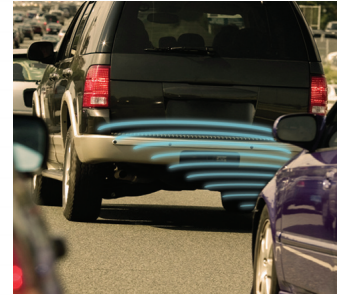




# SHARC Processor Family



## The Leader in Floating-Point Performance

The SHARC® processor portfolio currently consists of four generations of products providing code-compatible solutions ranging from entry-level products priced at less than \$10 to the highest performance products offering fixed- and floating-point computational power to 450 MHz/2700 MFLOPS. Irrespective of the specific product choice, all SHARC processors provide a common set of features and functionality usable across many signal processing markets and applications. This baseline functionality enables the SHARC user to leverage legacy code and design experience while transitioning to higher performance and more highly integrated SHARC products.

By integrating on-chip, single-instruction, multiple-data (SIMD) processing elements, coprocessors for filter processing (FIR, IIR, and FFT), high speed DRAM interface, SRAM, and I/O peripherals, SHARC processors deliver breakthrough signal processing performance.

- High performance 32-bit floating-point/fixed-point core for computationally intensive, real-time signal processing applications
- Coprocessors to offload FIR, IIR, and FFT processing in fixed- and floating-point formats
- Ideal choice for home theater, pro-audio, industrial, automotive, and medical applications
- High performance signal processing coupled with integrated system peripherals
- SIMD architecture with integrated application-specific system peripherals
- Link ports for data transport across SHARC processors
- Low power signal processors for portable and temperature-sensitive applications
- Exceptional core and memory performance with outstanding I/O throughput
- Wide range of code-compatible and pin-compatible products
- Supported by easy to use, world-class CROSSCORE® development tools

## SHARC Processor Target Applications

**ADSP-21488/ADSP-21489:** Highest performance 32-bit floating-point processor in a QFP package positioned for automotive audio and industrial/instrumentation applications.

**ADSP-21483/ADSP-21486/ADSP-21487:** Highest performance SHARC processor for consumer audio solutions.

**ADSP-21478/ADSP-21479:** Lowest power 32-bit floating-point SHARC processor positioned for automotive audio, portable medical, and instrumentation applications.

**ADSP-21469:** Highest performance processor positioned for professional audio and industrial/instrumentation applications.

**ADSP-21371/ADSP-21375:** Value-priced processors positioned for professional audio, industrial/instrumentation, and medical applications.

**ADSP-21368/ADSP-21369:** Highest performance processors for professional audio and industrial/instrumentation applications.

**ADSP-21363/ADSP-21364:** High performance processors for general-purpose and professional audio applications.

**ADSP-21266/ADSP-21366/ADSP-21367:** Highly integrated processors optimized for consumer audio, home theater, and next-generation DVD applications.

**ADSP-21262/ADSP-21261:** Low cost, floating-point processor created for consumer audio, wireless communication, medical appliances, and professional audio.

**ADSP-21161:** Optimized for single processor or small multiprocessor systems such as speech recognition, motor control, industrial, and medical applications.

**ADSP-21160:** For multiprocessing applications such as medical, military, imaging, and communications.

**ADSP-21065L:** Outstanding price/performance value for a broad base of consumer, communications, automotive, industrial, and computer applications.

