Texas Instruments

THE WORLD LEADER IN DSP SOLUTIONS

details on

signal processing

JANUARY 1998 • ISSUE 50

inside

Plus...

What's next for the world's most powerful DSP?

Announcing 1 GFLOPS technology from TI

In the latest affirmation of its undisputed DSP dominance, Texas Instruments announces a floating-point DSP core that will provide single-processor performance of 1 billion floating-point operations per second (1 GFLOPS) on a single chip. The new core will support a new 32-bit, floating-point line of DSPs,

Continued on page 3

TI to provide Java-enabled DSP Solutions through licensing agreement with Sun

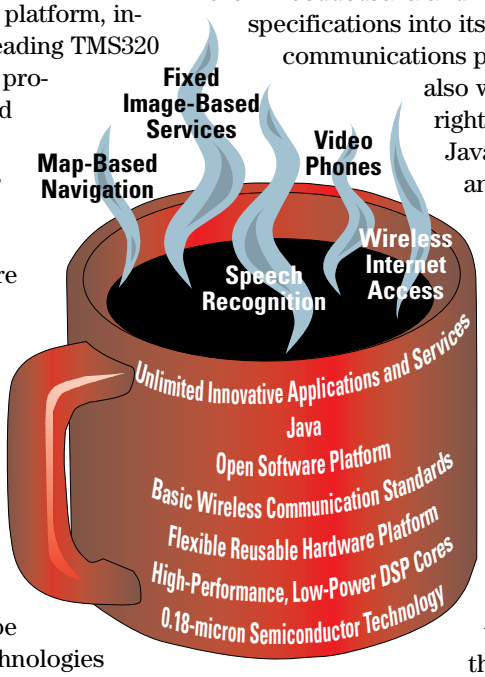
As a key move in providing future digital signal processing solutions for the wireless communications marketplace, Texas Instruments signed an agreement with Sun Microsystems™, Inc., to license the EmbeddedJava™ and PersonalJava™ environments.

The agreement will allow TI to deliver Java™ capabilities on any Texas Instruments processor platform, including TI's industry-leading TMS320 family of digital signal processors (DSPs), for end equipments such as digital cellular phones, pagers, and wireless local loop terminals.

"In researching future wireless communications needs, TI believes multimedia network-based services such as wireless Internet access and video phones will drive this marketplace and that digital signal processing and software will be the key underlying technologies to make this happen," said Gilles Delfassy, worldwide general manager of TI's Wireless Communications Business Unit and Semiconductor Group vice president. "TI's licensing of EmbeddedJava and PersonalJava is an important step toward building a software platform to integrate with existing hardware platform products such as its digital baseband platform for wireless communications systems."

Personal communications products based on Java-enabled digital signal processing will be able to derive functionality from the wireless network or the Internet. Applications will not have to be resident in the equipment. Rather, the individual applications will be downloaded from the network upon request. This approach will create a new class of independent software developers and will enhance revenue opportunities for wireless service providers in an increasingly competitive environment.

The TI Wireless Communications Business Unit will be incorporating the EmbeddedJava and PersonalJava specifications into its wireless communications platforms. TI also will have the right to offer a Java option on any of its processor platforms targeted at embedded systems for consumer products. The company is currently working with its customers and third parties to define how Java technology will be packaged and delivered, and it plans to offer Java-enabled wireless communications products based on its digital baseband platform in 1998.



TI's industry-leading digital baseband platform integrates all the digital baseband functions necessary for the design of digital cellular telephones using any transmission standard in the world. With Java, TI will be able to complement its digital baseband platform with a software platform which facilitates the delivery of enhanced information capabilities such as map-based navigation, speech recognition and fixed image-based services over cellular networks.

"The TI digital baseband platform has been incorporated into more than half of the digital cellular phones manufactured worldwide in 1997, making us the leading digital cellular DSP supplier worldwide," continued Delfassy. "TI is committed to helping our wireless customers continue to grow their competitive edge by providing hardware/software platforms that not only reduce time-to-market, but increase opportunities for consumer product differentiation via software."

"We are delighted that TI has chosen to license both our EmbeddedJava and PersonalJava specifications," said Jon Kannegaard, vice president of software products at Sun Microsystems JavaSoft division. "The synergy of the Java technology combined with TI's digital signal processing technology will further broaden the reach of Java into future wireless communications systems."

PersonalJava is a new Java Application Environment (JAE) for network-connectable applications on personal consumer devices for mobile, home, or office tasks. PersonalJava is designed to specifically address resource-limited environments, with the addition of specific features required by consumer applications. Similarly, EmbeddedJava can be used in a variety of products including mobile phones, pagers, process control, instrumentation, office peripherals, and networking routers and switches. EmbeddedJava applications run on real-time operating systems, and are optimized for the constraints of small memory footprints and diverse visual displays.

For more information regarding Wireless Solutions visit www.ti.com/sc/docs/wireless/home.htm.

Floating-point, GFLOPS DSP

Continued from page 1

the TMS320C67x generation, which complements and extends the groundbreaking VelociTI™ architecture already used in TI's industry-leading, advanced-VLIW TMS320C62x fixed-point DSPs.

Not only does the 'C67x floating-point core deliver up to 10 times the performance of today's fastest competitive offerings, but as a superset of the 'C62x instruction set, it makes TI the first DSP solutions provider to offer a code-compatible fixed- and floating-point architecture with a single learning curve.

"The VelociTI architecture lets DSP developers start with floating-point designs, and then seamlessly migrate to more cost-efficient fixed-point solutions," said TI Fellow and chief architect Ray Simar said at a recent gathering of the Microprocessor Forum.

