

Faust on the ADI SHARC Audio Module (SAM)

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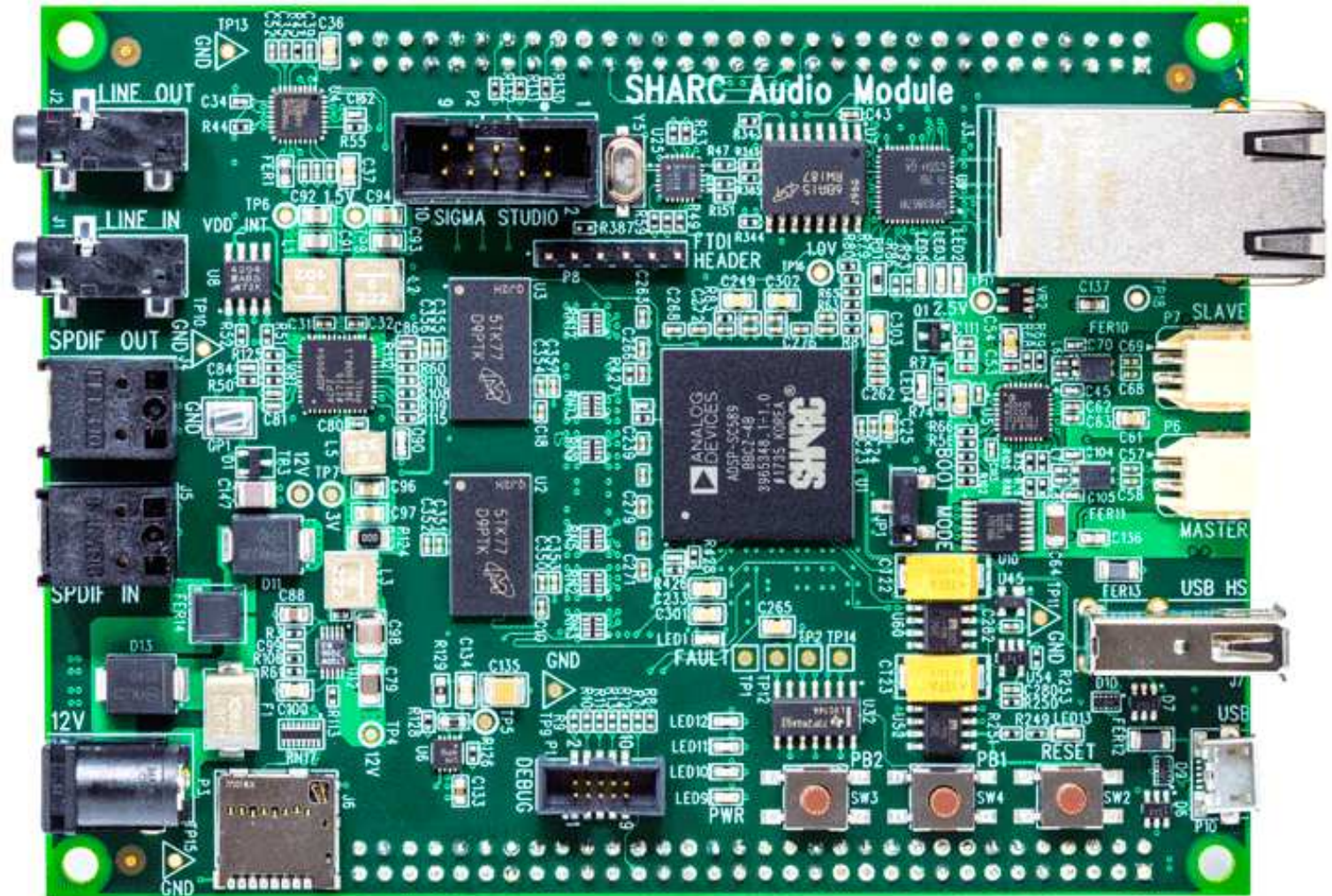
Programmable Audio Workshop
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Analog Devices SHARC Audio Module (SAM)

