

Sheet: gp_adc

File: gp_adc.sch

Sheet: ok_fpga

File: ok_fpga.sch

Sheet: level_shifters

File: level_shifters.sch

Sheet: adc1

File: adc1.sch

Sheet: dac1

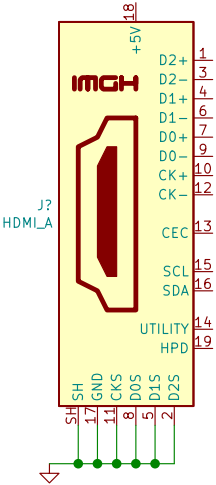
File: dac1.sch

Sheet: dac_gp

File: dac_gp.sch

Sheet: power

File: power.sch

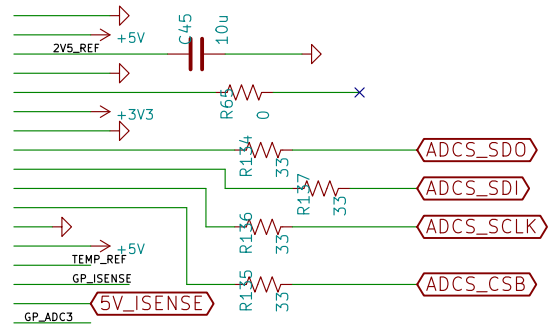
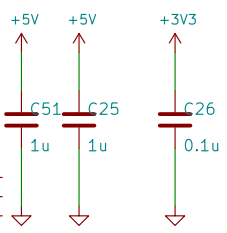
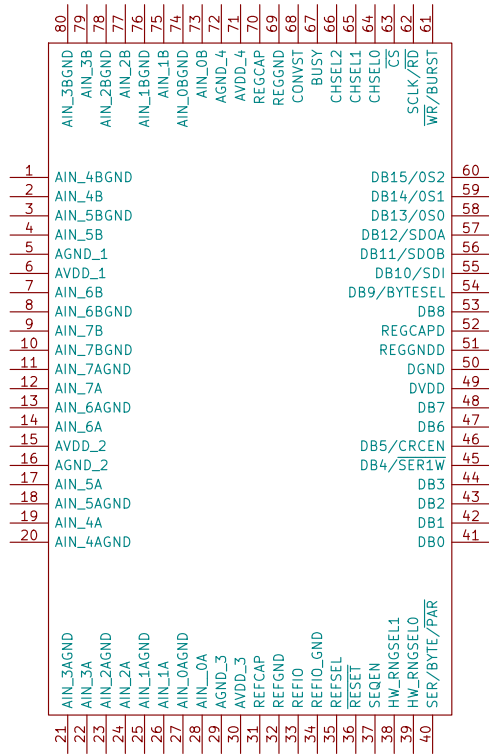
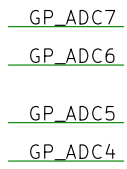


H1
MOUNT-HOLE3.0

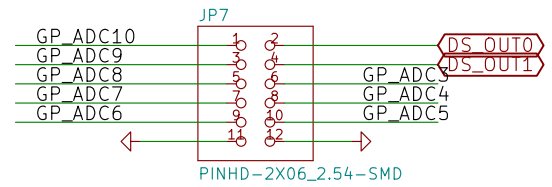
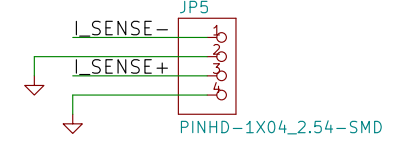
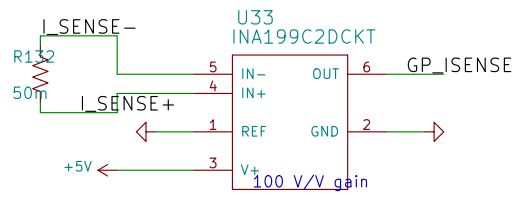
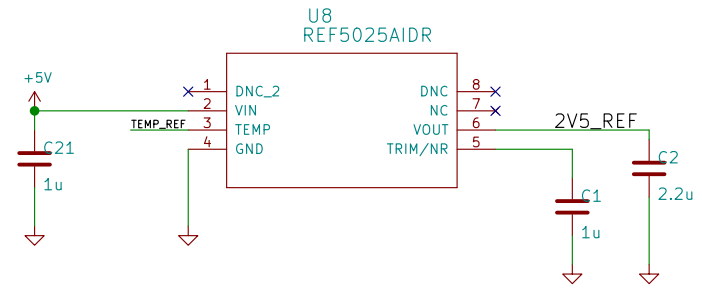
H2
MOUNT-HOLE3.0

