The rapid evolution of wide bandgap compound semiconductors (CS) in 2018-2019 has positioned both SiC and GaN as key materials within the power device market. There has been a remarkable shift of interest in SiC for automotive applications and in GaN in mainstream consumer applications. Yole Développement (Yole) expects that these applications will respectively drive the SiC and GaN power device market in coming years. It is noteworthy that the SiC market forecast for 2019 is approaching $600M, corresponding to a 40% percent increase year-over-year (YoY).

Yole closely follows both SiC and GaN power markets for many years, which have become key segments in the power semiconductor industry. In such a fast-evolving market, Yole will begin publishing, in quarterly instalments, a monitor containing world-class research, data, and insights pertaining to the CS markets. This monitor will analyze the CS markets’ evolution in terms of revenue, shipments, and prices. It will offer forecasts by market segment, CS device, including wafer and epiwafer market dynamics.

The SiC power device market is driven by automotive, while the GaN power device market reaches its first milestone in the consumer market.

Since the first commercialization of SiC diodes, the power SiC device market has been driven by power supply applications for long time. Now, the automotive sector is becoming the most important in the power SiC market. The 2018-2019 power SiC device market is notable for Tesla’s adoption of SiC in its main inverter. Following that, different Tier 1 part suppliers and carmakers, such as ZF, Bosch and Renault, have recently made announcements about their adoption of SiC technology in some of their products. Yole sees a prospering SiC power device market. In fact, Yole's analysts expect the SiC power semiconductor market’s value to exceed $2B by 2024. The automotive market is undoubtedly the foremost driver, and as such will hold more than 50% of total device market share in 2024.

An evolving market means opportunities and challenges for suppliers across the supply chain. Yole Développement’s quarterly monitor will answer numerous pressing questions facing this industry, such as:

- How will the electric vehicle (EV) market evolve and will tier 1 companies and carmakers stick to their adoption timeline?
- What will be the supply situation and cost erosion for SiC wafers?
- Will current SiC power device market leader STMicroelectronics continue to manage product supply and keep its market position?
GaN POWER DEVICES ARE ENTERING THE HIGH VOLUME CONSUMER MARKET

In the power GaN landscape, Yole recently witnessed a remarkable entry of one player into the high volume consumer market: Power Integrations. By Q3 2019, the company announced that it had shipped its new Innoswitch3 with a system-in-package GaN HEMT product to after-market fast charger manufacturers. It had also earned a design win with Oppo for 65W GaN-based ‘inbox fast chargers’. What’s more, Power Integrations announced also shipping to Samsung for GaN-based 45W accessory mobile fast chargers.

This is very exciting and encouraging news for GaN power devices, which have entered the high-volume smartphone market for the first time. It is likely to be a real game-changer for the GaN power market. Growth was in the range of 134% YoY in 2019, and analysts from Yole expect the market to be worth more than $350M in 2024.

Yole will provide detailed profiles and analyses of main suppliers on a quarterly basis.

CS QUARTERLY MARKET MONITOR - CONTENT

The CS Quarterly Market Monitor contains all the quarterly data related to power SiC and power GaN device revenue. This includes: SiC wafer and SiC/GaN epiwafer shipments and revenue; near and long-term revenue; a complete analysis with details of the market forecast; and deep dives into the automotive, consumer, energy, industrial, telecom and infrastructure sectors.

Yole follows companies across the supply chain. The CS Quarterly Market Monitor analyses the top players’ revenue in detail for SiC, specifically STMicroelectronics, Wolfspeed/Cree, ROHM, Infineon, ON Semiconductor, Mitsubishi Electric, Showa Denko, II-VI and others, and for GaN, which also includes Infineon, but also EPC, Power Integrations, Transphorm, GaN Systems, Navitas, IQE and others.
The monitor includes the following deliverables:
- Excel database with all historical and forecast data
- PDF slide-deck with graphs and comments and analysis regarding expected evolution
- Direct access to a Yole Développement analyst
- Market revenue forecast through 2024 by market segments, including automotive, consumer and energy in M$US
- Market forecast breakdown by technology such as discrete, module and wafer size
- Market players at device, epiwafer and wafer level, including STMicroelectronics, Cree, ROHM, Infineon, ON Semiconductor, Mitsubishi Electric, Infineon, EPC, Power Integrations, Transphorm, GaN Systems, Navitas, IQE for GaN; from 2018 to present, ranked by M$US revenue
- Market revenue forecast through 2024 in M$US for devices, wafers and epiwafers and units for wafers and epiwafers

The CS monitor is expected to have three modules. For the Q4 2019 version, the monitor includes the SiC and GaN power electronics device module. A second module covering GaAs and GaN RF devices and a third module covering GaAs and InP lasers will be released in coming quarters. The content of the monitor, such as the players that are monitored, will evolve according to feedback received from our customers.

**KEY FEATURES**
- Quarterly data update
- Market forecast through 2024 in M$US for devices, wafers and epiwafers
- Market revenue forecast through 2024 by market segments, including automotive, consumer and energy in M$US
- Market forecast breakdown by technology such as discrete, module and wafer size
- Market players at device, epiwafer and wafer level, including STMicroelectronics, Cree, ROHM, Infineon, ON Semiconductor, Mitsubishi Electric, Infineon, EPC, Power Integrations, Transphorm, GaN Systems, Navitas, IQE for GaN; from 2018 to present, ranked by M$US revenue

**COMPANIES CITED IN THE REPORT (non exhaustive list)**
STMicroelectronics, Wolfspeed/Cree, ROHM, Infineon, ON Semiconductor, Mitsubishi Electric, Showa Denko, II-VI for SiC; and Infineon, EPC, Power Integrations, Transphorm, GaN Systems, Navitas, IQE

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