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UDP SiM3C1xx MCU Card User's Guide

1. Introduction

The Unified Development Platform (UDP) provides a development and demonstration platform for Silicon Laboratories microcontrollers, short-range wireless devices, and software tools, including the Silicon Laboratories Integrated Development Environment (IDE).

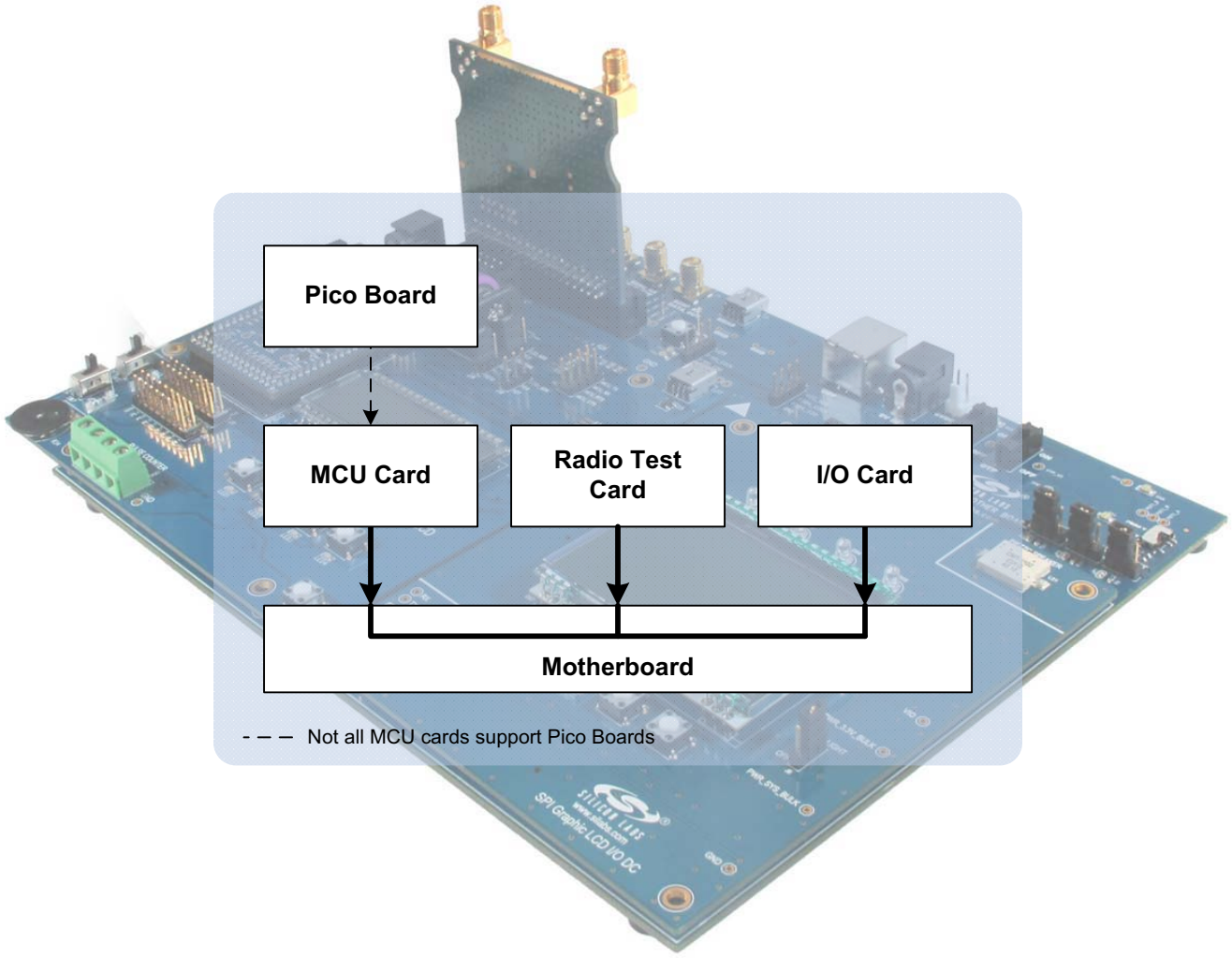

Figure 1. Unified Development Platform Block Diagram

2. Relevant Documents

This document provides a hardware overview for the Unified Development Platform (UDP) system SiM3C1xx MCU card. Additional information on the UDP system can be found in the documents listed in this section.

2.1. Motherboard User's Guide

The UDP Motherboard User's Guide contains information on the motherboard features and can be found at www.silabs.com/udp.

2.2. Card User's Guides

The UDP MCU, I/O, and radio test card user's guides can be found at www.silabs.com/udp.

3. Hardware Setup

3.1. Using the MCU Card Alone

Refer to Figure 2 for a diagram of the hardware configuration when using the MCU card without a UDP motherboard.

1. Connect the USB Debug Adapter to the 10-pin debug connector (J31) on the MCU card with the 10-pin ribbon cable.
2. Connect one end of the USB cable to the USB connector on the USB Debug Adapter.
3. Connect the other end of the USB cable to a USB Port on the PC.
4. Move the SW5 System Power Select switch to the upper WALL position.
5. Verify that the 5V WALL (J14), VDD (J15), and VIO (J17) Imeasure jumpers are all populated.
6. Verify that the VIOHD Selection jumper (J18) is in the upper position between VIO and VIOHD.
7. Connect the ac/dc power adapter to the wall outlet and to the power jack on the board labeled Power (P1).

Notes:

- Use the Reset button in the IDE to reset the target when connected using a USB Debug Adapter.
- Remove power from the MCU card and the USB Debug Adapter before connecting or disconnecting the ribbon cable from the MCU card. Connecting or disconnecting the cable when the devices have power can damage the device and/or the USB Debug Adapter.

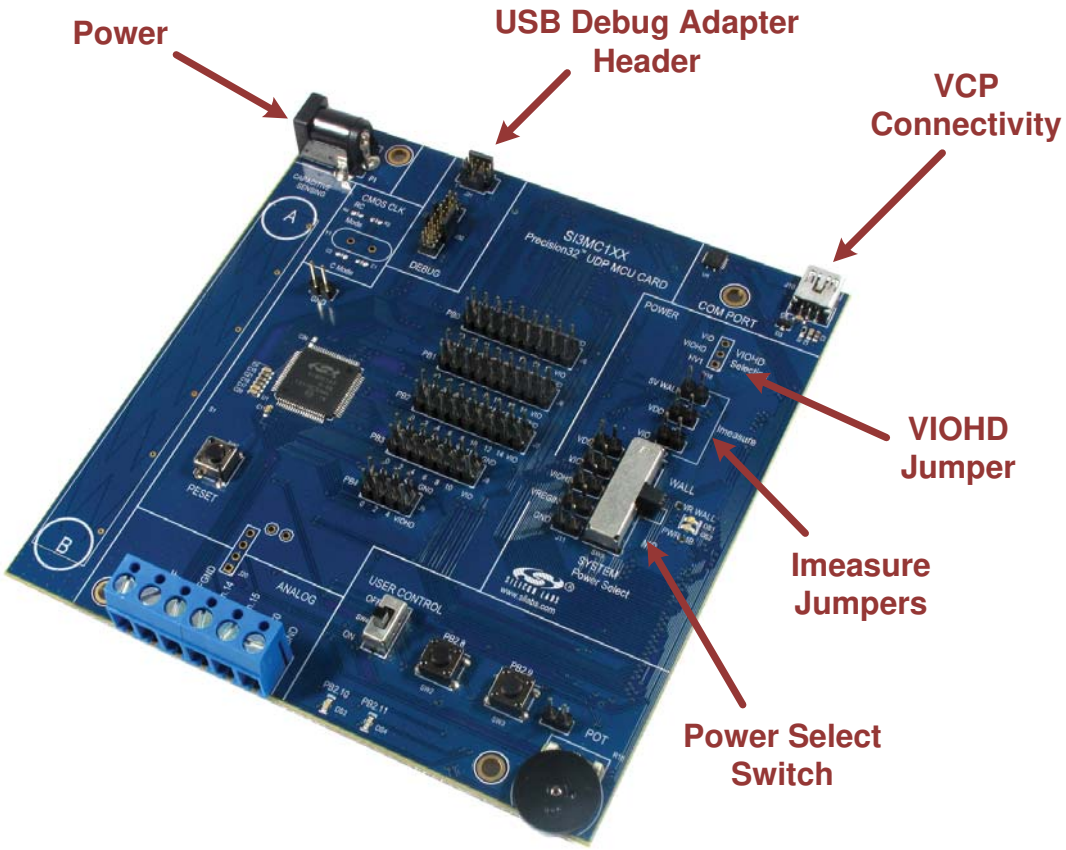

Figure 2. Hardware Setup using the MCU Card Alone

3.2. Using the MCU Card with the UDP Motherboard

Refer to Figure 3 for a diagram of the hardware configuration when using the MCU card with a UDP motherboard.