H3
MOUNT-HOLE3.0

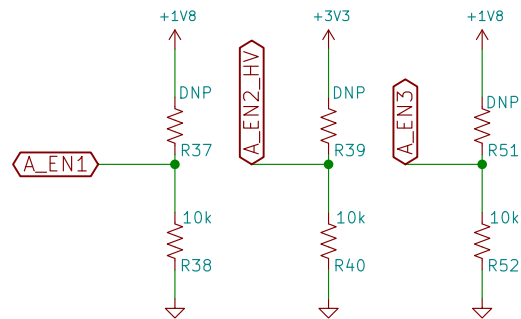
H4
MOUNT-HOLE3.0



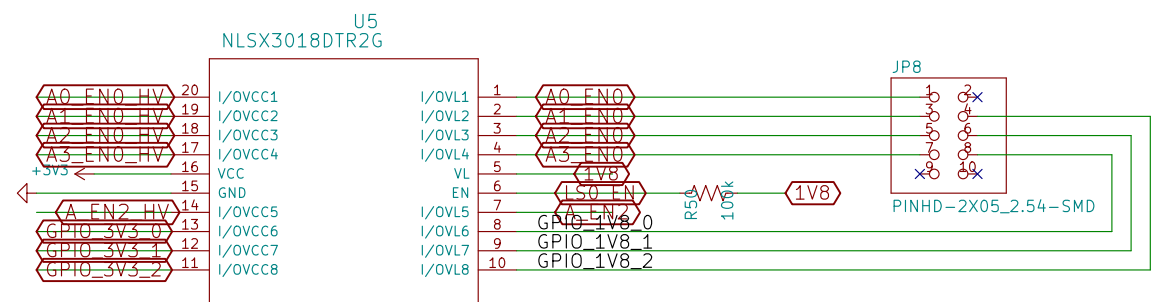
VA+ analog supply.
5V allows Range 2: VREF*2
VBD+ is digital I/O supply = 3.3V
REF from 2V-3V