## SHARC Processors

Part Number	Package	Speed (MHz)	On-Chip Memory SRAM/ROM (Mb)	Temp Range (°C)	Key Peripherals	Price Range @ 1k (SU.S.) <sup>1</sup>				
ADSP-21489BSWZ-2A <sup>2</sup>	100-lead LQFP E-pad	300	5/4	-40 to +85 ambient	2 timers, 1 UART, 8 SPORTs, 8-channel ASRC, 2 SPIs, 16-bit SDRAM interface, 1 TWI, 4 PCGs, PWM, S/PDIF Rx/Tx	12.86 to 23.81				
ADSP-21489BSWZ-2B	176-lead LQFP E-pad			-40 to +85 ambient						
ADSP-21489KSWZ-2A <sup>2</sup>	100-lead LQFP E-pad			0 to 70 ambient						
ADSP-21489KSWZ-2B	176-lead LQFP E-pad			0 to 70 ambient						
ADSP-21489BSWZ-3A <sup>2</sup>	100-lead LQFP E-pad	350		-40 to +85 ambient			Integrated audio decoders (ADSP-21483/ADSP-21486/ADSP-21487 only)	10.14 to 18.35		
ADSP-21489BSWZ-3B	176-lead LQFP E-pad			-40 to +85 ambient						
ADSP-21489KSWZ-3A <sup>2</sup>	100-lead LQFP E-pad			0 to 70 ambient						
ADSP-21489KSWZ-3B	176-lead LQFP E-pad			0 to 70 ambient						
ADSP-21489BSWZ-4A <sup>2</sup>	100-lead LQFP E-pad	400		-40 to +85 ambient					Integrated audio decoders (ADSP-21483/ADSP-21486/ADSP-21487 only)	10.14 to 18.35
ADSP-21489BSWZ-4B	176-lead LQFP E-pad			-40 to +85 ambient						
ADSP-21489KSWZ-4A <sup>2</sup>	100-lead LQFP E-pad			0 to 70 ambient						
ADSP-21489KSWZ-4B	176-lead LQFP E-pad			0 to 70 ambient						
ADSP-21488BSWZ-2A <sup>2</sup>	100-lead LQFP E-pad	300	3/4	-40 to +85 ambient	2 timers, 1 UART, 8 SPORTs, 8-channel ASRC, 2 SPIs, 16-bit SDRAM interface, 1 TWI, 4 PCGs, PWM, S/PDIF Rx/Tx	10.14 to 18.35				
ADSP-21488BSWZ-2B	176-lead LQFP E-pad			-40 to +85 ambient						
ADSP-21488KSWZ-2A <sup>2</sup>	100-lead LQFP E-pad			0 to 70 ambient						
ADSP-21488KSWZ-2B	176-lead LQFP E-pad			0 to 70 ambient						
ADSP-21488BSWZ-3A <sup>2</sup>	100-lead LQFP E-pad	350		-40 to +85 ambient			Integrated audio decoders (ADSP-21483/ADSP-21486/ADSP-21487 only)	10.14 to 18.35		
ADSP-21488BSWZ-3B	176-lead LQFP E-pad			-40 to +85 ambient						
ADSP-21488KSWZ-3A <sup>2</sup>	100-lead LQFP E-pad			0 to 70 ambient						
ADSP-21488KSWZ-3B	176-lead LQFP E-pad			0 to 70 ambient						
ADSP-21488BSWZ-4A <sup>2</sup>	100-lead LQFP E-pad	400		-40 to +85 ambient					Integrated audio decoders (ADSP-21483/ADSP-21486/ADSP-21487 only)	10.14 to 18.35
