

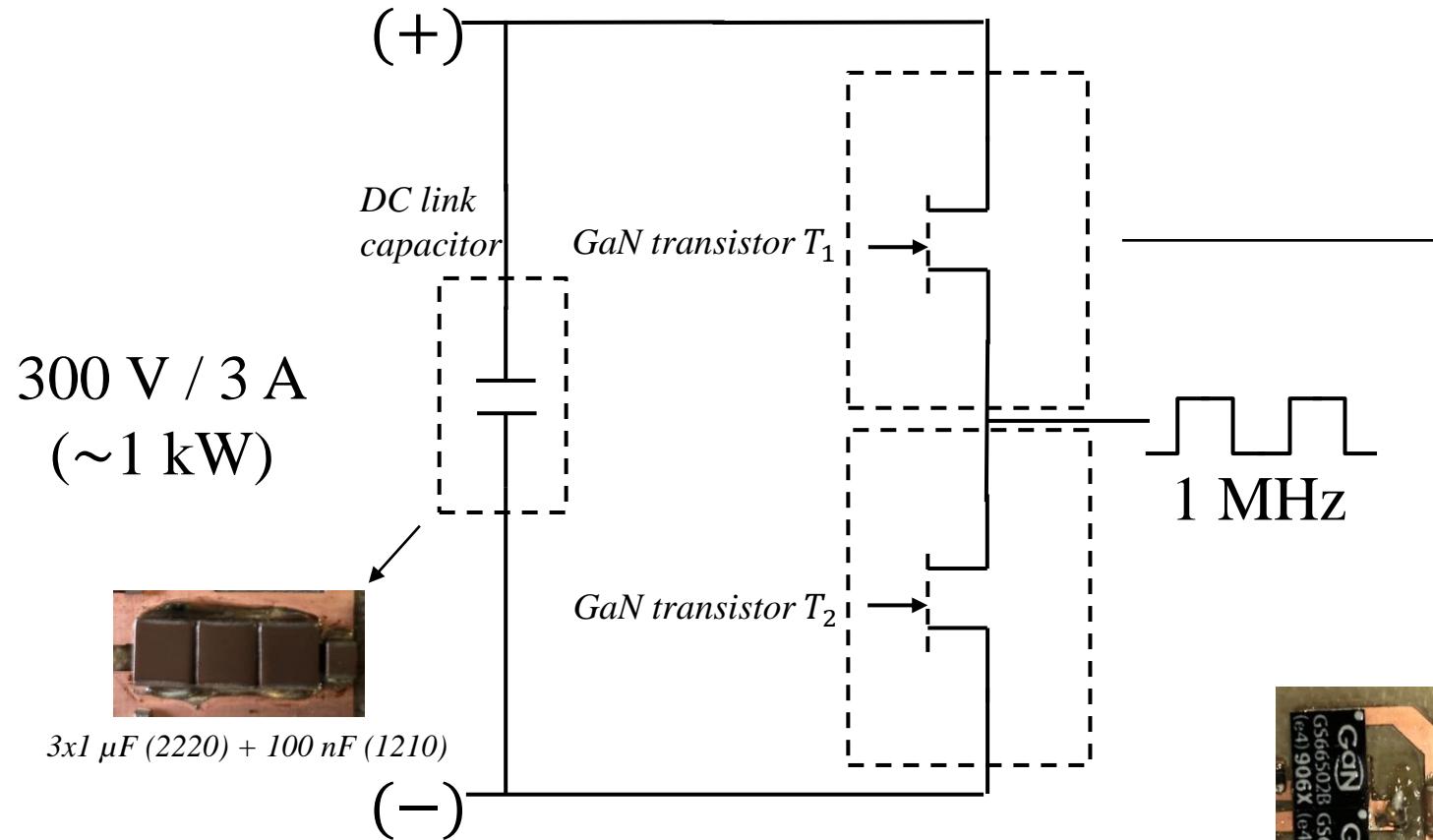
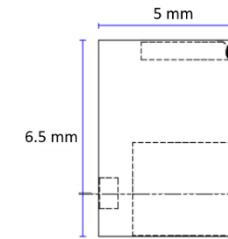
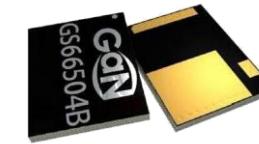
Projet PCB²