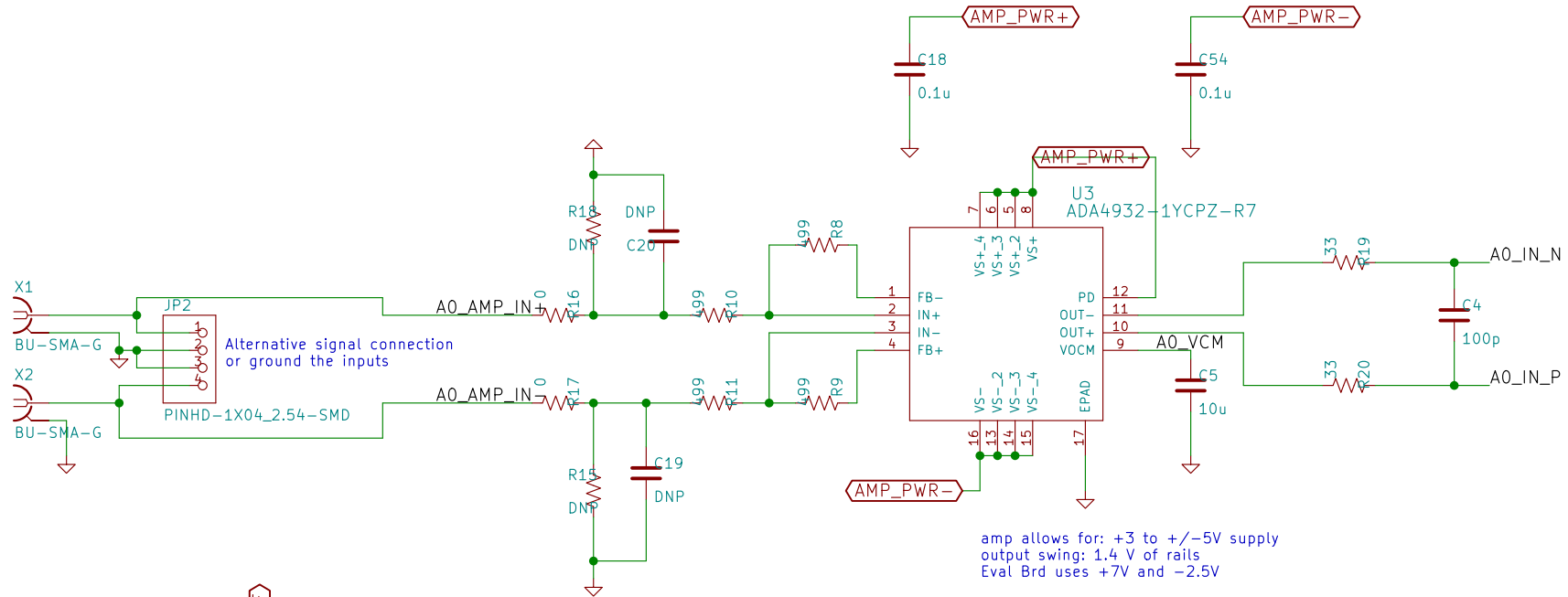


The dual SPI interface has sufficient BW
to clock the data out at the 1 MSPS
(just need 16 MHz clock rate)

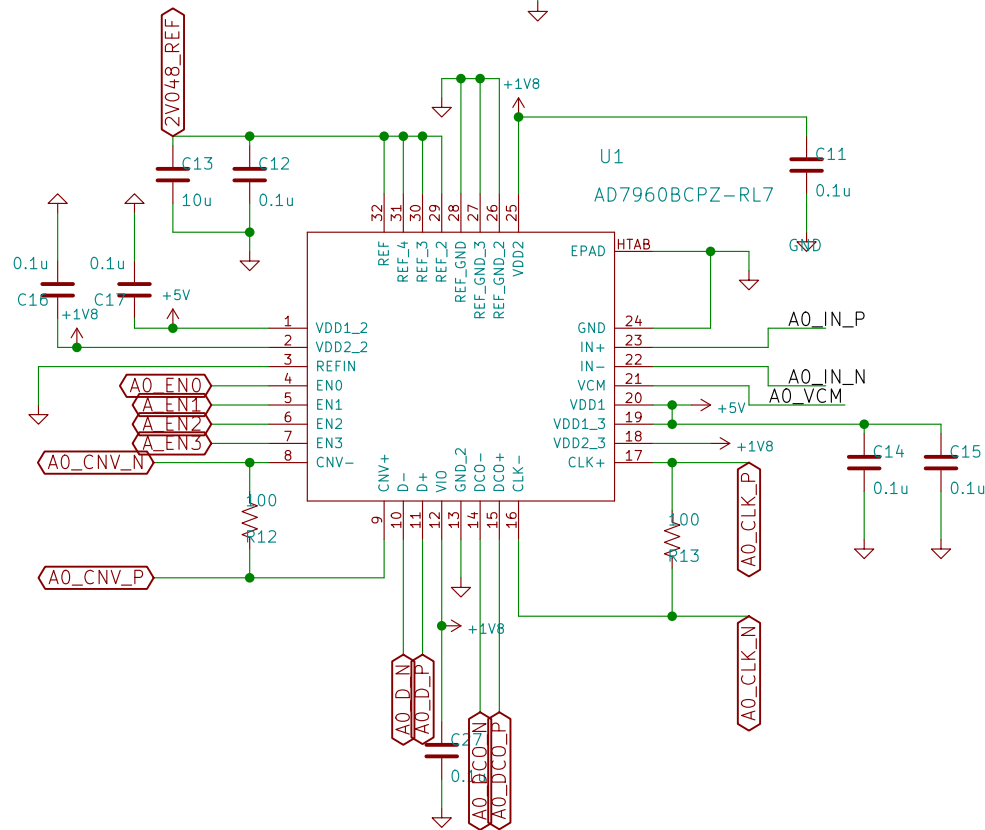


High speed ADC enable signals
 Connect A_EN2_HV to FPGA
 These are global (for all ADC channels)
 EN0 is the only signal that needs FPGA control per ADC channel.