ADSP-21488BSWZ-4B	176-lead LQFP E-pad			-40 to +85 ambient						
ADSP-21488KSWZ-4A <sup>2</sup>	100-lead LQFP E-pad			0 to 70 ambient						
ADSP-21488KSWZ-4B	176-lead LQFP E-pad			0 to 70 ambient						
ADSP-21487KSWZ-3B <sup>3</sup>	176-lead LQFP E-pad	350	5/4	0 to 70 ambient	Contact ADI					
ADSP-21487KSWZ-4B <sup>3</sup>	176-lead LQFP E-pad	400		0 to 70 ambient						
ADSP-21486KSWZ-3A <sup>3</sup>	100-lead LQFP E-pad	350	5/4	0 to 70 ambient	Contact ADI					
ADSP-21486KSWZ-3B <sup>3</sup>	176-lead LQFP E-pad			0 to 70 ambient						
ADSP-21486KSWZ-4A <sup>3</sup>	100-lead LQFP E-pad	400	5/4	0 to 70 ambient	Contact ADI					
ADSP-21486KSWZ-4B <sup>3</sup>	176-lead LQFP E-pad			0 to 70 ambient						
ADSP-21483KSWZ-3B <sup>3</sup>	176-lead LQFP E-pad	350	3/4	0 to 70 ambient	Contact ADI					
ADSP-21483KSWZ-4B <sup>3</sup>	176-lead LQFP E-pad	400		0 to 70 ambient						
ADSP-21479BBCZ-1	196-ball CSP_BGA	200	5/4	-40 to +85 ambient	2 timers, 1 UART, 8 SPORTs, 8-channel ASRC, 2 SPIs, 16-bit SDRAM interface, 1 TWI, 4 PCGs, PWM, S/PDIF Rx/Tx, WDT	8.81 to 12.77				
ADSP-21479BSWZ-1 <sup>2</sup>	100-lead LQFP E-pad			-40 to +85 ambient						
ADSP-21479KBCZ-1	196-ball CSP_BGA			0 to 70 ambient						
ADSP-21479KSWZ-1 <sup>2</sup>	100-lead LQFP E-pad			0 to 70 ambient						
ADSP-21479BBCZ-2	196-ball CSP_BGA	266		-40 to +85 ambient			RTC (196-ball CSP_BGA only)	7.99 to 11.10		
ADSP-21479BSWZ-2 <sup>2</sup>	100-lead LQFP E-pad			-40 to +85 ambient						
ADSP-21479KBCZ-2	196-ball CSP_BGA			0 to 70 ambient						
ADSP-21479KSWZ-2 <sup>2</sup>	100-lead LQFP E-pad			0 to 70 ambient						
ADSP-21478BBCZ-1	196-ball CSP_BGA	200	3/4	-40 to +85 ambient	RTC (196-ball CSP_BGA only)	7.99 to 11.10				
ADSP-21478BSWZ-1 <sup>2</sup>	100-lead LQFP E-pad			-40 to +85 ambient						
ADSP-21478KBCZ-1	196-ball CSP_BGA			0 to 70 ambient						
ADSP-21478KSWZ-1 <sup>2</sup>	100-lead LQFP E-pad			0 to 70 ambient						
ADSP-21478BBCZ-2	196-ball CSP_BGA	266		-40 to +85 ambient			RTC (196-ball CSP_BGA only)	7.99 to 11.10		
ADSP-21478BSWZ-2 <sup>2</sup>	100-lead LQFP E-pad			-40 to +85 ambient						
ADSP-21478KBCZ-2	196-ball CSP_BGA			0 to 70 ambient						
ADSP-21478KSWZ-2 <sup>2</sup>	100-lead LQFP E-pad			0 to 70 ambient						