In the first quarter of 1998, TI plans to release a new version of the 'C6x toolset that will fully support floating-point instructions. However, designers can use existing 'C6x tools to begin development of 'C67x floating-point systems today.

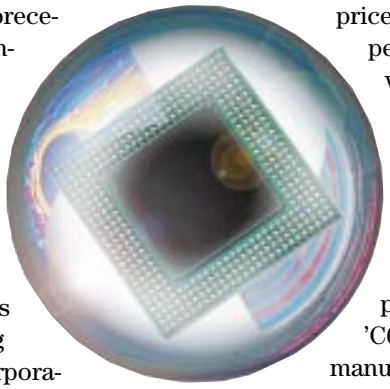
"Immediately," said Greg Da Silva, president and CEO of GO DSP Corporation, "that's how fast DSP designers can start development and use the Code Composer IDE on the new 'C67x DSP. Since this is the first DSP chip family with code-compatible fixed- and floating-point DSP architectures, designers have an unprecedented time-to-market advantage."

"This compatibility with the 'C62x, the excellent tool set, the VelociTI architecture, and an expansive network of developers are an important component to Ariel's success in the fast-paced networking market," remarked Ariel Corporation's John Lynch, chief technology officer.

In addition to the wide range of telecom and datacom applications enabled by the 'C62x, the new 'C67x will enable next-generation advanced applications and bring faster speed, precision, and dynamic range to applications including wireless local loop base stations, beam-forming base stations, virtual reality 3-D graphics, voice mail, speech recognition, audio, radar, industrial control, atmospheric modeling, finite element analysis, and imaging such as fingerprint recognition, ultrasound, and MRI.

To achieve the industry's first ever fixed- and floating-point code-compatibility, TI added floating-point functionality to six of the eight functional units inside the 'C6x CPU. These functional units are two ALU units, two auxiliary units, and two multiplier units. The 'C67x floating-point core can achieve 1 GFLOPS at 167 MHz today; and TI plans to triple 'C67x performance by the year 2000.

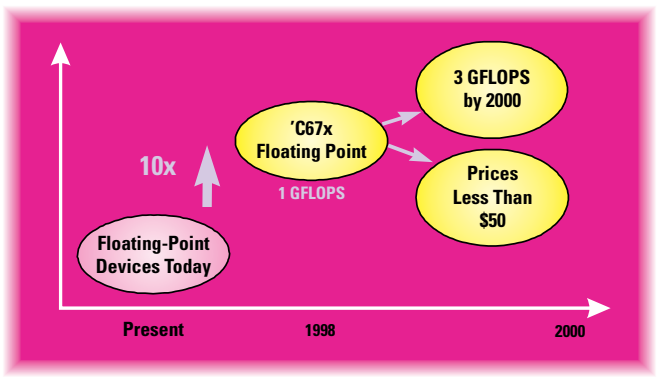
"We plan to offer a broad 'C67x floating-point product offering. Performance will range from 1 GFLOPS up to 3 GFLOPS by the end of the decade," said Mike Hames, TI Semiconductor Group vice president and worldwide DSP manager. "This technology also will enable prices less than $50 per device and will be complemented by a wide variety of mixed-signal application-enabling devices." Sampling of the first 'C67x devices, manufactured in TI's 0.18-micron TImeline technology, is planned for the second half of 1998.



As the world's number one DSP solutions provider, TI also has the largest number of floating-point customers worldwide and continues to encourage new designs using the 32-bit, floating-point TMS320C3x and TMS320C4x generations. For customers who need more performance, TI plans to offer translation tools from these existing architectures to the new 'C67x generation that will minimize rework and maximize 'C3x and 'C4x code investment. This 'C67x roadmap extends TI's DSP market leadership well into the next century. "Once again, TI has shown its DSP leadership," said Peter Siy, president of White Mountain DSP.

Leading DSP third-party companies who have already announced they will support the new 'C67x core include 3L; Ariel Corporation; Coreco, Inc.; DNA Enterprises, Inc.; DSP Research, Inc.; DSP Software Engineering, Inc.; Eonic Systems; GO DSP Corporation; Hunt Engineering; Loughborough Sound Images (LSI); Mizar; Pentek, Inc.; RadiSys Corporation; Spectron; Spectrum Signal Processing; Sundance Multiprocessor Technology, Ltd.; Traquair Data Systems; Transtech Parallel Systems Corporation; and White Mountain DSP, Inc.

For more information, visit www.ti.com/sc/c67x.



Marshall Industries/White Mountain DSP Starter Kit provides new support for 'C2xx devices

The Marshall Industries/White Mountain DSP Pathway 2xx DSP Starter Kit (DSK) is a simple, low-cost standalone application board for the TI TMS320C2xx fixed-point digital signal processors.

The Pathway 2xx DSK is powerful enough for real-time signal processing and versatile enough to allow the user full accessibility to on- and off-chip peripherals. In addition to accessing on- and off-chip peripherals, the user is free to interface the DSK to external designs through the flexible interconnect system.

The Pathway 2xx DSK has a TMS320F206-40 MHz on board to allow full-speed verification of code for the entire 'C2xx generation as well as 32K words of Flash memory for high-volume, low-cost memory integration. The supplied debugger is Windows® oriented, which simplifies code development and debugging capabilities.