1. Connect the MCU card to the UDP motherboard slot.
2. (Optional) Connect an I/O card to the UDP motherboard slot.
3. (Optional) Connect a radio test card to the radio test card slot in the UDP motherboard.
4. (Optional) Connect an EZLink card to the EZLink card slot in the UDP motherboard.
5. Connect the USB Debug Adapter to the 10-pin debug connector (J31) on the MCU card with the 10-pin ribbon cable.
6. Connect one end of the USB cable to the USB connector on the USB Debug Adapter.
7. Connect the other end of the USB cable to a USB Port on the PC.
8. Move the SW5 System Power Select switch to the lower MB position.
9. Verify that the 5V WALL (J14), VDD (J15), and VIO (J17) Imeasure jumpers are all populated.
10. Verify that the VIOHD Selection jumper (J18) is in the upper position between VIO and VIOHD.
11. Connect the ac/dc power adapter to power jack J20 on the UDP motherboard. The board can also be powered from the J16 USB, J1 mini USB connectors, or J11 battery connector socket.
12. Move the S3 power switch on the UDP motherboard to the ON position.
13. Update the motherboard firmware as described in Section 3.4.

Notes:

- Use the Reset button in the IDE to reset the target when connected using a USB Debug Adapter.
- Remove power from the target board and the USB Debug Adapter before connecting or disconnecting the ribbon cable from the target board. Connecting or disconnecting the cable when the devices have power can damage the device and/or the USB Debug Adapter.
- The MCU card can be used alone without the motherboard. However, the motherboard must be powered if an MCU card is connected.

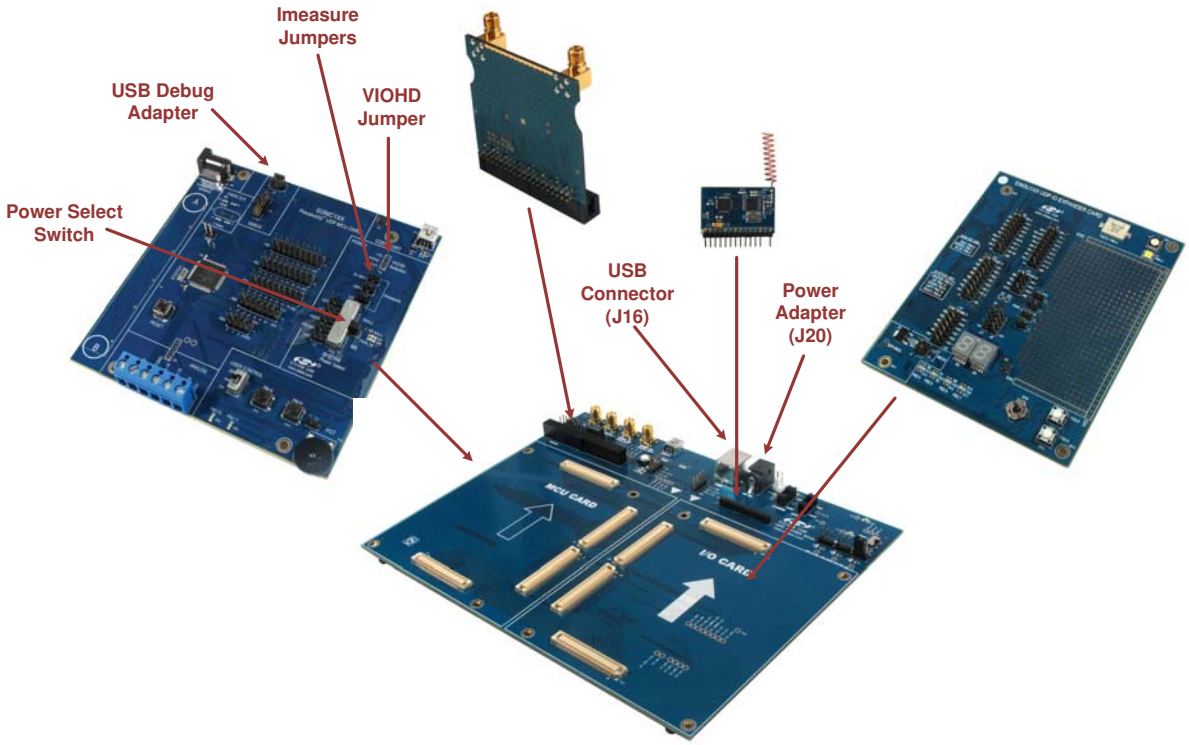

Figure 3. Hardware Setup using the Unified Development Platform

3.3. CP210x USB to UART VCP Driver Installation

The MCU Card includes a Silicon Labs CP210x USB-to-Dual-UART Bridge Controller. Device drivers for the CP210x need to be installed before the PC software can communicate with the MCU through the UART interface. If the "Install CP210x Drivers" option is selected during installation, a driver “unpacker” utility will launch.

1. Follow the steps to copy the driver files to the desired location. The default directory is *C:\SiLabs\MCU\CP210x*.
2. The final window will give an option to install the driver on the target system. Select the “Launch the CP210x VCP Driver Installer” option if you are ready to install the driver.
3. If selected, the driver installer will now launch, providing an option to specify the driver installation location. After pressing the “Install” button, the installer will search your system for copies of previously installed CP210x Virtual COM Port drivers. It will let you know when your system is up to date. The driver files included in this installation have been certified by Microsoft.
4. If the “Launch the CP210x VCP Driver Installer” option was not selected in step 3, the installer can be found in the location specified in step 2, by default *C:\SiLabs\MCU\CP210x\Windows_2K_XP_S2K3_Vista*. At this location, run *CP210xVCPInstaller.exe*.
5. To complete the installation process, connect the included USB cable between the host computer and the COM PORT USB connector (J10) on the MCU Card. Windows will automatically finish the driver installation. Information windows will pop up from the taskbar to show the installation progress.
6. If needed, the driver files can be uninstalled by selecting “Silicon Labs CP210x USB to UART Bridge Driver Removal” option in the “Add or Remove Programs” window.

3.4. Updating the UDP Motherboard Firmware

To ensure the UDP Motherboard supports the SiM3C1xx MCU card, run the UDP Motherboard Firmware Update Utility shown in Figure 4. This utility can be downloaded from www.silabs.com/udp.

1. Connect the UDP motherboard to a PC using a regular USB cable connected to the UDS connector (J16).
2. Run the utility.
3. Select the desired motherboard if more than one is connected to the PC.
4. Press the **Update Selected Device** button.

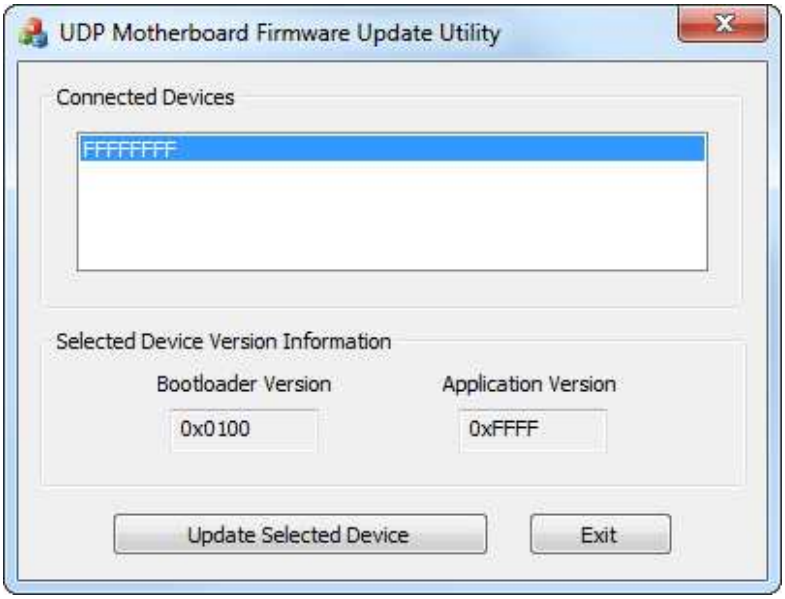

Figure 4. UDP Motherboard Firmware Update Utility

4. UDP SiM3C1xx MCU Card Overview

The SiM3C1xx MCU card enables application development on the SiM3C1xx MCU. The card connects to the MCU Card expansion slot on the UDP motherboard and provides complete access to the MCU resources. Each expansion board has a unique ID that can be read out of an EEPROM or MCU on the board, which enables software tools to recognize the connected hardware and automatically select the appropriate firmware image. The target MCU card can also be detached from the UDP and used alone as a development or demonstration tool.

Figure 5 shows the SiM3C1xx MCU card.

