



## Tuesday October 10, 2017

Time	Track 1	Track 2	Track 3
7 to 8 a.m.	Badge pick up / Coffee and light refreshments		
8 to 9:30 a.m.	Welcome + Keynote: More power to the people, Steve Lambouses		
	The first step to success — Selecting the optimal topology		
9:30 to 9:45 a.m.	Break		
9:45 to 10:45 a.m.	Hysteresis loss in high-voltage MOSFETs: Findings and effects for high-frequency AC/DC converters	Design considerations for USB Type-C™ power delivery	Fundamentals of gate driver design
10:45 to 11 a.m.	Break		
11 a.m. to 12 p.m.	A newer way to PFC and an even better way to LLC	Design review of an offline two-switch flyback topology	Implementation and design considerations of high-voltage 600V gate drivers
12 to 1 p.m.	Lunch		
1 to 2 p.m.	Modern lighting solutions	The active clamp flyback: Part 1	Mastering isolated gate driver robustness: A deep dive of CMTI
2 to 2:15 p.m.	Break		
2:15 to 3:15 p.m.	PFC for not dummies	The active clamp flyback: Part 2	Power loss and thermal consideration in gate drivers
3:15 to 3:30 p.m.	Break		
3:30 to 4:30 p.m.	When to consider general purpose PWMs	The no-neutral wire application in building and home automation	Challenges of the high-side bias in half-bridge drivers
4:30 to 6:30 p.m.	Happy hour		

## Wednesday October 11, 2017

Time	Track 1	Track 2	Track 3
7 to 8 a.m.	Coffee and light refreshments		
8 to 10 a.m.	Accelerating design with tools for high-voltage applications		
	Power supply design and layout optimization: Minimizing EMI and instability		
10 to 10:15 a.m.	Break		
10:15 to 11:15 a.m.	High-voltage solutions in HEV/EV Part 1: On-board chargers and charging stations	Multiple output flybacks: How to improve cross regulation	Designing multi-kW power supply systems
11:15 to 11:30 a.m.	Break		
11:30 a.m. to 12:30 p.m.	High-voltage solutions in HEV/EV Part 2: DC/DC and traction inverters	High-density DC/DC power module design with embedded planar magnetics	Very high-voltage AC/DC power: From 3-phase to single-phase offline bias supplies
12:30 to 1:30 p.m.	Lunch		
1:30 to 2:15 p.m.	GaN: The path to higher power density		
2:15 to 3 p.m.	Designing a 99% efficient totem pole PFC with GaN		
3 to 3:15 p.m.	Break		
3:15 to 4 p.m.	How to drive SiC MOSFETs...the right way		
4 to 4:15 p.m.	Closing		

