

Probing EI3 Extender Board Manual

an EZ-Extender® product

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Regulatory Compliance

The Probing EI3 Extender Board is designed to be used solely in a laboratory environment. The board is not intended for use as a consumer end product or as a portion of a consumer end product. The board is an open system design which does not include a shielded enclosure and therefore may cause interference to other electrical devices in close proximity. This board should not be used in or near any medical equipment or RF devices.

The Probing EI3 Extender Board is in the process of being 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 extender board 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 extender boards in the protective shipping package.



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PREFACE

Thank you for purchasing the Probing EI3 Extender Board, an EZ-Extender[®] product for EZ-KIT Lite[®]/EZ-Board[®] evaluation systems with the expansion interface 3 (EI3).

The EZ-KIT Lite/EZ-Board and Probing EI3 Extender Board are designed to be used in conjunction with the CrossCore[®] Embedded Studio (CCES) development environment.

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

Product Overview

The Probing EI3 Extender Board is a separately sold daughter board that plugs onto the EI3 of an EZ-KIT Lite/EZ-Board evaluation system. The extender board aids the design and prototyping phases of embedded processor-targeted applications.

The board extends the capabilities of the evaluation system by providing a point for probing any of the signals on the Expansion Interface 3 connector.

Purpose of This Manual

The following is a list of the Probing EI3 Extender Board interfaces.

- 30 × 2 headers for probing signals
- Expansion Interface III
- No power supply required: derives power from the EZ-KIT Lite/EZ-Board
- CE certified

Purpose of This Manual

The *Probing EI3 Extender Board Manual* provides instructions for installing the product hardware (board). The text describes operation and configuration of the board components and provides guidelines for running your own code on the Probing EI3 Extender Board. Finally, a schematic and a bill of materials are provided for reference.

Intended Audience

The primary audience for this manual is a programmer who is familiar with Analog Devices processors. This manual assumes that the audience has a working knowledge of the appropriate processor architecture, instruction set, and C/C++ programming languages.

Programmers who are unfamiliar with Analog Devices processors can use this manual, but should supplement it with other texts that describe your target architecture and hardware development tools.

Programmers who are unfamiliar with the CrossCore Embedded Studio programming environment or the mating evaluation board should refer to the CCES online help.

Manual Contents

The manual consists of:

- Chapter 1, “[Using Probing EI3 Extender Board](#)” on page 1-1
Provides basic product information.
- Chapter 2, “[Probing EI3 Extender Board Hardware Reference](#)” on page 2-1
Provides information about the product’s hardware components.
- Appendix A, “[Probing EI3 Extender Board Bill Of Materials](#)” on page A-1
Provides a list of hardware components used to manufacture the board.
- Appendix B, “[Probing EI3 Extender Board Schematic](#)” on page B-1
Provides all circuits on the extender board.

What’s New in This Manual

This is the first revision of the *Probing EI3 Extender Board Manual*.

Technical Support

You can reach Analog Devices processors and DSP technical support in the following ways:

- Post your questions in the processors and DSP support community at EngineerZone®:
<http://ez.analog.com/community/dsp>
- Submit your questions to technical support directly at:
<http://www.analog.com/support>
- E-mail your questions about processors, DSPs, and tools development software from **CrossCore Embedded Studio** or **VisualDSP++**®:

Choose **Help > Email Support**. This creates an e-mail to processor.tools.support@analog.com and automatically attaches your **CrossCore Embedded Studio** or **VisualDSP++** version information and `license.dat` file.

- E-mail your questions about processors and processor applications to:
processor.support@analog.com or
processor.china@analog.com (Greater China support)
- In the **USA only**, call **1-800-ANALOGD** (1-800-262-5643)
- Contact your Analog Devices sales office or authorized distributor. Locate one at:
www.analog.com/adi-sales

- Send questions by mail to:
Processors and DSP Technical Support
Analog Devices, Inc.
Three Technology Way
P.O. Box 9106
Norwood, MA 02062-9106
USA

Supported Products

This extender board supports EZ-KIT Lite/EZ-Board evaluation systems with the expansion interface 3.