(Power Converter Built to emPhasise thermal Capability and electrical Behavior)

Financement du GDR SEEDS dans le cadre du GT PCB

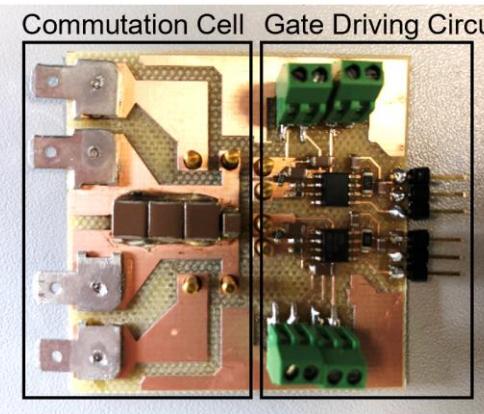
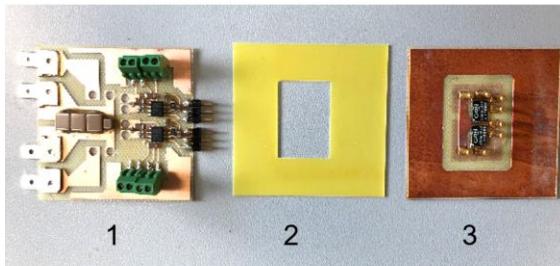
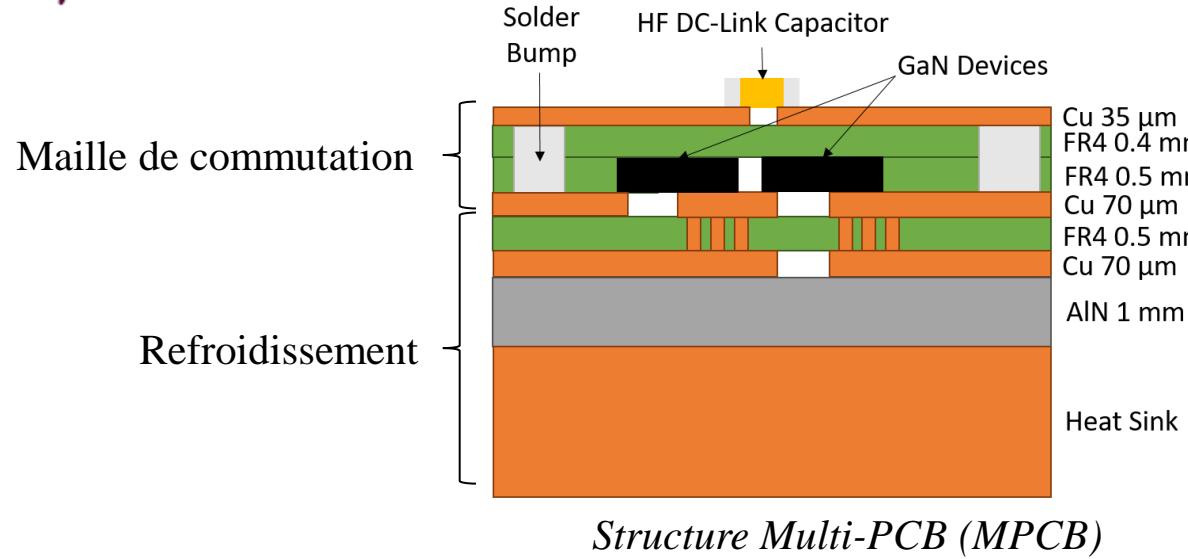
Florian Chevalier, L2EP