<sup>1</sup>All pricing is budgetary and subject to change.

<sup>2</sup>Available in automotive grade.

<sup>3</sup>License agreement required from respective IP holders prior to purchase for all products containing integrated audio decoders or DTCP acceleration hardware.

## SHARC Processors (continued)

Part Number	Package	Speed (MHz)	On-Chip Memory SRAM/ROM (Mb)	Temp Range (°C)	Key Peripherals	Price Range @ 1k (\$U.S.) <sup>1</sup>
ADSP-21469BBCZ-3 <sup>2</sup>	324-ball PBGA	400	5/4	-40 to +85 ambient	2 timers, 1 UART, 8 SPORTs, 8-channel ASRC, 2 SPIs, 16-bit DDR2 interface, 1 TWI, 4 PCGs, PWM, S/PDIF Rx/Tx, DAI, DPI, link ports	28.50 to 34.20
ADSP-21469KBCZ-3 <sup>2</sup>				0 to 70 ambient		
ADSP-21469KBCZ-4 <sup>2</sup>		450				
ADSP-21375BSWZ-2B	208-lead LQFP E-pad	266	0.5/2	-40 to +85 ambient	2 timers, 1 UART, 4 SPORTs, 2 SPIs, 1 TWI, 4 PCGs, PWM, DAI, 16-bit SDRAM interface	9.83 to 11.79
ADSP-21375KSWZ-2B				0 to 70 ambient		
ADSP-21371BSWZ-2B	208-lead LQFP E-pad	266	1/4	-40 to +85 ambient	2 timers, 1 UART, 8 SPORTs, 2 SPIs, 1 TWI, S/PDIF Rx/Tx, 4 PCGs, PWM, DAI, 32-bit SDRAM interface	13.27 to 15.92
ADSP-21371KSWZ-2A <sup>3</sup>				0 to 70 ambient		
ADSP-21371KSWZ-2B						
ADSP-21369BSWZ-1A	208-lead LQFP E-pad	266	2/6	-40 to +85 ambient	3 timers, 2 UARTs, 8 SPORTs, 2 SPIs, 1 TWI, S/PDIF Rx/Tx, 4 PCGs, PWM, 8-channel ASRC, 32-bit SDRAM interface  Shared external memory support (ADSP-21368 only)  Integrated audio decoders in ROM (ADSP-21367 only) <sup>3</sup>	19.69 to 37.91
ADSP-21369KSWZ-1A	208-lead MQFP			0 to 70 ambient		
ADSP-21369BBP-2A	256-ball SBGA	333		-40 to +85 ambient		
ADSP-21369BBPZ-2A						
ADSP-21369BSWZ-2A	208-lead LQFP E-pad			0 to 70 ambient		
ADSP-21369KBP-2A	256-ball SBGA					
ADSP-21369KBPZ-2A						
ADSP-21369KSWZ-2A	208-lead LQFP E-pad			350		
ADSP-21369KSWZ-4A				366		
ADSP-21369KSWZ-5A				400		
ADSP-21369KBPZ-3A	256-ball SBGA					
ADSP-21368BBP-2A	256-ball SBGA			333		-40 to +85 ambient
ADSP-21368BBPZ-2A						
ADSP-21368KBP-2A		0 to 70 ambient				
ADSP-21368KBPZ-2A						
ADSP-21368KBPZ-3A		400				
ADSP-21367BSWZ-1A	208-lead LQFP E-pad	266		-40 to +85 ambient		
ADSP-21367KSWZ-1A	208-lead MQFP			0 to 70 ambient		
ADSP-21367BBP-2A	256-ball SBGA	333		-40 to +85 ambient		
ADSP-21367BBPZ-2A						
ADSP-21367KBP-2A						
ADSP-21367KBPZ-2A						
ADSP-21367KSWZ-2A	208-lead LQFP E-pad		350			
ADSP-21367KSWZ-4A			366			
ADSP-21367KSWZ-5A			400			
ADSP-21367KBPZ-3A	256-ball SBGA					
ADSP-21367BSWZ-2A						
ADSP-21367KSWZ-2A						
ADSP-21367KSWZ-4A						
ADSP-21367KSWZ-5A						
ADSP-21367KBPZ-3A						
ADSP-21367BSWZ-2A						
ADSP-21367KSWZ-2A						
ADSP-21367KSWZ-4A						
ADSP-21367KSWZ-5A						
ADSP-21367KBPZ-3A						
ADSP-21366YSWZ-2AA <sup>2</sup>	144-lead LQFP E-pad	200	3/4	-40 to +105 ambient	3 timers, 6 SPORTs, DAI, 2 SPIs, 2 PCGs, PWM, 8-channel ASRC, S/PDIF Rx/Tx  Integrated audio decoders in ROM (ADSP-21366 only) <sup>3</sup>	Contact ADI
ADSP-21366BBC-1AA	136-ball CSP_BGA	333		-40 to +85 ambient		
ADSP-21366BBCZ-1AA <sup>2</sup>						
ADSP-21366BSWZ-1AA <sup>2</sup>	144-lead LQFP			0 to 70 ambient		
ADSP-21366KSWZ-1AA	144-lead LQFP E-pad					
ADSP-21366KBC-1AA	136-ball CSP_BGA					
ADSP-21366KBCZ-1AA						
ADSP-21364YSWZ-2AA <sup>2</sup>	144-lead LQFP E-pad	200		-40 to +105 ambient	3 timers, 6 SPORTs, 2 SPIs, S/PDIF Rx/Tx (not on ADSP-21363), 8-channel ASRC (not on ADSP-21363), 2 PCGs, PWM, DAI	29.75 to 42.85
ADSP-21364BBC-1AA	136-ball CSP_BGA	333		-40 to +85 ambient		
ADSP-21364BBCZ-1AA <sup>2</sup>						
ADSP-21364BSWZ-1AA <sup>2</sup>	144-lead LQFP E-pad			0 to 70 ambient		
ADSP-21364KBC-1AA	136-ball CSP_BGA					
ADSP-21364KBCZ-1AA						
ADSP-21364KSWZ-1AA	144-lead LQFP E-pad					

<sup>1</sup>All pricing is budgetary and subject to change.

<sup>2</sup>Available in automotive grade.

<sup>3</sup>License agreement required from respective IP holders prior to purchase for all products containing integrated audio decoders or DTCP acceleration hardware.

