Design, fabrication and characterization of a DC-DC converter with injection-molded plastic inductance

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Work content

The EU project GaN4AP is developing novel transformers in the high-frequency range for the charging technology of hybrid and electric cars. The IMPT participates in this project with the production of planar injection molded electromagnetic components in the form of transformers, chokes and inductors. In this work, a commercially available DC-DC converter will be adapted with an injection molded inductor. For this purpose, the inductor are simulated using Ansys Maxwell 3D on injection molded plastic substrates consisting of PEEK. The core material is completely enclosed of PEEK by the injection molding process. The laser activations of the PEEK enables the conductive paths around the core to be deposited with electroless plating. The manufactured inductance is then incorporated into the DC/DC converter, characterized and compared with the original converter.

Type of work

Masterthesis

Requirements

Independent, well structured, self dependent way of working; electrical engineering knowledge, knowledge or willingness to learn Ansys Maxwell 3D and Draftsight

Starting date

As soon as possible

06.02.2023

Field of work: Magnetic and Biomedical Application

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