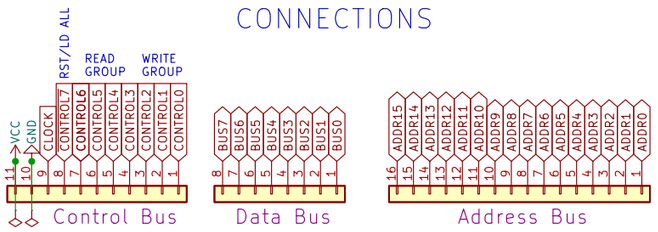
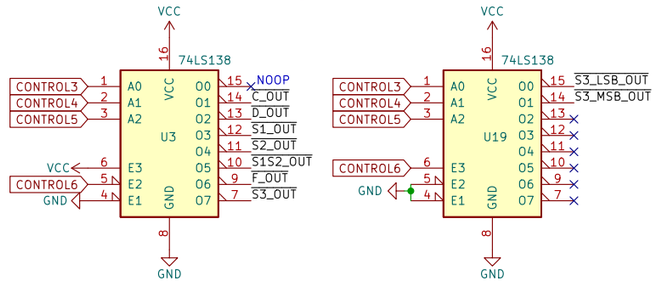
GENERAL PURPOSE REGISTER ARRAY

8bit & 16bit C^8, D^8, $S1^8$, $S2^8$, $S1S2^{16}$, F^{16}, $S3^{16}$

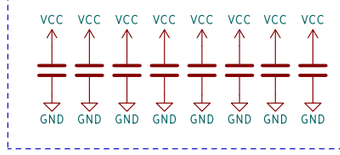
CONNECTIONS



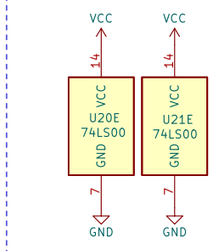
Read Register Decoder



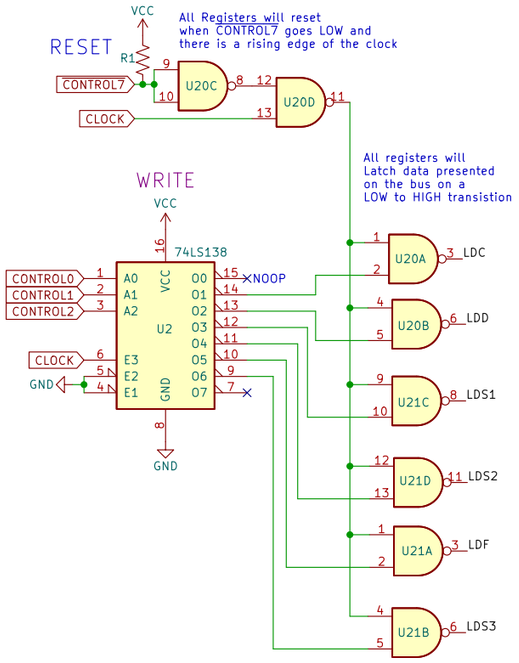
Smoothing Caps



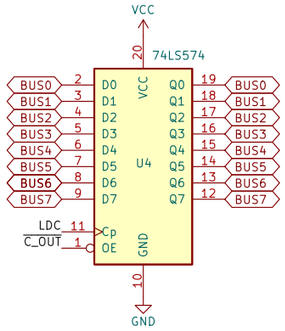
Logic Gate Power



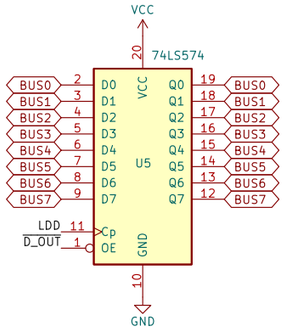
WRITE & RESET MUX



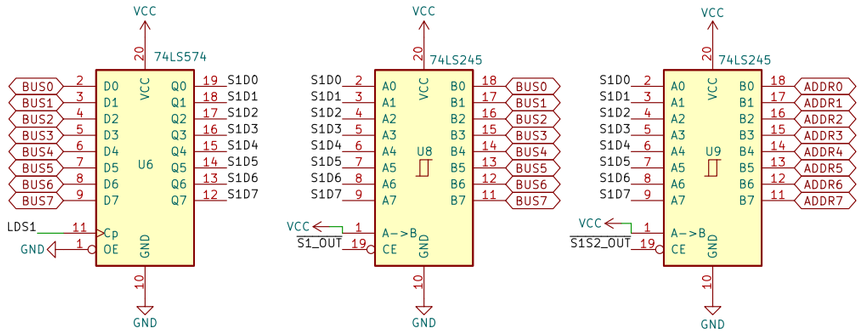
C Register



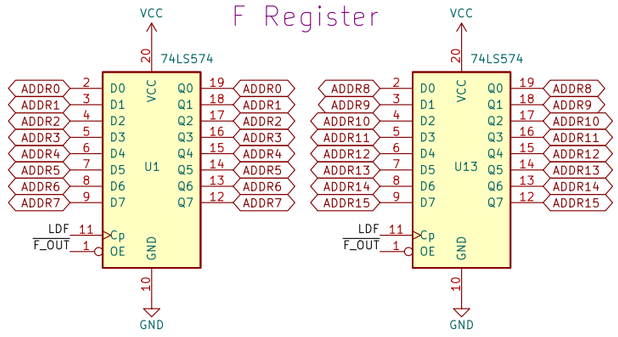
D Register



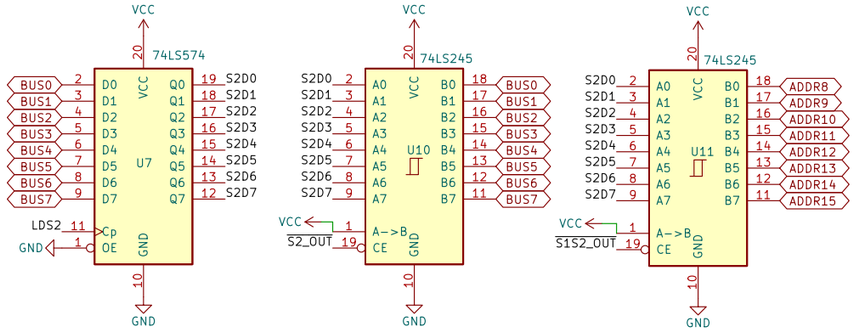
S1 Register



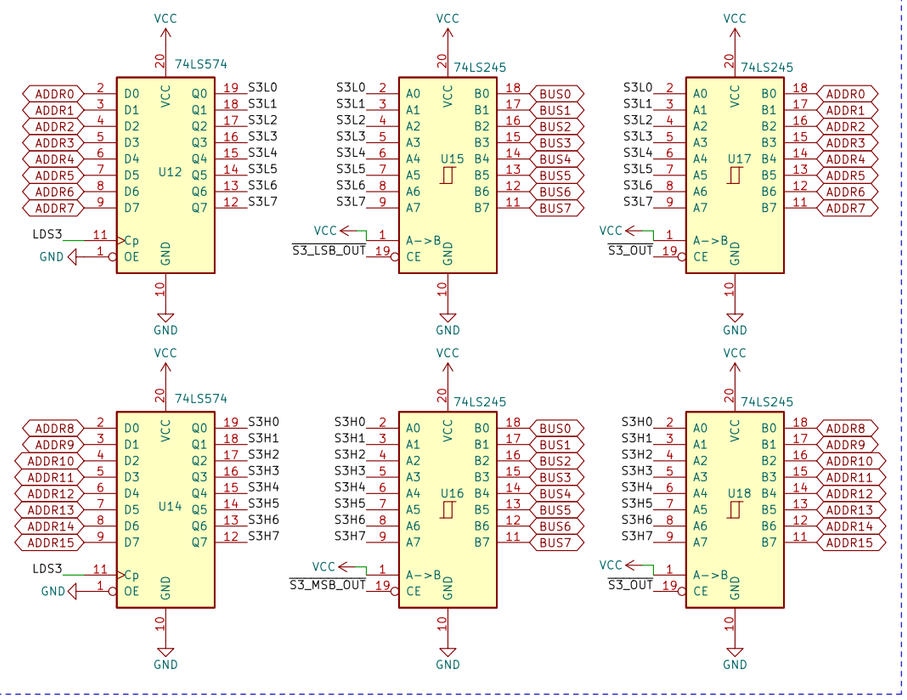
F Register



S2 Register



S3 Register



Control Word Truth Table

To just ASSERT or LOAD a value to the data bus to be used with external modules, just select a single value from either READ or WRITE

To do a GPR to GPR transfer just select a READ and WRITE control word and then OR them together.

To do a RESET, $\overline{\text{CONTROL7}}$ is set LOW and all data buses are set to 0x0, which causes each register to load the value presented on their data bus.

GPR <-> External

MOV R, *

0x81: LDC
