

WHITE PAPER | Semiconductor Inventory | Entering Q2 2009

Win Now Or Else: Inventory Insights and Data for 10 Key Electronic Supply Chain Nodes

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Win Now Or Else: Inventory Insights and Data for 10 Key Electronic Supply Chain Nodes

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COMPANIES MENTIONED

Asustek	Micron
ATT	nVidia
Benchmark	Orange
Celestica	Qualcomm
Flextronics	Reliance
Intel	Sanmina
Intel Micron Flash Technology	Vodafone

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Introduction

This Semiconductor Inventory Market Tracker presents an extensive inventory data set culled from companies worldwide and overlays analysis and insight from iSuppli.

Data sets are built from proprietary iSuppli analysis, as well as public SEC filings and company presentations.

Insights are gleaned from talking to players at each node in the supply chain, as well as from interviewing iSuppli experts covering semiconductors, PCs, TVs, handsets, and more.

Stakeholders finding our thought leadership useful include C-level management and market intelligence directors, as well as sales, marketing, and procurement teams.

2009 – Win Now Or Else

Performance in 2009 will set in motion the winners and losers of 2010. Firms losing share in the next year will find it difficult to regain their former strength. Inventory is a key performance indicator, since its optimization can achieve advantages in pricing, utilization, sales, and—ultimately—profits.

Overall Market Perspective – What Does The Data Tell Us?

- ▶ Q4 2008 revenue was down 21% sequentially from Q3 2008, for a broad set of semiconductor and electronics suppliers.
- ▶ Q1 2009 guidance indicates revenue will be down 19% sequentially from Q4 2008, for this set of suppliers.
- ▶ Our Q1 09 semiconductor revenue forecast calls for a 15% sequential decline.

iSuppli's full year 2009 semiconductor forecast is for revenue down 21% from 2008. This conclusion is the result of our "bottom up" methodology, which integrates the models of experts covering 28 separate applications.

The Big Picture on Inventory

- ▶ The semiconductor supply chain made a good effort to manage inventory in early 2009.
- ▶ Semiconductor inventory levels shrunk by 6% in Q4 2008 and by an estimated 4% in Q1 2009; inventory of PCs and handsets shrunk even more.
- ▶ Nonetheless, this effort wasn't good enough. Days of Inventory (DOI) increased notably as revenue declined faster than inventory.
- ▶ Against this backdrop, utilization has been cut to the extent viable, and firms are actively resizing their supply for a new reality of demand (no more home equity paper gains being spent on real goods).
- ▶ With utilization already low and DOI high, some are feeling the need to resort to price reductions—which can prove to be a dangerous path that doesn't easily unwind.
- ▶ Excess inventory is a danger that still lurks.
- ▶ Looking ahead to Q2, iSuppli expects a wave of ASP reductions at both the component and system level.
- ▶ Product redesigns—necessary to meet new lower price points at retail—will result in notable share shifts.

Win Now Or Else: Inventory Insights and Data for 10 Key Electronic Supply Chain Nodes**Key Inventory Findings and Implications**

Semiconductor inventory at all semi suppliers worldwide amounts to \$29B. Although inventory values have shrunk, Days of Inventory (DOI) have grown to levels not surpassed since the supply-side-driven industry debacle of 2001.

iSuppli expects analog inventory to rise above 100 days—well above the overall semi industry average of 80 days. As a result, we expect notable market share shifts, in part due to inventory's effect on ASPs, utilization, and profits.

PC OEMs lowered absolute inventory levels by **8%** in Q4 2008, with another **6%** reduction estimated in Q1 2009.

Handset OEMs lowered absolute inventory levels by **16%** in Q4 2008, with another 7% reduction estimated in Q1 2009. As a result, iSuppli expects DOI to remain relatively flat.

The pending battle of the titans—Intel and Qualcomm—will add a new wrinkle to PC and handset inventory. iSuppli is hearing that Intel will be announcing more 3G technology licensing “soon.” iSuppli notes that Intel has already partnered with LG to launch a MID device (announced in Barcelona February 2009). To this end, smart phones reflect a large, new market for Intel's x86—a market now dominated by ARM.

Why didn't Intel succeed in handsets before? Intel was playing the “me too” game, possessing only computing power but not the needed ecosystem and architecture for success in handsets. Intel has now evolved toward smart phones—and smart phones, MIDS, and netbooks have evolved toward Intel. Plans are now materializing for Intel to better position Atom and netbooks as legitimate launching pads for MIDs and smart phones.

“Flying Blind” is turning into “Stabilizing Demand.” In January 2009, management throughout the supply chain noted they were “flying blind” when it came to production levels. By late March 2009, the tone and content of iSuppli's conversations with them reveal that demand is “stabilizing”—albeit at modest rates.

It takes low pricing to move inventory at retail. PCs and TVs are moving at retail, but only at pricing too low to be sustainable.