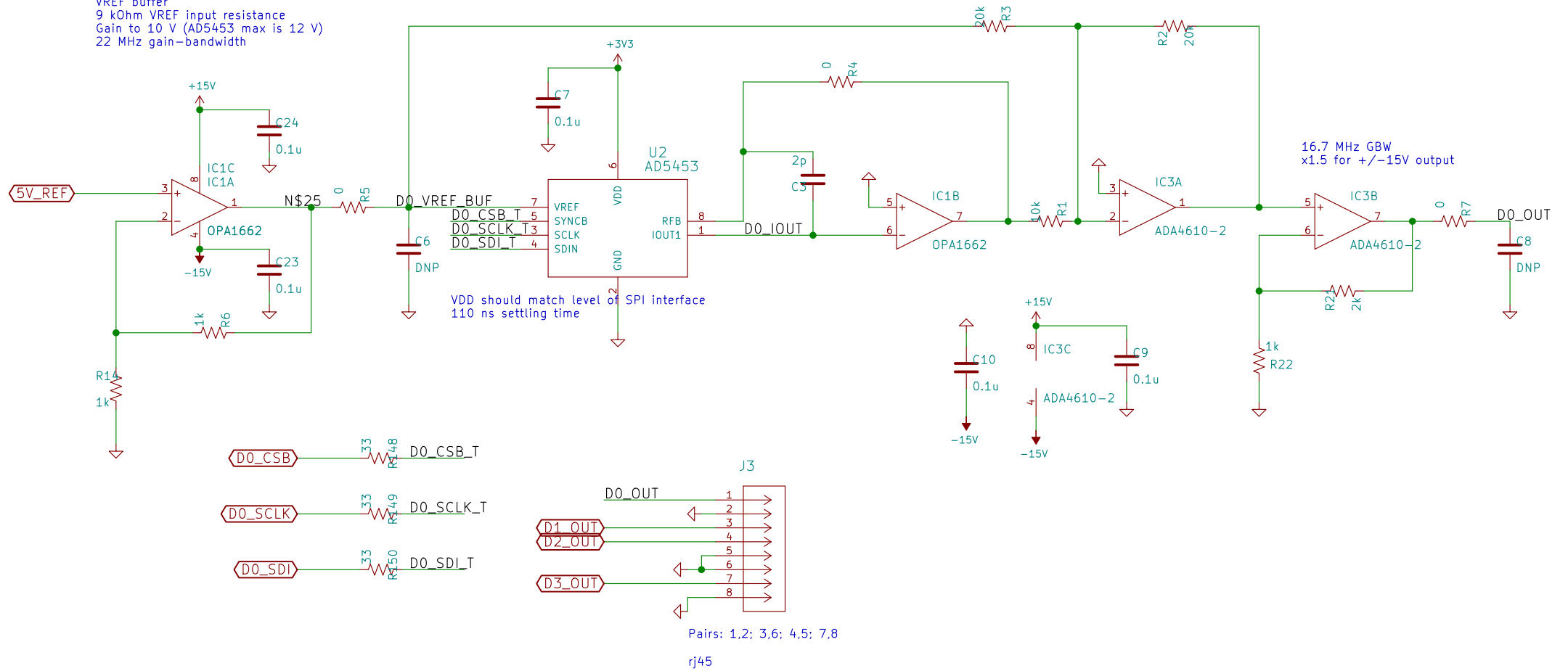


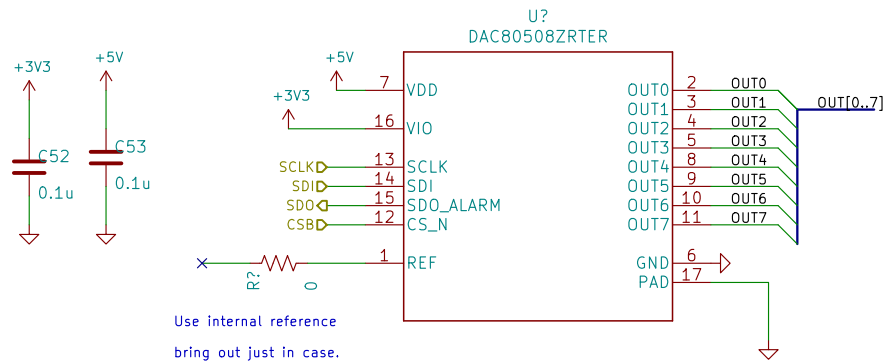


Use internal buffer with 2.048V ref.
EN3=X, EN2=0, EN1=0, EN0=1 (28 MHz BW)
EN3=X, EN2=1, EN1=0, EN0=1 (9 MHz BW)
VDD2 and VIO can come from the same supply.
But route and decouple separately.



