



Technology Day Vancouver

August 25, 2011

Time	Session	Signal Chain	Power	Wireless Connectivity	Applications Processors	Microcontrollers
8 to 9 a.m.	Registration & Booths / Continental Breakfast					
9 to 10 a.m.	1	Inside the Delta-Sigma Converter: Practical Theory and Applications	Switching Power Supplies Made Easy with SwitcherPro™ Software and the New, Powerful TINA-TI™ Simulation Software 9	Adding Wi-Fi and Bluetooth® to TI Embedded Processors (MCUs and MPUs)	Android Development and Acceleration on Sitara™ and DaVinci™ Processors	Hands-On Workshop: Touch Using MSP430™ MCUs – Design, Libraries and Programming with Capacitive Touch Booster Pack (Part 1)
10 to 10:30 a.m.	Break / Booths					
10:30 to 11:30 a.m.	2	Data Conversion, Specs to Systems	How TI PowerBlock, Power Stage and NexFET™ Technology Enable the Highest Efficiency and Power Density in Low- to Medium-Input Voltage Power Systems	Bluetooth® Low Energy and ANT: Very Low Power Wireless Connectivity Solutions	Video Processing with the TMS320DM8168	Hands-On Workshop: Touch Using MSP430™ MCUs – Design, Libraries and Programming with Capacitive Touch BoosterPack (Part 2)
11:30 a.m. to 1 p.m.	Lunch / Booths					
1 to 2 p.m.	3	SuperSpeed USB & Thunderbolt: Overview & Comparison	Save Energy with LED Lighting and Intelligent Sensing	Hands-On Workshop: Understanding and Developing a ZigBee System Using the CC2530 ZigBee Network Processor (Part 1 of 3)	Jumpstart your Digital Media Development with New TI SDKs	C2000™ Digital Power Solutions
2 to 2:15 p.m.	Break / Booths					
2:15 to 3:15 p.m.	4	TINA-TI™ Software 9: A New Simulation Solution for 2011	Wireless Power: Total Solution for Charging Using the Wireless Power Consortium Standard	Hands-On Workshop: Understanding and Developing a ZigBee System Using the CC2530 ZigBee Network Processor (Part 2 of 3)	Linux Application Debugging with Code Composer Studio™ Software	Under the Hood of FRAM and the New MSP430FR57xx MCU Family
3:15 to 3:30 p.m.	Break / Booths					
3:30 to 4 p.m.	5	Analog Motor Drivers: Steppers, Micro-steppers, and DC Motors	Charging System Concerns and Solutions	Hands-On Workshop: Understanding and Developing a ZigBee System Using the CC2530 ZigBee Network Processor (Part 3 of 3)	Natural User Interface with Sitara™	Ultra-Tiny Embedded Linux for Stellaris® MCUs



Texas Instruments

Tech Day: Vancouver – Aug. 25, 2011

Session Titles and Abstracts

Track and Course	Abstracts
Track 1 – Signal Chain	
Inside the Delta-Sigma Converter: Practical Theory and Applications	This presentation will take you inside the true workings of a delta-sigma converter, from modulator to digital filter. We will discuss basic concepts such as sampling frequencies (modulator vs. data rate), different types of digital filters and their advantages and disadvantages, settling times and latency, resolution, accuracy, and what "noise-free bits" really mean. Armed with this knowledge, you can decide if a delta-sigma converter is right for your application. This session will help debunk some of the myths around this popular converter architecture.
Data Conversion: Specs to Systems	Many resources exist that define analog-to-digital converter (ADC) errors, but few relate these errors to a system design and identify how they will have an impact on the end product. This presentation will relate ADC specifications to real-life system designs and gauge their impact on the end product performance, features and specifications. You will leave this presentation with a good working knowledge of the relationship between ADC specifications and the impact they have in end product designs.
SuperSpeed USB & Thunderbolt: Overview & Comparison	SuperSpeed USB has shown significant growth since the first certified products became available in early 2010. Yet many customers are still asking what it is, and what they can do with it. In addition with the Intel™/Apple™ announcement of Thunderbolt, many in the market have become even more confused on what each technology is intended for and when they should be used. The first part of this session will present a brief overview of SuperSpeed USB. This will be followed by a brief overview and Thunderbolt followed by a discussion of whether Thunderbolt and USB are competing or complimentary. Finally the presentation will review TI's SuperSpeed USB products and plans.
TINA-TI™ Software 9: A New Simulation Solution for 2011	TINA-TI™ software has been TI's free circuit simulator for five years. During that time, TI has released hundreds of macromodels and reference designs that can be simulated. This capability allows you to quickly evaluate parts, validate designs to ensure first-pass success, and if necessary, debug problems. This session will provide an introduction to TINA-TI simulation software with an emphasis on new features in version 9. We will cover topics such as modifying EVM schematics to meet your needs, importing third-party models, running simulations, conducting visualization/analysis of simulation output, and using parametric sweeping to improve your design.
Analog Motor Drivers: Steppers, Micro-steppers, and DC Motors	This session will review the critical specs and features to look for when selecting an integrated motor driver and provide an overview of TI's DRV8x portfolio of brushed, stepper and brushless motor drivers. Basic H-bridge theory, decay modes, microstepping, RDSON, dynamic braking, protection, current regulation and control interface options will be discussed. Coming out of this session, you will fully understand TI's DRV8x motor drivers and the critical specs to look for when selecting an integrated motor driver.



