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**EVB-UPD301A (SRC)  
Evaluation Kit  
User's Guide**

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**NOTES:**

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## Preface

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### NOTICE TO CUSTOMERS

All documentation becomes dated, and this manual is no exception. Microchip tools and documentation are constantly evolving to meet customer needs, so some actual dialogs and/or tool descriptions may differ from those in this document. Please refer to our web site ([www.microchip.com](http://www.microchip.com)) to obtain the latest documentation available.

Documents are identified with a “DS” number. This number is located on the bottom of each page, in front of the page number. The numbering convention for the DS number is “DSXXXXA”, where “XXXX” is the document number and “A” is the revision level of the document.

For the most up-to-date information on development tools, see the MPLAB® IDE online help. Select the Help menu, and then Topics to open a list of available online help files.

## INTRODUCTION

This chapter contains general information that will be useful to know before using the EVB-UPD301A (SRC) Evaluation Kit User's Guide. Items discussed in this chapter include:

- [Document Layout](#)
- [Conventions Used in this Guide](#)
- [Warranty Registration](#)
- [The Microchip Web Site](#)
- [Customer Support](#)
- [Document Revision History](#)

## DOCUMENT LAYOUT

This document describes how to use the EVB-UPD301A (SRC) Evaluation Kit as a demonstration platform optimized for portable applications. The manual layout is as follows:

- **Chapter 1. “Overview”** – Shows a brief description of the EVB-UPD301A (SRC) Evaluation Kit.
- **Chapter 2. “Getting Started”** – Provides information about set-up and operation of the EVB-UPD301A (SRC) Evaluation Kit.
- **Chapter 3. “Hardware Configuration”** – Includes information about the hardware configuration of the EVB-UPD301A (SRC) Evaluation Kit.
- **Appendix A. “Schematics”** – This appendix shows the EVB-UPD301A (SRC) Evaluation Kit schematic.
- **Appendix B. “Bill of Materials”** – This appendix includes the EVB-UPD301A (SRC) Evaluation Kit Bill of Materials (BOM).
- **Appendix C. “PCB Silk Screens”** – This appendix shows the EVB-UPD301A (SRC) Evaluation Kit silk screen images.

## CONVENTIONS USED IN THIS GUIDE

This manual uses the following documentation conventions:

### DOCUMENTATION CONVENTIONS

Description	Represents	Examples
<b>Arial font:</b>		
Italic characters	Referenced books	<i>MPLAB<sup>®</sup> IDE User's Guide</i>
	Emphasized text	...is the <i>only</i> compiler...
Initial caps	A window	the Output window
	A dialog	the Settings dialog
	A menu selection	select Enable Programmer
Quotes	A field name in a window or dialog	"Save project before build"
Underlined, italic text with right angle bracket	A menu path	<u><i>File&gt;Save</i></u>
Bold characters	A dialog button	Click <b>OK</b>
	A tab	Click the <b>Power</b> tab
N'Rnnnn	A number in verilog format, where N is the total number of digits, R is the radix and n is a digit.	4'b0010, 2'hF1
Text in angle brackets < >	A key on the keyboard	Press <Enter>, <F1>
<b>Courier New font:</b>		
Plain Courier New	Sample source code	#define START
	Filenames	autoexec.bat
	File paths	c:\mcc18\h
	Keywords	_asm, _endasm, static
	Command-line options	-Opa+, -Opa-
	Bit values	0, 1
	Constants	0xFF, 'A'
Italic Courier New	A variable argument	<i>file.o</i> , where <i>file</i> can be any valid filename
Square brackets [ ]	Optional arguments	mcc18 [options] <i>file</i> [options]
Curly brackets and pipe character: {   }	Choice of mutually exclusive arguments; an OR selection	errorlevel {0 1}
Ellipses...	Replaces repeated text	var_name [, var_name...]
	Represents code supplied by user	void main (void) { ... }

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- **General Technical Support** – Frequently Asked Questions (FAQs), technical support requests, online discussion groups, Microchip consultant program member listing
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Technical support is available through the web site at:

<http://www.microchip.com/support>

## DOCUMENT REVISION HISTORY

Revisions	Section/Figure/Entry	Correction
DS50002811B (02-28-19)	<a href="#">Section 1.2 "Features"</a>	Changed "34-pin" to "40-pin."
	<a href="#">Section 2.3 "Quick Start"</a>	Corrected the port numbers.
	<a href="#">Figure 1-1</a>	Replaced the figure.
	<a href="#">Figure 3-1</a>	Replaced the figure with the new Rev C of the board.
	<a href="#">Figure C-1</a> and <a href="#">Figure C-2</a>	Replaced the silk screen images with board Rev C silk screen images.
	<a href="#">Figure A-1</a> , <a href="#">Figure A-2</a> , <a href="#">Figure A-3</a> , and <a href="#">Figure A-4</a>	Updated the board schematics.
	<a href="#">Table 3-1</a>	Replaced and combined the tables for configuration ports 1 and 2.
	<a href="#">Table 3-5</a>	Updated the table to include additional test points (TP16, TP17, TP18, and TP19).
	<a href="#">Table B-1</a>	Updated the BOM table.
DS50002811A (10-02-18)	Initial release	



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## Chapter 1. Overview

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### 1.1 INTRODUCTION

The EVB-UPD301A (SRC) Evaluation Kit is a demonstration and evaluation platform that provides the necessary requirements and interface options for evaluating the UPD301A, a USB Power Delivery Controller on a 4-layer, RoHS-compliant Printed Circuit Board (PCB). This allows the user to gain an understanding of the product and accelerate the integration of the UPD301A into the user's design.

The EVB-UPD301A is compliant with the USB Power Delivery Specification (Revision 3.0). The evaluation platform supports two pass-through USB ports. The EVB-UPD301A platform also supports battery charging on both downstream ports. The EVB-UPD301A (SRC) supports three configurations for operation through programmable internal default settings and supports custom configurations through pin straps.

The EVB-UPD301A demonstrates driver compatibility with Microsoft® Windows® 10, Windows 8.x, Windows 7, Windows XP, Mac® OS X 10.4+, and Linux® USB drivers.

**Note 1:** See [Section 1.2 “Features”](#) for more information.

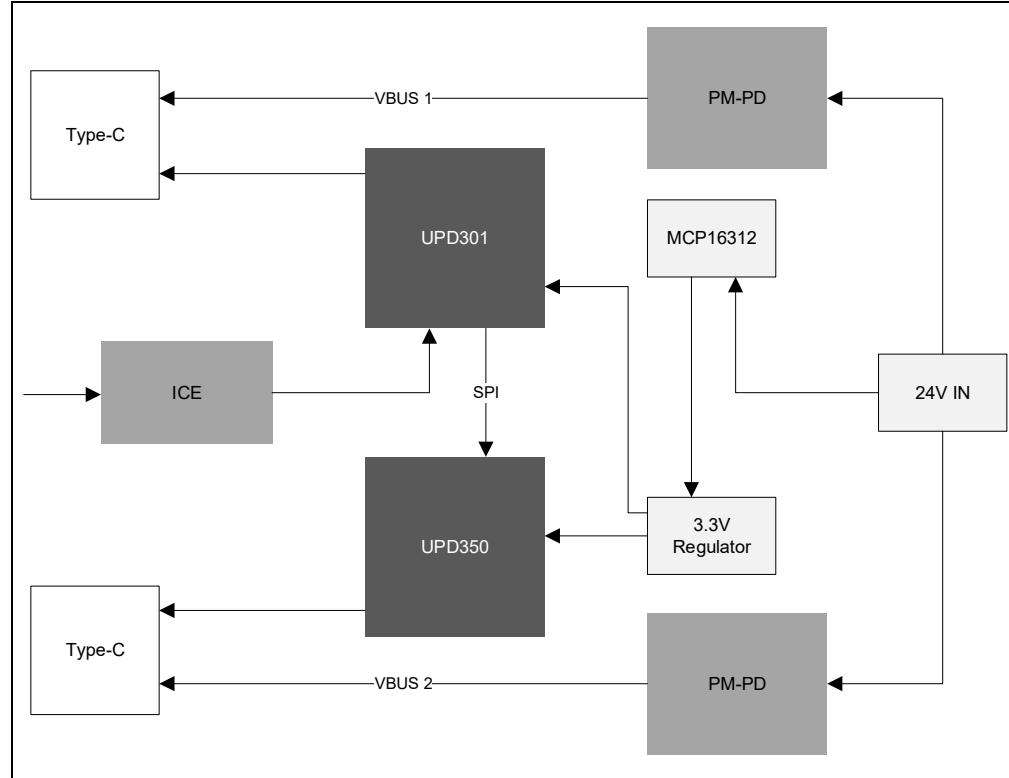
**2:** Requires a 24V, 120W bench power supply.

