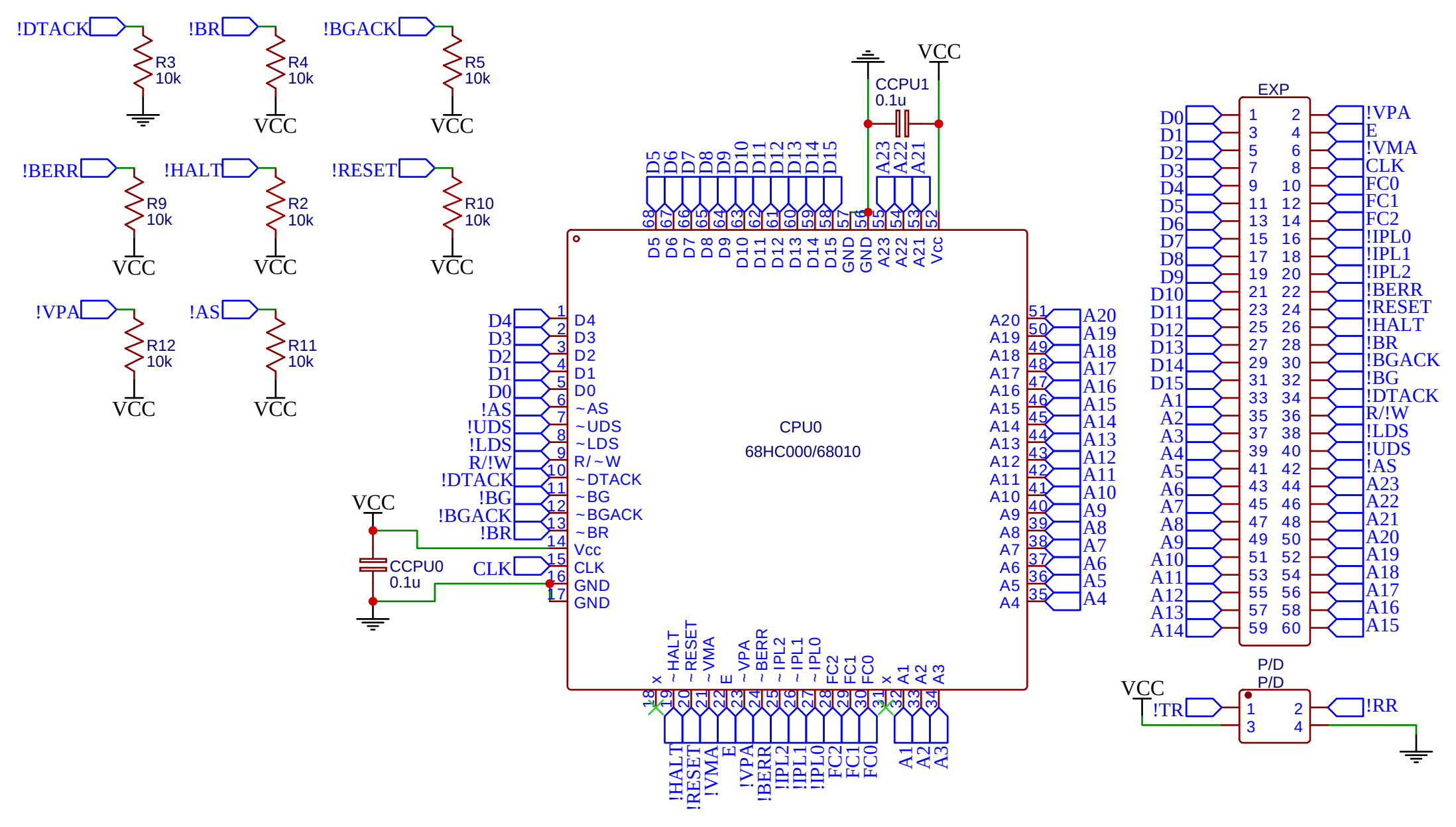
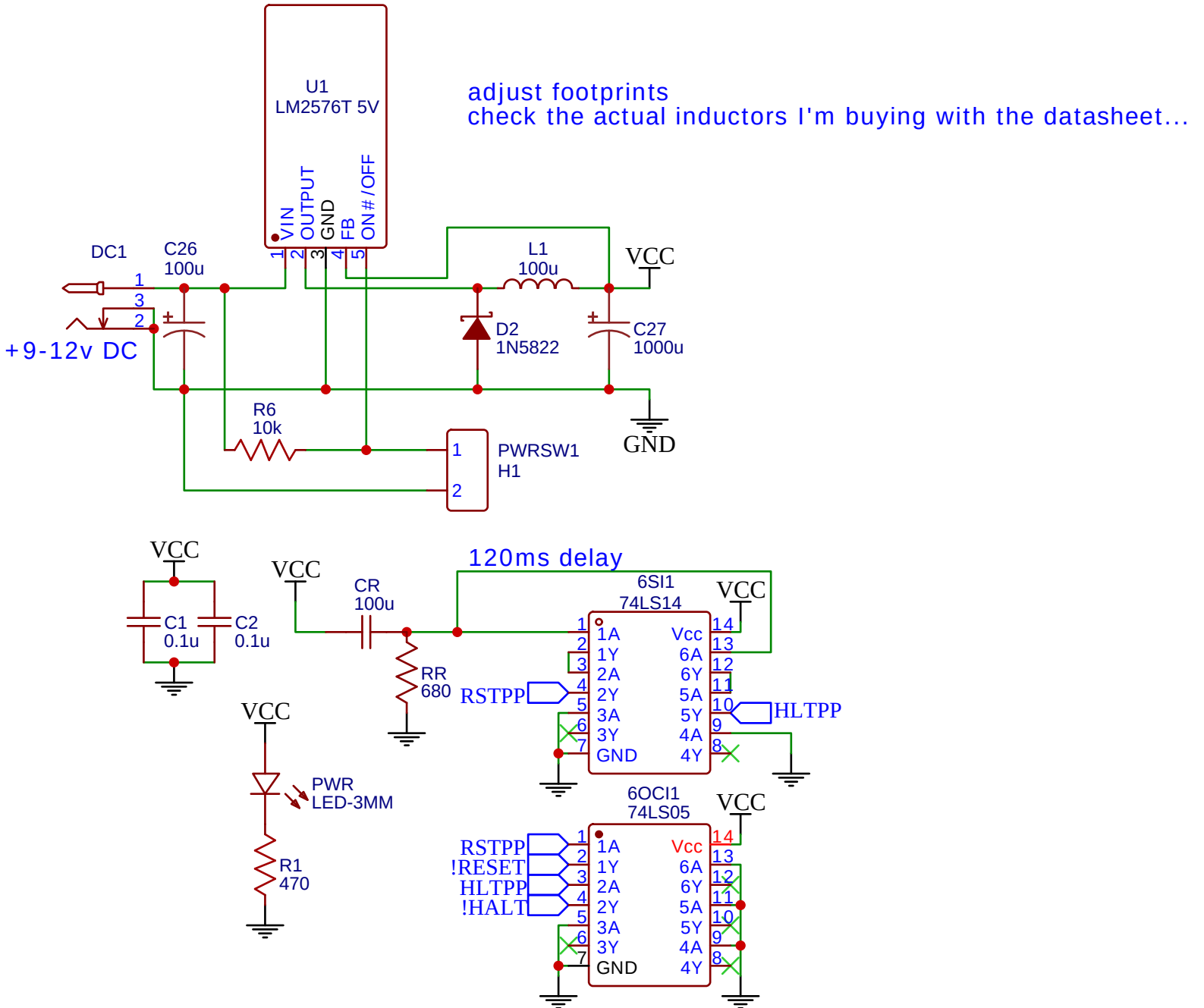