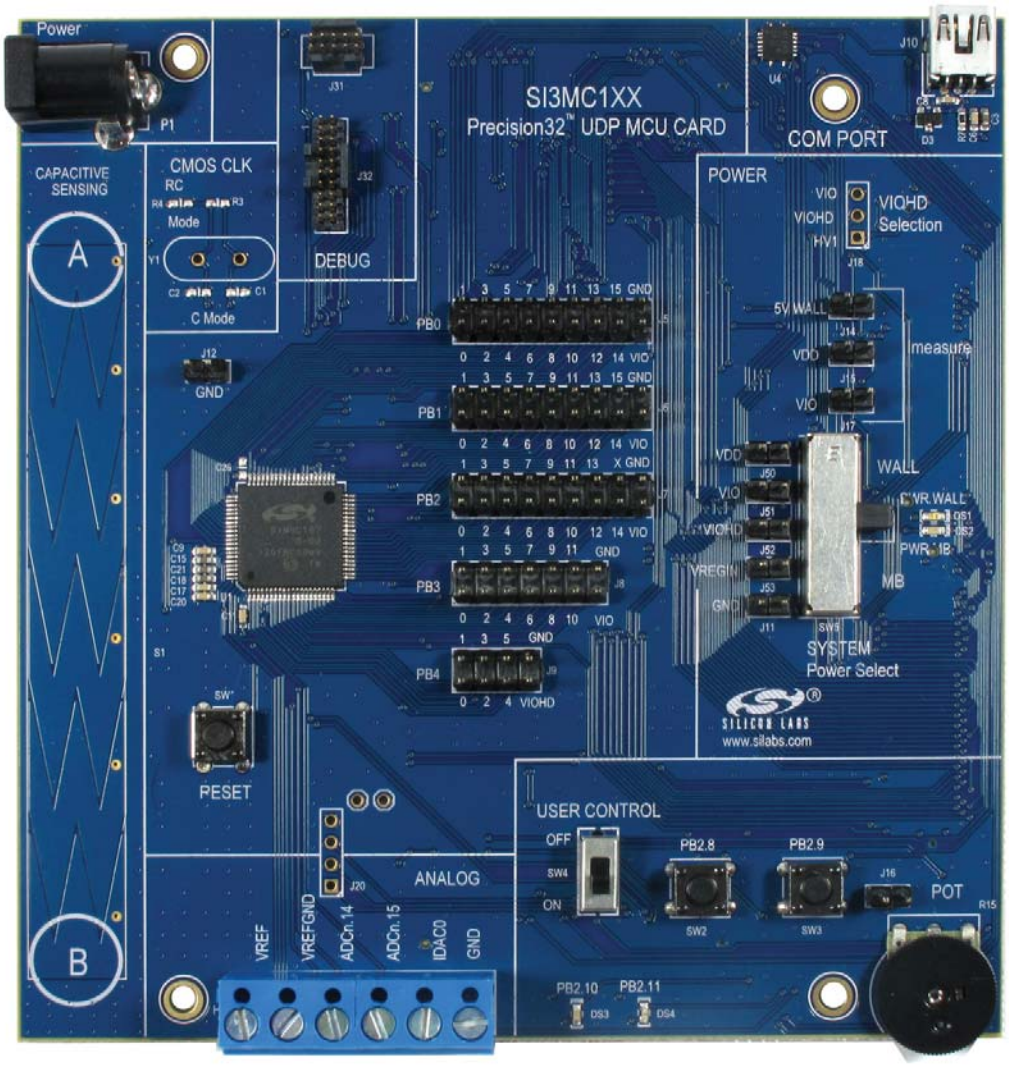

Figure 5. UDP SiM3C1xx MCU Card

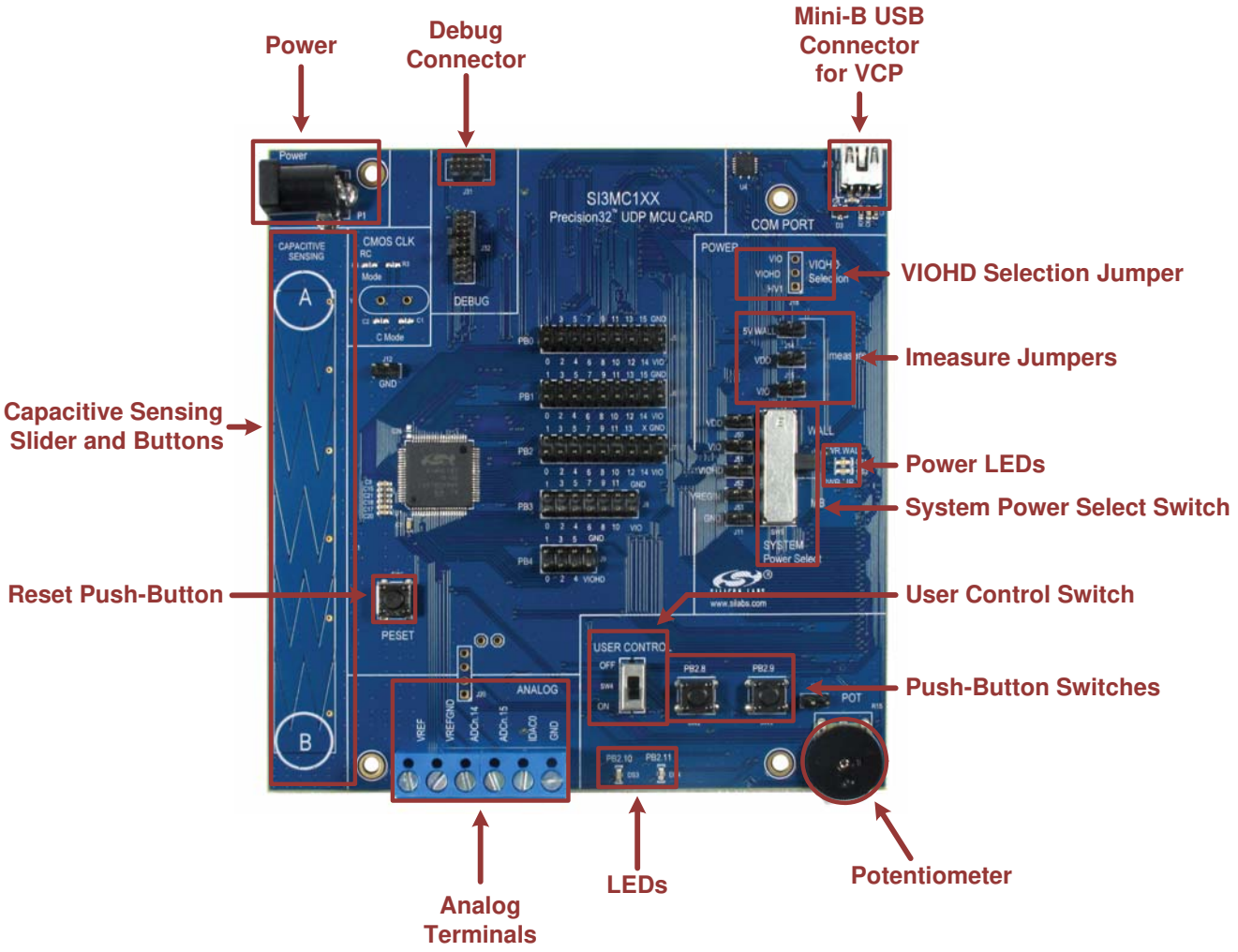

Figure 6. UDP SiM3C1xx MCU Card Features

4.1. Push-Button Switches and LEDs (SW2, SW3, DS3, DS4)

The UDP SiM3C1xx MCU Card has two push-button switches and two LEDs. The two switches connect to PB2.8 and PB2.9. The switches are normally open and pull the pin voltage to ground when pressed.

Port pins PB2.10 and PB2.11 also connect to two LEDs: DS3 and DS4. The LEDs connect to VIO through a current limiting resistor.

When using PB2.8 and PB2.9 as switches and PB2.10 and PB2.11 as LEDs, the User Control switch (SW4) must be in the ON position.

4.2. Analog Terminals (H1)

Several of the SiM3C1xx port pins used for analog functions are connected to the H1 terminal block. Refer to Table 1 for the H1 terminal block connections.

Table 1. Terminal Block Pin Descriptions (H1)

Pin	I/O
1	PB0.12 / VREF
2	PB0.11 / VREFGND
3	PB1.5 / ADCn.14
4	PB1.6 / ADCn.15
5	PB0.13 / IDAC0
6	GND

4.3. User Control Switch (SW4)

The User Control Switch enables and disables the User Control portion of the board. When in the ON position, various GPIO pins are connected to the push-button switches, LEDs, and potentiometer. When in the OFF position, the GPIO pins are disconnected from the hardware in the User Control portion of the board. The OFF selection should be used if another I/O board is connected to the MCU Card via a UDP motherboard or if the GPIO pins are needed for different functions. Table 2 shows a list of the GPIO pins that are controlled by the User Control Switch.

Table 2. User Controlled GPIO Pins

GPIO Pin	User Control Function
PB1.5	Potentiometer
PB2.8	Push-Button Switch (SW2)
PB2.9	Push-Button Switch (SW3)
PB2.10	Red LED (DS3)
PB2.11	Yellow LED (DS4)
PB2.12	Potentiometer Bias

4.4. Potentiometer (R15)

The potentiometer is available on PB1.5. To use the potentiometer, install a shorting block on J16 to connect PB1.5 to POT. To facilitate a low-power potentiometer, PB2.12 connects to bottom of the potentiometer as a potentiometer enable. Drive PB2.12 low to enable the potentiometer. The User Control switch must be in the ON position to use the potentiometer.

4.5. System Power Select Switch (SW5)

The MCU card has two power supply options: WALL power or UDP motherboard power. The System Power Select Switch is used to select between the two. If the MCU card is used without the UDP Motherboard, this switch should be placed in the WALL position. While in the WALL position, the part can be powered from the power connector (P1) labeled “Power”.

4.6. Power LEDs (DS1, DS2)

The two power LEDs provide visual feedback when the board is powered. When the System Power Select Switch is in the WALL position, the PWR WALL LED (DS1) will turn on when the device is powered through the P1 connector or by connecting a power supply to any power header on the board. When the System Power Select Switch is in the MB position, the PWR MB LED (DS2) will turn on when the device is powered by a UDP Motherboard.

4.7. Imeasure Jumpers (J14, J15, J17)

The 5V WALL (J14), VDD (J15), and VIO (J17) Imeasure jumpers allow for easy access to measure the supply current of the MCU. The shorting blocks for these headers are populated by default. To measure the supply current, remove the corresponding shorting block and connect a current measurement device across the unpopulated header.

