

# INTRODUCTION TO THE POWER IC MARKET 2018

Market & Technology report - October 2018

*Electrification and power management are changing power IC market perspectives.*

## KEY FEATURES

The introduction to the power IC market evolution 2018 report includes two excel files and a pdf document as deliverables, including:

- Power IC forecast – by quarter and available in Excel
- Power IC market shares – in Excel
- Power IC executive summary – a 30-50 pages executive summary available in PDF format

The report covers the following content:

- Update on power management Integrated Circuits (ICs) and their end applications
- Market size and market share information in US dollars for power ICs
- Revenue forecast for the power IC market for 2018-2023
- Revenue forecast by quarter for the power IC market for 2018 Q1 to 2019 Q4
- Key application and sector size breakdown in each of the five key markets: automotive, consumer, computing, communications, industrial
- Market breakdown by type of power management ICs, including switching regulators, controllers, linear regulators, low drop-out regulators, voltage references, supervisors, switches, multichannel power management ICs, and other power Application Specific ICs (ASICs)
- End market analysis with detailed end market breakdowns
- Market share and market leader information by type of power management ICs

## POWER IC MARKET EVOLUTION FOLLOWS MEGATRENDS

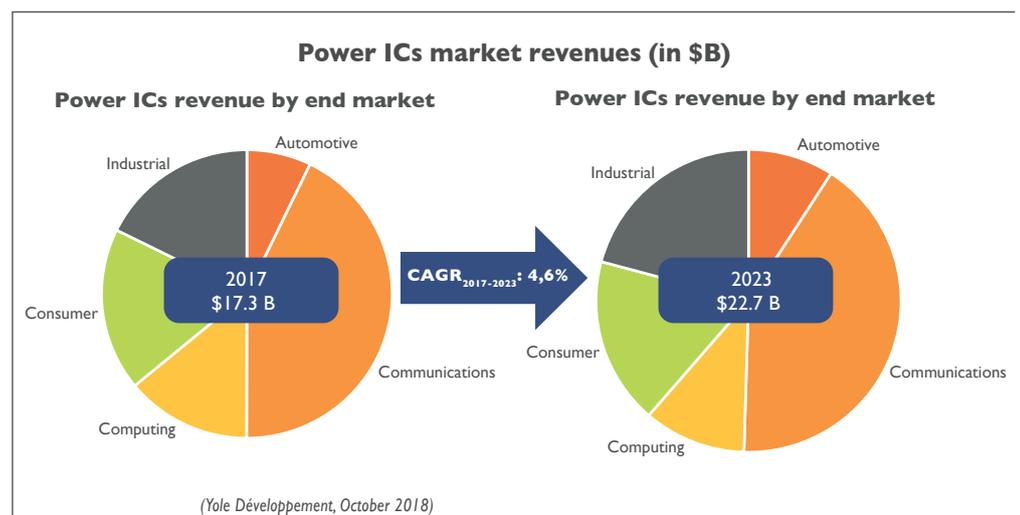
Our society is continuously evolving. Nowadays, increased connectivity, increased safety, automation and less polluting systems are major directions. We can see the proliferation of electronic devices around us in our day-to-day life, from radio to TV sets, fridges, washing machines, digital cameras, smartphones, drones, smartwatches or electric cars. The impact on the demand of electronic devices is benefiting different markets and power management devices in particular. As a matter of fact, any electronic device needs power management. Thus, it is not surprising that the power IC (Integrated Circuit) market evolves by following megatrends, dictated by end user demand. In fact, end product availability depends on power management technology, functionality capabilities and the accessibility of the components themselves.

There are multiple power IC component types, all of them having different basic functions. For instance, switching regulators are required for high efficiency power conversion and Battery Management ICs (BMICs) are needed to source and manage the batteries in portable applications.

On the other hand, multi-channel Power Management ICs (PMIC) are required to integrate several power management functions in one, which enables the miniaturization and lightening of the end product.

More and more power management components are needed to satisfy high demand for new electronic systems. Yole Développement (Yole) forecasts that power ICs will benefit from multiple key end markets to reach \$22.7B by 2023, with a 4.6% compound annual growth rate (CAGR) from 2017-2023, in line with the general health of the overall semiconductor industry.