### 1.2 FEATURES

- UPD301A in a 40-pin QFN RoHS-compliant package
- USB Power Delivery 3 Compliant
- USB 3.1 Compliant (Gen1 PASS THROUGH operation)
- USB 2.0 Compliant (HS, FS, and LS PASS THROUGH operation)

## 1.3 BLOCK DIAGRAM

**FIGURE 1-1: EVB-UPD301A BLOCK DIAGRAM**



## 1.4 REFERENCES

Concepts and materials available in the following documents may be helpful when reading this document. Visit [www.microchip.com](http://www.microchip.com) for the latest documentation.

- *UPD301A Data Sheet*

## 1.5 ACRONYMS AND DEFINITIONS

**TABLE 1-1: ACRONYMS AND DEFINITIONS**

Acronym	Definition
DFP	Downstream Facing Port
EVB	Evaluation board
OTP	One-Time Programmable
Type-C	Reversible USB Connector
USB-IF	USB Integrators Forum. Collection of corporate sponsored members responsible for developing USB specifications.
Gen1	USB Specification 3.1 Gen1

## Chapter 2. Getting Started

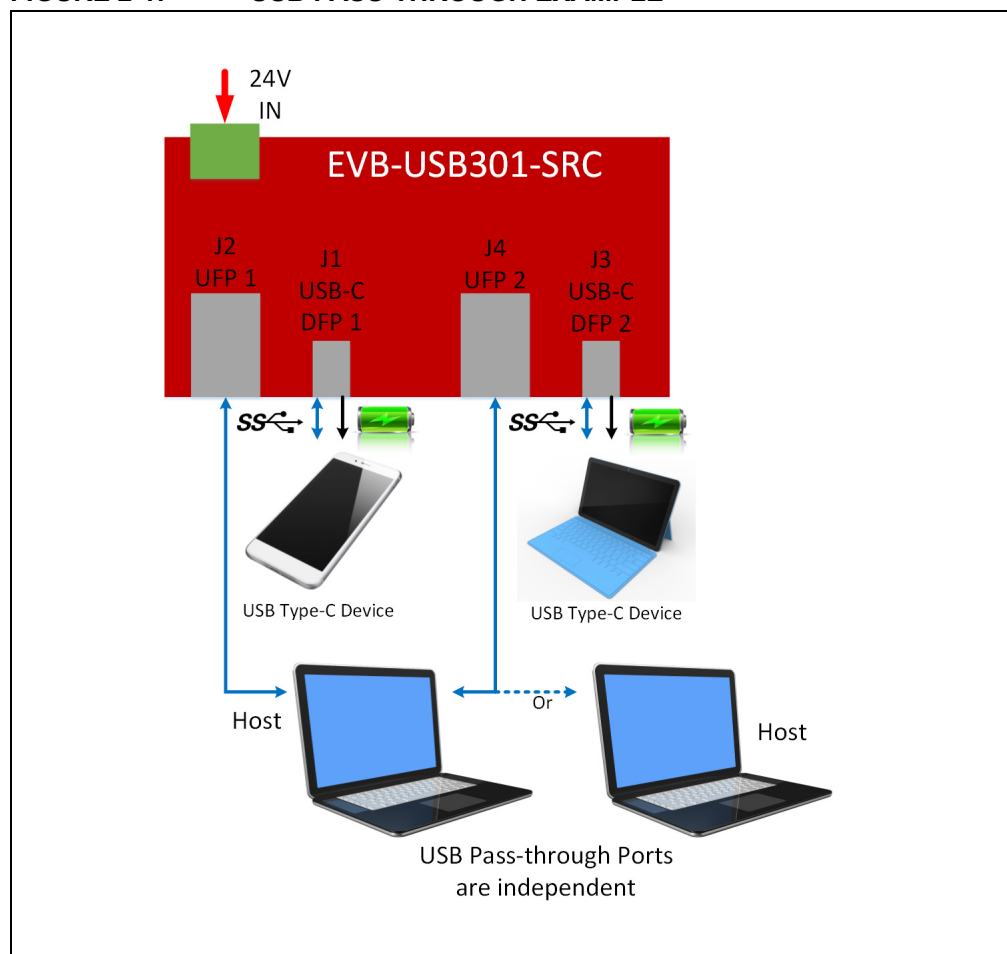
### 2.1 GETTING STARTED

The Microchip EVB-UPD301A is designed for flexible configuration solutions. It can be configured via default internal register settings, through the on-board configuration switches.

The EVB-UPD301A demonstrates two basic topologies: (1) USB pass-through and (2) basic USB Type-C charging port.

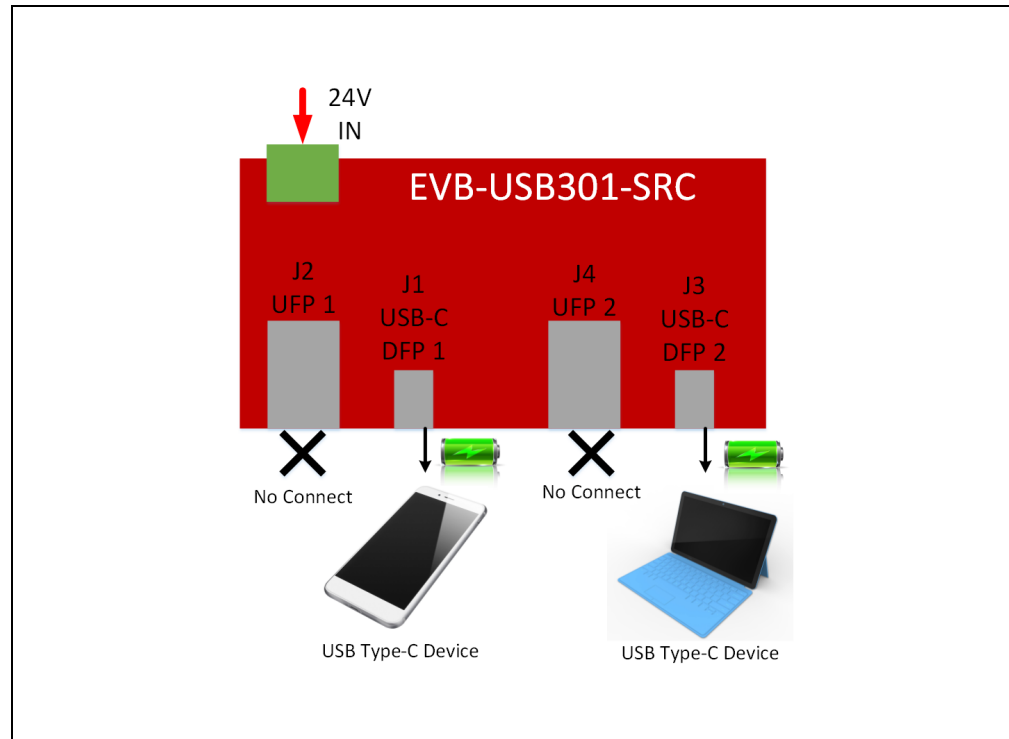
In the USB pass-through topology, the host PC is connected to the evaluation platform using standard USB Type-A or Type-B cables. Type-C devices are then connected to the standard host PC platform via the USB pass-through. The EVB-UPD301A (SRC) platform does not support data role swap. When a host platform (for example, PC) is connected to the EVB Type-C port, the USB pass-through is not supported.

**FIGURE 2-1: USB PASS-THROUGH EXAMPLE**



The second topology demonstrates a basic Type-C charging port. In this topology, the Type-B receptacles are not used. Type-C devices and host platforms are connected to the EVB Type-C ports. The UPD301A supports all PD3.0 charging profiles: 5V, 9V, 15V, and 20V, and supports up to 3A of current at 20V for a total of 60W.

