

Project Documentation

Commodore 1541 VIA/Parallel-Adapter (low P.)

Project number: 149

Revision: 0

Date: 19.08.2020

Commodore 1541-II VIA/Parallel-Adapter Rev. 0

Module Description

Introduction

This adapter board serves as a VIA (6522) adapter for a parallel connection for SpeedDOS in conjunction with a suitable ribbon cable and the User Port Parallel-Adapter (Project 150).

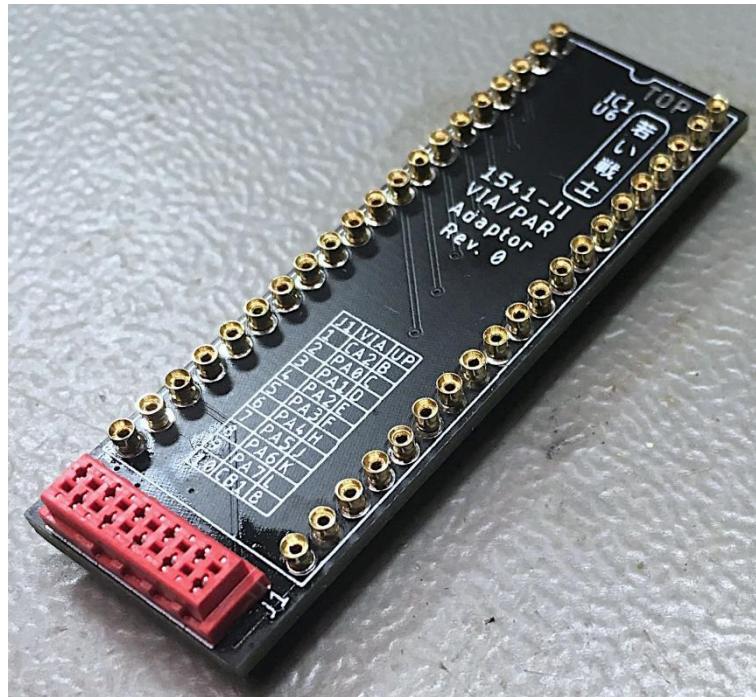


Figure 1: Commodore 1541-II VIA/Parallel-Adapter

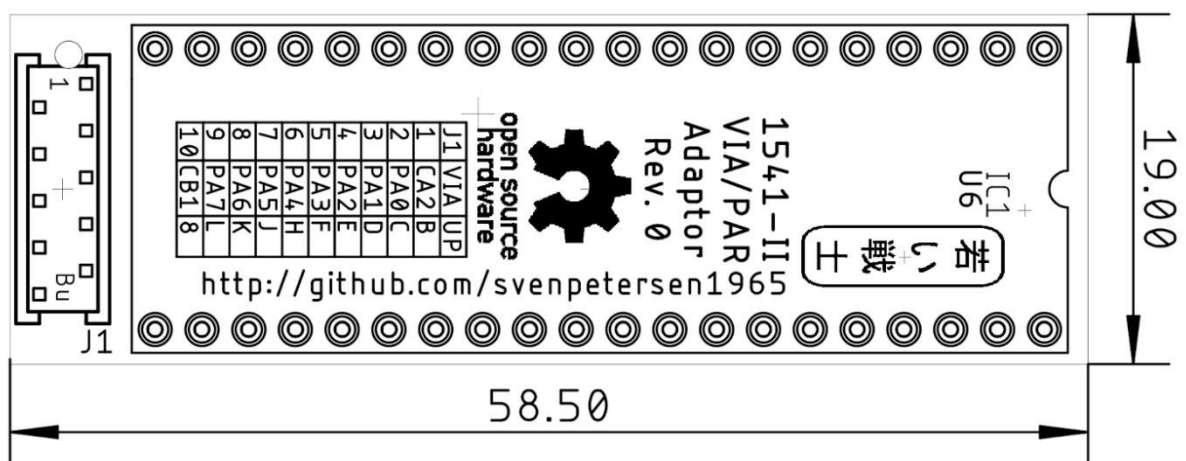


Figure 2: Dimensions

The microMatch connector (10 way) has the following pinout:

VIA (pin)	J2	J2	VIA (pin)
CA2 (39)	1	2	PA0 (2)
PA1 (3)	3	4	PA2 (4)
PA3 (5)	5	6	PA4 (6)
PA5 (7)	7	8	PA6 (8)
PA7 (9)	9	10	CB1 (18)

The via for the parallel data transmission in a 1541 is **U6**.



