Danville Signal Processing, Inc.

NAMM
Digital Press Kit

Please visit us
Meeting Room 154
in the Main Lobby
(across from Hall B Entrance)

Following is information about our line of Audio Digital Signal Processing Boards

For More Information, please contact:
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A High-Performance Programmable DSP Engine for Your Product

The Snowbird Audio Module is a self-contained audio processing platform that combines a high performance SHARC processor and carefully selected peripheral components with a custom programming environment that allows you to quickly and economically design sophisticated audio DSP features to any product. The programmable Snowbird Audio Module delivers outstanding value by letting you easily create, configure and implement digital audio effects ranging from simple tone controls to sophisticated time-based effects processing.

Floating-Point Performance, State-of-the-Art Components and Flexible Connectivity

At the heart of the Snowbird Audio Module is a powerful SHARC processor, the pro audio industry standard choice for audio processing. Surrounding the processor are components designed to deliver audio performance up to 192kHz with 108 dBA S/N. The Snowbird Audio Module includes connectors that let you attach a variety of companion boards. Integrate it into your own circuit design, create a stomp box, Eurorack module, or put DSP inside an amplifier, mixer, or keyboard.

Audio Weaver Programming Software

The Snowbird Audio Module is supported by a custom version of DSP Concepts’ Audio Weaver programming software. This is a powerful graphical design package that let you create your own signal processing chain by simply dragging and dropping highly optimized audio processing modules. You can use any of the dozens of pre-built audio functions—EQs, crossovers, mixers etc.—or enhance and combine them with your own custom processing to create the functions you need. Once the design is done, the file can be directly save and run standalone on the Snowbird Audio Module.

• PC-Based Development Environment
• Drag and Drop Signal Processing
• Over 400 Processing Modules
• Real Time Tuning and Profiling

The Snowbird Audio Module combined with Audio Weaver is a high performance, fast time to market, custom audio platform for your audio projects.
Expanding the Snowbird Audio Module
In addition to the Snowbird Audio Module’s ability to be incorporated directly into your own products, they are also designed to be mated with a line of connector boards that provide specific I/O and control functions. First in this series is the Snowbird Stomp Connector, designed to give you a complete guitar effects system, ready to be put in a box.

Snowbird Stomp Connector Board (P/N A.09231B)
The Snowbird Stomp module mates to the Snowbird Audio Module and is designed for guitar level input.

- 1/4” Phone Jacks with true bypass footswitch
- Indicator LED
- 5 potentiometers
- USB connector for programming and MIDI
- Powered by a standard 9Volt battery
- 56mm x 84mm, fits in a standard Hammond 1590B box

The Snowbird Audio Module (P/N A.09230A)

DSP:
- Analog Devices SHARC ADSP-21479
- Clock 245.76 MHz

Codec:
- AKM AK4558 Stereo Codec
- Multiple Sample Rates Supported from 8 kHz to 192 kHz
- S/N 108 dBA

Digital Filters:
- Sharp Roll Off; Short Delay, Sharp Roll Off
- Slow Roll Off; Short Delay, Slow Roll Off

Power Options:
- USB Bus Power or
- 6 to 12V external, typically 9V battery
- Output Level:
  - Output attenuators - 256 levels in 0.5dB steps

Connectors:
- 2mm Dual Row Headers

Five DC ADCs for controls

Memory:
- 16Mbit Flash and 2kbit EE with unique MAC ID

JFET buffers for guitar inputs

Interface:
- USB (control & MIDI)
- Optical - MIDI In

Size: 43mm x 76.5mm

About Danville Signal Processing
We have significant experience with designing complex, multi-layer processing boards, so all you need to worry about is integration. Founded in 1998, we manufacture and assemble products in our automated factory outside of Minneapolis, MN, USA. We work hard to develop long-term relationships with our customers and appreciate the opportunity to develop a mutually satisfying partnership with you as well. Give us a call, let’s start a conversation about how Danville can provide the platform for your next design.
The dspMusik™ 2/8 is a stereo in, eight out multichannel DAC platform, suitable for high performance DSP loudspeaker crossovers, music decoders and many other high quality audio algorithm applications.

The dspMusik 2/8 platform is available in a variety of configurations including PCB assemblies where you provide your own housing, or it can be provided in an extruded aluminum enclosure. Panels can be customized and rebranded with your company’s logos and trademarks to fit your company’s specific requirements and branding.

The dspMusik 2/8 is supported by a custom version of DSP Concepts’ Audio Weaver™ programming software. This is a powerful graphical design package that lets you create your signal processing chain by simply dragging and dropping highly optimized audio processing modules. You can use any of the dozens of pre-built audio functions—EQs, crossovers, mixers etc—or enhance and combine them with your own custom processing to create precisely the functions you need. Once the design is done, the file can be directly saved and run standalone on the dspMusik platform.

