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Hybrid GaN and CMOS integrated module radiation hard DC-DC converter

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Radiation-hard, compact, low-mass, hybrid GaN and CMOS integrated module DC-DC converter has been designed. The converter has an input voltage of up to 18V regulated down to an output voltage of 1.5V, with 7A maximum load current. It exhibits >70% efficiency. Discrete GaN transistors are used for the power stage, and the controller circuitry and power device drivers are integrated on a 0.35um CMOS chip. RHBD techniques have been implemented to meet TID levels ≥ 150 megarad(Si). This presentation discusses the successful test results of the custom-designed CMOS driver/controller ASIC and the whole converter module that uses this ASIC.

Summary

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