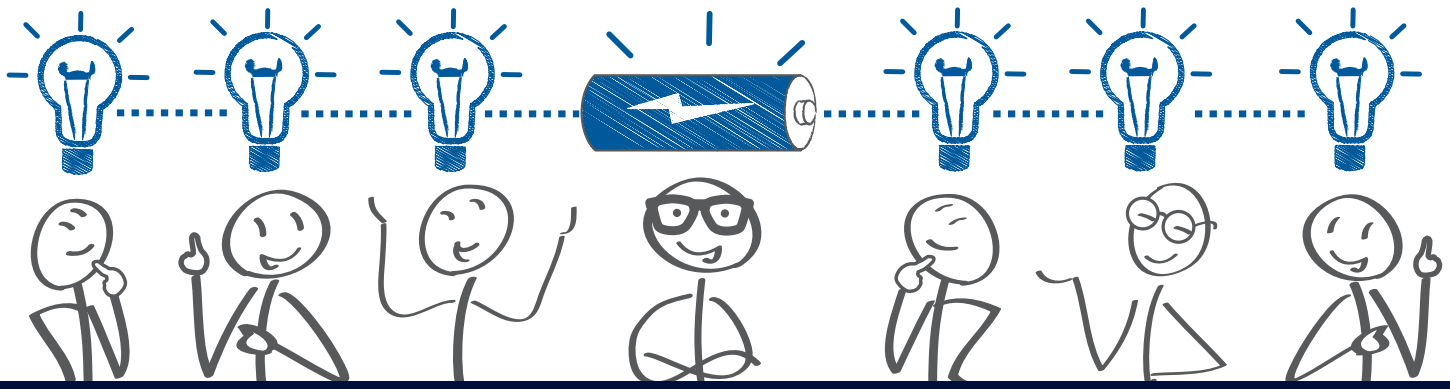
POWER
YOUR IDEAS!



7th Power Analysis & Design Symposium

Advanced Characterization, Simulation and
Troubleshooting of Electronic Power Systems

Symposium: April 26th, 2018 / 08:30 - 17:00
Open Lab: April 25th, 2018 / 15:00 - 19:00
in Eching (near Munich), Germany

With lectures, practical examples and demonstrations
presented by international experts from:

Analog Devices, Biricha Digital, dataTec AG,
Microchip Technology, OMICRON Lab,
Rohrer GmbH and Würth Elektronik

Register until:
April 11th, 2018

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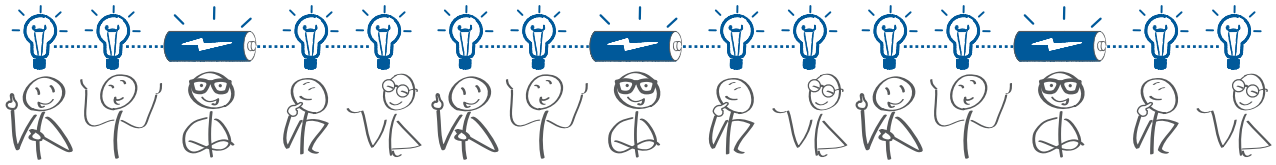
OMICRON LAB

Facts



Participants

- Power electronics design engineers working on analog and digital power supplies who want to ensure optimum system performance.
- Electronic engineers who need to assess the quality and stability of a power supply they are using or planning to buy.

Free Participation

The participation in our symposium is free of charge and will include lunch and refreshments during breaks.

Venue

The Symposium and the Open Lab take place at:
Bürgerhaus Eching
Roßbergerstraße 6
85386 Eching (near Munich)
Germany

Accommodation & Travel Information

All details for recommended accommodations and travel information can be found on our web page:
www.omicron-lab.com/event

April 25th - Pre-evening Open Lab:

Join our Open Lab after your daily work is done. We will have several measurement benches ready for you, where we can measure loop stability, PSRR, output impedance and more... So, come whenever you want, have a beer, bring your power supplies and do some great measurements with us.

The Lab will be open on April 25th from 15:00 - 19:00.

April 26th - Symposium Agenda:

08:30 - 09:00	Registration
09:00 - 09:10	Welcome & introduction
09:10 - 10:50	Lectures
10:50 - 11:20	Break & exhibition
11:20 - 12:35	Lectures
12:35 - 14:05	Lunch & exhibition
14:05 - 15:30	Lectures
15:30 - 16:10	Break & exhibition
16:10 - 16:45	Lectures
16:45 - 17:00	Discussion + Closing

Your Contact

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Registration

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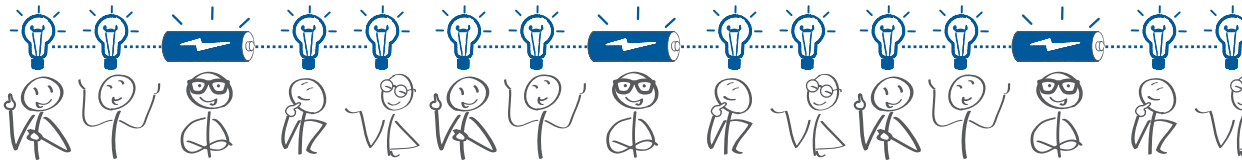
Topics



