



FOR IMMEDIATE RELEASE:

Gate driver ICs will be challenged by greater integration and GaN and SiC technologies

Gate Driver Market and Technology Trends 2017 report – Yole Développement – March 2017

LYON, France – April 5, 2017: “The gate driver IC¹ market will benefit from the steady growth of the power semiconductor industry”, announces the Power Electronics team from [Yole Développement \(Yole\)](#). Indeed, in recent years, a much greater percentage of home appliances, electric vehicles, hybrid vehicles, including mild hybrids, and renewable energy products have implemented dedicated power semiconductors devices on-board.

According to the “More than Moore” market research and strategy consulting company Yole, gate driver ICs will benefit from power semiconductors delivering a 6.1% CAGR² from 2017-2022. The gate driver IC market revenue, which was estimated to have been US\$1.2 billion in 2016, is forecast to have a 5.1% CAGR for 2017-2022.

In its new gate driver report titled [Gate Driver Market and Technology Trends](#), Yole’s analysts examine the different types of gate driver IC and related market sizes, split by single channel, half-bridge, full bridge, and three phase. The report also presents the different market segments by application (Including automotive, consumer, industrial, computers, and communication) and by voltage (From less than 400V and up to 1,200V). With this new power electronic technology and market report, Yole’s team aims to provide a comprehensive understanding of gate driver market segments, opportunities, business models, and technology trends.

Key results will be presented during [Yole’s Market Briefing](#) at **PCIM Europe 2017**. Yole’s presentation titled “*Status of the Gate Driver industry*”, takes place on May 18 at 2:00 pm (Speaker: Jonathan Liao, Technology and Market at Yole). To discover the program & speakers, click [Power Electronics Market Briefing](#).

Most of power MOSFETs and IGBTs are driven by gate drivers IC. However, while almost all IGBTs require a gate driver, MOSFETs are showing a considerably lower usage of gate driver ICs. Gate driver ICs utilization varies on voltage and power levels and it strongly depends on the applications. According to Yole’s analysts, in 2016, more than 60% of the gate drivers IC market correspond to the ones combined with MOSFETs. But this figure step by step decreases slowly and

¹ IC : Integrated Circuit

² CAGR : Compound Annual Growth Rate

appear to be stabilizing. In parallel IGBT market share increases. As a consequence, the revenue gap between MOSFET and IGBT gate drivers will be quickly narrowing in a near future.

“Usage of single channel and half bridge gate driver ICs will increase over the next few years due to the need for isolation integration”, explains Jonathan Liao, Senior Analyst & Business Development Manager at Yole. And he adds: “Half bridge gate driver ICs are estimated to have accounted for over 40% of gate driver revenues in 2016. Single side gate driver ICs were the second most popular topology with about 30% of revenue. While full bridge and three phase gate drivers are mostly found in motor control and inverter applications for low-mid power.”

From a technology point of view, new requirements related to isolation or the use of GaN³ and SiC⁴ power transistors demand advanced driver IC technologies to be developed

Over recent years, all major players have started providing isolation-integrated products, the coreless transformer being the main type. *“Having isolation in the same package as the driver IC provides greater integration, which is sought by many system manufacturers”, explains Mattin Grao Txapartegi, Technology & Market Analyst, Power Electronics at Yole.* Gate driver report from Yole is an in-depth technical analysis including several main types of isolation techniques such as pulse transformers, level shifters, opto-isolators and coreless transformers, their primary applications, disadvantages and advantages. This new power electronic report also details how companies are positioned on the use and development of these technologies.

Besides isolation technologies, niche applications such as high temperature operation and other harsh environment requirements provide additional growth opportunities for gate drivers. SiC-based power switches can endure high temperature environments with the material's high T_j⁵ and T_e⁶ performance characteristics. Companies such as Cissoid and X-Rel Semiconductor are looking to capitalize on the potential of SiC in these niche applications.

GaN FETs can switch at a much higher frequency than silicon-based MOSFETs. Higher frequency provides advantages but also challenges. Yole provides a case study of Navitas, a company trying to incorporate a GaN FET with GaN drivers on the same substrate. This monolithic solution, integrating the power transistor and its driver, shows the level of involvement of several GaN and SiC players, in order to get

³ GaN : Gallium Nitride

⁴ SiC : Silicon Carbide

⁵ T_j : Junction Temperature

⁶ T_e : Environment Temperature

adequate drivers to facilitate the use of wide band gap devices in the new generation of converters. This report includes a complete chapter on the new requirements needed for GaN and SiC power transistor gate drivers.

A detailed description of [Gate Driver Market and Technology Trends 2017](#) report is available on [i-micronews.com, power electronic reports section](http://i-micronews.com/power-electronic-reports-section).



About [Gate Driver Market and Technology Trends 2017](#) report

Gate driver ICs will be challenged by greater integration demands and the arrival of GaN and SiC.

▪ Authors:

Mattin Grao Txapartegi is a Technology & Market Analyst | Power Electronics at Yole Développement (Yole). He is engaged in many custom

studies and reports dedicated to the evolution of inverters architecture and passive components, from capacitors to protection devices. Getting a deep understanding of the technology evolution, the market trends and the strategies of each player are part of his mission at Yole. Indeed Mattin is daily driving technology and market scouting, roadmap definition, disruptive technologies and market opportunities identification and competitive landscape analysis. Previously he acquired a comprehensive expertise in the design of power converters for EV at Renault.

As an engineer, Mattin is graduated from Grenoble INP (FR) with specialization in embedded systems for transportation. He has also an advanced master in aeronautics from the Arts & Métiers ParisTech (FR).

Jonathan Liao is a Senior Analyst & Business Development Manager at Yole Développement (Yole). Jonathan is leading the quarterly power management market updates. In addition, he performs technology & market reports for gate driver, discrete, module, compound semiconductors, and power management IC. Before joining Yole, Jonathan served as a power electronics Sr. Analyst at HIS Markit. Within a global semiconductor business ecosystem, financial analyses and power management scouting were part of his mission. Prior to IHS, he was a product engineer at Microchip Technology Inc. During this period, Jonathan gained a strong expertise in analog & mixed signal devices. Jonathan Liao earned his Master of Science (AZ, North America) and graduated with a Bachelor of Science (PA, North America).

▪ Companies cited in the report:

Broadcom Limited, Infineon, Renesas, STMicroelectronics, ON Semiconductor, NXP, Mitsubishi, Panasonic, MediaTek, RichTek, Sanken Electric, Toshiba, ROHM, Cassoid, X-Rel, Wolfspeed, Dialog semiconductor, Navitas, Texas Instruments, Agile Switch, Analog Devices, Silicon Labs, NVE corporation, ABB, GaN Systems, EPC, GE, and more...

About Yole Développement – www.yole.fr

Founded in 1998, Yole Développement has grown to become a group of companies providing marketing, technology and strategy consulting, media and corporate finance services. With a strong focus on emerging applications using silicon and/or micro manufacturing, the Yole Développement group has expanded to include more than 50 collaborators worldwide covering MEMS, Compound Semiconductors, LED, Displays, Image Sensors, Optoelectronics, Microfluidics & Medical, Advanced Packaging, Manufacturing, Nanomaterials, Power Electronics and Batteries & Energy Management.

The “More than Moore” company Yole, along with its partners System Plus Consulting, Blumorpho and KnowMade, support industrial companies, investors and R&D organizations worldwide to help them understand markets and follow technology trends to grow their business.

- Consulting & Financial Services: Jean-Christophe Eloy (eloy@yole.fr)
- Reports: David Jourdan (jourdan@yole.fr)
- Press Relations & Corporate Communication: Sandrine Leroy (leroy@yole.fr)

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