Product Information

Product information can be obtained from the Analog Devices Web site and the CCES online help system.

Analog Devices Web Site

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

To access a complete technical library for each processor family, go to http://www.analog.com/processors/technical_library. The manuals selection opens a list of current manuals related to the product as well as a link to the previous revisions of the manuals. When locating your manual title, note a possible errata check mark next to the title that leads to the current correction report against the manual.

Also note, [myAnalog](#) is a free feature of the Analog Devices Web site that allows customization of a Web page to display only the latest information

Product Information

about products you are interested in. You can choose to receive weekly e-mail notifications containing updates to the Web pages that meet your interests, including documentation errata against all manuals.

[myAnalog](#) provides access to books, application notes, data sheets, code examples, and more.

Visit [myAnalog](#) (found on the Analog Devices home page) to sign up. If you are a registered user, just log on. Your user name is your e-mail address.

EngineerZone

EngineerZone is a technical support forum from Analog Devices. It allows you direct access to ADI technical support engineers. You can search FAQs and technical information to get quick answers to your embedded processing and DSP design questions.

Use EngineerZone to connect with other DSP developers who face similar design challenges. You can also use this open forum to share knowledge and collaborate with the ADI support team and your peers. Visit <http://ez.analog.com> to sign up.

Related Documents

For additional information about the processor, refer to the following publications.

Table 1. Related Processor Publications

Title	Description
<i>Processor Data Sheet</i>	General functional description, pinout, and timing of the processor
<i>Processor Hardware Reference</i>	Description of the internal processor architecture and all register functions
<i>Blackfin Processor Programming Reference</i>	Description of all allowed processor assembly instructions

Related Documents

1 USING PROBING EI3 EXTENDER BOARD

This chapter provides the setup procedure for the Probing EI3 Extender Board and describes two types of interfaces the extender supports.

The information is presented in the following order.

- “Package Contents” on page 1-2
- “Supported Operating Systems” on page 1-2
- “System Requirements” on page 1-3
- “Probing EI3 Extender Board Installation” on page 1-3
- “Expansion Interface III” on page 1-4
- “Board Design Database” on page 1-5

Package Contents

Your Probing EI3 Extender Board package contains the following items.

- Probing EI3 Extender Board
- A bag containing hardware for securing the extender board onto the EZ-KIT Lite/EZ-Board
- Release note containing information about the product download

Contact the vendor where you purchased your extender board or contact Analog Devices, Inc. if any item is missing.

Supported Operating Systems

CrossCore Embedded Studio is supported on the following operating systems:

- Windows[®] XP Professional SP3 (32-bit only)
- Windows Vista[™] Business, Enterprise, or Ultimate SP2 (32-bit only)
- Windows 7 Professional, Enterprise, or Ultimate (32- and 64-bit)



Windows Vista and Windows 7 users may experience User Access Control (UAC) related errors if the software is installed into a protected location, such as Program Files or Program Files (x86). We recommend installing the software in a non-UAC-protected location.

System Requirements

Verify that your PC has these minimum requirements for the CCES installation:

- 2 GHz single-core processor
- 1 GB RAM
- 8 GB available disk space
- One open USB port



A faster disk drive decreases the build time, especially for a large amount of source files.

Probing EI3 Extender Board Installation

Follow these instructions to ensure correct operation of the product hardware and software.

1. Attach the extender board to the EZ-KIT Lite/EZ-Board.

The J1 connector on the extender board can be connected to the P1A, P2A, or P3A connector on the EZ-KIT Lite/EZ-Board. Refer to the example program for a reference to the proper connector.

2. Use the provided hardware to secure the extender to the EZ-KIT Lite/EZ-Board. See [Figure 1-1](#).
3. Refer to the EZ-KIT Lite/EZ-Board manual for information on connecting to a personal computer (PC) and running CCES.

