

# FUTURE HORIZONS

Presents

## The Global Semiconductor Monthly Report August 2008

**It's People Not Business Models  
That Separate Winners From Losers**

---

### In This Issue:

Executive Overview .....	1
Market Summary .....	4
Cowan LRA Report .....	9
Industry Capacity .....	13
World Economic Round Up .....	17
Russia/CIS – Slick Sliding Away?.....	21
Economic Case Study – India's Struggling Economy?.....	23
Market Trends – Fabless Companies Excel.....	25
Semiconductor Spotlight – 3D ICs .....	32

*plus ...* Exchange Rate Trends & FH Reports & Upcoming Events

**Sign Up Now For IFF2008 International Systems & SoC Forum  
October 8-10, 2008, Vienna, Austria**

(Visit Our Website [www.futurehorizons.com](http://www.futurehorizons.com) For Further Details & Registration)

# The Global Semiconductor Monthly Report

## August 2008

A CEO favourite, the **Global Semiconductor Monthly Report** provides **analysis and commentary** on the **global semiconductor industry** and its **impact** on Future Horizons' **semiconductor market forecast**, as published in the **Annual Semiconductor / Semiconductor Application Markets** (previously called Key Market Drivers) **Reports**. These three reports provide a comprehensive in-depth analysis of the worldwide semiconductor, electronics equipment and economic environment. Together they provide the latest information on developments in the semiconductor industry, the companies involved, the changes in the markets, and the impact of the global economic and political situation.

*If you like this Report, by all means share it with your colleagues or post it on your company Intranet ... but please respect international copyright laws. Site licence available for only £2,200 (€3,3700 / US\$4,800) p/a. Please email Future Horizons on "reports@futurehorizons.com".*

**Copyright ©2008 by Future Horizons, Republication Prohibited**  
*The Global Semiconductor Industry Analysts*

All rights reserved. No part of this publication may be reproduced, stored in retrieval systems, or transmitted in any form or by any means (mechanical, electronic, photocopying, duplicating, microfilming, video-tape or otherwise) without the prior written permission of Future Horizons. This information is not furnished in connection with a sale offer to sell securities, or in connection with the solicitation of an offer to buy securities. This firm and/or its officers, stockholders, or members of their families may, from time to time, have a position or may sell or buy such. The information contained in this report has been derived from statistical and other sources deemed to be reliable but its completeness and accuracy cannot be guaranteed. Opinions expressed are based on our studies and interpretations of available information. They reflect our judgement at that time and are subject to future change. Whilst the report has been prepared in good faith, Future Horizons bears no responsibility for any consequences whatsoever aroused to the buyer through the reading of, or acting upon, any data or information, etc. contained in the report.

# Future Horizons

**www.futurehorizons.com** ♦ **mail@futurehorizons.com**

In Russia Tel/Fax: East-West Electronics +7 (495) 151 1639; e-mail: sorlov@futurehorizons.com  
(East-West Electronics is a Wholly-Owned Subsidiary of Future Horizons)

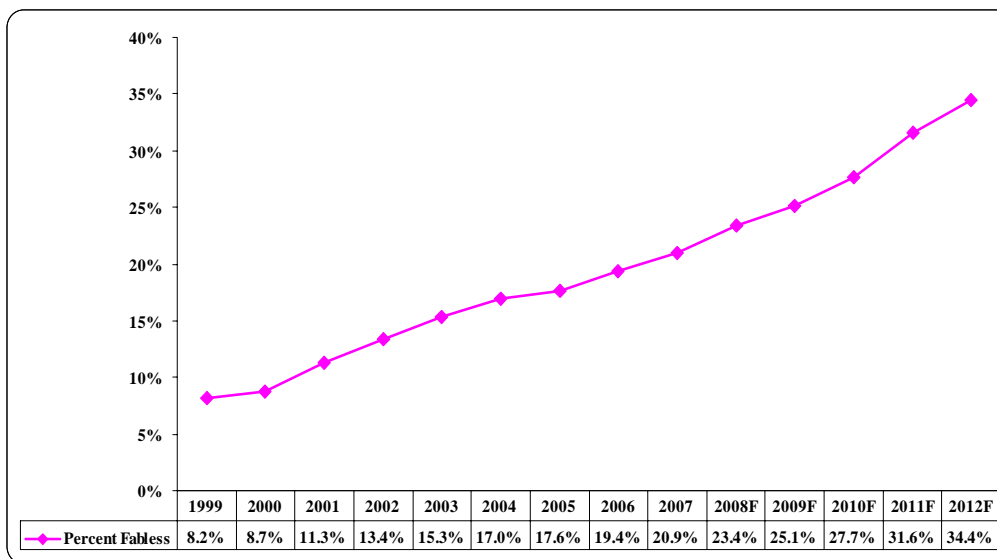
## The Global Semiconductor Monthly Report

### August 2008

Historically during the five years 2002-2007 the fabless industry revenue grew at a CAGR of 23.2 percent per annum and it is forecast by Future Horizons to grow continually and strongly at a CAGR of 21.9 percent over the next five years.

This means that the fabless business model continues to gain market share of the total semiconductor market to the detriment of the IDMs, Figure A9.