Features

- 20-MIPS TMS320F206 DSP
- 32K of on-chip Flash with 4.5K of on-chip SRAM (544-word data space and 4K of program space)
- Wide band audio analog data acquisition via the TLC320AC02 analog interface circuit
- Standard RCA connectors for analog I/O that provide direct connection to microphone and speaker
- Program, data, and I/O expansion bus for external design
- Standard RS-232 interface for asynchronous serial port operation
- Complete with DSK assembler and GO DSP's Code Explorer™ for rapid prototyping

Ordering information

The 'C2xx Pathway DSK is CE and UL approved, and has a suggested resale of US $149. Order your Pathway DSK today in North America. Call Marshall at (800) 261-9602 or TI at (800) 477-8924, ext. 3320. Or visit us via the web at www.ti.com/sc/pathway or www.marshall.com to order online! International shipments are available from TI (plus handling charges).

HotHaus Technologies/Texas Instruments 'C2xx DSP HausSolutions for telecommunications

An integrated DSP Solution that features HotHaus Technologies' suite of DSP telecommunciations software for the 'C2xx family is available today for North American customers via TI distribution.

The HausWare™ algorithms and DSP software framework provide all the elements required to support a wide variety of multi-tasking telecommunications applications, and shorten the learning curve for product developers using DSPs for the first time. Applications include point-of-sale terminals, remote metering and security, feature phones, multi-fax machines, and computer telephony. Through the use of a DSP API and object-oriented methodology, HausWare is changing the way developers field DSP-based products by buffering them from the underlying complexity of algorithms and multitasking.

The *base package* of software includes all the algorithms necessary to control multiple PSTN lines, a V.22bis modem, and an ADPCM (G.721) waveform coder. Optional additions to this base package include a V.32bis modem, and a T.30 fax protocol with associated fax modems. The HausWare Starter Kit, which includes a TMS320C203 DSP-based telephony platform and algorithms in on-board Flash, can carry developers from algorithm evaluation, through to proof of concept prototyping, and on to application development using C tools on a PC.

Embedded algorithms

Base software package

- ❒ DTMF/MF detection/generation
- ❒ Call progress monitoring/generation
- ❒ Activity detection
- ❒ Type I Caller ID
- ❒ G.711 format conversion
- ❒ G.721 ADPCM – 32-kbps compression

Continued on page 5

'C2xx DSP

Continued from page 4

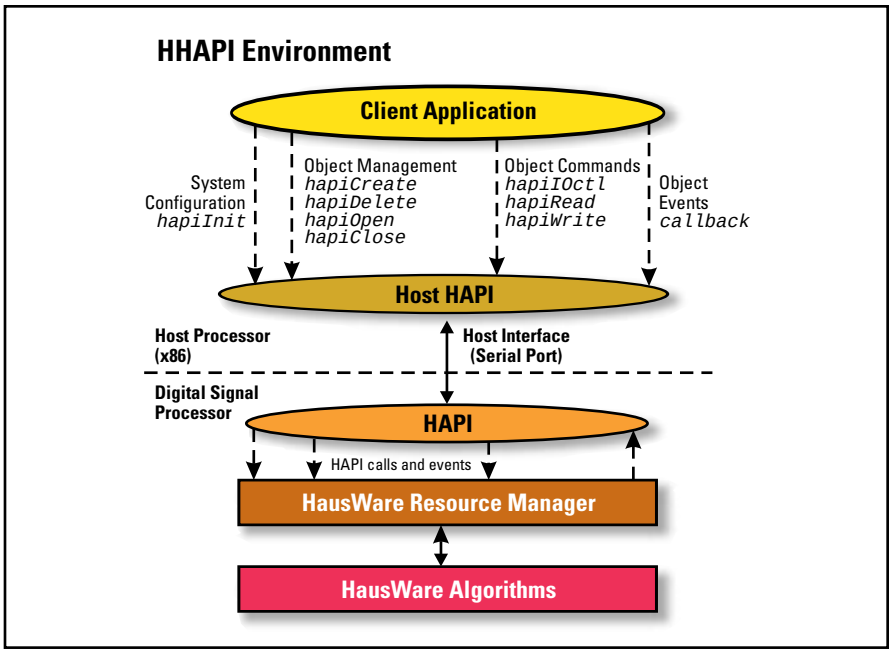
- ❒ G.165 line echo cancellation
- ❒ V.22bis – 4800/2400-bps data modem

Upgrade software options

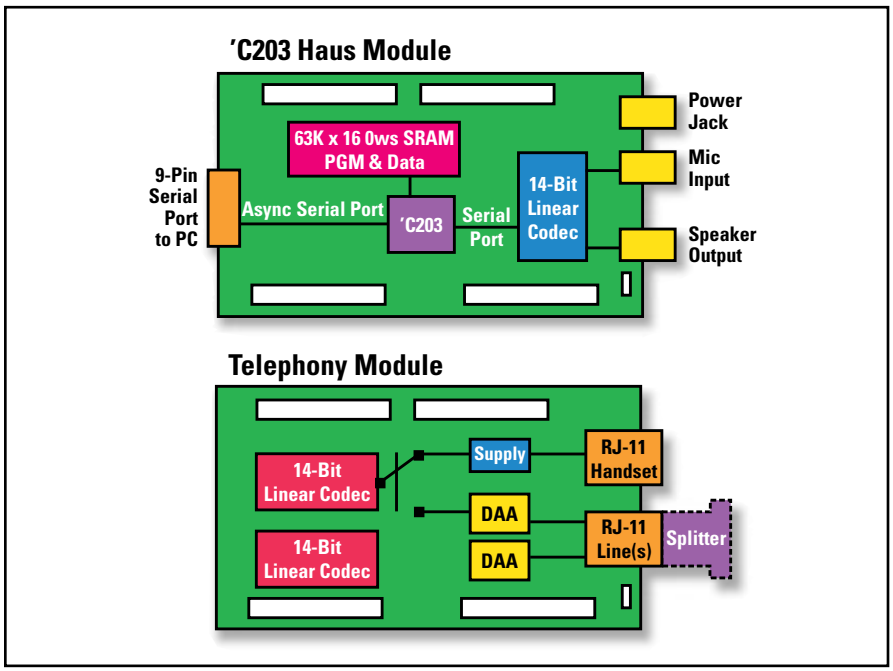
- ❒ V.32bis – 14,400/9600-bps data modem
- ❒ T.30 fax transmission protocol—Includes V.21 – 300 bps, V.29 – 9600 bps, V.27ter – 4800 bps modems