Figure 3: VIA-Parallel-Adapter installed in a 1541-II

Installation

Four issues have to be taken care of, when installing the VIA-Parallel-Adapter:

- The VIA (U6) should be socketed
- The adapter has to be oriented properly (align the notch of the IC, the adapter and the socket on the 1541-II PCB)
- The pins of microMatch connector on the solder side must not make contact with any component leads.
- Pin 2 (PA0) of U6 is connected to GND, which is not required for proper operation (not even with the original Kernal!). **This prevents a proper function** of the parallel adapter. Pin 2 must either be cut off, filed down (a bit) and insulated (Figure 4) or the trace between pin 1 and pin 2 of U6 must be cut.



Figure 4: Shortened pin 2 and insulated socket

It is a good idea to secure the ribbon cable with an adhesive cable post and a cable tie for strain relief, after the configuration is fully functional. A ribbon cable exiting the case through the breakout for the fuse is pretty common, I did not experience any problems with it, but one person reported a possible source of problems, here.

An alternative way of exiting the case is the left side of the case. A breakout for the ribbon cable has to be filed into the case, though.

The cable making with IDC connectors does not require any special tools, except a (small) vice for compressing the connector after the ribbon cable was inserted properly. In case you don not feel comfortable with this work, consult this write up about cable making: http://tech.guitarsite.de/cable_making.html#Ribbon%20Cables

Assembly

The low-profile property of the adapter requires precision round pin sockets. They are usually pretty hard to source and expensive. In July 2020, they were about \$10 plus shipping for 50 each on Ebay USA. It is pretty cheap and easy to salvage them from a precision pin DIP-40 socket (40 pin sockets for less than \$1!). The pin sockets can be popped out of a precision pin socket by applying slight pressure from the bottom side on the “shoulders” of the pin socket with a suitable tweezer (Figure 5). This takes less than 2 minutes per 40 pins.



Figure 5: Salvaging the pin sockets

For proper soldering, the pin sockets need to be aligned. This is accomplished by plugging each on the pin side of a 2nd DIP-40 precision round pin socket (Figure 6). It has to be checked, that all pins are fully inserted. The pins can now be inserted into the solder pads of the PCB from the top side.



Figure 6: Alignment of the pin sockets

After making sure, that everything is straight (Figure 7), the pins can be soldered from the solder side.

