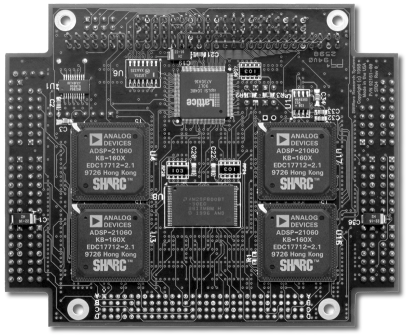
Silvertip-QUAD

Quad-SHARC PC/104 System Board



SHARC® Power in PC/104 Package

Loaded with processing power, the Silvertip-QUAD packs four 40 MHz SHARC DSPs onto a compact PC/104 format card. Small enough for space-constrained applications and rugged enough for industrial environments, the Silvertip-QUAD is a powerful solution for your embedded system design.

ADSP-2106x SHARC DSPs

The four SHARC processors can operate with a PC/104 host computer or standalone with the Silvertip-QUAD's on-board boot FLASH. The 1 Mbyte FLASH is also available as non-volatile memory space. Each SHARC DSP contains up to four Mbits of on-chip SRAM and has access to a 512K x 32 bank of external SRAM. All four SHARC DSPs are connected to a 32-bit processor bus, which allows them to access the external memory, the host PC through the PC/104 interface, and optional I/O mezzanines on the bitsi/104 interface.

PC/104 Interface

The PC/104 bus interface gives host computers direct access to the SHARC processors' IOP registers and DMA-driven host port, allowing the host to reset and boot the SHARC processors, load program images, and examine memory. Programs running on the DSP can have read and write access to the SHARC DSP's internal SRAM while the SHARC DSP's DSP core is operating without affecting the core's performance.

I/O Interface

The Silvertip-QUAD's bitsi/104 interface allows the SHARC DSPs to exchange data with BittWare's PC/104-compatible I/O mezzanines. The bitsi/104 connector conforms to the PC/104 standard, allowing you to stack multiple BITSI I/O mezzanines on the Silvertip-QUAD. A BITSI adapter board is also available to allow you to use the Silvertip-QUAD with BittWare's complete line of BITSI I/O mezzanines.

External Link and Serial Ports

The Silvertip-QUAD features eight external link ports and two external serial ports. The high-speed link ports allow the SHARC processors to communicate directly with other SHARC DSPs within the PC or in other systems. The Silvertip-QUAD's serial ports allow the SHARC DSPs to access synchronous serial devices.

Available Development Tools

BittWare offers a complete software development kit that allows you to easily integrate the Silvertip-QUAD into your system. The software tools include a comprehensive host interface library, a standard I/O library, and diagnostic utilities. The Silvertip-QUAD is also fully compatible with Analog Devices' VisualDSP® software development tools and supports in-circuit emulation.

Features

- Four ADSP-2106x SHARC DSPs running at 40 MHz
- Industry standard PC/104 interface and form-factor
- Up to 512K x 32 external SRAM
- 1 MB FLASH memory with optional auto boot
- Eight external link ports
- Two external serial ports
- bitsi/104 connector for optional I/O mezzanines
- Operates with host or standalone
- Complete development tools available
- Supports in-circuit emulation
- Available in dual or quad configurations

BittWare

Specifications

SYSTEM

Processors
- Four 40 MHz Analog Devices ADSP-2106x SHARC DSPs
- Shared processor bus provides fast interprocessor communication, memory access, and data transfer

External Memory
- One bank of up to 512K × 32 bits of zero-wait-state SRAM
- 1M × 8 bank of FLASH memory for hostless boot or user non-volatile data storage

Link Ports
- Eight external link ports link external devices directly to the SHARC processors
- Six 40 MB/s link ports per on-board processor provide high-performance data paths from the SHARC processors to the external link ports, the bitsi/104 interface, and the other SHARC processors

Serial Ports
- Two external serial ports link synchronous serial streams directly to the SHARC processors and the bitsi/104 interface
- Two 40 Mb/s serial ports per processor provide synchronous serial connections to the external serial ports, the other SHARC processors, and the bitsi/104 interface

PC/104 Interface
- 16-bit access to each of the SHARC processors' IOP registers
- Supports hardware interrupts in both directions (PC/104 IRQ is software selectable)
- Supports host-based booting of the SHARC processors
- Provides access to FLAG signals on all four processors

I/O Interface
- The bitsi/104 interface supports four SHARC link ports, three serial ports, and a 32-bit data bus
- bitsi/104 connector conforms to PC/104 format

Debug Port
- 14-pin IDC header for IEEE JTAG 1149.1 boundary scan with extensions for in-circuit emulation
- Supports White Mountain DSP's ICE emulators

Power
- 5V @ 2.5 A typical (not including optional BITSI mezzanine)

Size
- 3.775" × 4.550" (PC/104 compatible)

ADSP-2106x SHARC DSPs

Processing Rate
- 40 MHz, 25 ns instruction rate, 120 MFLOPS, 40 MIPS

Arithmetic
- 32/40-bit floating point, 32-bit integer

On-Chip Memory
- 2/4 Mbits (21062/21060) dual-ported SRAM organized ×32 or ×48

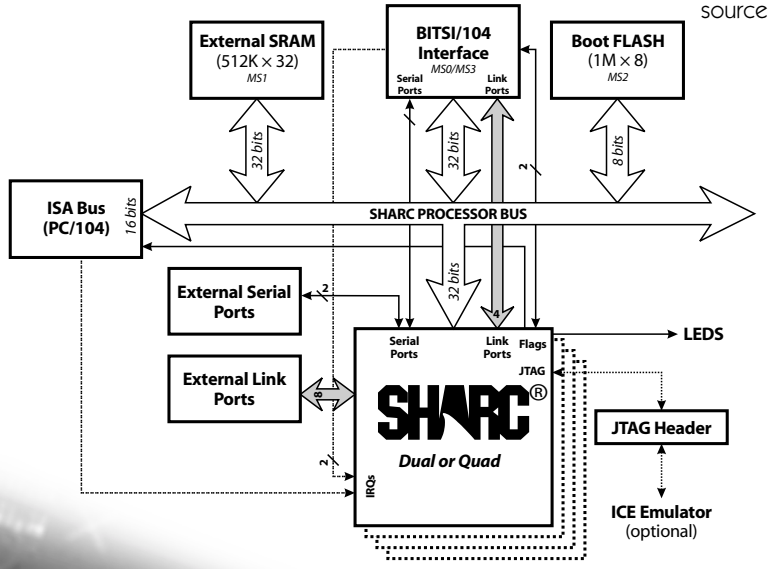
Off-Chip Addressing
- 4 Gigawords addressable memory space
- Memory addressable as 16-, 32-, 40-, or 48-bit words
- Programmable wait-state generation

I/O
- Integrated I/O processor with ten-channel DMA controller, six 40-MB/s link ports, and two 40-Mb/s serial ports

SOFTWARE SUPPORT

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

Development Tools
- Analog Devices VisualDSP tools include C compiler, assembler, linker, simulator, and source code debugger



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