

External serial buffer for a HP49

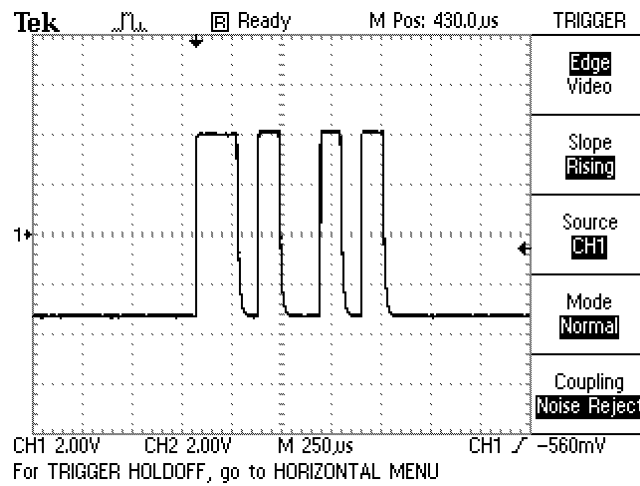
HP49 models starting with an ID below 94xxxxxxx have a hardware bug in the serial buffer. You can correct the error by opening your calculator, and patching the circuit. There's a document on www.hpcalc.org on how to do so. This document describes a different way, without opening the calc. It is an external buffer that forms a high impedant load to the HP49. It 'steals' power from the PC and amplifies the signal, depending on the voltages supplies by TX, RTS and DTR. The negative voltage is taken from TX and the positive one is taken from both RTS and DTS. Fortunately HPCOMM sets these signal high. If you are using a different terminal program to communicate, make sure you set hardware handshaking on. Also connect pin 7 and 8 (RTS and CTS) at the bottom of the PCB (See schematic drawing).

The current design is made with SMD components. It can made with through-hole components as well. If you need gerber-files, let me know.

