grew by 10.5% in 2008 and is expected to grow by 6.5% in 2009. Total wafer demand for the semiconductor industry is expected to grow by only 1.6%. Over the next five years, foundry wafer growth will continue to be higher than overall industry except for 2011 when the memory unit demand will surge, a market the foundries do not play a significant role.



Source: Semico Research Corp.

Today, the foundries process approximately 18% of the total wafers required by the industry. By 2013, that number will increase to 20%. The foundry impact is much more significant if the memory segment is filtered out of the picture. Currently, foundries supply almost 25% of the total non-memory wafers. That figure will grow to over 30% by 2013.

Dedicated foundries usually do not provide manufacturing capacity to the commodity memory market due to the low margins and pricing volatility. The production of memory chips depend

on very high volume output in order to reach economies of scale and the breakeven points for very low cost structures.

Foundry Demand by Product Type

Foundries manufacture a significant portion of digital logic products as opposed to memory, analog and discretres. Although a few DRAM companies have entered into partnerships for foundry capacity, the number of wafers dedicated to memory products still remains a small part of the overall foundry business.

MPRs (microperipherals) such as graphics, chipsets, and communication chips make up the high volume business for the large dedicated foundries. Many of the smaller foundries supply wafers to mixed signal analog, optoelectronics and power management suppliers.

Supply-Side Overview

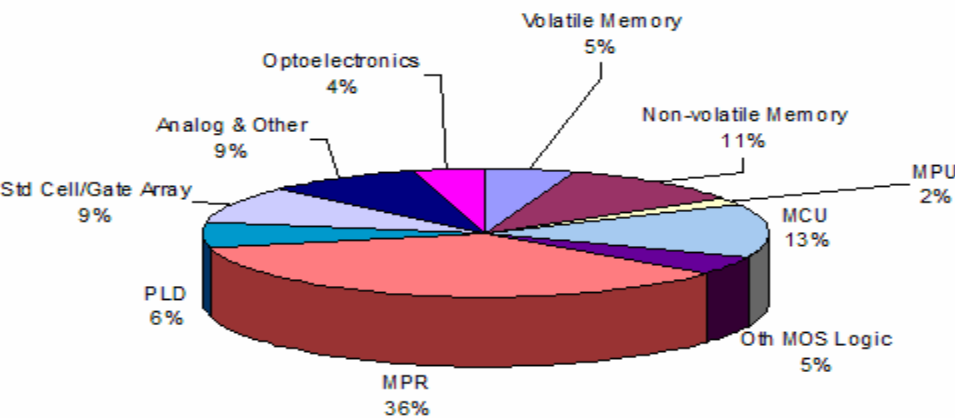
Foundry supply will continue to increase but at a much slower rate than in the past. The major foundries are reporting capacity utilization at record lows. All companies cut back expansion plans in 2008 and will most likely announce further cutbacks in 2009. During their third quarter financial conference call, TSMC stated the company would possibly cut capital expenditures by 20% in 2009. Their 2008 capital expenditures were USD\$1.8 billion.

Although the industry is being challenged by weak electronic and semiconductor sales, foundries continue to roll out their 45nm/40nm process offerings. In addition, they continue to make investments in the development of next generation technologies, such as 32nm and 22nm.

There are two items of interest that need to be addressed regarding the foundry supply market: New foundry suppliers and a change in process technology offerings.

The big supply side news at the end of 2008 was the announcement by AMD and ATIC (Advanced Technology Investment Company) regarding their partnership to create a new semiconductor manufacturing company. ATIC is wholly owned by the Government of Abu Dhabi. The deal also involves Mubadala Development Company, a Public Joint Stock Company headquartered in Abu Dhabi.

Key elements of the arrangement include



Source: Semico Research Corp.

the following:

- AMD will contribute its two Dresden, Germany fabs as well as related assets and intellectual property rights. In addition, Doug Gross and Hector Ruiz plan to leave AMD to assume positions with the newly formed company.
- ATIC will invest \$2.1 billion to purchase a stake in the new company.
- Mubadala will increase its ownership in AMD through the purchase of newly issued AMD shares and warrants for additional AMD shares.

Semico believes this is significant because the new company is inheriting existing fabs with a built in customer, is accustomed to working with advanced technology including the Common Platform and has a partner with financial resources and a desire to succeed in the technology arena.