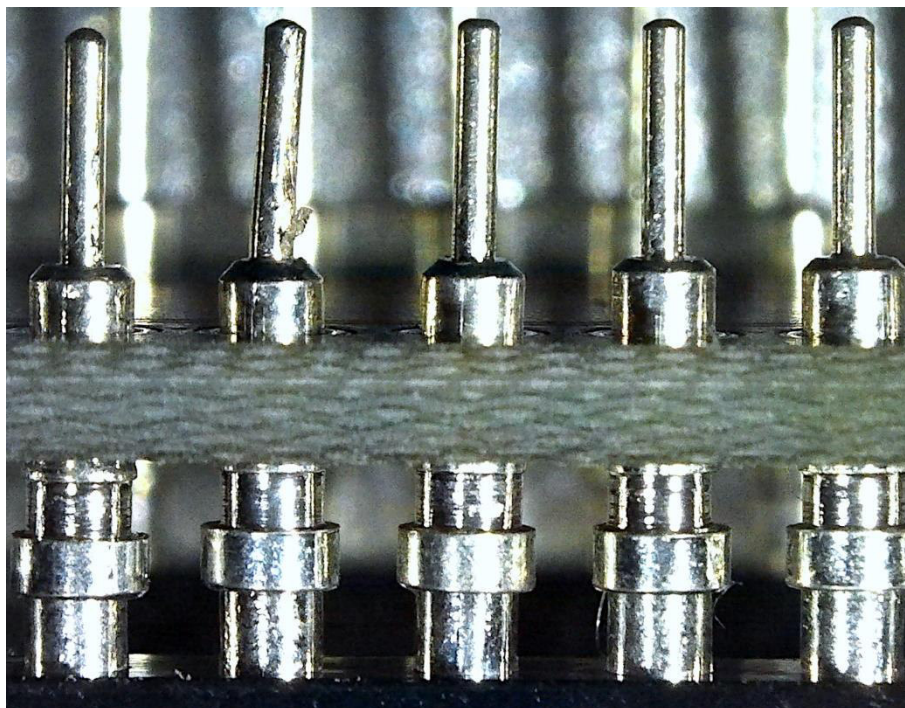


Figure 7: Pin sockets aligned in PCB before soldering

Just add very little solder, so that it just coats the gap between pin socket and solder pad and a meniscus is formed. A smooth, concave meniscus indicates a good wetting (Figure 8).

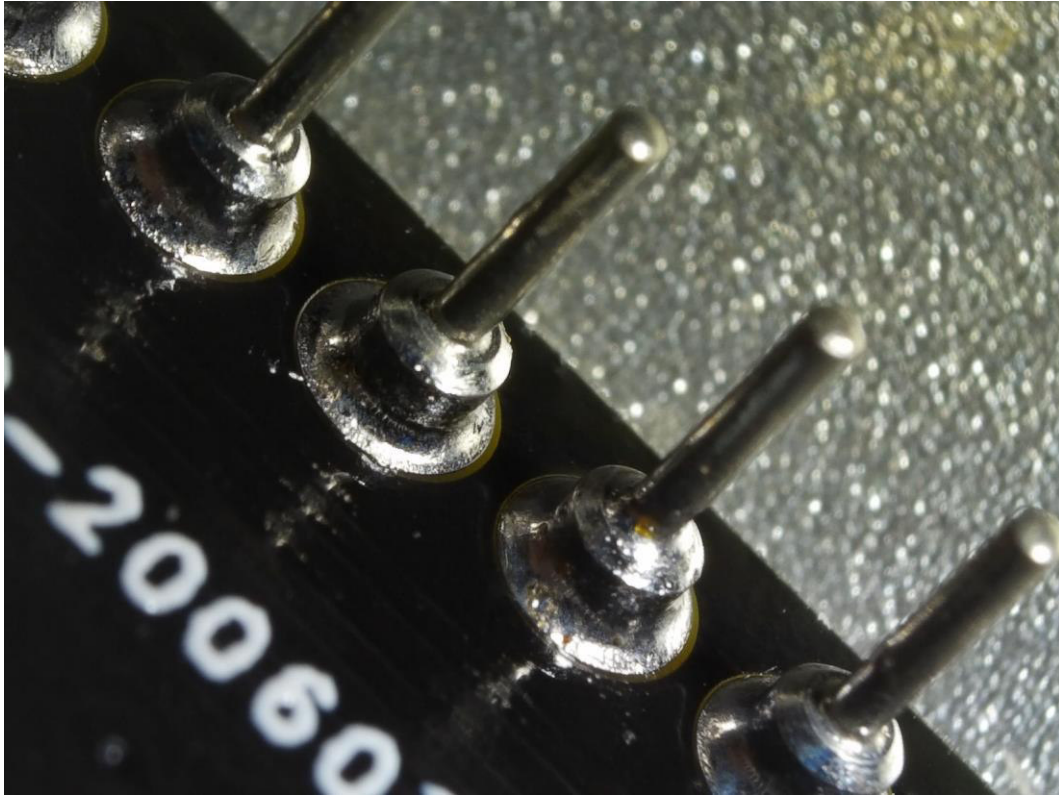


Figure 8: Amount of solder and meniscus of the bottom pads

It is desired that the solder is rising through the pad and also forms a meniscus on the component side (Figure 9). Care must be taken, that the shoulder of the pin sockets is not coated with solder.



