

# GaN power components will be cheaper than silicon ones, says EPC

Nuying Huang, Taipei; Julie Chang, DIGITIMES Asia

🕒 Tuesday 19 September 2023

Gallium Nitride (GaN) semiconductor company Efficient Power Conversion (EPC) is taking a fresh stab at the power component landscape, challenging the longstanding silicon hegemony. The US-based firm recently made headlines due to its ongoing patent battle with China-based GaN leader, Innoscience.

## Performance and pricing of GaN power components

In an exclusive interview with DIGITIMES, Alex Lidow, co-founder and CEO of EPC, stated that most researchers still hold the misconception that GaN is more expensive than its silicon counterparts, a notion he aims to debunk. Although the theoretical limit of GaN components is 300 times the level of how it currently performs. Optimization comes with each new product generation. GaN components now have significantly lowered costs, improved efficiency, shrunk component sizes, and additional innovative functionalities.

At two electronics events, the Applied Power Electronics Conference (APEC) and PCIM Europe, EPC asked participants, on the spot, to compare the pricing of their own silicon-based MOSFETs and GaN MOSFETs of the same specifications, and EPC's GaN MOSFETs are indeed all cheaper than the most advanced silicon MOSFETs.

## GaN power component applications and adaptation

**DIGITIMES:** Electric vehicles (EVs) have been moving towards 800V systems, can GaN components adapt to such high voltage? Does EPC have any plans in this arena?

**Alex Lidow:** Currently, GaN primarily targets applications below 650V, whereas silicon carbide (SiC) dominates markets above 650V and could very likely replace Si-IGBTs. EPC is also focusing on developing solutions for the sub-400V market, which commands much higher speed and has a much higher standard for size and material qualities. We are dedicated to manufacturing GaN power components that perform better and are more cost-effective than silicon ones.

**DIGITIMES:** What is the current state of EPC's energy storage system, solar energy, 5G base station, and RF power amplifier operations?

**Lidow:** The emerging AI computing infrastructure market has always been EPC's main focus, especially given that the new generation of machines is power-intensive, which highlights the importance of energy efficiency. This is also why DC/DC converters utilizing GaN components are increasingly adopted in next-generation designs.

## Analysis from industry sources

Supply chain sources point out that the perception of GaN being more expensive than silicon is hard to overcome, given silicon's historical presence and its massive ecosystem. However, EPC's GaN yield rate stands as a considerable advantage, particularly as one of the few players in the 100V GaN market that can compete cost-effectively with cutting-edge Si MOSFETs.

The key to GaN's cost competitiveness lies in its ability to produce more dies per wafer than silicon wafers, coupled with higher performance per die. In terms of costs and benefits, GaN MOSFETs are beginning to display clear advantages. However, it is worth noting that this conclusion only applies when GaN MOSFETs are compared with advanced silicon MOSFETs.

Industry insiders noted that most global GaN manufacturers still struggle with yield control, perpetuating the notion of GaN being expensive. Chinese or China-based firms, subsidized by the government, operate under different cost structures that this analysis may not apply to.

EPC's manufacturing partners primarily include Taiwan-based companies like Episil Technologies, and Vanguard International Semiconductor (VIS), according to industry sources.



Alex Lidow Credit: EPC

### Related stories

[EPC optimistic about GaN sector](#)

[TASC's compound semiconductor venture to flourish as ProAsia begins mass production in 3Q24](#)

[GaN Systems, ACEpower partner to propel GaN adoption in EVs](#)

[TASC's 3 year expansion plan and its SiC and GaN semiconductor application streak](#)

[China's export control on Ga and Ge: bluff or buff to US IDMs?](#)

[Why prominent power semiconductor manufacturers race to gain a presence in China](#)

Show less

### Categories

[Chips + components](#)   [IC manufacturing](#)   [Passive, PCB, other IC components](#)

### Tags

[CEO](#)   [competitiveness](#)   [EPC](#)   [GaN](#)   [Interview](#)   [manufacturing](#)   [power components](#)   [silicon](#)

#### DIGITIMES

- [About](#)
- [Advertising](#)
- [Membership](#)
- [Terms & conditions](#)
- [Privacy policy](#)
- [Copyright policy](#)
- [Contact us](#)
- [Notes & corrections](#)
- [Site map](#)
- [中文網繁體](#)
- [中文網简体](#)

#### TOOLS & SERVICES

- [Prior to Web Release](#)
- [7 days news](#)
- [Web news elsewhere](#)
- [Topics](#)
- [RSS](#)

© 2023 DIGITIMES Inc. All rights reserved.



