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1 Introduction

PI5USB30216D provides a cost-effective solution for USB 2.0 Type-C connector applications. PI5USB30216D detects the plug-in orientation of the cable at a Type-C connector. It supports host mode, device mode and dual role mode ports with automatic configuration based on the voltage levels detected on CC pins. It is a fully-integrated solution with ultra-low power dissipation. PI5USB30216D enters power-saving mode when EN pin is pulled low to GND through an internal resistor.

PI5USB30216D supports both pin and I2C control base on ADDR pin setting. It allows the system choose between pin control and I2C control mode. In pin control mode, the PORT input pin determines the port setting in which host, device or dual-role port can be selected. In host mode, the system can monitor ID pin to know the connector status while default current mode is set. Systems running in device mode can monitor system VBUS for connector status as well as OUT1 and OUT2 pins for host's charging profile capability. Enabling I2C control mode allows higher flexibility for port control and communications through registers read/write in PI5USB30216D. There is also flexibility to support Default, 1.5A and 3A current modes. An interrupt signal for indicating changes with the I2C registers is sent to the master to notify the system any change in the Type-C connector while in parallel the system can still monitor ID pin.

This user manual describes the components and the usage of PI5USB30216D Demo Board Rev.A.

2 Overview

Figure 1 is the block diagram of Pericom PI5USB30216D demo board and figure 2 shows the demo board layout. A USB-C cable can be connected between the USB-C receptacle connector (J1) on PI5USB30216D demo board and another USB-C device. A USB-C to USB-A cable can be connected between J1 and a USB host, such as PC. A USB-C to USB-A receptacle adapter can be connected between J1 and a USB device, such as USB flash drive. One USB micro-AB connector (J2) is used to connect mobile phones/notebook/tablet/PC to transmit USB2 data to/from J1.

Slide switch at reference SW2 is used to set control mode (GPIO/I2C) and operating mode (Source/Sink/DRP) of PI5USB30216D.

Slide switch at reference SW3 is used to provide optional pull-up resistor (to VDD) or LED indicator to SDA/SCL/INTB/ID pins of PI5USB30216D. The processor can connect to SDA/SCL/INTB/ID/EN pins through pin header JP21/JP22/JP23/JP24/JP16.

+5V can be employed to the demo board via VDD_EXT header pin (JP2) to power PI5USB30216D. VBUS can be connected to the USB-C receptacle connector via VBUS_EXT header pin (JP4).

PI5C3257 at reference U1 is added to the demo board to manually select whether transmitting USB2 D+/D- between USB-C connector (J1) and USB micro-AB connector (J2) or between J1 and another USB micro-AB connector (J3).

