

GaNonCMOS

Target market and demonstrators

In the global strive to reduce greenhouse gas emissions, energy efficiency is playing an ever-increasing role. In fact, a 1% energy efficiency increase globally in 2012, would have saved more than 160 TWH, which is the output of 23 nuclear reactors, or equivalent to the world's total wind power generation in the same year.

In this context, it is a major objective of GaNonCMOS to demonstrate the efficacy of GaN on CMOS devices in enabling efficient and dense power supplies of the future in various IT and (e-)mobility applications.

The GaNonCMOS consortium has now defined the voltage regulator modules (VRM) to be demonstrated during the project lifetime. **At this point in time, we want to provide you more information on the chosen demonstrators at PCB-, stack- and chip-level and give you the opportunity to provide your feedback and wishes for the further fine-tuning of the GaNonCMOS technology.**

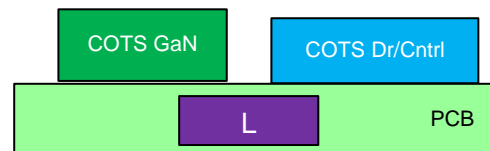
The most important novelties provided by the GaNonCMOS demonstrators are:

- IAF d-mode GaN switches with maximum input voltage in two categories – 25 VDC and 100 VDC
- Embedded inductor in PCB
- Die on Die CMOS on GaN on Embedded inductor

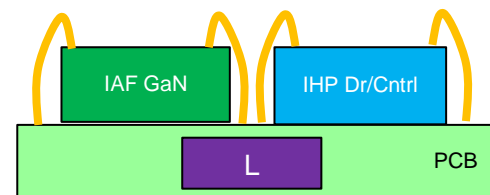
Demonstrator (all non-isolated) specifications:

a) PCB Demonstrators

- PCB Gen 1 - 12V to 1V5/2A buck converter. Contains embedded inductor and SMD actives are cots. Switching frequency at ~1.5MHz. Planned availability Q2/2019.

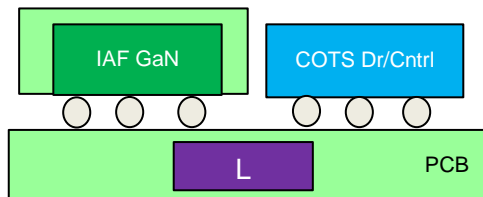


- PCB Gen 1.5 - 12V to 1V5/5A and 12V to 1V5/30A buck converters. Contains embedded inductor and SMD actives are cots. Switching frequency at ~1.5MHz. Planned availability Q4/2019.
- PCB Gen 2 - 12V to 1V5/2A buck converter. Contains embedded inductor and wire bond IHP driver and IAF GaN. Switching frequency at ~1.5MHz. Planned availability Q4/2019.

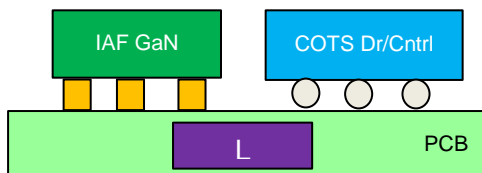


b) Stack Demonstrators 12V to 1V/30A

- Stack Gen 1 - 48V to 12V/4A buck converter. Contains embedded inductor and IAF GaN. Driver is COTS. Switching frequency at ~1.5MHz. Planned availability Q4/2019.



- Stack Gen 2 - 48V to 12V/4A buck converter. Contains embedded inductor and IAF GaN and IHP High Voltage Driver. Switching frequency at ~1.5MHz. Planned availability Q2/2019.



c) Chip Demonstrators 48V to 12V/10A

- Chip Gen 1 - 12V to 1V5/4A buck converter on chip. Contains embedded inductor and IAF GaN Die and IHP driver Die (GaN on CMOS on Embedded inductor). Switching frequency at ~1.5MHz. Planned availability Q1/2020.
- Chip Gen 2 - 48V to 1V5/4A LLC. Contains embedded resonance tank and IAF GaN Die and IHP driver Die (GaN on CMOS on Embedded inductor). Switching frequency at ~10MHz. Planned availability Q1/2020.

Interested?

Are you interested in the GaNonCMOS technology and demonstrators?

Then provide your feedback via our short survey [here](#).

Want to know more?

Visit our website [here](#).

Contact

Project coordinator:

Prof. Jean-Pierre Locquet

E-mail: jeanpierre.locquet@kuleuven.be

Phone: +32 (0)16 32 72 90



Department of Physics and Astronomy

Celestijnenlaan 200D

B-3001 Leuven

Belgium