In August 2008, Sitronics Inc. announced plans to build a 300mm fab in Zelenograd, near Moscow. Sitronics Inc is a provider of telecommunications, IT and microelectronics products in Russia. The company expected to receive \$1 billion dollars from the Russian government to fund the new facility. The project, named Sitronics Nanotechnology expected to license 65nm and 45nm technologies. The plan was to provide capacity for domestic IC production and some foundry services to partners and fabless companies.

Even though the foundry market is in an over capacity situation, there are still companies trying to enter the foundry market.

The second item which Semico believes will impact the advanced technology foundry market is more subtle and involves TSMC's strategy to offer 40nm and 28nm as their primary technology nodes. As the Common Platform moved ahead with their release of 45nm and advanced development of their 32nm processes, TSMC announced a 40nm process technology.

Claiming that it is an important process node for graphics chips TSMC is using 40nm not as a transition node but as a permanent offering for general purpose and low power production. TSMC will be doing the same thing at the 32nm node, i.e. offering 28nm processes. This does

offer more options for the customer but there is an associated cost.

Semico views this in two ways. First, TSMC needed to distinguish itself from the Common Platform as they are making headway in the market. But the impact to the foundry business can be detrimental. Chartered, Samsung, and UMC will be offering both 45nm and 40nm process technologies for volume production. There may not be any immediate increase in cost to the customer today but more process nodes implies higher industry costs to support more options. Those costs will eventually have to trickle down to the customer.

Automotive Systems: Adaptive Braking

The automotive industry is in distress. Total shipments of passenger cars and commercial vehicles will decrease by nearly 25% from 2007 through 2009. This will undoubtedly have an impact on semiconductor revenues. One trend that will mitigate some of the lost revenue will be the increased usage of semiconductors in new automotive systems and the increased penetration rates. Adaptive braking systems are an excellent example.

This is an attractive semiconductor market that will be increasing during the next two years, when overall semiconductor sales will be declining. Semiconductor sales for adaptive braking systems will be increasing at a much greater rate than overall semiconductor sales over the next five years. The CAGR will be greater than 100% for both semiconductor unit shipments and revenue over the five-year forecast period.

As shown below, adaptive braking systems use a laser or radar system to sense the distance from a vehicle to an object and apply the brake system pressure necessary to avoid or soften a collision.



Source: Semico Research Corp.

Adaptive braking systems use a MOS micrologic or MOS logic controller to calculate the possibility of a collision, using data from distance and vehicle speed sensors. When a collision becomes a possibility, the controller warns the driver, or visually, determines the amount of brake pressure required to avoid a collision, and brings the brake pads into contact with the rotors.

When the driver applies the brakes, the controller immediately causes the hydraulic braking system to supply the predetermined amount of brake pressure required. Active Cruise Control systems can also maintain the interval between two vehicles. Some companies use the term adaptive braking to describe systems that can provide some or all of the following functions:

- Hill Start Assist: Prevents the car from rolling backwards when the pressure on the brake pedal is released and the accelerator pedal is depressed.
- Brake Drying: Applies brakes periodically to remove moisture.
- Priming: Increases brake pressure to move the pads into slight contact with the rotors as soon as the driver releases pressure on the accelerator.

Although these are useful functions, they can be provided without using a distance sensor. In this study the term, "active braking systems," will be used to refer only to systems that apply braking pressure in response to inputs from distance and speed sensors.

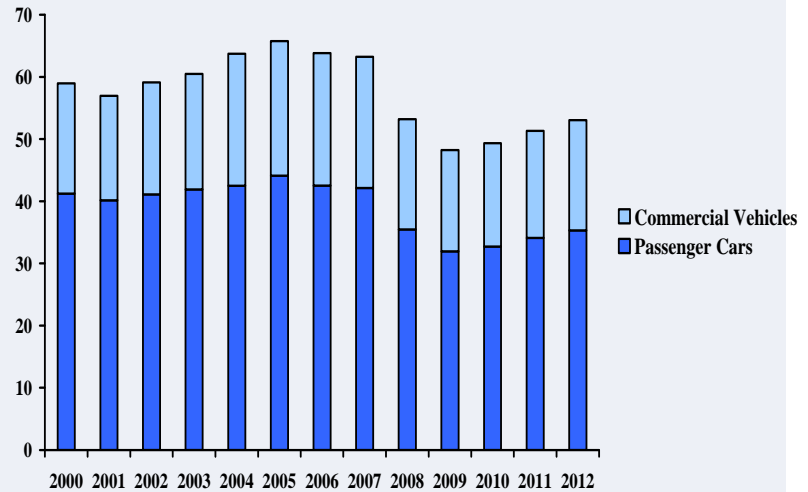
Human factors are an important consideration. For example, active braking systems are identical to longitudinal collision avoidance systems; but the term, "active braking system," is used to sidestep the negative connotations that drivers might pick up from the term, "collision avoidance system."