Loris Pace, Ampère

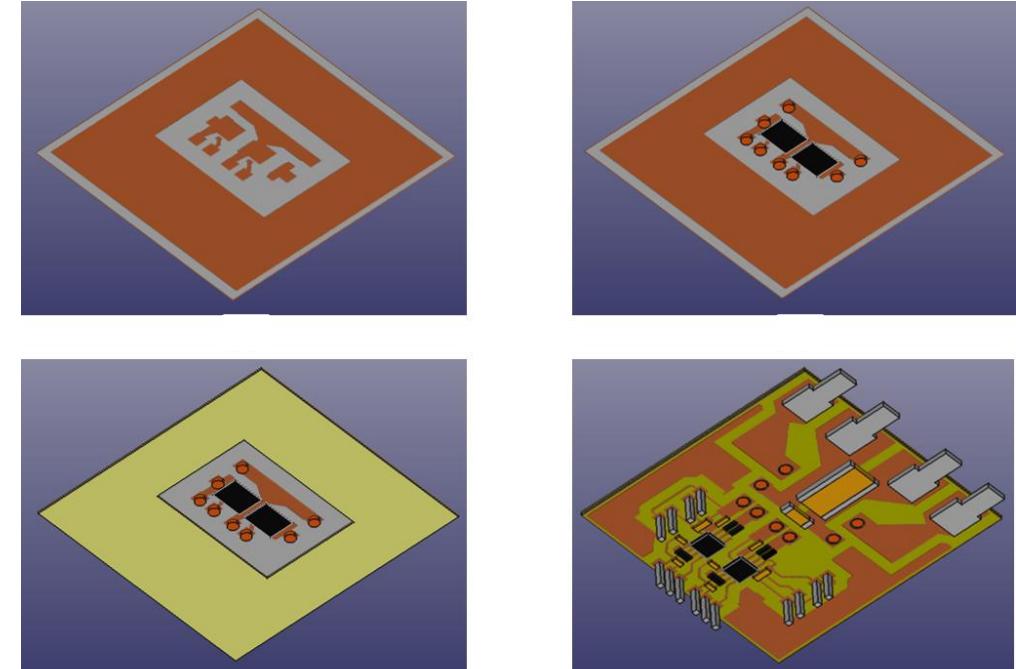
Cellule de commutation étudiée :

Transistor GaN GS66502B


V_{DS}	650 V
I_D	8 A
R_{DSon}	200 m Ω
Q_G	1.6 nC
R_{THj-c} (bottom side)	2 °C/W


Exemple de réalisation sur PCB

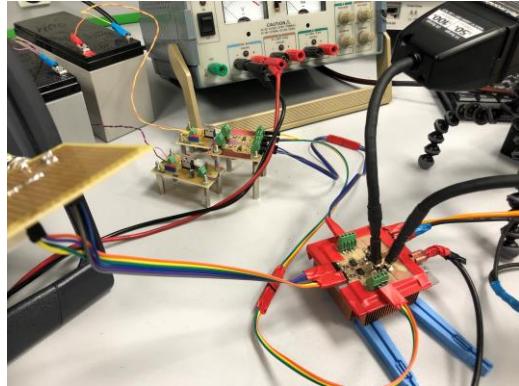


Réalisation de la cellule de commutation



L. Pace, F. Chevalier, T. Duquesne and N. IDIR, "Design Method of a High Frequency GaN-Based Half-Bridge with Bottom-Side Cooled Transistors Using Multi-PCB Assembly," 2022 24th European Conference on Power Electronics and Applications (EPE'22 ECCE Europe), Hanover, Germany, 2022, pp. 01-08.