4.8. VIOHD Selection Jumper (J18)

The VIOHD jumper allows for the VIOHD pin on the MCU to be connected to the VIO power supply, the HV1 signal from the UDP Motherboard, or to an external power supply. The HV1 option is only available if the MCU is connected to a UDP Motherboard. To power from an external supply, remove the shorting block and connect the supply to pin 2 of the header.

4.9. UART VCP Connection Options (J10)

The MCU card features a USB virtual COM port (VCP) UART connection via the mini-B USB connector (J10) labeled “COM PORT”. The VCP connection uses the CP210x USB-to-UART bridge chip. The GPIO pins connected to the CP210x device can be enable or disabled when connected to a UDP Motherboard as necessary. When the MCU card is not connected to the UDP Motherboard, the TX, RX, CTS, and RTS signals are all connected to the CP210x device. Table 3 shows the GPIO pins that are routed to the CP210x or UDP Motherboard.

Table 3. CP210x Controlled GPIO Pins

GPIO Pin	User Control Function
PB1.12	RX
PB1.13	TX
PB1.14	CTS
PB1.15	RTS

4.10. Debug Header (J31)

The mini 10-pin debug header supports the Silicon Labs USB Debug Adapter. This connector provides a Serial Wire (SW) debug connection to the SiM3C1xx on the MCU card.

4.11. Capacitive Sensing Button and Slider (S1)

Two capacitive sensing buttons and one slider are included on the MCU card. Six GPIO pins are connected to the slider and can be used to implement up to two buttons or a slider. Table 4 shows the J13 pin definitions. The GPIO pins are connected to the slider in ascending order from the location labeled “A” to the location labeled “B” on the MCU card.

Table 4. Capacitive Sensing GPIO Connections

Location	Pin
A	PB1.7
—	PB1.8
—	PB0.4
—	PB0.3
—	PB0.2
B	PB0.1

4.12. Reset Button (SW1)

The reset push-button switch is in the lower-left corner. Pushing this button will always reset the MCU. Note that pushing this button while the IDE is connected to the MCU will result in IDE disconnecting from the target.

4.13. Port Pin Headers (J5-J9)

All of the MCU port pins are available on the 0.100-inch headers on MCU card. Some of these port pins are shared with other functions on the board. For example, PB0.9 and PB0.10 are both used by the external RTC. Several GPIO pins are connected to circuits in the User Control portion of the board as well. To disconnect these GPIO pins from the additional circuits, place the User Control switch in the OFF position. PB1.12, PB1.13, PB.1.14, and PB1.15 are either routed to the CP210x device or to the UDP Motherboard. For more information on the GPIO pins used by the CP210x or UART interface, see Section 4.9.

4.14. MCU Card Default and Optional Connections

The MCU card has many default and optional connections for use with different I/O cards and the UDP motherboard. The default connections are via shorting jumpers. The shorting jumpers are a 603 resistor footprint with a cut trace between pads. To disconnect, cut the trace with a sharp utility knife. To reconnect, install a 0 Ω 603 resistor or connect the two pads with solder. The optional connections are non-populated (no-pop) resistor footprints. To connect, install a 0 Ω 603 resistor or connect the two pads with solder. The User Control ON connections are only enabled when the User Control switch is moved to the ON position.

Table 5 shows a summary of the default and optional connections for each pin.

Table 5. MCU Pin Functions

MCU Pin	MCU Card Function			UDP Motherboard Signal	
	Default	Optional	User Control ON	Default	Optional
P0.0				USART_TX_A	
P0.1	CAPSENSE			USART_RX_A	
P0.2	CAPSENSE			USART_RTS_A C2D_TX00_A	
P0.3	CAPSENSE			USART_CTS_A C2D_TX01_A	
P0.4	CAPSENSE			USART_UCLK_A C2D_TX02_A	
P0.5				SPI_SCK_EZR C2D_TX03_A	
P0.6				SPI_MISO_EZR C2D_TX04_A	
P0.7				SPI_MOSI_EZR C2D_TX05_A I2V_INP_A	
P0.8				SPI_NSS0_EZR C2D_TX06_A I2V_INN_A	
P0.9	RTC1				GPIO14
P0.10	RTC2				GPIO15
P0.11		VREFGND		GPIO11 ADC_VREFGND	
P0.12		VREF		GPIO12 ADC_VREF	
P0.13		IDAC		PCA_CH0_A GPIO13 IDAC_B	
P0.14				PCA_CH1_A I2SOUT_DFS_A IDAC_A	
P0.15	XTAL1				I2SOUT_CLK_A CP_OUT_A

Table 5. MCU Pin Functions (Continued)

MCU Pin	MCU Card Function			UDP Motherboard Signal	
	Default	Optional	User Control ON	Default	Optional
P1.0	XTAL2				I2SOUT_DOUT_A CP_OUTA_A
P1.1				I2C_SDA_EZR	
P1.2				I2C_SCL_EZR	
P1.3				JTAG_TDO_A	
P1.4				JTAG_TDI_A	
P1.5			POT		ADC_IN0
P1.6					ADC_IN1
P1.7	CAPSENSE				GPIO08
P1.8	CAPSENSE				GPIO09
P1.9					GPIO10
P1.10				ADC_IN2	
P1.11				TIMER_EX_A ADC_IN3	
P1.12		VCP_RX		EMIF_A21	UART_RX_SYS
P1.13		VCP_TX		EMIF_A20	UART_TX_SYS
P1.14		VCP_CTS		EMIF_A19 EZRP_CLK_IN	UART_CTS_SYS
P1.15		VCP_RTS		WAKEUP0 EMIF_A18 EZRP_TX_DATA_IN	UART_RTS_SYS
P2.0				EMIC_A17 EZRP_RX_CLK_OUT	
P2.1				USART_TX_B EMIF_A16 EZRP_RX_DATA_OUT	
P2.2				USART_RX_B EMIF_A15 EZRP_SDN	
P2.3				EMIF_A14 EZRP_NIRQ	
P2.4				EXT_INT0 EMIF_A13	
P2.5				GPIO00 EMIF_A12	
P2.6				GPIO01 EMIF_A11	
P2.7				GPIO02 EMIF_A10	

Table 5. MCU Pin Functions (Continued)

MCU Pin	MCU Card Function			UDP Motherboard Signal	
	Default	Optional	User Control ON	Default	Optional
P2.8			SW2	SPI_NSS3_A GPIO03 EMIF_A9	
P2.9			SW3	SPI_NSS2_A GPIO04 EMIF_A8	
P2.10			LED (DS3)	SPI_NSS1_A GPIO05 EMIF_A7	
P2.11			LED (DS4)	SPI_NSS0_A GPIO06 EMIF_A6	
P2.12			POT_EN	SPI_SCK_A GPIO07 EMIF_A5	
P2.13				SPI_MISO_A EMIF_A4 CP_POS_A	
P2.14				SPI_MOSI_A EMIF_A3 CP_NEG_A	
P3.0				EMIF_A2	
P3.1				SPI_NSS2_EZR EMIF_A1	
P3.2				SPI_NSS3_EZR EMIF_A0	
P3.3				LPTIMER_IN_A I2SIN_DFS_A EMIF_WRB	
P3.4				I2SIN_CLK_A EMIF_OEB CP_POS_B	
P3.5				I2SIN_DOUT_A EMIF_ALE CP_NEG_B	
P3.6				EMIF_CS0B EXTREG_SP_A	
P3.7				EMIF_BE1B EXTREG_SN_A	
P3.8				EMIF_CS1B EXTREG_OUT_A	

Table 5. MCU Pin Functions (Continued)

MCU Pin	MCU Card Function			UDP Motherboard Signal	
	Default	Optional	User Control ON	Default	Optional
P3.9				EMIF_BE0B EXTREG_BD_A	
P3.10	EBID_SCK			PORT_MATCH0 UDPBUS_SDA_A	
P3.11	EBID_SDA			PORT_MATCH1 UDPBUS_SCL_A	
P4.0				EPCA_CH0_MOTOR HVGPIO0	
P4.1				EPCA_CH1_MOTOR HVGPIO1	
P4.2				UART_TX_A EPCA_CH2_MOTOR HVGPIO2	
P4.3				UART_RX_A EPCA_CH3_MOTOR HVGPIO3	
P4.4				UART_RTS_A EPCA_CH4_MOTOR HVGPIO4	
P4.5				LPTIMER_OUT_A UART_CTS_A EPCA_CH5_MOTOR HVGPIO5	

4.14.1. P0.1, P0.2, P0.3, P0.4, P1.8, P1.7

Pins P0.1, P0.2, P0.3, P0.4, P1.7, P1.8 all connect to the capacitive sensing slider by default. To disconnect any of these pins from the capacitive sensing slider, remove the 0 Ω resistor that is connected to the port pin (R16 - R21).

4.14.2. P0.9, P0.10

Pin P0.9 and P0.10 both connect to the 32.768 kHz RTC by default. To disconnect this pin from the RTC, remove the crystal Y2 on the board. Alternatively, the 0 Ω resistors R5 and R6 can be removed to disconnect the RTC circuit from the headers on J5.

4.14.3. P0.11

Pin P0.11 connects to the VREFGND terminal on H1 by default. By default, P0.11 is not used as VREFGND and is instead a GPIO pin.

4.14.4. P0.12

Pin P0.12 connects to the RX pin of the CP210x by default. Alternatively, P0.12 can be enabled for use with the VREF.

