LumaFix64 Rev. 1.2sp

Module Description

1. Preface

It is a known fact, that some digitals signals are interfering with the video output signals inside the VIC-II chip of the Commodore C64. This results in a typical vertical strip pattern in the monitor output of the C64. The main culprits are AEC and PHI0 (VIC-II pin 16 and 17).

This topic was discussed in the lemon64.com forum in December 2011 (https://www.lemon64.com/forum/viewtopic.php?t=40570&start=0), where the attempt to cancel out these interferences was mentioned, that was released by the user ikary_01 in forum64.de in October 2010, called „C64-Streifenfix“ (https://www.forum64.de/index.php?thread/39285-c64-bild-hat-leiche-vertikale-streifen/&s=b329abcb4ddda3e4efab6bcffade57ad2a5b7f33 & https://sd2snes.de/~ikari/pics/).

This design is based on the eagle files LumaFix64v1.0_B64W, that e5frog released in the lemon64.com forum March 7th, 2018. (https://www.lemon64.com/forum/viewtopic.php?t=40570&start=375)

2. Functionality

The signals AEC and PHI0 are inverted, then attenuated by potentiometers (AEC & PHI0) and coupled into the S/LUM signal (VIC-II pin 15) via a small (47p) capacity). The potentiometers can be adjusted to minimize the interferences of the signals mentioned above.

Further on, the chrominance signal of the VIC-II chip has an amplitude, which is too high for most modern TVs, which results in a poor color quality. Many C64 video cables solve this issue by inserting a 330Ω resistor into the chrominance output signal. The LumaFix64 solves this issue with a pot (CHR) inserted in the signal. This pot can stay not populated and the cut pad CP1 can be closed instead.