Solving control challenges in tightly coupled, cascaded multistage GaN Converters
by Andreas Reiter - Microchip Technology

Data centers are one of the biggest consumers of electrical energy today. Companies like Google or Facebook are therefore working very closely with system vendors like HP, EMC/Dell and component vendors like Intel to push the envelope in solving the trade-off between energy efficiency and performance. The latest push for system optimization is to increase the internal server bus voltage from 12 V to 48 V to save losses. One of the greatest technical challenges to solve, are the CPU voltage regulator modules (VRM) directly converting 48 V down to 1 V while still being able to meet the quite tough transient response requirements.
In this presentation, a non-isolated low-cost converter architecture is introduced where an intelligent, digital control approach is used to operate two tightly coupled, GaN-based buck converter stages, meeting the major design targets of achieving highest efficiencies and a wide dynamic range, at the same time.

Linear power amplifiers for test applications
by Helmut Rohrer - Rohrer GmbH

Lab-testing of electronic circuits has gained a lot of importance. In the automotive industry, testing standards such as LV124 and LV148 have been established to ensure proper operation during all expected supply voltage variations. Linear power amplifiers help to solve test challenges by offering an outstanding frequency range from DC up to several MHz. The linear regulation provides a precise zero crossing and very low signal distortions.
This presentation provides an overview on the advantages and characteristics of linear power amplifiers. The use of linear amplifiers in laboratories, for component tests, calibration, renewable energy and drive technology is explained. Engineers learn to understand the different types of linear amplifiers and how to choose the correct amplifier for specific test applications.

Practical EMI filter design to pass your EMC test
by Dr. Ali Shirsavar - Biricha Digital

There are many factors that must be taken into consideration when designing input filters. Many of these factors are based on size, cost and manufacturing process and therefore are beyond the control of the design engineer. Furthermore, there is so much uncertainty involved in the design that exact, mathematically elegant, academic equations seldom resemble what happens in real life. This has led some calling this field “black magic”; it is not!
In this highly technical session, Dr. Ali Shirsavar from Biricha Digital presents a very pragmatic and simple methodology for designing EMI input filters to meet your specifications. A complete numerical design example, with full equations and calculations, down to component will be presented. Finally, experimental results will be provided in order to verify the theory.

Do you really know your EMC ferrites?
by Markus Holzbrecher - Würth Elektronik

This presentation provides an overview on different ferrite types, their different materials and application areas. The influence of temperature and DC bias currents on the impedance in the high frequency range is shown. Finally different filter circuits and their properties are presented in detail.

PWM controller with integrated feedback loop isolators
by Bernhard Strzalkowski - Analog Devices

A fully integrated PWM current mode fixed frequency active-clamp synchronous forward controller has been designed for isolated DC/DC power supplies. Bi-directional and high bandwidth digital couplers are integrated to eliminate the bulky signal transformers and opto-couplers. With the integrated isolators and gate-drivers on both, the primary and the secondary side, the controller offers a compact system level design and yields a higher efficiency than a non-synchronous forward converter. The feedback and the PWM signals are transmitted between the primary and secondary through integrated micro-transformers.
By encoding the feedback signal and multiplexing with output over-voltage protection (OVP), over temperature protection (OTP) a high level of system protection has been achieved. To gain the power efficiency, programmable gate delay, dead time and light-load mode are implemented. Test results show very good power efficiency and a high bandwidth feedback loop.

A quick EMI pre-compliance test solution for PCBs helps to get to market faster.
by Axel Hahn - dataTec AG

The use of RF and Microwave Measurement utilities has a necessary impact on today’s developers. The evaluation of hardware designs in their function and signal integrity is well supported by measurement tools like Oscilloscopes, Spectrum Analyzers and Network Analyzers. Meanwhile the measuring of unwanted parasitics like EMI is an emerging focus for development engineers. The knowledge of conducted or radiated emissions provides necessary information for improvements in design and hardware components. Modern test solutions can give support in getting to market faster by evaluating new products beside development, production and quality control. An EMI scanner-board with magnetic near-field probes provides a solution which is easy to use, delivers reproducible measurement results and provides information where the unwanted distortion is located.

Output impedance - an important design parameter for power supplies
by Florian Hämmerle - OMICRON Lab

Any regulated voltage supply, no matter if linear or switched, has the goal to provide a stable voltage to its load. This is only possible if the output impedance of the supply is sufficiently low. Due to bandwidth limits in the regulation this cannot be ensured for all frequencies. To overcome this, capacitors are used to support the power supply in the higher frequency areas. The presence of high-Q capacitors such as MLCCs in combination with parasitic trace inductance or ferrite beads can lead to multiple resonance frequencies.
In this presentation the risks of resonances and their impact on the load are demonstrated, based on real-life measurement examples and theory. Further on, different output impedance measurement setups are presented in detail.

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