**FIGURE 2-2: USB TYPE-C CHARGING PORT EXAMPLE**



## 2.2 KIT CONTENTS

The EVB-UPD301A evaluation kit includes basic equipment necessary for evaluation. The items included in the kit are:

- EVB-UPD301A Evaluation Board

## 2.3 QUICK START

To quickly start using the board, perform the following steps:

1. Connect a 24V, 5A power supply to the terminal block connector on the EVB-UPD301A (J5).
2. Using a standard Type-A to Type-B USB cable, connect the EVB-UPD301A to a USB host via the upstream "Port 1" J2.
3. Using a standard Type-A to Type-B USB cable, connect the EVB-UPD301A to a USB host via the upstream "Port 2" J4.

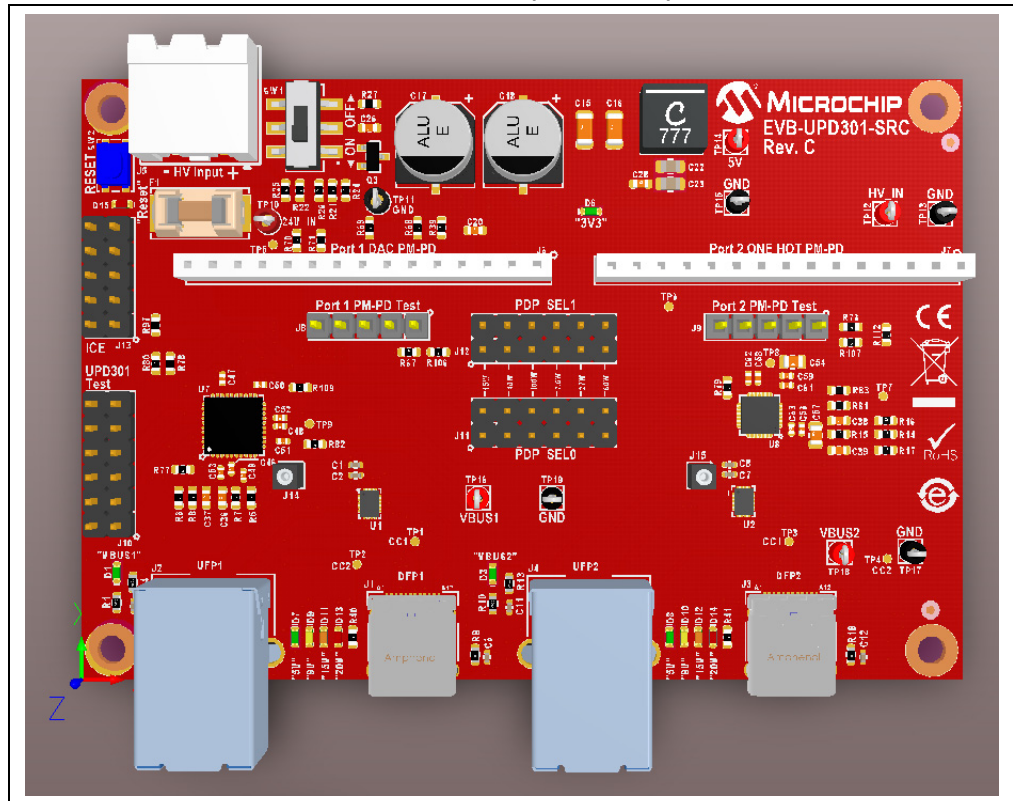
Devices may now be connected to either of the two downstream facing Type-C ports to enumerate and use those devices with the USB host.

## Chapter 3. Hardware Configuration

### 3.1 HARDWARE CONFIGURATION OPTIONS

Figure 3-1 shows the top view of the EVB-UPD301A.

**FIGURE 3-1: EVB-UPD301A REV C (TOP VIEW)**



#### 3.1.1 Configuration

##### 3.1.1.1 INTERNAL DEFAULT CONFIGURATIONS WITH STRAPPING OPTIONS

Upon power-up, the UPD301A uses internal default register settings. The controls are configured by selecting one of the six resistor values for each pin. EVB-UPD301A demonstrates three of the six possible resistor values for each profile. These straps are sensed by the UPD301A device at power-on to determine the resultant configuration of the device. To select the preferred configuration, shunts must be connected to J11 and J12 headers (refer to [Table 3-1](#)).

**Note:** The VID, PID, and DID, and additional settings are configured using the internal ROM code.

**TABLE 3-1: CONFIGURATION OPTIONS FOR PORTS 1 AND 2**

J11/J12 Shunt Position	(J11/J12 is shunted pins 11-12)	PDP
1-2	200K Pull-Up Configuration 2	15W
3-4	4.7K Pull-Up Configuration 4	45W
5-6	10R Pull-Up Configuration 6 (NOT SUPPORTED)	NA
7-8	200K Pull-Down Configuration 1	7.5W
9-10	4.7K Pull-Down Configuration 3	27W
11-12	10R Pull-Down Configuration 5 (DEFAULT)	60W

### 3.1.2 Power Source - Self Powered

The EVB-UPD301A only supports self-powered operation. Power is supplied through one +24.0V regulated external power supply. The power supply is connected to the screw terminal "HV\_INPUT" (J5). The +24.0V feeds two 5A PM-PD modules that output +5V, +9V, +15V, or +20V (nominal) to the Type-C VBUS and also supplies the on-board +3.3 regulator.

#### CAUTION

**SW1 must be used to enable the 24.0V external power supply; otherwise, damage may occur to the power circuit. It is recommended to use a high power bench supply. Failure to heed to this warning could result in damage to the 24.0V power circuit.**

### 3.1.3 Downstream Port Power Control

USB power to the two downstream ports is controlled via port power controllers with auto-discharge functionality. All downstream ports support Type-C battery charging. The two downstream Type-C ports are each capable of up to 3A of current at 20V.

### 3.1.4 USB Type-C Ports

The UPD301A has two USB3.2 Type-C pass-through ports. The UPD301A also features integrated Type-C control signal (CC) detection to determine when and in what orientation a USB Type-C attach has been made. It powers the VBUS needed for both USB communication and PD communication.

## 3.1.5 LED Indicators

Table 3-2 describes the LED indicators on the EVB-UPD301A (SRC).

**TABLE 3-2: LED INDICATOR DESCRIPTIONS**

Ref. Des.	Label	Description
D1	"PORT1_VBUS"	Illuminates when 5V to upstream PORT1 VBUS is present.
D3	"PORT2_VBUS"	Illuminates when 5V to upstream PORT2 VBUS is present.
D6	"3V3"	Illuminates when 3.3V is present from the 5V voltage regulator.
D7	"5.0V"	Illuminates when 5V is present on Port 1 VBUS.
D8	"9.0V"	Illuminates when 9V is present on Port 1 VBUS.
D9	"15.0V"	Illuminates when 15V is present on Port 1 VBUS.
D10	"20.0V"	Illuminates when 20V is present on Port 1 VBUS.
D11	"5.0V"	Illuminates when 5V is present on Port 2 VBUS.
D12	"9.0V"	Illuminates when 9V is present on Port 2 VBUS.
D13	"15.0V"	Illuminates when 15V is present on Port 2 VBUS.
D14	"20.0V"	Illuminates when 20V is present on Port 2 VBUS.

## 3.1.6 Switches

Table 3-3 describes the switches on the EVB-UPD301A (SRC).

**TABLE 3-3: SWITCH DESCRIPTIONS**

Ref. Des.	Label	Description
SW1	"ON/OFF"	Connects the 24V supply to the HV_Input.
SW2	"RESET"	Momentary push-button switch to assert RST_N.

## 3.1.7 Connector Descriptions

Table 3-4 describes the connectors included on the PCB.

**TABLE 3-4: EVB-UPD301A (SRC) CONNECTOR DESCRIPTIONS**

Ref. Des.	Type	Label	Description
J1	USB Type-C Connector	Port 1	Downstream Facing Port 1
J2	USB Type-B Connector	Host Port 1	Host Port 1
J3	USB Type-C Connector	Port 2	Downstream Facing Port 2
J4	USB Type-B Connector	Host Port 2	Host Port 2
J5	1x2 Terminal Block	HV Input	24V Supply Input
J6	1x15 Header	Port 1 PM-PD	Port 1 PM-PD Module
J7	1x15 Header	Port 2 PM-PD	Port 2 PM-PD Module
J8	1x5 Header	Port 1	Port 1 PM-PD Test Header
J9	1x5 Header	Port 2	Port 2 PM-PD Test Header
J10	2x6 Header	ICE	UPD301A Test Header

## 3.1.8 Test Points

Table 3-5 describes the test points on the EVB-UPD301A (SRC). A header may be permanently installed on the through-hole test points if needed.