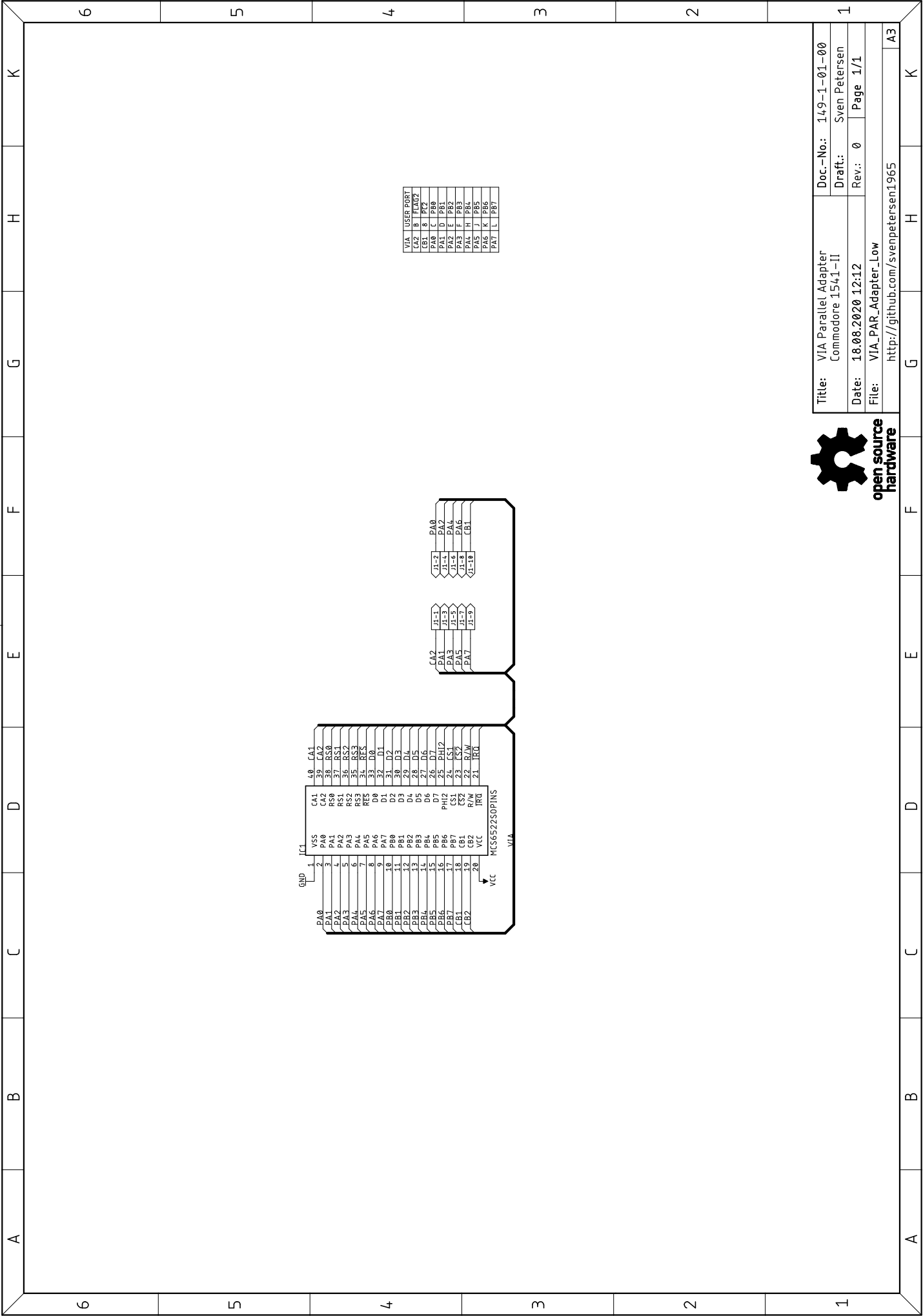
Figure 9: Solder meniscus on the top solder pads

Finally, the microMatch connector can be soldered.

