

# Power Supply Design seminar

Abstracts for each session are on the next page. View the 2026 seminar locations and [register online](#).

8:15 – 8:45 a.m.	Check-in and registration
8:45–9:00 a.m.	Introduction to speakers and topics
9:00–10:00 a.m.	Introduction to digital power control
10:00–11:00 a.m.	Constructing your power supply: Layout considerations
11:00–11:30 a.m.	Networking break
11:30 a.m.–12:30 p.m.	Planar transformer design tutorial
12:30–1:30 p.m.	Lunch
1:30–2:30 p.m.	Current and voltage sensing in power conversion applications
2:30–3:00 p.m.	Networking break
3:00–4:00 p.m.	Würth Elektronik: Exploring EMI in flyback converters with live demo
4:00–5:00 p.m.	High power density flyback converter design basics using GaN technology
5:00 p.m.	Seminar ends

Session time	Title and abstract
9:00-10:00 a.m.	<p><b>Introduction to digital power control</b></p> <p>This paper covers the fundamentals of microcontroller-based digital power control design. It explains the working principles of building blocks in digital power control like feedback sampling, compensators, and actuators. The essential parameters of each block are discussed along with its effects on control loop performance through a step-by-step design process of a voltage-mode controlled buck converter. This topic also explains feedback circuit design and considering the analog to digital converter along with its configurations with respect to the actuator i.e. digital pulse width modulation. Additionally, it covers the selection, implementation and compensation procedure for the digital compensator.</p>
10:00-11:00 a.m.	<p><b>Constructing your power supply: Layout considerations</b></p> <p>Laying out a power supply design is crucial for its proper operation; there are many issues to consider when translating a schematic into a physical product. This topic addresses methods to keep circuit parasitic components from degrading the operation of your designs. It discusses techniques to minimize the impact of parasitic inductance and capacitance of filter components and printed wire board (PWB) traces, together with a description of the impact that PWB trace resistance can have on power supply regulation and current capacity. A general overview of thermal design is also included as well as sample temperature rise calculations in a natural and forced-air environment. Finally, some practical examples of power stage and control device layouts are reviewed.</p>
11:30 a.m.-12:30 p.m.	<p><b>Planar transformer design tutorial</b></p> <p>This topic discusses the process for designing a planar transformer suitable for an intermediate bus converter (IBC) application. The principles covered will extend to other planar transformer applications and to transformer design in general. Key transformer design principles will be covered that include, electrical design requirements, size considerations, core selection, winding considerations, and loss predictions. A generalized flow chart will be provided for the transformer design process along with a detailed discussion of each step. Finally, the paper will conclude by examining the measured performance of a transformer designed using this process.</p>
1:30-2:30 p.m.	<p><b>Current and voltage sensing in power conversion applications</b></p> <p>Voltage and current sensing are crucial in power conversion applications as they provide essential information for control loops, enabling controllers to maintain desired output levels. Integrated converters use internal sensing amplifiers, while high-power or isolated applications require external circuitry. This training covers various solutions, including discrete amplifiers, current-sense amplifiers, and delta-sigma isolated amplifiers and modulators. By the end of this session, you will understand the various technologies and which ones fit your application and the trade-offs between them which in turn will make your design decisions easier.</p>
3:00–4:00 p.m.	<p><b>Würth Elektronik: Exploring EMI in Flyback Converters with live Demo</b></p> <p>The presentation offers a comprehensive insight into conducted emissions in flyback converters, covering common-mode and differential-mode noise sources, coupling mechanisms, and the effects of filtering. Live time- and frequency-domain measurements illustrate these phenomena in practice.</p>
4:00–5:00 p.m.	<p><b>High power density flyback converter design basics using GaN technology</b></p> <p>Flyback is the most popular topology for low-power AC/DC conversions due to its simplicity and low cost. With the development of power semiconductor technology, gallium nitride (GaN) devices can further improve flyback's performance through better conduction, switching losses, and simplicity in integration. This presentation demonstrates an improvement in the flyback performance when GaN is adopted. Design steps and tricks to further enhance the flyback converter's performance are also covered.</p>

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