HausWare API

The HausWare API (HAPI) provides programmers with access to HausWare algorithms on a DSP target processor, and the Host HausWare API (HHAPI) extends this functionality to external host processors. The HausWare Starter Kit includes a PC x86 version of HHAPI that supports a serial port interface to the DSP. Developers can use Borland C++ V4.5 or Microsoft® Visual C++ V1.52 (not included) to develop Client Applications on a PC, which use HHAPI to communicate with the HausWare algorithms running on the DSP hardware.



Once the prototyping phase of development is complete, the PC C code can be recompiled for the end-product DSP. If an external host is used in the end-product, the code can be recompiled for it, since HHAPI supports a variety of other host processors. A Windows DLL and ActiveX Control version of HHAPI are also available.



HausWare Starter Kit – DSP hardware platform

Literature

For more information, call your regional literature response center for the following or visit www.ti.com/dsps.

- *HausWare Renaissance Overview*
- *HausWare Technical Data Sheets folder*

Pricing/Availability

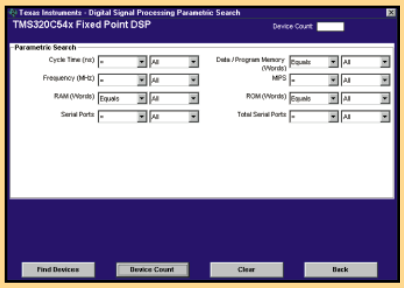
- These products are currently available only in North America.
- HHTLS0004.2XX HausWare Starter Kit (HSK): US $995.00
  Availability: January '98
- HausBuilder Suite(s) base package/ upgrade suite: Available on request. Includes:
  - design process guide
  - HotHaus technical support, and
  - hardware Reference Design for modules
- Texas Instruments 'C2xx DSPs (production quantities) for HotHaus HausSolutions
  - TMS320C203HPZ, TMS320C203HPZ-80, TMS320LC203HPZA
  - TMS320F206HPZA (Flash based, 40 MHz)

For further information, check out www.hothaus.com or contact your local TI sales representative.

DSP Solutions information—Now ea

All you need to know about TMS320 on CD-ROM

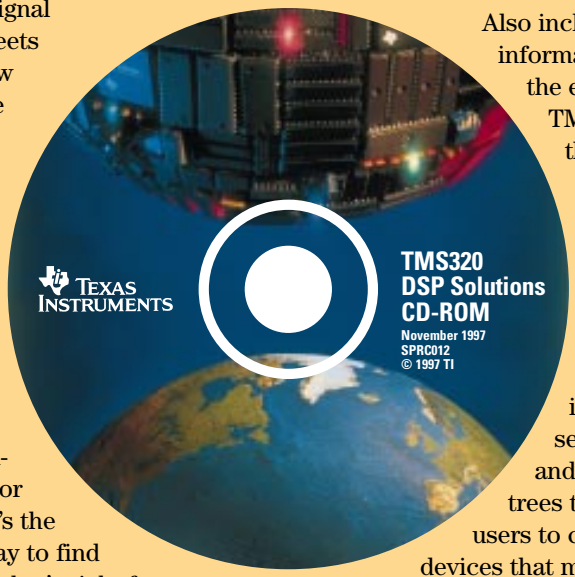
This CD is designed to provide you with all the critical information you'll need for choosing the right TI DSP for your application.



On the disc, you'll find technical documentation, including:

- Data Sheets
- User's Guides
- Application Notes
- Designer Notebook Pages
- Tools Documentation
- Mixed Signal Data Sheets

To narrow your device hunt, use the parametric search engine that allows you to search the CD by device, end-equipment or function. It's the quickest way to find the TI DSP that's right for your application.



Also on this CD, web access is included for you to view the latest database with TI's most up-to-date literature.

Also included is information on the extensive TMS320 third-party network, distributors, and software. The CD-ROM will feature intelligent searching and device trees that allow users to choose devices that meet their design criteria. The user will also be able to download from the web the latest data base that contains the most recent listing of documentation.

To receive your complimentary CD-ROM, please fill out the enclosed reply card or for more information about TI DSP Solutions, visit www.ti.com/dsps.

TI DSP third-party appli development guide now

The latest TI DSP Third-Party Application Software & Development Guide containing hardware and software support from the most extensive third-party network in the industry is now available on CD-ROM.

The CD is a comprehensive, fully searchable collection of DSP information, including technical data sheets, training documents, directories of third-party software and developer resources, and DSP newsletters and magazine archives.

For more information on how to receive your free CD-ROM, please visit our third-party resource guide online at www.ti.com/sc/dsp_3pguide.