VREF buffer
 9 kOhm VREF input resistance
 Gain to 10 V (AD5453 max is 12 V)
 22 MHz gain-bandwidth

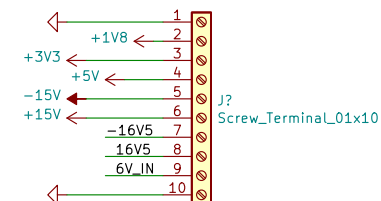
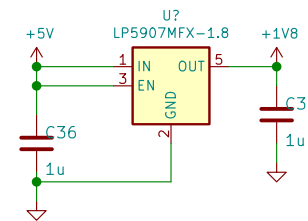
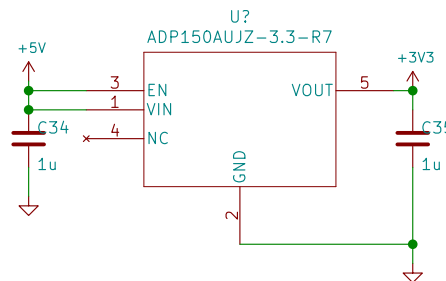
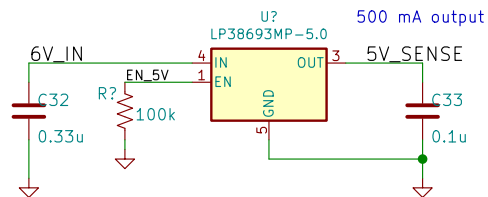
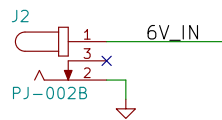




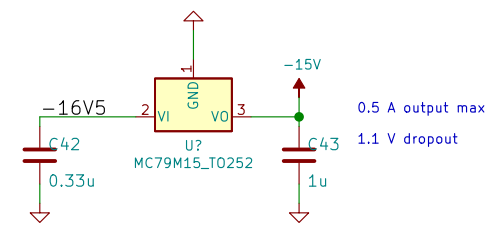
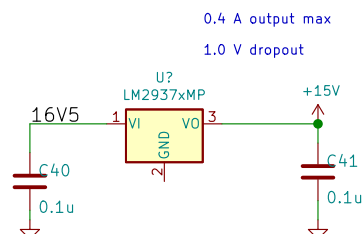
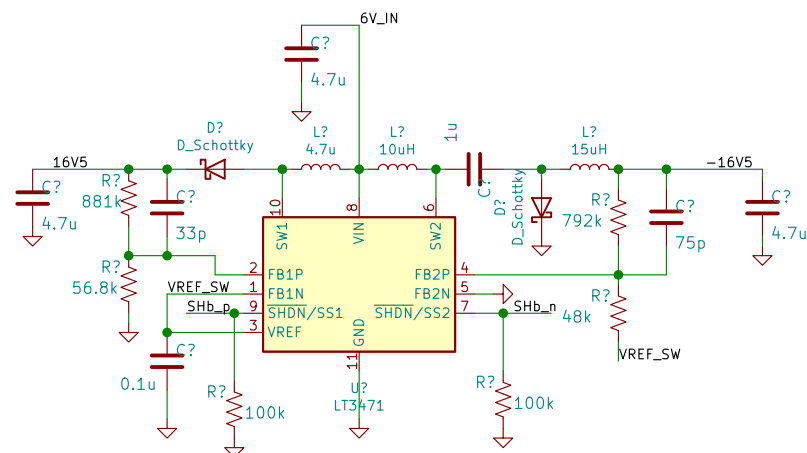
Howland Current Source (needs to MUX to any DAC HDMI signal)