*In this report, Yole examines the entire semiconductor industry in detail, across five major application end markets: automotive, communications, computing, consumer, and industrial. Even though there are common quarterly growth trends amongst these five major markets, such as seasonality impacted by consumer behavior, their growth rates are largely independent from one another. As a result, it is crucial for power IC suppliers to individually understand the growth and decline of each end market.*



## COMPANIES ARE CONSOLIDATING THEIR PRESENCES

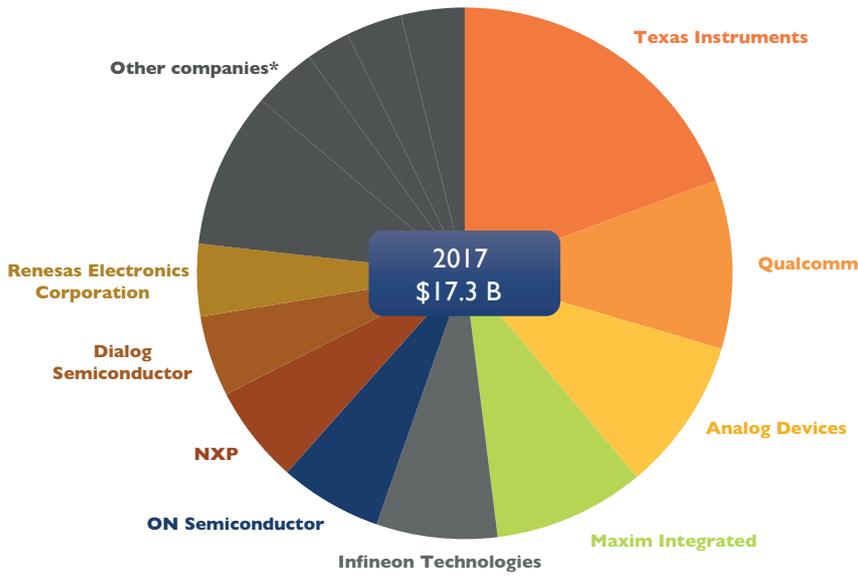
The power IC manufacturer landscape has mainly three major types of actors: the pure power IC makers; Integrated Device Manufacturers (IDMs); and end user system producers that implement their own power ICs. Among the pure IC makers, the leading companies are Texas Instruments and

Maxim Integrated, while companies with just a few power IC products in their portfolio have smaller market shares. IDMs benefit from a full portfolio, including power devices, microcontrollers or sensors, which is very interesting for end-product manufacturers. Finally, there are some end user

system manufacturers, like Mediatek or Samsung, who implement their own PMICs for their tablets or

smartphones, controlling their volumes and achieving low-cost solutions.

### Global top power IC suppliers



\*Key power IC companies and their market shares are available in this report.

(Yole Développement, October 2018)

As we can see from last year's landscape movements, the power IC industry is consolidating. We now have big companies that will rule the market for the next few years, rather than companies with limited portfolios. Linear Technology, a leader in power management, data conversion and signal conditioning, was acquired by Analog Devices, a leader in global high-performance analog technology. This strengthens Analog Devices with an extended product portfolio that inches it closer to becoming the power IC market leader. Renesas Electronics, which is strong in microcontrollers, acquired Intersil, whose portfolio includes voltage regulators and other analog products. In doing so Renesas Electronics gains a product portfolio that it lacked internally in power management, interfaces, and gate drivers.

The report provides market share information on a component level, offering understanding of the main competitors for linear regulators, switching regulators, voltage references, voltage supervisors and controllers, Hot Swap controllers, Power Over Ethernet, Power Factor Correction, BMICs and PMICs.

### AUTOMOTIVE: ONE OF THE MAIN DRIVERS FOR POWER ICs

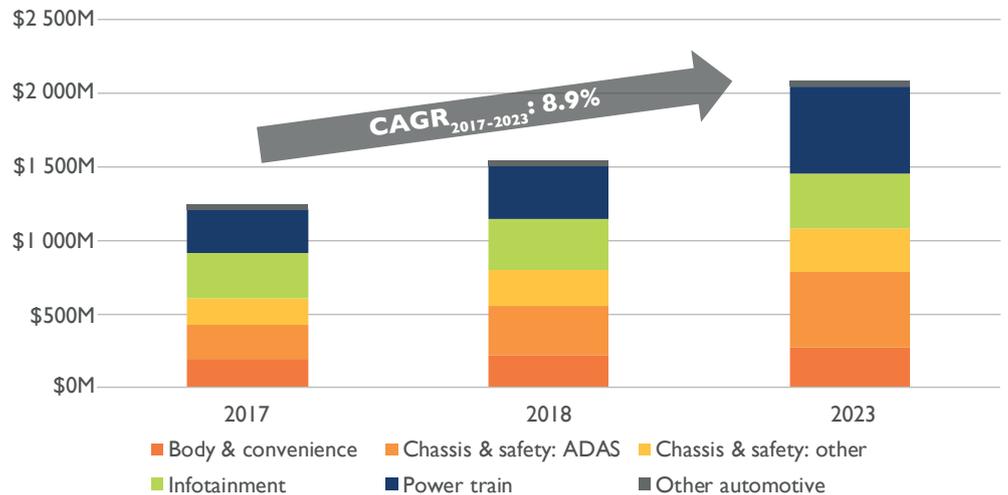
For several years, we have observed an interesting trend in the electrification of functions within the automotive industry. For example, steering, braking and anti-roll stabilization used to be hydraulic-based: nowadays they rely on electricity. This trend goes along with power IC implementation to regulate voltages with high efficiency. Multi-purpose cameras, radar systems and airbags are other functions that illustrate this trend.