Audio Weaver Programming Software
- PC-Based Development Environment
- Drag and Drop Signal Processing
- Over 400 processing Modules
- Real Time Tuning and Profiling
- Visit www.dspconcepts.com for more info

Combined with Audio Weaver, the dspMusik 2/8 DAC delivers a high performing, fast time to market, custom audio platform for your audio projects.
The dspMusik 2/8 platform delivers audiophile performance, featuring state-of-the-art components from Analog Devices, XMOS, AKM and Wolfson. Each part has been carefully selected to build a precisely integrated system.

The dspMusik starts by using low phase jitter clocks driving all the data converters. The optional ADC incorporates very high common mode rejection / low noise balanced inputs and DACs with minimum phase anti-imaging filters (desirable to avoid pre-echo effects). Signals are processed by an audio-optimized 32-bit/40-bit floating point DSP capable of up to 192 kHz performance.

The dspMusik features:

**DSP:**
Analog Devices SHARC ADSP-21479

**Inputs:**
- USB Audio Class 2: XMOS XS1-U8A
- SPDIF
- Optional Analog Input Module
  - ADC: AKM AK5394A (S/N > 120 dBA)

**Outputs:**
- DACs: Wolfson WM8742 (S/N > 120 dBA)

**Configurable Input / Output:**
- Balanced or unbalanced circuits
- Consumer (-10dBV) or Pro (+4dBu) levels
- Standard 6.3mm TRS connectors
- Optional Tascam style DB-25 connections

**Operating System Support:**
- Microsoft Windows XP, 7, 8 & 10 (included)
- Apple OS X (native support)

**Input Power (Complete Version)**
- IEC Mains Connector
- Autoswitching 115/230VAC, 50/60Hz

**dspMusik 2/8 Configurations**
The dspMusik 2/8 platform is available in two configurations: PCB Assemblies (with or without ADS and/or TRS) and two Complete with Housing versions (with or without ADC). A variation using the ADSP-21469 DSP is also available. Visit our website or contact us for more information.
The dspSoM 589™ is a highly integrated, small form factor “System on Module” that provides you with a comprehensive development and production platform and is ideal for fast time to market of high performance audio and industrial products. As with our other products, the dspSoM 589 is a precisely built, integrated system, with the connectivity and peripheral set expert selected to best compliment the processors’ feature set.

Class Leading Floating-Point Performance and Flexible Connectivity
At the heart of the dspSoM 589 is the SHARC SC589 processor, combining dual SHARC+ floating-point DSP cores, an ARM Cortex-A5 processor and a highly advanced FFT/iFFT Accelerator core on a single chip. The SC589 features an optimized connectivity engine with enhanced integrated peripherals including Gigabit Ethernet (w/AVB), MLB, USB, CAN, SDIO high speed link ports & PCIe. The SC589 features class leading, low power floating-point DSP Performance at under 2W, enabling products to be designed with reduced heat-sinks and fanless capability.

A Complete DSP and Control Solution
The dspSoM 589 is not just a prototyping board, it is a complete hardware solution delivering an optimized development platform for your designs and a production ready target for manufacturing. The dspSoM 589 platform enhances the SHARC features by providing a rich set of industry-leading system peripherals and memory.
The dspSoM 589™ Dual Core DSP & ARM Module

SHARC® ADSP-SC589 DSP:
- Two SHARC floating point DSP cores (5.4 GFLOPS, 1.8 GMACs)
- ARM Cortex-A5 providing connectivity and additional processing including FPU and Neon® DSP extensions.
- Advanced FFT/IFFT accelerator (up to 18 GFLOPS - 5μsec 1024-pt cFFT with DMA)
- Large 640KB L1 SRAM per SHARC, shared L2 SRAM & advanced DMA features
- Glueless Digital Audio Interface including 16 half duplex SPORTs, I2S, TDM, SPDIF/AES3 & 16 Asynchronous Sample Rate Converters
- Under 2W power consumption, more than 2 times more efficient than the nearest competitive processors enabling products with reduced heat-sinks and no fans
- Advanced Security with Cryptographic accelerators and OTP Memory, for IP protection, fast secure boot and secure network connectivity

Interfaces:
- Ethernet: 1Gb with onboard PHY & IEEE-1588 support (requires magnetics/connector)
- USB 2.0 (2 ports), host and device configurations
- PCIe: 1 Lane 5Gb/s
- SPI (3 ports)
- TWI (3 ports)
- UART
- CAN
- Link Ports
- JTAG

Memory:
- 4Gb DDR3 SDRAM
- 128Mb SPI Flash
- 2kb SPI EEPROM with individual MAC address (EUI-48)

Power:
- Input Voltage 5.0 VDC - All local supplies are derived from on board switcher
- Input Current < 1A
- I/O Voltage is 3.3V

The dspSoM 589 is ideal for hi-performance Audiophile and precision Industrial devices that require no-compromise DSP, connectivity and control.