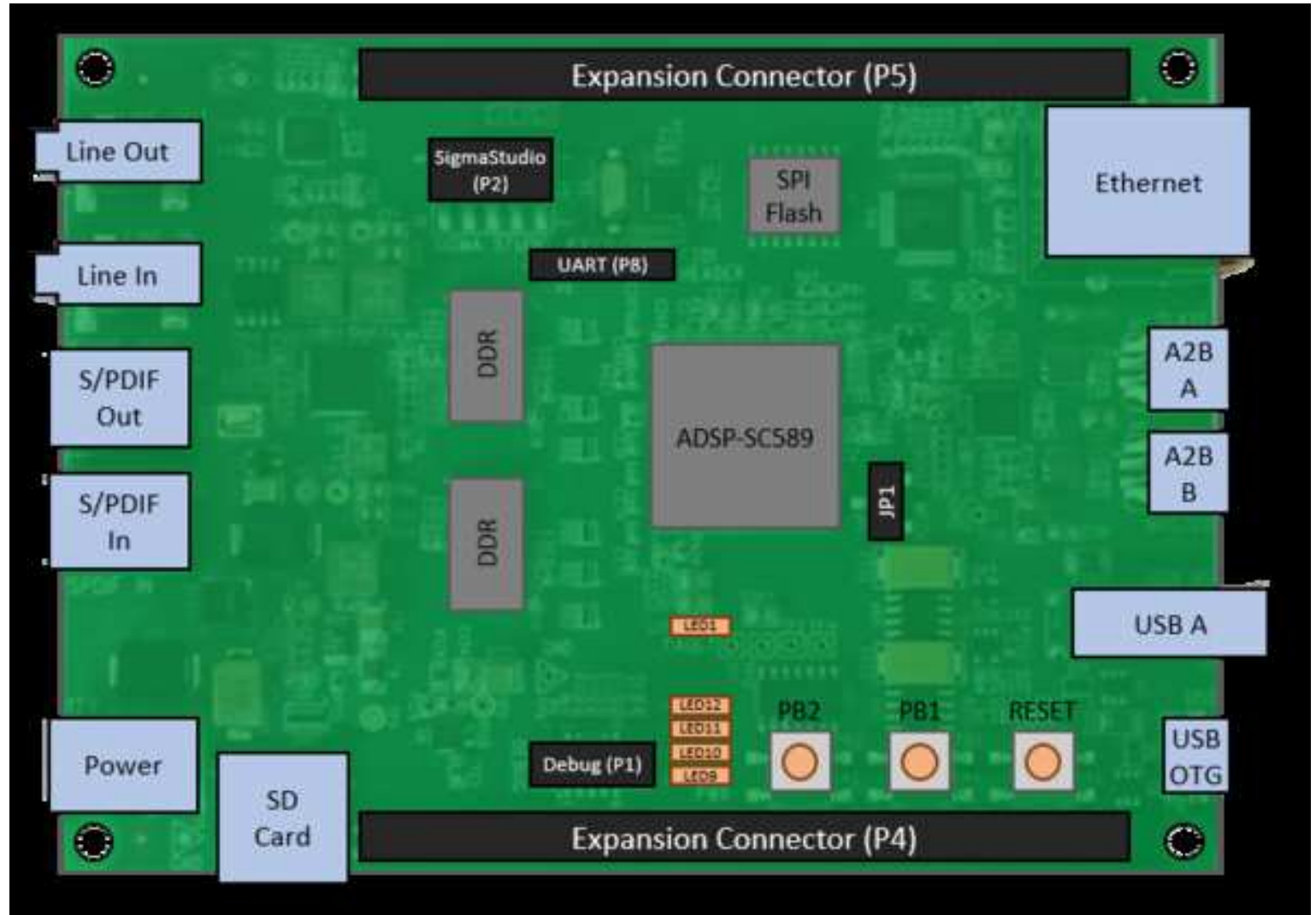
- ADI SAM
- SAM Blocks
- SAM Features
- SHARC 589
- SHARC 589 Features
- SAM+FIN
- FIN
- FIN Blocks
- Faust on SAM
- SAM Flow
- faust2sam