New Mixed Signal and Analo Reference InfoNavigator CD a

The latest version of InfoNavigator is now available containing approximately 20,000 pages of technical specifications and application notes.

It includes a powerful search engine that will search by parametrics or functionality. The user can review a high-level technical overview on each device before accessing comprehensive data sheets and application notes. One new feature is the ability to download CD updates for new devices from TI's web site, allowing designers to easily maintain

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on CD-ROM

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llows for powerful searches

an up-to-date database of TI mixed-signal and analog products on their PC. The first update file, which adds 17 recently released devices, is already available.

To order your free copy of the 1997 InfoNavigator CD or download an update file, see www.ti.com/sc/5047 for more information. One new feature is the ability to download device updates from the world wide web site enabling users to get the latest details on MSP and analog devices as soon as they become available.

TI announces $25 million University Research Fund

TI recently announced a $25 million investment to support applications for high-performance digital signal processors at universities around the world.

"This collaboration will involve hundreds of researchers in top universities worldwide who are conducting research for high-performance DSPs," said John Scarisbrick, senior vice president of TI Semiconductor Group and manager of worldwide applications-specific products. "It will accelerate the development of DSP technologies and create the next wave of DSP-based applications."

The new investment in DSP research represents a significant "next step" in TI's overall focus on DSPs. With this fund, TI has invested more than $50 million over the past 15 years in DSP university education and research, partnering with universities and research centers around the world and focusing on areas such as wireless communications, high-speed networks, and smart motor control. More than 900 universities worldwide are training the next generation of electronic designers on TI DSPs.

Universities interested in submitting abstracts to the TI DSP University Research Fund should begin by looking at basic criteria online at www.ti.com/sc/univfund. For more information on TI's University Program, visit the home page at www.ti.com/sc/docs/dsps/universi.

It's time to join the DSP revolution!

MCU-to-DSP seminar (in Europe only)

This fundamental seminar introduces digital signal processing.

The class focuses on the advantages of DSP in practical applications which in the past have been designed using microcontrollers. The skills needed to begin designing with DSPs will be introduced.

For further information please call EPIC at one of the following numbers:

Deutsch	+49-8161 80 33 11
English	+44-1604 66 33 99
Francais	+33-1-30 70 11 64
Italiano	+33-1-30 70 11 67

DSP course for universities

Advanced Microcomputer Systems, Inc. (AMS) recently announced another Educational Courseware, EZ-DSP Tutor Course based on the TMS320C5x.

This courseware program includes software, DSP main board, lab board, a comprehensive workbook for students, and an instructor's manual.

The intent of the curriculum is to help schools keep pace with leading-edge technology and to prepare tomorrow's engineers for the job market.

For more information on this or other educational courses, contact AMS at (800) 972-3733 or e-mail them at ams@gate.net.

Complete 1394 and DSP Solutions 1394 serial bus device MPEG2Lynx—TSB12LV41

The TSB12LV41, also called the MPEG2Lynx, provides a 1394 interface for high-performance audio, video, and data applications at up to 200M bits/s.

It is suitable for set-top boxes, multimedia tape and disk drives, and other consumer electronic devices requiring MPEG-2 formatted isochronous data transfer according to the proposed IEC 1883 specification. The TSB12LV41 also supports non-MPEG-2/digital satellite system (DSS) isochronous and asynchronous data transfer with an auto-packetization feature.

The TSB12LV41 interfaces directly to TI's TMS320AV7000 generation of single-chip set-top-box devices. The AV7000 architecture integrates a 32-bit ARM® RISC processor, a transport packet parser, an MPEG-2 video decoder, an MPEG audio decoder, an advanced graphics accelerator, and an NTSC/PAL video encoder.

The bulky data interface (BDIF) enables MPEG-2, DSS, isochronous, or asynchronous data transfer in bit-wide, byte-wide, and memory-mapped modes. A 256-byte control FIFO allows asynchronous transmit and receive control packets while an 8K BDIF FIFO provides independent logical FIFOs for MPEG-2/DSS, isochronous and asynchronous data transmit and receive. The BDIF FIFO performs a hardware asynchronous packet transmit retry for up to 256 × 125 µs. The TSB12LV41 supports full-width, time-stamped offsets for MPEG-2 and DSS transmit and receive and also performs age filtering functions.

The TSB12LV41 link-layer controller complies with the IEEE 1394-1995 specification for high-performance serial bus. It transmits and receives correctly formatted 1394 packets, detects lost cycle-start packets, and generates and inspects the 32-bit cyclic redundancy check. The TSB12LV41 is also capable of performing the functions of cycle master, isochronous resource manager, and bus manager.

Voltage (V)	Data Rate (Mbps)	Package	Quantity	Price
3.3	Up to 200	100-pin TQFP (PZ)	1K	$14.03

Programmable dual DACs let designers trade power for speed

The TLC5618 and the TLC5617, programmable, dual 12-bit and 10-bit digital-to-analog converters (DACs) offer designers high speed and low power in combination with an easy interface to TI's line of TMS320 DSPs.

Both the TLC5618 and TLC5617 feature settling time vs. power consumption programmability (12.5-µs/3-mW slow mode and 2.5-µs/8-mW fast mode) and a software-programmable, power-down mode (to 1 µA). They also offer a high-impedance buffered reference input and simultaneous or independent updates of both DACs in the package. Both devices also have a power-on-reset function that ensures repeatable power-up conditions.

