

Modular active high power density 380V PFC with SiC-MOSFET technology for mobile applications

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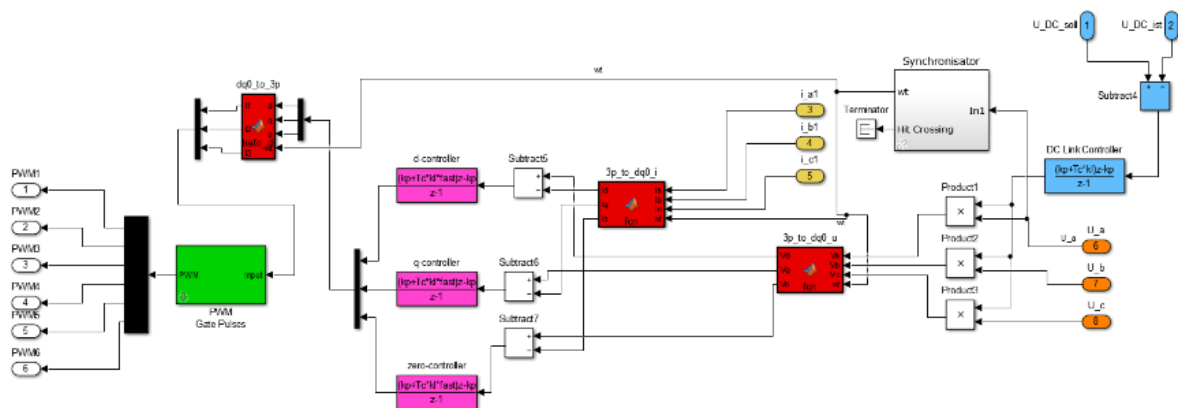
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Abstract — This Paper describes the design of an active power factor correction (PFC) for a high power density AC/DC converter for mobile applications. The purpose of this PFC is to adjust the waveform of an electric current drawn by a load, for example a battery, to advance the power factor. The described PFC is able to provide 11 kW continuous power with an efficiency up to 98%. The total power density is 1.7 kW/l and therefore the PFC is perfectly suitable for mobile applications in which installation space and weight are critical topics. The special feature in the full AC/DC converter is, that the construction size contains of both high voltage AC part and low voltage DC part, which is absolutely novel in its sector concerning the power density. All in all, the paper itself is about the purpose of use of the converter, in special for applications with high power low voltage drives (e.g. 48V ISCAD Drives), the simulation, operating modes, the circuit diagram and layout design. The paper closes with a description of hardware manufacturing, the technical summary and future work.

Keywords — active B6 PFC; modular AC/DC converter; on-board charger; 48 V; automotive; navy; aerospace; ISCAD



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