0x82: LDD
0x83: LDS1
0x84: LDS2
0x85: LDF
0x86: LDS3

MOV *, R

0x80: NOOP
0x88: CO
0x90: DO
0x98: S1OB
0xa0: S2OB
0xa8: S1S2OA
0xb0: FO
0xb8: S3O
0xc0: S3L0B
0xc8: S3H0B

GPR to GPR Control Words

MOV C, D – 0x91 (0b1_0010_001)
MOV C, S1 – 0x99 (0b1_0011_001)
MOV C, S2 – 0xa1 (0b1_0100_001)
MOV C, S3LSB – 0xc1 (0b1_1000_001)
MOV C, S3MSB – 0xc9 (0b1_1001_001)
MOV D, C – 0x8a (0b1_0001_010)
MOV D, S1 – 0x9a (0b1_0011_010)
MOV D, S2 – 0xa2 (0b1_0100_010)
MOV D, S3LSB – 0xc2 (0b1_1000_010)
MOV D, S3MSB – 0xca (0b1_1001_010)
MOV S1, C – 0x8b (0b1_0001_011)
MOV S1, D – 0x9a (0b1_0010_011)
MOV S1, S2 – 0x93 (0b1_0100_011)
MOV S1, S3LSB – 0xc3 (0b1_1000_011)
MOV S1, S3MSB – 0xcb (0b1_1001_011)
MOV S2, C – 0x8c (0b1_0001_100)
MOV S2, D – 0x94 (0b1_0010_100)
MOV S2, S1 – 0x9c (0b1_0011_100)
MOV S2, S3LSB – 0xc4 (0b1_1000_100)
MOV S2, S3MSB – 0xcc (0b1_1001_100)
MOV F, S3 – 0xbd (0b1_0111_101)
MOV F, S1S2 – 0xad (0b1_0101_101)
MOV S3, F – 0xb6 (0b1_0110_110)
MOV S3, S1S2 – 0xae (0b1_0101_110)

theWickedWebDev/8-bit-computer
Sheet: /
File: Minified-Gpr.kicad_sch

Title: General Purpose Register Array

Size: User	Date: 2022-02-10	Rev: v2
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