SHARC Main Board Block Diagram

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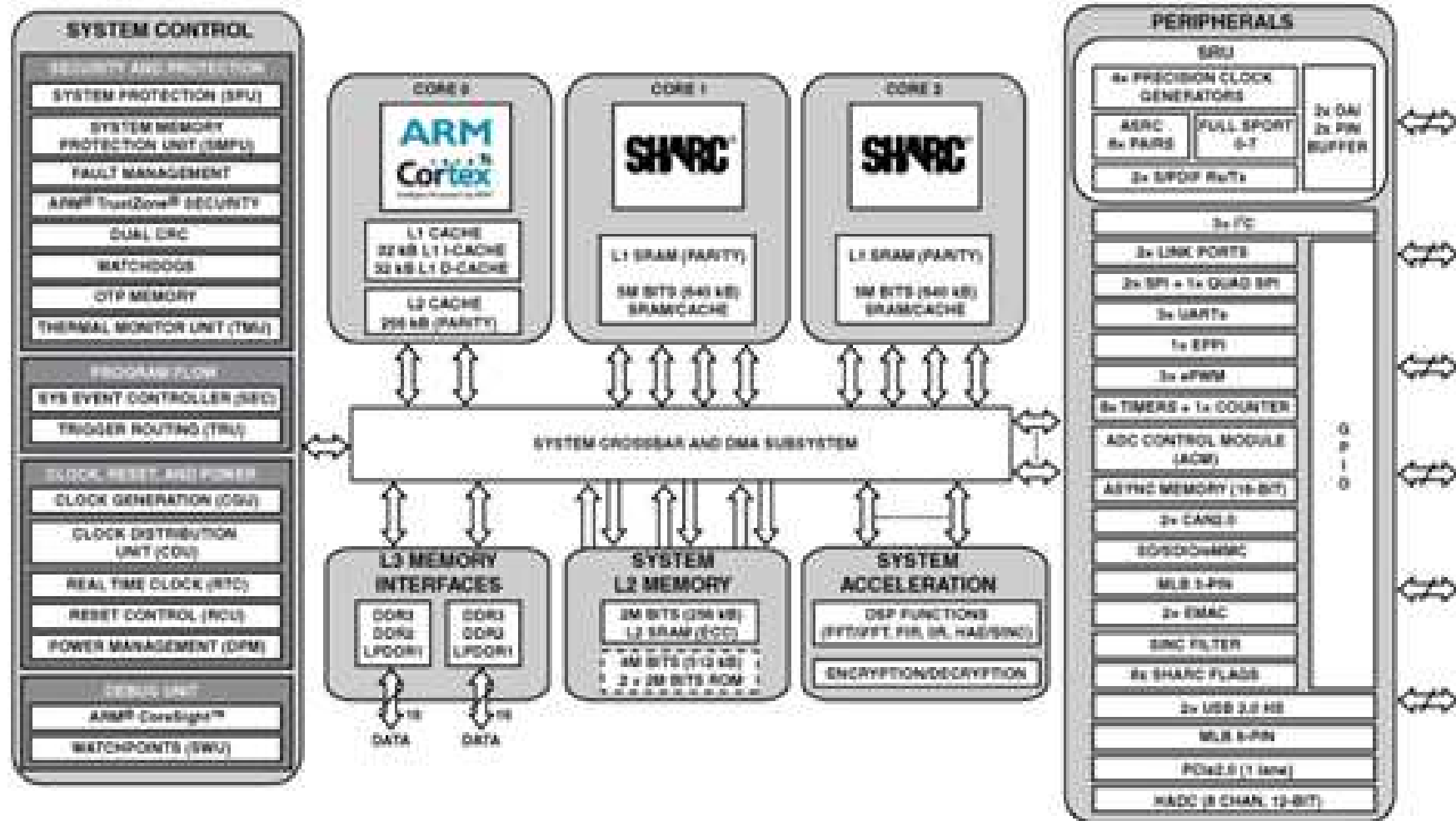


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SHARC Audio Module Features

- SHARC ADSP-SC589 (two DSP cores and one ARM core)
- More cost-effective for embedded audio signal-processing than ARM alone
- FFT/IFFT accelerator hardware
- Massive on-board I/O
- Two 2Gb DDR3 memories
- 512 Mb SPI flash memory
- UART (for MIDI and more)
- SigmaDSP 96 kHz A/D and D/A
- 24-bit audio CODEC
- 1/8" stereo jacks
- S/PDIF
- Gigabit Ethernet
- USB
- Analog Devices' A2B multi-channel audio interface
- Two 60-pin expansion connectors under the board

Analog Devices SHARC ADSP-SC589 (“Griffin”)





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SHARC ADSP-SC589 (“Griffin”)