Expansion Interface III

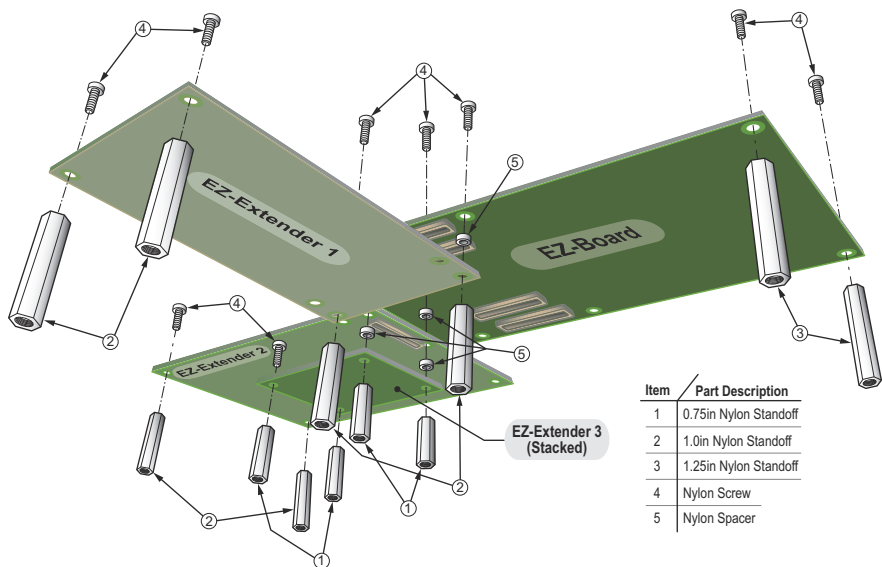


Figure 1-1. Assembled Board Diagram

Expansion Interface III

The Expansion Interface III (EI3) allows an extender board to be used across various hardware platforms that have the same expansion interface connectors.

The connectors contain a majority of the processor’s signals. For pinout information, go to [Appendix B, “Probing EI3 Extender Board Schematic”](#). The mechanical dimensions of the expansion connectors can be obtained by contacting [“Technical Support”](#).

The Probing EI3 Extender Board can interface with EZ-KIT Lites/EZ-Boards operating at an IO voltage of 3.3V. Other IO voltages are not supported. The extender can be powered from either the EZ-KIT Lite/EZ-Board or through the on-board 5V power connector (P1).

Analog Devices offers many EZ-Extender products that plug on to the expansion interface. For more information on these products, visit the Analog Devices Web site at:

www.analog.com/processors/tools/blackfin.

Limits to current and interface speed must be taken into consideration when using the EI3. Current for the EI3 can be sourced from the EZ-KIT Lite/EZ-Board; therefore, the current should be limited to 200 mA for 5V and 300 mA for the 3.3V planes. If more current is required, then a separate power connector and a regulator must be designed on the daughter card. Additional circuitry can add extra loading to signals, decreasing their maximum effective speed.



Analog Devices does not support and is not responsible for the effects of additional circuitry.

Board Design Database

A .zip file containing all of the electronic information required for the design, layout, fabrication and assembly of the product is available for download from the Analog Devices board design database at:

<http://www.analog.com/board-design-database>.

2 PROBING EI3 EXTENDER BOARD HARDWARE REFERENCE

This chapter describes the hardware design of the Probing EI3 Extender Board.

The following topics are covered.

- [“System Architecture” on page 2-2](#)
Describes the daughter board configuration and explains how the board components interface with the processor.
- [“Connectors” on page 2-3](#)
Shows the locations and provides part numbers for the on-board connectors. In addition, the manufacturer and part number information is provided for the mating parts.
- [“LEDs” on page 2-5](#)
Describes the on-board LEDs.

System Architecture

A block diagram of the Probing EI3 Extender Board is shown in [Figure 2-1](#).