**TABLE 3-5: EVB-UPD301A (SRC) TEST POINT DESCRIPTIONS**

Ref. Des.	Type	Description
TP1	Test Pad	Signal CC1 Port 1
TP2	Test Pad	Signal CC2 Port 1
TP3	Test Pad	Signal CC1 Port 2
TP4	Test Pad	Signal CC2 Port 2
TP5	Test Pad	PM-PD Module 1
TP6	Test Pad	PM-PD Module 2
TP7	Test Pad	OCS_COMP1 (UPD301A Port 2)
TP8	Test Pad	UPD350 VBUS
TP9	Test Pad	UPD301A DAC DC Select
TP12	Test Loop	High Voltage INPUT
TP13	Test Loop	Ground
TP14	Test Loop	PHASE
TP15	Test Loop	Ground
TP16	Test Loop	VBUS1
TP17	Test Loop	Ground
TP18	Test Loop	VBUS2
TP19	Test Loop	Ground





## **Appendix A. Schematics**

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### **A.1 INTRODUCTION**

This appendix shows the EVB-UPD301A (SRC) Evaluation Kit schematic.

**FIGURE A-1: EVB-UPD301A (SRC) BLOCK DIAGRAM**

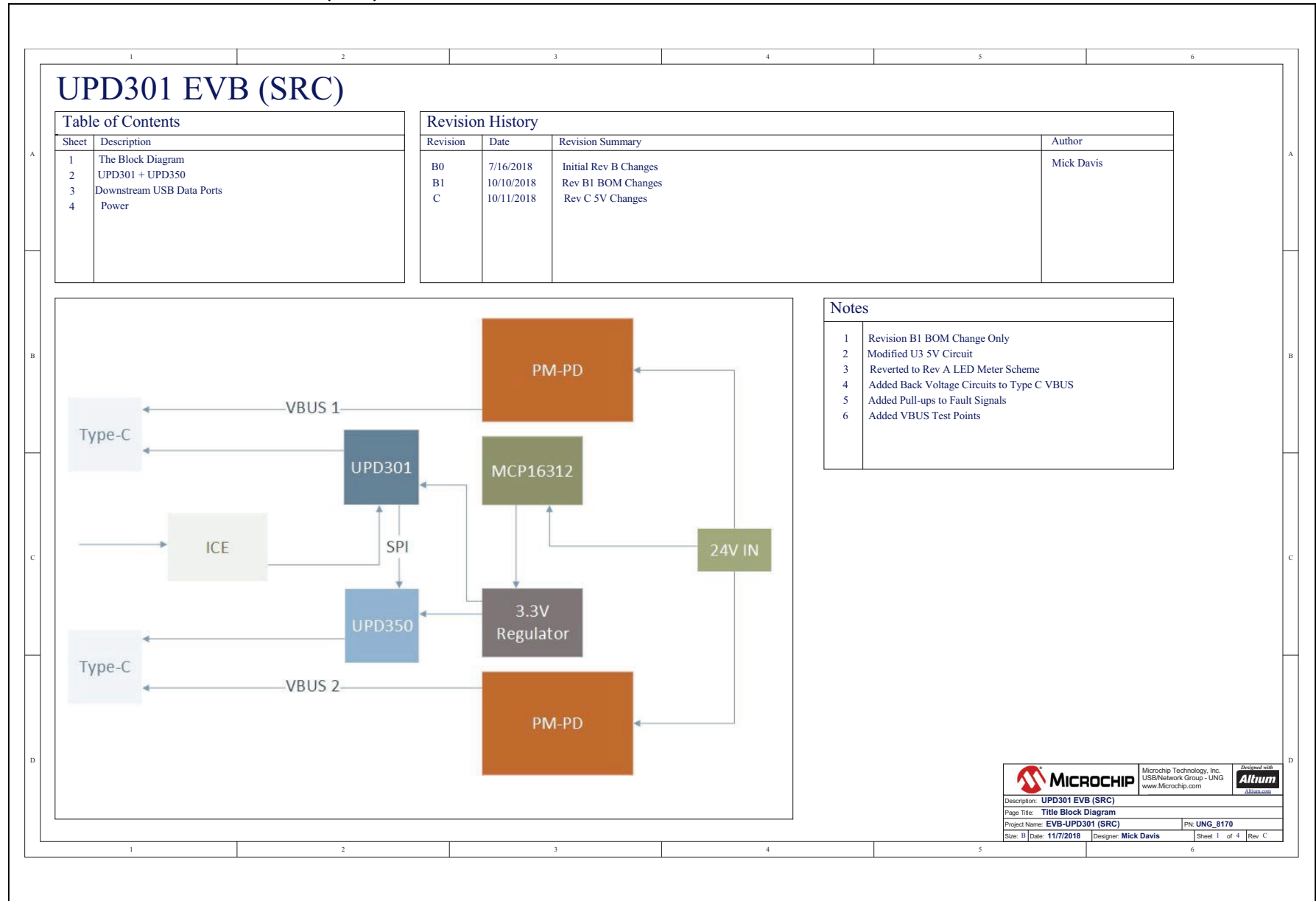
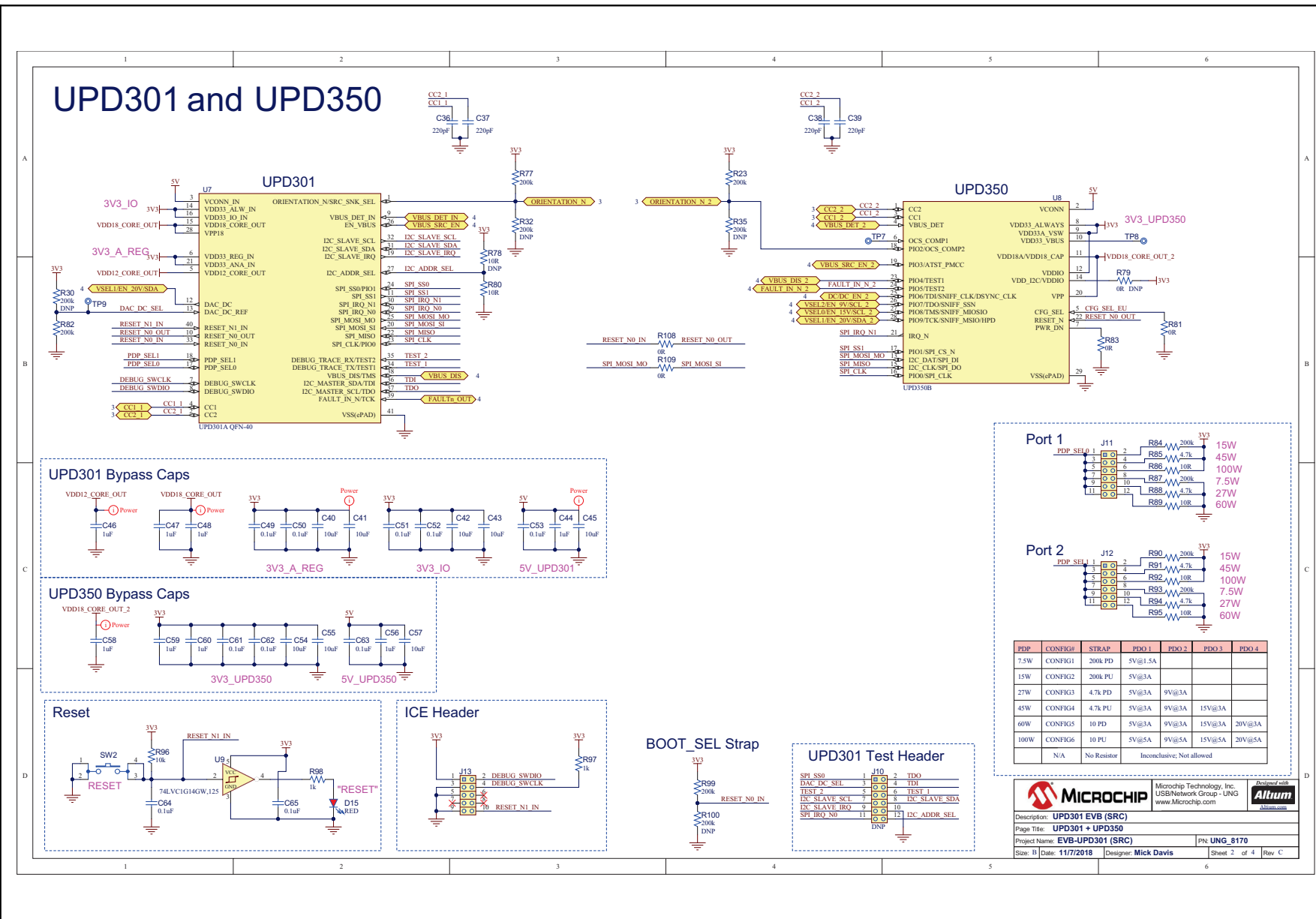
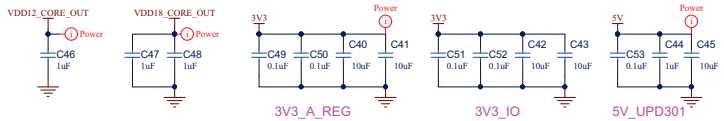