## SHARC Processors (continued)

Part Number	Package	Speed (MHz)	On-Chip Memory SRAM/ROM (Mb)	Temp Range (°C)	Key Peripherals	Price Range @ 1k (\$U.S.) <sup>1</sup>			
ADSP-21363YSWZ-2AA <sup>2</sup>	144-lead LQFP E-pad	200	3/4	-40 to +105 ambient	3 timers, 6 SPORTs, 2 SPIs, S/PDIF Rx/Tx (not on ADSP-21363), 8-channel ASRC (not on ADSP-21363), 2 PCGs, PWM, DAI	20.22 to 29.13			
ADSP-21363BBC-1AA	136-ball CSP_BGA	333		-40 to +85 ambient					
ADSP-21363BBCZ-1AA <sup>2</sup>				144-lead LQFP E-pad			0 to 70 ambient		
ADSP-21363BSWZ-1AA <sup>2</sup>	136-ball CSP_BGA	150						0 to 70 ambient	
ADSP-21363KBC-1AA				144-lead LQFP E-pad			200		0 to 70 ambient
ADSP-21363KBCZ-1AA									
ADSP-21363KSWZ-1AA									
ADSP-21266SKSTZ-1B	144-lead LQFP	150	2/4	0 to 70 ambient	3 timers, 6 SPORTs, 1 SPI, integrated audio decoders in ROM (ADSP-21266 only); <sup>3</sup> 2 PCGs, DAI	Contact ADI			
ADSP-21266SKSTZ-1C									
ADSP-21266SKSTZ-1D									
ADSP-21266SKBCZ-2B	136-ball CSP_BGA	200					0 to 70 ambient		
ADSP-21266SKBCZ-2C									
ADSP-21266SKBCZ-2D									
ADSP-21266SKSTZ-2B	144-lead LQFP	150	1/3	0 to 70 ambient	3 timers, 4 SPORTs, 1 SPI, 2 PCGs, DAI, 4 SPORTs, 2 link ports, 1 SPI, DMA controller	6.64 to 7.68			
ADSP-21266SKSTZ-2C									
ADSP-21266SKSTZ-2D									
ADSP-21262SBBC-150	136-ball CSP_BGA	150					-40 to +85 ambient	3 timers, 6 SPORTs, 1 SPI, 2 PCGs, DAI	17.15 to 25.35
ADSP-21262SBBCZ150 <sup>2</sup>									
ADSP-21262SKBC-200		200					0 to 70 ambient		
ADSP-21262SKBCZ200									
ADSP-21262SKSTZ200	144-lead LQFP								
ADSP-21261SKBC-150	136-ball CSP_BGA	150	4/—	0 to 85 case	2 SPORTs, 4 link ports, DMA controller	169.49 to 209.25			
ADSP-21261SKBCZ150									
ADSP-21261SKSTZ150									
ADSP-21161NCCA-100	225-ball CSP_BGA	100					1/—	-40 to +85 ambient	26.17 to 36.27
ADSP-21161NCCAZ100									
ADSP-21161NKCA-100								0 to 85 case	
ADSP-21161NKCAZ100									
ADSP-21160MKB-80	225-ball CSP_BGA	80	4/—	0 to 85 case	2 SPORTs, 4 link ports, DMA controller	169.49 to 209.25			
ADSP-21160MKBZ-80		100		-40 to +100 case					
ADSP-21160NCB-100							0 to 85 case		
ADSP-21160NCBZ-100									
ADSP-21160NKB-100							0 to 85 case		
ADSP-21160NKBZ-100									
ADSP-21065LCCA-240	196-ball CSP_BGA	60	0.5/—	-40 to +100 case	2 SPORTs, DMA controller, 2 timers	22.85 to 69.96			
ADSP-21065LCCAZ240									
ADSP-21065LCSZ-240	208-lead MQFP			0 to 85 case					
ADSP-21065LKCA-240	196-ball CSP_BGA								
ADSP-21065LKCAZ240				208-lead MQFP					
ADSP-21065LKSZ-240	196-ball CSP_BGA								
ADSP-21065LKCA-264		208-lead MQFP							
ADSP-21065LKCAZ264									
ADSP-21065LKSZ-264									

<sup>1</sup>All pricing is budgetary and subject to change.

<sup>2</sup>Available in automotive grade.

<sup>3</sup>License agreement required from respective IP holders prior to purchase for all products containing integrated audio decoders or DTCP acceleration hardware.

## Development Tools

Analog Devices CROSSCORE development tools offer easy and robust methods for engineers to develop and optimize systems by shortening product development cycles, reducing time to market.

### VisualDSP++ Integrated Development Environment

VisualDSP++<sup>®</sup> software is an easy to install, easy to use, integrated development and debugging environment (IDDE). For more information and to download a free 90-day test drive, visit [www.analog.com/testdrive](http://www.analog.com/testdrive).

### EZ-KIT Lite Evaluation Kit

EZ-KIT Lite<sup>®</sup> systems consist of a standalone evaluation board and VisualDSP++ evaluation suite to facilitate architecture evaluations via a PC-hosted tool set. Users can evaluate ADI's processors and learn about digital signal processing applications, as well as simulate, debug, and prototype applications.

### EZ-Extender Daughter Boards

EZ-Extender<sup>®</sup> daughter boards give developers access to and the ability to connect to various peripherals from Analog Devices and third parties via the expansion interface of the EZ-KIT Lite evaluation kits.

### EZ-Board Evaluation Board

The EZ-Board<sup>™</sup> evaluation board provides developers with a low cost platform for initial evaluation of the processors via an external emulator or  $\mu$ Clinix<sup>™</sup>. The EZ-Board evaluation board has an expansion interface that allows for modularity with different EZ-Extender boards.

