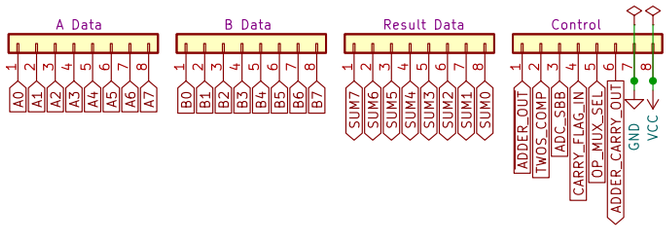
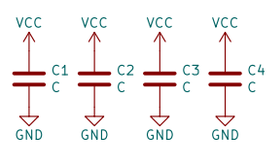
Arithmetic Module

8bit Arithmetic Module provides: ADD, ADC, SUB, SBB, INC, DEC

CPU Connections

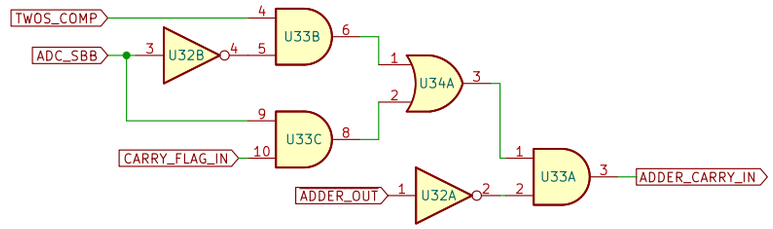


Decoupling



Arithmetic Carry In Logic

a) If twos complement, or
b) if ADC or SBB, and current carry flag status is active



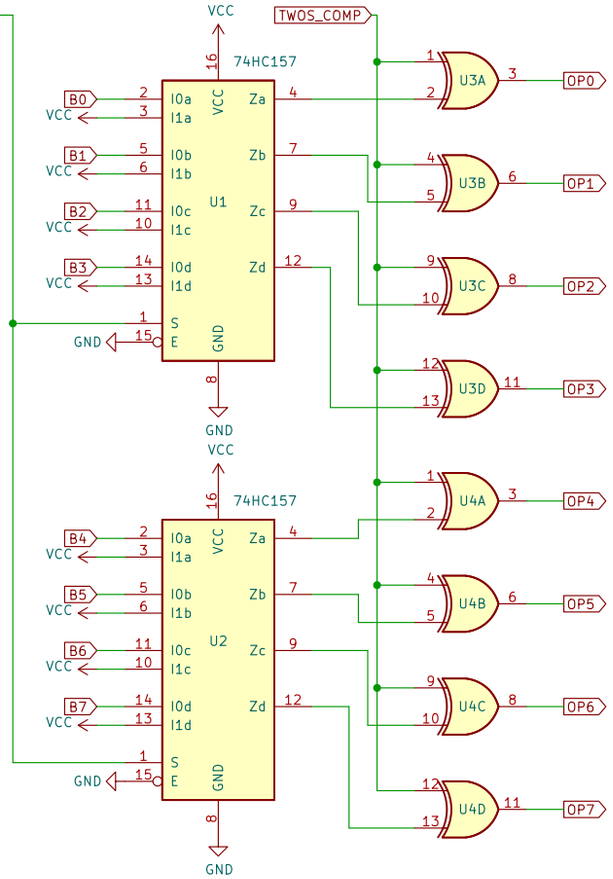
Control Word Decoding

DEC A: MUX_SEL: 1, TC: 0, CI: 0
A – B: MUX_SEL: 0, TC: 1, CI: 1
A + B: MUX_SEL: 0, TC: 0, CI: 0
INC A: MUX_SEL: 1, TC: 1, CI: 1
A – B – Ci: MUX_SEL: 0, TC: 1, CI: ?
A + B + Cf: MUX_SEL: 0, TC: 0, CI: ?

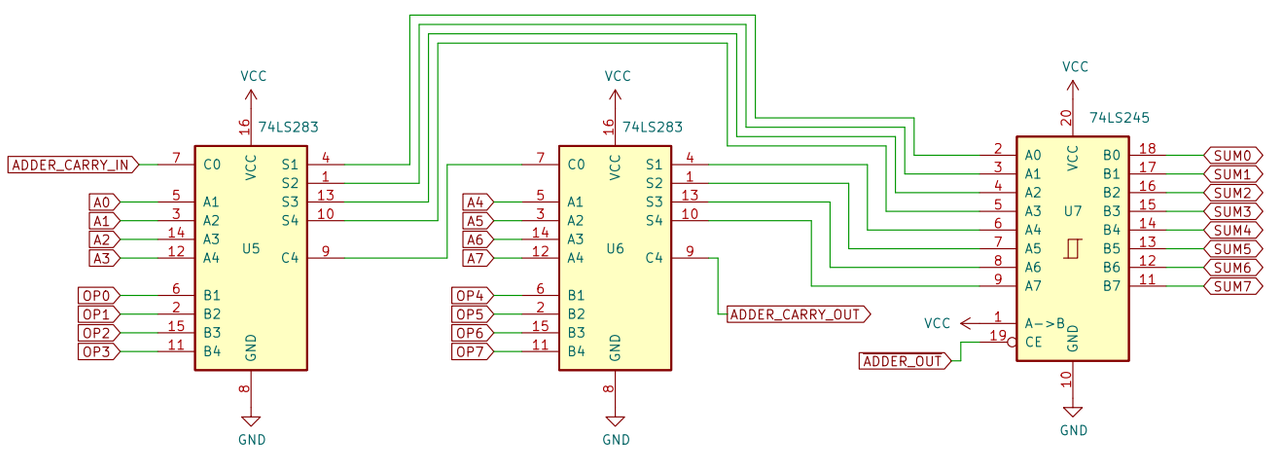
Operand Multiplexer

OP_MUX_SEL

a) 0xff
b) 0x0
c) B
d) B XOR 0XFF

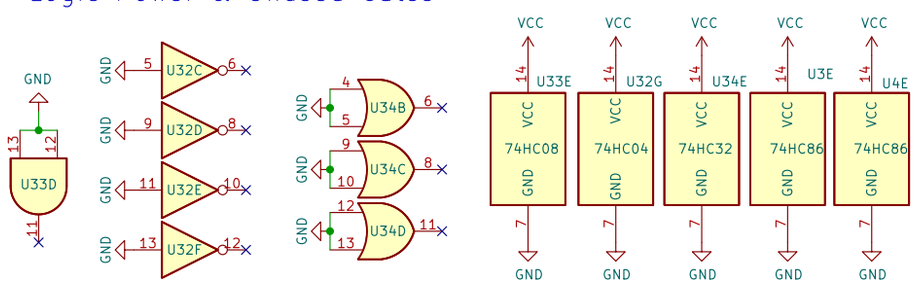


Full Adder w/ Carry



NOTE: Should have used 74HC283

Logic Power & Unused Gates



ADD / SUB / ADC / SBB / INC / DEC

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Title: Arithmetic Module

Size: User	Date:	Rev: 3
KiCad E.D.A. kicad (6.0.0–0)		Id: 1/1