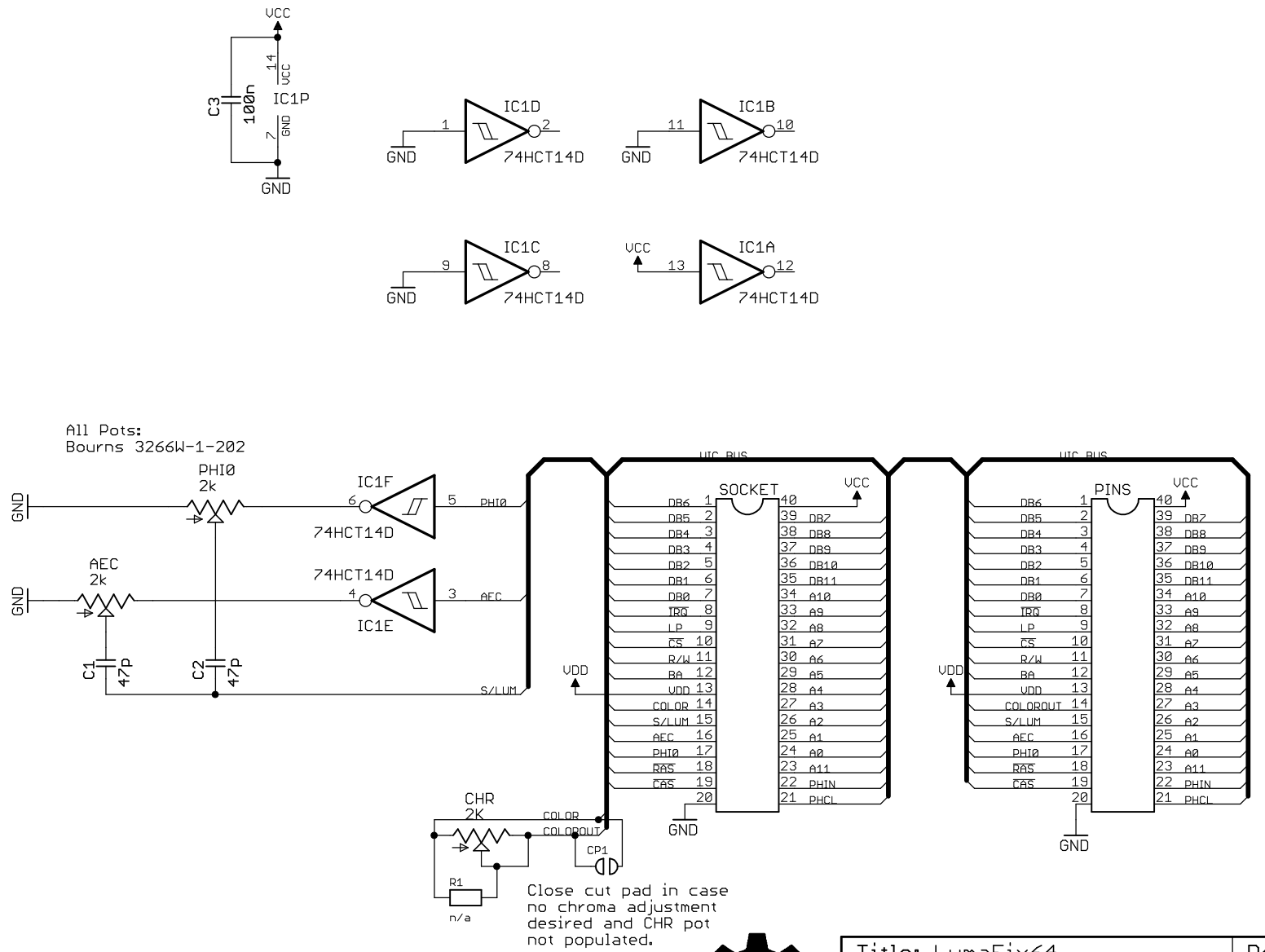
3. Revision History

v1.0 B64W → v1.1sp

- The issue of the original eagle files with Eagle 9 was fixed
- The schematic was restructured
- The THT ICs and capacitors were left out
- The footprints of the socket, pin headers and pots were changed
- The inverter IC 74HCT14 has a 100n buffer cap
- The cut-pad CP1for bridging the CHR pot was added, a 330Ω resistor (0603) can be placed on this cut-pad for having a fix resistor in the chrominance output.
- The width of the board was reduced to 25.94mm
- The layout is new

v1.1sp → v1.2sp

- PCB Revision
- R1 is new to replace the CHR pot if not required



open source hardware

Title: LumaFix64	Doc.-No.: 110-1-01-01.11	
http://www.lemon64.com e5frog (2014)	Draft.: Sven Petersen	
Date: 11.08.2020 18:14	Rev.: 1.2	Page 1/1
File: LumaFix64v1.2_sp		
http://github.com/svenpetersen1965		A4

LumaFix64 http://www.lemon64.com	Doc.-No.: 110-2-01-01.2	
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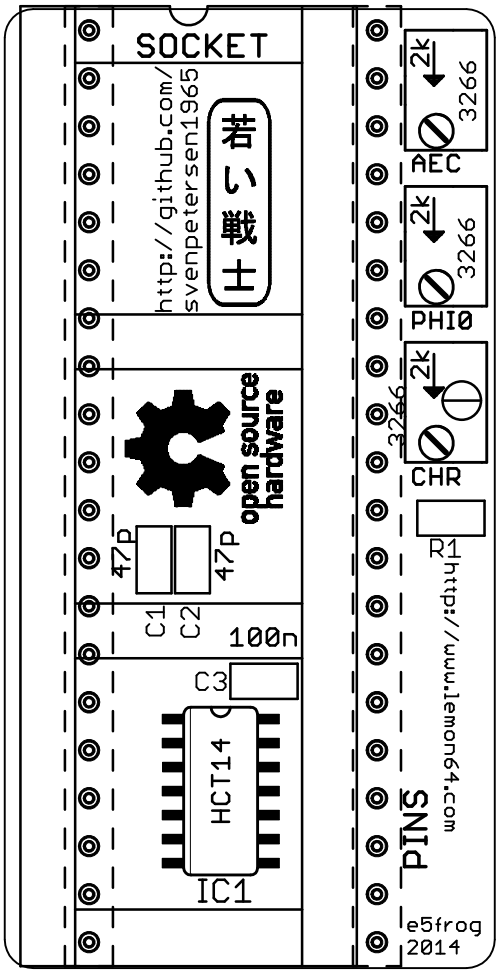
LumaFix64v1.2_sp /e5frog		
11.08.2020 18:21		Rev.: 1.2
placement component side		



