

Monolithically integrated GaN power circuits

Higher functionality and excellent device characteristics

Gallium nitride (GaN) is more than a high-performance semiconductor material: For the first time, monolithic integration enables a GaN technology which provides excellent device characteristics paired with higher functionality. At Fraunhofer IAF, we manufacture devices and circuits in our III-V process line. This 600 V-class GaN-on-Si technology offers new opportunities for various high-performance applications and customer specific solutions.

Features

- High functionality due to monolithic integration (power circuits, gate driver, logic, sensors) and PCB-embedding assembly technology
- High frequencies > 1 MHz due to AlGaN/GaN-heterojunction technology
- High compactness by integrated GaN power circuits, and PCB embedding assembly technology

Applications

- **Mobility:** DC-DC converter, boardnet charger
- **Information technology:** Point-of-load (PoL) converters for data centers, and cloud servers
- **Industry 4.0:** compact and robust power electronics for industrial facilities
- **Consumer electronics:** battery charger, home entertainment

Custom high-voltage GaN-on-Si technology for power ICs
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