FIGURE A-2: UPD301A AND UPD350

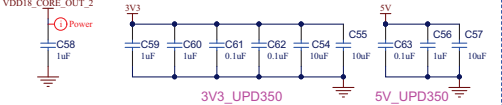


# UPD301 and UPD350

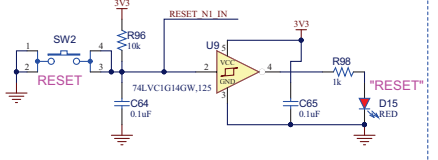
## UPD301 Bypass Caps



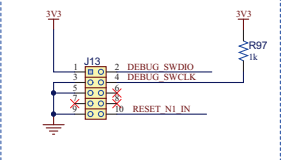
## UPD350 Bypass Caps



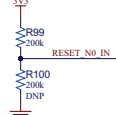
## Reset



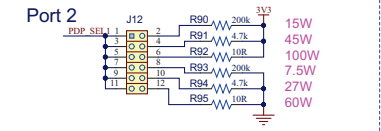
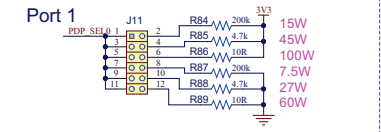
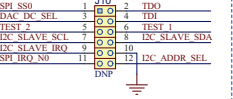
## ICE Header



## BOOT\_SEL Strap



## UPD301 Test Header

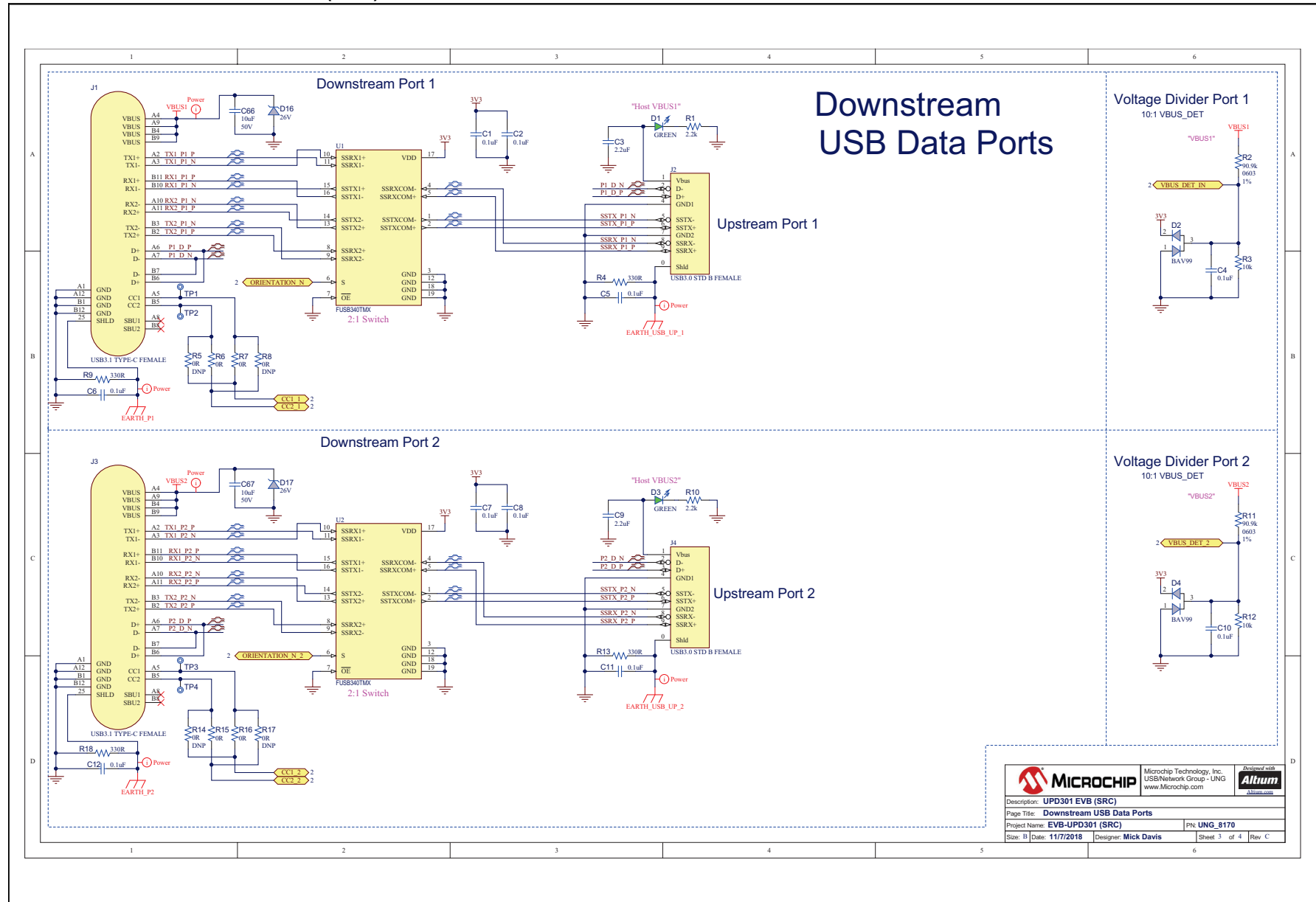


PDP	CONFIG	STRAP	PDO 1	PDO 2	PDO 3	PDO 4
7.5W	CONFIG1	200k PD	5V@1.5A			
15W	CONFIG2	200k PU	5V@3A			
27W	CONFIG3	4.7k PD	5V@3A	9V@3A		
45W	CONFIG4	4.7k PU	5V@3A	9V@3A	15V@3A	
60W	CONFIG5	10 PD	5V@3A	9V@3A	15V@3A	20V@3A
100W	CONFIG6	10 PU	5V@5A	9V@5A	15V@5A	20V@5A
	N/A	No Resistor	Inconclusive; Not allowed			