Some drivers object to the idea that an active braking system could take braking away from their control. The right timing and best way to warn a driver of an impending collision are issues that are still being explored. Some of the alternatives being proposed are audible warnings, visual warnings on a heads-up display and systems that cause the vehicle to simulate

running over a rumble strip.

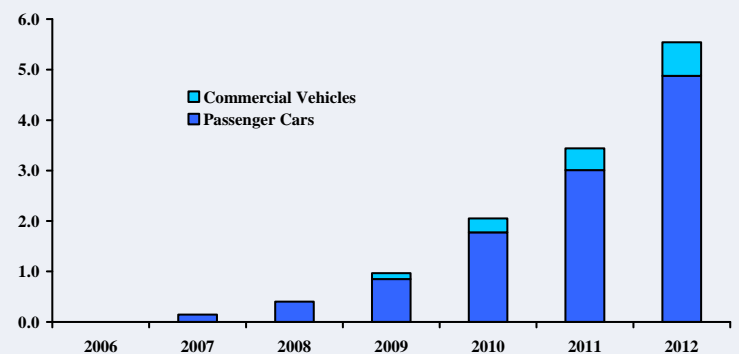
Worldwide Automotive Shipments Forecast

The automobile industry is in serious difficulty, especially in the United States. The three large US automobile manufacturers are running out of cash and have obtained loans from the US government to help them stay in business. Other countries such as Sweden are also providing aid to their domestic automotive industries.



Source: Semico Research Corp.

Shipments will decline by nearly 20% in 2008, followed by a second decline in 2009. This forecast is more optimistic than the worst case forecasts some analysts are presenting. It is based on two assumptions: First, that the economic recovery efforts and automotive industry loans taking place in the last quarter of 2008 will lead to a recovery in the US economy and in the automotive industry; and second, that the recovery programs will result in positive economic growth in the second half of 2009, which will spread to the rest of the world.



Source: Semico Research Corp.

Adaptive Braking System Forecast

The penetration rate for adaptive braking systems in passenger and commercial vehicles in 2006 was, essentially, zero. At least two high end manufacturers, BMW and Mercedes-Benz offered adaptive braking systems in 2007. Because active braking system costs can be reduced with increased volumes, applications will follow the very common automotive industry pattern, seeping down from high-end vehicles to mid-range vehicles and finally even to entry-level vehicles.

The penetration rates of adaptive braking systems in commercial vehicles will lag the penetration rates for passenger cars. Commercial vehicles often use air brakes, which require different software and hardware systems. In addition, there are some regulatory issues which could impede the adoption of adaptive braking systems in commercial vehicles.

The adaptive braking system market is quickly entering the growth phase of its product life cycle. Costs will decrease and over time systems will be integrated with active cruise control, stability control, traction control and other systems. In addition there is a possibility that adaptive control systems may be required by legislation. This will eventually lead to penetration rates approaching 100%.

Wafer Demand Summary & Assumptions Fourth Quarter 2008

Summary

- Wafer demand is expected to increase by only 2.3% in 2009 to 144.3 million wafers.
- Total semiconductor units will grow by 2.7%.
- The financial crisis in the U.S. and the worldwide economic slowdown has impacted semiconductor demand. The first half of 2009 is expected to experience continued slow growth.
- There are a few categories that will grow at double digit rates in 2009. MOS Micro Logic Communication will increase by 14% in units

and 18% in wafers. Programmable Logic Devices and Optoelectronics are two other categories that will experience just over 10% growth in 2009.

- The memory market will continue to experience sluggish unit growth in 2009. The DRAM and NAND markets are still in an over capacity situation creating downward pricing pressures. DRAM units are expected to decline by 14% in 2009 and wafer demand will decline by 18%.
- Demand for wafers processed at 90nm or smaller will increase to 34% of total wafer demand. That is 2% higher than 2008.