Redesigns are necessary to meet the new, lower consumer price points. OEMs have pressured suppliers on price, but that alone isn't enough. Redesigns are required, which will change the landscape.

iSuppli's research indicates the \$43B analog market will shrink by more than 20% in 2009, slightly more than worldwide semiconductors in general. Checks validate our assumption that market-share battles in Analog are looming.

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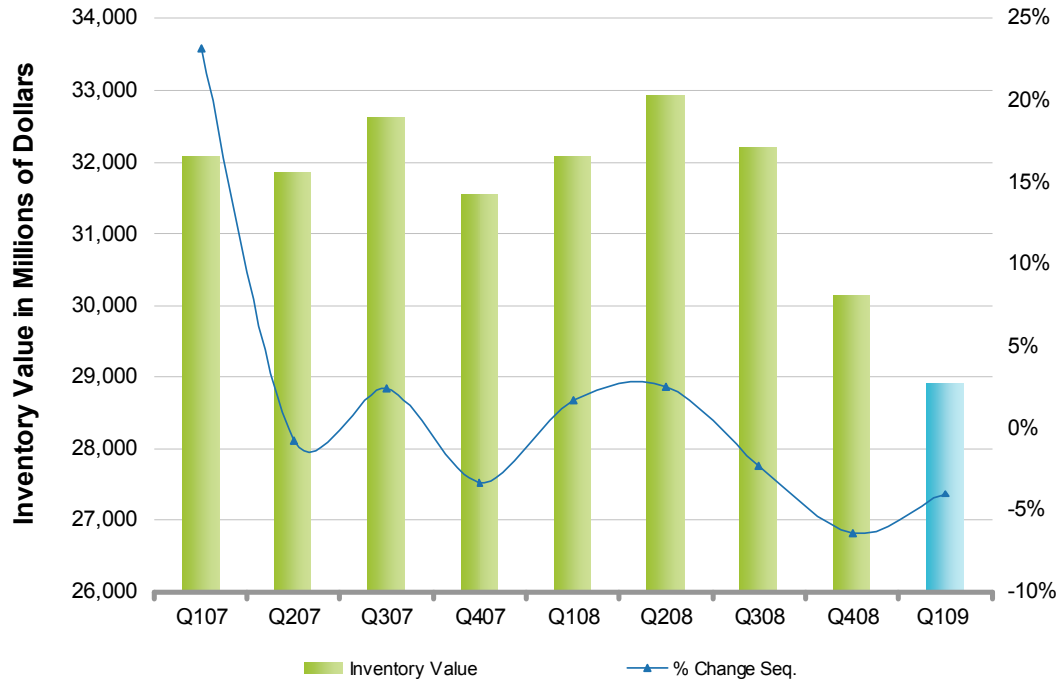
The current economy is different from that of early 2001, due to the “rapidity of the decline.” In 2001, supply chain players did not anticipate the dot-com bubble burst, and their problems were compounded by immature inventory management systems. In 2008, firms were more cautious going into the second half of 2008 and managed inventory well, but they were still overwhelmed by the severity of the decline.

Supplier channel checks reveal that PC OEMs believe they need lower system pricing to move product in the next year. Consequently, there are numerous conversations throughout the supply chain as to “how to get there from here.” Price reductions and redesigns of components/features will also be required to meet new, lower consumer price points.

Are write-downs coming? iSuppli believes that companies are poised to borrow an accounting trick used heavily in 2001—writing down inventory. Write-downs reduce a company's current net income, but they can artificially boost profits later, if the company ends up selling the inventory it has written down. As a result, Wall Street can view these announcements as neutral to positive. Write-downs are part of a time-honored cleansing ritual known as the “big bath,” and now is as good a time as any to lump inventory write-offs together with plant closings, layoffs, and other impairments.

Semiconductor Supplier Inventory Assessment

Figure 1: Inventory Value for All Semiconductor Suppliers Worldwide



Source: iSuppli Corp. | April 2009

Big picture: Semiconductor inventory at all semi suppliers worldwide amounts to \$29B.