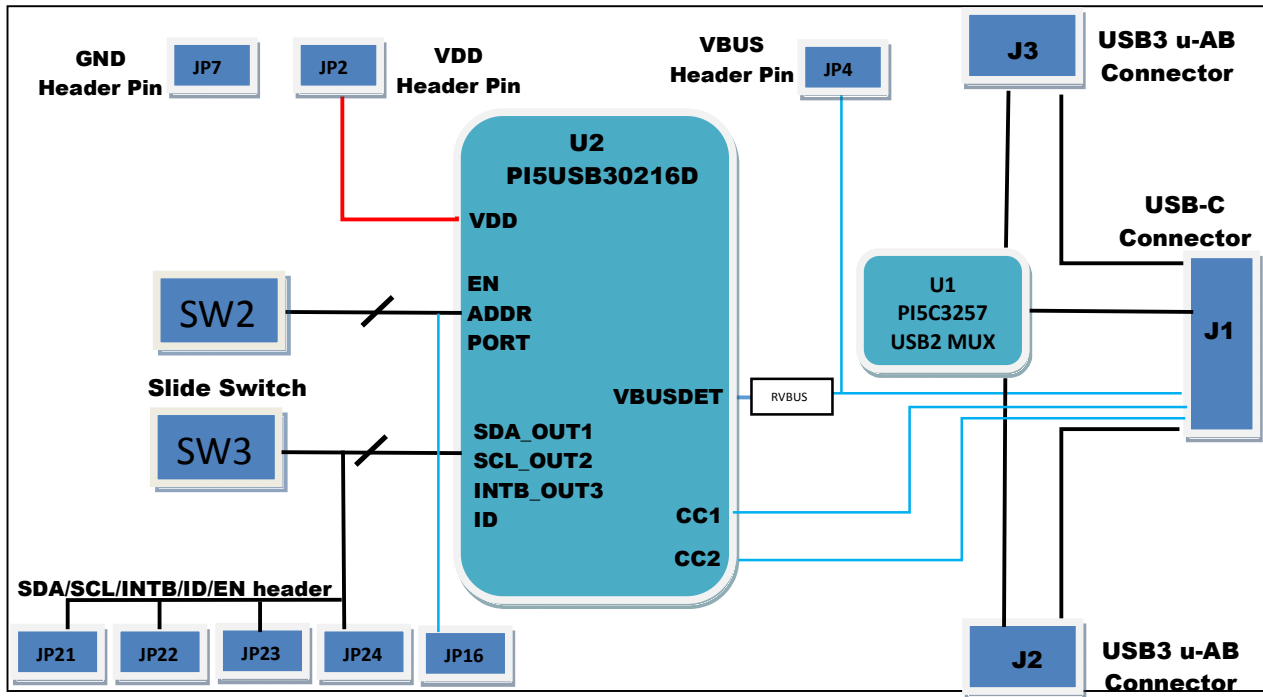


Figure 1: Block Diagram of PI5USB30216 Demo Board Rev.A

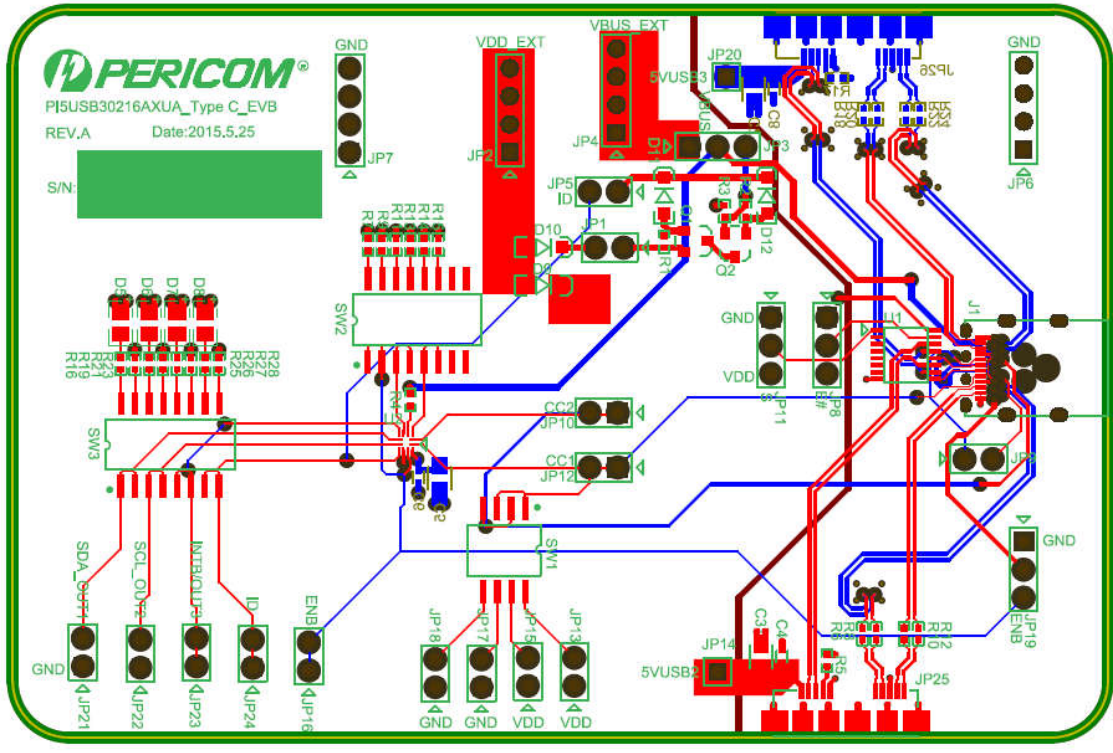
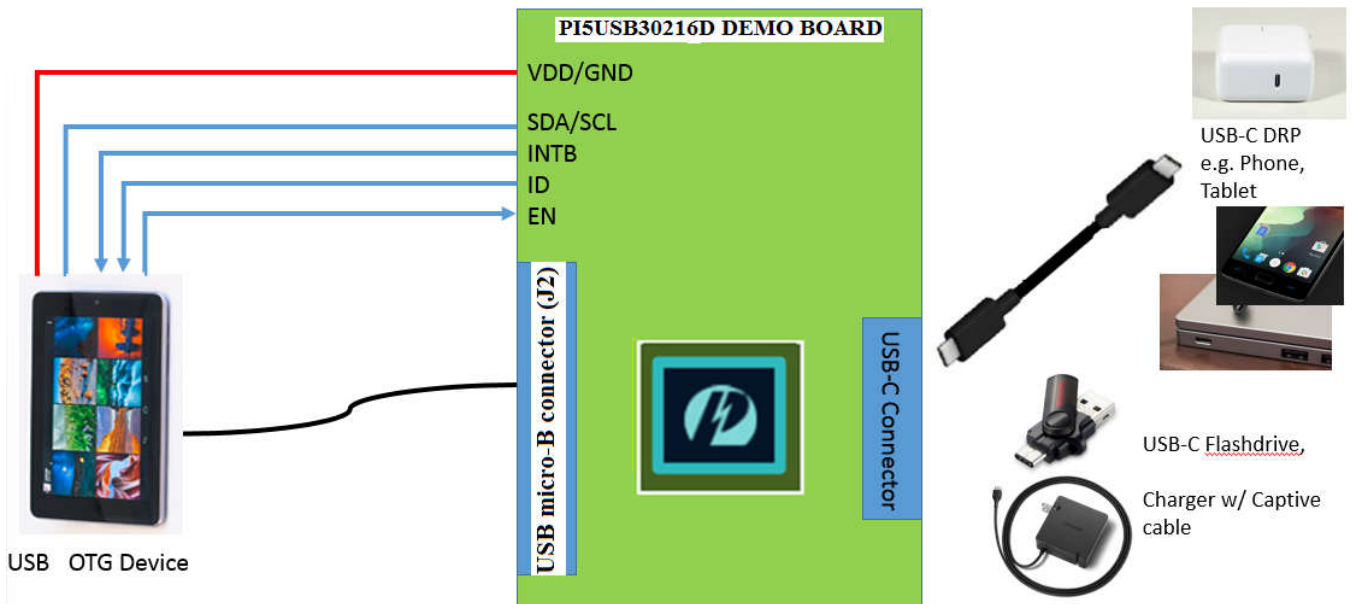