Forecast Highlights for 2009

Overall Wafer Demand

- The 2009 wafer demand is 8% lower compared to the forecast in Q3 2008. The drop in wafer demand is primarily due to the reduction in the overall unit forecast for 2009.
- Semiconductor unit growth is only expected to be 2.7% in 2009. U.S. and world economic conditions have caused downward pressure on consumer electronic demand.
- Significant wafer demand adjustments were made in the memory categories.

DRAM

- DRAM wafer demand for 2009 was revised downward again this quarter. Wafers used for DRAM production are expected to decline by 14.4% in 2009. DRAM units are expected to decline by 14.3% in 2009. That follows the 6.7% unit growth and 6.4% wafer growth in 2008.

NAND

- NAND Flash demand has slowed significantly. NAND flash unit growth is only expected to increase 7.2% in 2009 and wafer demand will grow by 8.9%. NAND flash wafer demand grew by 31.1% in 2008.

DSP

- The DSP unit demand is forecast to increase by only 2.3% in 2009. Wafer demand will experience a 7.9% increase in 2009. The move to 45nm/40nm higher performance

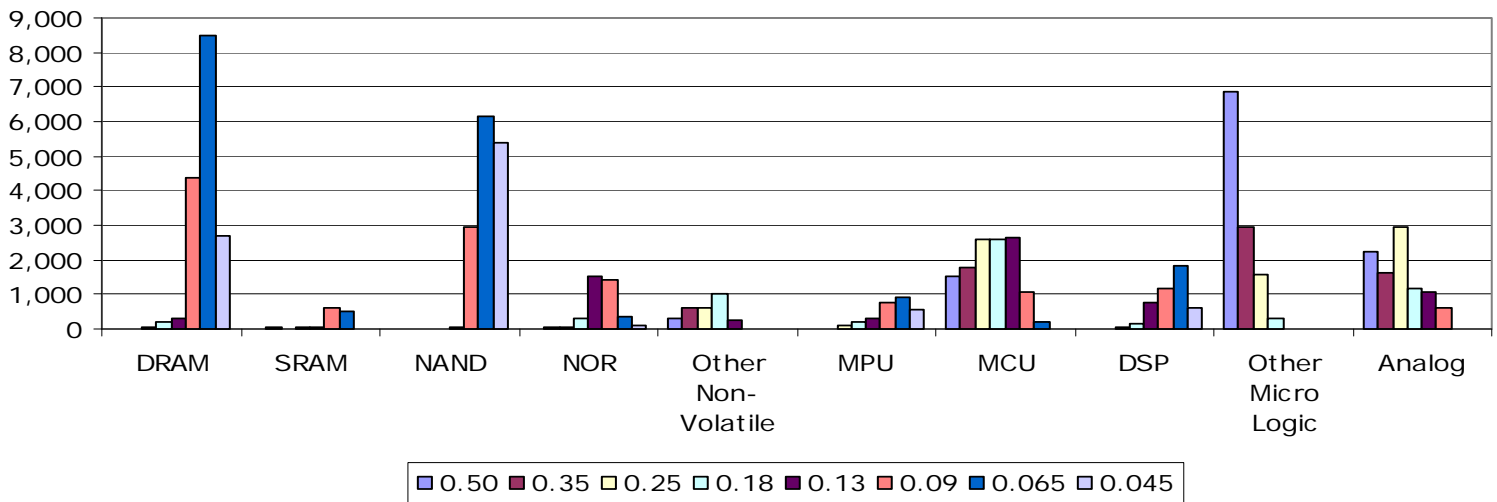
chips will require more silicon during the transition phase.

- DSP wafer demand declined by 5.2% in 2008.