The TLC5618 is a 12-bit DAC perfectly suited for applications such as cellular phones, battery-operated industrial controls, remote industrial controls, and machine and motion controls. The 16-bit digital control data is obtained over a three-wire serial bus that is CMOS compatible. The TLC5618 and TLC5617 are available in 8-pin SOIC packages.

For more information, call your regional literature response center as shown on page 12, or visit us on the web at www.ti.com/sc/msp.

10-bit, 20-MSPS ADC provides high resolution and speed with 33% power savings

The TLC876 is a single-supply, 10-bit, 20-MSPS analog-to-digital converter (ADC) which allows designers to reduce board space, lower power dissipation, improve bus efficiency, increase flexibility, and lower system cost.

This ADC's speed and resolution make it ideal in digital video systems, digital cameras, scanners, communications systems, and other cost-sensitive, high-performance applications.

The TLC876's power consumption is only 107 mW, 33 percent lower than competitive devices. Designers experiencing bus delays will find that the TLC876 significantly reduces enable and disable time (5 ns vs. 150 ns), improving bus efficiency and system throughput.

The TLC876 analog input has been designed to allow inputs as low as ground. This permits the system designer to eliminate level shifting stages prior to the ADC, saving board space and cost. Additionally, the reference input impedance is two times higher, reducing the drive requirements and cost of the reference drive circuitry. The TLC876 guarantees differential non-linearity of less than 1 LSB and delivers 54 dB of signal-to-noise ratio.

The TLC876 features three-state outputs, and both inputs and outputs are compatible with 3-V and 5-V logic. The TLC876 is available in 28-pin SOIC or 28-pin SSOP packaging.

Demonstrate ’AD50 performance today with new MSP EVM

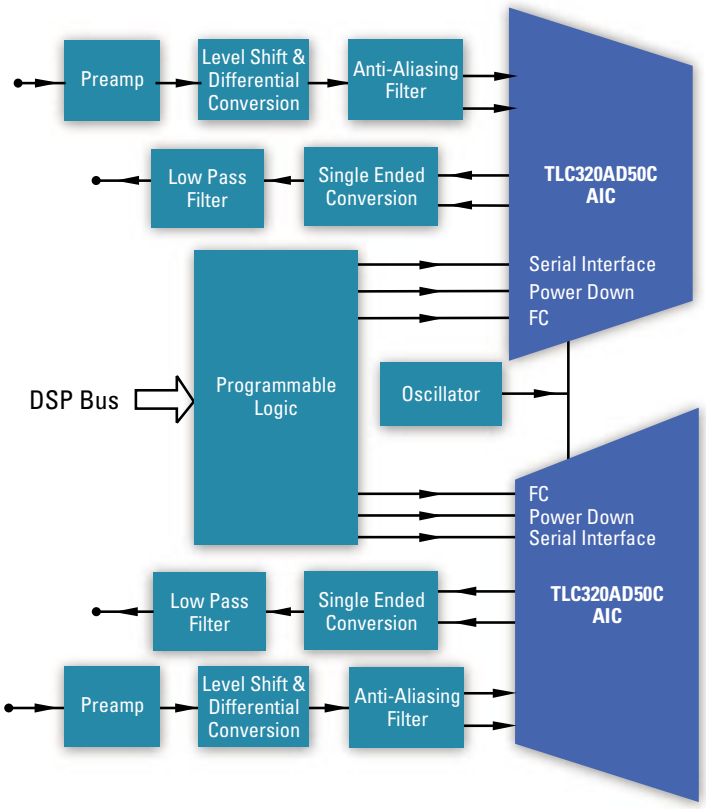
An EVM is now available to evaluate the performance of the TLC320AD50 analog interface circuit (AIC).

The ’AD50 is a versatile 16-bit sigma-delta analog front end for modem and business audio applications. It provides high-resolution signal conversion using an oversampling sigma-delta technique. The ’AD50 has internal 64 X oversampling on the ADC and 256 X oversampling on the DAC. The TLC320AD50 has a glueless interface, via a serial port, to the TMS320 family of digital signal processors (DSPs) reducing overall system cost and board space.

This EVM can be directly connected to the TMS320C54x DSKplus DSP Starter Kit or to any other system with a compatible synchronous serial interface. The kit comes complete with a data manual and applications report which describes the evaluation board and how to use it to demonstrate the performance of the ’AD50. The application report also describes the connections of the EVM to the DSKplus.

The ’AD50 AIC includes master/slave capability with support for up to three slaves, allowing this device to be used in multiple AIC applications such as voice-enabled modems. It also provides differential outputs that can drive a 600 differential load.

The ’AD50 offers excellent noise performance with typical signal-to-distortion ratio of 90 dB and typical signal-to-noise ratio of 89 dB on the ADC and DAC. With a 3-V digital interface, power-down mode, and low power dissipation of only 120 mW typical this device is ideal for battery-operated equipment and interfacing to 3-V DSPs.



Additional features of the ’AD50 include: selectable conversion rate, reset, power down, communications protocol, serial clock rate, gain control, and system test mode (digital and analog loopback test mode).

Key applications of this device include V.34+ modems, PCMCIA fax modems, DSP analog interface, industrial process control, acoustical signal processing, noise cancellation/suppression, and general-purpose data conversion.

To order the TLC320AD50 EVM: In the US, call (800) 477-8924, x5800. Price: US $75. In Europe, contact the European Product Information Center. In all other areas, contact your regional product information center (see back cover). For more information on TI mixed-signal and analog EVMs, see www.ti.com/sc/mspevms.