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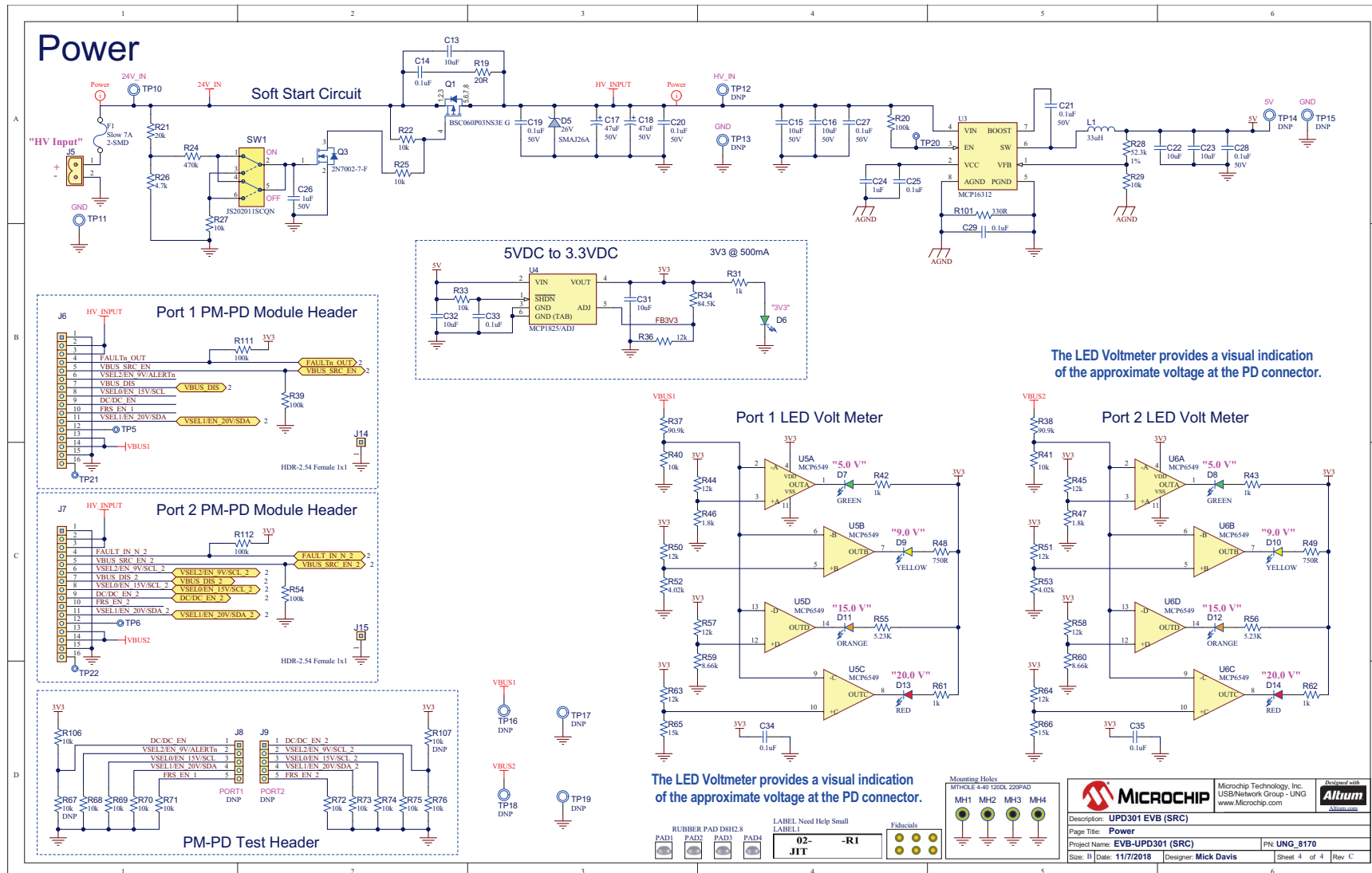
Description: **UPD301 EVB (SRC)**  
 Page Title: **UPD301 + UPD350**  
 Project Name: **EVB-UPD301 (SRC)** PN: **UNG\_8170**  
 Size: B | Date: **11/7/2018** | Designer: **Mick Davis** | Sheet 2 of 4 | Rev C

FIGURE A-3: EVB-UPD301A (SRC) DOWNSTREAM USB DATA



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	Description: <b>UPD301 EVB (SRC)</b> Page Title: <b>Downstream USB Data Ports</b> Project Name: <b>EVB-UPD301 (SRC)</b> PN: <b>UNG_8170</b> Size: B   Date: <b>11/7/2018</b> Designer: <b>Mick Davis</b> Sheet 3 of 4      Rev C	

FIGURE A-4: EVB-UPD301A (SRC) POWER



**NOTES:**



## **Appendix B. Bill of Materials**

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### **B.1 INTRODUCTION**

This appendix contains the EVB-UPD301A (SRC) Evaluation Kit Bill of Materials (BOM).

**TABLE B-1: EVB-UPD301A (SRC) BILL OF MATERIALS**

Item	Qty	Reference	Description	Populated	Manufacturer	Manufacturer Part Number
1	24	C1, C2, C4, C5, C6, C7, C8, C10, C11, C12, C14, C33, C34, C35, C49, C50, C51, C52, C53, C61, C62, C63, C64, C65	CAP CER 0.1uF 35V 10% X7R SMD 0402	YES	TDK Corporation	CGA2B3X7R1V104K050BB
2	2	C3, C9	CAP CER 2.2uF 10V 10% X5R 0402	YES	Murata	GRM155R61A225KE95D
3	11	C13, C31, C32, C40, C41, C42, C43, C45, C54, C55, C57	CAP CER 10uF 16V 10% X5R SMD 0805	YES	Würth Electronics Inc	885012107014
4	2	C15, C16	CAP ALU 10uF 50V 20% SMD C	YES	Panasonic Electronic Components	EEE-FK1H100UR
5	2	C17, C18	47uF SMD F ALUM 50V 20%	YES	Nichicon	UCW1H470MNL1GS
6	3	C19, C20, C25	CAP CER 0.1uF 50V 20% X7R SMD 0603	YES	TDK	C1608X7R1H104M
7	1	C21	CAP CER 0.33uF 16V 10% X7R SMD 0603	YES	Murata	GRM188R71C334KA01D
8	2	C22, C23	CAP CER 10uF 10V 10% X7R SMD 0805	YES	TDK Corporation	C2012X7R1A106K125AC
9	2	C24, C26	CAP CER 1uF 50V 10% X5R SMD 0603	YES	Taiyo Yuden	LMK107BJ105KA-T
10	1	C27	CAP CER 2.2uF 10V 10% X7R SMD 0603	YES	Murata	GRM188R71A225KE15D
11	1	C28	CAP CER 5600pF 50V 10% X7R SMD 0402	YES	Samsung Electro-Mechanics America, Inc	CL05B562KB5NNNC
12	1	C29	CAP CER 6800pF 50V 10% X7R SMD 0402	YES	Murata Electronics North America	GCM155R71H682KA55D
13	1	C30	CAP CER 47pF 50V 5% NP0 SMD 0402	YES	Murata	GRM1555C1H470JA01D
14	4	C36, C37, C38, C39	CAP CER 220pF 50V 10% X7R SMD 0603	YES	TDK	C1608X7R1H221K
15	8	C44, C46, C47, C48, C56, C58, C59, C60	CAP CER 1uF 10V 10% X5R SMD 0402	YES	Murata Electronics North America	GRM155R61A105KE15D
16	5	D1, D3, D6, D7, D8	DIO LED GREEN 2V 30mA 35mcd Clear SMD 0603	YES	Lite-On, Lite-On, Lite-On Inc, Lite-On, Lite-On	LTST-C190KGKT, LTST-C190KGKT, LTST-C190KGKT, LTST-C190KGKT
17	2	D2, D4	DIO RECTARR BAV99 1V 215mA 70V SOT-23-3	YES	Comchip Technology	BAV99-G
18	1	D5	DIO TVS SMAJ26A 26V 400W DO-214AC_SMA	YES	Littlefuse	SMAJ26A
19	2	D9, D10	DIO LED YELLOW 2.1V 20mA 6mcd Clear SMD 0603	YES	Lite-On	LTST-C190YKT
20	3	D11, D12, D15	DIO LED RED 2V 30mA 2mcd Clear SMD 0603	YES	Lite-On	LTST-C190EKT
21	2	D13, D14	DIO LED ORANGE 2V 30mA 90mcd Clear SMD 0603	YES	Lite-On	LTST-C190KFKT
22	1	F1	RES FUSE 7A 72VAC 60VDC SLOW 2-SMD	YES	Littelfuse Inc.	0154007.DRT
23	2	J1, J3	CON USB3.1 TID TYPE-C Female SMD R/A	YES	Amphenol Commercial Products	12401610E4#2A
24	2	J2, J4	CON USB3.0 STD-B FEMALE TH R/A	YES	Würth Electronics Inc	692221030100
25	1	J5	CON TERMINAL 5.08mm 1X2 Female 16-30AWG 13.5A TH RA	YES	TE Connectivity	282836-2
26	2	J6, J7	CON HDR-2.54 Female 1x15 Gold TH VERT	YES	3M	929974-01-15-RK
27	2	J11, J12	CON HDR-2.54 Male 2x6 Gold 5.84MH TH VERT	YES	Samtec	TSW-106-07-G-D
28	1	J13	CON HDR-2.54 Male 2x5 0.100" (2.54mm) TH VERT	YES	Samtec	TSW-105-07-G-D



