

Design factor of high frequency transformer

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Abstrak

Transformer is a device that transfers electric energy from one alternating-current circuit to one or more other circuits, either increasing (stepping up) or reducing (stepping down) the voltage. Transformers act through electromagnetic induction; current in the primary coil induces current in the secondary coil. The use of transformers includes reducing the line voltage to operate low-voltage devices (doorbells or toy electric trains) and raising the voltage from electric generators so that electric power can be transmitted over long distances.

Power electronics is a rapidly growing technology encompassing a large variety of applications including automotive, telecommunications, computers and alternative energy system. Traditionally, transformer design has been based on voltage and current operating in low frequency. In switching circuit (SMPS) transformer works at high frequencies which led to considerable reductions in the size of magnetic component. The type of signals to be transferred from the primary to secondary windings dictate the type of transformer that most suitable to the application. Operation of a transformer at higher frequencies will lead reduced magnetizing inductance compared to lower frequencies.

This project is aimed to analyse and design a transformer purposed for high frequency uses. The expected outcomes of this project are defining the design factor of a high frequency inductors and transformers. Modelling and simulation of the transformer will be performed as part of this project, along with design approach and design factor.