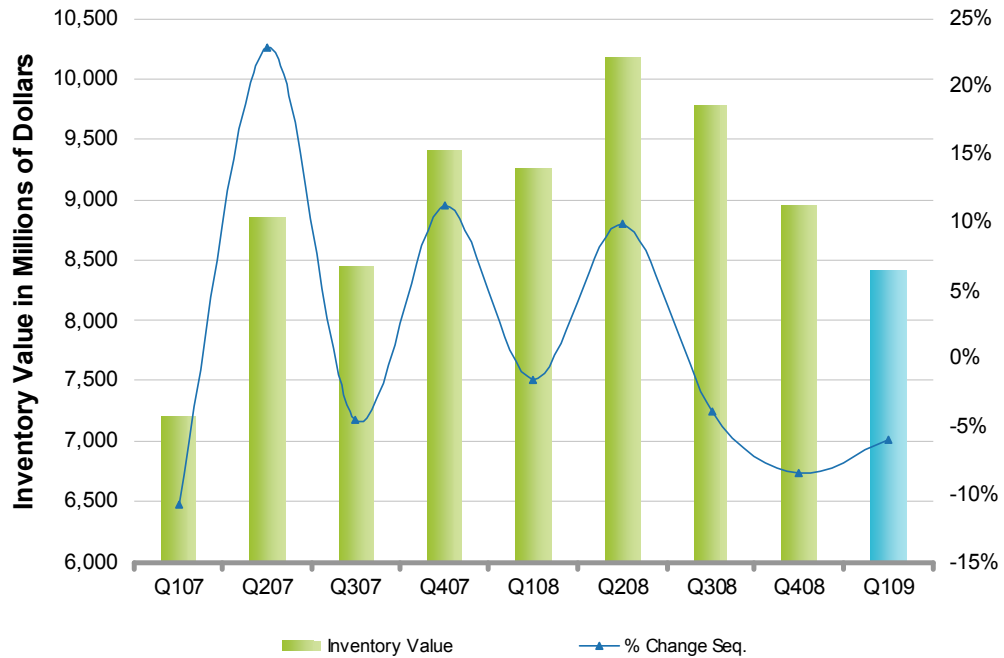
Days of Inventory (DOI) grew to levels not surpassed since the supply-side-driven industry debacle of 2001.

For Q4 2008, semiconductor revenue declined 19% and total manufacturer inventory value fell 6%, both on a sequential basis. As a result, DOI increased to 75 days.

For Q1 2009, iSuppli forecasts semiconductor revenue to decline 15% and total manufacturer inventory value to fall 4%, both sequentially. As a result, DOI is expected to increase from 75 days to 80 days—making inventory management a key facet of a firm’s relative competitiveness.

PC Group Inventory Assessment

Figure 2: Inventory Value for PC OEM Group



Source: iSuppli Corp. | April 2009

Big picture: The PC group yielded \$230B in PC revenue in 2008. PC OEMs did a good job of lowering absolute inventory levels, reducing them by 8% in Q4, with another 6% reduction estimated in Q1 2009.

Big picture: PC inventory at all OEMs worldwide is forecasted at \$8.4B.

For Q4 2008, PC revenue declined 11% and total manufacturer inventory value fell 8%, both on a sequential basis. As a result, DOI remained flat at 21 days.

For Q1 2009, iSuppli forecasts PC revenue to decline 10% and total manufacturer inventory value to fall 6%, both sequentially. As a result, DOI is expected to remain essentially flat at 21 days, like in Q4 2008.

The emergence of the netbook category impacts PC inventory decisions. Analysis has led iSuppli to conclude that sales of low-priced netbooks are 40% cannibalistic to more powerful notebooks, and 60% incremental. This is based on cross-functional analysis of the morphing of the handset and netbook markets, as well as an examination of business models, technologies, and consumer behavior.

PC inventory is becoming more sensitive to wireless service providers. iSuppli is hearing that netbook promotions, like certain smart-phone promotions, will likely include some offers of \$200 subsidies to test the elasticity of demand. However, our data analysis reveals that the bulk of netbook subsidies will need to be below \$100 in order to yield adequate profits to operators.

Top netbook ODM Asustek plans 15% price reductions from already slim margins to flush the \$1.3B in excess inventory that the company needs to work off in the next few months, including 600,000 notebooks, 850,000 netbooks, and 2.5 million motherboards, as well as \$150M worth of monitors.

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Supplier channel checks reveal that PC OEMs believe they need lower system pricing to move product in the next year. Consequently, there are numerous conversations throughout the supply chain as to “how to get there from here.” Pricing pressure on vendors is the key overtone, but vendors find it difficult to offer pricing concessions without volume commitments. Ultimately, most recognize that the redesign and reduction of components/features will be required as well to meet new, lower consumer price points.