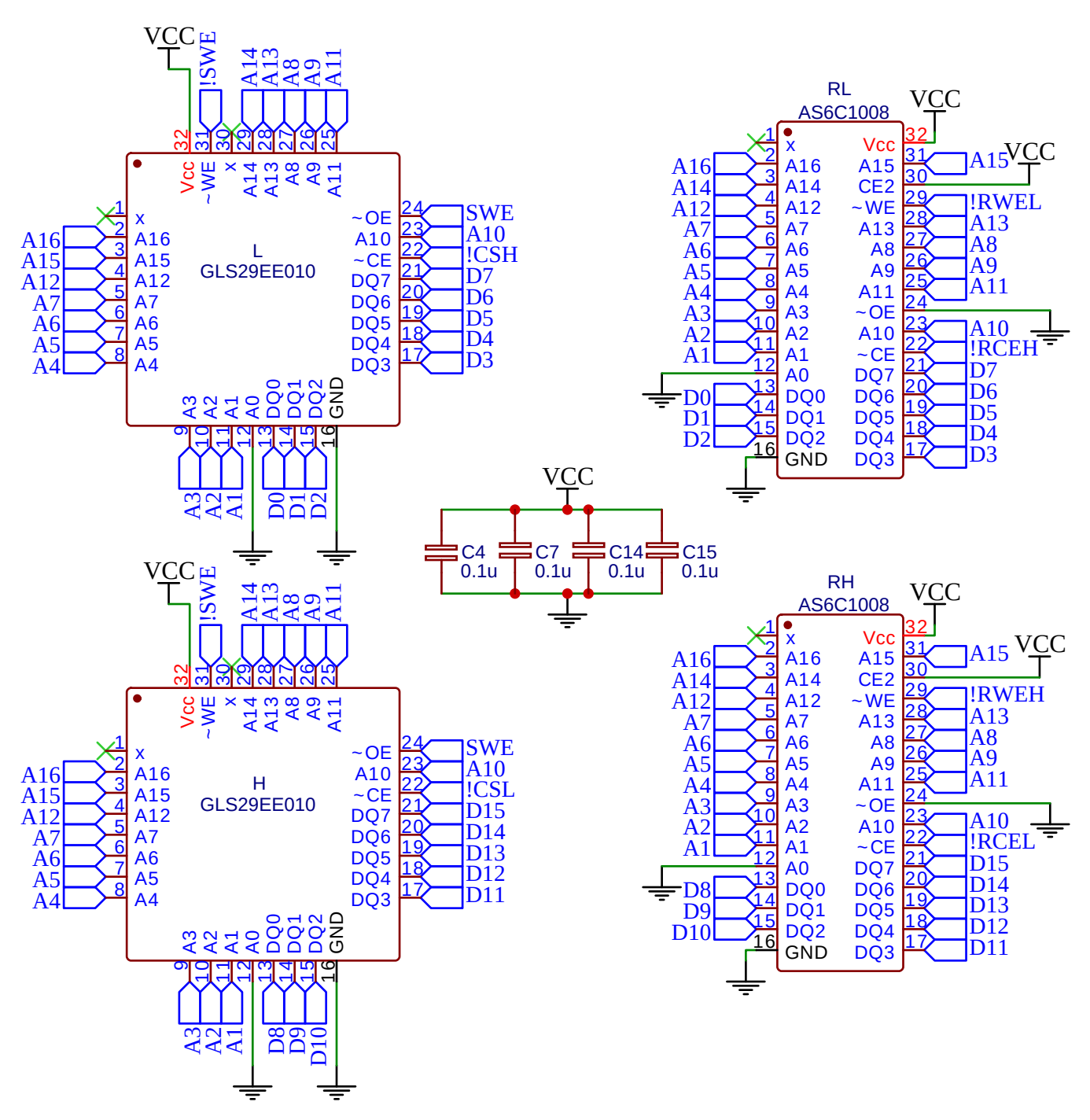
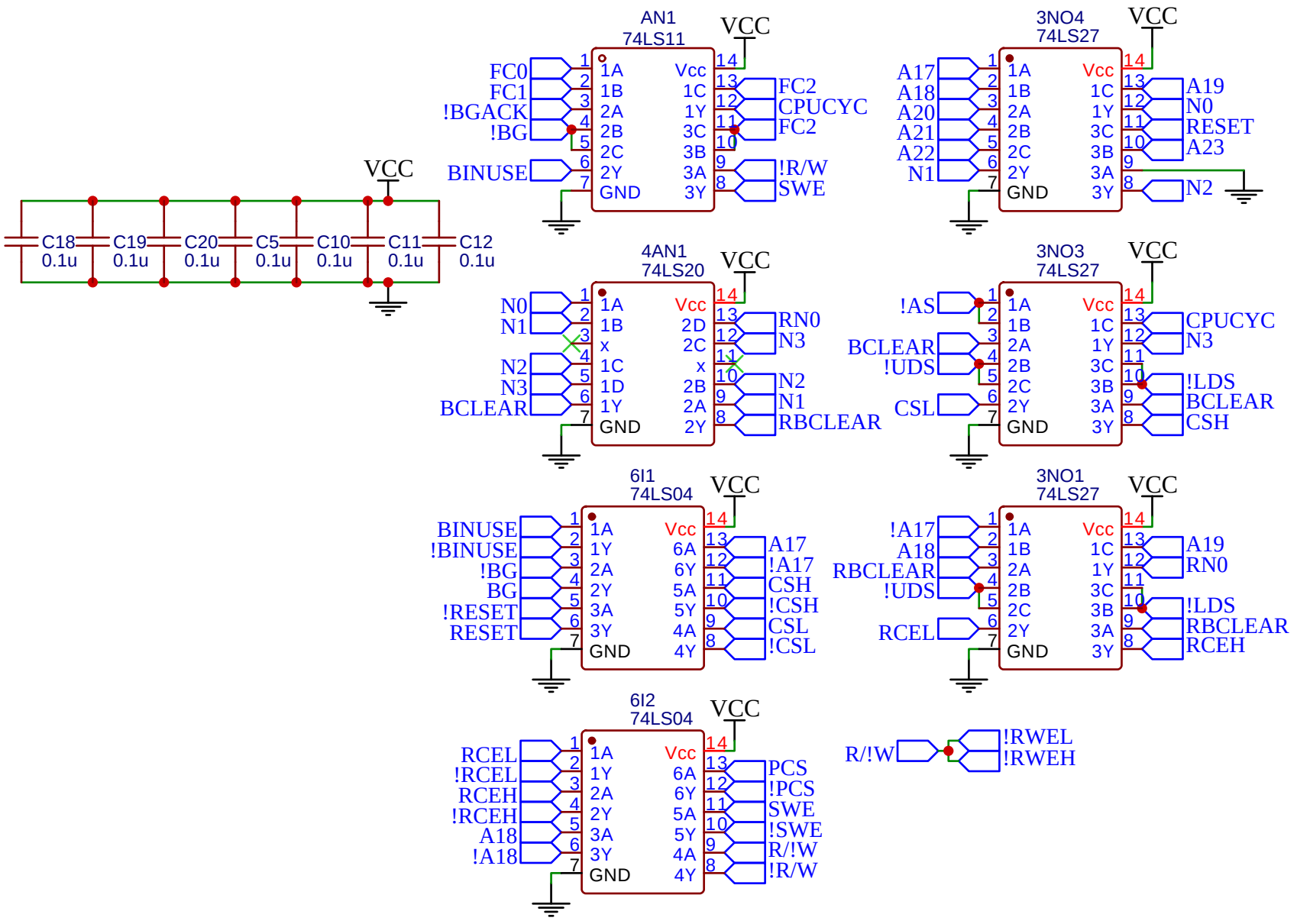

