

Abstract

A series resonant converter modified by adding an inductor in parallel with the transformer primary (or secondary). This configuration is referred to as an “LCL – type series resonant converter”. To overcome the problem of light load regulation of series resonant converter, modified series resonant converter is proposed. A narrow variation in switching frequency is required to regulate the output voltage for a wide change in load, and the converter has load short circuit capability. By placing the parallel inductor on the secondary side, the parasitic of the high frequency transformer can be used profitably.

A modified series resonant converter which employs an LCL type-tank circuit and operating above resonance (lagging power factor) mode has been presented. The high frequency resonant converter has number of desirable features, can be conveniently employed in telecommunication and electronic system power supplies. The main advantage is that it reduces EMI phenomena and can be used in wide variation of load current. The converter has been analyzed using complex ac circuit analysis. It has been shown that placing the parallel inductor across the secondary side of the HF transformer takes full advantage of the parasitic of the HF transformer. A complete simulation result has done by using P –SIM software tool. By using simulation results and the complex ac circuit analysis, complete design example for 500W dc-dc converter has done.