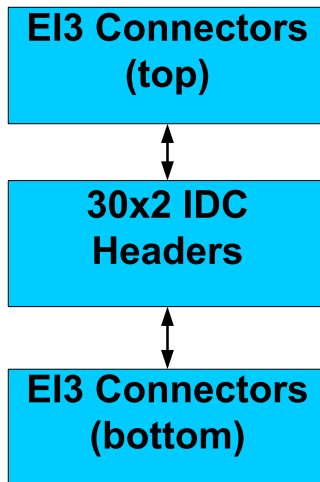


Figure 2-1. Probing EI3 Extender Board Block Diagram

Connectors

This section describes connector functionality and provides information about mating connectors. [Figure 2-2](#) shows the locations of all connectors on the Probing EI3 Extender Board.

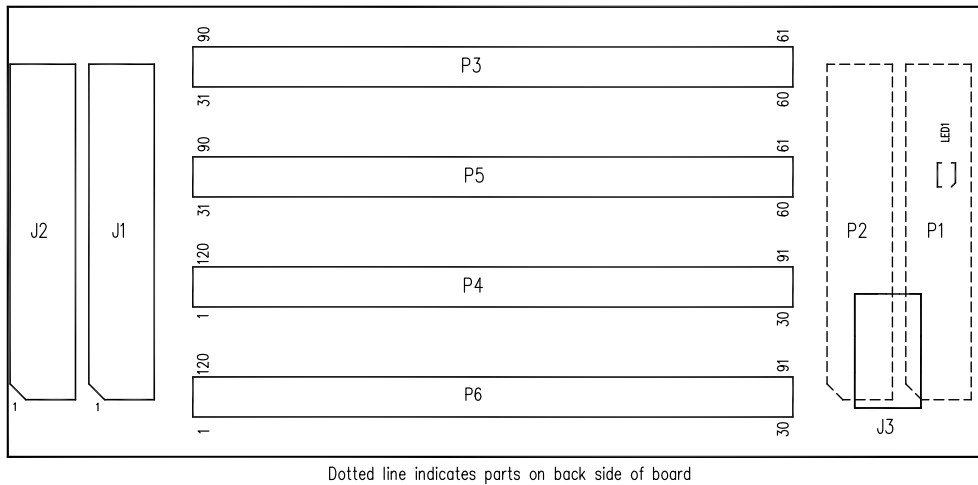


Figure 2-2. Connector Locations

Expansion Interface III (EI3) Connectors (J1–2)

Two board-to-board connector (J1 and J2) provide signals from the PPI, SPI, TWI, UART, SPORT, and GPIO interfaces of the processor. The connectors are located on the top side of the board.

Part Description	Manufacturer	Part Number
120-pin, 0.6 mm	HIROSE	FX8-120S-SV(21)
Mating Connector		
120-pin, 0.6 mm	HIROSE	FX8-120P-SV1(91)

Expansion Interface III (EI3) Connectors (P1–2)

Two board-to-board connector (P1 and P2) provide signals from the PPI, SPI, TWI, UART, SPORT, and GPIO interfaces of the processor. The connectors are located on the bottom side of the board and used when stacking another.

Part Description	Manufacturer	Part Number
120-pin, 0.6 mm	HIROSE	FX8-120P-SV1(91)
Mating Connector		
120-pin, 0.6 mm	HIROSE	FX8-120S-SV(21)

Probing Connectors (P3–P6)

The probing connectors (P3–P6) are 30×2 IDC connectors which are used for probing any of the signals on the Expansion Interface III connectors.

Part Description	Manufacturer	Part Number
HDMI	FCI	10029449-002TLF
Mating Cable		
HDMI cable	MEDIABRIDGE	91-02X-06B

Power Connector (J3)

Under normal circumstances, the power connector is not needed and is not populated on the board.

Part Description	Manufacturer	Part Number
2.5 mm power jack	CUI	PJ-036BH-SMT
Mating Cable		
5.0VDC@3.6A power supply	GLOBETEK	GS-1750(R)

LEDs

This section describes the on-board LEDs.

Power LED (LED1)

When LED1 is lit solid (green), it indicates that power is being supplied to the board properly.

LEDs

A PROBING EI3 EXTENDER BOARD BILL OF MATERIALS

The bill of materials corresponds to “[Probing EI3 Extender Board Schematic](#)” on page B-1.

Ref.	Qty.	Description	Reference Designator	Manufacturer	Part Number
1	1	EI3_PROBING_ADAPTER 24LC32AF U1	U1	MICROCHIP	24LC32AF-I/ST
2	2	0.6MM 120PIN HIROSE_FX8-120P-SV1(91)	P1,P2	HIROSE	FX8-120P-SV1(91)
3	2	.6MM 120PIN HIROSE_FX8-120S-SV(21)	J1,J2	HIROSE	FX8-120S-SV(21)
4	4	IDC 30X2 IDC30X2	P3-P6	FCI	77313-101-60LF
5	1	0.1UF 10V 10% 0402	C1	AVX	0402ZD104KAT2A
6	4	0 1/16W 5% 0402	R2,R5-R7	PANASONIC	ERJ-2GE0R00X
7	1	1K 1/10W 5% 0603	R3	DIGI-KEY	311-1.0KGRTR-ND
8	1	GREEN LED001	LED1	PANASONIC	LN1361CTR
9	1	200MA BAT54 SOT23D	D1	MOUSER	512-BAT54
10	3	100K 1/16W 5% 0402	R1,R4,R8	DIGI-KEY	541-100KJTR-ND

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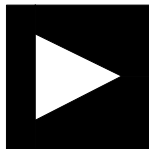
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EI3 Probing Adapter



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Title		EI3 Probing Adapter Title Page	
Size C	Board No.	A0243-2010	Rev 0.1
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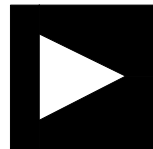
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Title
**EI3 Probing Adapter
EI3 Connectors**

Size
C

Board No.