!DTACK
R3
10k
VCC
!BR
R4
10k
VCC
!BGACK
R5
10k
VCC
!BERR
R9
10k
VCC
!HALT
R2
10k
VCC
!RESET
R10
10k
VCC
!VPA
R12
10k
VCC
!AS
R11
10k
VCC
VCC
CCPU1
0.1u
D5 D6 D7 D8 D9 D10 D11 D12 D13 D14 D15 GND GND A23 A22 A21 Vcc
68 67 66 65 64 63 62 61 60 59 58 57 56 55 54 53 52
D4 D3 D2 D1 D0 ~AS ~UDS ~LDS R/~W ~DTACK ~BG ~BGACK ~BR Vcc CLK GND GND
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
CPU0
68HC000/68010
A20 A19 A18 A17 A16 A15 A14 A13 A12 A11 A10 A9 A8 A7 A6 A5 A4
51 50 49 48 47 46 45 44 43 42 41 40 39 38 37 36 35
x ~HALT ~RESET ~VMA E ~VPA ~BERR ~IPL2 ~IPL1 ~IPL0 FC2 FC1 FC0 x A1 A2 A3
18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34
!HALT !RESET !VMA E !VPA !BERR !IPL2 !IPL1 !IPL0 FC2 FC1 FC0 A1 A2 A3
VCC
CCPU0
0.1u
CLK
EXP
D0 D1 D2 D3 D4 D5 D6 D7 D8 D9 D10 D11 D12 D13 D14 D15 A1 A2 A3 A4 A5 A6 A7 A8 A9 A10 A11 A12 A13 A14
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47 49 51 53 55 57 59
2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60
!VPA E !VMA CLK FC0 FC1 FC2 !IPL0 !IPL1 !IPL2 !BERR !RESET !HALT !BR !BGACK !BG !DTACK R/!W !LDS !UDS !AS A23 A22 A21 A20 A19 A18 A17 A16 A15
P/D
P/D
VCC
!TR
1 3
2 4
!RR