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LumaFix64v1.2_sp /e5frog		
14.03.2020 09:32		Rev.: 1.2
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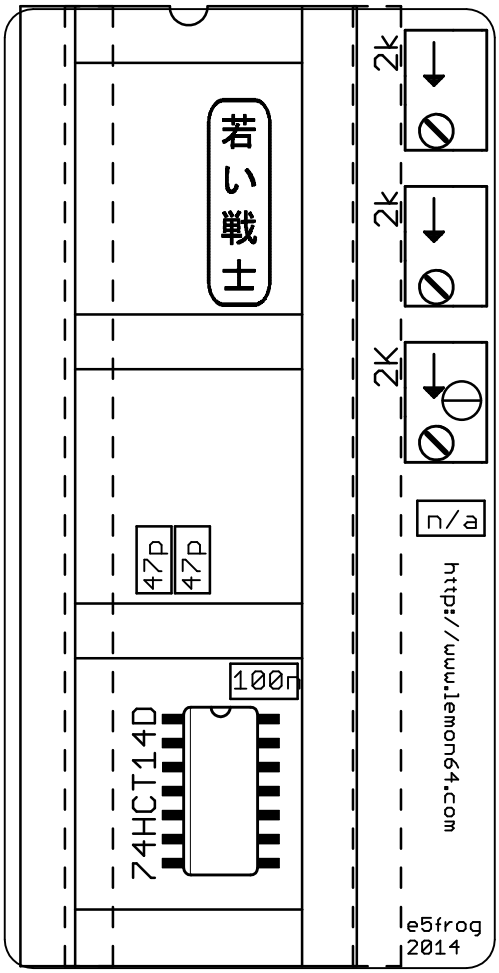

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LumaFix64v1.2_sp /e5frog		
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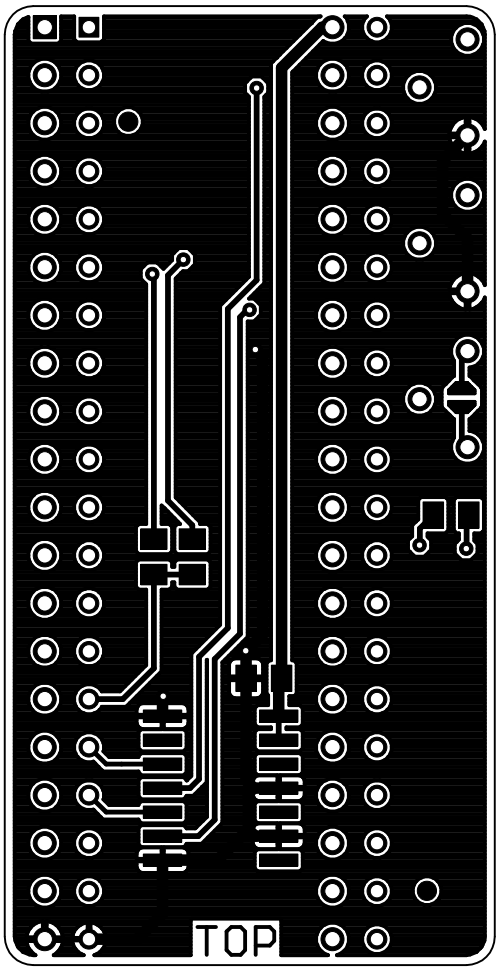

