

碳化硅与氮化镓，功率半导体产业的两大关键细分市场

季度市场监测 – 2020 年第二季度

市场动态：

- 企业最新情况 - 2020 年第二季度：
GTAT 联手安森美半导体进行一项为期五年的合作，生产并供应碳化硅晶体。
在碳化硅产能增加的同时，X-FAB 也具备了新的自有外延能力。
华为推出了其首款内部制造的氮化镓充电器，作为设备配件。据传苹果和三星将在今年年底前推出盒内原配氮化镓快速充电器。
英诺赛科以其内置“中国芯”的氮化镓芯片进军高产量快充市场，用于配件品牌厂商洛克（ROCK）的充电器产品。
还有更多信息.....
- 新冠疫情爆发：
碳化硅与氮化镓功率器件产业预期将遭到短期影响。
2020 年第一季度末，新冠疫情在欧洲和美国各地爆发，对供应链带来干扰，并造成部分器件制造商和 OEMs¹ 停产。
中国：形势似乎已缓慢回归常态。
- 季度趋势与市场数据：
氮化镓与快速充电应用：采用率正在快速增长.....
EV/HEV 仍是碳化硅器件的杀手锏应用。
由于新冠疫情爆发，功率氮化镓器件市场在 2020 年第一季度的预期季度增长率为 2%。
尽管疫情造成了短期影响，碳化硅器件市场收益仍将持续，并且预期截止到 2025 年将超过 30 亿美元。

碳化硅与氮化镓，功率半导体产业的关键细分市场

WBG² 化合物半导体市场在 2018 年到 2019 年间的快速发展让碳化硅和氮化镓都成为了功率器件市场中的关键材料。对于碳化硅，市场兴趣出现了向汽车应用的显著转移，而在氮化镓市场则出现了向主流消费应用的兴趣转移。

¹ OEM：原始设备制造商

² WBG：宽禁带

“这些应用将在未来几年中分别推动碳化硅和氮化镓功率器件市场发展”，**Yole Développement (Yole)**的技术与市场分析师 **Ezgi Dogmus** 称，她还补充道：“2020年上半年，全球新冠疫情爆发造成了各类终端市场增长的显著放缓，尤其是汽车和消费这两个市场领域，因此也影响了相关的碳化硅和氮化镓功率器件市场收益。”

碳化硅功率器件在汽车应用推动下蓬勃发展

自碳化硅二极管首次投入商用以来，供电应用就在为碳化硅功率器件市场发展提供动力。尽管如此，2018年特斯拉的主逆变器采用了碳化硅，自这一引人注目的事件至今，汽车应用已成为该市场的杀手锏。从那时起，多家以及零部件制造商（如采埃孚和博世）与整车制造商 **OEM**（如比亚迪和雷诺）都在近期宣布在其部分产品中采用碳化硅技术。在蓬勃发展的碳化硅功率市场中，汽车这一细分领域无疑是首当其冲的驱动力，也因此将在2025年在器件总市场中占据超过50%的份额。

“然而在新冠疫情爆发后，几乎所有汽车 **OEM** 都不得不停产，供应链因而面临了重大干扰”，**Yole** 的技术与市场分析师 **Ahmed Ben Slimane** 点评道：“在这种形势下，我们预期碳化硅功率器件市场将在2020年的第二和第三季度遭受重大影响，使其2020年的年增长率减缓至7%。”

氮化镓功率器件：消费领域厂商确认采用该技术

在氮化镓产业中，市场研究与策略咨询公司 **Yole** 确认多家厂商以大动作进军高产量消费市场，具体来说有 **Power Integrations** 和 **纳微半导体**。“确定无疑，氮化镓市场正在快速发展”，**Yole** 的 **Ahmed Ben Slimane** 称。

包括 **Oppo**、**Vivo**、**Realme**（真我）和魅族在内的多家手机 **OEM** 采用基于氮化镓的盒内原配快速充电器，并在2020年初与各自的旗舰手机产品一同发布。三星、华为和小米选择在其配件充电器中采用氮化镓。这是氮化镓功率器件在高产量消费市场中的第一个里程碑。

在这类消费型快充应用的推动下，氮化镓功率器件市场在2019年的年增长率将达到167%左右，2025年市值将超过7亿美元。然而由于新冠疫情爆发，智能手机2020年的产量预计将下降20%。疫情对不同地区和不同厂商的影响各不相同。



化合物半导体市场：新冠疫情对新兴碳化硅与氮化镓功率市场有何影响？ - 市场简报网络直播

在 **EVIHEV** 和消费型快充应用的推动下的碳化硅和氮化镓功率器件市场预期将遭遇新冠疫情爆发带来的短期冲击。 - **7月2日欧洲中部时间下午 5:00 PM - 太平洋夏令时间上午 8:00 AM**

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[Yole's Compound Semiconductor Quarterly Market Monitor](#) on SiC and GaN power applications will be published every beginning of March (Q1), June (Q2), September (Q3) and December (Q4)... Aim of these services is to provide an in-depth coverage of rapidly changing market dynamics and main players' status and strategy.

This is why [Yole's Quarterly Market Monitor](#) will also evolve and incorporate step by step a new module on RF GaAs and RF GaN markets in the Q3 2020 edition, next to the existing Power GaN and Power SiC module. Stay tuned to [i-Micronews](#) to get further information about our Compound Semiconductor & Power electronics activities!

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About the compound semiconductor team at Yole Développement

As a Technology & Market Analyst, Compound Semiconductors, **Ezgi Dogmus**, PhD is member of the Power & Wireless division at Yole Développement (Yole).

She is daily contributing to the development of these activities with a dedicated collection of market & technology reports as well as custom consulting projects.

Prior Yole, Ezgi was deeply involved in the development of GaN-based solutions at IEMN (Lille, France). Ezgi also participated in numerous international conferences and has authored or co-authored more than 12 papers.

Upon graduating from University of Augsburg (Germany) and Grenoble Institute of Technology (France), Ezgi received her PhD in Microelectronics at IEMN (France).

Ahmed Ben Slimane, PhD. is a Technology & Market Analyst, specialized in Compound Semiconductors at Yole Développement (Yole).

As part of the Power & Wireless team, Ahmed is contributing to the development of dedicated collection of compound semiconductors market & technology reports and monitor.

Previously, he worked as an epitaxy (MBE/MOCVD) & fabrication process engineer for GaAs-based photovoltaic applications at TOTAL and IPVF (Paris-Saclay, France). Ahmed also completed his PhD in Material Engineering from KAUST (Saudi Arabia), where his mission was focused on GaN-based microstructures for flexible solid state lighting.

During this career, Ahmed Ben Slimane proposed lot of presentations towards an international audience. He authored/co-authored more than 20 publications in the semiconductor field, and submitted a patent on the III-V hetero-structure for PV industry.

Ahmed obtained his Master degree in Electronics Engineering from INPG (Grenoble, France).

About Yole Développement

Founded in 1998, Yole Développement (Yole) has grown to become a group of companies providing marketing, technology and strategy consulting, media and corporate finance services, reverse engineering and reverse costing services and well as IP and patent analysis. With a strong focus on emerging applications using silicon and/or micro manufacturing, the Yole group of companies has expanded to include more than 80 collaborators worldwide... [More](#)

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