A0243-2010

Rev
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Date

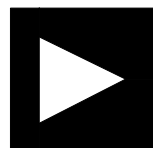
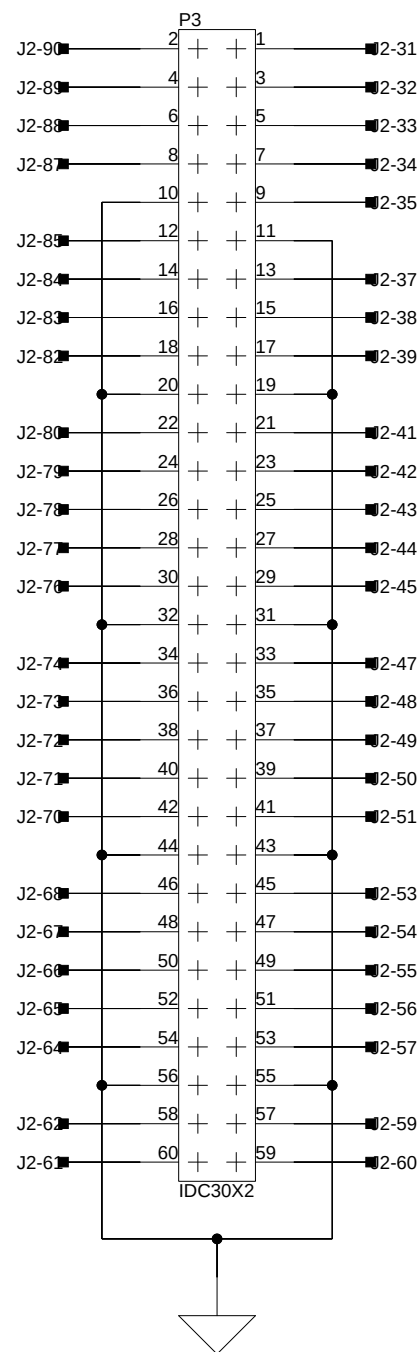
