

MEMS SWITCH AND VARICAP MARKET

Struggles in industrial market offset by increasing interest from the cell phone industry

GET A GLOBAL AND IN-DEPTH VIEW OF THE RF MEMS SWITCH MARKET:

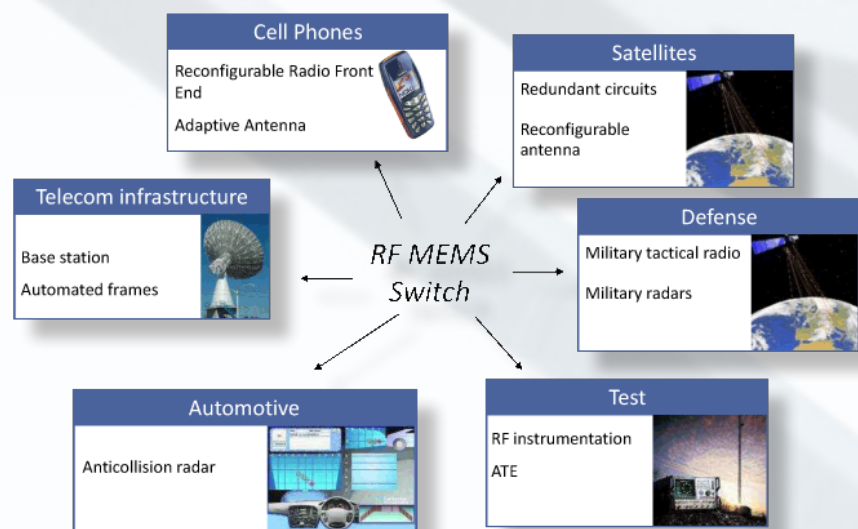
- MEMS switch and Varicap applications
- Target price per application and dedicated end market
- Focus on RF MEMS switches for cell phone applications
- How and when will they be integrated in front end modules?

REPORT HIGHLIGHTS

MEMS switches and varicaps products are getting to commercialization today.

These products either replace existing switching products or create new features. The industry is just emerging with early sales levels in 2006. Successful sales of MEMS switches have been registered for ATE (Automated Test Equipment) and other defense and industrial applications since 2006. Despite a market growth in 2007 the two industrial market leaders, Teravicta and Simpler Network have nevertheless stopped their activity in December 2007. It will be a challenge for the industry to recover from this difficult start.

But acquisitions in the field of the cell phone module industry (such as EPCOS acquisition of NXP MEMS varicap activity) raise commercialization expectations in the next 2 years. Yole's report highlights **who is poised to be the next leading players** and which applications will drive the MEMS switch and varicap sales in



Scope of the report - RF MEMS switches application

the 2007-2012 period. **Six players are currently commercializing or sampling products on the market** (RadantMEMS, MEW, Advantest, XCOMwireless, MEMtronics, Wispry) and **more than 20 additional products development projects** have been listed in the report.

M&A activity will certainly increase in the next 5 years in order to push forward the commercialization of these technologies like EPCOS did this year. The potential market for switches and varicaps is therefore

