

ELECTRICAL, ELECTRONICS AND COMMUNICATIONS ENGINEERING

117- Development of integrated DC-DC converters for automotive applications feat. enhanced conversion efficiency and reduced electromagnetic emissions

Funded By	MINISTERO DELL'UNIVERSITA' E DELLA RICERCA [P.iva/CF:97429780584] STMICROELECTRONICS S.R.L. [P.iva/CF:00951900968] Politecnico di TORINO [P.iva/CF:00518460019]
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Context of the research activity	<p>The research deals with the development of innovative architectures of DC-DC converters that allow for a better exploitation of last generation BCD technology to get higher conversion efficiency, higher power density and reduced electromagnetic emissions.</p> <p>Progetto finanziato nell'ambito del PNRR – DM 117/2023 - CUP E14D23002000004</p>
Objectives	<p>The increasing number of complex digital ICs such as microprocessors and DSP in automotive applications along with the need for high density electronic units have prompted semiconductor manufacturers to investigate new solutions that allow for the complete integration of high current DC-DC converters on silicon.</p> <p>Specifically, the research will focus on the design of active circuits behaving like passive ones (off chip capacitors) that can be integrated on silicon saving silicon area thus getting higher power density. The design of such circuits will be carried out with an eye to reducing the switching noise, thus the conducted and the radiated electromagnetic emissions.</p> <p>Within the research project, a test chip comprising the developed circuits will be designed, fabricated and experimentally characterized.</p>
Skills and competencies for the development of the activity	<p>The successful candidate should have good knowledge of circuit theory, CMOS technology, analysis and design of analog and digital integrated circuits as well as of signal and power integrity.</p> <p>The knowledge of design tools such as Cadence Virtuoso is a plus.</p>