Figure 2: Layout of PI5USB30216 Demo Board Rev.A

3 Quick Start

To start-up the PI5USB30216D demo board rev.A in I2C DRP mode, complete the following steps:

1. Leave JP1, JP5 open to disable on-board VBUS switch.
2. Short pins 1 and 2 of JP3 to connect VBUS_EXT (JP4) to USB-C receptacle connector (J1).
3. Short pins 1 and 2 of JP8 and pins 1 and 2 of JP11 to allow USB2 data transmission between USB-C receptacle connector (J1) and USB micro-AB connector J2.
4. Short pins 1 and 2 of JP19.
5. Leave pins 2 of SW2 open and short pins 1 of SW2 to enable PI5USB30216D.
6. Leave pins 3 of SW2 open and short pins 4 of SW2 to select I2C mode (I2C slave address 0x1D).
7. Leave all pins of SW1 open.
8. Leave pins 5 and 6 of SW2 open to set DRP mode upon power-up.
9. Leave pins 1, 3, 5 and 7 of SW3 open.
10. Short pins 2 of SW3 if on-board SDA pull-up resistor is needed.
11. Short pins 4 of SW3 if on-board SCL pull-up resistor is needed.
12. Short pins 6 of SW3 if on-board INTB/OUT3 pull-up resistor is needed.
13. Short pins 8 of SW3 if on-board ID pull-up resistor is needed.
14. Connect VBUS to VBUS_EXT header pin (JP4).
15. Connect a USB2 OTG device, e.g. mobile phone, to the USB micro-AB connector J2.
16. Connect 5V to VDD_EXT (JP2).
17. Use MPU or I2C tool to read the detection results in registers. Turn-on OTG mode and drive VBUS when a Sink/USP is detected.



If the system will provide VBUS through the USB micro-AB connector J2. Please connect JP14 to JP4.

