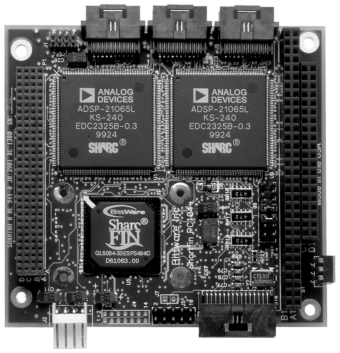
Shortfin-PC/104-*Plus*

Dual ADSP-21065L PC/104-*Plus* DSP Board



SHARC Power, PC/104-*Plus* Platform

The Shortfin-PC/104-*Plus* is a DSP board based on Analog Devices' low-cost ADSP-21065L SHARC® DSP. Combining two SHARC DSPs, which provide 400 MFLOPS of processing power, with 16 MB of SDRAM, 2 MB FLASH memory, and a 32-bit, 33 MHz PCI interface, the Shortfin-PC/104-*Plus* is ideal for embedded computing applications.

ADSP-21065L Processors

The Shortfin-PC/104-*Plus* is configured with two 66 MHz ADSP-21065L processors, each providing 200 MFLOPS. Each SHARC processor also has 544 Kbits of dual-ported on-chip memory, two programmable timers, two serial ports, an integrated I/O Processor (IOP), and twelve flags. The ADSP-21065L processors share a common 32-bit processor bus, which gives them access to the 4M×32 (16MB) bank of SDRAM, 2M×8 (2MB) bank of FLASH memory, and PCI bus interface.

SharcFIN™ ASIC for SHARC DSPs

The Shortfin-PC/104-*Plus* incorporates BittWare's SharcFIN ASIC, which flexibly interfaces the ADSP-21065L DSPs to the 32-bit, 33 MHz PCI bus, the SDRAM, the FLASH memory, and a peripheral bus. It also provides a feature-rich set of DMA functions and interrupt options to support very high-speed, real-time data flow with minimum processor overhead.

I/O Support

The Shortfin-PC/104-*Plus* offers a variety of user I/O options in addition to its 32-bit, 33 MHz PCI interface: external serial port connections, an RS-232 interface, and a digital I/O port. One serial port on each SHARC processor is a dedicated external, 4-channel (2 in/2 out) serial port (capable of 133 Mb/s). The remaining serial port on each SHARC processor goes off-board to an external connector via a global serial bus that can be configured as either TDM or I^2S.

The board's UART allows the ADSP-21065L processors to communicate with external serial devices via an RS-232 port, facilitating remote debugging, command, and control. The digital I/O port provides six bits of digital I/O and an interrupt to each processor. A timer I/O port provides two general-purpose timers per DSP.

Available Development Tools

BittWare offers a complete software development kit that allows you to easily develop application code and integrate the Shortfin-PC/104-*Plus* into your system. The software tools include a comprehensive host interface library (HIL), a standard I/O library, and diagnostic utilities. The board is fully compatible with Analog Devices' VisualDSP® code development tools and supports in-circuit emulation. It is also compatible with SpeedDSP, BittWare's highly-optimized C-callable runtime libraries, and with SharcLAB, BittWare's interface to MATLAB Simulink® and Real-Time Workshop®.

Features

- Dual ADSP-21065L SHARC DSPs (200 MFLOPS each)
- Low-cost, high-performance (400 MFLOPS total processing power)
- 16 MB of SDRAM
- 2 MB of FLASH memory with optional boot loading
- 2 external serial ports @ 133 Mbits/s each
- Global TDM/I^2S serial bus
- RS-232 UART
- Digital I/O port (6 bits and 1 interrupt from each processor)
- Timer I/O port provides 4 general-purpose timers (2 per DSP)
- PCI interface or standalone operation
- Complete software development tools available

BittWare

Specifications

BOARD ARCHITECTURE

Processors

- Two 66 MHz Analog Devices ADSP-21065L SHARC DSPs (200 MFLOPS per SHARC)