DSP Solutions
Texas Instruments
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This section features new development and application support available through TMS320 Third Parties

PDI introduces 'C8x Compression Library

Precision Digital Images (PDI) introduces the TMS320C8x Compression Library, a unique combination of low-level compression components which allows rapid development of image/video compression algorithms on the 'C8x DSP. PDI's 'C80 Compression Library makes it easy for you to incorporate functions such as Huffman coding, motion estimation, pixel sub sampling, and DCT transforms in your application. Standards-based routines are also included so you can perform MPEG-1 and JPEG standard compression technology using the power of the 'C80. Maintenance is available for US $5,000/yr and includes automatic updates, telephone and e-mail support.

Precision Digital Images

- Phone: (425) 882-0218
- e-mail: info@precisionimages.com
- www.precisionimages.com

GO DSP releases new version of Code Composer™ with support for 'C6x

GO DSP has released the latest version of Code Composer. In addition to new features for communications and imaging applications, version 3.0 also includes support for the 'C6x. Code Composer provides a single unified environment from which designers can edit, build, debug, and profile code and manage projects, thereby reducing time-to-market. The new features include: additional integrated graphical signal analysis capabilities including eye and constellation diagrams, FFT waterfall, image displays, and others that are well suited for communications, imaging, and other real-time applications; a Visual Project Manager that is integrated with the IDE's editor for fast manipulation of all project files including libraries and project customizations; multiple watch windows to view variables, structures, and expressions; and a new leading-edge GUI with enhanced toolbars and allowing for more effective use of screen real estate. These features help engineers develop more sophisticated, robust, and optimized code to fully exploit the resources of the 'C6x and other DSPs for maximum performance. Code Composer version 3.0 runs on the MS Windows 95™ and NT™ host platforms and supports the 'C2xx, 'C3x, 'C4x, 'C5x, 'C54x, and 'C6x. Price is US $2,000 from GO DSP's third-parties and worldwide distributors, TI's worldwide distribution network, or directly from GO DSP.

GO DSP

- Phone: (416) 599-6868
- e-mail: sales@go-dsp.com
- www.go-dsp.com

Traquair launches 'C6x single-processor development system

Traquair Data Systems has just introduced the HEVAL6A, a TMS320C6x single-processor development system. This integrated package combines 'C6201 hardware, software development tools, and extensive documentation in order to allow engineers to utilize the new technology in a wide variety of computationally-demanding DSP applications.

The system includes a PC-based DSP board, developed by Hunt Engineering, which integrates a 200-MHz 'C6201

processor with several types of memory, including SBSRAM, SDRAM, and asynchronous SRAM, giving developers the means to selectively utilize the memory options most suited to their application. A mezzanine slot, supporting a pair of serial interfaces and two I/O interface slots, supporting a variety of data-acquisition and communications modules, provide developers with various means of integrating the hardware into their chosen application environment. The DSP hardware can be programmed and debugged via the board's 16-bit ISA-bus host interface and JTAG controller and can also be booted without a host computer (for standalone or embedded applications) via its onboard Flash ROM. The software development tools include the TI 'C6x code development tools (C Compiler, Assembly Optimizer, Assembler, and Linker), a software loader utility, GO DSP Code Composer, and a PC™-based API for DOS and Windows.

Traquair Data Systems

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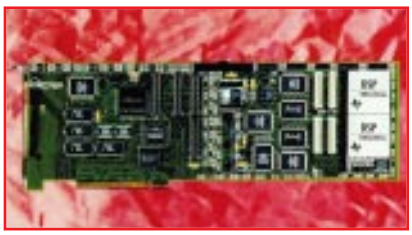
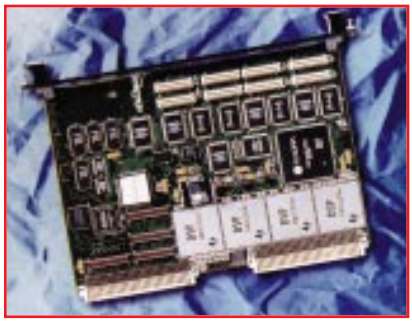
Spectrum Signal Processing offers 'C6x product suite

Spectrum Signal Processing has introduced a suite of industry-leading solutions supporting the TMS320C6x. The first prod-



ucts in Spectrum's 'C6x product line consist of the Monaco, a Quad-VME™ carrier board, the Daytona, a dual-PCI carrier board, as well as a variety of PMC mezzanine modules optimized for the 'C6x architecture. The Monaco and Daytona solutions contain exclusive hardware performance features and extensive signal processing and integrated development environment (IDE) software support. The high-performance of this new product suite hinges on the Hurricane, a new PCI interface bridge chip. This chip was exclusively developed by Spectrum to increase I/O dataflow to and from the PCI interface at a sustained transfer rate of 132 MB/s, while permitting the design of a compact and efficient line of products. Complete 'C6x system solutions will be available on a number of platforms such as PCI, VME, and CompactPCI. The Monaco board, Daytona board, and PMC modules will be available in 1Q98. Volume pricing is available for OEM quantities.



Spectrum Signal Processing

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'C3x DSK expansion

SuperDSK from Kane Computing provides a pathway to convert a 'C3x DSK board into a professional DSP development platform. The SuperDSK package includes a new PCB that the existing DSK will plug on to with 254 Kb SRAM, 128 Kb Flash memory, generous prototyping area, diagnostic LEDs, power connector, digital I/O (2×16 bits), and optional CD-quality stereo CODEC (16 bit, 50 KHz). Documentation comprises a user manual with quick start software, block diagrams, memory maps, switch setting, circuit explanations, and software driver, and software guides. All SuperDSKs will include test software, Flash memory programming, drivers for CODECs, and GO DSP interface.

