

GaAs Industry Overview and Forecast: 2011 – 2016 Abstract

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Abstract

After a strong start in 2011, growth in the entire GaAs supply chain peaked and slowed substantially to end the year. The paper will focus on the 2011 performance of the GaAs substrate and device markets, along with the factors that drove this performance. It will also discuss our insights into trends, drivers and forecasts for the GaAs industry.

INTRODUCTION

Strategy Analytics estimates the GaAs device market closed 2011 with revenues of slightly more than \$5.2 billion. This growth of roughly 6% extends the GaAs revenue expansion to seven consecutive years. This paper will provide some insight into the present state of the GaAs substrate and device industry with snapshots of company and application market shares. We will also discuss our 5-year market forecast and some of the drivers and threats shaping that forecast.

HISTORY

Figure 1 shows the historical performance of the GaAs device industry from 1999 to 2011. The GaAs device market had an extraordinary year in 2010 with 35% growth pushing revenues easily past \$4 billion for the first time to finish the year at nearly \$5 billion. In the first part of 2011, the entire GaAs industry seemed destined to pick up where it left off, but then the market faltered. Even though GaAs device revenues reached a new record, the rate of growth in the second half of 2011 moderated substantially and there are some troubling trends for the future. The paper will offer some insight into the drivers for the entire GaAs device supply chain in the second half of 2011 and the trends we see going forward.

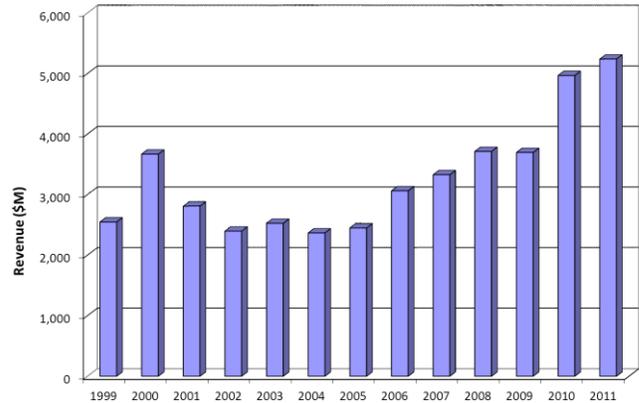


Figure 1. GaAs Industry Revenue from 1999-2011

THE SUPPLY CHAIN

Not surprisingly, the growth rates and the trends that drive GaAs devices trickle down into the GaAs substrate markets. One of the strong trends we have seen over the past few years is the conversion of handset switches from GaAs to silicon-on-insulator (SoI) technology. Handset switches are very inexpensive, so this conversion has had very little effect on the overall revenue of the GaAs device market. The sheer quantity of these devices however, has had a profound effect on the production and composition of the epitaxial substrates.

Historically, designers have used pHEMT devices for handset switches and these devices have been manufactured on epitaxial wafers processed with MBE deposition techniques. Figure 2 shows the how the market share percentage for pHEMT devices and MBE wafers has dropped since 2008, when the transition to SoI began in earnest. The paper will present detailed information about the share, trends, participants and forecast for pHEMT and HBT devices, as well as MBE and MOCVD wafers.