U1
LM2576T 5V
VIN
OUTPUT
GND
FB
ON#/OFF
1
2
3
4
5
adjust footprints
check the actual inductors I'm buying with the datasheet...
DC1
C26
100u
+9-12v DC
L1
100u
VCC
D2
1N5822
C27
1000u
R6
10k
PWRSW1
H1
GND
VCC
C1
0.1u
C2
0.1u
VCC
CR
100u
120ms delay
RR
680
6SI1
74LS14
VCC
RSTPP
HLTPP
1A
1Y
2A
2Y
3A
3Y
GND
Vcc
6A
6Y
5A
5Y
4A
4Y
VCC
PWR
LED-3MM
R1
470
6OCI1
74LS05
VCC
RSTPP
!RESET
HLTPP
!HALT


VCC
!SWE
A14
A13
A8
A9
A11
L
GLS29EE010
Vcc
~WE
x
~OE
A10
~CE
DQ7
DQ6
DQ5
DQ4
DQ3
A16
A15
A12
A7
A6
A5
A4
A3
A2
A1
A0
DQ0
DQ1
DQ2
GND
SWE
!CSH
D7
D6
D5
D4
D3
H
!CSL
D15
D14
D13
D12
D11
D8
D9
D10
RL
AS6C1008
CE2
!RWEL
!RCEH
D0
D1
D2
RH
!RWEH
!RCEL
C4
C7
C14
C15
0.1u