4.14.5. P0.13

Pin P0.13 connects to the TX pin of the CP210x by default. Alternatively, P0.13 can be enabled for use with the IDAC.

4.14.6. P0.14

Pin P0.14 connects to the CTS pin of the CP210x by default.

4.14.7. P0.15

Pin P0.15 connects to the RTS pin of the CP210x by default. Alternatively, P0.15 can be enabled for use as the XTAL1 input.

4.14.8. P1.0

Pin P1.0 is a GPIO pin by default. Alternatively, P1.0 can be enabled for use as the XTAL2 input. P1.0 is connected to the external crystal circuit, but the external crystal circuit is not populated by default. See the MCU card schematic in 6. "Schematics," on page 18 for more information on the external crystal circuit.

4.14.9. P1.5

Pin P1.5 is a GPIO pin by default. Alternatively, P1.5 can be used at the potentiometer input pin if the User Control switch is in the ON position.

4.14.10. P2.8, P2.9

Pins P2.8 and P2.9 are both GPIO pins by default. Alternatively, P2.8 and P2.9 can be used as switches (SW2 and SW3) if the User Control switch is in the ON position.

4.14.11. P2.10, P2.11

Pins P2.10 and P2.11 are both GPIO pins by default. Alternatively, P2.10 and P2.11 can be used as LEDs (DS3 and DS4) if the User Control switch is in the ON position.

4.14.12. P2.12

Pin P2.12 is a GPIO pin by default. Alternatively, P2.12 can be used at the potentiometer bias pin if the User Control switch is in the ON position.

4.14.13. P3.10, P3.11

Pins P3.10 and P3.11 normally connects to the EBID UDP bus. To disconnect these pins from the UDP bus circuit, remove the 0 Ω resistors R34 and R35.

5. Using the UDP SiM3C1xx MCU Card with the UDP Motherboard

5.1. Current Measurement

The power measurement circuitry on the UDP motherboard consists of a Silicon Labs C8051F351 8051 MCU that measures both input voltage and current consumption of the MCU card, I/O expander, and radio test card. Install a shorting block on the UDP Motherboard J13 and J15 connect the two left pins together when using the motherboard with the SiM3C1xx MCU card.

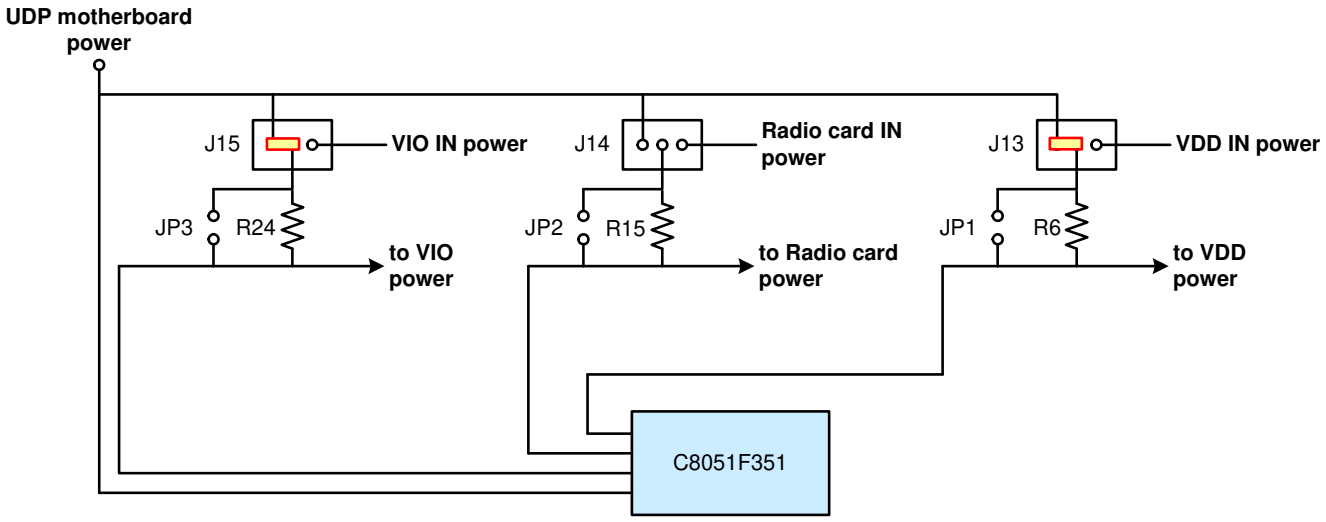

Figure 7. Power Measurement Diagram with Shorting Blocks

5.2. MCU Card Header Connections

The MCU card has four connectors with 100 pins each. These 400 pins are directly tied to the UDP motherboard and I/O cards. These signals are named and designed to support a wide variety of features and applications, and the UDP SiM3C1xx card implements a subset of these connections.

The MCU cards and I/O cards are designed so that a maximum number of functions are shared between each card. This allows a particular type of I/O card to be shared amongst all MCU cards that connect to the same signals.

The MCU card slot includes the following components:

J1	MCU card connector H1
J2	MCU card connector H2
J3	MCU card connector H3
J4	MCU card connector H4

The UDP SiM3C1xx card implements the signals described in Table 7, Table 8, Table 9, and Table 10 in the Appendix.

5.3. Shorting Blocks: Factory Defaults

The UDP SiM3C1xx MCU card comes from the factory with pre-installed shorting blocks on several headers. Figure 8 shows the positions of the factory default shorting blocks.

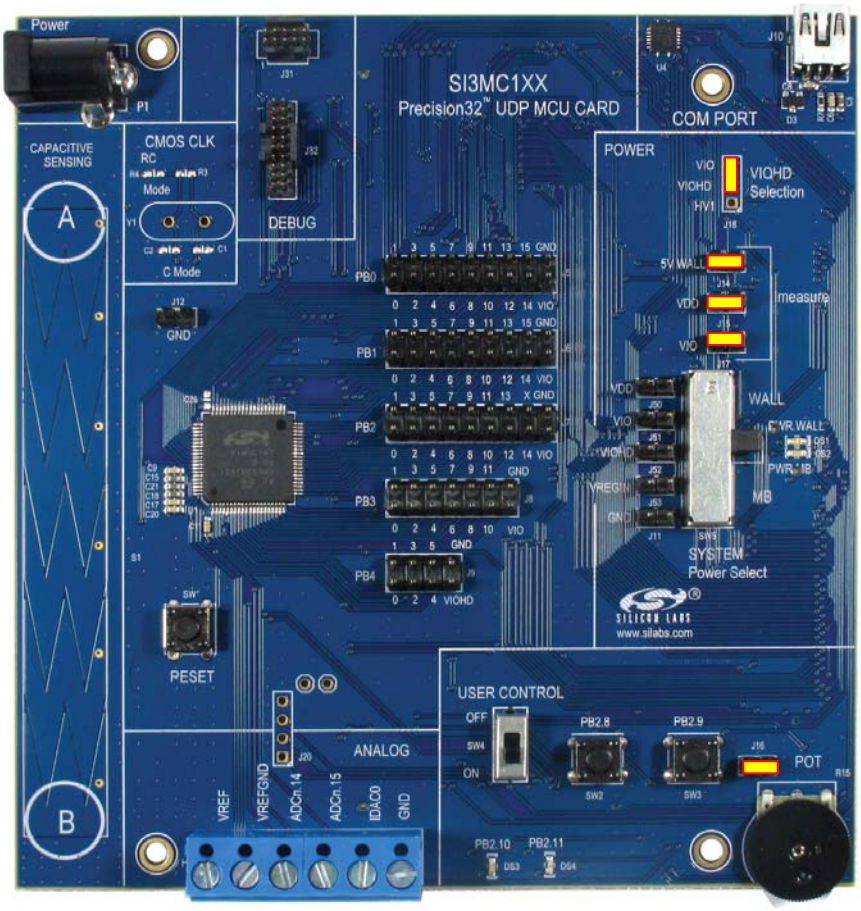

Figure 8. Shorting Blocks: Factory Defaults

Shorting blocks are installed across the 5V WALL (J14), VDD (J15), VIO (J17) Imeasure jumpers. A shorting block is installed on J16 to connect the potentiometer to the User Control portion of the board. A shorting block is also installed on J18 to connect the VIOHD pin of the MCU to the VIO pin of the MCU.

