

Invitation



Power Your Ride

STMicroelectronics is pleased to present the

Power Your Ride Seminar Series

Attend a FREE full day of technical seminars near you.

Join us for a day of educational presentations on Automotive Electronics presented in two tracks by our technology experts. The topics can be implemented directly in your designs today to improve efficiency, reliability and control.

The Power Your Ride Seminar goes beyond product presentation and combines new advanced concepts, basic design principles and “real world” application examples. Don't miss this chance to discover the latest technology and consult with leading industry experts about your next design.

Location	Dates
Detroit	June 7, 2016
Santa Clara	June, 28-29 2016

Register at www.st.com/PowerYourRide

Agenda

Power

8:30 AM - 9:30 AM	Registration and Breakfast
9:30 AM - 9:45 AM	Opening remarks
9:45 AM - 10:45 AM	SiC MOSFET benefits in Automotive applications
10:45 AM - 11:00 AM	Break: Demo area open
11:00 AM - 12:00 PM	Plug-in electric vehicle (PEV) On Board charger
12:00 PM - 1:00 PM	Lunch: Demo area open
1:00 PM - 2:00 PM	Wireless charging
2:00 PM - 2:15 PM	Break: Demo area open
2:15 PM - 2:45 PM	Motor control 12 V Battery operated systems
2:45 PM - 3:15 PM	Isolated gate drivers for motor control and Inverters
3:15 PM - 3:30 PM	Break: Demo area open
3:30 PM - 4:00 PM	DC/DC converters for Automotive
4:00 PM - 4:30 PM	Power Amplifier Technology

Power and Beyond

8:30 AM - 9:30 AM	Registration and Breakfast
9:30 AM - 9:45 AM	Opening remarks
9:45 AM - 10:45 AM	Vehicle connectivity for Autonomous vehicles
10:45 AM - 11:00 AM	Break: Demo area open
11:00 AM - 12:00 PM	Global Navigation Satellite System Fundamentals
12:00 PM - 1:00 PM	Lunch: Demo area open
1:00 PM - 2:00 PM	Evolution of Automotive FM Diversity Systems
2:00 PM - 2:15 PM	Break: Demo area open
2:15 PM - 2:45 PM	Designing with ViPower High Side Switches
2:45 PM - 3:15 PM	
3:15 PM - 3:30 PM	Break: Demo area open
3:30 PM - 4:00 PM	LED lighting for automotive
4:00 PM - 4:30 PM	

Abstracts

	Power
A1	<p>SiC MOSFET benefits in automotive applications</p> <p>In Automotive applications SiC solutions offer large advantages at any load condition in terms of power losses, efficiency and consequently longer battery autonomy as well as a smaller cooling system. However a SiC MOSFET solution must be dimensioned properly in order to maintain a reasonable junction temperature at the peak power condition where any MOSFET solution is affected by huge conduction losses that can be only partially counter-compensated by the much better switching performance. This session will give the designer tools to properly dimension the solution to achieve the best performance.</p>
A2	<p>Plug-in electric vehicle (PEV) On Board charger</p> <p>The on-board charger is responsible for charging the battery pack in a plug-in hybrid electric vehicle (PHEV). The general objective is to achieve high efficiency, which is critical to minimize the charger size, charging time and the amount and cost of electricity drawn from the utility. Different topologies and design options for the battery charger enabled by the latest power technology (SiC, and Power MOS M6) will be presented.</p>
A3	<p>Wireless charging</p> <p>Adoption of wireless charging enabled mobile devices, in particular smart phones, is growing rapidly. As a result, wireless charging infrastructure roll-out is also accelerating, creating access to wireless charging for consumers in multiple locations and scenarios throughout their typical day and after the home, consumers second choice for where they would most like access to wireless charging is in the car. The presentation focus is, in accordance with the QiAx topology, the STEVAL-ISB028V1 for the transmitter that works at 12 V input and a half bridge stage with bridge voltage control based on the STWBC controller, which integrates all the functions required to drive and monitor the transmitter and on the received based on STLC03.</p>
A4	<p>Motor control 12 V Battery operated systems</p> <p>This session will present the latest solutions for high and low power motors in automotive applications. For high power, where the main application involved EPS, e braking systems, fuel/water pumps, the focus will be on BLDC motor drive. The presentation will discuss the Power MOSFET dynamic characteristic (gate charge, capacitance...) and their effects. A kit approach for the design is presented using discrete power devices and integrated driver ICs. For the low power applications, like body electric, inducing memory seat and door zone applications, the focus will be on DC and BLDC motors driven with a mixed solution of smart power high side drivers and discrete power MOS for the low side switch.</p>