LumaFix64 http://www.lemon64.com	Doc.-No.: 110-2-01-01.2	
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LumaFix64v1.2_sp /e5frog		
14.03.2020 09:32		Rev.: 1.2
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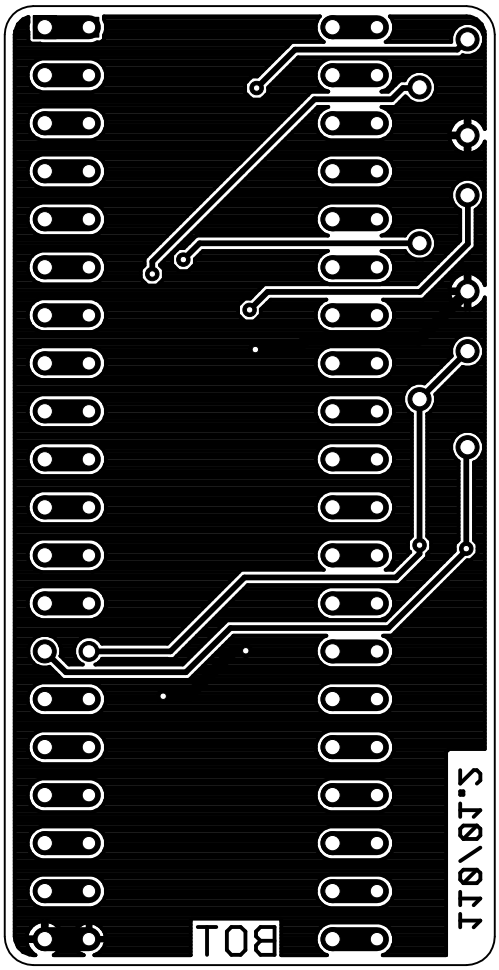

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14.03.2020 09:32		Rev.: 1.2
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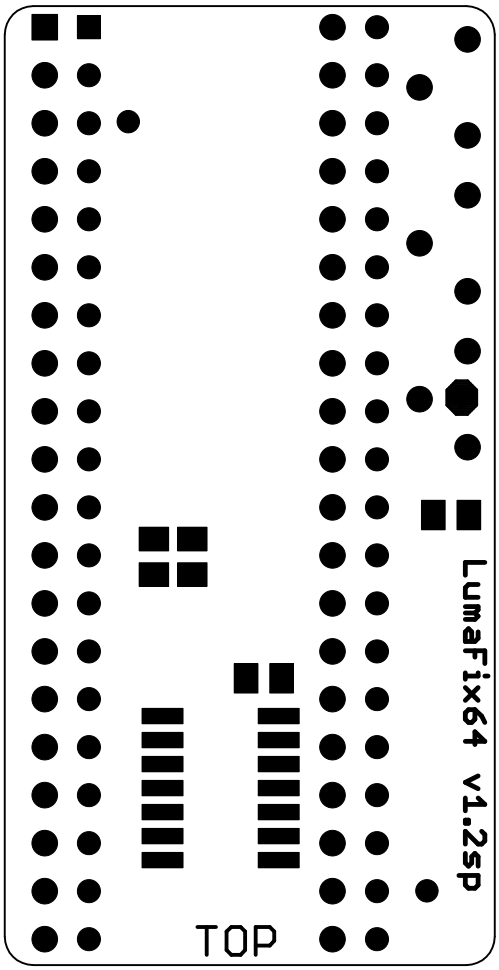

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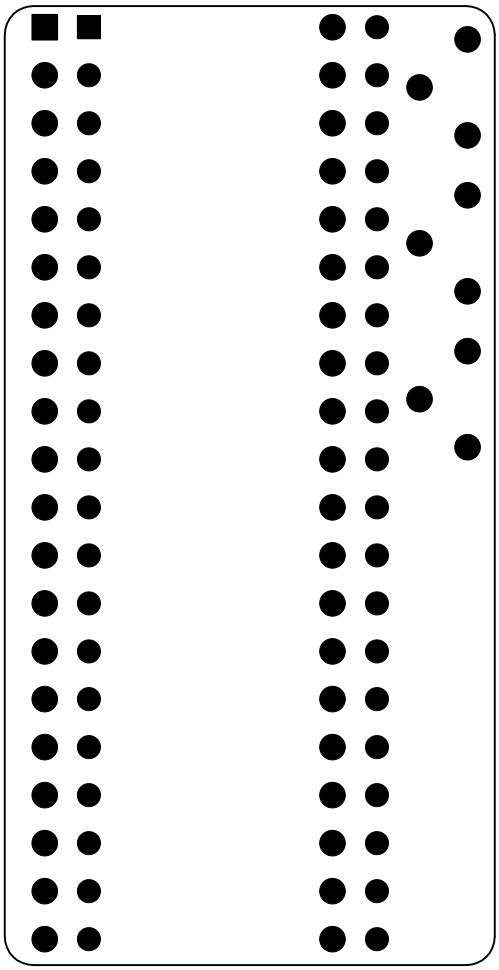