6. Schematics

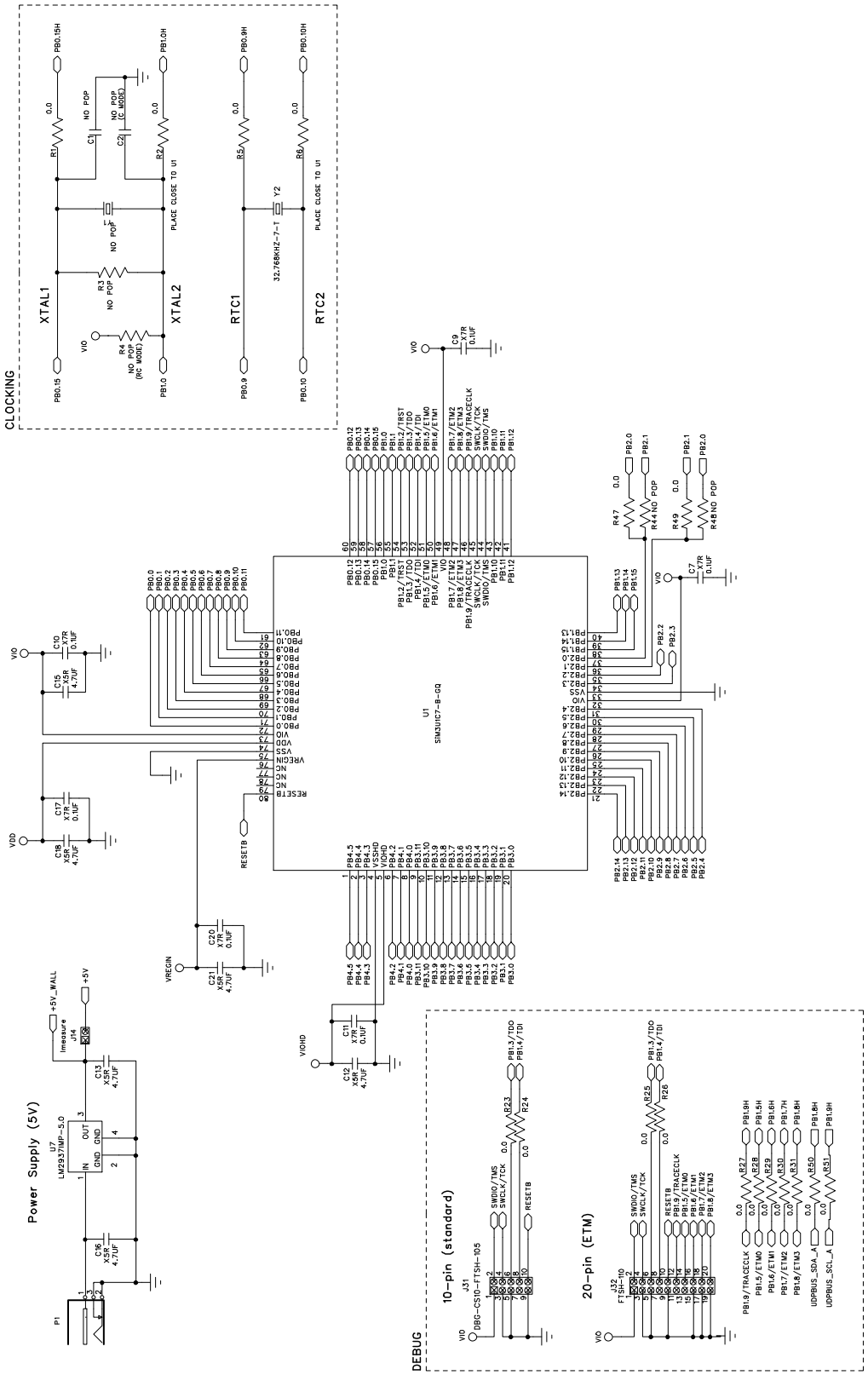

Figure 9. SiM3C1xx UDP MCU Card Schematic (1 of 6)

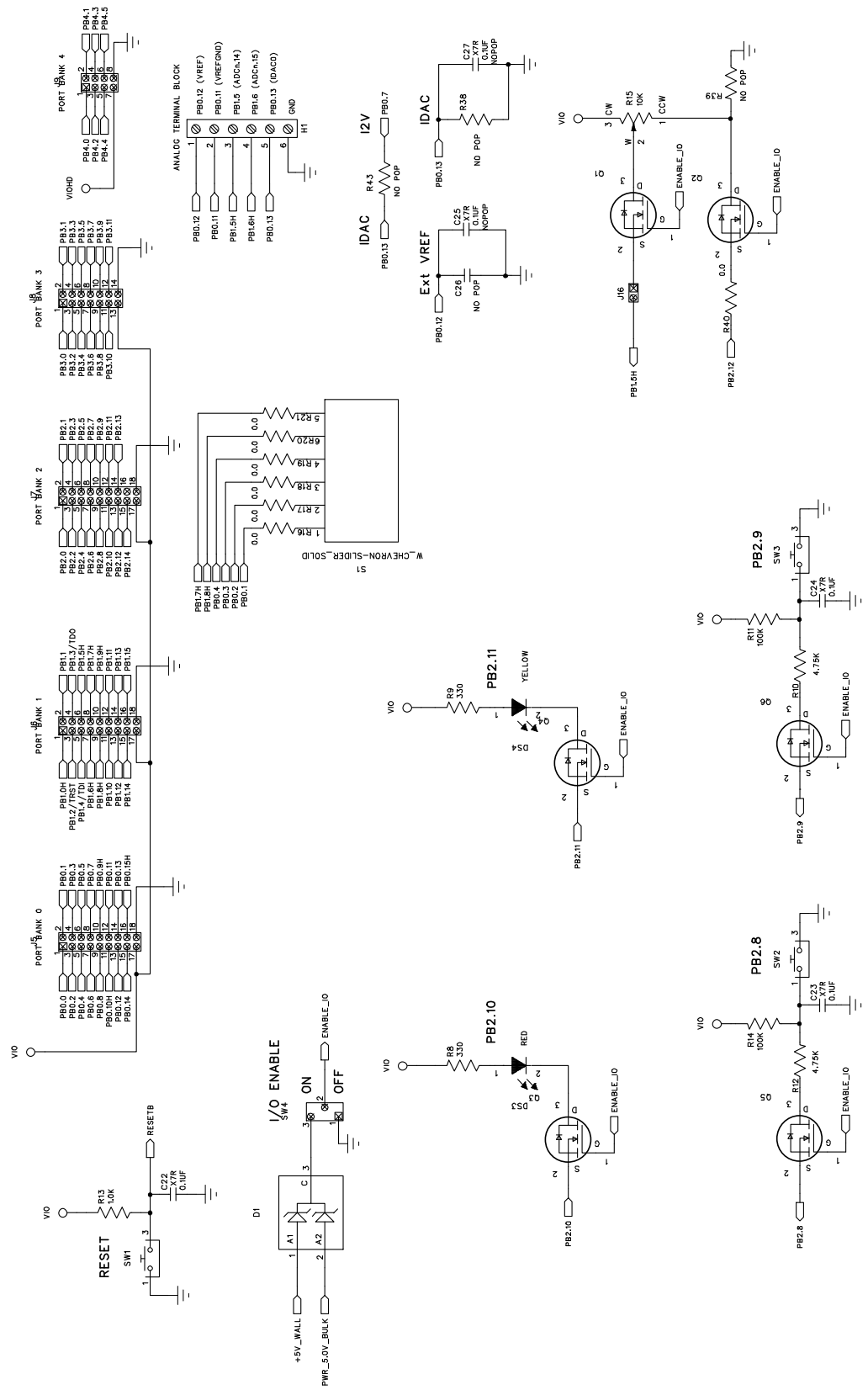

Figure 10. SiM3C1xx UDP MCU Card Schematic (2 of 6)

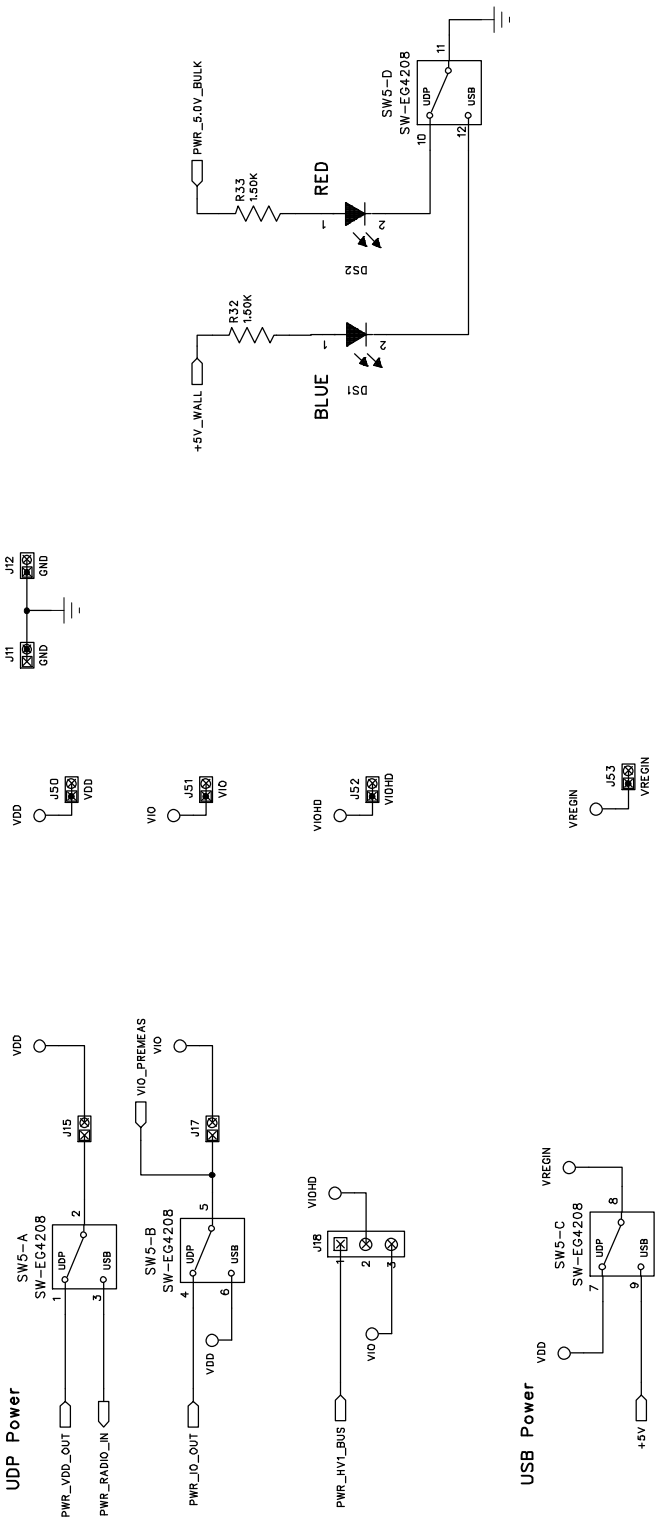

Figure 11. SiM3C1xx UDP MCU Card Schematic (3 of 6)