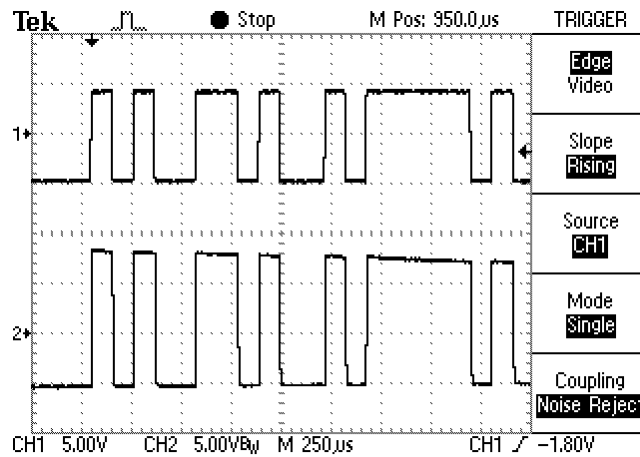
Good luck, dont't fry your calc,

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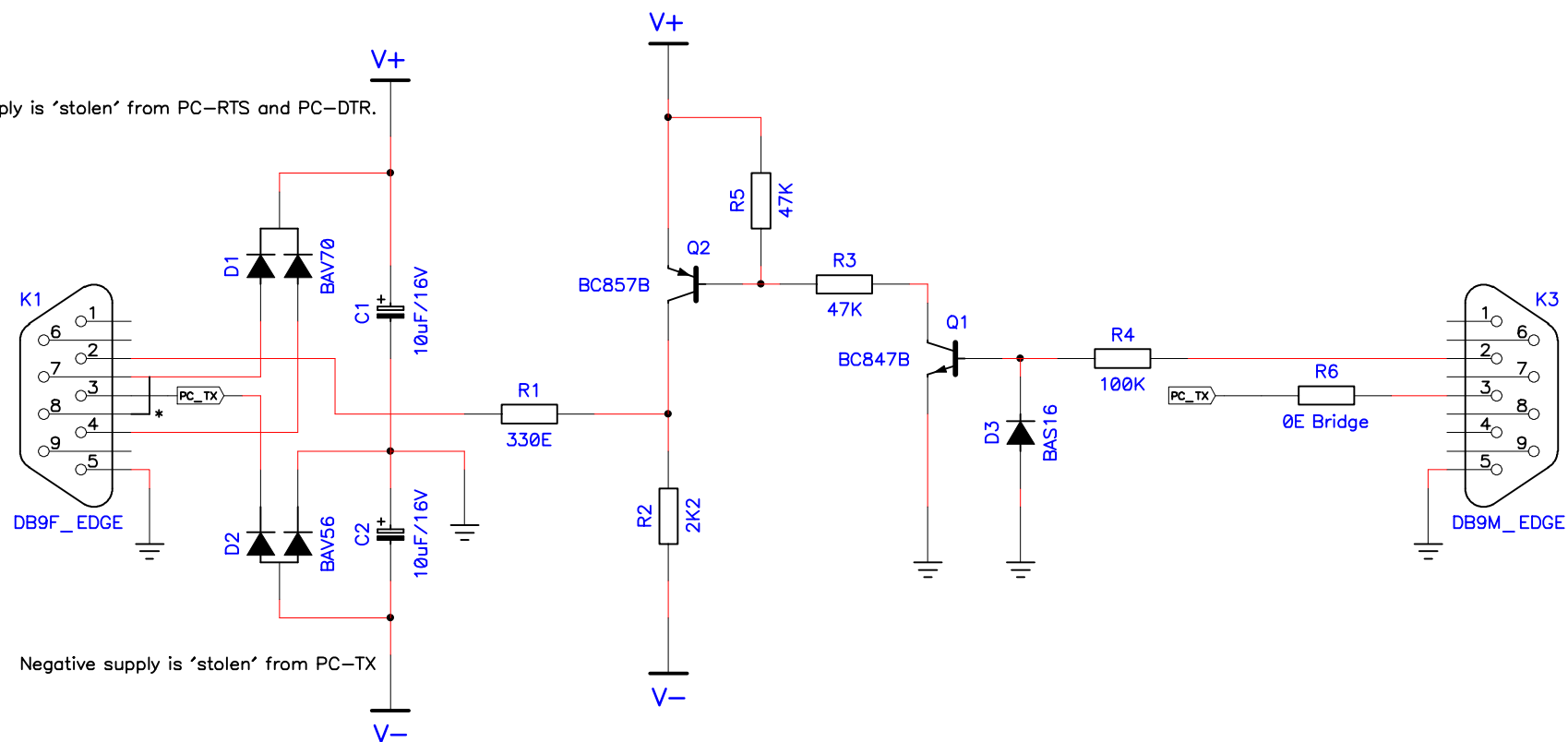
Original HP49 (or patched one) serial signal. Swings from -3.6V to 4V with a 3.3K load on the receiver input of a standard serial port. (2V/Div)



Upper trace: HP49 serial port output with high impedant external buffer. It has a higher amplitude due to the high impedant load (100K) compared to the original waveform. (5V/Div)

Lower trace: HP49 serial port output after high impedant the buffer. Swings nicely from -5V to 8.7V .

Positive supply is 'stolen' from PC-RTS and PC-DTR.



Negative supply is 'stolen' from PC-TX

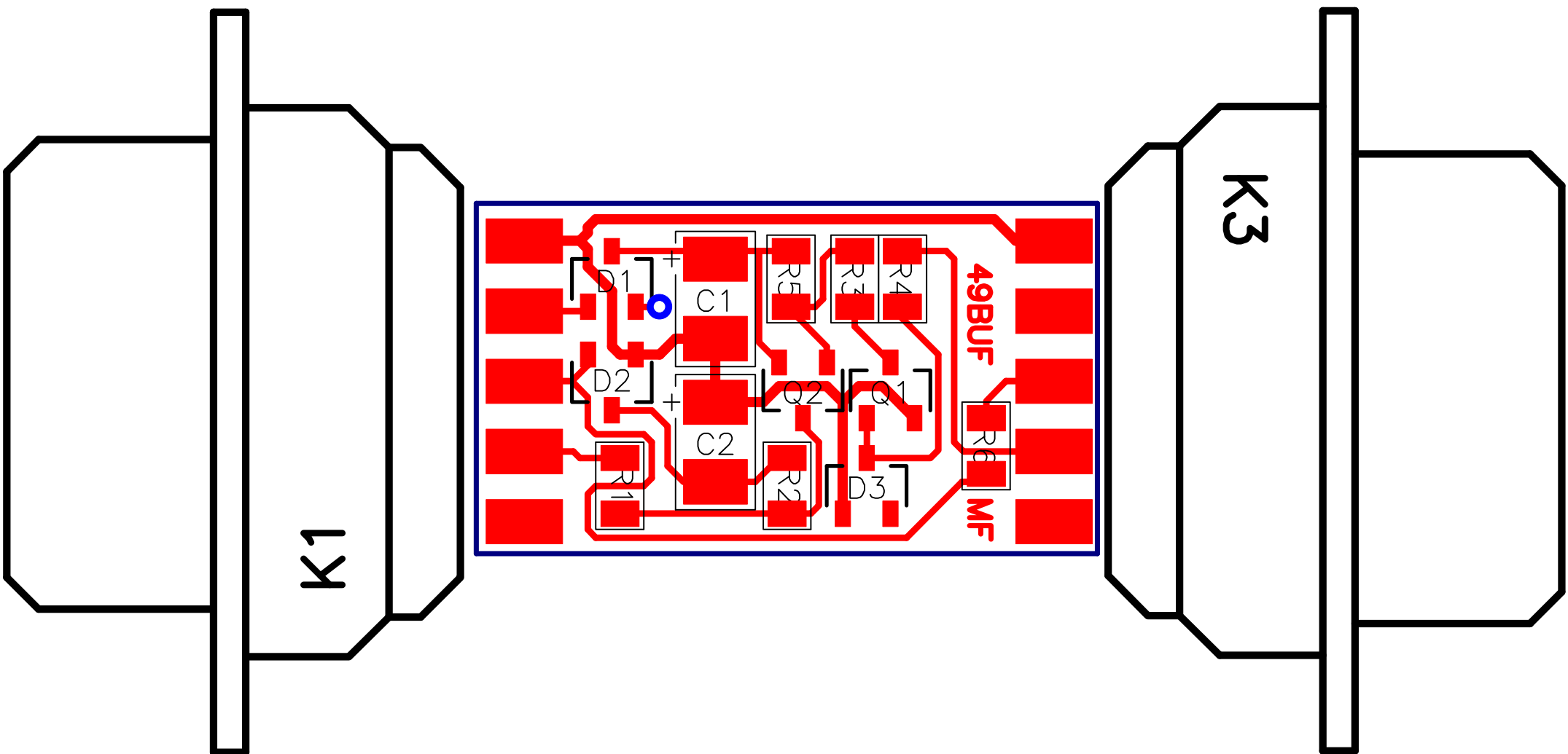
(*) Connect RTS and CTS if you are using a standard communication program. Set hardware handshaking ON.

