

Master Thesis

Inductors under Load



Motivation

Inductors are crucial elements in switched mode power supplies (SMPS). They serve as the main energy storage element in almost every converter topology, as well as filtering circuits at the output of most SMPS. In order to simulate the high frequency behavior of such

an SMPS, a lot has to be known about the components of which it consists. It has therefore become necessary to know the exact high frequency behavior of all components when nominal stress is applied. Especially the behavior of inductors is highly dependent on current, which is why they have returned to focus of science.

Research Questions

- What measurement methods are established to measure inductors under load?
- Where are the advantages and disadvantages of those methods?
- How can vector network analysis be used to measure inductors under load?
- What are the boundaries of this measurement method?

Approach / Methodology:

- Literature research on measurement methods
- Development of a measurement system to characterize inductors under load using vector network analysis
- Development of simulation models of inductors under load in LTspice

Organisational Matter

- Start: as soon as possible
- Workplace: EAM & IFE at TU Graz
- Outcome: written master thesis

Supervisors

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