

PI5USB2543 PI5USB2543 (DB) EVB Rev.A User Manual by Noyes Mok

Introduction

Pericom's PI5USB2543 is the USB sleep & charge switch with Vbus switch control function which provides multimode supports auto-detection and auto-switching between modes by detecting correctly plugged in device. The PI5USB2543 evaluation board (EVB) is designed to demonstrate the benefits, performance and key features of PI5USB2543. This user manual describes the usage of this EVB and it will be divided into following sections:

- Overview
- Quick start
- Board Design information
 - PI5USB2543 EVB Schematic

Overview

Figure 1a & 1b are the block diagrams of Pericom PI5USB2543 Evaluation board (EVB) and Figures 2(a) and (b) is the top and bottom view of EVB board. There is an USB plug connectors (J1) which is used to connect PC's USB port and the USB receptacle connector (J2) is used to connect mobile devices. The MODE setting in SW2 is used to select the normal USB operation and simulate the Standby or Sleep mode (S3) of the PC. The LED D1 is used to show whether the circuit is over-current or over-temperature and LED D2 is used to show whether the device is plug in under auto detect mode. PI5USB2543 operation required +5V which can use supplied by the external power supply or the USB power from PC. If use external power supply, +5V need to apply at JP1; if use the power from PC, JP1 and JP3 need to short together.