Lower the Cost and Simplify the Design of Creating DSP-based Products
Today’s DSPs and other state-of-the-art components are extremely powerful, but they come at a price: they are often extremely difficult to design onto a board. Signal integrity, crosstalk, trace length matching, complex routing, multiple layer I/O paths, etc., all combine to make the utilization of the features of powerful chips challenging. The DSP generally requires more pcb layers and higher precision fabrication than typical I/O and power supply circuits. This rapidly contributes to fabrication costs as the whole board must accommodate the demands of all the circuits. Low noise converters and signal conditioning circuits are also much easier to isolate when high speed digital switching resides off board. As these and other mating circuit boards generally do not require same complexity or cost structure, the rest of your pc board layouts become more simple. Projects are completed quickly and cost effectively when developing with the dspSoM 589.

The Danville Advantage
We are experts in the design, creation and integration of flexible, modular development and production boards, providing turnkey DSP solutions for our customers, all you need to worry about is integration. Give us a call, let’s start a conversation about how Danville Signal can provide the platform for your next design!

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Danville Signal Processing, Inc. is a design and manufacturing company providing custom and semi-custom Digital Signal Processing Systems for the professional audio and acoustics/vibration instrumentation markets. We are experts in the design, creation and integration of flexible, modular development and production boards, providing turnkey DSP solutions for our customers. Our platforms deliver audiophile performance, featuring carefully selected state-of-the-art components from Analog Devices, XMOS, AKM and Wolfson.

We are specialists in the board design and layout of systems utilizing a variety of state-of the art components including DSPs, microcontrollers, FPGAs and associated memory and I/O technology. Complementing our core technology base in these areas, we have developed strong relationships with leading hardware and software vendors. We are third party partners with several chip and technology providers, including Analog Devices, DSP Concepts, XMOS, Altera and Summit Wireless.

We take the complexity out of designing sophisticated products. Today’s DSPs and other state-of-the-art components are extremely powerful, but they come at a price: they are often extremely difficult to design onto a board. Complex routing, signal integrity issues, controlled impedances, BGAs, multiple layer I/O paths, etc., all combine to make the utilization of the features of powerful chips challenging. We have significant experience with designing complex, multi-layer processing boards, so all you need to worry about is integration.

Our products are not just prototyping boards, they are complete hardware solutions delivering an optimized development platform for your designs and a production ready module for manufacturing. In addition, many of our SHARC-based DSP designs can include a custom version of DSP Concept’s Audio Weaver software for development, test and deployment of audio algorithms.

Given our expertise, our understanding of industry applications and our agility in developing solution sets, we are able to quickly provide our customers in a wide variety of industries with the solutions they need.

These solutions include:

• Turnkey Design & Manufacturing for OEMs/ODMs
• DSP and FPGA combination solutions
• High Performance Audio Systems
• COTS DSP Boards and I/O Modules
• Custom board solutions
Danville Signal Custom Solutions for High Performance Audio

The world of high performance audio is changing. Sure, you can still find vinyl enthusiasts and advocates for 10 watt triode amplifiers, but you will also find many more listeners that are taking advantage of newer digital technologies. What they all have in common, is that they want great sound. What many of them also have in common is core technology from Danville Signal Processing. Our modules can be found inside award winning audiophile / brand name products for home audio systems, recording studio monitors, and concert hall speakers around the world.

Here are a few of the application areas that we address:

- DSP-based Active Crossovers
- High Performance Wireless Audio
- USB Audio Class 2 DACs
- USB Audio Class 2 Headphone Amps
- Bass Management
- Room Correction
- Beam Forming
- Vinyl to Digital Converters
  (Translation Phono Preamplifiers)
- Algorithm Decoders and Demo Systems

The bulk of our audio products are semi-custom solutions tailored to individual customer requirements (ODM & OEM). Most of our products are available in a variety of configurations including stand-alone PCB assemblies where you provide your own housing, or they can be provided in extruded aluminum enclosures. Panels can be customized with your company’s logos and trademarks to fit your company’s specific requirements and branding.

About Danville

Founded in 1998, we manufacture and assemble products in our state-of-the-art facility outside of Minneapolis, MN, USA. We are proud members of the WiSA (Wireless Speaker & Audio) Association, Alma and NAMM.

We work hard to develop long-term relationships with our customers and appreciate the opportunity to develop a mutually satisfying partnership with you as well. Give us a call, let’s start a conversation about how Danville Signal can provide the platform for your next design!