- Tests en commutation : 300 V, 3 A, 1 MHz (Burst Mode)
- Comparaison mesures et simulations ADS



*Banc de test
en commutation
(L2EP)*

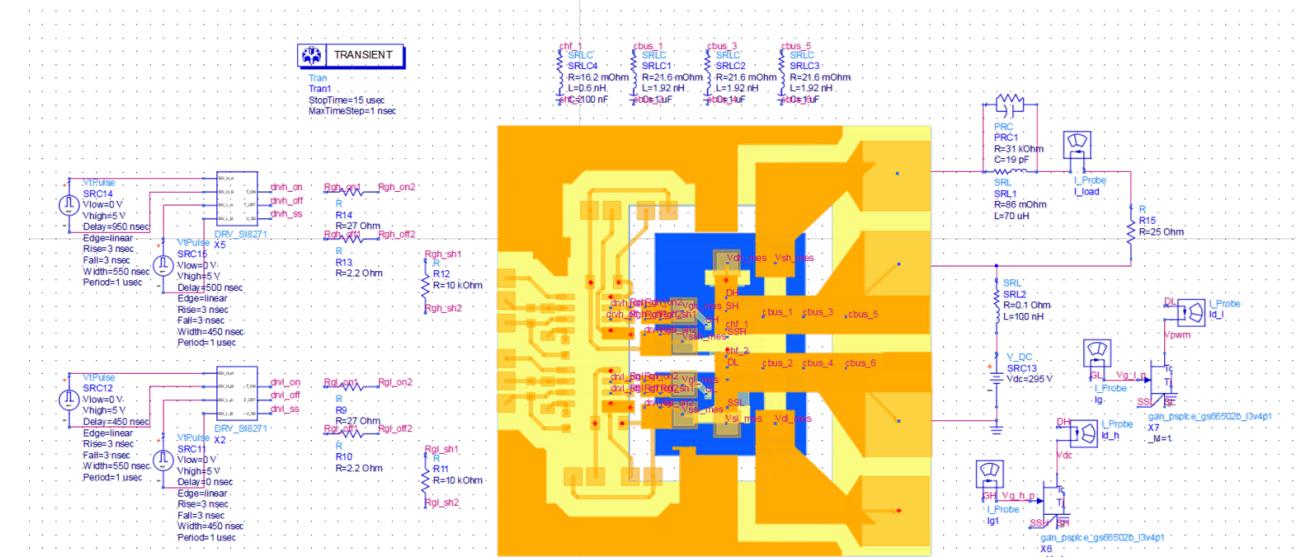
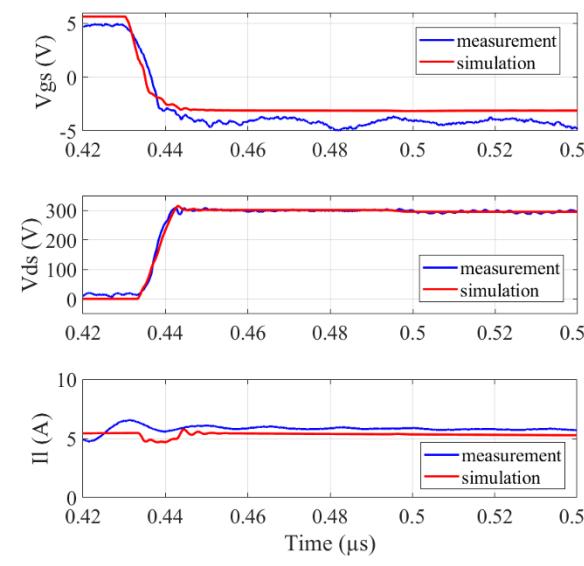
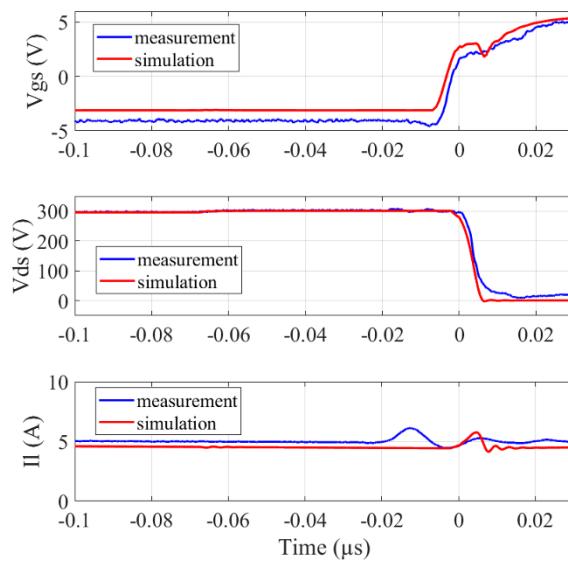
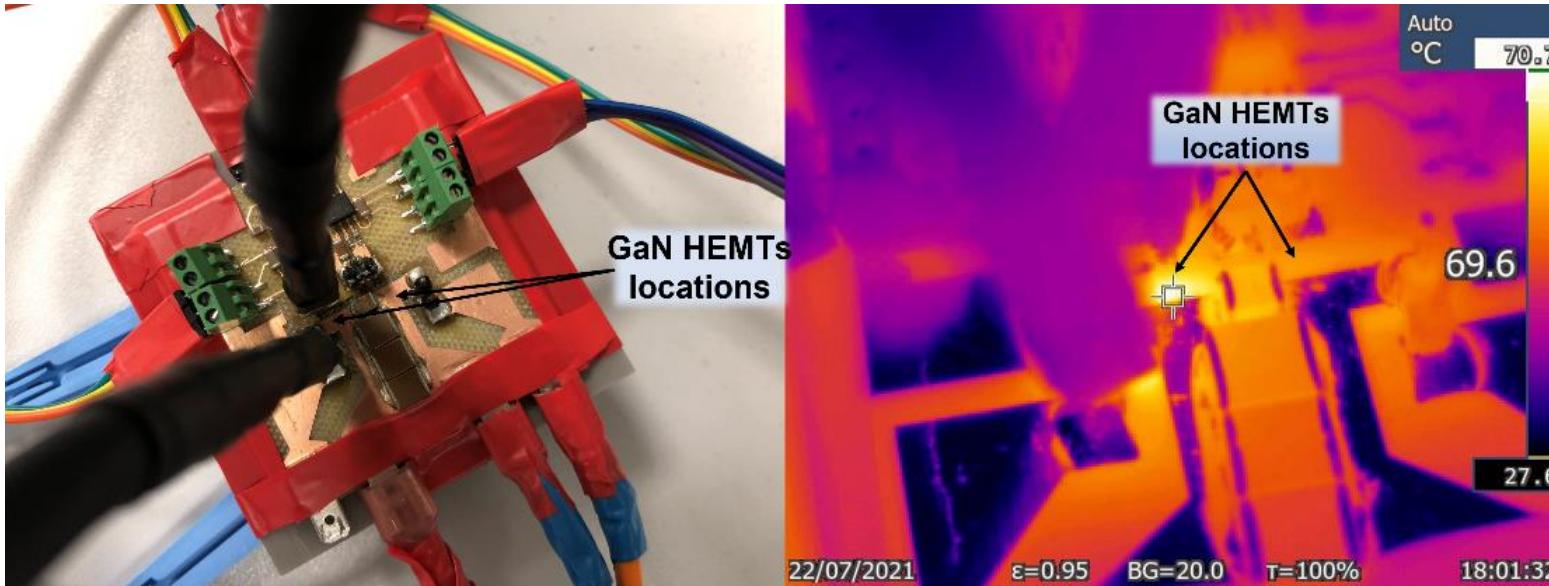


