

SHARC EZ-Extender Manual

Revision 2.0, January 2005

Part Number
82-000805-01

Analog Devices, Inc.
One Technology Way
Norwood, Mass. 02062-9106



Copyright Information

© 2005 Analog Devices, Inc., ALL RIGHTS RESERVED. This document may not be reproduced in any form without prior, express written consent from Analog Devices, Inc.

Printed in the USA.

Limited Warranty

The SHARC EZ-Extender is warranted against defects in materials and workmanship for a period of one year from the date of purchase from Analog Devices or from an authorized dealer.

Disclaimer

Analog Devices, Inc. reserves the right to change this product without prior notice. Information furnished by Analog Devices is believed to be accurate and reliable. However, no responsibility is assumed by Analog Devices for its use; nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under the patent rights of Analog Devices, Inc.

Trademark and Service Mark Notice

The Analog Devices logo, SHARC, SHARC logo, VisualDSP++, the VisualDSP++ logo, CROSSCORE, the CROSSCORE logo, and EZ-KIT Lite are registered trademarks of Analog Devices, Inc.

All other brand and product names are trademarks or service marks of their respective owners.

Regulatory Compliance

The SHARC EZ-Extender has been certified to comply with the essential requirements of the European EMC directive 89/336/EEC (inclusive 93/68/EEC) and, therefore, carries the “CE” mark.

The SHARC EZ-Extender has been appended to Analog Devices Development Tools Technical Construction File referenced “DSPTOOLS1” dated December 21, 1997 and was awarded CE Certification by an appointed European Competent Body and is on file.



The EZ-KIT Lite evaluation system contains ESD (electrostatic discharge) sensitive devices. Electrostatic charges readily accumulate on the human body and equipment and can discharge without detection. Permanent damage may occur on devices subjected to high-energy discharges. Proper ESD precautions are recommended to avoid performance degradation or loss of functionality. Store unused EZ-KIT Lite boards in the protective shipping package.



CONTENTS

PREFACE

Purpose of This Manual	viii
Intended Audience	ix
Manual Contents	ix
What's New in This Manual	x
Technical or Customer Support	x
Supported Products	xi
Product Information	xi
MyAnalog.com	xi
Processor Product Information	xii
Related Documents	xii
Online Technical Documentation	xiii
Accessing Documentation From VisualDSP++	xiv
Accessing Documentation From Windows	xiv
Accessing Documentation From Web	xv
Printed Manuals	xv
VisualDSP++ Documentation Set	xv
Hardware Tools Manuals	xvi
Processor Manuals	xvi

CONTENTS

Data Sheets	xvi
Notation Conventions	xvii

EZ-EXTENDER INTERFACES

ADC HSC Interface	1-1
Breadboard Area	1-2

EZ-EXTENDER HARDWARE REFERENCE

System Architecture	2-1
DIP Switches and Jumpers	2-3
Direction/Clock Source Control Switch (SW1)	2-3
MISO Disconnect Jumper (P6)	2-5
SMA Connector Clock Disconnect Jumper (P10)	2-5

BILL OF MATERIALS

INDEX

PREFACE

Thank you for purchasing the SHARC EZ-Extender, Analog Devices (ADI) extension board to the EZ-KIT Lite[®] evaluation system for ADSP-21262 SHARC[®] processors.

The SHARC processors are based on a 32-bit super Harvard architecture that includes a unique memory architecture comprised of two large on-chip, dual-ported SRAM blocks coupled with a sophisticated IO processor, which gives SHARC the bandwidth for sustained high-speed computations. SHARC represents today's de facto standard for floating-point processors targeted for premium audio applications.

The SHARC EZ-Extender is designed to be used in conjunction with the ADSP-21262 EZ-KIT Lite evaluation system. The EZ-KIT Lite includes an evaluation suite of VisualDSP++[®] software, which is limited in program memory size for use solely with the EZ-KIT Lite product. VisualDSP++ is a powerful programming tool with flexibility that significantly decreases the time required to port software code to a processor, reducing time-to-market.

To learn more about Analog Devices development software, go to <http://www.analog.com/processors/tools/>.

Example programs are available to demonstrate the capabilities of the SHARC EZ-Extender board.

The SHARC EZ-Extender is a separately sold assembly that plugs onto the expansion interface of the ADSP-21262 EZ-KIT Lite evaluation system.

Purpose of This Manual

The board extends the capabilities of the evaluation system by providing a connection between the Parallel Data Access Port (PDAP) of the ADSP-21262 processor and an Analog Devices analog-to-digital high-speed converter (ADC HSC) evaluation board. Moreover, the extender broadens the range of the EZ-KIT Lite applications by providing surface mounted (SMT) footprints for breadboard capabilities and access to all of the pins on the EZ-KIT Lite's expansion interface.

The extender features:

- High-Speed Converter Evaluation Board Interface
 - ✓ 40-pin, right angle, 0.1 in. spacing, female socket to connect to analog-to-digital converter boards
 - ✓ Switches for routing and direction selection
 - ✓ RJ45 with Serial Peripheral Interconnect (SPI) to configure converter registers
- SMT Footprint Area
 - ✓ 1206 and 805 footprints
 - ✓ SOIC24 and SOIC20 footprints
- Dimensions
 - ✓ 5 in (H) x 5 in

Purpose of This Manual

The *SHARC EZ-Extender Manual* describes the operation and configuration of the components on the board. A schematic and a bill of materials are provided as a reference for future ADSP-21262 processor board designs.

Intended Audience

This manual is a user's guide and reference to the SHARC EZ-Extender. Programmers who are familiar with the Analog Devices SHARC processor architecture, operation, and development tools are the primary audience for this manual.

Programmers who are unfamiliar with VisualDSP++ or EZ-KIT Lite evaluation software should refer to the *ADSP-21262 EZ-KIT Lite Evaluation System Manual*, VisualDSP++ online Help, and user's or getting started guides. For the locations of these documents, refer to [“Related Documents”](#).

Manual Contents

The manual consists of:

- Chapter 1, [“EZ-Extender Interfaces”](#) on page 1-1
Provides basic board information.
- Chapter 2, [“EZ-Extender Hardware Reference”](#) on page 2-1
Provides information on the hardware aspects of the board.
- Appendix A, [“Bill Of Materials”](#) on page A-1
Provides a list of components used to manufacture the SHARC EZ-Extender board.
- Appendix B, [“Schematics”](#) on page B-1
Provides the resources to allow modifications to the EZ-Extender or to use as a reference design.



This appendix is not part of the online Help. The online Help viewers should go to the PDF version of the *SHARC EZ-Extender Manual* located in the Docs\EZ-KIT Lite Manuals folder on the

What's New in This Manual

installation CD to see the schematics. Alternatively, the schematics can be found at the Analog Devices Web site, www.analog.com/processors.

What's New in This Manual

This is the first revision of the *SHARC EZ-Extender Manual*. The manual documents the extender support for the ADSP-21262 EZ-KIT Lite.

Technical or Customer Support

You can reach DSP Tools Support in the following ways.

- Visit the Embedded Processing and DSP products Web site at <http://www.analog.com/processors/technicalSupport>
- E-mail tools questions to dsptools.support@analog.com
- E-mail processor questions to dsp.support@analog.com
- Phone questions to **1-800-ANALOGD**
- Contact your Analog Devices, Inc. local sales office or authorized distributor
- Send questions by mail to:

Analog Devices, Inc.
One Technology Way
P.O. Box 9106
Norwood, MA 02062-9106
USA

Supported Products

The SHARC EZ-Extender is designed as an extension to the ADSP-21262 EZ-KIT Lite evaluation system.

Product Information

You can obtain product information from the Analog Devices Web site, from the product CD-ROM, or from the printed publications (manuals).

Analog Devices is online at www.analog.com. Our Web site provides information about a broad range of products—*analog integrated circuits, amplifiers, converters, and digital signal processors.*

MyAnalog.com

MyAnalog.com is a free feature of the Analog Devices Web site that allows customization of a Web page to display only the latest information on products you are interested in. You can also choose to receive weekly e-mail notifications containing updates to the Web pages that meet your interests. MyAnalog.com provides access to books, application notes, data sheets, code examples, and more.

Registration:

Visit www.myanalog.com to sign up. Click **Register** to use MyAnalog.com. Registration takes about five minutes and serves as means for you to select the information you want to receive.

If you are already a registered user, just log on. Your user name is your e-mail address.

Product Information

Processor Product Information

For information on embedded processors and DSPs, visit our Web site at www.analog.com/processors, which provides access to technical publications, data sheets, application notes, product overviews, and product announcements.

You may also obtain additional information about Analog Devices and its products in any of the following ways.

- E-mail questions or requests for information to dsp.support@analog.com
- Fax questions or requests for information to
1-781-461-3010 (North America)
+49 (89) 76 903-557 (Europe)
- Access the FTP Web site at
[ftp ftp.analog.com](ftp://ftp.analog.com) or [ftp 137.71.23.21](ftp://137.71.23.21)
<ftp://ftp.analog.com>

Related Documents

For information on product-related development software, see the following publications.

Table 1. Related Processor Publications

Title	Description
<i>ADSP-21262 SHARC Microprocessor Datasheet</i>	General functional description, pinout, and timing
<i>ADSP-2126x SHARC DSP Core Manual</i> <i>ADSP-2126x SHARC DSP Peripherals Manual</i>	Description of internal processor architecture, registers, and all peripheral functions
<i>ADSP-21160 SHARC DSP Instruction Set Reference</i>	Description of all allowed processor assembly instructions

Table 2. Related VisualDSP++ Publications

Title	Description
<i>VisualDSP++ Assembler and Preprocessor Manual for SHARC Processors</i>	Description of the assembler function and commands for SHARC processors
<i>VisualDSP++ C/C++ Compiler and Library Manual for SHARC Processors</i>	Description of the compiler function and commands for SHARC processors
<i>VisualDSP++ Linker and Utilities Manual</i>	Description of the linker function and commands for the processors
<i>VisualDSP++ Loader Manual</i>	Description of the loader function and commands for the processors
<i>VisualDSP++ User's Guide</i>	Detailed description of VisualDSP++ features and usage



If you plan to use the EZ-KIT Lite board in conjunction with a JTAG emulator, also refer to the documentation that accompanies the emulator.

All documentation is available online. Most documentation is available in printed form.

Visit the Technical Library Web site to access all processor and tools manuals and data sheets:

<http://www.analog.com/processors/resources/technicalLibrary>

Online Technical Documentation

Online documentation comprises the VisualDSP++ Help system, software tools manuals, hardware tools manuals, processor manuals, the Dinkum Abridged C++ library, and Flexible License Manager (FlexLM) network license manager software documentation. You can easily search across the entire VisualDSP++ documentation set for any topic of interest. For easy printing, supplementary .PDF files of most manuals are provided in the Docs folder on the VisualDSP++ installation CD.

Product Information

Each documentation file type is described as follows.

File	Description
.CHM	Help system files and manuals in Help format
.HTM or .HTML	Dinkum Abridged C++ library and FlexLM network license manager software documentation. Viewing and printing the .HTML files requires a browser, such as Internet Explorer 4.0 (or higher).
.PDF	VisualDSP++ and processor manuals in Portable Documentation Format (PDF). Viewing and printing the .PDF files requires a PDF reader, such as Adobe Acrobat Reader (4.0 or higher).

If documentation is not installed on your system as part of the software installation, you can add it from the VisualDSP++ CD at any time by running the Tools installation. Access the online documentation from the VisualDSP++ environment, Windows[®] Explorer, or the Analog Devices Web site.

Accessing Documentation From VisualDSP++

To view VisualDSP++ Help, click on the **Help** menu item or go to the Windows task bar and navigate to the VisualDSP++ documentation via the **Start** menu.

To view SHARC EZ-Extender EZ-KIT Lite Help, which is part of the VisualDSP++ Help system, use the **Contents** or **Search** tab of the Help window.

Accessing Documentation From Windows

In addition to any shortcuts you may have constructed, there are many ways to open VisualDSP++ online Help or the supplementary documentation from Windows.

Help system files (.CHM) are located in the `Help` folder, and .PDF files are located in the `Docs` folder of your VisualDSP++ installation CD-ROM. The `Docs` folder also contains the Dinkum Abridged C++ library and the FlexLM network license manager software documentation.

Your software installation kit includes online Help as part of the Windows® interface. These help files provide information about VisualDSP++ and the SHARC EZ-Extender EZ-KIT Lite evaluation system.

Accessing Documentation From Web

Download manuals at the following Web site:

<http://www.analog.com/processors/resources/technicalLibrary/manuals>.

Select a processor family and book title. Download archive (.ZIP) files, one for each manual. Use any archive management software, such as WinZip, to decompress downloaded files.

Printed Manuals

For general questions regarding literature ordering, call the Literature Center at 1-800-ANALOGD (1-800-262-5643) and follow the prompts.

VisualDSP++ Documentation Set

To purchase VisualDSP++ manuals, call 1-603-883-2430. The manuals may be purchased only as a kit.

If you do not have an account with Analog Devices, you are referred to Analog Devices distributors. For information on our distributors, log onto <http://www.analog.com/salesdir/continent.asp>.

Product Information

Hardware Tools Manuals

To purchase EZ-KIT Lite and In-Circuit Emulator (ICE) manuals, call 1-603-883-2430. The manuals may be ordered by title or by product number located on the back cover of each manual.

Processor Manuals

Hardware reference and instruction set reference manuals may be ordered through the Literature Center at 1-800-ANALOGD (1-800-262-5643), or downloaded from the Analog Devices Web site. Manuals may be ordered by title or by product number located on the back cover of each manual.




Data Sheets

All data sheets (preliminary and production) may be downloaded from the Analog Devices Web site. Only production (final) data sheets (Rev. 0, A, B, C, and so on) can be obtained from the Literature Center at 1-800-ANALOGD (1-800-262-5643); they also can be downloaded from the Web site.

To have a data sheet faxed to you, call the Analog Devices Faxback System at 1-800-446-6212. Follow the prompts and a list of data sheet code numbers will be faxed to you. If the data sheet you want is not listed, check for it on the Web site.

Notation Conventions

Text conventions used in this manual are identified and described as follows.

Example	Description
Close command (File menu)	Titles in reference sections indicate the location of an item within the VisualDSP++ environment's menu system (for example, the Close command appears on the File menu).
{this that}	Alternative required items in syntax descriptions appear within curly brackets and separated by vertical bars; read the example as <i>this</i> or <i>that</i> . One or the other is required.
[this that]	Optional items in syntax descriptions appear within brackets and separated by vertical bars; read the example as an optional <i>this</i> or <i>that</i> .
[this,...]	Optional item lists in syntax descriptions appear within brackets delimited by commas and terminated with an ellipsis; read the example as an optional comma-separated list of <i>this</i> .
.SECTION	Commands, directives, keywords, and feature names are in text with letter gothic font.
<i>filename</i>	Non-keyword placeholders appear in text with italic style format.
	Note: For correct operation, ... A Note provides supplementary information on a related topic. In the online version of this book, the word Note appears instead of this symbol.
	Caution: Incorrect device operation may result if ... Caution: Device damage may result if ... A Caution identifies conditions or inappropriate usage of the product that could lead to undesirable results or product damage. In the online version of this book, the word Caution appears instead of this symbol.
	Warning: Injury to device users may result if ... A Warning identifies conditions or inappropriate usage of the product that could lead to conditions that are potentially hazardous for the devices users. In the online version of this book, the word Warning appears instead of this symbol.

Notation Conventions



Additional conventions, which apply only to specific chapters, may appear throughout this document.

1 EZ-EXTENDER INTERFACES

This chapter relates how the extender interfaces with the compatible boards. The information is presented in the following sections.

- [“ADC HSC Interface” on page 1-1](#)
- [“Breadboard Area” on page 1-2](#)

ADC HSC Interface

The SHARC EZ-Extender can connect to analog-to-digital high-speed converter (ADC HSC) evaluation boards via the ADC HSC interface. The ADC HSC interface consists of a 40-pin female header, which contains all of the control and data signals necessary to transfer data between the processor’s Parallel Data Access Port (PDAP) and the HSC evaluation board. Additionally, the extender provides a RJ45 connector, which contains all of the Serial Peripheral Interconnect (SPI) signals necessary to configure the control registers of capable high-speed converters. For a block diagram of the ADC HSC interface, see [Figure 2-1 on page 2-2](#).

Before using the SHARC EZ-Extender, familiarize yourself with the documentation and schematics of the target board and the ADSP-21262 EZ-KIT Lite. For example, on the EZ-KIT Lite, it may be necessary to disable other devices on the PDAP or disable the push buttons.

To configure the SHARC EZ-Extender to connect to an ADC HSC evaluation board, determine the source of the PDAP clock and the direction of general-purpose signals, DAI_P15_GP1 and DAI_P16_GP2. To learn about possible clock settings, refer to [“Direction/Clock Source Control Switch](#)

Breadboard Area

(SW1)” on page 2-3. The setup of the general-purpose signals DAI_P15_GP1 and DAI_P16_GP2 is dependent on the specific ADC HSC evaluation board being interfaced; thus, the board’s model must be taken into consideration.

The data bus of the EZ-Extender must be enabled before data is read. Enable the data bus by a memory read from address 0x160 0000, which the AD[15:0] pins set up as the External Port. Then, the AD[15:0] pins can be set up in PDAP mode.

A list of ADC boards compatible with the extender can be found at http://www.analog.com/processors/processors/blackfin/technical-library/manuals/pdf/EZ-Extender_to_DSP_Supported.pdf. **Contact Technical Support** for information about available examples. To learn more about Analog Devices data converters, go to <http://www.analog.com>.

Breadboard Area

SHARC EZ-Extender broadens the range of the EZ-KIT Lite applications by providing surface mounted (SMT) footprints for breadboard capabilities and access to all of the pins on the EZ-KIT Lite’s expansion interface.

2 EZ-EXTENDER HARDWARE REFERENCE

This chapter describes the hardware design of the SHARC EZ-Extender . The following topics are covered.

- [“System Architecture” on page 2-1](#)
Describes the configuration of the extender and explains how the board components interface with the processor and EZ-KIT Lite.
- [“DIP Switches and Jumpers” on page 2-3](#)
Describes the function of the configuration DIP switches and jumpers.

System Architecture

A detailed block diagram of the SHARC EZ-Extender is shown in [Figure 2-1](#). Note that the arrow in the bidirectional driver symbols denotes the direction of the driver when in transmit mode. The bidirectional driver is in transmit mode when the direction pin is pulled high. Use the diagram in conjunction with information in [“DIP Switches and Jumpers” on page 2-3](#) section of this manual to configure your SHARC EZ-Extender .

Before using the SHARC EZ-Extender , familiarize yourself with the documentation and schematics of the target board and the ADSP-21262 EZ-KIT Lite. For example, on the EZ-KIT Lite, it may be necessary to disable other devices on the PDAP or disable the push buttons.

System Architecture

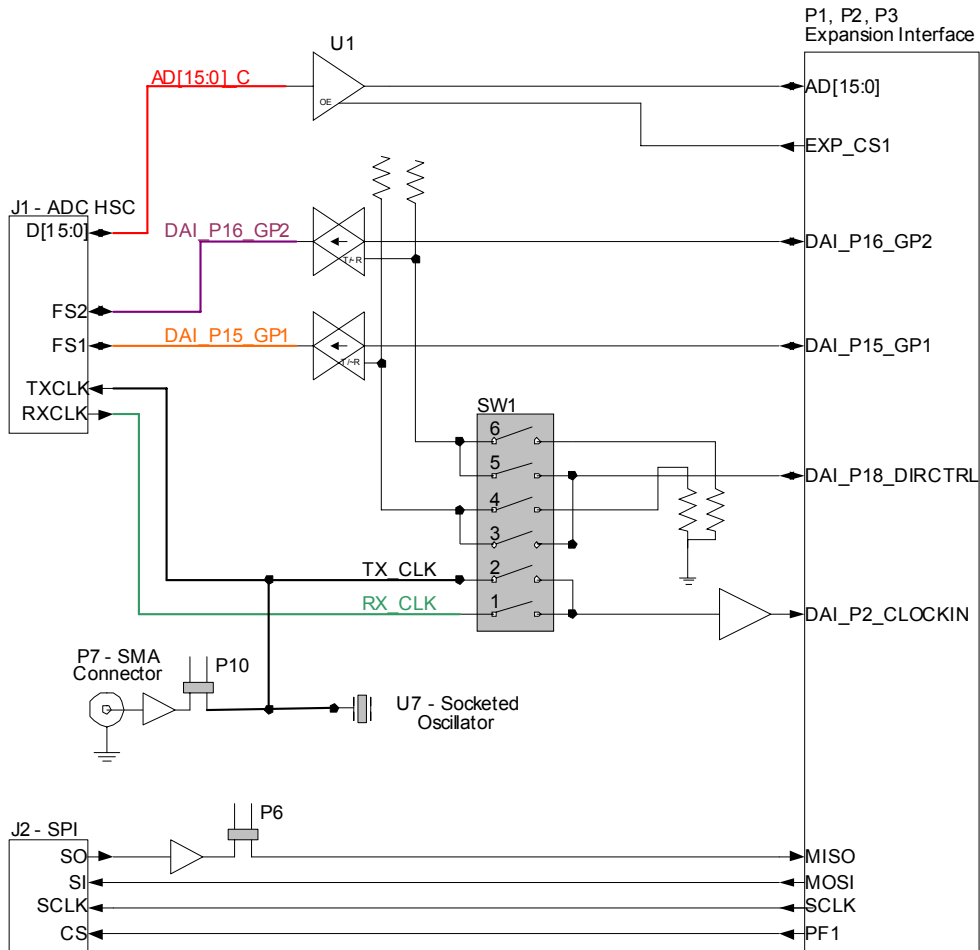


Figure 2-1. SHARC EZ-Extender Block Diagram

The block diagram in [Figure 2-1](#) shows that each clock and general-purpose signal attached to the ADC HSC interface is configured depending on how the interface operates.

The EZ-Extender has two clock signals, TX_CLK and RX_CLK. The TX_CLK signal is used as an output and can be generated in three ways: by applying a signal via an SMA connector, by using the RX_CLK signal, or by populating a socket with an oscillator. Only one of these sources can be used at a time, the other sources must be disabled. For more information on how to disable the TX_CLK sources, see [“SMA Connector Clock Disconnect Jumper \(P10\)” on page 2-5](#). The RX_CLK signal is generated by the target board. Both the TX_CLK and RX_CLK can connect to the processor’s clock-in signal (DAI_P2_CLOCKIN) as an input. See [“Direction/Clock Source Control Switch \(SW1\)” on page 2-3](#) for more information.

The ADC interface has two general-purpose signals, DAI_P15_GP1 and DAI_P16_GP2. The evaluation board with which the extender interfaces determines how these signals are set up. For information on how to set the direction and the source of these signals, refer to [“Direction/Clock Source Control Switch \(SW1\)” on page 2-3](#).

The ADC interface connects to the PDAP of the ADSP-21262 processor. The PDAP is multiplexed with the address and data bus. To avoid bus contention with the memory devices on the EZ-KIT Lite, the driver connected to the data bus of the ADC must be enabled. For more information about enabling the data bus, see [“ADC HSC Interface” on page 1-1](#).

DIP Switches and Jumpers

The following section describes the function of all of the jumpers and switches on the EZ-Extender. Before connecting the extender, make sure you understand each possible setting effect on your application.

Direction/Clock Source Control Switch (SW1)

A designated DIP switch, SW1, provides an independent direction control for the general-purpose signals (DAI_P15_GP1 and DAI_P16_GP2), as illustrated in [Figure 2-1 on page 2-2](#). Each signal can be hardwired to be either

DIP Switches and Jumpers

transmit or receive, or can be changed in real time using the DAI_P18 processor pin. If the DAI_P18 processor pin is intended for the direction control, ensure the pin is not used for other purposes on the EZ-KIT Lite board. When the SW1 switch connects a direction control signal to ground (GND), the corresponding signal (signals) is (are) controlled as input. The direction control functionality is summarized in [Table 2-1](#).

Table 2-1. DAI_P15_GP1/DAI_P16_GP2 Direction Control Settings

SW1 Position 3 SW1 Position 5	SW1 Position 4 SW1 Position 6	DAI_P15_GP1 Direction DAI_P16_GP2 Direction
OFF	OFF	EZ-KIT Lite is transmitter
OFF	ON	DAI_P18 sets the direction: 0 = EZ-KIT Lite is receiver 1 = EZ-KIT Lite is transmitter
ON	OFF	EZ-KIT Lite is receiver
ON	ON	Do not use

The source of the PDAP clock input signal, DAI_PP2_CLOCKIN, is configured through positions 1 and 2 of the DIP switch SW1, as illustrated in [Figure 2-1 on page 2-2](#). The switch settings are summarized in [Table 2-2](#).

Table 2-2. PDAP Clock-in Source Settings

SW1 Position 1 RX_CLK	SW1 Position 2 TX_CLK	DIA_P2_CLOCKIN Source
OFF	OFF	Not generated by the EZ-Extender
OFF	ON	In this configuration, the TX_CLK signal must be generated by one of the user configured clock sources.
ON	OFF	RX_CLK
ON	ON	RX_CLK. In this configuration, the RX_CLK signal is also routed to the TX_CLK to be used as an output.

MISO Disconnect Jumper (P6)

The S0 signal of the SPI connector (J2) is driven by a buffer to the processor's MISO signal, as illustrated in [Figure 2-1 on page 2-2](#). When the SPI connector is not in use, remove the P7 jumper to prevent the signal from interfering with other devices on the SPI bus.

SMA Connector Clock Disconnect Jumper (P10)

The SMA connector (P7) enables a clock input from a signal generator or from other clock source. The input signal is directed through a buffer, as illustrated in [Figure 2-1 on page 2-2](#). When the SMA connector is not in use, remove the P7 jumper to prevent the buffer from driving other signals on the net.

DIP Switches and Jumpers

A BILL OF MATERIALS

Reference	Quantity	Description	Reference Design	Manufacturer	Part Number
1	1	74LVX244M SOIC20 LOW-VOLT-OCTAL-BUFFER	U8	FAIR CHILD SEMI	74LVX244M
2	1	SN74AHC1G00 SOT23-5 SINGLE-2-INPUT-NAND	U13	TI	SN74AHC1G00DBVR
3	5	SN74LVC1G125 SOT23-5 SINGLE-3STATE-BUFFER	U5-6,U9, U12,U14	TI	SN74LVC1G125DBVR
4	4	74LVTH16245MEA SSOP48 16-BIT TXRX- DONT USE MTD	U1-2, U10-11	FAIR- CHILD	74LVTH16245MEA
5	1	SN74LVC1G14DBVR SOT-23-5 SCHMIT-TRIGGERED INVERTER	U3	DIGI-KEY	296-11607-1-ND
6	1	8 PIN DIP TH-TH CARRIER SOCKETED PIN	U7	MILL-MAX	614-93-308-31-007
7	3	0.05 45x2 CON018 HEADER	P1-3	SAMTEC	TFC-145-32-F-D
8	2	DIP6 SWT017	SW1,SW4	DIG01	CKN1364-ND
9	1	IDC 16X2 IDC16X2RASOC SOCKET RA	J2	SAMTEC	SSW-116-02-F-D-RA
10	1	IDC 20X2 IDC20X2RASOC SOCKET RA	J3	SAMTEC	SSW-120-02-G-D-RA

Reference	Quantity	Description	Reference Design	Manufacturer	Part Number
11	1	RJ45 8PIN CON_RJ45 RA	J1	TYCO	1-1609214-1
12	2	DIP4 SWT018 4PIN-SMT-SWT	SW2-3	DIG01	CKN1363-ND
13	1	SMA SMA 50OHM STRAIGHT JACK RECEPTACLE SMA1	P11	DIGI-KEY	J500-ND
14	1	STRAIGHT HEADER.1X. 20X2 HDR W/LATCH EJECTOR	J4	AMP	499910-9
15	1	32-PIN CONN. NORM FLZ32 FLZ32	P8	JST	32FLZ-SM1-R-TB
16	1	51 1/8W 5% 1206	R9	AVX	CR1206-51R0JTR
17	25	0.1uF 50V 10% 805 CERM	C1-10, C12-26	AVX	08055C104KAT
18	14	10K 100MW 5% 805	R5-7, R11-12, R15-16, R21-25, R28, R30	AVX	CR21-103J-T
19	4	33 100MW 5% 805	R10,R13, R18,R29	AVX	CR21-330JTR
20	5	10uF 16V 10% B TANT	CT1-5	AVX	TAJB106K016R
21	1	0.00 100MW 5% 805	R1	VISHAY	CRCW0805 0.0 RT1
22	4	22 1/10W 5% 805	R3-4, R26-27	VISHAY/ DALE	CRCW0805220JRT1
23	3	1.2K 1/10W 5% 805	R17,R19-20	DALE	CRCW08051201FRT1
24	8	22 125MW 5% RNETX	RN1-8	DIGI-KEY	744C083220JCT-ND

Bill Of Materials

Reference	Quantity	Description	Reference Design	Manufacturer	Part Number
25	1	10K 0.5W 10% RES002 TRIM POTENTIOMETER	R8	DIGI-KEY	CT9W103-ND
26	5	IDC 2X1 IDC2X1 2X1 TIN	P7,P9-10, P36-37	BERG	54101-T08-02

A

B

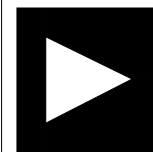
C

D

REVISIONS				
REV	DESCRIPTION	ENGR	DATE	APPR
1.0	Initial Release	MJE	07/07/03	

SHARC EZ-Extender Schematic

DNP = DO NOT POPULATE

	ANALOG DEVICES		20 Cotton Road Nashua, NH 03063 PH: 1-800-ANALOGD	
	Title SHARC EZ-EXTENDER - TITLE			
Size C	Board No. A0182-2003		Rev 1.0	
Date	3-11-2004_11:15		Sheet 1 of 7	

Approvals		Date
Drawn	MJE	07/07/03
Checked		
Engineering		

A

B

C

D

1

1

2

2

3

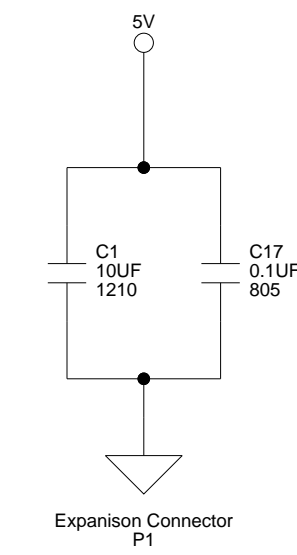
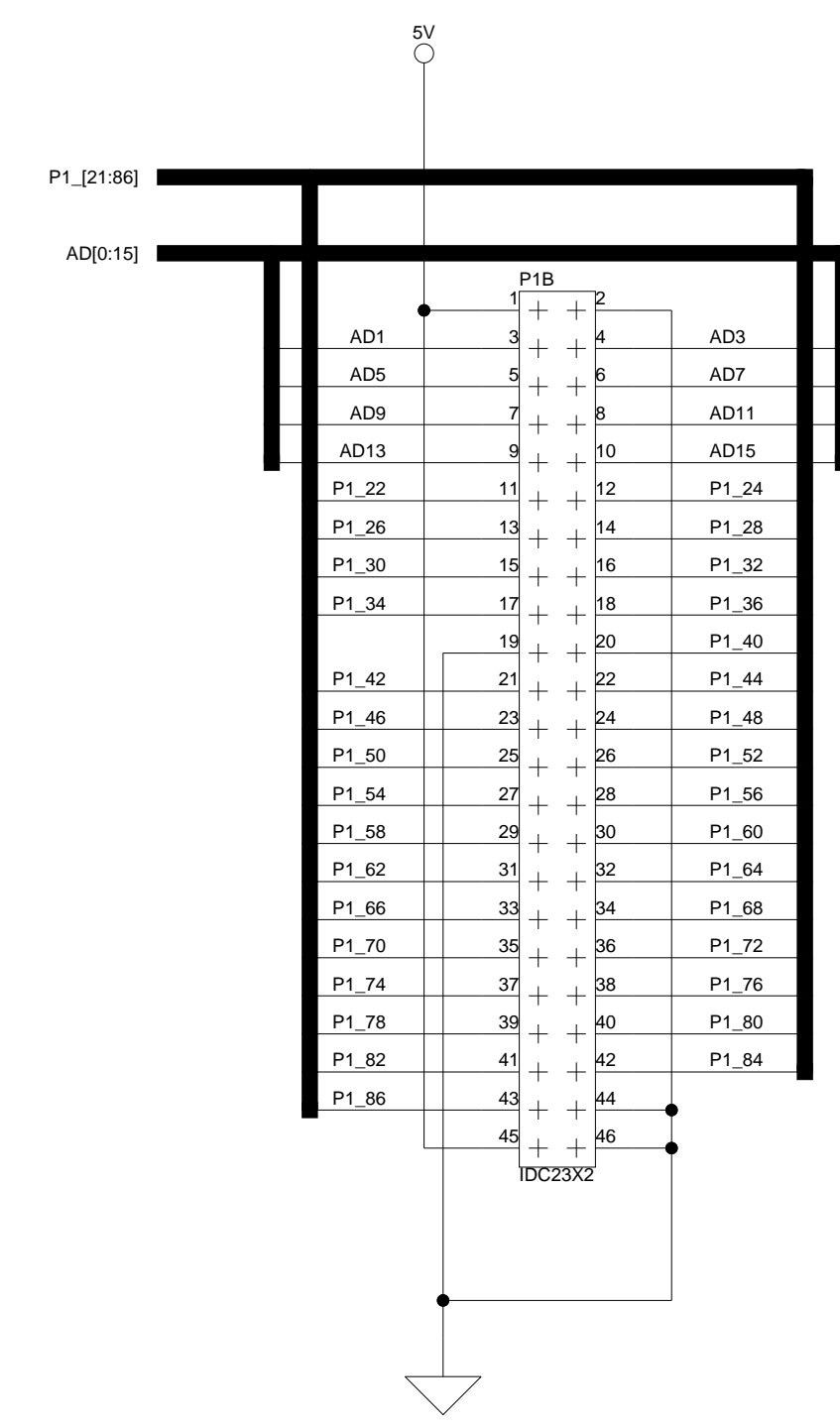
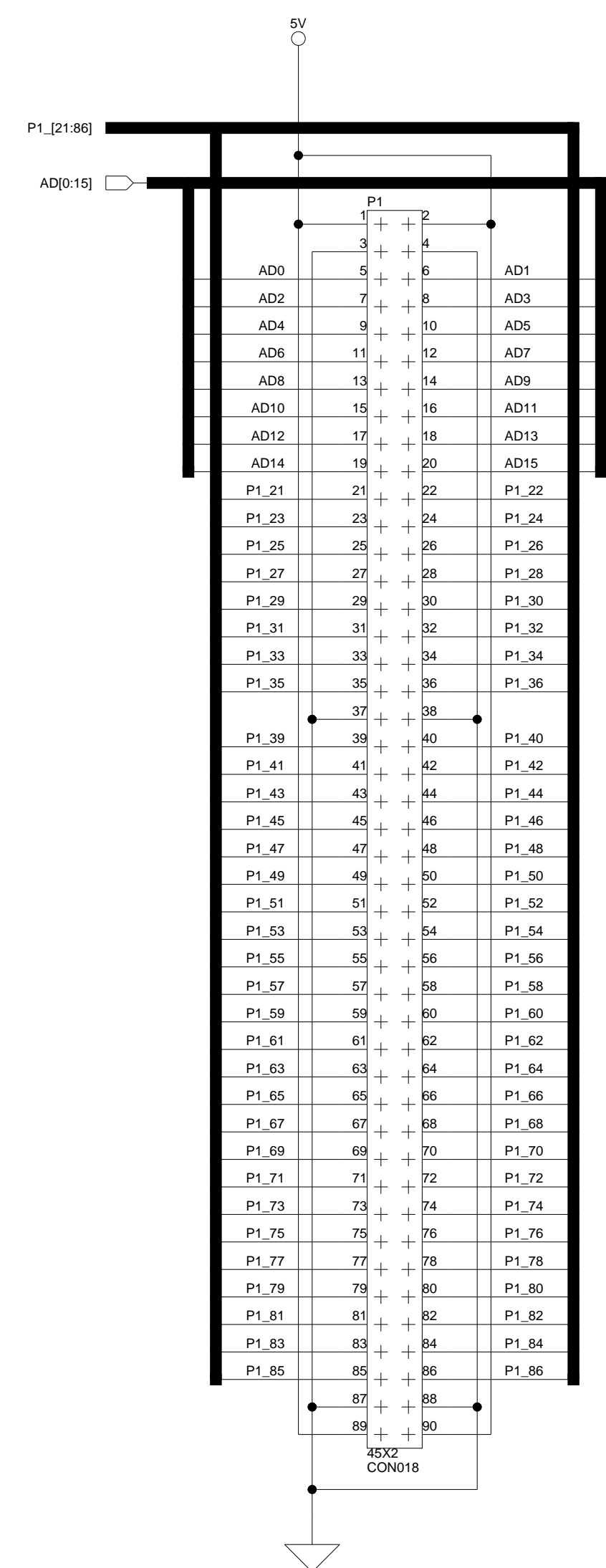
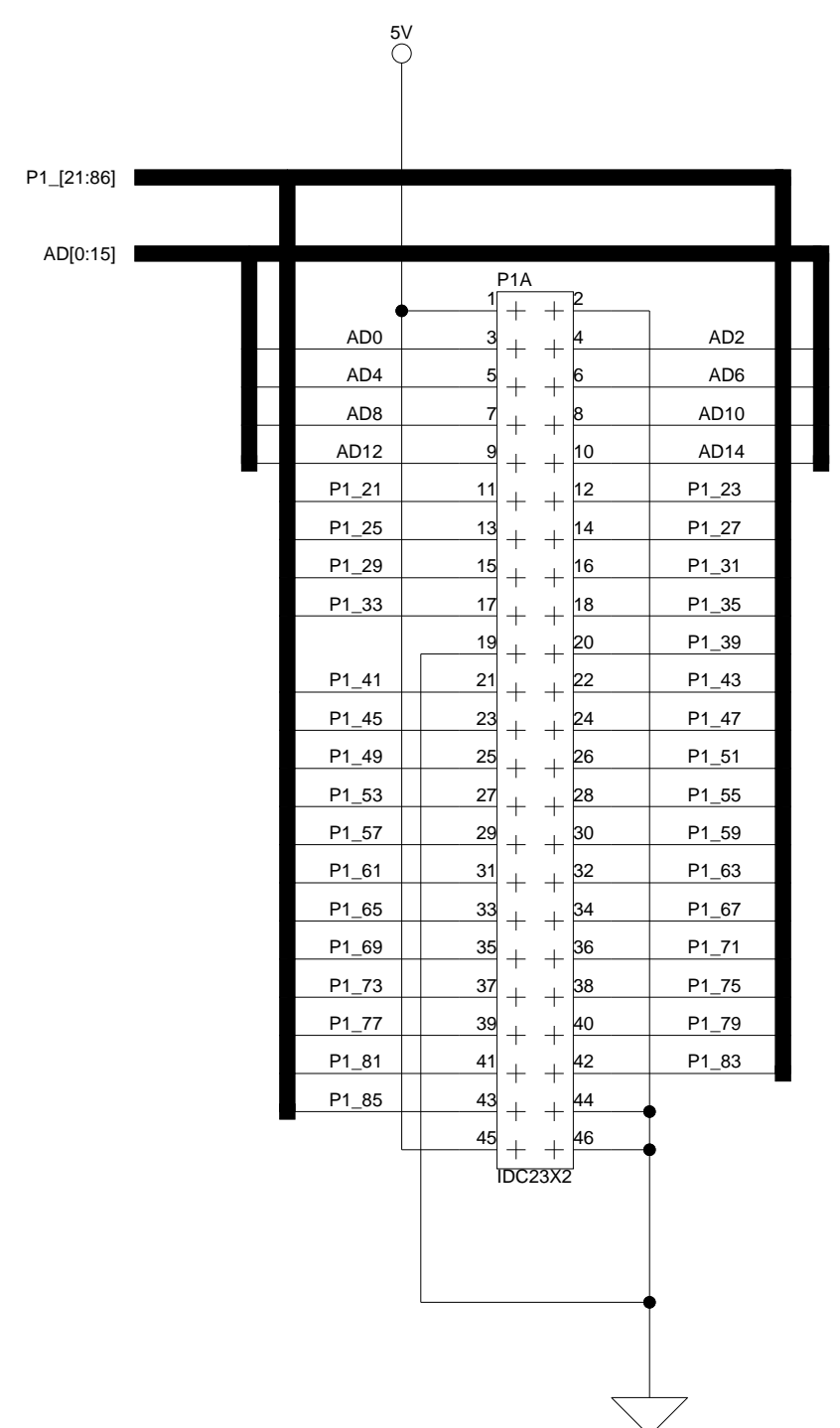
3

4

4

REVISIONS				
REV	DESCRIPTION	ENGR	DATE	APPR
1.0	Initial Release	MJE	07/07/03	

EXPANSION INTERFACE (TYPE A)



DNP = DO NOT POPULATE

	20 Cotton Road Nashua, NH 03063 PH: 1-800-ANALOGD	
	Title SHARC EZ-EXTENDER - P1	
Size C	Board No. A0182-2003	Rev 1.0
Date 3-11-2004_11:15	Sheet 2 of 7	

Approvals	Date
Drawn MJE	07/07/03
Checked	
Engineering	

1

2

3

4

1

2

3

4

A

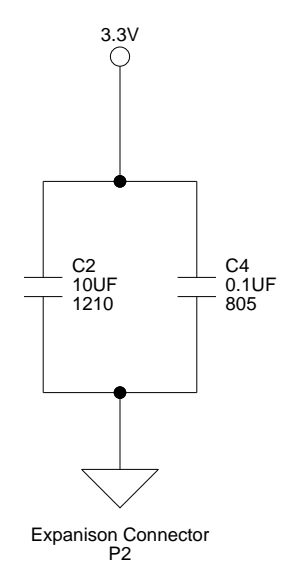
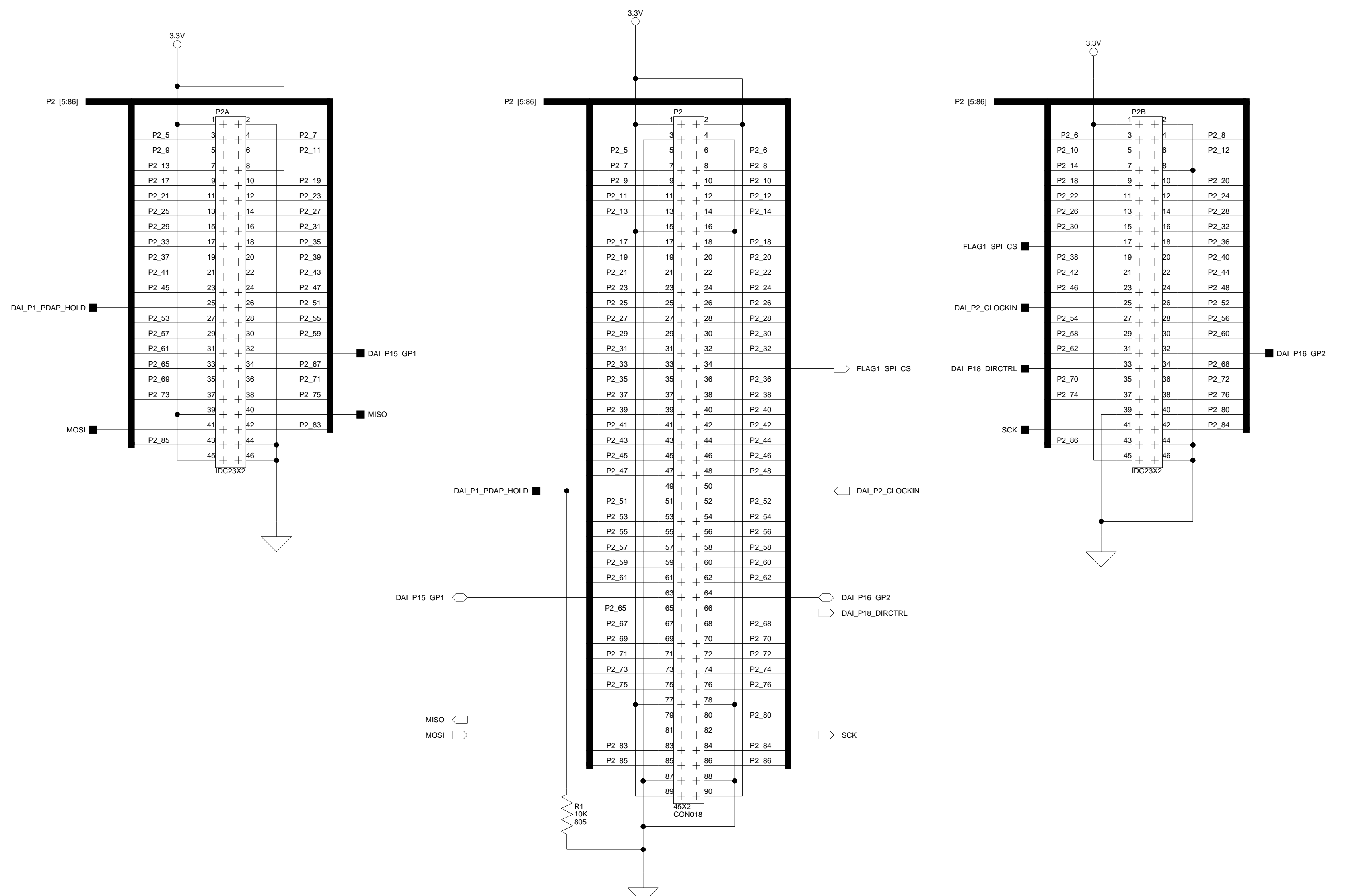
B

C

D

REVISIONS				
REV	DESCRIPTION	ENGR	DATE	APPR
1.0	Initial Release	MJE	07/07/03	

EXPANSION INTERFACE (TYPE A)



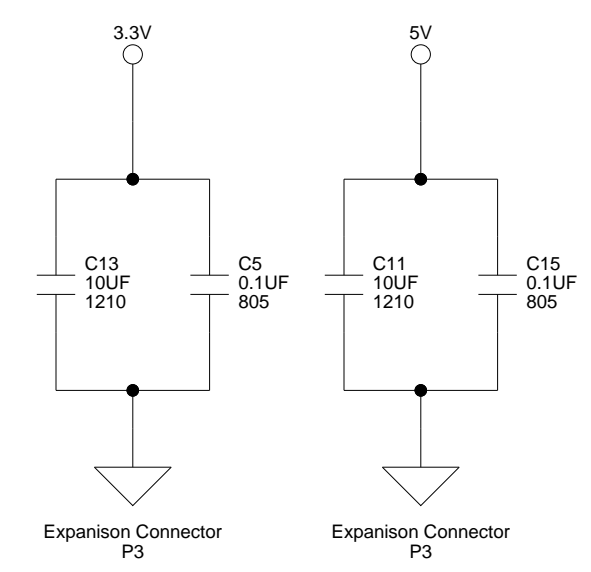
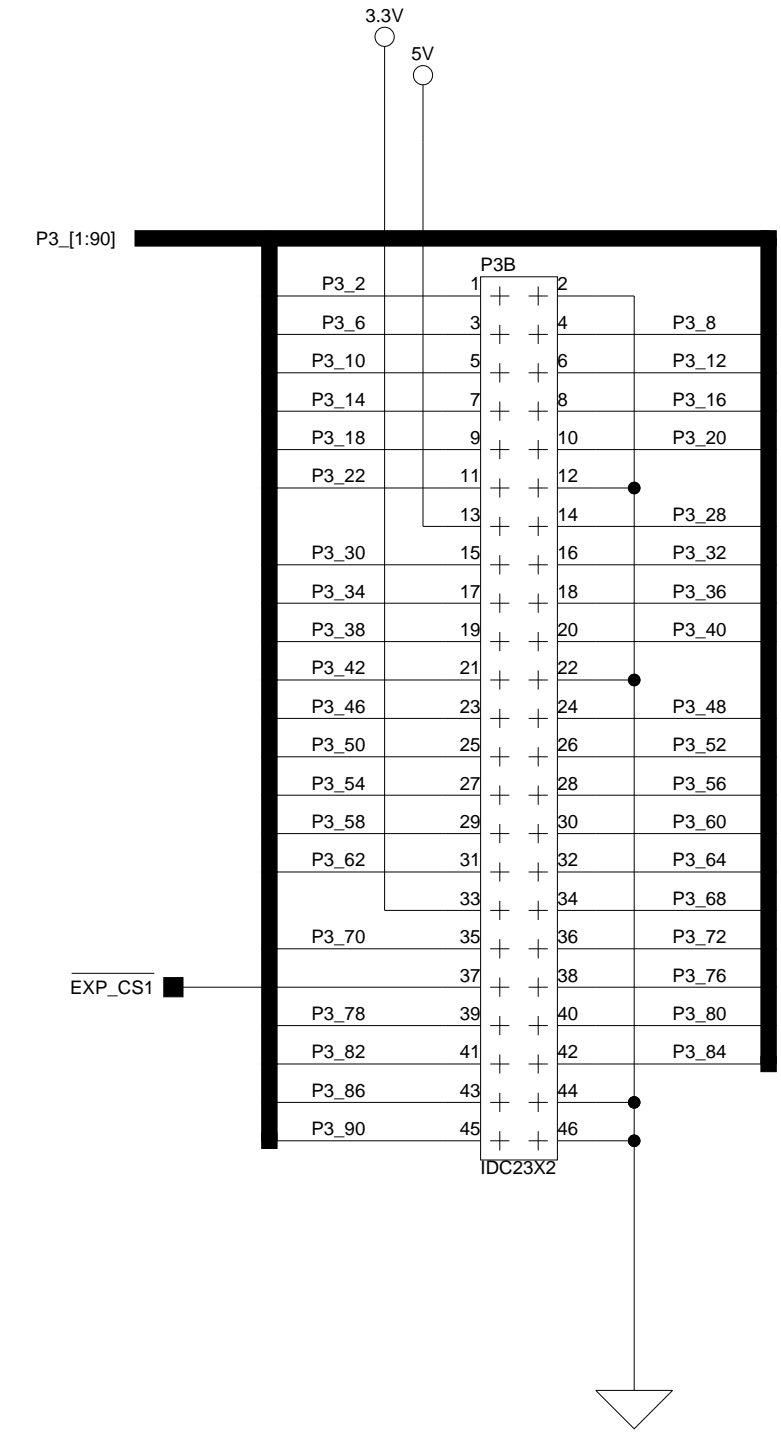
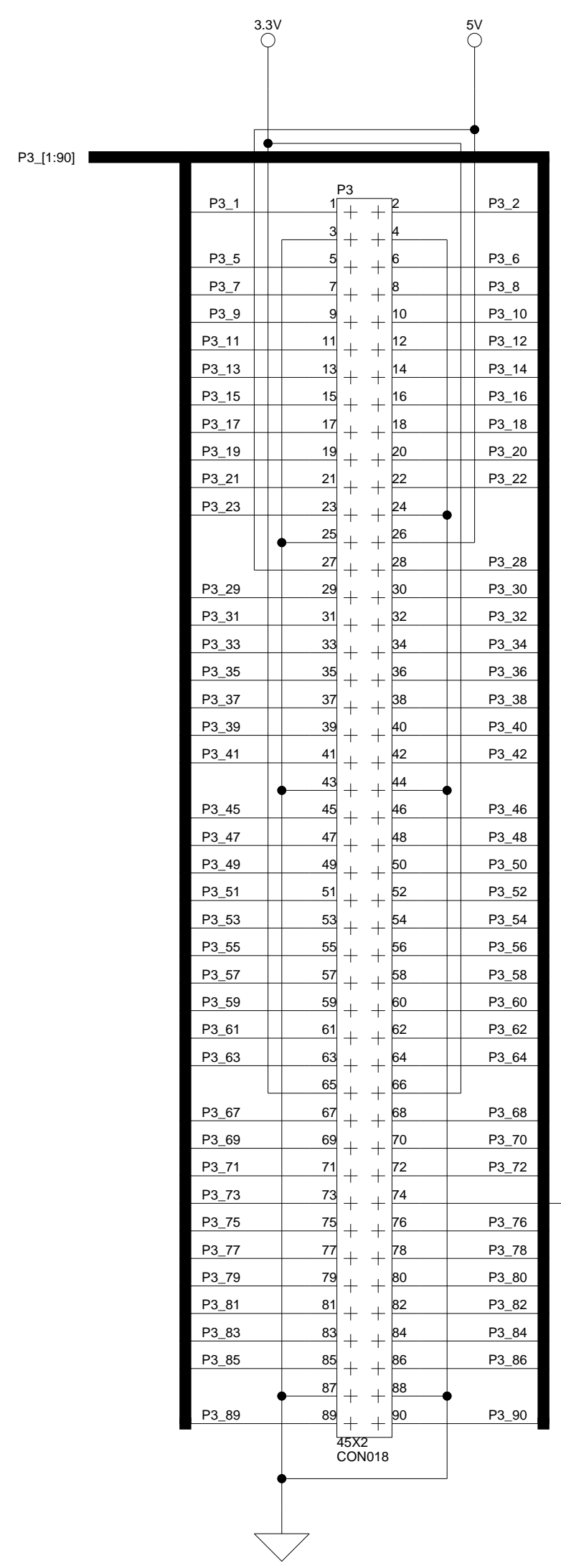
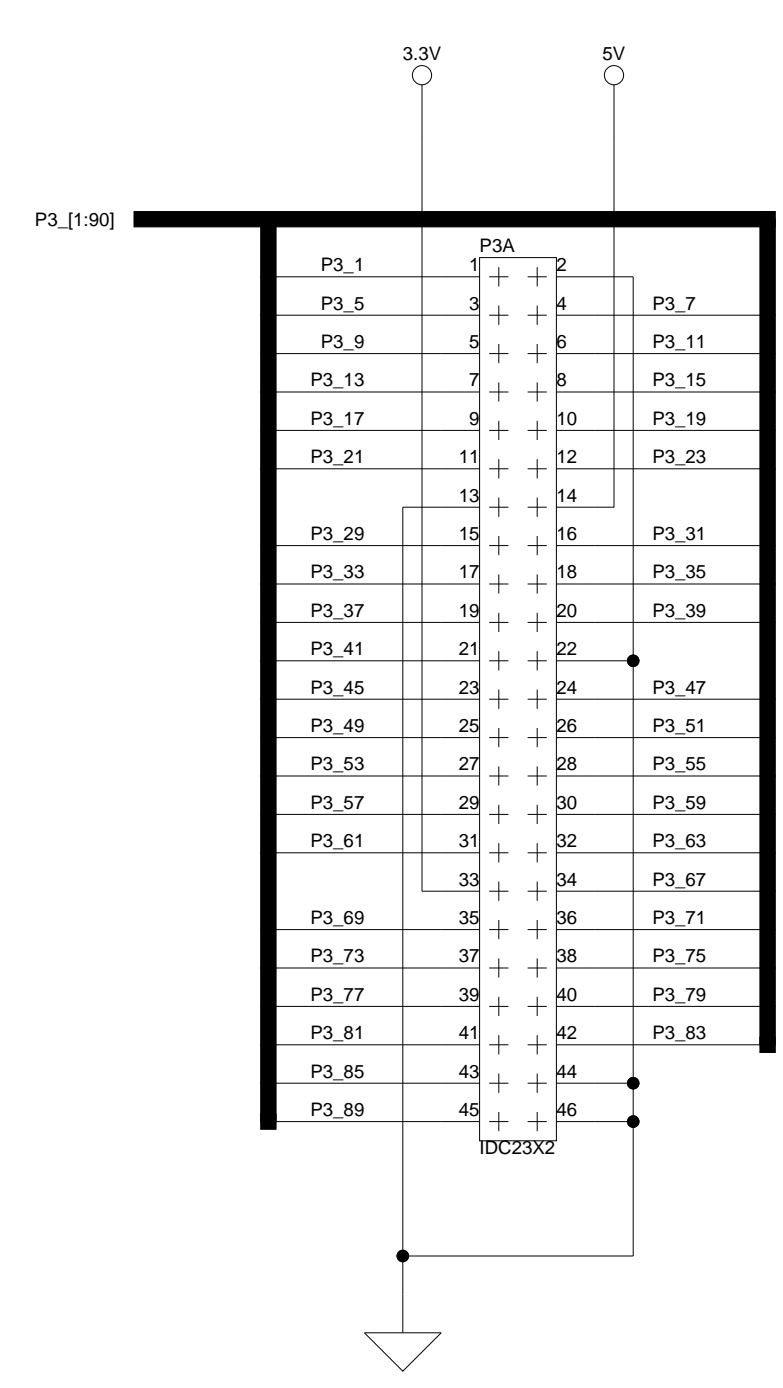
DNP = DO NOT POPULATE

	ANALOG DEVICES		20 Cotton Road Nashua, NH 03063 PH: 1-800-ANALOGD	
	Title SHARC EZ-EXTENDER - P2			
Size C	Board No. A0182-2003		Rev 1.0	
Date 3-11-2004_11:15	Sheet 3 of 7			

Approvals	Date
Drawn MJE	07/07/03
Checked	
Engineering	

REVISIONS				
REV	DESCRIPTION	ENGR	DATE	APPR
1.0	Initial Release	MJE	07/07/03	

EXPANSION INTERFACE (TYPE A)



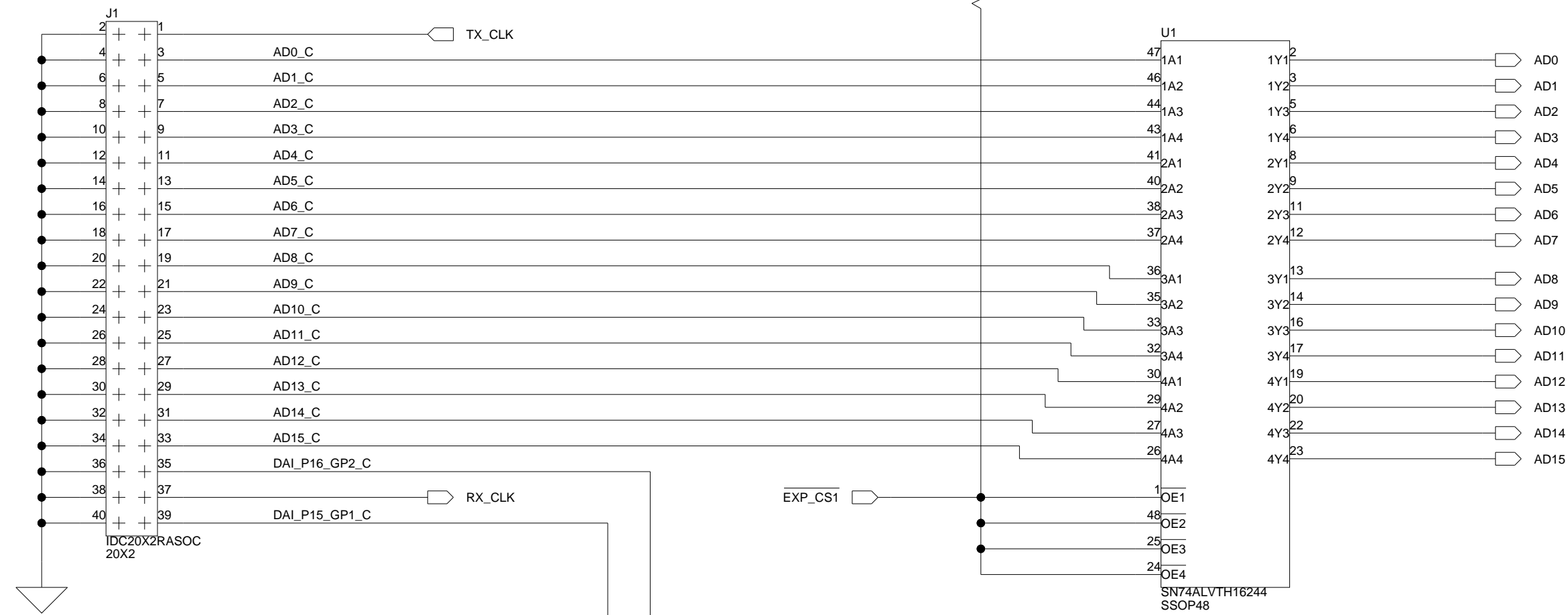
DNP = DO NOT POPULATE

ANALOG DEVICES
 20 Cotton Road
 Nashua, NH 03063
 PH: 1-800-ANALOGD

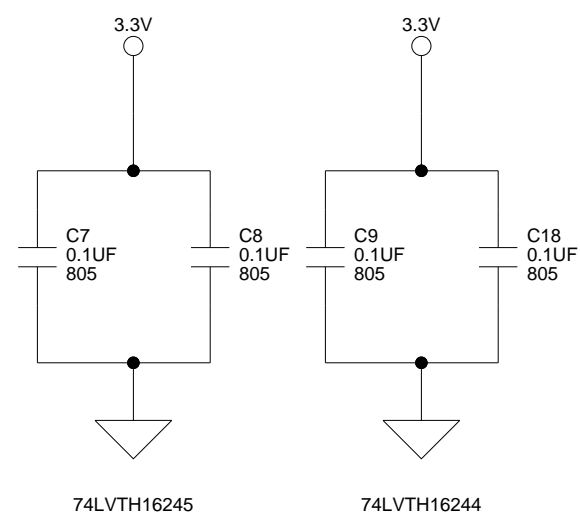
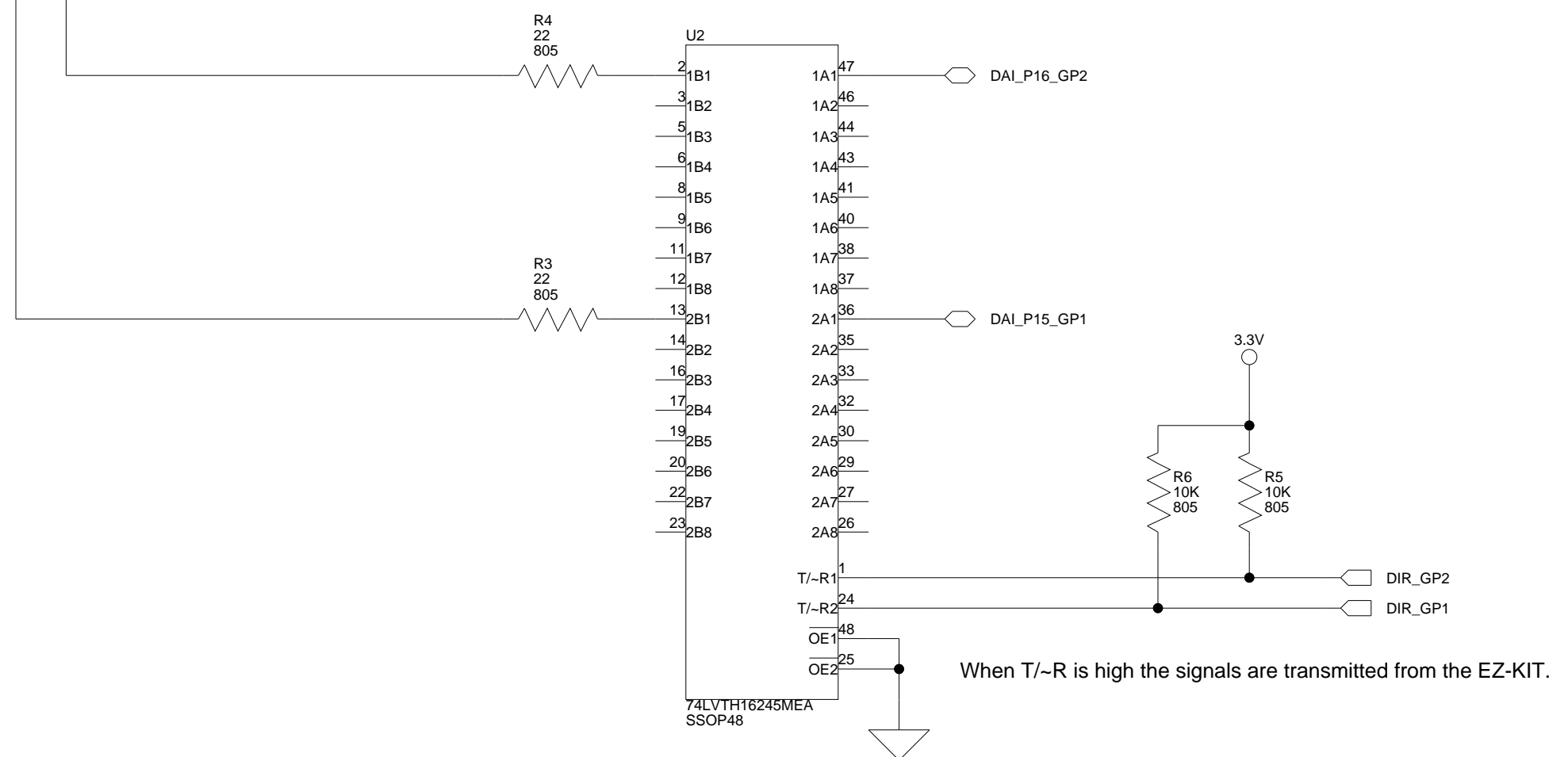
Approvals		Date	Title	
Drawn	MJE	07/07/03	SHARC EZ-EXTENDER - P3	
Checked			Size C	Board No.
Engineering			C	A0182-2003
		Date	Rev	1.0
		3-11-2004_11:15	Sheet	4 of 7

REVISIONS				
REV	DESCRIPTION	ENGR	DATE	APPR
1.0	Initial Release	MJE	07/07/03	

Interface to ADC Eval Board



Place close to connector

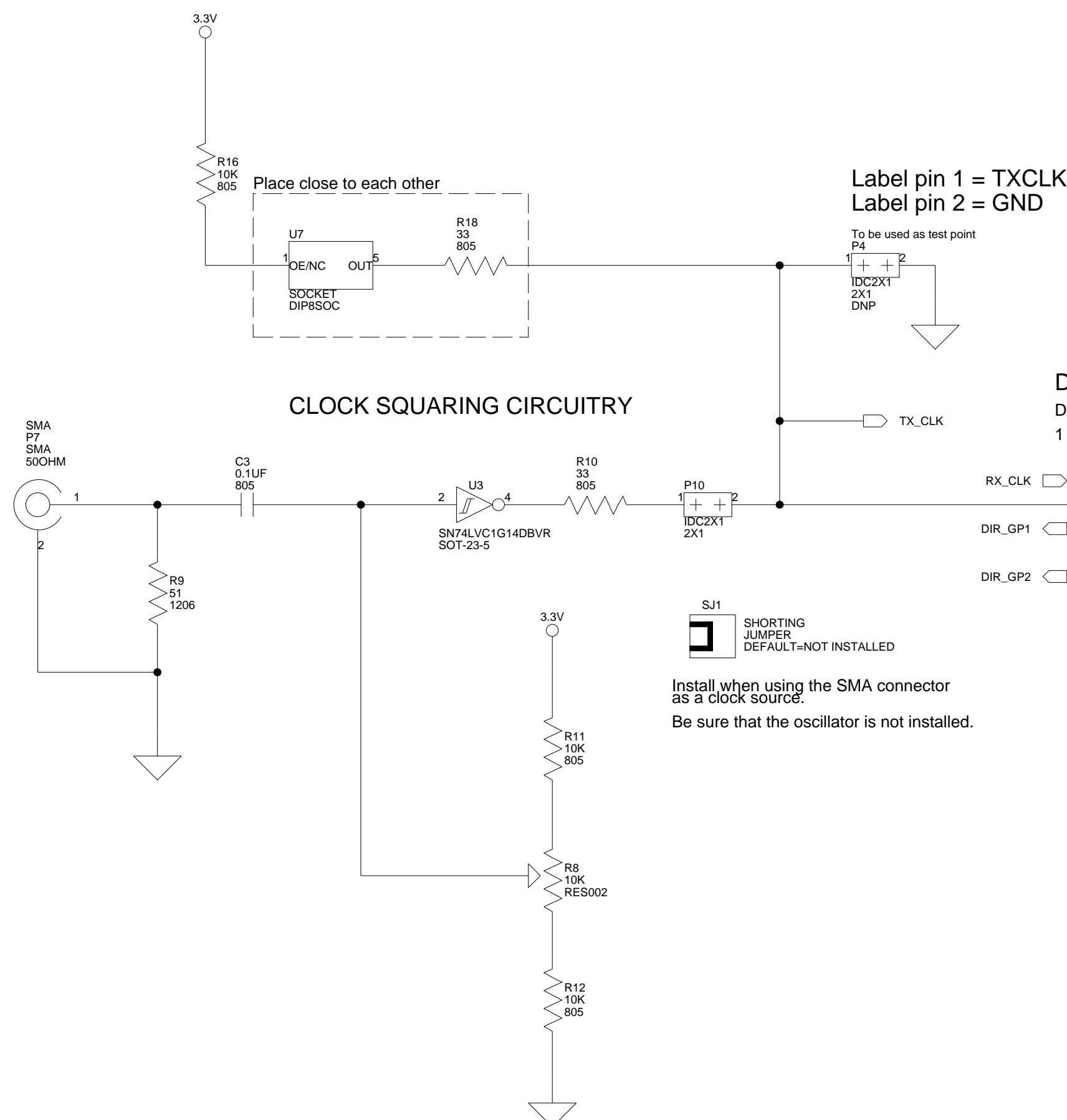


DNP = DO NOT POPULATE

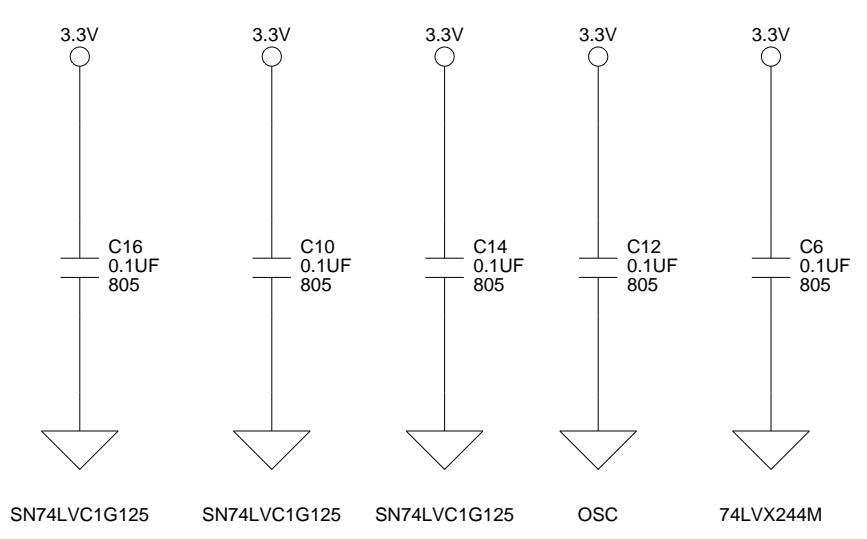
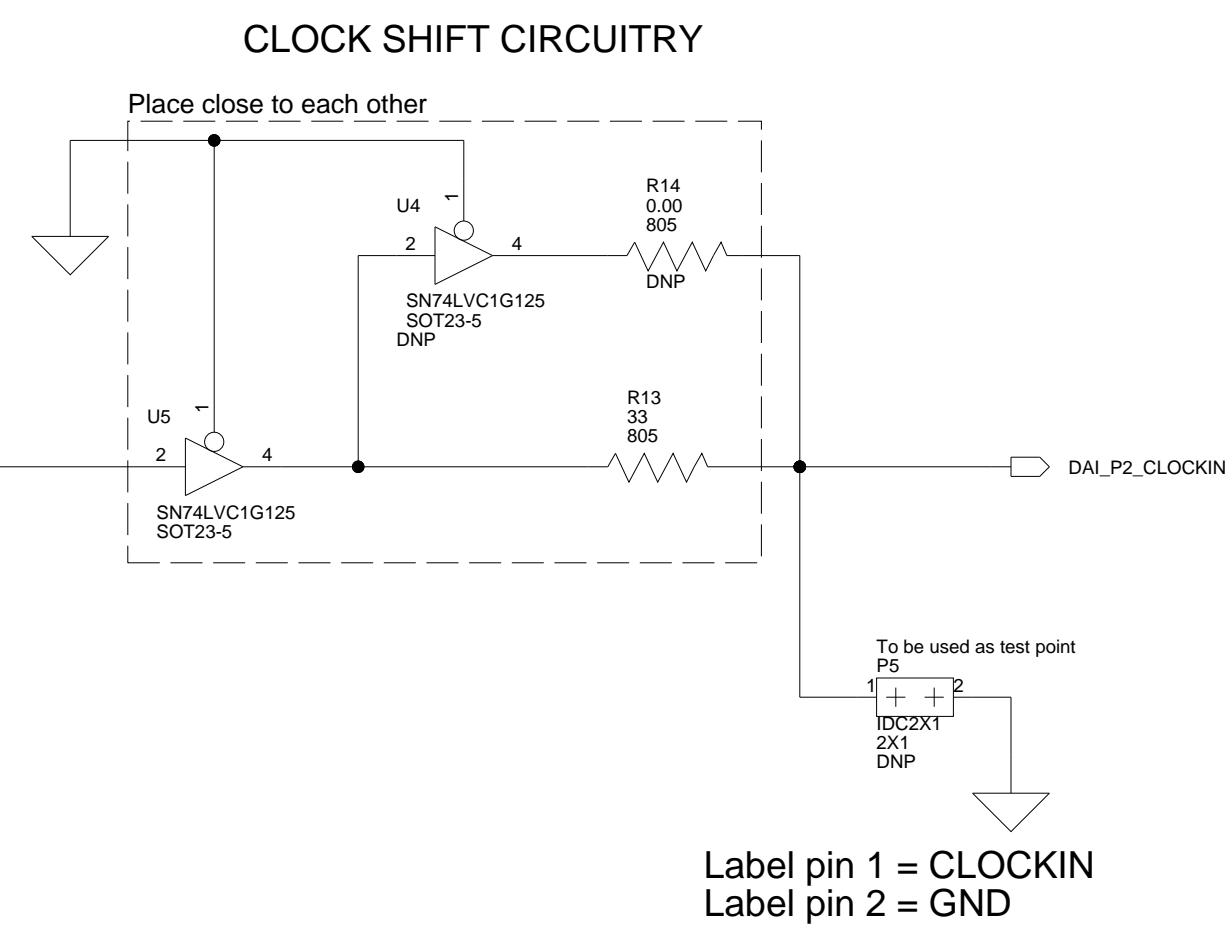
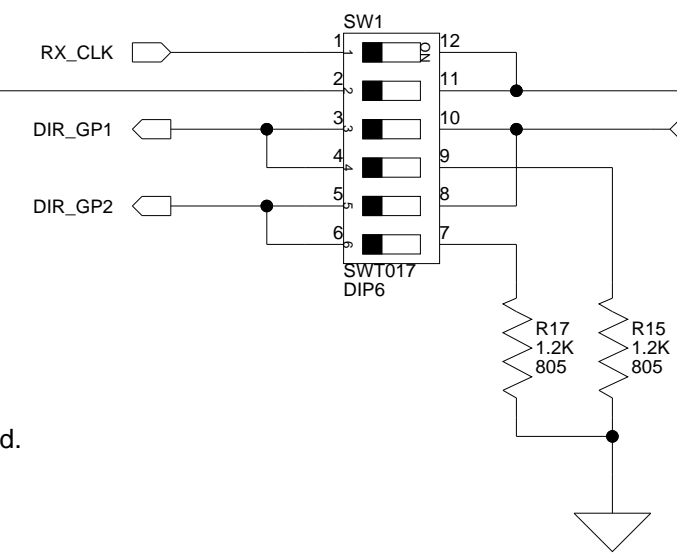
	ANALOG DEVICES 20 Cotton Road Nashua, NH 03063 PH: 1-800-ANALOGD	
	SHARC EZ-EXTENDER - HSC	
Title	Board No.	Rev
Size C	A0182-2003	1.0
Date	3-11-2004_11:15	Sheet 5 of 7

Approvals		Date
Drawn	MJE	07/07/03
Checked		
Engineering		

REVISIONS				
REV	DESCRIPTION	ENGR	DATE	APPR
1.0	Initial Release	MJE	07/07/03	

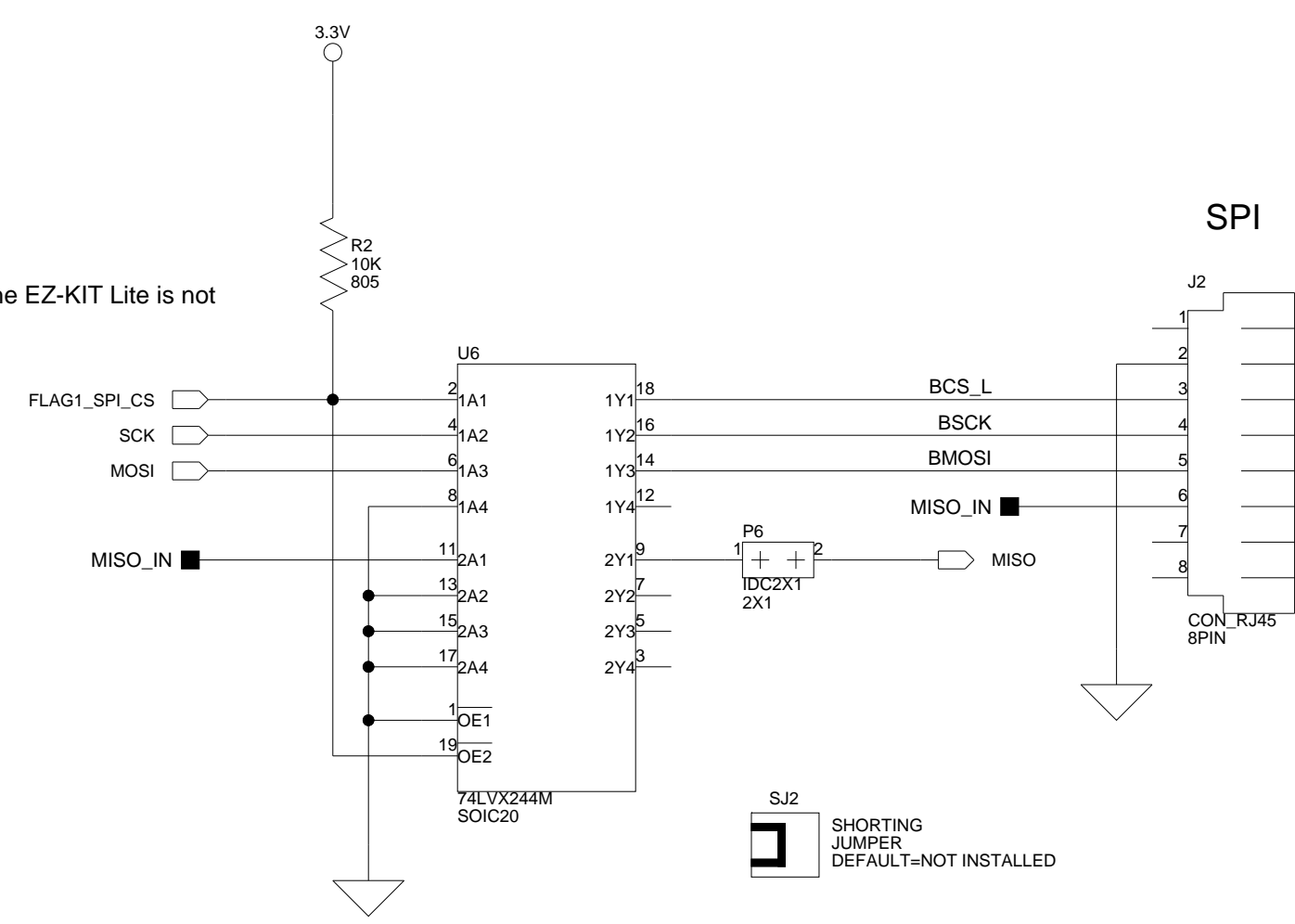


Direction/Clock Source Control
 Default Settings:
 1 = ON, 2 = OFF, 3 = OFF, 4 = OFF, 5 = OFF, 6 = OFF



SN74LVC1G125 SN74LVC1G125 SN74LVC1G125 OSC 74LVX244M

Be sure that the pushbutton on the EZ-KIT Lite is not driving FLAG1.



DNP = DO NOT POPULATE

	ANALOG DEVICES 20 Cotton Road Nashua, NH 03063 PH: 1-800-ANALOGD	
	Title SHARC EZ-EXTENDER - CONTROL	
Drawn MJE	Date 07/07/03	Size C
Checked	Board No. A0182-2003	Rev 1.0
Engineering	Date 3-11-2004_11:15	Sheet 6 of 7

Approvals		Date
Drawn	MJE	07/07/03
Checked		
Engineering		

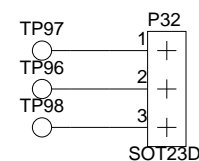
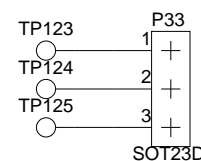
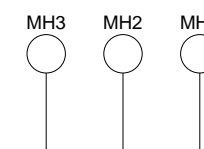
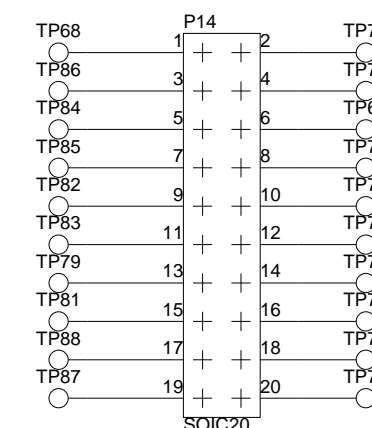
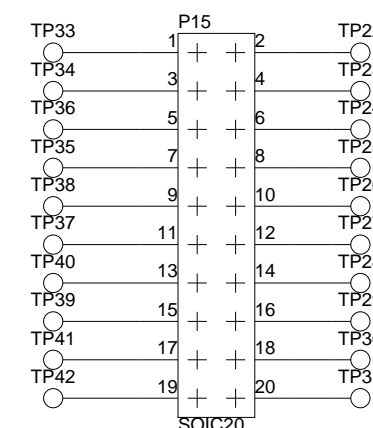
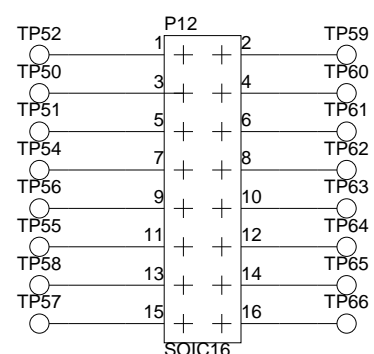
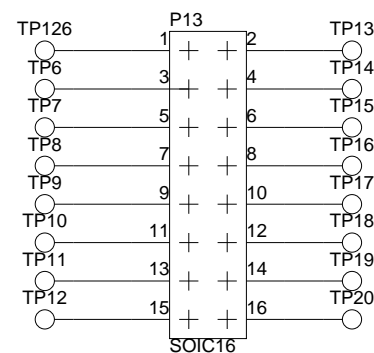
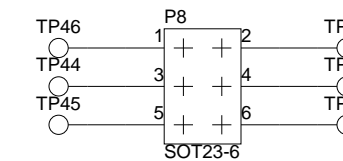
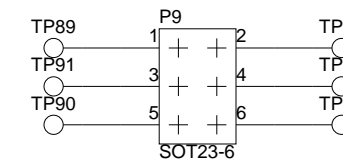
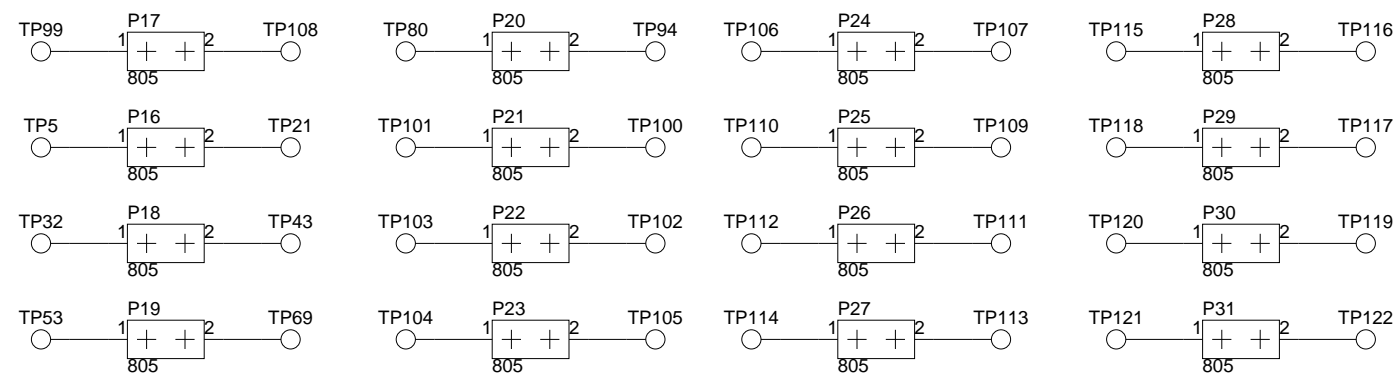
A

B

C

D

REVISIONS				
REV	DESCRIPTION	ENGR	DATE	APPR
1.0	Initial Release	MJE	07/07/03	



DNP = DO NOT POPULATE

	20 Cotton Road Nashua, NH 03063 PH: 1-800-ANALOGD	
	Title SHARC EZ-EXTENDER - BREADBOARD	
Size C	Board No. A0182-2003	Rev 1.0
Date 3-11-2004_11:15	Sheet 7 of 7	

Approvals	Date
Drawn MJE	07/07/03
Checked	
Engineering	

A

B

C

D

I INDEX

A

ADC HSC interface, [1-1](#), [2-2](#)
architecture, EZ-Extender, [2-1](#)

B

bidirectional driver, [2-1](#)
bill of materials, [A-1](#)
block diagram, EZ-Extender, [2-1](#)
breadboard area, [viii](#), [1-2](#)

C

clock, [2-2](#)
 disconnect jumper (P10), [2-5](#)
 processor input signal
 (DAI_PP2_CLOCKIN), [2-3](#), [2-4](#)
 settings (SW1 switch), [1-1](#)
 signals (TX_CLK, RX_CLK), [2-3](#)
 sources, [2-5](#)
compatible boards, [1-2](#)
connectors
 J2 (SPI), [2-5](#)
 P7 (SMA), [2-3](#), [2-5](#)
customer support, [x](#)

D

DAI signals, [1-1](#), [2-3](#), [2-4](#)

data

 bus, [1-2](#), [2-3](#)
 converters, [1-2](#)
 transfer, [1-1](#)
dimensions, [viii](#)
DIP switches
 see direction control switch (SW1)
direction control switch (SW1), [2-3](#)

E

expansion interface, [vii](#)
external port, [1-2](#)
EZ-Extender
 architecture, [2-1](#)
 features, [viii](#)

F

features, EZ-Extender, [viii](#)

G

general-purpose signals, [1-1](#), [2-2](#), [2-3](#)

H

Help, online, [xv](#)
high-speed converter (HSC) interface, [viii](#), [1-1](#)

I

interface, ADC HSC, [viii](#), [1-1](#)

INDEX

J

- jumpers, [2-3](#)
 - clock disconnect (P10), [2-5](#)
 - MISO disconnect (P6), [2-5](#)

M

- MISO
 - disconnect jumper (P6), [2-5](#)
 - processor signal, [2-5](#)

N

- notation conventions, [xvii](#)

O

- oscillator, [2-3](#)

P

- P10 (SMA connector clock disconnect) jumper, [2-5](#)
- P6 (MISO disconnect) jumper, [2-5](#)
- parallel data access port (PDAP), [viii](#), [1-1](#), [2-3](#)
 - clock, [1-1](#)
 - source settings, [2-4](#)
- push buttons, [1-1](#)

R

- regulatory compliance, [iii](#)
- RJ45 connector, [1-1](#)
- RX_CLK signal, [2-3](#), [2-4](#)

S

- serial peripheral interconnect (SPI)
 - connector (J2), [2-5](#)
 - signals, [1-1](#)
- signal generator, [2-5](#)
- SMA connector (P7), [2-3](#), [2-5](#)
- SO signal, [2-5](#)
- surface mounted (SMT) footprints, [viii](#), [1-2](#)
- SW1 (direction control) switch, [2-3](#)

T

- transmit mode, [2-1](#)
- TX_CLK signal, [2-3](#), [2-4](#)

V

- VisualDSP++
 - documentation, [xv](#)
 - online Help, [xv](#)