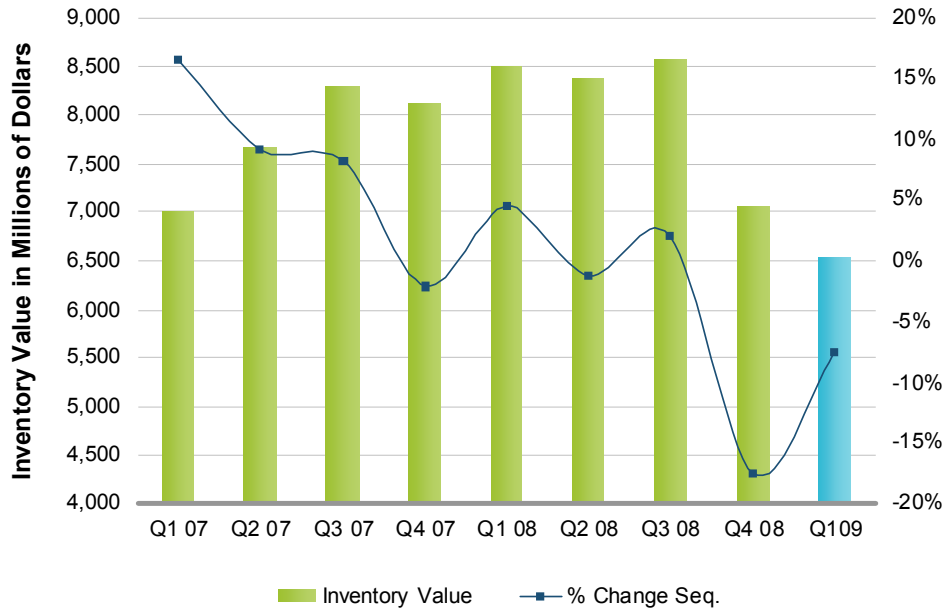
Retail channel checks of netbook offers reveal that elasticity of demand is being tested by ATT (United States.), Reliance (India), and Orange and Vodafone (Europe).

Hardware cost models help add insights to our inventory data sets. Ultimately, PC analysis reveals that shrinking margins on the horizon are in store for all entities in the supply chain. The bill of materials (BOM) on netbooks is \$250 on units selling at retail for \$350.

iSuppli's renowned teardown practice maintains current pricing on a wide variety of components, leveraging that database and expertise to determine the detailed BOM for handsets, PCs, TVs, and more. The insights are used by procurement specialists around the world, and by sales, marketing, and corporate strategy teams.

Handset Group

Figure 3: Inventory Value for Handset OEM Group



Source: iSuppli Corp. | April 2009

Big picture: Handset OEMs yielded \$147B in handset revenue in 2008. Handset OEMs lowered absolute inventory levels by 16% in Q4 2008, with another 7% reduction expected in Q1 2009.

Big picture: Handset inventory at all OEMs worldwide is forecasted at \$6.5B. iSuppli estimates that just over 1.14 billion handsets will be sold in 2009, down 10% from 2008. This shrinking demand, coupled with reductions in targets for inventory safety stock, are leading to notably lower utilizations and a heightened sensitivity toward management of inventory.

For Q4 2008, handset revenue declined 10% and total OEM inventory value fell 16%, both on a sequential basis. As a result, DOI shrunk slightly to 29 days.

For Q1 2009, iSuppli forecasts handset revenue to decline 14% and total manufacturer inventory value to fall 7%, both sequentially. As a result, DOI is expected at 30 days.

2009 will be a defining year for handset OEMs, as successes in design, technology, strategy, operations, and vendor negotiations are all levers that will define a firm's ability to compete in 2010. To this end, Inventory management is a key indicator of the maturity of internal controls, and will directly impact ASPs and profits.

Wireless service providers appear in a relatively strong position relative to handset OEMs. Providers are closer to the customer, are in control of subsidy levels, and are the decision maker as to which models they market as their flagship phones. These chosen models will still yield healthy profits, but overall, less of the

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pool of newly designed handset will sell enough to qualify as successes on an IRR basis. With high-volume models coming fewer and farther apart, OEM profitability and share shifts will become even more variable than in the past.

- ▶ **High end:** Smart-phone yearly sales are approaching 200 million units. Importantly, in 2009, iSuppli projects the smart-phone segment will grow 11%, while overall handset units shrink 11%.
- ▶ **Middle:** Handset OEMs are finding it too risky to independently decide to produce large runs of specific models. Carrier volume commitments are even more critical than in the past.
- ▶ **Low end:** This commoditized segment yields limited profits for those in the supply chain. Representative of this, handset ASPs at EMS firms making lower end phones are 50% of ASPs at OEMs.

Summary

At iSuppli, our value lies in our extensive data sets, “digging in the weeds” —so to speak—to overlay insights on the data, and in collaborating with a pool of some 100 internal analysts. Specifically, our 360-degree views of key trends typically incorporate input from subject experts in PC, EMS, storage, wireless carriers, handset OEMs, and semiconductors.

The [iSuppli Inventory Service](#) is extensive, offering quarterly Market Trackers and bi-monthly [Inventory Insiders](#).

For more information about inventory, contact iSuppli today.

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iSuppli Corporation is the global leader in technology value chain research and advisory services. iSuppli delivers vital information on the status of the entire electronics value chain - from diodes to displays and from application markets to emerging markets. iSuppli's Market Intelligence Services are designed to help industry participants improve the cost and performance of their supply chains by delivering the research, analysis, and tools that facilitate strategic and operational decision-making. More information is available at www.isuppli.com.

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