A5	<p>Isolated gate drivers for motor control and Inverters</p> <p>New GAP driver technology uses magnetic coupling to provide up to 4kV isolation and high speed switching in a small IC package. The magnetic coupling allows bidirectional transmission to get diagnostic feedback from the output stage. This presentation shows implementations in motor control using the GAP driver technology and the advantages of optocoupler isolation.</p>
A6	<p>DC/DC converters for Automotive</p> <p>The latest car generation includes more and more functionalities in body control, car infotainment / connectivity (including Advanced driver assistance systems -- ADAS), and clusters. The automotive environment is generally sensitive for noise minimization to satisfy EMC specifications, but car infotainment applications, in addition, also demand a high switching frequency to prevent noise injection into the tuned radio bandwidth. Specifications for extreme power bus conditions, like load dump and cold crank, require sustaining a wider input voltage range than the nominal battery voltage. This presentation deals with the key features required of the new DC-DC converters specifically developed for the automotive market and describes their implementation inside the new product family from STMicroelectronics: the A6985F and A6986F, both qualified to AECQ100 specifications</p>
A7	<p>Power Amplifiers Typologies Evolution and Advantages</p> <p>With the drive for increased fuel economy and reduced weight, especially with electric and hybrid vehicles, the power required in a typical car audio system can be significantly reduced with existing technology. In this seminar we will discuss several steps that can be taken to dramatically improve the efficiency of the car audio system.</p>

Power and Beyond	
B1	<p>Vehicle connectivity for Autonomous vehicles</p> <p>Autonomous vehicles will appear on roads toward the end of the decade. Besides the obvious benefits of using vehicle-to-vehicle (V2V) communication as a low-cost, weather proof, and obstruction resilient 360° sensor, V2V technology provides a scheme for road merging alignment between vehicles, accurate signage recognition and future pedestrian detection. This presentation will focus on the performance requirements of V2V solution targeting Autonomous driving, and how those can be achieved with Autotalks V2V chipset.</p>
B2	<p>Global Navigation Satellite System Fundamentals</p> <p>The market is find new and exciting ways to profit from Global Navigation Satellite System (GNSS). Applications include the traditional vehicle and pedestrian navigation system, survey and mapping, assets tracking, telecommunication, financial services, social activities and is limited only by your imagination.</p> <p>This presentation provides a system overview of the Global Navigation Satellite System which will provide you with the basis for producing the next killer GNSS application.</p>

B3	<p>Evolution of Automotive FM Diversity Systems</p> <p>Automotive diversity systems have been in production for more than 20 years. The main purpose of a diversity system is to reduce the degraded reception performance caused by multipath propagation. This is often accomplished by the use of two or more uncorrelated receiving antennas. The first part of the talk gives a brief history of the legacy analog systems that have been implemented in many vehicles. These include Phase Aligning Systems (PAS) and Switched Antenna Systems (SAS). The second part discusses the implementation of the digital systems in new vehicles. Such systems utilize digital beam forming based on a Constant Modulus Algorithm (CMA), a Maximal Ratio Combining (MRC) algorithm, and a switched diversity algorithm. Finally, a new ST tuner system implementation will be shown including FM diversity audio recordings.</p>
B4	<p>Designing with ViPower High Side Switches</p> <p>ViPower switches are a unique, cost effective, solution for driving loads. They are fully protected switches yet still need some administration to stay healthy in adverse environments. They can be found in one form or another in virtually every module in a vehicle. At first glance, they appear to be simple high side switches. How complicated can that be? The answer to that question is that nothing is simple. When it comes to faulted load protection, or compensating for lamp inrush currents, or the ever increasing power densities and ever decreasing package sizes, load driving a wide range of loads and protection methodologies the simple high side switch can get quite complex. These methodologies have evolved as the need has pushed us to more flexibility and to find more reliable ways of protecting the device from faulted loads.</p> <p>This presentation will outline the history / evolution of ViPower High Side Switches from the 1980's until now. There will be a detailed discussion on the design requirements for the current technology High side drivers, both in hardware and software, to ensure long lasting reliable operation.</p>
B5	<p>Automotive LED lighting</p> <p>The massive presence of LEDs in our daily lives is no longer anything new. Across various market segments—mobile applications, Signage, LCD TV backlight, Illumination and Automotive—LED lighting is a matter of fact. The reduction in LED prices, coupled with increased LED efficiency (lumens per watt), has fueled the redesign of many common devices, each requiring different LED drivers. This presentation will focus on solutions for Exterior LED Lighting for Automotive. New technologies are constantly emerging for LED drive. The presentation will introduce new concepts for digital power control for the LED lighting using a unique state machine architecture for PWM control.</p>