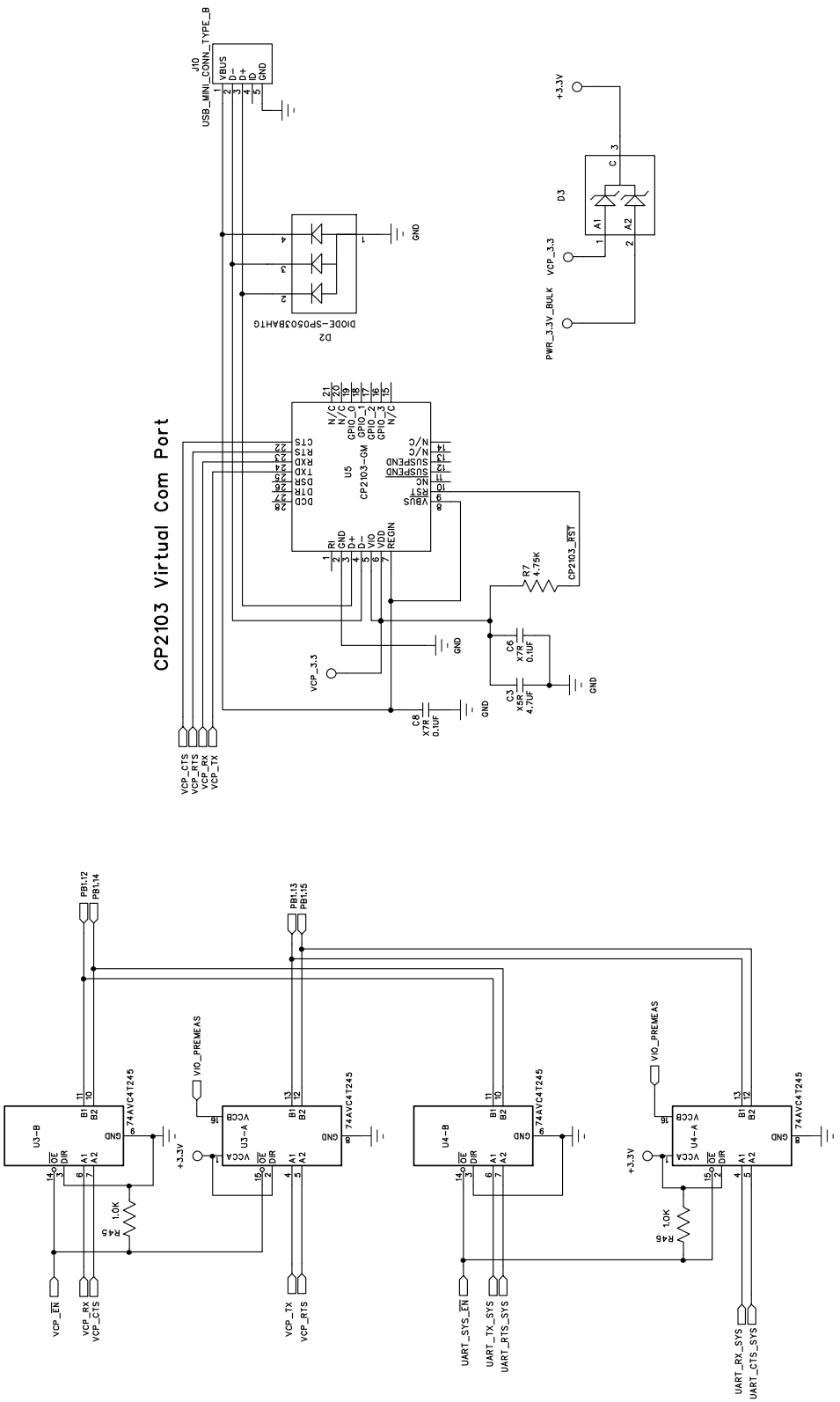

Figure 12. SiM3C1xx UDP MCU Card Schematic (4 of 6)

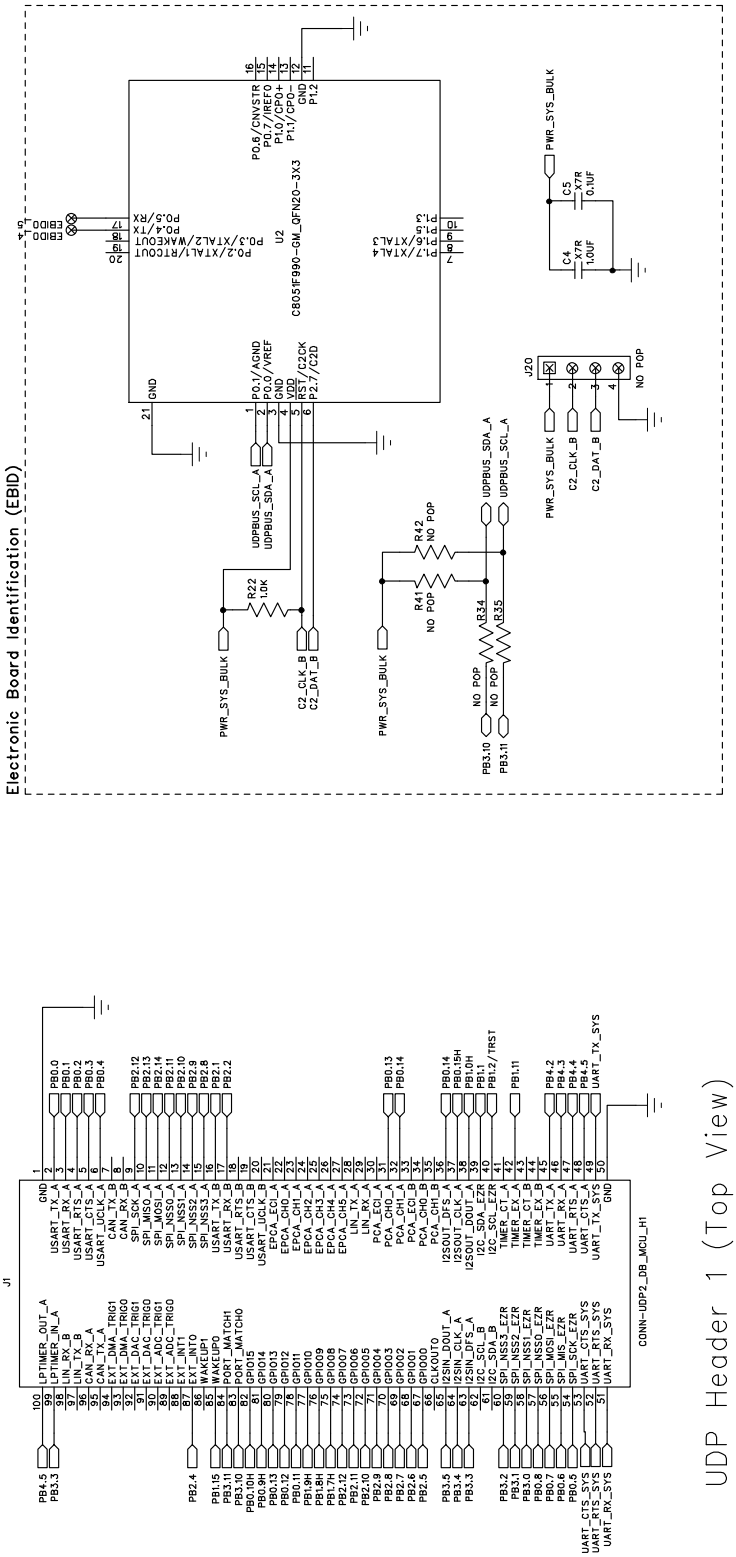

Figure 13. SiM3C1xx UDP MCU Card Schematic (5 of 6)