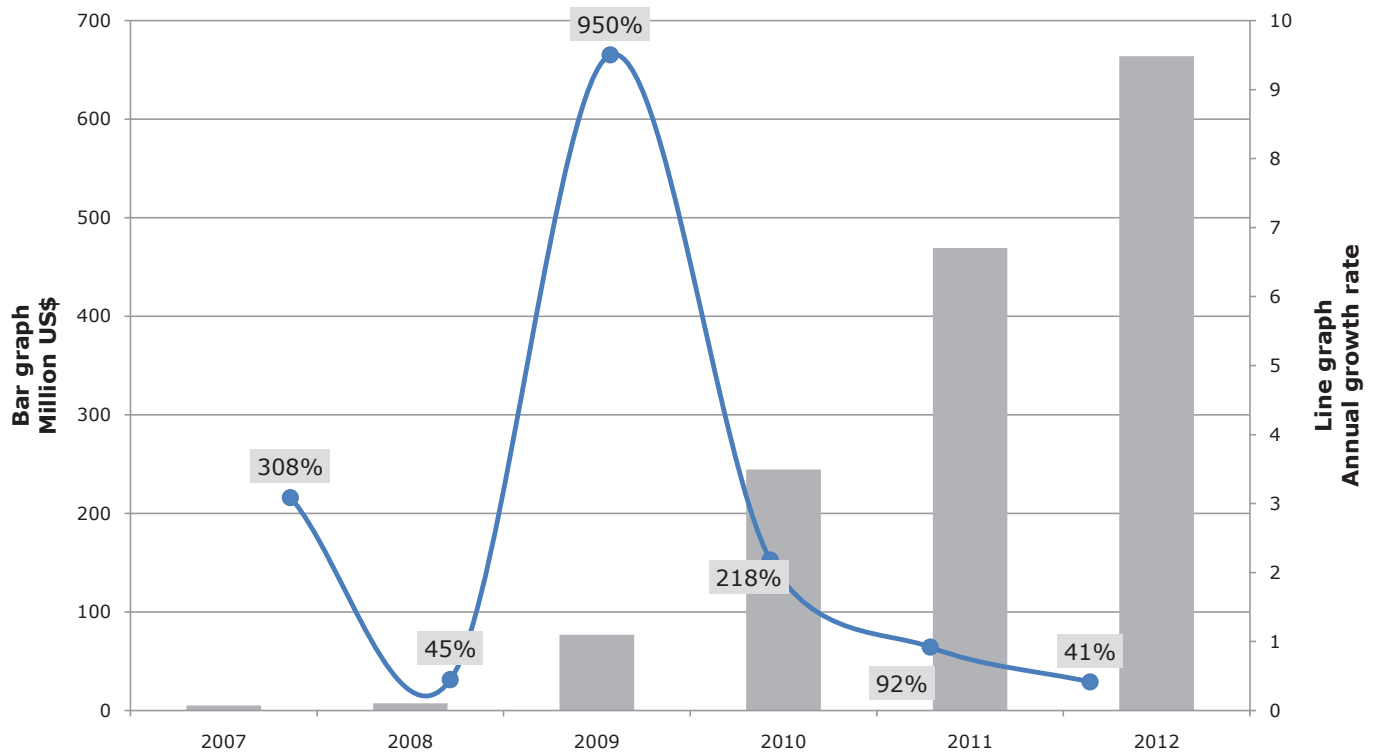
large because MEMS based switches are expected to both:

- substitute existing products
- enable new applications, particularly for mobile phones within the short term

There is **complex market segmentation** for the products to fit with a large set of parameters for each application: Supply voltage, size, and cost structure, RF power handling capability, reliability level, and fit with the supply chain requirements...

Yole Development forecasts that the **main market drivers** are the following:

- Weight and size benefit for space and ATE (Automated Test Equipment) applications
- Increased RF switching performance at constant size and cost, for cell phone and radars applications
- Ability to create switching matrix being low cost and good RF performances in wired and wireless telecom applications



RF MEMS SWITCH MARKET 2007-2012

MEMS switch and varicaps will generate **over US\$ 650M sales by 2012**. The market will be mainly **driven by cell phones applications**.

Price erosion be a major concern from MEMS manufacturers as volume ramps up. Market leaders will have a major advantage in this complex technology development period.

This report not only **describes the market at the player and application level**, but it provide a global view of the RF MEMS switch market allowing to build diversification strategies **taking into account technical requirements**.

KEY FEATURES OF THE REPORT

- 6 fields investigated
- 13 applications evaluated
- 150+ companies listed
- Analysis on the complete value chain (Technology, Foundry, IDM, OEMs)
- 200+ Pages

This report gives an exhaustive analysis of the potential applications. It gives a segmentation of defense, industrial, automotive and telecom field. The market analysis details each application using the following criteria:

- Description of the application and the benefit of RF MEMS switches
- Function and specification requirements for RF MEMS switches
- Description of the final product market players and trends
- Analysis of the competitive technologies and players
- Analysis of the RF MEMS switches market
- Global market evaluation of the RF MEMS switch applications: component volume in Munits, Average Single Price (ASP), and 2007-2012 value forecasts
- Description of the products and technologies: product specifications, technological trends and business trends
- Evaluation of major players market share and potential new entrants

The main challenges facing the RF MEMS switch industries are discussed in order to forecast the evolution of the global MEMS industry and its impact on each market.

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WHO SHOULD BUY?

MEMS manufacturers:

- Evaluate the accessible market for your switch or varicap components
- Define diversification strategies on new applications for your core switch or varicap technology
- Evaluate the technology selection and the level of development of your competitors
- Support a strategic decision to enter, exit, or find a partner in the switch and varicap industry

Handset manufacturers and operators:

- Understand the benefits of MEMS based products over competitive technologies
- Access to an updated product roadmap and the status of the MEMS leading players
- Evaluate how MEMS can change the architecture of the cell phone front end
- Understand why power amplifier market will have a negative growth after 2012
- Get detailed company profiles with description of the product technology & process

MEMS foundries, equipment & material manufacturers

- Evaluate the business potential of your customers developing switch and varicap products
- Identify the switch and varicap processes selected by each MEMS manufacturer
- Prepare new business development strategies

Financial and strategic investors

- Understand the MEMS technology, product and challenges which will replace existing switch technologies or create new features
- Evaluate the business opportunity for MEMS companies in the field of switches and varicaps

BIO



Mathieu Potin is responsible of MEMS market research activities at Yole .