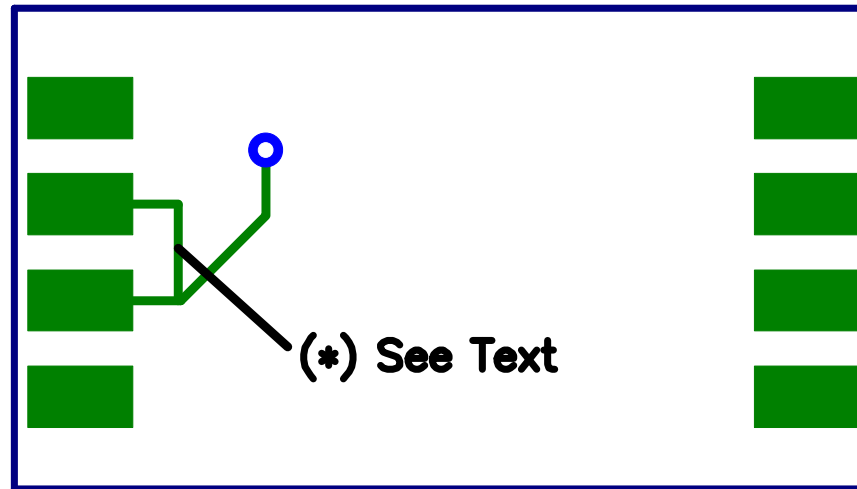


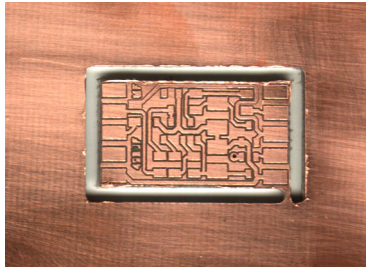
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Title External buffer- HP49

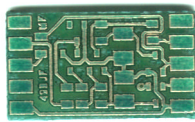
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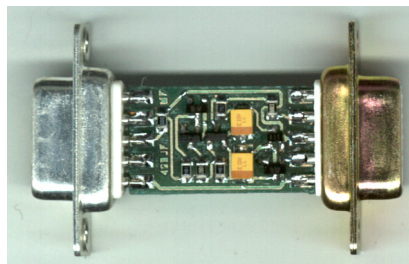




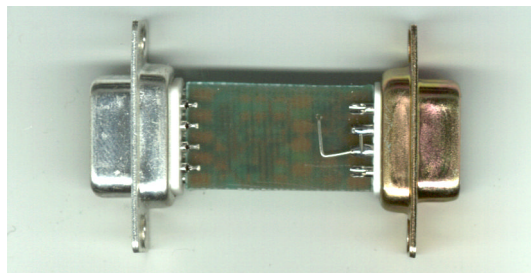
PCB after Milling.



PCB with solder mask



Top layer with components



Bottom layer with RTS/CTS bridge