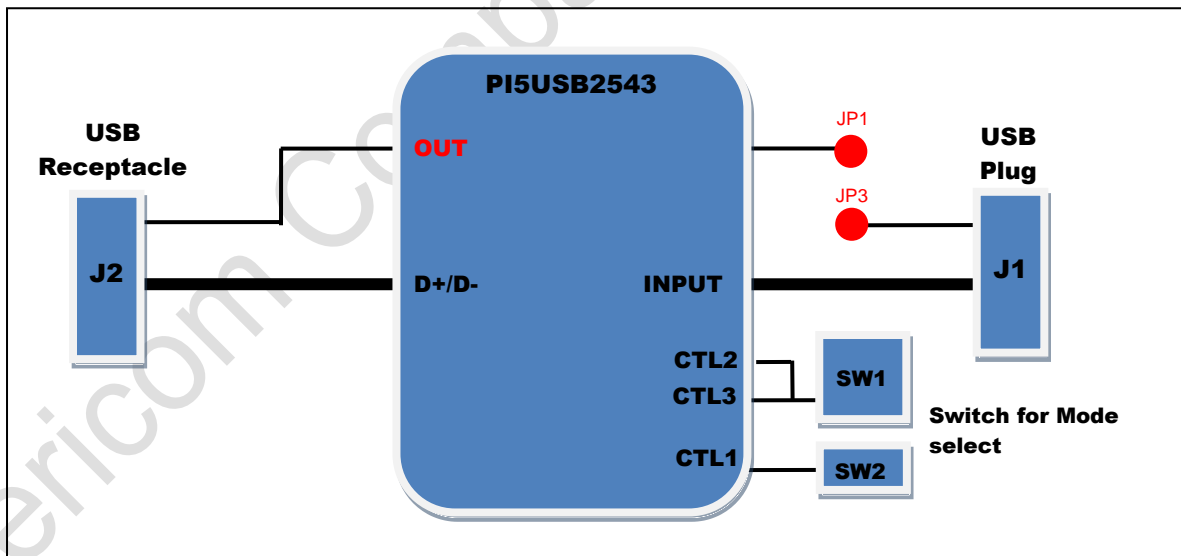


Figure 1a, block diagram of PI5USB2543EVB



Figure 2(a), top view of PI5USB2543EVB

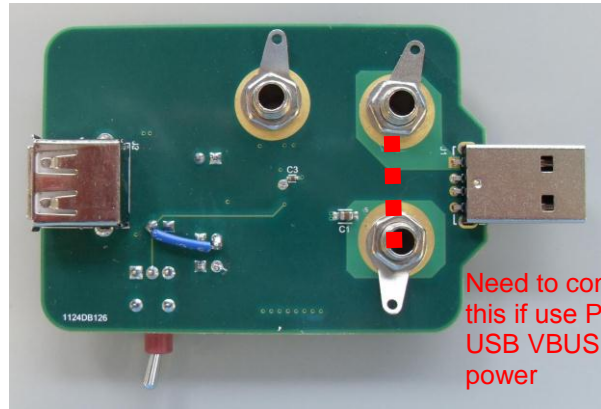


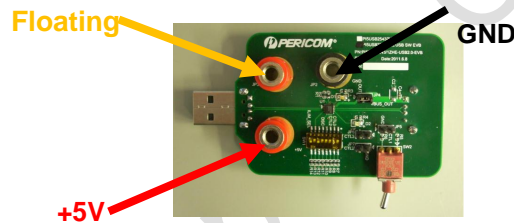
Figure 2(b), bottom view of PI5USB2543

Need to connect this if use PC's USB VBUS power

Quick Start

To start-up the PI5USB2543EVB, complete the following steps:

1. Choose whether the +5V is supplied by external power supply or PC's USB port
If use external power supply:



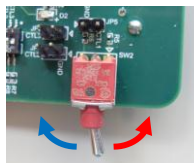
If USB power from PC:

Short JP1 and JP3 together



2. Check the head pin status and SW1 and SW2 setting follow Table 1
3. EVB USB connector J1 plugged into PC's USB connector.
4. For Normal USB operation, SW2 switch to LEFT side (SB# = 1 - Normal USB mode)
For Auto sleep and charge mode on mobile device charging, SW2 switch to RIGHT side (SB# = 0 - Auto sleep and charge mode)

Normal USB mode



Auto Sleep & Charge

5. Power up the PC
6. Plug the mobile device into EVB USB connector J2
Switches & Header pin are set as defaulted on EVB.

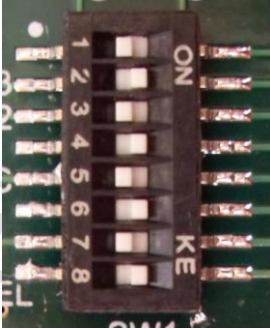
Switch and Header pin #	Pin name for PI5USB2543	Switch status		Remark
JP1	+5V	Apply +5V if use external power supply (short JP1 and JP5 if use USB power from PC)		
JP2	GND			
JP3	Vbus from PC	Floating if use external power supply (short JP1 and JP5 if use USB power from PC)		
JP4	OUT	Short		
JP5	CTL1	Floating		
JP6	CTL2	Floating		
JP7	CTL3	Floating		
SW1 – 1	CTL3	SW1 – 1 OFF		<p>H = Normal operation L = IC off</p> <p>L= Current limit controlled by external resistor @ ILMIO H = Current limit controlled by external resistor @ ILM11</p>
SW1 – 2		SW1 – 2 ON		
SW1 – 3	CTL2	SW1 – 3 OFF		
SW1 – 4		SW1 – 4 ON		
SW1 – 5	DSC	SW1 – 5 OFF		
SW1 – 6		SW1 – 6 ON		
SW1 – 7	ILIM_SEL	SW1 – 7 OFF		
SW1 – 8		SW1 – 8 ON		
SW2	Configure mode	RIGHT => CTL[1:3] = 011 (Auto detect mode) LEFT => CTL[1:3] = 111 (Normal USB mode)		

Table 1, Switch & Header pin settings for EVB

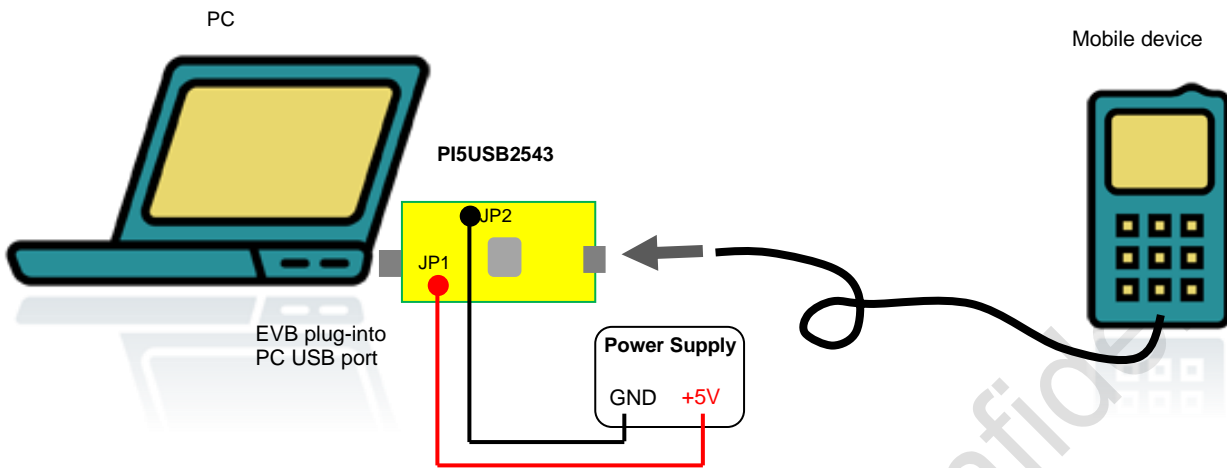


Figure 3, Connection of PI5USB2543EVB

Detail Description

The current limit control, functionality of header pins, switch are detail described in this section.

Current Limit

Two current limit values can be set by the external resistor on ILIM0 & ILIM1 which is controlled by ILIM_SEL

R Value for ILIMx	Current limit
50 k Ω	900mA
33 k Ω	1700mA
26 k Ω	2000mA
22 k Ω	2400mA
18 k Ω	2900mA
16 k Ω	3200mA

Functionality of Header Pins

Header Pin	Description
	PI5USB2543 / PI5USB2543A
JP4	JP4 Pin 1 = OUT pin of PI5USB2543 JP4 Pin 2 = Vbus pin of USB receptacle connector
JP5	JP5 Pin 1 = GND JP5 Pin 2 = CTL1 use for signal monitoring
JP6	JP6 Pin 1 = GND JP6 Pin 2 = CTL3 use for signal monitoring
JP7	JP7 Pin 1 = GND JP7 Pin 2 = CTL2 use for signal monitoring

Switches Setting

Mode control truth table

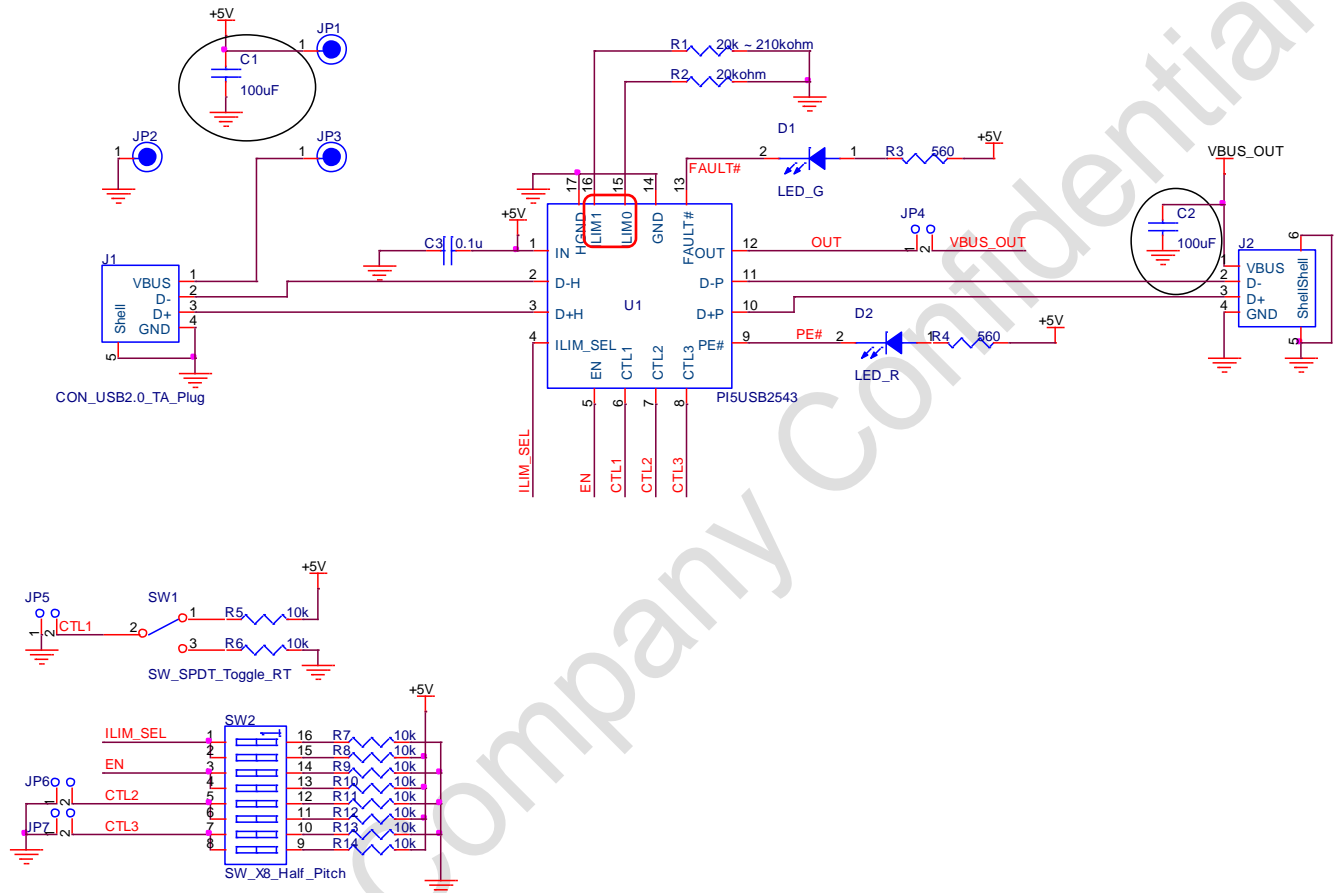
SW2 CTL1	SW1 – 3 & 4 CTL2	SW1 – 1 & 2 & CTL3	Feature
0	0	0	IC power down; All I/O Hi-Z
0	0	1	DCP/ Auto detect without LS USB keyboard/mouse pass through disable
0	1	0	D±P Connects to D±H
0	1	1	DCP/ Auto detect with LS USB keyboard/mouse pass through disable
1	0	0	DCP, BC Specification 1.1 only
1	0	1	Apple mode charger supply up to 1A only
1	1	0	SDP enabled
1	1	1	CDP enabled

Current limit threshold Control Table (ILIM_SEL)

SW1 – 7	SW1 – 8	Feature
1	0	Current limit is controlled by External Resistor at ILIM0
0	1	Current limit is controlled by External Resistor at ILIM1

Board Design Information:

➤ PI5USB2543 EVB Schematic



➤ 100uF should be added @ input and output of the EVB

BOM

Item	Quantity	Reference	Part
1	2	C1,C2	100uF
2	1	C3	0.1u
3	1	D1	LED_G
4	1	D2	LED_R
5	3	JP1,JP2,JP3	Banana Jack
6	4	JP4,JP5,JP6,JP7	2x1 Pin Header
7	1	J1	CON_USB2.0_TA_Plug
8	1	J2	CON_USB2.0_TA_Rec
9	1	R1	20k ~ 210kohm
10	1	R2	20kohm
11	2	R3,R4	560ohm
12	10	R5,R6,R7,R8,R9,R10,R11,R12,R13,R14	10kohm
13	1	SW1	SW_SPDT_Toggle_RT
14	1	SW2	SW_X8_Half_Pitch
15	1	U1	PI5USB2543