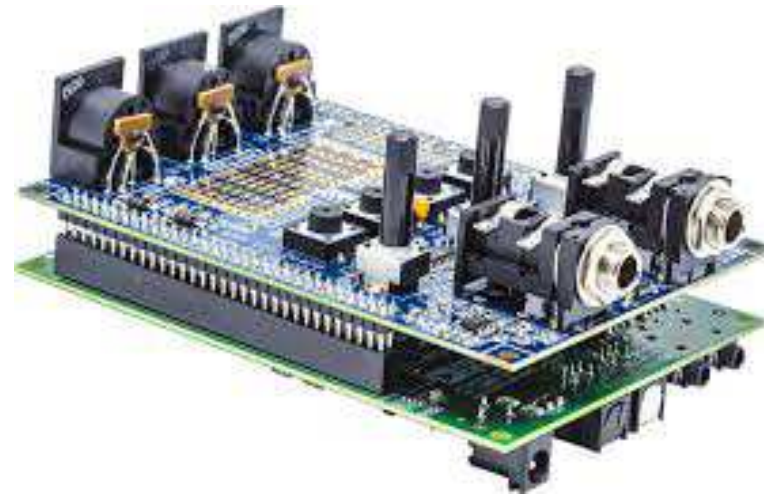
- Two 450 MHz DSP cores
- One 450 MHz ARM Cortex-A5 Core with Neon/FPU
- 5Mbits/640KB L1 memory/core with parity
- Optional cache/SRAM mode
- 32-bit, 40-bit & 64-bit floating point support
- ARM Core Infrastructure:
 - 450 MHz ARM Cortex-A5 (with Neon/FPU)
 - 32kByte/32kByte L1 Instr./Data Cache
 - 256kByte L2 Cache
 - Shared System Memory
 - 256KB L2 SRAM with ECC protection
 - Up to Two High Speed Memory Controllers
 - DDR3-900, DDR2-800 & LPDDR (16-bit)
 - Advanced Hardware Accelerators
 - FFT/iFFT (20 GFLOPS, 5usec per 1K-pt FFT)
 - FIR/IIR and SINC Filters, ASRC
 - Security Crypto Engines with OTP





SHARC Audio Module + “Fin” DIY Daughterboard

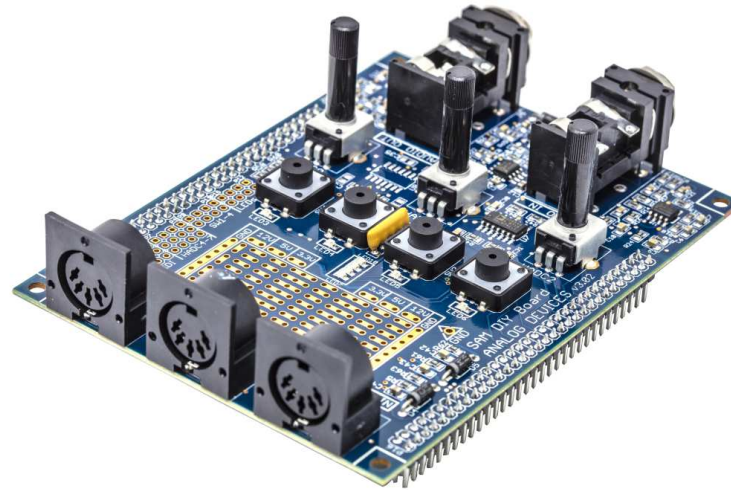
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Audio Project Fin DIY Daughterboard