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Tech Day: Vancouver – Aug. 25, 2011

Session Titles and Abstracts

Track and Course	Abstracts
Track 2 – Power	
Switching Power Supplies Made Easy with SwitcherPro™ Software and the New, Powerful TINA-TI™ Simulation Software 9	In this hands-on training session, you will learn to generate custom power solutions in minutes with SwitcherPro™ software from Texas Instruments. SwitcherPro software allows you to select TI parts and real-world components; analyze designs for efficiency, stability, size and other design factors; modify designs to meet your needs with Design Options, What if Analysis, and User Defined Parts; and review your designs in the design report, complete with a full bill of materials and notes for layout. Please bring a laptop if you wish to follow along.
How TI PowerBlock, Power Stage and NexFET™ Technology Enable the Highest Efficiency and Power Density in Low- to Medium-Input Voltage Power Systems	Switching-power-supply FET technology is ever-advancing. TI's PowerBlock, Power Stage and NexFET™ technology enable ~92 percent efficiency at output currents of >100 A, and meet the ever-increasing power density and efficiency demands of inline and portable power systems. You will come away with a complete understanding of the system approach that NexFET technology facilitates in TI power management solutions and will understand TI's NexFET Power MOSFET technology's competitive advantages in the marketplace.
Save Energy with LED Lighting and Intelligent Sensing	The main benefit of LEDs is that you can save energy by dimming the light. So what about an intelligent light that is aware of its environment and communicates to other lights about the need for illumination? From simple temperature measurement, ambient light and occupancy sensing using TI MCUs and DSPs to wired and wireless communication protocols, TI's software and hardware solutions help to design intelligent lighting.
Wireless Power: Total Solution for Charging Using the Wireless Power Consortium Standard	TI's first wireless power solution for the mass market is called the bqTESLA100LP solution. This Qi-compatible kit includes both the transmit and receive ICs plus design to take a Wireless Power Consortium-based solution to market today. In this session, we will discuss the basics of wireless power, the Wireless Power Consortium and the TI devices that make up our first-generation solution.
Charging System Concerns and Solutions	This session will focus on system-level design concerns and solutions for single cell and multicell. Emphasis will be placed on lessons learned and solving customer typical questions/issues. This session assumes attendance of the "Battery Basics" session or equivalent knowledge level.



Texas Instruments

Tech Day: Vancouver – Aug. 25, 2011

Session Titles and Abstracts

Track and Course

Abstracts

Track 3 – Wireless Connectivity

Adding Wi-Fi and *Bluetooth*® to TI Embedded Processors (MCUs and MPUs)

Quickly and easily add Wi-Fi and/or *Bluetooth*® technology to systems using TI MPUs (AM/DM37x, AM18x) and MSP430™ MCUs. In this session, we will start with an overview of the WL1271-TiWi 802.11b/g/n + *Bluetooth*® transceiver and CC2560-PAN1325 *Bluetooth*® transceiver, and then go into the details of the platform. The platform provides complete system integration of all components including WLAN and *Bluetooth*® hardware, host hardware, Linux WLAN drivers, supplicant, TCP/IP integration, *Bluetooth*® stack, profiles, example code for configuration, and sample source applications. We will walk through the sample applications and explain how you can get started developing Wi-Fi and *Bluetooth*® applications.

Bluetooth® Low Energy and ANT: Very Low Power Wireless Connectivity Solutions

Bluetooth® low energy (BLE) and ANT represent wireless standards operating in the 2.4-GHz arena that are gaining lots of momentum due to their small size, reasonable cost and very low power requirements. They enable communication between self-powered devices in an extensible network environment. This session will present an overview of the BLE and ANT standards before diving into the key priorities and challenges when designing with these two protocols. The session will then cover how to set up a quick BLE and ANT link.

Hands-On Workshop: Understanding and Developing a ZigBee System Using the CC2530 ZigBee Network Processor (Parts 1-3)

This three-hour workshop will introduce you to ZigBee and how to build a ZigBee application by understanding the design process for a ZigBee network processor. You will come away from this workshop understanding how to set up a ZigBee mesh network using ZigBee coordinators, routers and end devices. You will run packet sniffers and then observe the personal area network (PAN) traffic over the network. Other features you will learn about include mesh routing, network commissioning and PAN formation. Laptops will be provided and all attendees will leave with a CC2530ZNP mini development kit (CC2530ZDK-ZNP-MINI).

