

**A new electronics packaging technology platform with improved electrical, thermal and reliability performance for key power conversion modules in data centres and telecommunication equipment**

### Keywords:

- Smart City, power conversion, electronic packaging, power modules, energy saving, data centres, efficiency, thermal performance

### Problems addressed

- As a major financial and international trading and logistics hub and a home to many regional offices and headquarters of global corporations, Hong Kong has the ever increasing demand for secure data centre facilities and services to support the business growth. This makes Hong Kong an ideal and prime location for data centres to deliver, transfer and process huge amount of data and information.
- To provide reliable data centre services, a robust infrastructure is desired, especially on the power supply and energy efficiency. Currently the data centres consume 3% of the overall electricity usage in Hong Kong, and it is expected to increase to 10%-20% in the next couple of years.
- Data centre designers are facing with increasing challenges: supplying ever increasing computing power using less energy in a smaller space, while maintaining mission-critical reliability.

ASTRI's new technology platform uses Vertical-Driver-GaN and Package-Embedded Inductor technologies to improve the power density and the coupled electromagnetic-thermal performance concurrently for the critical power conversion modules in the next-generation data centres and telecommunication equipment.

### Innovations

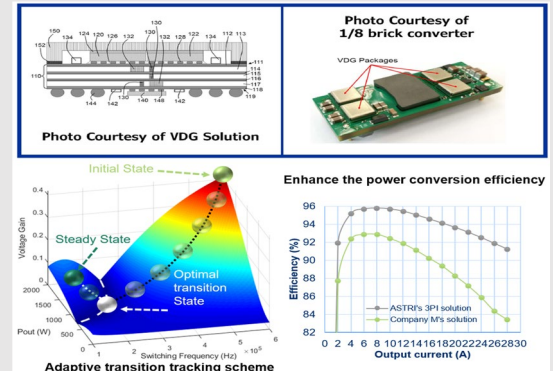
**The key innovation is providing a new electronics packaging technology platform with improved electrical, thermal and reliability performance for key power conversion modules in data centres and telecommunication equipment, which includes the following features and benefits:**

- ~50% improvement of power density
- ~2X improvement of driving speed
- ~30% reduction of power loss & thermal resistance
- ~3X improvement of reliability

### Key impact

- High power density for high-end applications
- Fast driving speed for 3<sup>rd</sup> generation power semiconductors
- Low power loss for energy saving
- More reliable for a longer lifetime

### Innovation snapshot



### Project completed

- March 2019

### Applications

- Data Centres
- 5G base station
- Industrial control
- Robotics

### Patent(s)

- US Patent No. US10,784,213 and CN Patent No. 201880000127.X
- US Patent No. 11,127,524; CN App No. 201980000142.9 and HK App No. 62021023244.8
- US Patent No. 10,609,844; CN App No. 201980000324.6 and HK App No. 62021023240.6
- US Patent No. 10,847,297; CN App No. 201980002632.2 and HK App No. 62020022914.9
- US Patent No. 10,938,310; CN App No. 202080000133.2 and HK App No. 62021040007.8

[ASTRI Patent Search](#)

### Commercialisation opportunities

- IP licensing
- Technology co-development