Communication MOS Logic

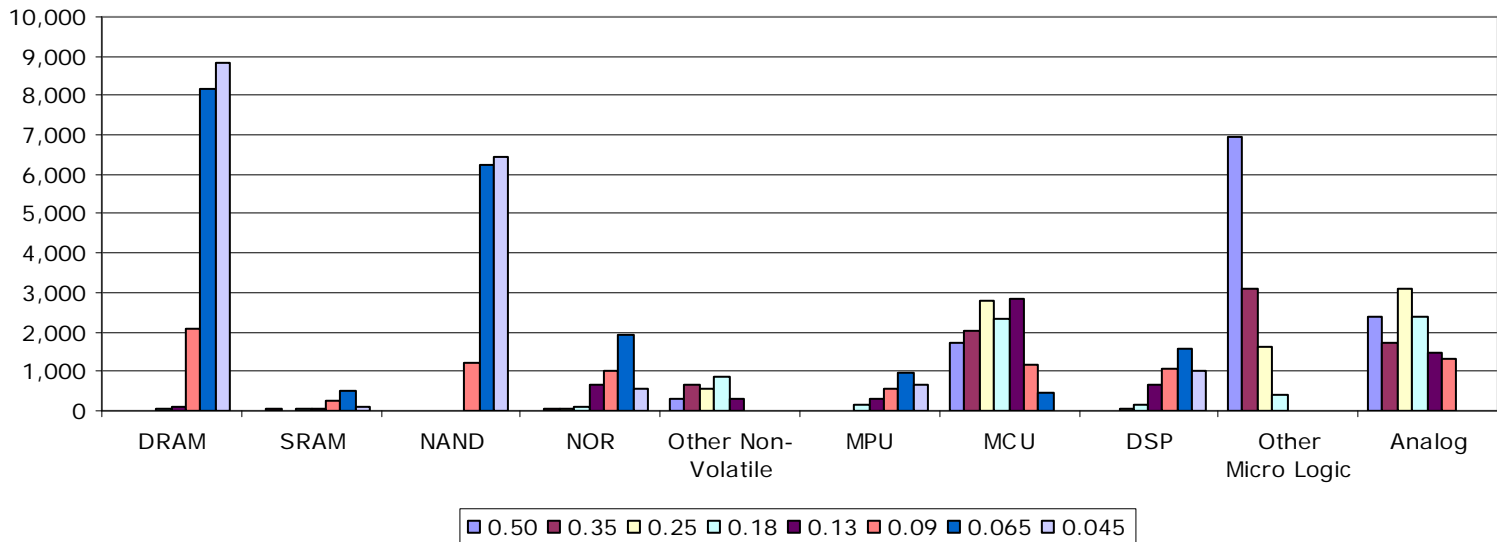
- Communication MOS Logic is a product group experiencing continued positive growth. Total wafer demand for Communication MOS Logic is expected to grow by 18.1% in 2009.
- Total units in this category are expected to grow by 14.4% in 2009.

2009 Forecast



Source: Semico Research Corp.

2010 Forecast



Source: Semico Research Corp.