VCC
C18 0.1u
C19 0.1u
C20 0.1u
C5 0.1u
C10 0.1u
C11 0.1u
C12 0.1u
AN1 74LS11
FC0
FC1
!BGACK
!BG
BINUSE
FC2
CPUCYC
FC2
!R/W
SWE
3NO4 74LS27
A17
A18
A20
A21
A22
N1
A19
N0
RESET
A23
N2
4AN1 74LS20
N0
N1
N2
N3
BCLEAR
RN0
N3
N2
N1
RBCLEAR
3NO3 74LS27
!AS
BCLEAR
!UDS
CSL
CPUCYC
N3
!LDS
BCLEAR
CSH
6I1 74LS04
BINUSE
!BINUSE
!BG
BG
!RESET
RESET
A17
!A17
CSH
!CSH
CSL
!CSL
3NO1 74LS27
!A17
A18
RBCLEAR
!UDS
RCEL
A19
RN0
!LDS
RBCLEAR
RCEH
6I2 74LS04
RCEL
!RCEL
RCEH
!RCEH
A18
!A18
PCS
!PCS
SWE
!SWE
R/!W
!R/W
R/!W
!RWEL
!RWEH

" -" indicates bug or optimization has been handled
Bugs:
 - UART RX buffering is swapped
 - DMA is broken, peripherals will not be selected once something else becomes bus master
 - R/C vals are wrong
 - 10uF caps wrong footprint
 - mounting holes were too small - right size should be ~126 mil (arduino hole size)
 - SDP needs to be turned off - SKIP, hard to fix and SDP isn't required for basic operation
 - adjust silkscreen to rev 1.1 - no new features, just bug fixes
 - use 0.01uF bypass caps on the crystals instead of 0.1uF
 - Output buffer inverts UART signals, need another buffer to turn em back
fix silkscreen issue with expansion connector
 - Falstad simulation with the interrupt signal is wrong
 - Byte selection signals on EEPROM and RAM are backwards
 - UDS and LDS signals on EEPROM and RAM chips can be grounded as they are never accessed
   on an odd boundary and the UDS and LDS signals on A0s were always low when device was selected

Optimizations:
 - Vcc/GND go on the inside, signals go anywhere, because we can't do a 2-layer board
   and cutting internal traces is a lot more dangerous
Use fancy sockets for everything?
Buy a 68010 once the 68000 works and use that, monitor power consumption increase
Get power consumption back down by using something better than a 7805. Not hard, and a good idea

TODO: print out the final PCB and check that all the components still fit (use 1:1 ratio for actual size)
Byte select issue is going to be really hard to fix on the rev 1 board, check it carefully and move on to rev 2
  since this ~might~ be serious enough to require a respin on its own
test interrupt handling of I/O event to MFP
test interrupt handling of external interrupt source - have to pull the data bus down/up to select
  the right interrupt vector
test timers on MFP
test DMA

On the software side:
 comment check:
 - Arduino - DONE
 - Assembly - not finished
 - Python - NOT DONE
 - Make sure everything is commented and there are no TODOs before releasing code

Halt public release until everything is tested and I have a hello world working

Special nets:
Vcc - 10 width, 6 clearance
GND - 10 width, 6 clearance
REG_1 - 10 width, 6 clearance
DC_1 - 10 width, 6 clearance