Engineering Services

Electrical Modelling of Magnetics

Our 10 phd engineers, engineers and technicians use advanced engineering tools to model, analyse and optimise the electrical characteristics of wound magnetics.

Our electrical equivalent circuits are based on measurements of either a prototype or a production part and are compatible with simulation software such as PSPICE, SIMPLORER, SABER and CIRCUIT.

Modelling Principles

- Valid for wound magnetics up to 3 windings
- Independent of geometry and technology
- Assumption of linear materials behaviour
- Comparison of measured and model plots

Characteristics of an Electrical Model

- Composed of R, L, C and perfect couplers
- Taking into account:
  - magnetic coupling (magnetizing and leakage)
  - LF and HF copper and iron losses (Eddy currents)
  - electrical coupling (parasitic capacitances)
- Modelling at operating temperatures

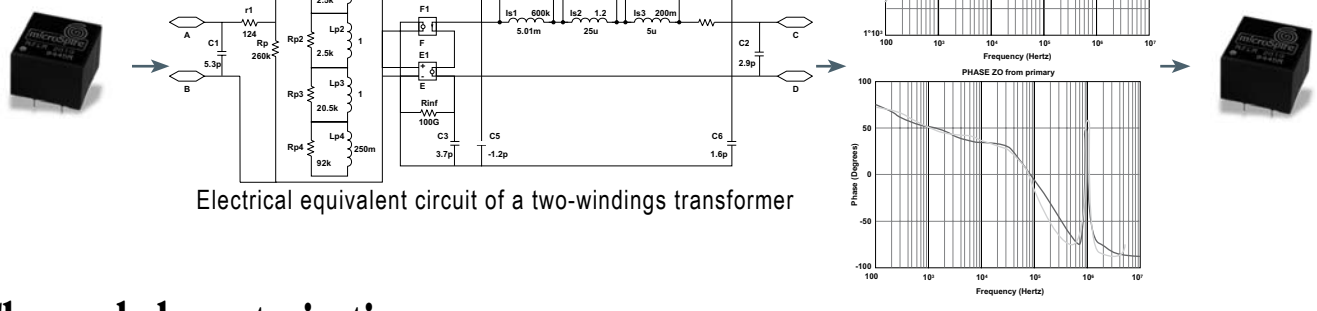
Uses

- Simulation of electronic circuits
- Computation of gains, losses, efficiencies
- Analysis of characteristics dispersion
- Approval of equivalent alternative parts
- Diagnosis of defective magnetics
- Optimisation of a part in its environment
- Design of passive filters

Applications

- Telecom and signal transformers
- Current and voltage measurement transformers
- Power supply inductors and transformers
- Inductive sensors

Component optimisation through electrical model



Electrical equivalent circuit of a two-windings transformer

Thermal characterization of components/packages