Revision History

Rev. 0

- Prototypes fully functional. For testing consult the documentation of the User Port/Parallel Adapter (Project 150).



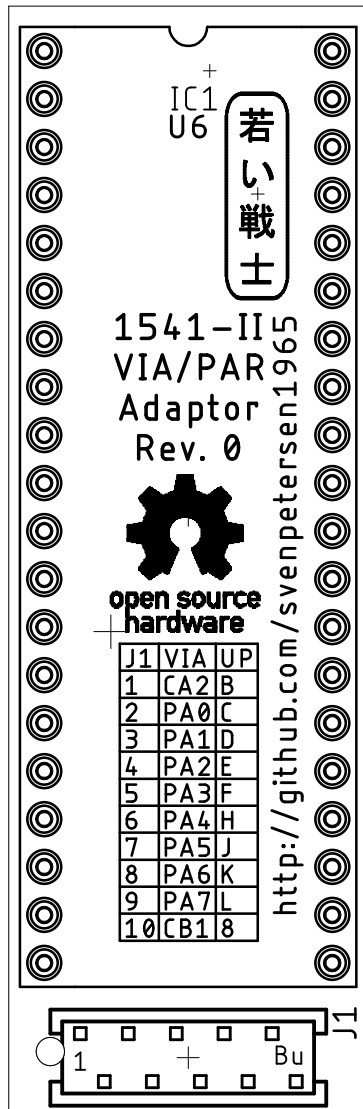
VIA	USER PORT
PA0	PA0
PA1	PA1
PA2	PA2
PA3	PA3
PA4	PA4
PA5	PA5
PA6	PA6
PA7	PA7



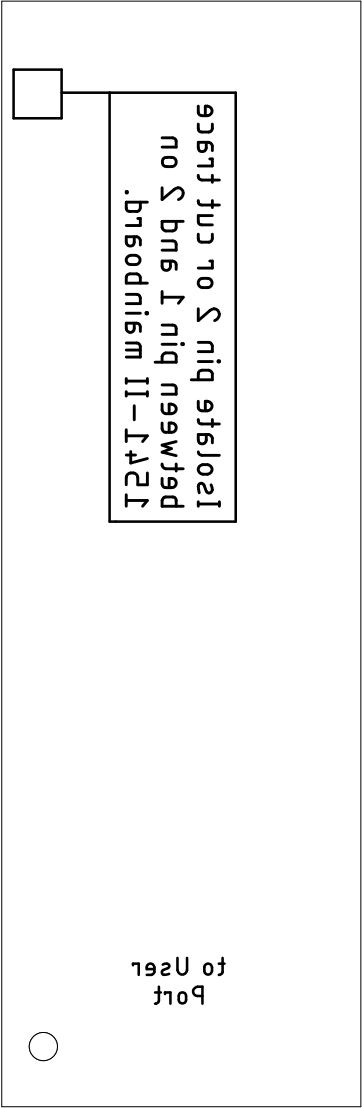
open source
hardware

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Date: 18.08.2020 12:12	Draft: Sven Petersen
File: VIA_PAR_Adapter_Low	Rev.: 0 Page 1/1
http://github.com/svenpetersen1965	
A3	