Optional gain and unipolar to bipolar

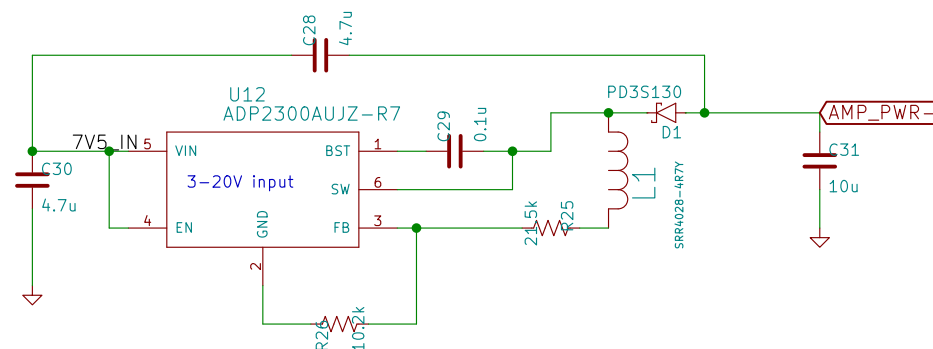
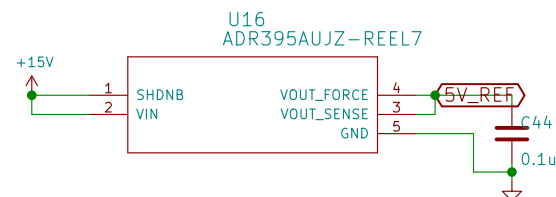
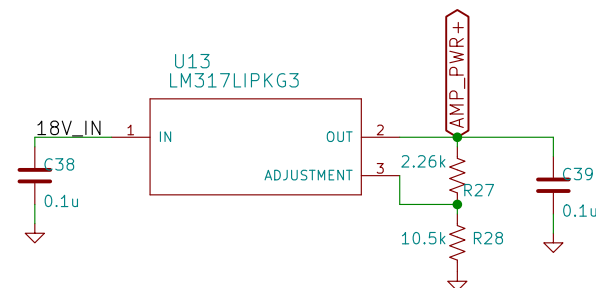
Add connector here?



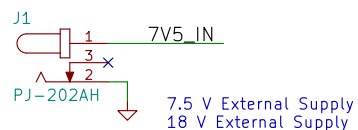
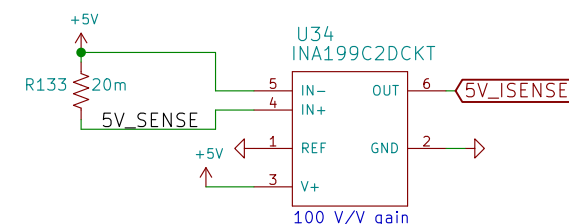
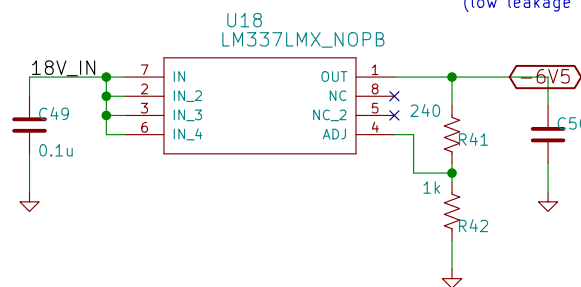
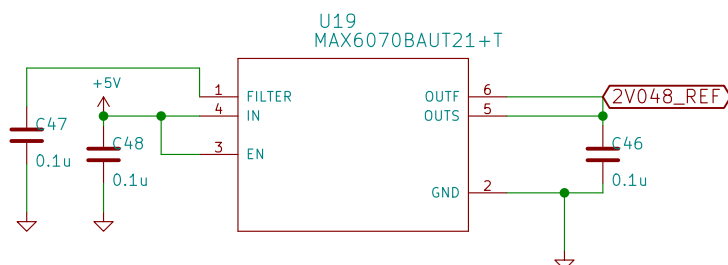
Allows for observation or override of supplies



0.5 A output max
1.1 V dropout



For FET gate drive
(low leakage gate drive)



