

Seminar 5 Sunday June 17, 2001

PLANAR MAGNETICS TECHNOLOGIES

9:00am – 6:00pm

Instructor: Ionel Dan Jitaru, Rompower Inc., Tucson, Arizona, USA

ABOUT THE INSTRUCTOR

Ionel D. Jitaru is the founder of Rompower an internationally recognized engineering firm in the field of power conversion with offices in USA and Europe. Mr. Jitaru has published 22 articles and held 20 professional seminars at different international conferences. Two of them received the best paper award. He holds 7 USA patents and has pioneered several new trends in power conversion such as Soft Transition, Very High Efficiency Power Conversion Technologies, Full Integrated Multi-Layers PCB Magnetic-Packaging Technology.

CONTENTS

The seminar will provide a comprehensive overview of the planar magnetic technologies. The presentation will be highlighted with design guidance, workout design example and experimental results from telecommunications to the electric vehicle applications.

There will be presented some new trends in planar magnetic such as the three-dimensional packaging technology as a merge between electric-magnetic-thermal design.

The attendees will become familiar with different construction techniques, ranging from discrete planar magnetic elements to the full-integrated construction techniques. There will be presented the advantages and the limitations associated with these technologies. The presentation will include:

Overview of different low profile magnetic construction techniques

- There will be presented a short history of low profile magnetic technologies
- concluding with the latest technologies employed today

How to minimize the leakage and the stray inductance in planar transformers

- Calculation
- Low leakage inductance winding arrangements

Interwinding and Intrawinding capacitance - a major limitation in planar magnetic

- Calculation of the effective interwinding and intrawinding capacitance
- Low capacitance winding arrangements
- Function and placement of electrostatic shields
- Self shielding & noise cancellation

Improving copper utilization for low cost planar magnetic design

- Design guidance for magnetic core selection
- How to calculate and minimize the winding resistance and associated copper losses
- How to improve the copper utilization by employing the most suitable circuit topology
- The utilization of the fractional turns
- New integrated magnetic structures derived from the fractional turns
- New magnetic structures suitable for low output voltage and high current applications

Construction techniques employing full integrated multilayer PCB

- Full integrated multilayers PCB a three-dimensional packaging technology
- Optimization of the electric-magnetic-thermal design
- Distributed magnetic an effective method in addressing high power applications
- Distributed Power processing cells a new and cost effective power system design

Compliance with the safety agencies

- There will be presented several methods to achieve compliance with the safety agencies for planar transformers

The presentation will be highlighted with design guidance, and several worked-out design examples ranging from 5W to 3KW and experimental results.

WHO SHOULD ATTEND

Design engineers, project managers and other professionals with interest in the latest developments in power conversion.