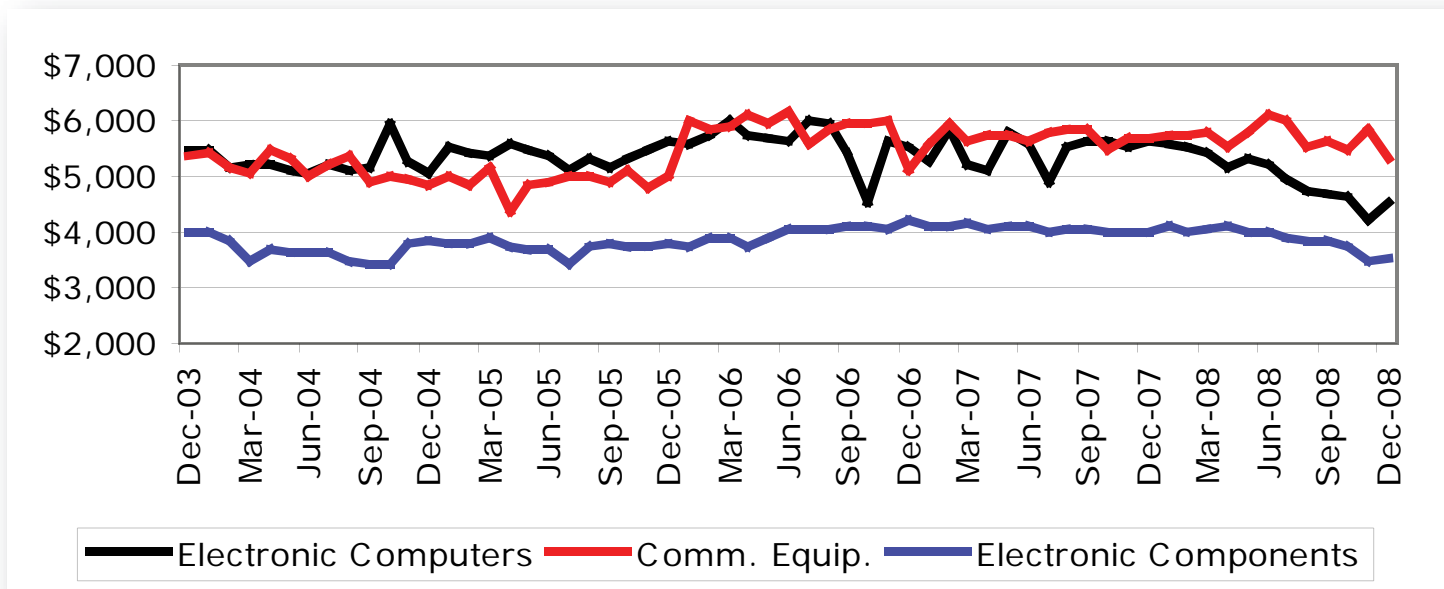
SEMICO IPI EXCLUSIVE

SHIPMENTS

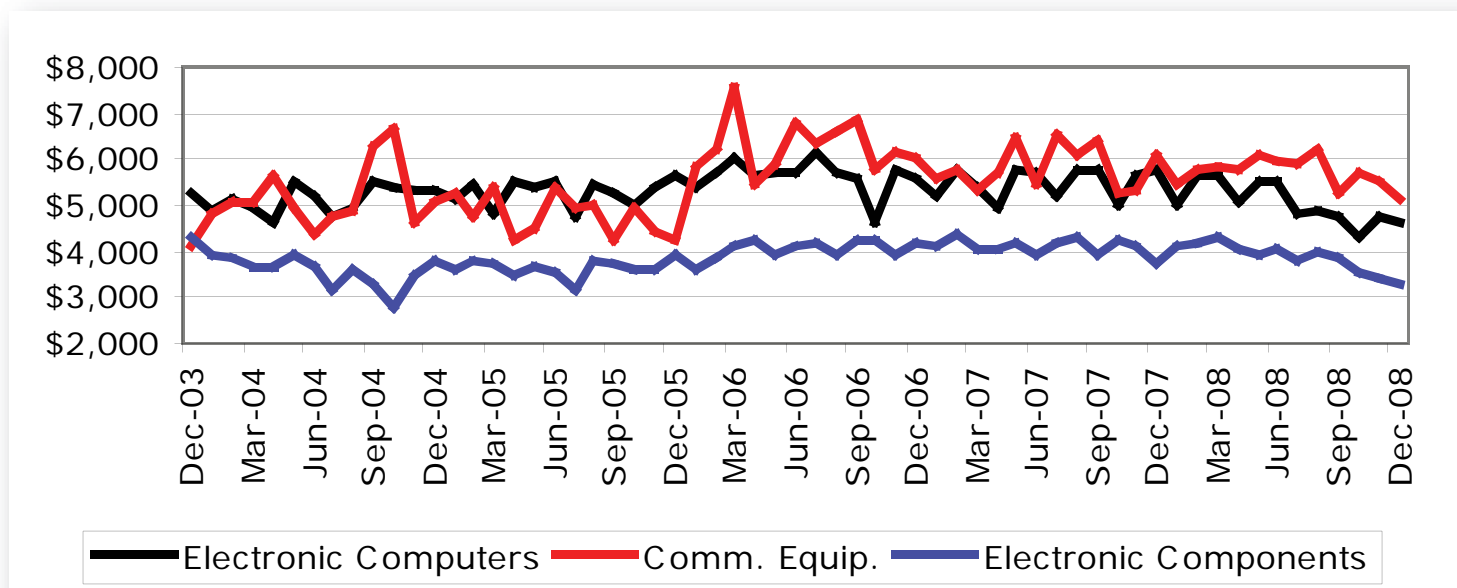
ORDERS

INVENTORIES

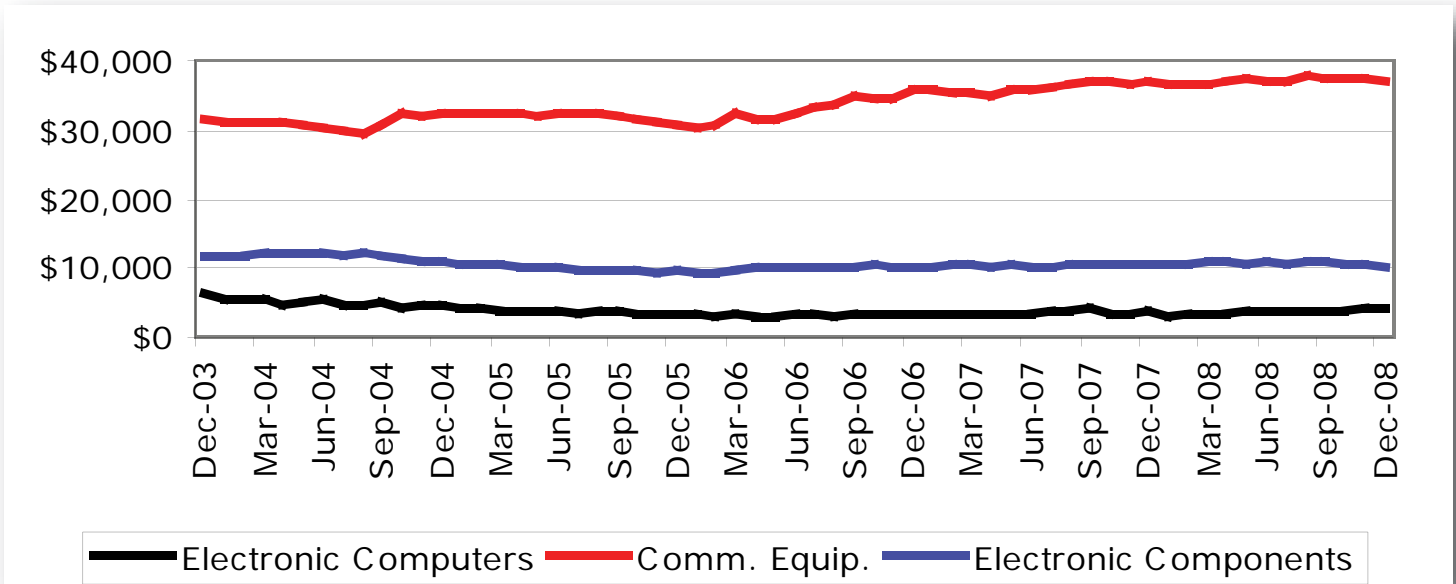
SHIPMENTS (\$M)	Jun-08	Jul-08	Aug-08	Sep-08	Oct-08	Nov-08	Dec-08
Electronic Computers	\$5,193	\$4,945	\$4,763	\$4,703	\$4,626	\$4,228	\$4,545
Communications Equip.	\$6,104	\$6,011	\$5,509	\$5,649	\$5,458	\$5,868	\$5,310
Electronic Components	\$3,979	\$3,903	\$3,868	\$3,847	\$3,727	\$3,481	\$3,538