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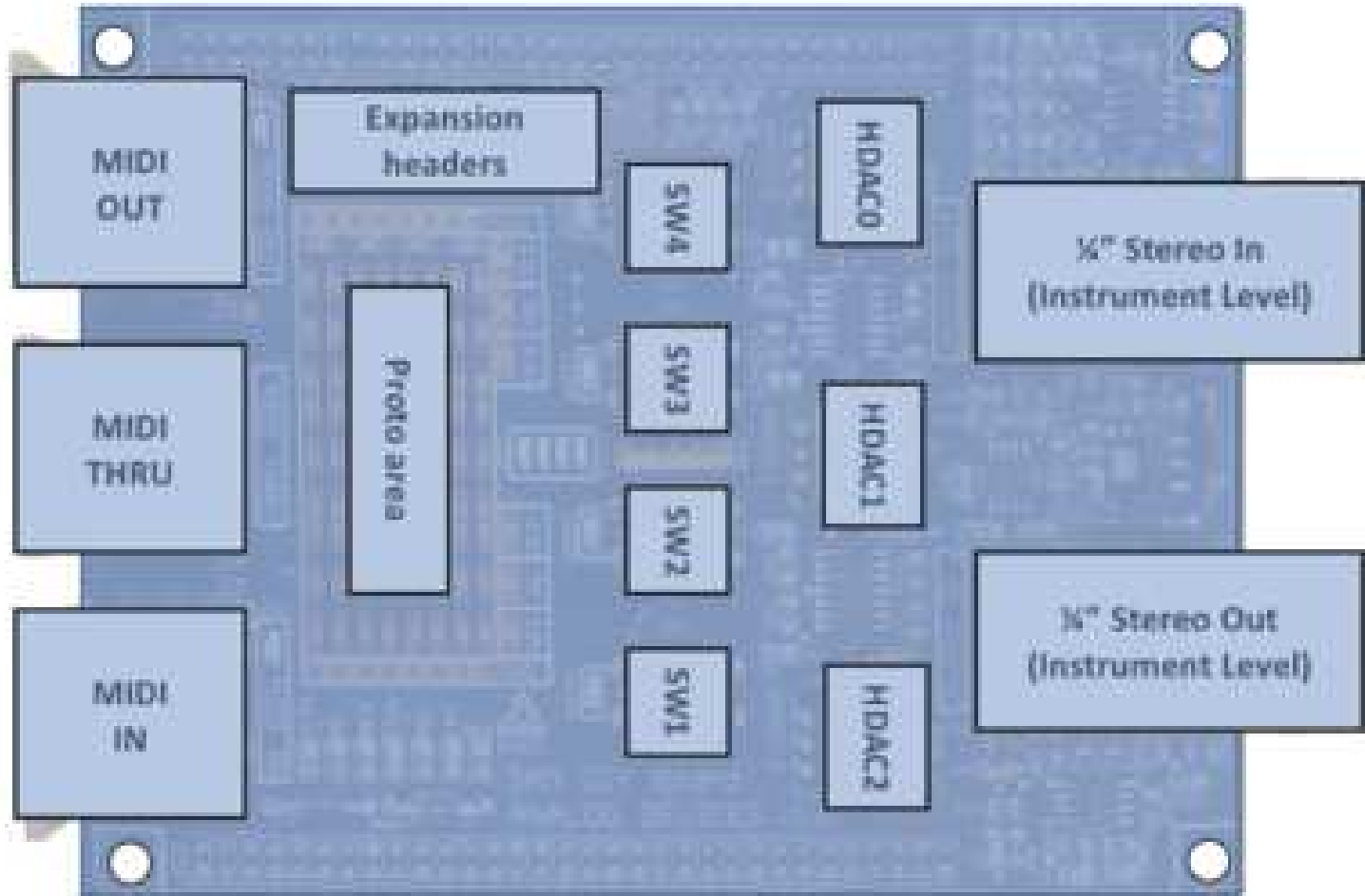


- Connects to SAM Expansion Connector
- Provides MIDI/Audio I/O and controllers:
- MIDI In/Out/Thru DIN connectors
- Three Pots, mappable to MIDI continuous controllers
- Four Push Buttons, similarly mappable
- 1/4" Stereo Input and Output



Fin Module Block Diagram

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Video: Faust on the Sharc Audio Module + Fin

faust2sam script already in the FAUST distribution

- Intro Video
- SAM Tools Overview
- Faust SAM Directories
- ADI Wiki SAM Page
- Overview of examples in `faust/examples/sam/`
- ADI CCES Tool Chain for processing `faust2sam` output
- SHARC Audio Module Demos
- Flanger, Echo, Chorus, Reverb
- Dual Core Processing
- Minimoog (Core 1) + Effects (Core 2)
- MIDI Control
- Minimoog MIDI Mapping
- TouchOSC interface controlling the Minimoog
- Standalone SAM + FIN
- 70 Synth Controls via MIDI for Minimoog
- Touch OSC Interface for Minimoog Front Panel



Faust SAM Signal Flow