Track 4 – Application Processors

Android Development and Acceleration on Sitara™ and DaVinci™ Processors

With the availability of Android for TI's Cortex-A8 devices, developers are now able to utilize the unique power of the Android application framework to create new, compelling designs. Attend this session to learn about Android fundamentals, including overview and key benefits, architecture review, how Android can benefit different end equipment and applications (including voice/video applications), and the TI/Android roadmap.

Video Processing with the TMS320DM8168

TI provides a range of video encoding and processing solutions. The DM8168 is TI's latest DaVinci™ media processor. We will describe the advanced video capabilities of the DM8168 processor, and the reference platform that enables video capture, encoding, decoding and display.

Jumpstart Your Digital Media Development with New TI SDKs

This session provides an overview of TI's latest software development kits (SDKs) featuring the Matrix user interface for intuitive setup and navigation among applications. A networked video application will be created on the DM3730 EVM using the included Linux board support package, codecs and industry-standard frameworks such as GStreamer and Qt. The application will take full advantage of the DM3730's ARM Cortex-A8, high-definition video accelerator and POWERVR 3-D graphics accelerator. Procedures for integrating your own codec as well as adding Wi-Fi and *Bluetooth*® support will also be highlighted. Join this session to understand TI's latest SDKs and how they can be used to quickly develop advanced networked video applications with sophisticated user interfaces.



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Tech Day: Vancouver – Aug. 25, 2011

Session Titles and Abstracts

Track and Course

Linux Application Debugging with Code Composer Studio™ Software

Abstracts

Learn how to develop and debug Linux applications using Code Composer Studio™ software v5. Many customers of Sitara™, Integra™ and DaVinci™ processors spend much of their time developing Linux applications. In this session, you will learn how the Code Composer Studio IDE can be used for both kernel-level debugging as well as application debugging.

Natural User Interface with Sitara™

In this session, we'll show how ARM-based microprocessors from TI are enabling advanced industrial HMI solutions with comprehensive support for connectivity and graphics processing. In conjunction with graphics accelerators, the ARM Cortex-A8 and ARM926 cores have enough CPU cycles to run user applications including communication protocols over interfaces such as CAN, UART, Ethernet, etc. We will review those ARM MPUs from TI that are fit for implementing HMI solutions for industrial and building automation applications.



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Tech Day: Vancouver – Aug. 25, 2011

Session Titles and Abstracts

Track and Course

Abstracts

Track 5 – Microcontrollers

Hands-On Workshop: Touch Using
MSP430™ MCUs
– Design, Libraries and Programming with
Capacitive Touch Booster Pack (Part 1)

This session helps you expand the functionality of your MSP430™ MCU Value Line LaunchPad kit with the capacitive touch booster pack. Learn how to use the capacitive touch software libraries to interface your Value Line devices with capacitive touch buttons, sliders and wheels.

Hands-On Workshop: Touch Using
MSP430™ MCUs
– Design, Libraries and Programming with
Capacitive Touch BoosterPack (Part 2)

This session helps you expand the functionality of your MSP430™ MCU Value Line LaunchPad kit with the capacitive touch booster pack. Learn how to use the capacitive touch software libraries to interface your Value Line devices with capacitive touch buttons, sliders and wheels.

C2000™ DSP Digital Power Solutions

Digitally controlled power supply and power conversion is quickly gaining momentum in the marketplace, not only in the power supply segment but also in renewable energy and other power- and energy conversion-related applications. This session will discuss digital control of the latest fundamental power supply and power conversion technologies such as bridgeless PFC, phase-shifted full-bridge DC/DC and LLC-resonant DC/DC. Both software and hardware implementations will be discussed. Piccolo™ MCU-based implementations will also be demonstrated.

Under the Hood of FRAM and the New
MSP430FR57xx MCU Family

This session is intended to introduce MCU designers to the latest in non-volatile memory technology – Ferroelectric RAM (FRAM). You will gain experience with MSP430's first FRAM offering – the MSP430FR57xx family and become familiar with key architecture blocks such as the new power management module, clock system and FRAM controller. Advantages unique to FRAM such as ultra low active power, fast writes and unified code memory will be covered and attendees will learn about tools available to aid in starting development with this new addition to the MSP430™ portfolio.

Ultra-Tiny Embedded Linux for Stellaris®
MCUs

The Unison ultra-tiny embedded Linux-compatible operating system offers complete communication, synchronization, thread management, file I/O and socket services on Stellaris® microcontrollers. Unison also adds extensive I/O modules including advanced networking, graphics and seamless integration into IAR, Eclipse and Code Composer Studio™ IDEs. Tools for bootloading, power-on self test (POST) and operating object viewing are also available. This one-hour hands-on workshop provides an introduction to building ultra-tiny Linux-compatible systems with Stellaris processors, including wireless Wi-Fi or *Bluetooth*®, a tiny Web server, advanced networking, USB and FAT/flash file systems.

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