**Figure A9 - Fabless Worldwide Market Share**



Source: Future Horizons

Fabless companies owe their growth to continuous innovation, fast design cycles and spot-on product definition in some key fast-growing market segments. For some, such as Qualcomm and Broadcom, this has worked for a number of decades and it is profitable. Most companies in this sector have proved that there is a place for this business model in the semiconductor industry and we expect it to grow from 20.9 percent of the market in 2007 and capture a third of the semiconductor market by 2012.

### Semiconductor Spotlight – 3D ICs

BeSang Inc., a chipless IP vendor set up in Portland, Oregon, USA, has demonstration chips designed at the South Korean National Nanofab Centre and

## The Global Semiconductor Monthly Report

### August 2008

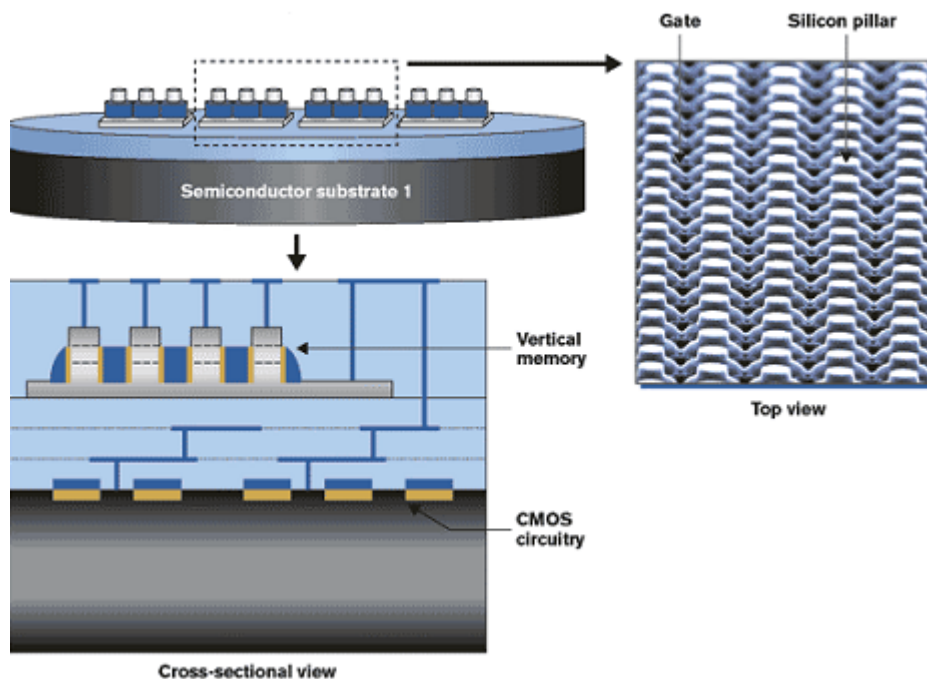
processed there and at Stanford Nanofab, Palo Alto, California, USA. BeSang says licences are available to commercialise this breakthrough technology, which will allow flash memory, DRAM and SRAM to be placed on top of CPUs and logic, thus reducing the physical size of SoC chips and increasing system speed.

#### The Technology

The 3D process is designed to reduce previously experienced fabrication incompatibility issues. It is based on a CMOS Surrounded Gate Transistor (SGT) structure, where the source, gate and drain are stacked. Separately, on a different wafer, the memory cell patterned doped silicon is placed on top of some memory control logic.

The CMOS logic wafer is chemically polished using CMP to clean and planarise it and the donor wafer containing the vertical memory cells has its back surface chemically removed. This leaves a 1-micron thin single-crystalline silicon layer pre-doped for memory cells and this is then transferred on top of the CMOS receptor wafer, Figure T1.

**Figure T1 - Schematic Of Stacked Memory On CMOS Logic**



Source: BeSang/Future Horizons

---

**The Global Semiconductor Monthly Report****August 2008**

---

Electrical connection 'vias' between the CMOS logic and memory layers is made using a standard photolithography process and this gives a very small margin for misalignment. Using multi-bit stacked vertical SGT densities can reach 32x effective density.

The demonstration IC was processed on 0.18-micron CMOS and contained 128 million vertical devices, 3D processed at the low temperature of 400 degrees Centigrade and, in theory, using a technology that can make an unrestricted number of inter connections.

**Scaling Limits**

Apparently BeSang means 'flying high' in Korean. The company may well be flying high over the next few years as we may be well witnessing the first stage of the next evolution of the silicon semiconductor process - means of overcoming the process scaling barrier and a means of meeting the miniaturisation, lower power and affordability requirements of the future.

## **Sign Up Now For IFF2008**

**6th Annual International System & SoC Forum**

**Oct 8-10, 2008 - Trend Hotel Savoyen, Vienna, Austria**

*Future Horizons is pleased to announce that its 6<sup>th</sup> Annual International System & SoC Forum (IFF2008) will take place from Oct 8-10, 2008 at the Trend Hotel Savoyen, Austria - <http://www.austria-trend.at/en/?id=sav>. For more details visit [http://www.futurehorizons.com/new\\_web/forums/ieforum/ieforum.htm](http://www.futurehorizons.com/new_web/forums/ieforum/ieforum.htm).*

*Sign Up Now ...*

*Get The Latest Industry Outlook ...*

*Where The International SoC & System Industry Meet®*