Kane Computing

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White Mountain DSP introduces LAN-based DSP emulation

White Mountain DSP unveils a network-hosted DSP emulator. The Trek-510 Universal Ethernet Emulator provides network-hosted emulation for the TMS320C2xx, 'C3x, 'C4x, 'C5x, 'C54x, 'C8x, and the new 'C6x. The ability to debug DSP targets remotely will enable new applications that require DSP-distant debugging. In addition, it gives corporate developers the ability to share DSP target systems among large teams of developers.

Providing flexible connectivity options, the Trek-510 connects via a 10Base-T or AUI connection to an Ethernet-based local area network (LAN), allowing remote debugging between either PC or Sun® workstation debug hosts and the target DSP system. The Trek-510 uses the TCP/IP networking protocol to provide seamless emulation of TI DSPs from either a Windows 95/Windows NT-based PC or SunOS 4.1.x-based Sun workstation. Future capabilities will allow Trek-510 users to debug remote DSP targets over the Internet.

Priced at US $5,995, the Trek-510 hardware, available now, will be supported by all of the popular DSP software debugger options. Debugger software will be sold separately and priced at approximately US $3,995. Initial operating system support will be for Sun workstations, releases in first quarter 1998 will support Windows 95 and Windows NT PCs.

White Mountain DSP

- Phone: (603) 883-2430
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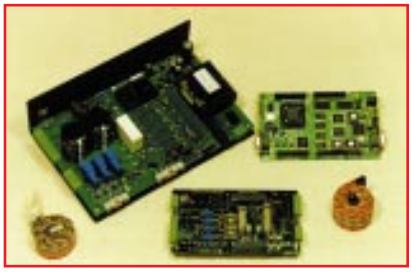
DSP-based motor controller development system

Spectrum Digital, Inc. has introduced the MCDS240 Motor Controller Development System based on the TMS320F240. This modular system consists of an EVM320F240 Evaluation Module, a Labdrive Interface, and a Labdrive Inverter Module. The MCDS240 is designed to reduce motor controller development time by giving the user a proven platform to quickly test DSP algorithms, prototype their motor interface hardware, and then optimize their design without having to build everything from scratch.

Cost of the complete MCDS240 system is US $2,793.00. All modules are available separately.



Spectrum Digital, Inc.

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TRAINING

The Texas Instruments technical training organization offers hands-on workshops designed to help speed designs into production. The following are 1998 USA workshops.

City	'C2xx	'C3x	'C4x	'C5x
Austin	2/17	2/17 3/17	1/27	1/6
Boston	1/27			
Chicago	3/24			
Dallas	2/17		2/24	3/3
San Jose	1/13 3/3			

City	'C54x	'C6x	'C8x
Boston	3/3	1/20	
Chicago	1/27	2/17	
Dallas	1/20	1/13 3/10	2/3
San Jose	2/10	2/3	

TMS320 DEVELOPMENT TOOLS

Device	Development Tool	Platform	Current Rev Level
TMS320C1x	Simulator	PC	2.00
TMS320C1x	EVM	PC	1.00
TMS320C2x/'C2xx/'C5x	COMP/ASM/LNK	PC/SPARC™	6.60
TMS320 Fixed-pt	ASM/LNK ('C1x/2x/2xx/5x)	PC	6.60
TMS320C2x	Simulator	PC/SPARC	3.00
TMS320C2x	EVM	PC	6.40
TMS320C2xx	Simulator	PC/SPARC	1.30
TMS320C2xx	XDS510/EPK	PC/SPARC	1.00
TMS320C3x/'C4x	COMP/ASM/LNK	PC/SPARC	5.00
TMS320C3x/'C4x	ASM/LNK	PC	5.00
TMS320C3x	Simulator	PC/SPARC	2.20
TMS320C3x	XDS510/EPK	PC/SPARC	5.20
TMS320C30	EVM	PC	5.00
TMS320C4x	Simulator	PC/SPARC	1.30/1.31
TMS320C4x	XDS510/EPK	PC/SPARC	2.50
TMS320C5x	XDS510/EPK	PC/SPARC	7.40
TMS320C5x	EVM	PC	7.20
TMS320C5x	Simulator	PC/SPARC	1.30
TMS320C54x	COMP/ASM/LNK	PC/SPARC/HP 9000	1.20
TMS320C54x	ASM/LNK	PC	1.20
TMS320C54x	XDS510	PC/SPARC/HP 9000	1.70
TMS320C54x	Simulator	PC/SPARC/HP 9000	2.20
TMS320C54x	EVM	PC	1.30
TMS320C6x	COMP/ASM/LNK	PC/SPARC	1.10
TMS320C6x	Simulator	PC/SPARC	1.00
TMS320C6x	XDS510	PC	1.10
TMS320C8x	COMP/ASM/LNK/SIM	PC/SPARC	2.00
TMS320C8x	XDS510/EPK	PC/SPARC	2.00
TMS320C8x	Software Development Board	PC	1.20

Read Details on Signal Processing online at www.ti.com/sc/details

FOR MORE INFO

Details on Signal Processing is published quarterly by TI DSP. For more information about the newsletter or its contents, contact:

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TMS320 WWW Site	www.ti.com/dsps

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TMS320 BBS	(281) 274-2323
TMS320 email address	dsph@ti.com
TMS320 Internet BBS	ftp.ti.com
Software Registration/Upgrades	(972) 638-0333

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