High efficiency power device and adaptive power supply

Increment of DC powered IT loads and green power sources urge development of highly efficient DC power grid.

- IT devices are rapidly increasing.
- Solar power is generated in form of DC power , and IT devices are powered by DC power. There is a need for a system that enables efficient power supply by supplying power without AC conversion.

Problems solved by this research

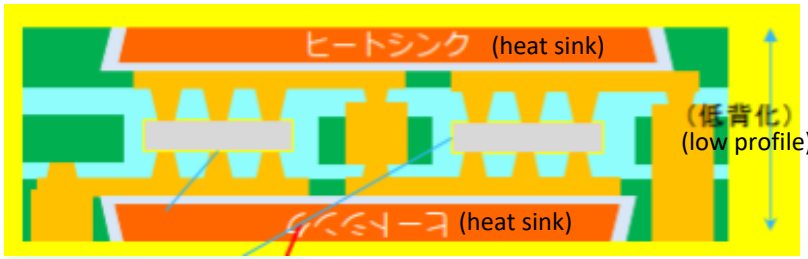
Development of power devices that enable DC voltage conversion required for high-efficiency DC power grid systems.

2021 NEDO Program “Adaptive power supply with multiple series-parallel configuration using advanced packaging technology”

- A highly reliable, high-efficiency DC-DC converter that supports 1500V DC power supply was developed.
- In addition, a multiple series-parallel configuration adaptive power supply was developed and was confirmed the possibility of future DC power grid in society demonstration.
- This development was carried out by four entities: Fukuoka University, Fukuoka IST, Nagasaki University of Integrated Arts and Sciences, and Isahaya Electronics Co., Ltd.

Technologies that Fukuoka University own

By mounting electronic components in the advanced packaging technology (Device Embedded Module), low profile, low parasitic inductors, high speed, and integral formation are possible.



Illustrative cross-section view of DEM

Future Prospects

✓ Realization of semiconductor packaging for more than Moore era with DEM and 3D packaging.