

A current-fed semi-dual-active bridge (S-DAB) dc-dc converter with symmetrical dual-pulse width modulation (PWM) and phase shifted control was proposed. All the power switches can achieve zero voltage switching (ZVS) and the output side diodes can achieve zero current switching (ZCS) naturally. The converter has lower conduction loss, lower peak current, and higher efficiency. The typical operating modes were analyzed. The parameter optimal design criterion was given to achieve soft switching and circulation loss reduction. Simulation and experimental results for a 1-kW prototype were made to verify the effectiveness of the proposed topology employing the proposed control.