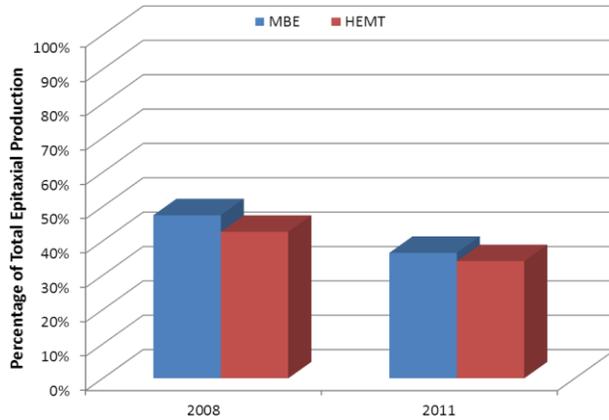


Figure 2. Share of Epitaxial Substrate Production

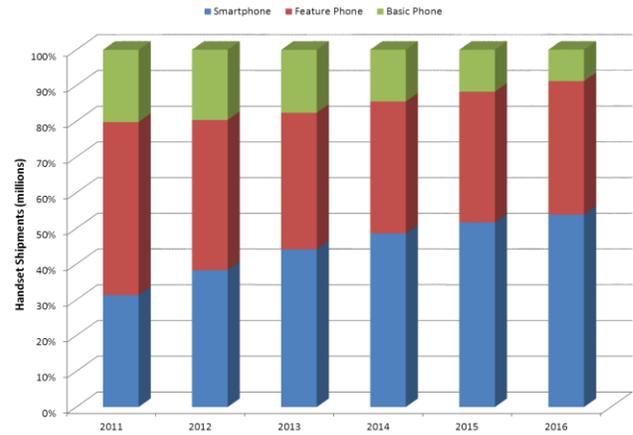


Figure 3. Handset Segmentation

TRENDS AND THE FUTURE

The top-level trend in the GaAs market is the seemingly insatiable consumer demand for data. While the growth *rate* is slowing, actual data consumption continues to exceed the forecasted values. While all IP data is increasing, mobile data continues to show the strongest growth with some estimates indicating an increase of nearly 20x from 2011 – 2016.

The implications of this increasing data consumption bode well for the GaAs device market and supply chain. To enable the demand and ensure the appropriate quality of service, operators are developing next generation networks, architectures and devices to handle the anticipated increase in data consumption. The biggest contributor to the rapid increase of mobile data continues to be consumer adoption of multi-band, multi-standard mobile handsets.

Because of the sheer volume of mobile handsets, they have long been the driver for the entire GaAs device market. The rising number of frequency bands and standards, particularly in smartphones is increasing the GaAs content. We estimate the handset portion of the overall GaAs device market exceeded 50% in 2011, but the news is not all positive.

Figure 3 shows that the market share for multi-band mobile handsets, particularly smartphones is increasing. However, as smartphones increase in share, the *rate* of growth is decreasing. We believe a drop in the growth rate of smartphones in the second half of 2011 was the primary reason why the overall GaAs device market slowed. Since the size of a phone is still a factor, designers have been developing multi-mode, multi-band PAs to address the increasing number of bands. The paper and presentation will discuss the implications of larger, but fewer handset PAs for the entire GaAs device market.

The paper and presentation will also discuss trends and forecasts for wireless and wired broadband networks, but it is no surprise that the market leaders in GaAs revenue are the companies most closely associated with GaAs handset products. Figure 4 shows our estimate of the 2011 market share of revenue for GaAs devices.

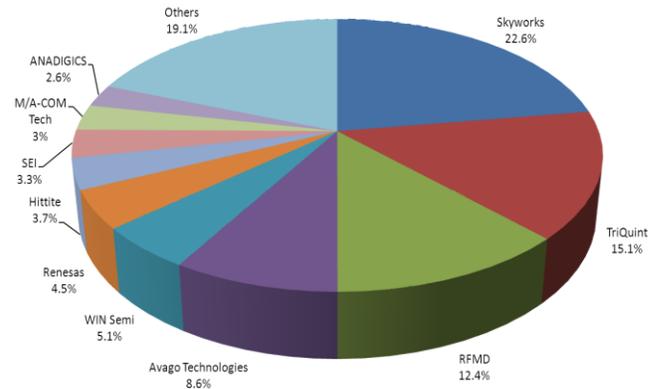


Figure 4. 2011 GaAs Manufacturer Market Share

The paper and presentation will discuss some of the trends we are seeing with the GaAs device suppliers and who is gaining and losing share.

CONCLUSION

After a strong start to 2011, growth in the GaAs device market slowed substantially. An uncertain global economy, coupled with slowing growth of smartphones has put a damper on the expected level of future growth in the industry, but there are positive signs. The fundamental driver of increasing data consumption remains and economic uncertainty has not slowed development activity. This paper and presentation will address trends, drivers and our estimates for the overall GaAs device market and its major segments out to 2016.