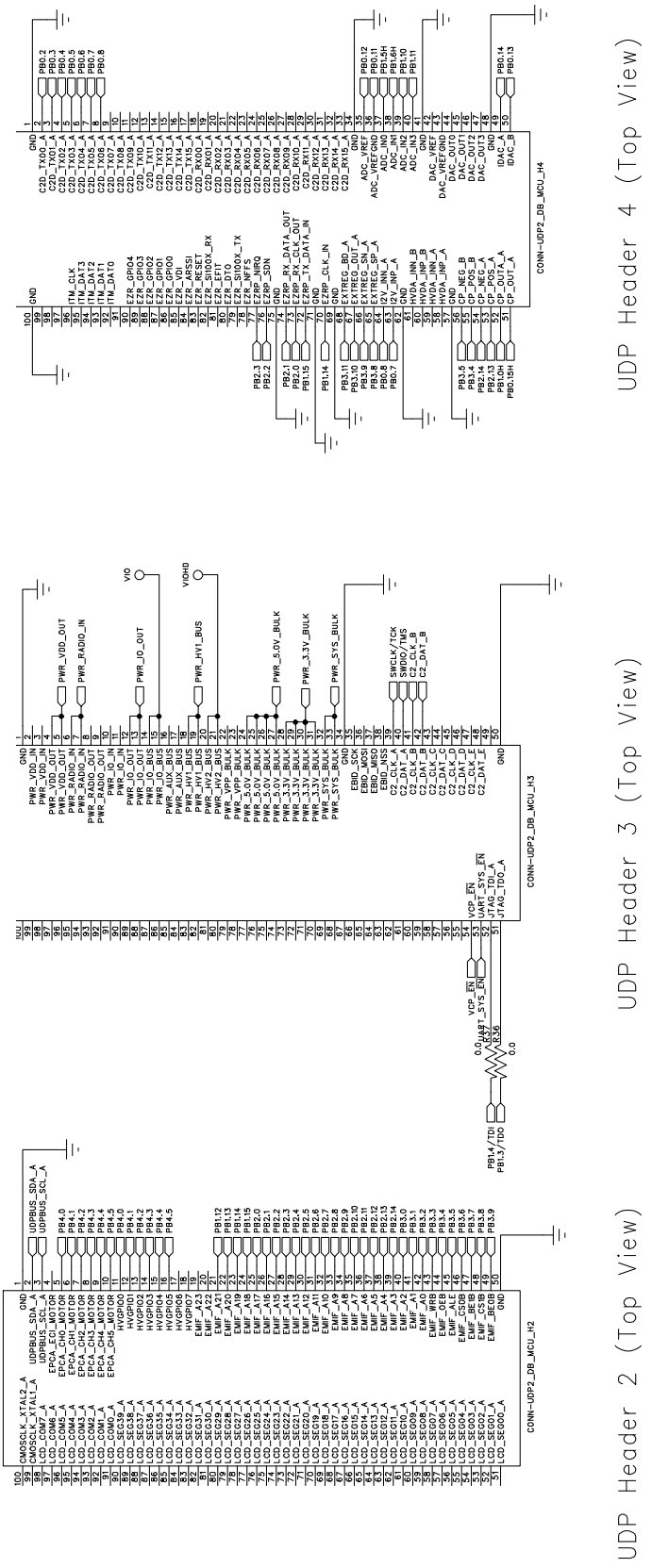

Figure 14. SiM3C1xx UDP MCU Card Schematic (6 of 6)

7. Bill of Materials

Table 6. UDP SiM3C1xx Card Bill of Materials

Reference	Part Number	Source	Description
U1	SiM3C167-A-GQ	Silicon Labs	MCU, TQFP80-14X14, RoHS
U2	C8051F990-GM	Silicon Labs	MIXED SIGNAL, MCU, QFN20-3X3, RoHS
U3-4	SN74AVC4T245RGYR	Texas Instruments	IC, BUS TRANSCVR, 4BIT, 16QFN, RoHS
U7	LM2937IMP-5.0/NOPB	National Semiconductor	VOLTAGE REG-LDO, 5.0V, 500mA, SOT223, RoHS
C5-11, C17, C20, C22-25, C27	C0603C104J3RACTU	Kemet	CAP, 0.1 µF, X7R, CERAMIC, 0603, 25V, ±5%, OR EQ, RoHS
C4	C1608X7R1C105K	TDK Corporation	CAP CERAMIC, 1.0UF, X7R, 0603, 16V, ±10%, OR EQ, RoHS
C3, C12, C15, C18, C21	ECJ-1VB0J475M	Panasonic - ECG	CAP, 4.7 µF, X5R, CERAMIC, 0603, 6.3V, ±20%, OR EQ, RoHS
C13, C16	EMK212BJ475KG-T	Taiyo Yuden	CAP, 4.7 µF, X5R, CERAMIC, 0805, 16V, ±10%, OR EQ, RoHS
C1-2, C26			CAP, NO POP, 0603, OR EQ, RoHS
J1-4	FX8-100P-SV1(91)	Hirose Electric Co Ltd	CONN, HDR, 100POS, .6 mm, GOLD, SMD, RoHS
U5	CP2103	Silicon Labs	SINGLE-CHIP USB TO UART BRIDGE, QFN28, RoHS
J31	FTSH-105-01-F-D-K	Samtec Inc	CoreSight 10 Debug Header
J32	FTSH-110-L-D-K	Samtec Inc	CONN, HDR, SHRD, 0.050"(1.27 mm) PITCH, 20 PINS [2X10], OR EQ, RoHS
D1, D3	BAT54C-G	Comchip Technology	DIODE, Schottkey DUAL CC, 200 mA, 30 V, SOT23,RoHS
D2, D6	SP0503BAHTG	Littlefuse	TVS AVAL DIODE ARRAY, 3 CH, SOT143, RoHS
Q1-6	DMN2075U-7	Diodes Inc	MOSFET, PWR N-CHAN, 20 V, 4.2A, SOT-23, OR EQ, RoHS
J15, J11-12, J14, J17, J50-53	PBC02SAAN	Sullins Connector Solutions	STAKE HEADER, 1X2, 0.1"CTR, GOLD, OR EQ, RoHS
J14, J16	PBC02DAAN	Sullins Connector Solutions	STAKE HEADER, 1X2, 0.1"CTR, GOLD, OR EQ, RoHS
J18	PBC03SAAN	Sullins Connector Solutions	STAKE HEADER, 1X3, 0.1" CTRS, OR EQ, RoHS
J20	PBC04SAAN	Sullins Connector Solutions	STAKE HEADER, 1X4, 0.1" CTRS, OR EQ, RoHS, NO POP
J9	PBC04DAAN	Sullins Connector Solutions	STAKE HEADER, 2X4, 0.1"CTR, OR EQ, RoHS
J8	PBC07DAAN	Sullins Connector Solutions	STAKE HEADER, 2X7, 0.1" CTR, GOLD, OR EQ, RoHS
J5-7	PBC09DAAN	Sullins Connector Solutions	STAKE HEADER, 2X9, 0.1' CTR, GOLD, OR EQ, RoHS

Table 6. UDP SiM3C1xx Card Bill of Materials (Continued)

Reference	Part Number	Source	Description
DS1	LTST-C190TBKT	Lite-On Inc	LED 468NM, BLUE, SMT0603, OR EQ, RoHS
DS2-3	SML-LX0603IW-TR	Lumex Opto / Components Inc	LED, RED DIFF, 635NM, SMT0603, OR EQ, RoHS
DS4	LY L29K-H1K2-26-Z	OSRAM Opto Semiconductors Inc	LED, YELLOW, 591NM, SMD0603, 1.8 V, OR EQ, RoHS
R15	RV100F-30-4K1B-B10K-B301	Alpha (Taiwan)	POT, 10K, THUMBWHEEL LINEAR, 0.03W, ±20%, OR EQ, RoHS
R1-2, R5-6, R16-21, R23-31, R34-37, R40, R44, R48	RC0603JR-070RL	Yageo	RES, 0.0, SMT, 0603, 1/10W, ±5%, OR EQ, RoHS
R32-33	ERJ-3EKF1501V	Panasonic - ECG	RES 1.50 kΩ, SMT, 0603, 1/10W, ±1%, OR EQ, RoHS
R11, R14	ERJ-6ENF1003V	Panasonic - ECG	RES, 100 k, SMT, 0805, 1/8W, ±1%, OR EQ, RoHS
R13, R22, R41-42, R45-46	RC0603JR-071KL	Yageo	RES, 1.0 kΩ, SMT, 0603, 1/10W, ±5%, RoHS
R8-9	RC0805JR-07330RL	Yageo	RES, 330 Ω, SMT, 0805, 1/8W, ±5%, OR EQ, RoHS
R7	ERJ-3EKF4751V	Panasonic - ECG	RES, 4.75 kΩ , SMT, 0603, 1/10W, ±1%, OR EQ, RoHS
R10, R12	ERJ-6ENF4751V	Panasonic - ECG	RES, 4.75 kΩ, SMT, 0805, 1/8W, ±1%, OR EQ, RoHS
R3-4, R38-39, R43, R47, R49			RES, NO POP, SMT, 0603, OR EQ, RoHS
SW4	OS102011MS2QN1	C&K Components	SWITCH SLIDE MINI, SPDT, PCB MNT, OR EQ, RoHS
SW5	EG6201	E-Switch	SWITCH, SLIDE 6PDT, RT ANG, L=4MM, OR EQ, RoHS
SW1-3	EVQ-PAD04M	Panasonic - ECG	SWITCH, LIGHT TOUCH, 130GF, 6 mm SQ, RoHS
H1	1729160	Phoenix Contact	TERM. BLOCK, 5.08 mm CTRS, 6 POS, RoHS
J10	54819-0519	Molex Inc	CONN, USB MINI RECEPT, 5POS RT ANG, TYPE B OR EQ, RoHS
S1			PCB W_CHEVRON SLIDER SOLID, RoHS
Y2	ABS07-32.768KHZ-7-T	Abracon Corporation	CRYSTAL, 32.76 kHz, 7PF, SMT, RoHS
Y1		ECS Inc	HC46/9 CRYSTAL, NO POP, OR EQ, RoHS
P1	RAPC722X	Switchcraft Inc	CONN, POWERJACK MINI.08" RA PC MNT, RoHS