Schéma de simulation avec modèle EM du PCB

L. Pace, F. Chevalier, T. Duquesne and N. IDIR, "Design Method of a High Frequency GaN-Based Half-Bridge with Bottom-Side Cooled Transistors Using Multi-PCB Assembly," 2022 24th European Conference on Power Electronics and Applications (EPE'22 ECCE Europe), Hanover, Germany, 2022, pp. 01-08.

- Tests en fonctionnement sur charge R-L : 200V 200W 1 MHz

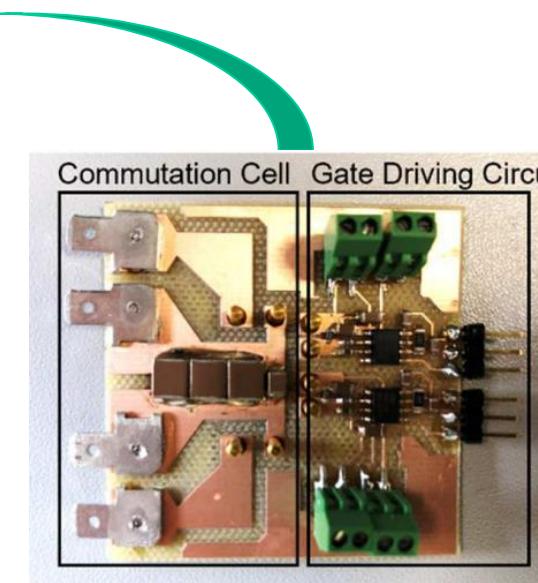
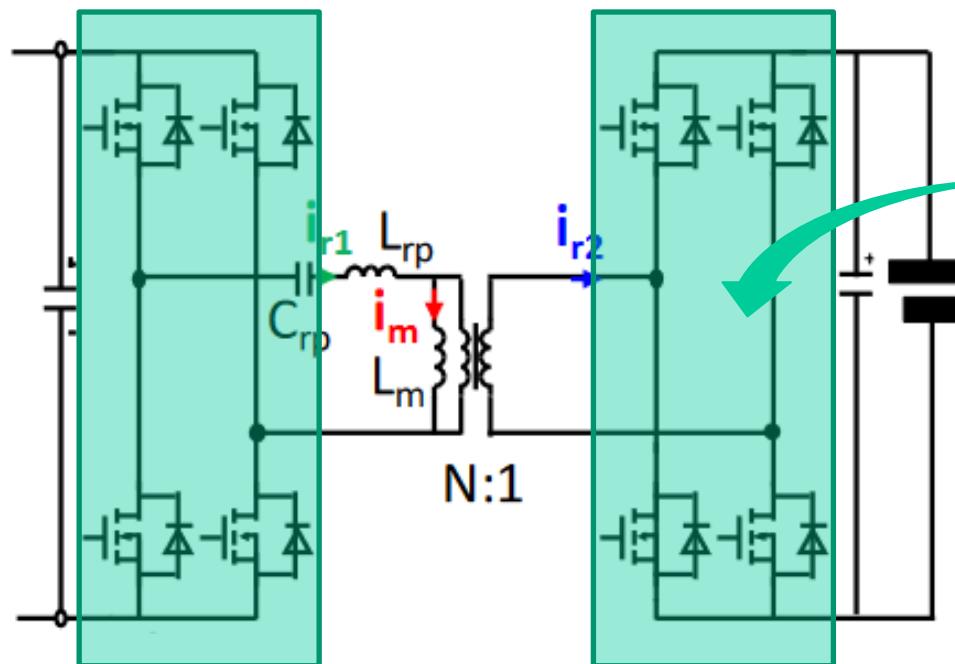


Mesures de température à 200W 1 MHz

L. Pace, F. Chevalier, T. Duquesne and N. IDIR, "Design Method of a High Frequency GaN-Based Half-Bridge with Bottom-Side Cooled Transistors Using Multi-PCB Assembly," 2022 24th European Conference on Power Electronics and Applications (EPE'22 ECCE Europe), Hanover, Germany, 2022, pp. 01-08.

Ambitions du projet PCB² (SEEDS)

- Partir de la structure MPCB et l'étendre à un module pont complet en intégrant la commande, protection...
- Comparer top et bottom cooling, transistors avec driver intégré, etc...
- Viser 1 kW 1 MHz et le maximum en densité de puissance
- Faire un démonstrateur d'un convertisseur type LLC



Possibilité d'intégration 3D :

