

1 kW Power Factor Correction Soft Switching Boost Converter with an Active Snubber Cell

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Abstract : A 1 kW power factor correction boost converter with an active snubber cell is presented in this paper. In the converter, the main switch turns on under zero voltage transition (ZVT) and turns off under zero current transition (ZCT) without any additional voltage or current stress. The auxiliary switch turns on and off under zero current switching (ZCS). Besides, the main diode turns on under ZVS and turns off under ZCS. The output current and voltage are controlled by the PFC converter in wide line and load range. The simulation results of converter are obtained for 1 kW and 100 kHz. One of the most important feature of the given converter is that it has direct power transfer as well as excellent soft switching techniques. Also, the converter has 0.99 power factor with the sinusoidal input current shape.

Keywords : power factor correction, direct power transfer, zero-voltage transition, zero-current transition, soft switching

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