### Standalone Debug Agent Board

The Standalone Debug Agent is intended to provide a modular low cost emulation solution for EZ-Board evaluation boards, as well as those designed by third parties. The Standalone Debug Agent is very similar to the Debug Agent that is on existing EZ-KIT Lite evaluation kits but will have the flexibility to move from one board to another board.

### Universal Serial Bus-Based Emulators

Analog Devices' cost-effective USB-based emulator and high performance (HP) USB-based emulators provide an easy, portable, nonintrusive, target-based debugging solution for Analog Devices JTAG processors and DSPs. These powerful USB-based emulators perform a wide range of emulation functions, including single-step and full speed execution with predefined breakpoints and viewing and/or altering of register and memory contents.

### Software Modules

Analog Devices has a wide range of tested and optimized software modules available, including decoders, encoders, codecs, and other algorithms that provide multimedia functions for the Blackfin<sup>®</sup> and SHARC processor families. The software modules allow engineers to quickly and easily incorporate these functions, providing a faster development path to the end product. In addition, the highly optimized software modules feature a consistent API and framework to ensure rapid development of multiple functions.

## SHARC Processor Development Tools

Processor	Hardware	Emulator	Software	Additional Software Available
ADSP-21261 ADSP-21262 ADSP-21266	ADZS-21262-EZLITE <i>Key Features</i> <ul style="list-style-type: none"> <li>• ADSP-21262 SHARC processor</li> <li>• 1M × 8-bit flash memory</li> <li>• 512k × 8-bit SRAM</li> <li>• 512k bit SPI flash memory</li> <li>• AD1835 stereo, 96 kHz, 24-bit S-D codec</li> <li>• 4 × 2 RCA jack for 4 channels of stereo audio output</li> <li>• 1 × 2 RCA jack for 1 channel of stereo audio input</li> <li>• Headphone jack (connected to 1 of the stereo outputs)</li> <li>• 2M bit SPI flash memory</li> <li>• USB-based debugger interface</li> </ul> ADDS-21262-1-EZEXT ADSZ-SHRCUSB-EZEXT			
ADSP-21363 ADSP-21364 ADSP-21366	ADZS-21364-EZLITE <i>Key Features</i> <ul style="list-style-type: none"> <li>• ADSP-21364 SHARC processor</li> <li>• 1M × 8-bit flash memory</li> <li>• 512k × 8-bit SRAM</li> <li>• 2M bit SPI flash memory</li> <li>• AD1835 stereo, 96 kHz, 24-bit codec</li> <li>• USB-based debugger interface</li> </ul> ADSZ-SHRCUSB-EZEXT			MathWorks™
ADSP-21367 ADSP-21368 ADSP-21369	ADZS-21369-EZLITE <i>Key Features</i> <ul style="list-style-type: none"> <li>• ADSP-21369 SHARC processor</li> <li>• AD1835 stereo, 96 kHz, 24-bit codec</li> <li>• 1M × 8-bit flash memory</li> <li>• 1M × 32-bit × 4 banks SDRAM</li> <li>• 512k × 8-bit SRAM</li> <li>• 2M bit SPI flash memory</li> <li>• ADM3202 RS-232 driver/receiver</li> <li>• USB-based debugger interface</li> </ul> ADSZ-SHRCUSB-EZEXT			
ADSP-21371 ADSP-21375	ADZS-21371-EZLITE <i>Key Features</i> <ul style="list-style-type: none"> <li>• ADSP-21371 SHARC processor</li> <li>• 1M × 8-bit flash memory</li> <li>• 128 MB (1M × 32-bit × 4 banks) SDRAM</li> <li>• 2 MB SPI flash memory</li> <li>• AD1835 stereo, 96 kHz, 24-bit codec</li> <li>• USB-based debugger interface</li> </ul> ADZS-21375-EZLITE <i>Key Features</i> <ul style="list-style-type: none"> <li>• ADSP-21375 SHARC processor</li> <li>• 1M × 8-bit flash memory</li> <li>• 8M × 16-bit SDRAM</li> <li>• 2M bit SPI flash memory</li> <li>• AD1835 stereo, 96 kHz, 24-bit codec</li> <li>• USB-based debugger interface</li> </ul> ADSZ-SHRCUSB-EZEXT	ADZS-USB-ICE ADZS-HPUSB-ICE	VDSP-SHARC-PC-TEST VDSP-SHARC-PC-FULL VDSP-SHARC-PCFLOAT VDSP-SHARC-PCFLT-5	
ADSP-21469	ADZS-21469-EZBRD <i>Key Features</i> <ul style="list-style-type: none"> <li>• ADSP-21469: 324-pin PBGA package, 25 MHz CLKIN oscillator</li> <li>• Flash memory: 4M × 8-bit, Numonyx M29W320EB</li> <li>• DDR2 memory: 64M × 16-bit, Micron MT47H64M16HR-3</li> <li>• SPI flash: 16 Mb</li> <li>• Audio codec: AD1939 codec</li> <li>• S/PDIF: RCA phono jacks connected to DAI pin for input/output</li> <li>• Temperature sensor: ADM1032 2-wire sensor</li> <li>• UART: ADM3202 RS-232 line driver/receiver 5 V</li> <li>• Power supply: 5 V @ 3.6 A</li> <li>• LEDs: 11 LEDs: 1 power (green), 1 board reset (red), 8 general-purpose (amber), 1 temperature limit (amber)</li> <li>• Push buttons: 5 push buttons: 1 reset, 2 connected to DAI, 2 IRQ/flag</li> <li>• Expansion interface: EBIU, flags/IRQs, DAI, DPI, PWR_IN (5 V), 3.3 V, GND</li> </ul> ADZS-21469-EZLITE ADZS-DBAGENT-BRD ADZS-SHAUDIO-EZEXT ADZS-BFUSB-EZEXT			

