Master Thesis:
High gain hybrid boost converter: topology definition and modeling

Infineon Technologies Austria AG is looking for a Master of Science thesis student in Villach, Austria.

The objective of the Master’s thesis is to develop and analyze different hybrid topologies of Boost switch-mode DC/DC converter with high (5-8) gain for mobile and automotive applications (2-5W). After the analysis, the control scheme (digital/analog) should be proposed for the most optimum topologies. Different available technologies at Infineon should be analyzed and selected the most suitable.

The main tasks of this thesis work can be summarized as:
› Getting familiar with the operation of different Boost DC/DC converter topologies (e.g. LC, SC, Three-level)
› Getting familiar with the existing MATLAB-based models
› Comparison of different topologies in terms of power efficiency, cost, level of integration and EMI performance
› Development of mathematical models for selected topologies (Matlab)
› Propose the control scheme for selected topologies (digital/analog)
› Select the target technology from available at Infineon
› Concept prove can be done with the SPICE simulations

For the duration of the thesis, the student is expected to be located in Villach, Austria. Details upon the monthly salary for the student will be given by HR Infineon after a technical interview.

Interested applicants are invited to contact Prof. Corradini. For further information, please contact Kyrylo.Cherniak@infineon.com.

Prerequisites
› Familiarity with theory of operation of switch-mode DC/DC converters
› Familiarity with control theory with focus on Boost DC/DC converters
› Basic knowledge of digital signal processing
› Familiarity with MATLAB
› Familiarity with Spice like simulators
› Familiarity with scripting and programming
› Familiarity with VHDL or Verilog
› Good English language skills

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