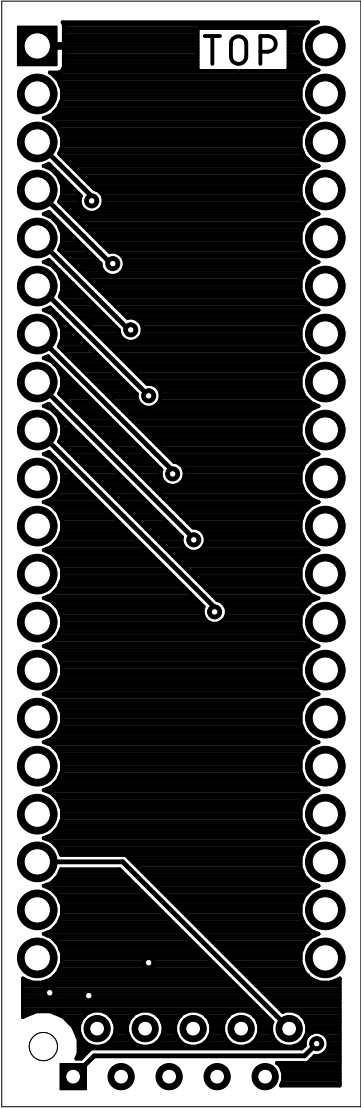
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18.08.2020 12:12		Rev.: 0
placement component side		



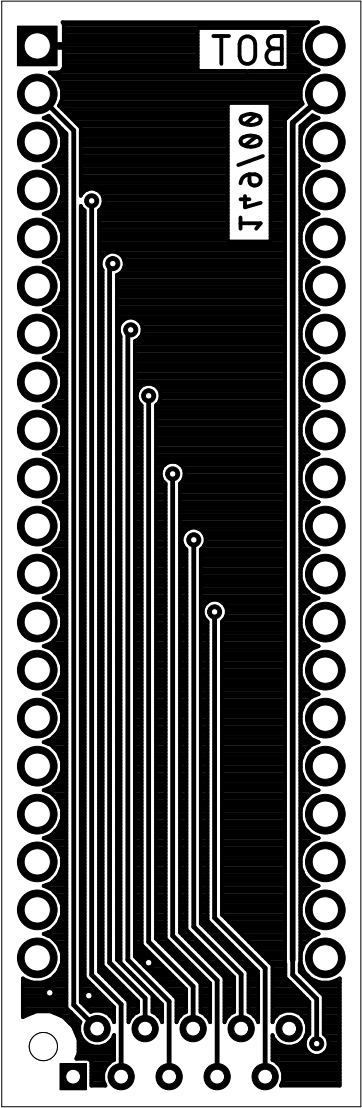
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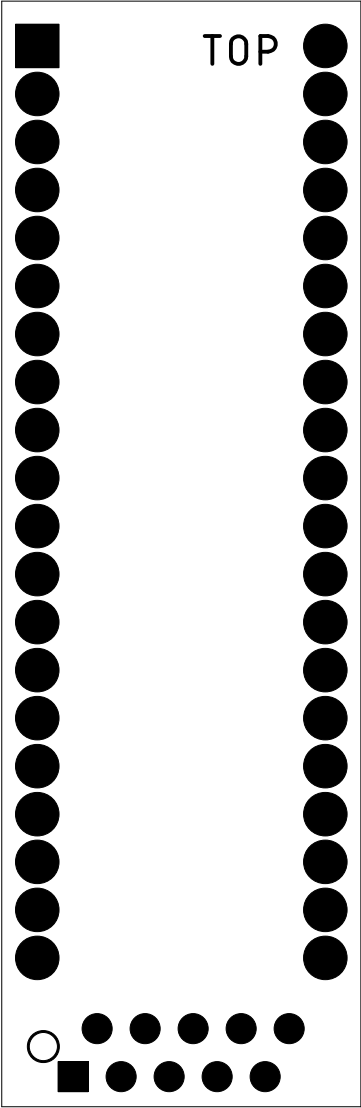
Sven Petersen 2020	Doc.-No.: 149-2-01-00	
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top		