## SHARC Processor Development Tools

Processor	Hardware	Emulator	Software	Additional Software Available
ADSP-21478 ADSP-21479	ADZS-21479-EZBRD <i>Key Features</i> <ul style="list-style-type: none"> <li>ADSP-21479: 196-pin CSP_BGA package, 16.625 MHz CLKIN oscillator</li> <li>Flash memory: 4M × 8-bit, Numonyx M29W320EB</li> <li>SDRAM memory: 16 Mb × 16-bit, Micron MT48LC16M16A2P</li> <li>Asynch SRAM: 1M × 16-bit, ISSI IS61WV102416BLL-10TLI</li> <li>SPI memory: 16 Mb</li> <li>Analog audio: AD1939 codec</li> <li>S/PDIF: RCA phone jacks</li> <li>UART: ADM3202 RS-232 line driver/receiver</li> <li>Power supply: 5 V @ 3.6 A</li> <li>LEDs: 10 LEDs: 1 power (green), 1 board reset (red), and 8 general-purpose (amber)</li> <li>Push buttons: 5 push buttons: 1 reset, 2 connected to DAI, 2 IRQ/flag</li> <li>SHARC expansion interface II: AMI, flags/IRQs, DAI, DPI, PWR_IN, 3.3 V, GND</li> </ul> ADZS-BFSHUSB-EZEXT ADZS-21479-EZLITE ADZS-DBAGENT-BRD			
ADSP-21483 ADSP-21486 ADSP-21487 ADSP-21488 ADSP-21489	ADZS-21489-EZBRD <i>Key Features</i> <ul style="list-style-type: none"> <li>ADSP-21489: 176-pin LQFP package, 25 MHz CLKIN oscillator</li> <li>Flash memory: 4M × 8-bit, Numonyx M29W320EB</li> <li>SDRAM memory: 16 Mb × 16-bit, Micron MT48LC16M16A2P-6A</li> <li>Asynch SRAM: 1M × 16-bit, ISSI IS61WV102416BLL-10TLI</li> <li>SPI memory: 16 MB</li> <li>Analog audio: AD1939 codec</li> <li>S/PDIF: RCA phone jacks</li> <li>Temperature sensor: ADM1032 2-wire sensor</li> <li>UART: ADM3202 RS-232 line driver/receiver</li> <li>Power supply: 5 V @ 3.6 A</li> <li>LEDs: 11 LEDs: 1 power (green), 1 board reset (red), 1 temperature limit (amber), and 8 general-purpose (amber)</li> <li>Push buttons: 5 push buttons: 1 reset, 2 connected to DAI, 2 IRQ/flag</li> <li>SHARC expansion interface II: AMI, flags/IRQs, DAI, DPI, PWR_IN, 3.3 V, GND</li> </ul> ADZS-BFSHUSB-EZEXT ADZS-21489-EZLITE ADZS-DBAGENT-BRD	ADZS-USB-ICE ADZS-HPUSB-ICE	VDSP-SHARC-PC-TEST VDSP-SHARC-PC-FULL VDSP-SHARC-PCFLOAT VDSP-SHARC-PCFLT-5	