He is working with Yole for more than 5 years on marketing analysis & research, due diligence and business plan activities. He was granted a master degree of marketing and technology management and a science master degree in semiconductor physics.

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Our commitment is to facilitate market access for innovative technology, devices, equipment and materials in the disruptive semiconductor businesses. Founded in 1998, Yole Développement is involved in the following fields, with strong leadership worldwide:

- MEMS Devices and Equipment & Materials for MEMS manufacturing
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- Nanomaterials
- Photovoltaic
- Microfluidics
- 3D IC/TSV & Advanced Packaging

Our services and publications:

- Market research
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- Magazine Publication Micronews (print version and on line services)
- Exclusive newsletters in MEMS, 3D IC, photovoltaic, compound semiconductors and microfluidics
- Market reports & Database

Yole Développement is the world leader in the analysis of disruptive semiconductor applications and markets. Each day, Yole Développement's team of 20 market analysts is in contact with industrial companies, R&D institutes and investors worldwide in order to help them understand the market and technology trends. In its analysis, Yole Développement takes into account the complete value chain including materials, equipment suppliers, device & system manufacturers and end users.

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"Seller": Based in Lyon (France headquarters), Yole Développement is a market research and business development consultancy company, facilitating market access for advanced technology industrial projects. With more than 18 consultants, Yole works worldwide with the key industrial companies, R&D institutes and investors to help them understand the markets and technology trends.

1. Scope

1.1 The Contracting Parties undertake to observe the following general conditions when agreed by the Buyer and the Seller. ANY ADDITIONAL, DIFFERENT, OR CONFLICTING TERMS AND CONDITIONS IN ANY OTHER DOCUMENTS ISSUED BY THE BUYER AT ANY TIME ARE HEREBY OBJECTED TO BY THE SELLER, SHALL BE WHOLLY INAPPLICABLE TO ANY SALE MADE HEREUNDER AND SHALL NOT BE BINDING IN ANY WAY ON THE SELLER.

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the Buyer accepts these conditions of sales when ticking the box "I accept the conditions". This results in acceptance by the Buyer.

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2.2 Some weeks prior to the release date the Seller can propose a pre-release discount to the Buyer

The Seller shall by no means be responsible for any delay in respect of article 2.2 above, and including incases where a new event or access to new contradictory information would require for the analyst extra time to compute or compare the data in order to enable the Seller to deliver a high quality Products.

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2.4 The mailing is operated through electronic meanseither by email via the sales department or automatically online via an email/password. If the Product's electronic delivery format is defective, the Seller undertakes to replace it at no charge to the Buyer provided that it is informed of the defective formatting within 90 days from the date of the original download or receipt of the Product.

2.4 The person receiving the Products on behalf of the Buyer shall immediately verify the quality of the Products and their conformity to the order. Any claim for apparent defects or for non-conformity

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3.3 Payment is due by the Buyer to the Seller within 30 days from invoice date, except in the case of a particular written agreement. If the Buyer fails to pay within this time and fails to contact the Seller, the latter shall be entitled to invoice interest in arrears based on the annual rate Refi of the «BCE» + 7 points, in accordance with article L. 441-6 of the French Commercial Code.

3.4 In the event of termination of the contract, or of misconduct, during the contract, the Seller will have the right to invoice at the stage in progress, and to take legal action for damages.

4. Liabilities

4.1 The Buyer or any other individual or legal person acting on its behalf, being a business user buying the Products for its business activities, shall be solely responsible for choosing the Products and for the use and interpretations he makes of the documents it purchases, of the results he obtains, and of the advice and acts it deduces thereof.

4.2 The Seller shall only be liable for (i) direct and (ii) foreseeable pecuniary loss, caused by the Products or arising from a material breach of this agreement

4.3 In no event shall the Seller be liable for:

a) damages of any kind, including without limitation, incidental or consequential damages (including, but not limited to, damages for loss of profits, business interruption and loss of programs or information) arising out of the use of or inability to use the Seller's website or the Products, or any information provided on the website, or in the Products;

b) any claim attributable to errors, omissions or other inaccuracies in the Product or interpretations thereof.

4.4 All the information contained in the Products has been obtained from sources believed to be reliable. The Seller does not warrant the accuracy, completeness adequacy or reliability of such information, which cannot be guaranteed to be free from errors.

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