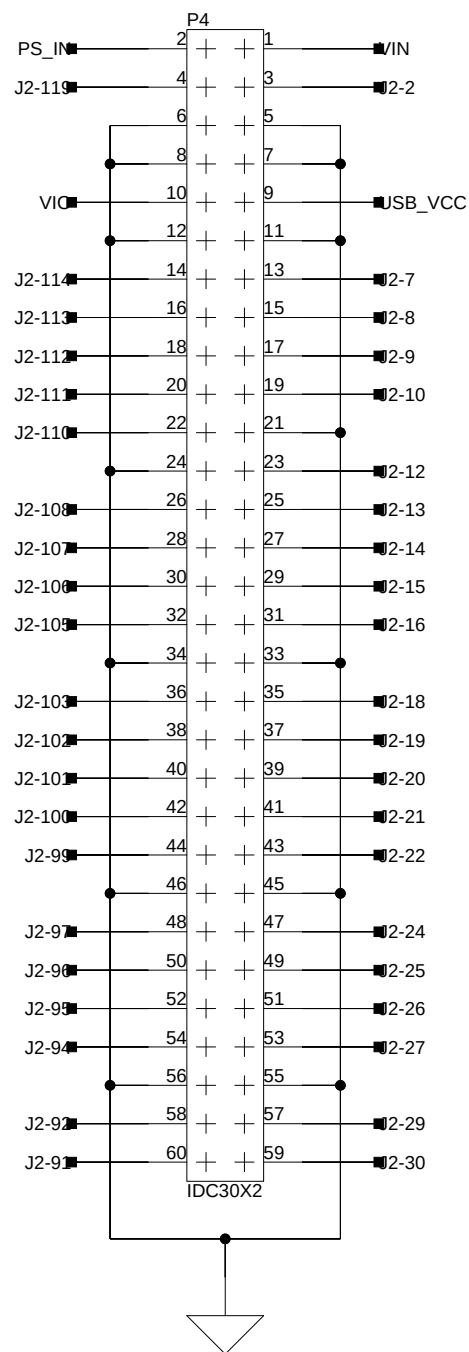
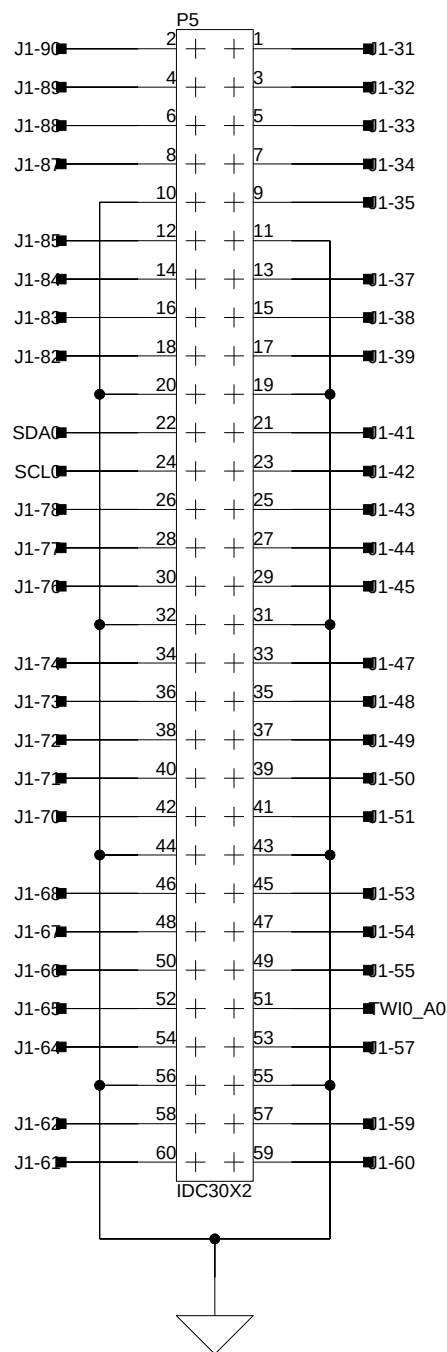
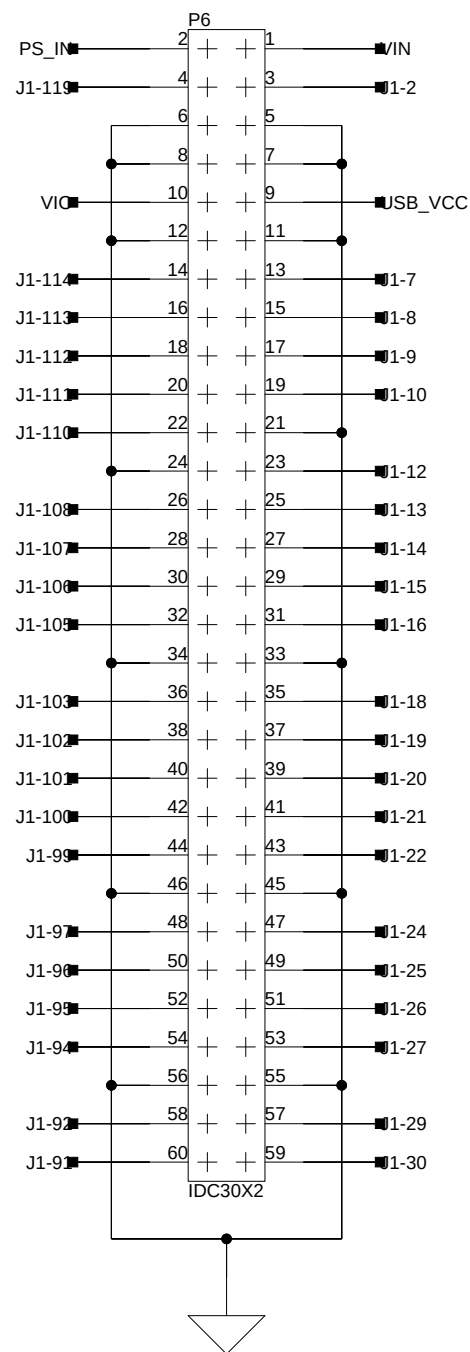
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Title