**TABLE B-1: EVB-UPD301A (SRC) BILL OF MATERIALS (CONTINUED)**

Item	Qty	Reference	Description	Populated	Manufacturer	Manufacturer Part Number
29	2	J14, J15	CON HDR-2.54 FEMALE 1x1 TIN TH VERT	YES	3M	929974-01-01-RK
30	1	L1	INDUCTOR 2.2uH 17.8A 20% SMD L7.5W7.2D7	YES	CoilCraft	XAL7070-222MEC
31	1	Q1	TRANS FET P-CH BSC060P03NS3E G -30V -100A 83W PG-TDSON-8	YES	Infineon Technologies	BSC060P03NS3EGATMA1
32	2	Q2, Q4	TRANS FET N-CH NTMFS5832NLT1G 40V 110A 0.0042R 3.1W SO-8FL	YES	ON Semiconductor	NTMFS5832NLT1G
33	1	Q3	TRANS FET N-CH 2N7002-7-F 60V 170mA 370mW SOT-23-3	YES	Diodes Inc	2N7002-7-F
34	2	R1, R10	RES TKF 2.2k 1% 1/10W SMD 0603	YES	ROHM	MCR03EZPFX2201
35	4	R2, R11, R37, R38	RES TKF 90.9k 1% 1/10W SMD 0603	YES	Panasonic	ERJ-3EKF9092V
36	4	R3, R12, R40, R41	RES TKF 10k 1% 1/10W SMD 0603	YES	Vishay	CRCW060310K0FKEA
37	4	R4, R9, R13, R18	RES TKF 330R 1% 1/10W SMD 0603	YES	Panasonic	ERJ-3EKF3300V
38	9	R6, R7, R15, R16, R35, R81, R83, R108, R109	RES TKF 0R 1/10W SMD 0603	YES	Panasonic	ERJ-3GSY0R00V
39	1	R19	RES TKF 20R 1% 1/10W SMD 0603	YES	Panasonic	ERJ-3EKF20R0V
40	2	R20, R23	RES TKF 100k 1% 1/10W SMD 0402	YES	Panasonic	ERJ-2RKF1003X
41	1	R21	RES TKF 20k 1% 1/10W SMD 0603	YES	Panasonic	ERJ-3EKF2002V
42	15	R22, R25, R27, R33, R68, R69, R70, R71, R72, R73, R74, R75, R76, R96, R106	RES TKF 10k 1% 1/10W SMD 0603	YES	Panasonic, Panasonic, Panasonic, ROHM, Panasonic, Panasonic, Panasonic, Panasonic, Panasonic, Panasonic, Panasonic, Panasonic, Panasonic, Panasonic, Panasonic	ERJ-3EKF1002V, ERJ-3EKF1002V, ERJ-3EKF1002V, MCR03EZP-FX1002, ERJ-3EKF1002V, ERJ-3EKF1002V, ERJ-3EKF1002V, ERJ-3EKF1002V, ERJ-3EKF1002V, ERJ-3EKF1002V, ERJ-3EKF1002V, ERJ-3EKF1002V, ERJ-3EKF1002V, ERJ-3EKF1002V, ERJ-3EKF1002V, ERJ-3EKF1002V
43	1	R24	RES TKF 470k 1% 1/10W SMD 0603	YES	Vishay	CRCW0603470KFKEA
44	7	R26, R61, R62, R85, R88, R91, R94	RES TKF 4.7k 1% 1/10W SMD 0603	YES	ROHM	MCR03EZPFX4701
45	1	R28	RES TKF 2.7k 1% 1/10W SMD 0402	YES	Panasonic	ERJ-2RKF2701X
46	1	R29	RES TKF 750R 1/10W 1% SMD 0402	YES	Panasonic Electronic Components	ERJ-2RKF7500X
47	1	R30	RES TKF 20k 5% 1/10W SMD 0402	YES	Panasonic Electronic Components	ERJ-2GEJ203X
48	3	R31, R97, R98	RES TKF 1k 1% 1/10W SMD 0603	YES	Panasonic	ERJ-3EKF1001V
49	1	R32	RES TKF 2.55k 1% 1/10W SMD 0603	YES	Yageo	RC0603FR-072K55L
50	1	R34	RES TKF 84.5k 1% 1/10W SMD 0603	YES	Yageo	RC0603FR-0784K5L
51	9	R36, R44, R45, R50, R51, R57, R58, R63, R64	RES TKF 12k 1% 1/10W SMD 0603	YES	Yageo	RC0603FR-0712K1L
52	2	R39, R54	RES TKF 100k 1% 1/10W SMD 0603	YES	Panasonic	ERJ-3EKF1003V
53	6	R42, R43, R48, R49, R55, R56	RES TKF 1k 1% 1/16W SMD 0603	YES	SPC Technology	MC0603WGF1001T5E-TC
54	2	R46, R47	RES TKF 1.8k 1% 1/10W SMD 0603	YES	Panasonic	ERJ-3EKF1801V
55	2	R52, R53	RES TKF 4.02K 1% 1/10W SMD 0603	YES	Stackpole Electronics Inc	RMCF0603FT4K02
56	2	R59, R60	RES TKF 8.66k 1% 1/10W SMD 0603	YES	Yageo	RC0603FR-078K66L

**TABLE B-1: EVB-UPD301A (SRC) BILL OF MATERIALS (CONTINUED)**

Item	Qty	Reference	Description	Populated	Manufacturer	Manufacturer Part Number
57	2	R65, R66	RES TKF 15k 1% 1/10W SMD 0603	YES	Stackpole Electronics Inc	RMCF0603FT15K0
58	7	R77, R82, R84, R87, R90, R93, R99	RES TKF 200k 1% 1/10W SMD 0603	YES	Vishay, Panasonic, Panasonic, Panasonic, Panasonic, Panasonic, Vishay	CRCW0603200KFKEA, ERJ-3EKF2003V, ERJ-3EKF2003V, ERJ-3EKF2003V, ERJ-3EKF2003V, ERJ-3EKF2003V, CRCW0603200KFKEA
59	5	R80, R86, R89, R92, R95	RES TKF 10R 1% 1/10W SMD 0603	YES	Panasonic	ERJ-3EKF10R0V
60	1	SW1	SWITCH SLIDE DPDT 6V 300mA JS202011SCQN SMD	YES	C&K	JS202011SCQN
61	1	SW2	SWITCH TACT SPST 16V 50mA PTS810 SJM 250 SMTR LFS SMD	YES	C&K Components	PTS810 SJM 250 SMTR LFS
62	2	U1, U2	IC INTERFACE FUSB340TMXCT USB 3.1 SWITCH UMLP-18	YES	Fairchild/ON Semiconductor	FUSB340TMX
63	1	U9	74LVC1G14GW,125 SCHMITT-TRG INVERTER	YES	NXP	74LVC1G14GW,125
64	1	SERIAL1	Label, Serial Number, Laminated, 250 x 800	YES	Brother	1/4" x 0.8"
65	1	RUBBER FEET	Foot, Silicone Rubber, Adhesive, Clear, Cylindrical, .375"x.190"	YES	Essentra Components	RBS-35
66	1	PCB1	Printed Circuit Board	YES	N/A	EVB-UPD301-SRC
67	1	LABEL1	LABEL, ASSY W/REV LEVEL (SMALL MODULES) PER MTS-0002	YES	N/A	N/A
68	4	PAD1, PAD2, PAD3, PAD4	MECH HW RUBBER PAD Cylindrical flat top D8H2.8 Black	YES	3M	SJ5076BLACK
69	2	J8, J9	CON HDR-2.54 Male 1x5 Gold 5.84MH TH VERT	DNP	FCI	68000-105HLF
70	1	J10	CON HDR-2.54 Male 2x6 Gold 5.84MH TH VERT	DNP	Samtec	TSW-106-07-G-D
71	6	R5, R8, R14, R17, R79, R103	RES TKF 0R 1/10W SMD 0603	DNP	Panasonic	ERJ-3GSY0R00V
72	3	R67, R102, R107	RES TKF 10k 1% 1/10W SMD 0603	DNP	Panasonic	ERJ-3EKF1002V
73	1	R78	RES TKF 10R 1% 1/10W SMD 0603	DNP	Panasonic	ERJ-3EKF10R0V
74	1	R100	RES TKF 200k 1% 1/10W SMD 0603	DNP	Vishay	CRCW0603200KFKEA
75	1	R101	RES TKF 374k 1% 1/10W SMD 0603	DNP	Panasonic Electronic Components	ERJ-3EKF3743V
76	1	R104	RES TKF 16.5k 1% 1/10W SMD 0603 AEC-Q200	DNP	Panasonic Electronic Components	ERJ-3EKF1652V
77	1	R105	RES TF 23.2k 0.1% 1/10W SMD 0603	DNP	Panasonic Electronic Components	ERA-3AEB2322V
78	2	TP12, TP14	CON TP LOOP RED 1.02mm TH	DNP	VERO Technologies	20-313137
79	2	TP13, TP15	CON TP LOOP BLACK 1.02mm TH	DNP	VERO Technologies	20-2137
80	1	U10	IC POWER LM4041CYM3-ADJ-TR ADJUST-ABLE VREF 10V 1.24V SOT-23-3	DNP	Microchip Technology	LM4041CYM3-ADJ-TR

## Appendix C. PCB Silk Screens

### C.1 INTRODUCTION

This appendix shows the EVB-UPD301A (SRC) top and bottom silk screen images.