Title	Abstract
<b>Hysteresis loss in high-voltage MOSFETs: Findings and effects for high-frequency AC/DC converters</b>	This discussion will focus on a review of different high performance super-junction silicon MOSFETs for ZVS high-frequency resonant supply applications and crucial parameters of performance not fully characterized today.
<b>Design considerations for USB Type-C™ power delivery</b>	This presentation will provide a deeper understanding of the power requirements for USB-C Power Delivery (PD). After an overview of the PD power requirements, we will explore how factors like the AC input range and number of USB ports affect system architecture. Design examples will be provided for different USB-C applications.
<b>Fundamentals of gate driver design</b>	An in-depth discussion about driving state-of-the-art power transistors and key design considerations for high voltage gate drivers including parasitics influences, hard switching vs soft-switching, non-linear junction capacitance (CRSS, COSS), turn-off negative bias, separating power ground noise and isolated gate driver.
<b>A newer way to PFC and an even better way to LLC</b>	Showcasing an advanced PFC + LLC solution with extremely low stand by power, superior light load efficiency, excellent THD and PF, best in class transient response, best in class audibility performance, as well as low system cost
<b>Design review of an offline two-switch flyback topology</b>	The two-switch-flyback topology has the potential to overcome some of the drawbacks of a conventional flyback. First of all it recycles the energy of the leakage inductance. Secondly the maximum drain-to-source voltage of the primary MOSFET is equal or less the input voltage. Learn how to design an offline flyback. This topic imparts design knowledge and gives practical tips.
<b>Implementation and design considerations of high-voltage 600V gate drivers</b>	An overview of common topologies utilizing 600V half-bridge monolithic drivers, the driver IC architecture, and power device switching events including layout parasitics relating to high dV/dt, high di/dt and HF ringing. Tips and advice on minimizing switching transition ringing and power device stress are also discussed.
<b>Modern lighting solutions</b>	Modern intelligent fixtures, dynamic changes in optics, government legislations, and need for increased performance has opened up the lighting market to a host of interesting system challenges that are way beyond the scope of today's outdated solutions. We discuss in detail key challenges and demonstrate an elegant solution to these problems
<b>The active clamp flyback: Part 1</b>	An introduction to the operation, benefits, and challenges of this topology gaining new importance as markets demand increasing higher power density for AC/DC supplies.
<b>Mastering isolated gate driver robustness: A deep dive of CMTI</b>	Common mode transient immunity, known as CMTI, is a critical spec for nearly all gate drivers which handles differential voltage between two separate ground reference, i.e. isolated gate drivers. This presentation will introduce TI's isolated gate driver family and deep dive into the CMTI competitive analysis, standards, validation and measurement, design consideration and optimization.
<b>PFC for not dummies</b>	What are the key inputs needed to decide on a PFC solution? This presentation will help a designer understand trade-offs through exploring real designs used in server, industrial and consumer AC/DC applications, appliances, motor drive, and digital TVs
<b>The active clamp flyback: Part 2</b>	Continuing the discussion, this session will review control details, performance, and techniques to optimize your design.
<b>Power loss and thermal consideration in gate drivers</b>	This presentation will discuss power losses, distribution of power losses, thermal impedance, and impact of various parameters on thermal performance of the gate drivers. Presentation will also show methodology and examples of thermal measurements in gate drivers.
<b>When to consider general purpose PWMs</b>	Explore key topologies for isolated DC/DC power supply, understand pros and cons of each topology, see how to use general purpose PWM controllers for multi-topologies and what are the benefits
<b>The no-neutral wire application in building and home automation</b>	How to retrofit intelligent lighting controls into legacy building wiring including unique challenges for AC/DC supplies that are in series with lights and without a neutral connection.
<b>Challenges of the high-side bias in half-bridge drivers</b>	This presentation will discuss effects of bootstrap diode, bootstrap capacitor, bootstrap resistor, switching frequency, power stage topology, power MOSFETs, operating voltage, and other parameters on the performance of high side bias supply or bootstrap supply in half-bridge drivers. The presentation will also show data points taken on some gate drivers
<b>High-voltage solutions in HEV/EV Part 1: On-board chargers and charging stations</b>	An overview of complete high voltage power solutions in on board chargers and charging stations. TI is a one stop shop!
<b>Multiple output flybacks: How to improve cross regulation</b>	A survey of different techniques to improve cross-regulation and a discussion on benefits/tradeoffs of each.
<b>Designing multi-kW power supply systems</b>	An explanation of the Phase Shifted Full Bridge, why it is the topology of choice for high power DC/DC applications with a real design example
<b>High-voltage solutions in HEV/EV Part 2: DC/DC and traction inverters</b>	An overview of complete high voltage power solutions in DC/DCs and traction inverters. TI is a one stop shop!
<b>High-density DC/DC power module design with embedded planar magnetics</b>	To meet the growing power density demand, the next gen brick power module requires advanced control with more integration, pre-biased start up, PWM schemes, fault protection, and planar magnetics. This presentation will cover key design considerations and DC-DC module reference design with test results.
<b>Very high-voltage AC/DC power: From 3-phase to single-phase offline bias supplies</b>	Learn of some of the applications and limits of the offline bias supply for wide input voltage and methods to improve performance.
<b>How to drive SiC MOSFETs... The right way</b>	What will it take for SiC MOSFETs to be fully adopted? After decades of R&D, SiC MOSFETs are starting to be designed into mainstream power applications. Join the discussion on advances/challenges of SiC adoption, what features are needed in next gen SiC drivers, and how TI is rising up to the challenge
<b>Designing a 99% efficient totem pole PFC with GaN</b>	This discussion focuses on design and optimization of a 1kW PFC for high density and efficiency power supplies.
<b>GaN: The path to higher power density</b>	A deeper look into how TI GaN enables high power density, faster switching, higher efficiency for power conversion
<b>Power supply design and layout optimization: Minimizing EMI and instability</b>	An in-depth look into general principles including identifying nodes with high dv/dt, loops with high di/dt, minimizing node size and loop area, use of ground planes, component placement and parasitics, and how to minimize CM and DM noise sources
<b>Accelerating design with tools for high-voltage applications</b>	Learn how TI's design tools can help you save time in your next high voltage isolated AC/DC and DC/DC power supplies and principles and considerations necessary for transformer design. Examples will include Flyback, LLC, and PFC circuits.
<b>The first step to success – Selecting the optimal topology</b>	The first and most critical design to be made during the design of a power supply is selecting the topology. An ill-informed choice could jeopardize a project from the beginning. We'll look at how different factors affect the choice of topology and discuss the advantages and disadvantages of some of the most common topologies.