Moreover, the power IC world has recently been stimulated by the arrival of new electric and autonomous car models. The electric power reduces CO<sub>2</sub> emissions thanks to highly efficient energy

conversion and less dependency on the oil industry. Nowadays, electric and hybrid electric vehicles (EV/HEVs) account for 4% of global car sales, a share which is expected to increase to 16% by 2023. In addition, big carmakers are already working on the shift from 12V to 48V converters. This enables a transition from hydraulic to electric systems for different functions as steering, braking or anti-roll stabilization, enlarging the power management sales volumes in the automotive sector.

On the other hand, Advanced Driver Assistance Systems (ADAS) and sensors are starting to be commonly adopted by car manufacturers to allow autonomous driving and comfort functionality. The

### Power ICs revenue for automotive



(Yole Développement, October 2018)

CAGR for sales volumes of sensors is expected to be about 8% over the next five years, in turn driving more power management sales.

Therefore, it is not surprising that one of the fastest growing end markets is forecasted to be the automotive market, with a 6.2% CAGR from

2018-2023. In all cases, high quality power IC components are needed in high volumes.

*This report details the major trends in power ICs for automotive applications, with volumes and revenues associated with the different functions.*

### OBJECTIVES OF THE REPORT

- Access the gate driver market for power management ICs including switching regulators, LDOs, battery management ICs, multi-channel power management ICs, and other key power ASICs.
- Understand the market dynamics for power management IC applications
- Access end market breakdowns for over 40 end markets and over 15 power IC components on annual and quarterly bases.
- Provide an overall view of the competitive landscape of the power management IC market

### COMPANIES CITED IN THE REPORT (non exhaustive list)

Alpha and Omega Semiconductor, Analog Devices, Dialog Semiconductor, Diodes, Fuji Electric, Infineon Technologies, Intersil, IXYS, Linear Technology, Lite-On Semiconductor, MagnaChip, Maxim Integrated, MediaTek, Microchip, Microsemi, Monolithic Power Systems, NXP, ON Semiconductor, Panasonic Corporation, Power Integrations, Qualcomm, Renesas Electronics Corporation, Ricoh, ROHM Semiconductor, Samsung, Sanken Electric Company, Semtech, Shindengen, STMicroelectronics, Texas Instruments, Toshiba, Vishay Intertechnology, and more...

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### AUTHOR

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serves as a Technology & Market Analyst, Power Electronics & Compound Semiconductors within the Power & Wireless division at Yole Développement (Yole). She is involved in many custom studies and reports focused on emerging power electronics technologies at Yole Développement, including device technology and reliability analysis for MOSFETs, IGBTs and HEMTs. In addition, Ana led the quarterly power management market updates released in 2017.

Previously Ana was involved in a high-added value collaboration related to superjunction Power MOSFETs, within the National Microelectronics Center (CNM) research center in Barcelona, Spain, for the leading power electronic company ON Semiconductor. During this partnership and after two years as Silicon Development Engineer, she acquired relevant technical expertise and deep knowledge of the power electronic industry.

Ana is author and co-author of several papers as well as a patent. She holds an Electronics Engineering degree and a Master's degree in micro- and nanoelectronics, both from Universitat Autònoma de Barcelona (SP).

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#### BY CREDIT CARD

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Name of the Card Holder: .....

Credit Card Number: .....

□□□□ □□□□ □□□□ □□□□ □□□□

Card Verification

Value (3 digits except AMEX: 4 digits):

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Expiration date:

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Bank code: 30056, Branch code: 00170

Account No: 0170 200 1565 87,

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• MAIL: YOLE DÉVELOPPEMENT, Le Quartz,  
75 Cours Emile Zola, 69100 Villeurbanne/Lyon - France

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The "More than Moore" market research, technology and strategy consulting company Yole Développement, along with its partners System Plus Consulting, PISEO and KnowMade, support industrial companies, investors and R&D organizations worldwide to help them understand markets and follow technology trends to grow their business.

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