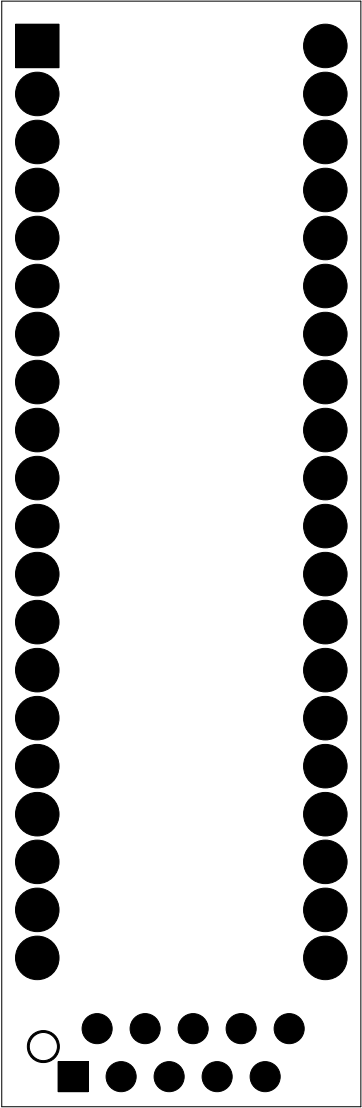
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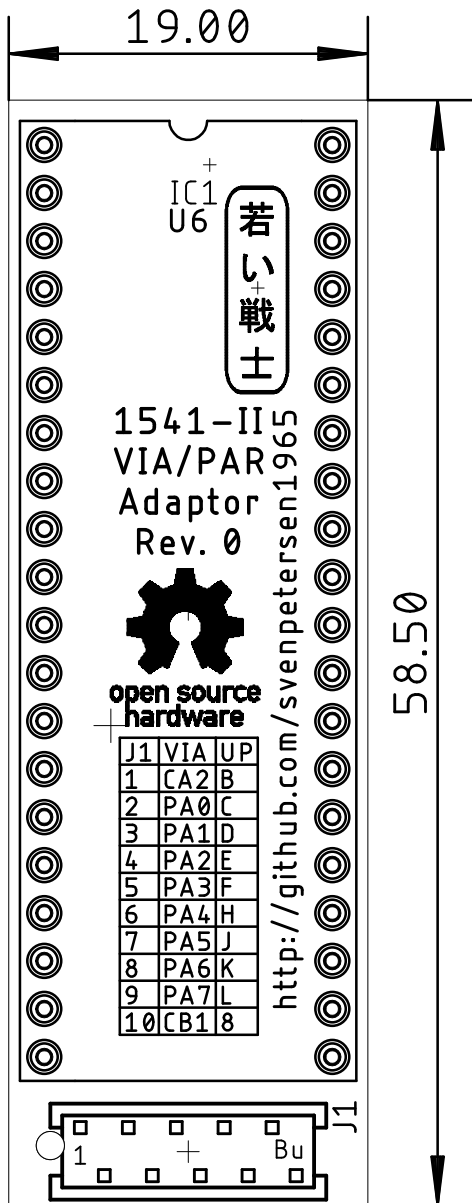
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stopmask component side		