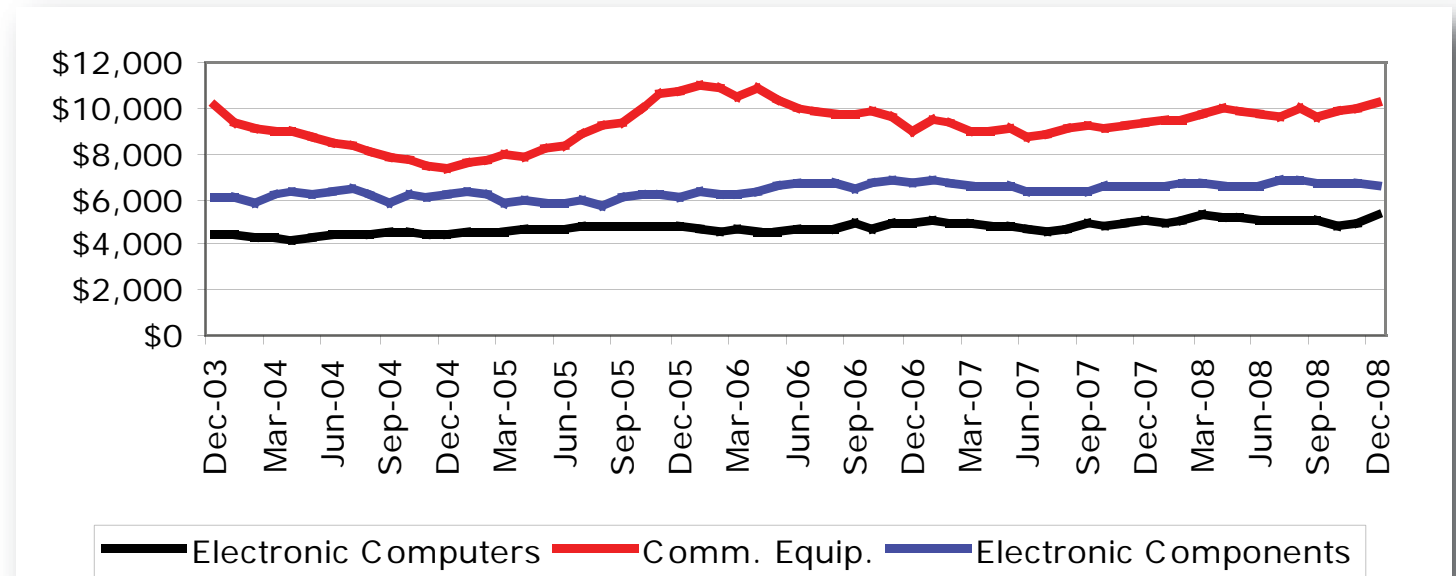
NEW ORDERS (\$M)	Jun-08	Jul-08	Aug-08	Sep-08	Oct-08	Nov-08	Dec-08
Electronic Computers	\$5,539	\$4,811	\$4,844	\$4,723	\$4,292	\$4,775	\$4,634
Communications Equip.	\$5,937	\$5,892	\$6,205	\$5,270	\$5,699	\$5,540	\$5,147
Electronic Components	\$4,056	\$3,785	\$3,999	\$3,846	\$3,548	\$3,387	\$3,278



UNFILLED ORDERS (BACKLOG)	Jun-08	Jul-08	Aug-08	Sep-08	Oct-08	Nov-08	Dec-08
Electronic Computers	\$3,957	\$3,823	\$3,904	\$3,924	\$3,590	\$4,137	\$4,226
Communications Equip.	\$37,191	\$37,072	\$37,768	\$37,389	\$37,630	\$37,302	\$37,139
Electronic Components	\$10,777	\$10,659	\$10,790	\$10,789	\$10,610	\$10,516	\$10,256



INVENTORIES (\$M)	Jun-08	Jul-08	Aug-08	Sep-08	Oct-08	Nov-08	Dec-08
Electronic Computers	\$5,082	\$5,006	\$5,031	\$5,039	\$4,853	\$4,938	\$5,255
Communications Equip.	\$9,707	\$9,621	\$9,951	\$9,649	\$9,806	\$9,916	\$10,263
Electronic Components	\$6,594	\$6,813	\$6,808	\$6,666	\$6,700	\$6,746	\$6,557





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Insight and Analysis For The Semiconductor Industry Professional

INSIDE THE EXECUTIVE BRIEFS

- Desktop PCs
- Media Center PCs
- Notebook PCs
- Servers
 - Entry Level
 - Midrange
- Workstations
- NAS Servers
- Routers
- Portable Multimedia Players
- Handhelds
- Digital Cameras
- Digital Video Cameras
- Digital Video Players
- Digital Video Recorders
- Set Top Boxes
- Satellite Radios
- Video Game Consoles
- Handheld Consoles
- DTVs
- GPS
- MP3 Players
- Cellular Infrastructure
- xDSL Modems
- Cable Modems
- VoIP PBX
- Cell Phones
 - High End
 - Mid Range
 - Low End

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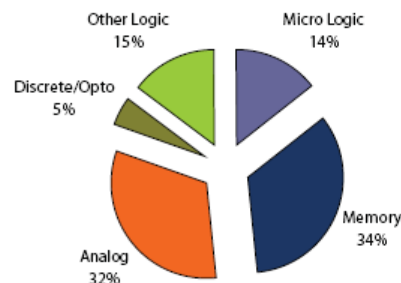
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Key Semiconductor Markets

Figure 68: 2007 Mid-Range Cell Phone Semiconductor Content



Analog represents the greatest semiconductor cost of the mid-range phones, although that amount will fall by several dollars over the forecast period.

NAND content in these phones will increase dramatically over the next five years as higher-megapixel cameras, camcorders, and Flash cards become increasingly entrenched on these phones.

Because these phones exhibit higher audio and video processing capabilities, DRAM and logic usage will also rise substantially over the next five years.