View locations and register at www.TI.com/PSDS2024

7:30 – 8:30 a.m.	Badge pick-up and light breakfast
8:30 – 9:30 a.m.	**Tips, tricks and advanced applications of linear regulators** This topic explores some common tips and tricks to maximize the performance of low-dropout (LDO) regulators and covers how to improve noise, the power-supply rejection ratio, thermal dissipation and system efficiency. We will also discuss more complex topics such as parallel LDOs, including brand-new material on multiple-input-single-output LDO designs. This topic is valuable for anyone who is looking to maximize performance in their LDO designs or systems.
9:30 – 10:30 a.m.	**Demystifying clearance and creepage distance for high-voltage end equipment** Achieving the highest possible power density while still maintaining safety and design guidelines requires more careful high-voltage printed circuit board spacing and integrated circuit package selection. This topic summarizes the considerations and provides a cheat sheet for popular end equipment, including telecommunication, server and wireless infrastructures; motor drives, solar inverters and charging piles; consumer AC/DC applications; and electric vehicles and hybrid electric vehicles.
10:30 – 10:45 a.m.	Coffee break
10:45 – 11:45 a.m.	**Introduction to the trans-inductor voltage regulator (TLVR)** Introduced in 2019, the trans-inductor voltage regulator (TLVR) topology offers major transient response, power density and solution cost improvements (a >40% capacitor reduction for the design example reviewed in this topic) versus the traditional multiphase buck voltage regulator topology. This topic covers the operating principles of the TLVR topology, performance and cost improvements over traditional voltage regulators, design equations, and guidelines.
11:45 a.m. – 1:00 p.m.	Lunch
1:00 – 2:00 p.m.	**Creating a primary-side regulation flyback converter using a conventional boost controller** Primary-side regulation (PSR) regulation eliminates the need for optocoupler-based feedback by sensing the voltage across the primary or auxiliary winding, an approach that reduces system costs and enhances reliability. Flyback controllers featuring integrated advanced feedback circuitry specifically designed for primary-side sensing are broadly available, but it is also possible to achieve PSR-type feedback using standard boost controllers. Despite its apparent simplicity, this implementation has its own caveats. This topic explains these caveats and identifies areas where trade-offs become necessary, including a design example.
2:00 – 3:00 p.m.	**Phase-shifted full-bridge converter fundamentals** The phase-shifted full-bridge converter (PSFB) is common in high-performance power supplies with fast transient response, high power density and high converter efficiency. This topic reviews PSFB operation principles, characteristics of the PSFB, different types of rectifiers, clamp options, converter control modes, synchronous rectifier operation modes and light-load management options. A PSFB design based on the Modular Hardware System-Common Redundant Power Supply base specification demonstrates the ability of a PSFB – with an active clamp circuit – to achieve a high-power design with a high transient response.
3:00 – 3:15 p.m.	Coffee break
3:15 – 4:15 p.m.	**GaN-optimized transition-mode power factor correction** This topic introduces a gallium nitride (GaN)-optimized power factor correction (PFC) topology and control methodology for high-performance, high-density and cost-effective PFC. Employing a new zero voltage detection circuit and algorithm enhances zero voltage switching and total harmonic distortion (THD) over the entire line cycle and load range. A 5kW prototype with a power density of 120W/in3 and a THD <6% serves as a proof of concept for demonstrating optimal control methods for startup, transient response and AC dropout.
4:15 – 5:15 p.m.	**Comparing AC/DC power-conversion topologies for three-phase industrial systems** This topic compares two- and three-level AC/DC converters for three-phase industrial applications, focusing the analysis on two-level, T-type, active neutral point clamped (ANPC), neutral point clamped (NPC) and flying capacitor (FC) topologies. The evaluation includes system trade-offs such as efficiency, electromagnetic interference, operating principles, power switching selection and DC link capacitor stress, with a discussion of the impact on the bill of materials for the various topologies.

IMPORTANT NOTICE AND DISCLAIMER

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265