**FIGURE C-1: EVB-UPD301A (SRC) TOP SILK SCREEN**

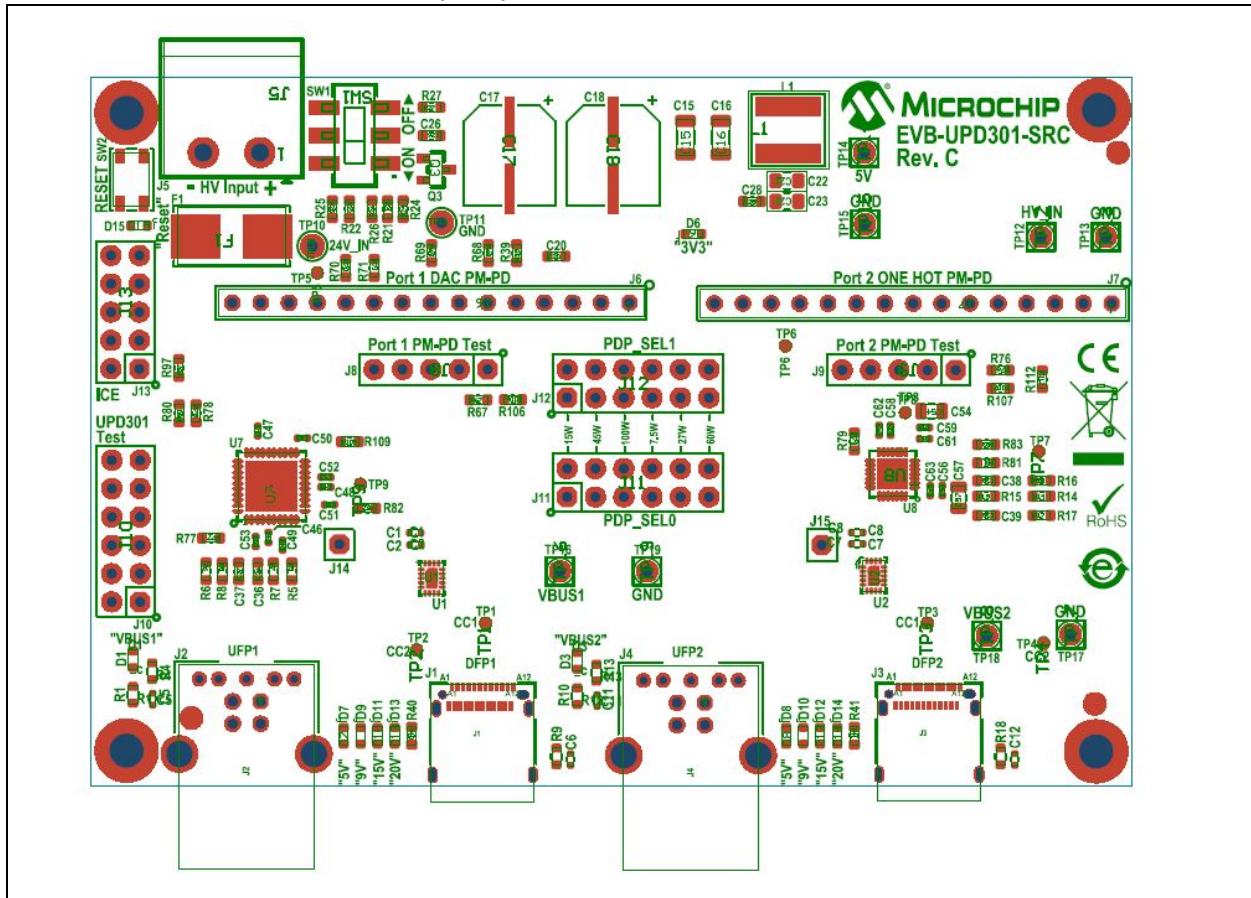
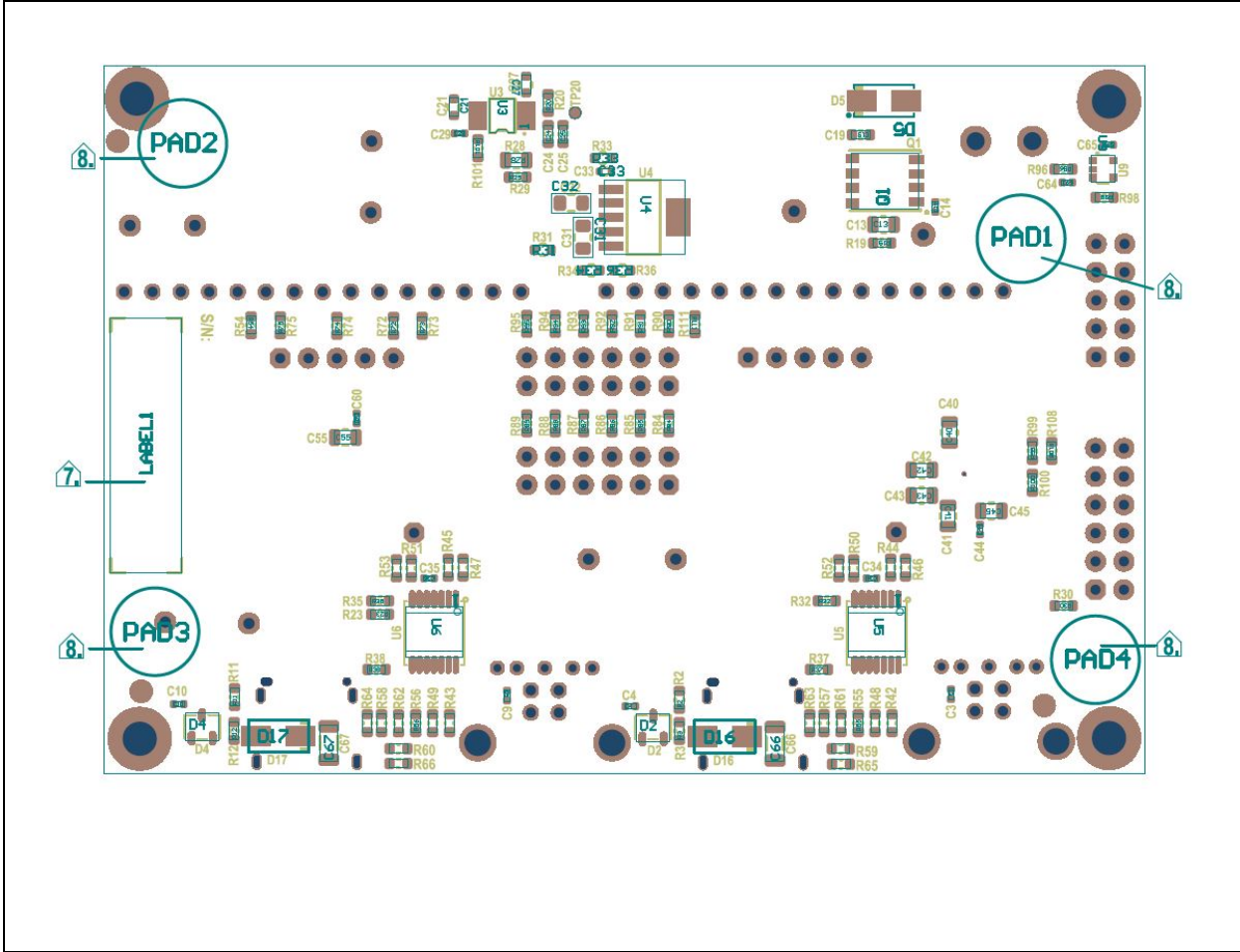


FIGURE C-2: EVB-UPD301A (SRC) BOTTOM SILK SCREEN



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**NOTES:**



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