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Tutorial title

SiC/GaN power devices and driving technologies brings innovation to high-efficiency energy conversion for RESSs.

Abstract:

Efforts to achieve carbon neutrality through the use of renewable energy are accelerating around the world. Power generation, energy storage, charging, electrification of mechanical power, and related power systems are being developed and improved, but the silicon semiconductors that have been used for more than 60 years are about to be replaced by new materials (wide-gap semiconductors) in power semiconductors, which are indispensable for promoting power conservation in the power conversion sections of all units. We will introduce silicon carbide (SiC) and gallium nitride (GaN), which are called next-generation power semiconductors, and the drive technologies that drive them. These innovative technologies will bring about technological innovation in the use of renewable energy, greatly accelerating the achievement of carbon neutrality.

Keywords:

- 1) SiC power devices and modules
- 2) GaN HEMT devices
- 3) Isolated Gate Drive Technology
- 4) High Efficiency Energy Conversion