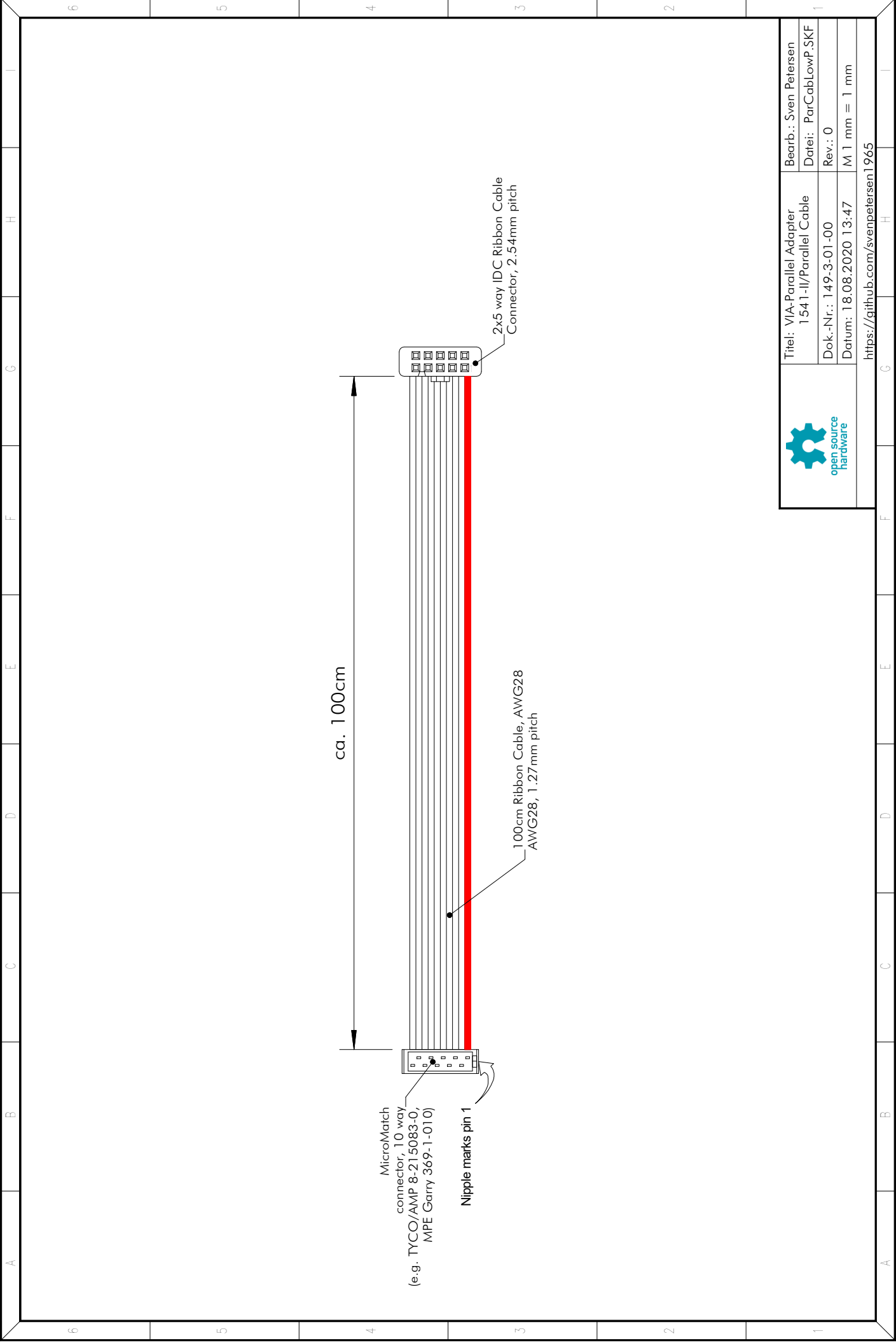



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stopmask solder side		



Sven Petersen 2020	Doc.-No.: 149-2-01-00	
	Cu: 35µm	Cu-Layers: 2
VIA_PAR_Adapter_Low		
18.08.2020 12:12		Rev.: 0
placement component side	measures	





	Titel: VIA-Parallel Adapter 1541-II/Parallel Cable		Bearb.: Sven Petersen
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	Datum: 18.08.2020 13:47		Rev.: 0
			M 1 mm = 1 mm
https://github.com/svenpetersen1965			

Commodore 1541-II VIA/Parallel-Adapter Rev. 0

Bill of Material Rev. 0.0

Pos.	Qty	Value	Footprint	Ref.-No.	Comment
1	1	149-2-01-00	2 Layer	PCB Rev. 0	2 layer, Cu 35μ, HASL, 58.5 x 19mm, 1.6mm FR4
2	2	40p DIP Socket	GS40P	IC1	Dual In Line precision round pin Socket, e.g. Reichelt: GS40P (the 2nd socket is for alignment)
3	1	8-215079-0	MicroMaTch 10p J1		Tyco/AMP or MPE Garry 369-1-010, e.g. Reichelt MPE 369-1-010
4	1	8-215083-0	MicroMaTch 10p (J1)		Tyco/AMP (IDC connector) or MPE Garry 372-1-010, e.g. Reichelt MPE 372-1-010
5	1	10p IDC receptacle, 2,54mm			e.g. Reichelt RND 205-00682
6	1m	10p/AWG28/1,27mm			Ribbon cable. See drawing 149-3-01.**