**Commodore VIC-20: Hyper Expander Rev. 0**

**Functional Description**

The EPROM part with IC1 and IC2 is pretty much a straight forward VIC-20 EPROM cartridge. The data bus (D0…D7) and the address bus (A0…A12) are connected to the EPROM. This allows to address 8k of memory. The address bit A13…A15 can be jumpered (JP3), which results in selectable 8k memory banks.

The chip selects can be set for each EPROM differently (JP1 and JP2). It is not every chip select possible to use with IC1 and IC2.

IC3 is a static 32kB RAM. Again, the data bus (D0…D7) and the address bus (A0…A12) is connected to IC3, which results in an 8k RAM bank size. These four RAM banks are selected with the signals RA13 and RA14. Those additional address signals are generated by the 8 to 3 decoder IC4. If one of the chip selects gets LOW, the signal gets LOW, too. This is forming the chip select signal of IC3.

The three chip select signals for the 3k RAM expansion are originally made for addressing 2114 1kx4 RAMs. Since the 4th RAM block is either addressed with or the 3k chip selects , those need to be combined to a single chip select, which is accomplished with D1, D2 and D3 and the pull-up resistor R4. In case one of those signals is LOW, the combined is LOW as well.