



Fig. 3.17: Photographs and schematics of the BRC prototypes. (a), (c) Single-phase BRC. Prototype is made to be modular in order to test both versions, L_{RES} in DC and AC side. (b), (d) Two-phase BRC. Labels in the photographs correspond to the ones in the schematics.

improvement in dc bus and total volume increases from 204 cm^3 in case of single-phase BRC up to 264.94 cm^3 in case of two-phase BRC. Nevertheless, redesign of the driving circuitry is considered as a part of the future work. It is important to say that it is achieved that both, single-phase and two-phase BRC, are driven by four driving signals from FPGA board. They are crossed per each leg of interleaved BRC in a way that the same driving signal is used for $S_{A,(1,3)}$ and $S_{B,(2,4)}$, respectively. Of course, outputs of the driving circuits at MOSFETs' pins need to be galvanically isolated.

Comparison of the resonant current model presented in Section 3.3.2 with the real prototype measurements of the single-phase BRC are depicted in Fig. 3.20. A proper estimation of the resonant current behaviour for both scenarios, DC and AC side inductor, see Fig. 3.20(a) and 3.20(b), under different load conditions can be noticed. Additionally, comparison of the measured switching frequency and the one estimated by the mentioned model, in DC and AC side inductor scenario, under different loads, is given in Fig. 3.20(c). One can notice that behaviour of the switching frequency is pretty good predicted by the presented model. Slight deviation from the measured results come from the facts that: