USB Isolator workshop – VHS, April 2014

Thanks for coming out tonight for the isolator SMD workshop. This is the 6th SMD workshop I've run at vhs and it's a easy one. With these notes you should have also received a bag of components and photo(s). Please read this right through before starting.

First a word on safety. You're using lead based solder. Lead is poisonous. Please don't consume food or drink while you're working and wash your hands with soap afterwards. Please use some form of eye protection while soldering, solder splatters can cause permanent damage to your eyes.

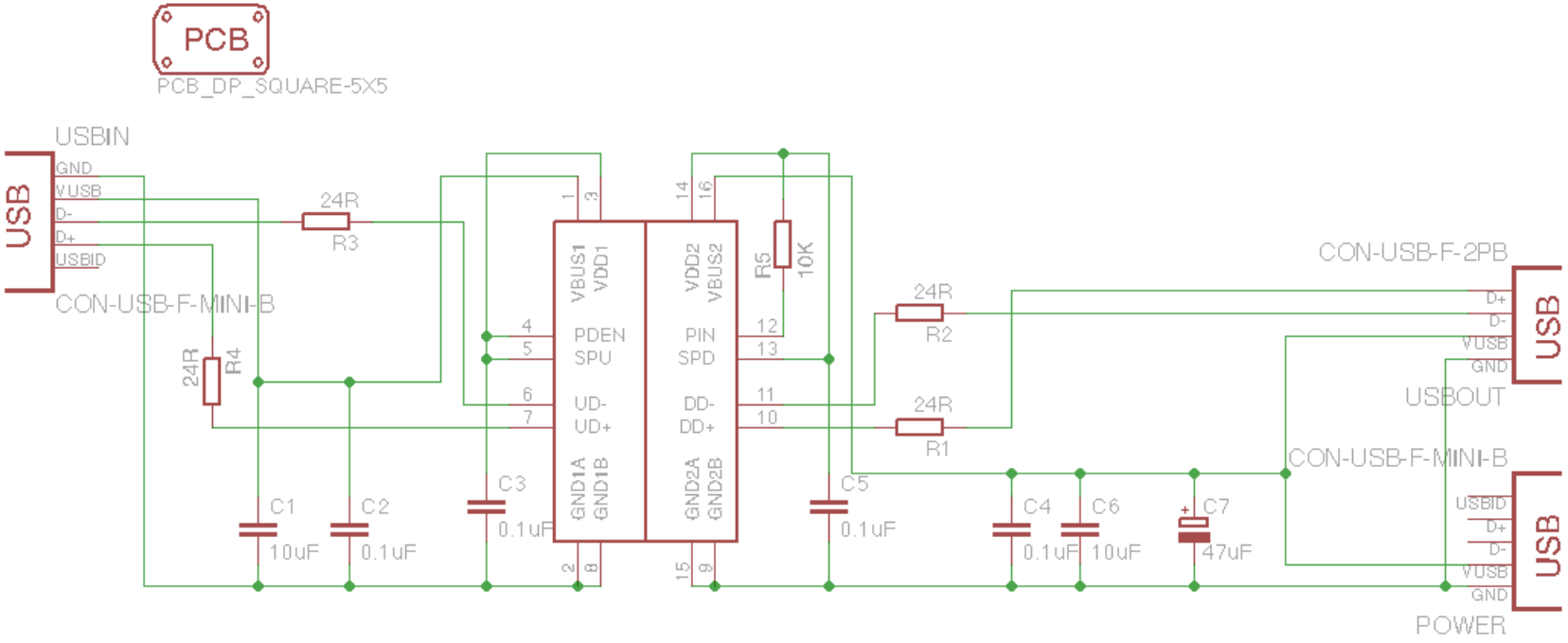
To make identifying the components easier many of them are colour coded. The colours are shown in the parts list later in these notes along with the component values and their schematic reference. Using the colour codes, the photo(s) and the markings on the pcb silkscreen you will match up the components with their location and solder them in place. A suggested order of assembly is given below, this is based on height of the components. Most of the components can be installed in either orientation, exceptions to this are noted in both the order of assembly below and the parts list on the reverse.

An image of the schematic can be seen below.

Some kits have v1.0 pcbs, some have v1.1, the only difference is the white silk screen text.

If you haven't looked the suggested youtube video, please do so now. It shows a technique I suggest for mounting SMD components - http://www.youtube.com/watch?v=P_6XJR3D27Y or search for "I (heart) SMT vancouver.hackspace.ca".

This board is a bare bones isolator. You need to be sure that you are not connecting the connector marked POWER to the computer, it needs to go to an external power source.



Suggested order of assembly

- R4, R3, C3, C2, C1
- R1, R2, R5, C5, C4, C6
- C7 (check polarity in photo)
- USBIN, POWER usb jacks – use a little solder as possible on the signal connectors to avoid shorts. Consider using some flux from a pen.
- IC1 (check polarity in photo)
- USBOUT – you will need to push the connector down to ensure it is flush with the board.

Parts list

Qty	Value	Colour	Parts	Description
2	10uF	Black	C1, C6	CAPACITOR, European symbol
4	0.1uF	No colour/White	C2, C3, C4, C5	CAPACITOR, European symbol
1	47uF	Large yellow part	C7 *	POLARIZED CAPACITOR, European symbol
1	ADUM3160BRWZ		IC1 *	
2	CON-USB-F-MINI-B		POWER, USBIN	USB Female connector
4	24R	Red	R1, R2, R3, R4	RESISTOR, European symbol
1	10K	Blue	R5	RESISTOR, European symbol
1	PCB_DP_SQUARE-5X5		USB-ISOLATOR	Dangerous Prototypes Standard Square PCB sizes
1	CON-USB-F-2PB		USBOUT	USB Female connector with 2 body pins

* check polarity

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V1.1