On-Board Memory

- 4M words × 32 SDRAM (16 MB total) available to the ADSP-21065L at 66 MHz (264 MB/s)
- 2M words × 8 (2MB) FLASH RAM for hostless boot or non-volatile storage
- 544 Kbits of dual-ported SRAM on each DSP

Serial Ports

- Two external serial port connectors, one per processor; each SHARC serial port has 4 channels (2 in/2 out) @ 33 MHz
- Global serial bus to external connector at 66 Mbits/s; can be configured as either TDM or I^2S
- Global UART provides RS-232 port (10-pin IDC Header)

Digital I/O Interface

- 30-pin, 50 mm IDC connector provides 6 bits of digital I/O (12 total) and 1 interrupt to each processor
- Timer I/O interface provides 2 timers per DSP

SharcFIN™ ASIC

- 32/33 MHz PCI rev. 2.2 compliant interface (132 burst; 80 MB/s sustained)
- Programmable interrupt multiplexer: 10 inputs, 7 outputs (supports hardware interrupts in both directions)
- All ADSP-21065L IOP registers are mapped to PCI memory space
- Supports host- and FLASH-based booting of ADSP-21065L DSPs
- 8-bit, 25 MHz peripheral bus

Power

- 6W @ 3.3V worst case sustainable
- 1W @ 5V worst case sustainable

Size

- 3.6" × 3.8" PC/104-*Plus* PCI bus format

SOFTWARE SUPPORT

Host Interface

- BittWare's software development kit for Windows® 95/98/NT/2000 and Linux contains a C-callable library of board control and communications routines
- Porting kit available for other operating system platforms

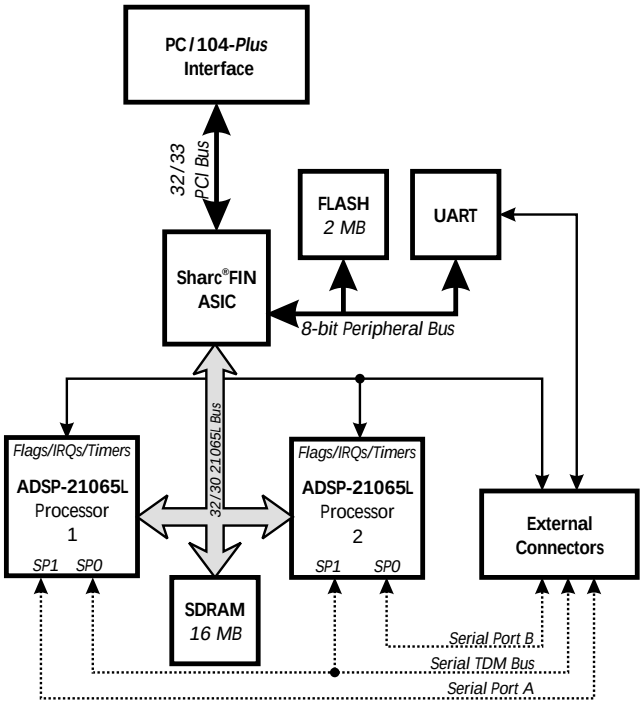
Development Tools

- Analog Devices' VisualDSP tools: C compiler, assembler, linker, simulator, and debugger
- VisualDSP Target for on-board debugging from host without an ICE
- White Mountain DSP ICE emulators
- Eonic Systems' Virtuoso™ operating system
- BittWare SharcLAB interface to MATLAB Simulink® and Real-Time Workshop®
- BittWare SpeedDSP function libraries

Ordering Information

SFP4-23-X

- Processors =2
  - 2 DSPs =2
- SDRAM =3
  - 16 MB =3
- X= Processor Speed
  - 0= 60 MHz (180 MFLOPs/DSP)
  - 6= 66 MHz (200 MFLOPs/DSP)



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