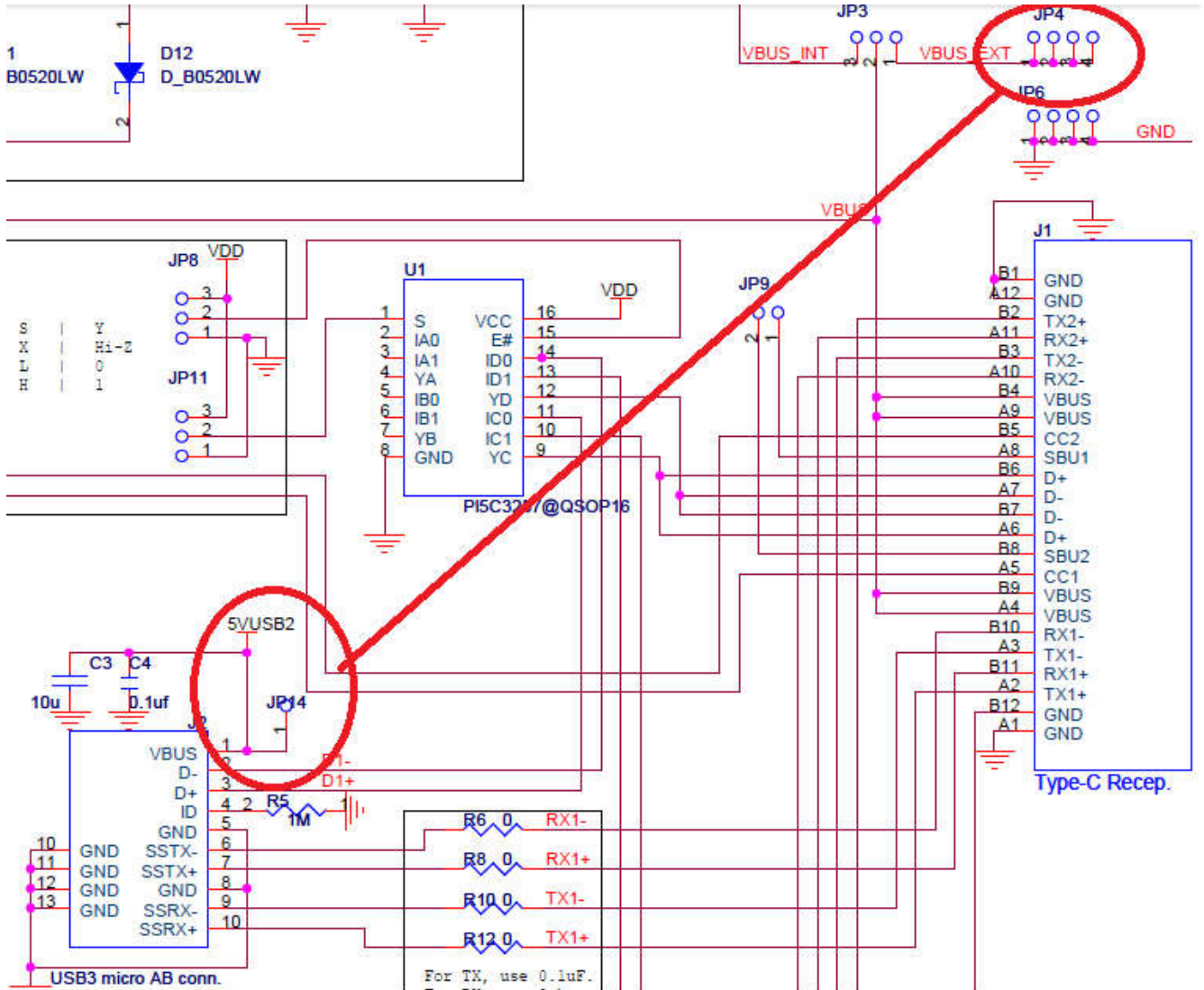


Figure 4: VBUS Power Supply via USB micro-AB connector of PI5USB30216D Demo Board Rev.A

4.4 Disable/Low Power State

PI5USB30216D can be disabled by setting EN pin to a low voltage level.

SW2-1	PI5USB30216D
ON	Enabled/Active Mode
OFF	Disabled/Low Power State

Table 3: EN Setting of PI5USB30216D Demo Board Rev.A

References

(1) Universal Serial Bus Type-C Cable and Connector Specification Version 1.1, April 3, 2015

5 Appendix A: Demo Board Schematic



PI5USB30216_TYP
E-C_EVB_RevA.pdf

For clearer view of schematic diagram, please click the PDF file icon on the right.