## SHARC Processor Product Portfolio

	Higher Performance									
	ADSP-21261 ADSP-21262	ADSP-21266	ADSP-21362 <sup>1</sup> ADSP-21363 <sup>1,2</sup> ADSP-21364 <sup>1,2</sup>	ADSP-21371 <sup>1</sup> ADSP-21375 <sup>1</sup>	ADSP-21368 ADSP-21369 <sup>1</sup>	ADSP-21365 <sup>1</sup> ADSP-21366 <sup>1,2</sup> ADSP-21367	ADSP-21478 <sup>1</sup> ADSP-21479 <sup>1</sup>	ADSP-21483 ADSP-21486 ADSP-21487 ADSP-21488 <sup>1</sup> ADSP-21489 <sup>1</sup>	ADSP-21469 <sup>1</sup>	Future <sup>1</sup>
Performance > 2 GFLOPS					•	•		•	•	•
Application-Specific Peripherals			•	•	•	•	•	•	•	•
Configurable Applications I/O interface			•	•	•	•	•	•	•	
Low Cost	•			•			•	•		
Audio Decoders in ROM		•				•				
Hardware Accelerators			•		•	•	•	•	•	•
High Speed Interprocessor Communication (Link Ports)									•	
Low Power							•			

<sup>1</sup>Automotive grade available.

<sup>2</sup>ADSP-21363, ADSP-21364, and ADSP-21366 do not have hardware accelerators.



## Third-Party Developers

Many third parties provide software, hardware, and consulting services to support SHARC processors. For more information, visit [www.analog.com/processors/collaborative](http://www.analog.com/processors/collaborative).

### Hardware

- Companion chip/chipsets
- Development boards
- Development systems
- Emulators
- Evaluation/starter boards
- Reference designs
- COTS DSP boards
- Daughter boards

### Software

- Audio (MP3, AAC/AAC+, WMA9, Dolby®, DTS®, etc.)
- Algorithms
- Code generation
- Tool suites
- Filter programs
- Graphical software programs
- Post analysis tools
- System integration
- System prototyping/simulation

## Complimentary Support Resources

### EngineerZone Online Support Community

[EZ.analog.com](http://EZ.analog.com)

### SHARC Visual Learning and Development

[www.analog.com/vld](http://www.analog.com/vld)

### Analog Devices Sales and Distributors

[www.analog.com/salesdir](http://www.analog.com/salesdir)

### Worldwide Processor and Development Tools Technical Support

[www.analog.com/support](http://www.analog.com/support)

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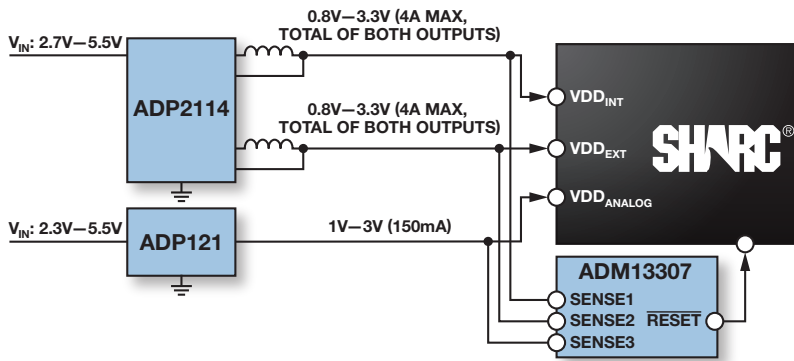


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## Example\* Power Solution for SHARC Processors



\* Numerous variables affect the power requirements of an embedded system. Ambient temperature, core and system frequency, supply voltages, pin capacitances, power modes, application code, and peripheral utilization all contribute to the average power requirements; therefore, this is just one suggested solution.

**Analog Devices, Inc.  
Worldwide Headquarters**

Analog Devices, Inc.  
One Technology Way  
P.O. Box 9106  
Norwood, MA 02062-9106  
U.S.A.  
Tel: 781.329.4700  
(800.262.5643,  
U.S.A. only)  
Fax: 781.461.3113

**Analog Devices, Inc.  
Europe Headquarters**

Analog Devices, Inc.  
Wilhelm-Wagenfeld-Str. 6  
80807 Munich  
Germany  
Tel: 49.89.76903.0  
Fax: 49.89.76903.157

**Analog Devices, Inc.  
Japan Headquarters**

Analog Devices, KK  
New Pier Takeshiba  
South Tower Building  
1-16-1 Kaigan, Minato-ku,  
Tokyo, 105-6891  
Japan  
Tel: 813.5402.8200  
Fax: 813.5402.1064

**Analog Devices, Inc.  
Southeast Asia  
Headquarters**

Analog Devices  
22/F One Corporate Avenue  
222 Hu Bin Road  
Shanghai, 200021  
China  
Tel: 86.21.2320.8000  
Fax: 86.21.2320.8222