EI3 Probing Adapter Probing Connectors

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A0243-2010

Rev
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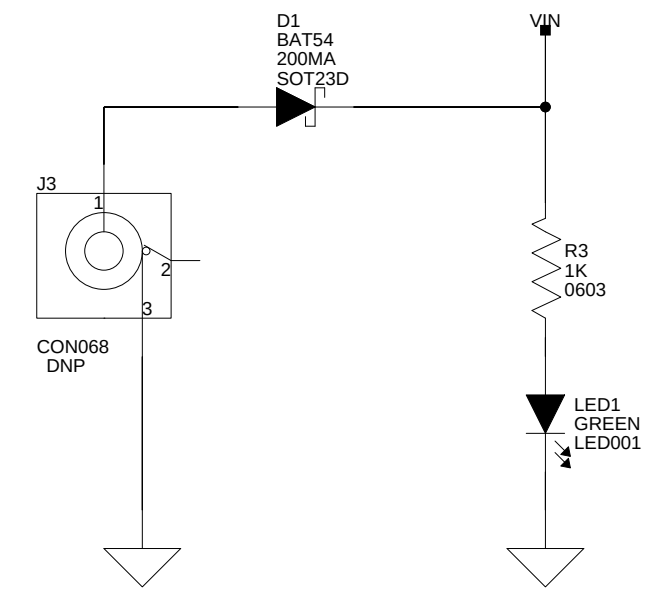
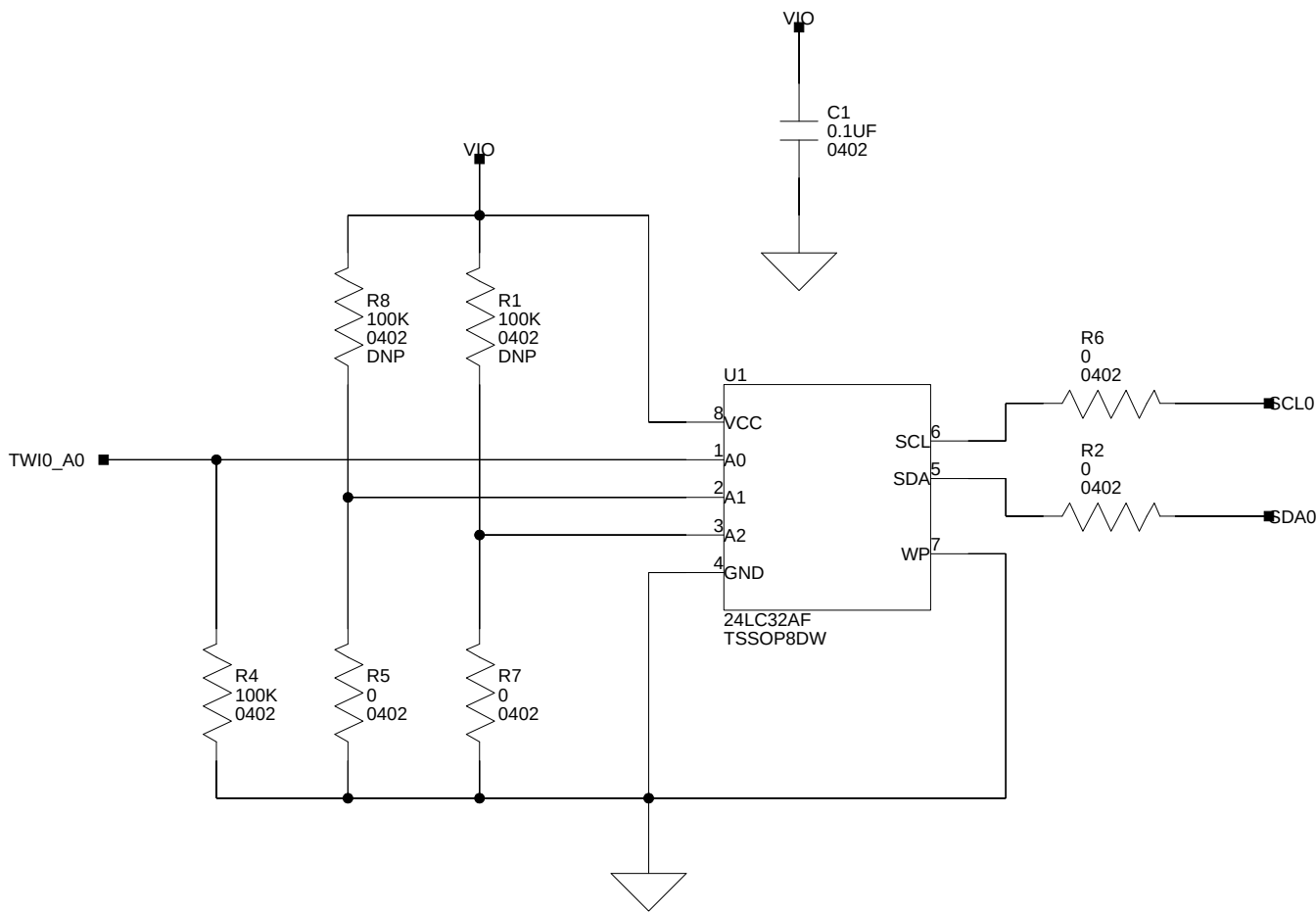
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