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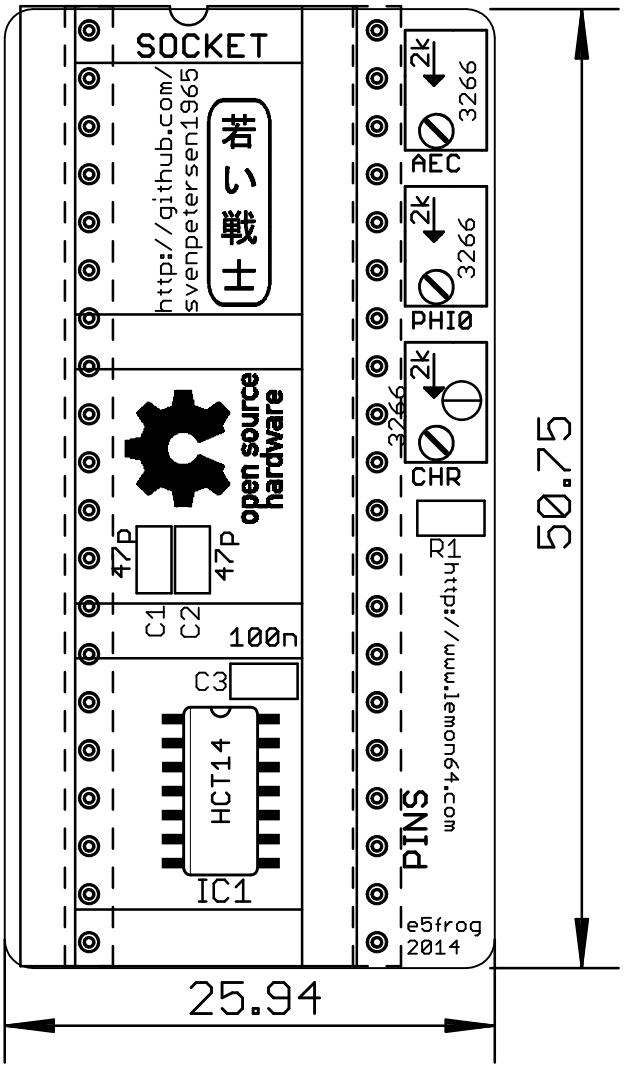
11.08.2020 18:21		Rev.: 1.2
placement component sidemeasures		



LumaFix64 Rev. 1.2sp
Partlist Rev. 1.20

Pos.	Each	Value	Footprint	Names	Anmerkung
1	1	110-2-01-01.2sp	2 Layers	PCB Rev. 1.2sp	2 Layers, Cu 35μ, HASL, 50.75mm 25.94mm, 1.6mm FR4
2	1	DIP-40	GS40P	SOCKET	Dual In Line Socket, Reichelt: GS40P
3	1	10120540	BKL_10120540_2X20	PINS	Precision pin header, bkl-electronic.de Art.-Nr. 10120540, Reichelt BKL 10120540
4	1	100n	0805	C3	SMD capacitor
5	1	2k	POT_B64W	CHR	optional, only if chroma adjustment is desired. Bournes 3266W-1-202, Reichelt: BOU 3266W-1-202
6	2	2k	POT_B64W	AEC, PHI0	Bournes 3266W-1-202, Reichelt: BOU 3266W-1-202
7	2	47p	0805	C1, C2	SMD capacitor
8	1	74HCT14D	SO14	IC1	Hex schmitt trigger inverter, e.g. NXP, Reichelt 74HCT 14D NXP