

What are the Prerequisites for Survival in the GaAs Industry?

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Abstract

The 2004 GaAs device market grew by 12 percent over 2003, boosted by the cellular handset market, which saw record shipments, with year-on-year growth of 25 percent. With the “upgrade cycle” in this strategic market coming to an end, overall handset volume growth is forecast to be only 8-10 percent in 2005. Growth in other markets will not be enough to offset the subsequent slowdown, and GaAs device and materials suppliers should be prepared for lower demand across the board. Multiple capabilities that can address several end-markets will be key to future success and companies with a singular focus on the cellular market will be exposed to future market share erosion.

GAAS DEVICE MARKETS

The overall market for GaAs devices comprising merchant and captive supply of MMICs, digital ICs and discretes grew by over 7 percent in 2004, from \$2.65 billion in 2003 to \$2.84 billion in 2004. The MMIC segment continued to be the driving force for the industry and was boosted in 2004 by healthy demand from the cellular handset market, growing by almost 13 percent from \$2.09 billion in 2003 to \$2.35 billion in 2004.

The cellular market remains the key driver for the GaAs industry. Demand from this market grew by over 20 percent and accounted for almost 55 percent of total GaAs MMIC demand in 2004. This corresponds to year-on-year growth in cellular handset shipments of around 25 percent, with handset sales expected to reach 672 million in 2004.

Handset volumes grew on the back of an “upgrade cycle” in mature markets such as North America, Western Europe, Japan and Korea, where end-users made a switch from black and white to colour screens, and focused on more data-centric applications for their mobile handsets, such as taking and sending photos.

The handset industry has seen three major upgrade cycles to date:

- Upgrade from analogue to digital
- Transition from functional cellular handsets to fashionable cellular handsets
- Evolution of black and white screens to colour

The upgrade cycle in mature markets was augmented by increasing demand for cellular handsets in emerging markets in Central and Latin America, Central and Eastern Europe and other parts of the world.

Strategy Analytics believes this latest upgrade cycle in the mature regions has peaked and whilst demand will continue in both mature and emerging regional markets, overall growth in 2005 handset volumes will be more modest.

With the GaAs industry continuing to rely on the cellular handset market for the bulk of its revenue, this will result in correspondingly slower growth for the overall GaAs device industry from 7 percent in 2003-2004 to 3 percent in 2004-2005 (Exhibit 1).

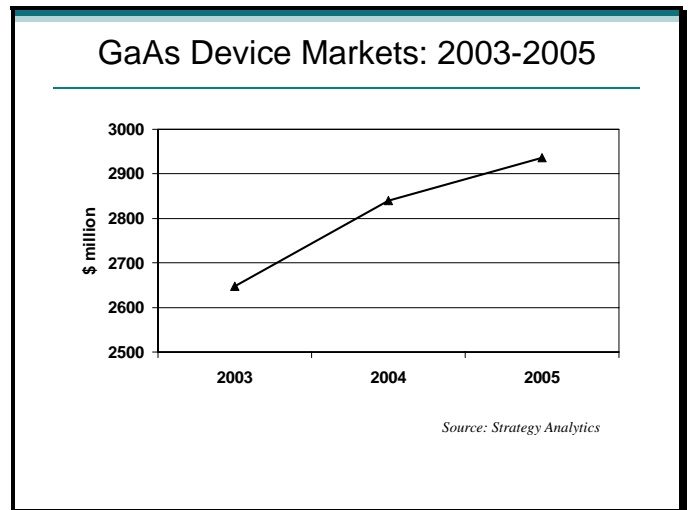


Exhibit 1
GAAS DEVICE MARKETS: 2003-2005

Strategy Analytics notes that it is becoming increasingly expensive for component suppliers to participate in the cellular handset market with module and packaging capabilities required alongside the basic semiconductor technology offerings of FETs, pHEMTs and HBTs. Even companies that are able to address all the growing list of requirements should look to being able to target diverse markets to offset swings in demand from the commoditised cellular handset market.

GaAs device companies with a singular focus on the cellular handset market that fail to develop or do not have existing capabilities to target emerging markets such as WLAN and automotive RADAR (that will provide long term opportunities), as well as capabilities in mature markets (once again showing signs of recovery, e.g. fibre-optics, point-to-point radios, military applications etc) will find it increasingly difficult to operate on a profitable basis.

GAAS BULK AND EPITAXIAL WAFER MARKETS

The effect of this slowdown will be reflected in slower growth across the supply chain, affecting the bulk and epitaxial substrates suppliers as well. Strategy Analytics does not expect demand to decline significantly, but based upon the above scenario, overall growth in demand for material will be limited at best or remain flat in 2005. Wafer ASPs are also likely to firm as a result of diminished demand, a consolidating supply base and an expected increase in raw gallium prices in 2005.

The bulk substrates sector will see the supply base consolidate further, with Sumitomo Electric (SEI), Freiburger Compound Materials (FCM) and Hitachi Cable squeezing out other suppliers to niche status. Capabilities in both LEC and VGF/VB materials will be key to survival in this market and Strategy Analytics expects that SEI and FCM will be the leading bulk substrates suppliers to the GaAs industry.

MOCVD material suppliers Kopin and Hitachi Cable will continue to lead the merchant epitaxial wafer markets, whilst RFMD will continue to be the world's largest MBE-based epitaxial wafer producer (albeit captive). The relative low cost of establishing an epitaxial substrate manufacturing facility, coupled with inherent captive capabilities at many of the GaAs device manufacturers makes for a much more fractured market and in 2004, other merchant vendors such as Emcore and IQE scrambled to gain preferred supplier status at leading GaAs device companies such as ANADIGICS in hopes of gaining a measure of stability.

CONCLUSIONS

Strategy Analytics expects the GaAs industry to continue to grow in 2005, but the industry should factor in a slowdown in cellular handset shipment growth, which will affect overall growth in the GaAs industry. Multiple capabilities that can address several end-markets will be key to future success and companies with a singular focus on one market will be exposed to market share losses and find it increasingly difficult to be profitable.

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ACRONYMS

ASP: Average Selling Price
FET: Field Effect Transistor
GaAs: Gallium Arsenide
HBT: Heterojunction Bipolar Transistor
LEC: Liquid Encapsulated Czochralski
MBE: Molecular Beam Epitaxy
MOCVD: Metal-Organic Chemical Vapour Deposition
PHEMT: Pseudomorphic High Electron Transistor
VB: Vertical Bridgman
VGF: Vertical Gradient Freeze