

Starting a new project!

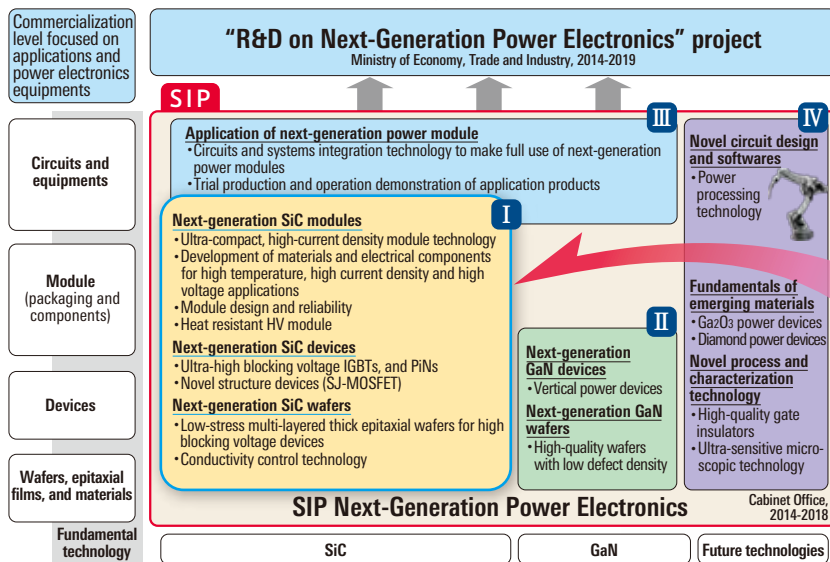
Next-generation power electronics

Consistent research and development of next-generation SiC power electronics

In October 2014, the research proposal, which was primarily prepared by the TIA-nano members, was adopted as a "Next-Generation Power Electronics" project in the "Cross-Ministerial Strategic Innovation Promotion Program (SIP)" under the Cabinet Office.

"An affluent energy-saving society by disseminating ubiquitous power electronics equipments"

Overview of R&D on the next-generation power electronics



"Consistent research and development of next-generation SiC power electronics," to be conducted at the TIA-nano platform, will cover most of this part of the research project.

Power electronics

Power electronics is the technology to intentionally control voltage, current, frequency and phase in electric power using semiconductor devices, and applicable to the conversion between direct current and alternating current. It is a key technology to facilitate high-efficiency conversion of electric energy, and greatly contributes to downsizing and energy saving in applicable equipments.

Next-generation materials

Wide bandgap semiconductors, such as silicon carbide (SiC) and gallium nitride (GaN), are considered to be next-generation semiconductor materials that will replace silicon (Si), a widely used material for electric power devices today. Owing to their superior material properties, these next-generation semiconductor materials are expected to improve the performance of electric power devices so that their electric power loss is much less than Si power devices.

Consistent research development of next-generation SiC power electronics

At TIA-nano, we will carry out the following R&D subjects in the research network framework involving 43 research organizations of universities, the private sector and public research institutes, with AIST, Kyoto University, ISIR of Osaka University and the Central Research Institute of Electric Power Industry playing a leading role. By making close coordination among different technological domains, we promote effective and efficient R&D, and foster researchers in the related research fields.

- Technological development of next-generation SiC wafers
- Technological development of next-generation SiC devices
- Technological development of next-generation SiC modules