OK1A	
DGND_1	P2-1
NC_3	P2-3
JTAG_TCK	P2-5 JP2-5
JTAG_TMS	P2-7 JP2-7
JTAG_TDI	P2-9 JP2-9
SYS_CLK4	P2-11
DGND_13	P2-13
G16-L9P_1	P2-15 JP2-15
G17-L9N_1	P2-17
H19-L34P_1	P2-19
H18-L34N_1	P2-21
F16-L10P_1	P2-23
F17-L10N_1	P2-25
J17-L36P_1	P2-27
K17-L36N_1	P2-29
K16-L21P_1	P2-31
J16-L21N_1	P2-33
+VCC01_35	P2-35
V21-L52P_1	P2-37
V22-L52N_1	P2-39
T21-L50P_1	P2-41
T22-L50N_1	P2-43
P21-L48P_1	P2-45
P22-L48N_1	P2-47
M21-L46P_1	P2-49
M22-L46N_1	P2-51
L20-L45P_1	P2-53
+VCC01_55	P2-55
L22-L45N_1	P2-57
H21-L41P_1	P2-59
H22-L41N_1	P2-61
F21-L37P_1	P2-63
F22-L37N_1	P2-65
D21-L31P_1	P2-67
D22-L31N_1	P2-69
B21-L19P_1	P2-71
B22-L19N_1	P2-73
A21-L20N_1	P2-75
J20-L43P_1	P2-77
J22-L43N_1	P2-79

OK1B	
+3.3VDD_2	P2-2 JP2-2
+3.3VDD_4	P2-4 JP2-4
+3.3VDD_6	P2-6 JP2-6
JTAG_TDO	P2-8 JP2-8
VREF_1	P2-10 JP2-10
NC_12	P2-12
DGND_14	P2-14
G19-L33P_1	P2-16
F20-L33N_1	P2-18
H20-L38P_1	P2-20
J19-L38N_1	P2-22
D19-L29P_1	P2-24
D20-L29N_1	P2-26
F18-L30P_1	P2-28
F19-L30N_1	P2-30
M16-L58P_1	P2-32
L15-L58N_1	P2-34
DGND_36	P2-36
K20-L40P_1	P2-38
K19-L40N_1	P2-40
U20-L51P_1	P2-42
U22-L51N_1	P2-44
R20-L49P_1	P2-46
R22-L49N_1	P2-48
N20-L47P_1	P2-50
N22-L47N_1	P2-52
M20-L42P_1	P2-54
DGND_56	P2-56
L19-L42N_1	P2-58
K21-L44P_1	P2-60
K22-L44N_1	P2-62
G20-L39P_1	P2-64
G22-L39N_1	P2-66
E20-L35P_1	P2-68
E22-L35N_1	P2-70
C20-L32P_1	P2-72
C22-L32N_1	P2-74
A20-L20P_1	P2-76
DGND_78	P2-78
DGND_80	P2-80

OK1C	
+VDC_1	P1-1 JP1-1
+VDC_3	P1-3 JP1-3
+VDC_5	P1-5 JP1-5
+1.8VDD	P1-7 JP1-7
+3.3VDD_9	P1-9 JP1-9
+3.3VDD_11	P1-11 JP1-11
+3.3VDD_13	P1-13 JP1-13
W20-L60P_1	P1-15 JP1-15
W22-L60N_1	P1-17 JP1-17
U19-L70P_1	P1-19 JP1-19
V20-L70N_1	P1-21 JP1-21
C5-L2P_0	P1-23
A5-L2N_0	P1-25
D14-L49P_0	P1-27
C14-L49N_0	P1-29
E16-L66P_0	P1-31
D17-L66N_0	P1-33
DGND_35	P1-35
D7-L32P_0	P1-37
D8-L32N_0	P1-39
L17-L61P_1	P1-41
K18-L61N_1	P1-43
D6-L3P_0	P1-45
C6-L3N_0	P1-47
A3-L1P_0	P1-49
A4-L1N_0	P1-51
B8-L6P_0	P1-53
DGND_55	P1-55
A8-L6N_0	P1-57
B10-L34P_0	P1-59
A10-L34N_0	P1-61
C13-L38P_0	P1-63
A13-L38N_0	P1-65
C15-L51P_0	P1-67
A15-L51N_0	P1-69
C17-L64P_0	P1-71
A17-L64N_0	P1-73
A18-L65N_0	P1-75
C11-L35P_0	P1-77
A11-L35N_0	P1-79

OK1D	
DGND_2	P1-2
+1.2VDD_4	P1-4
+1.2VDD_6	P1-6
SYS_CLK5	P1-8
USB_SCL	P1-10
USB_SDA	P1-12
DGND_14	P1-14
T19-L74P_1	P1-16
T20-L74N_1	P1-18
P17-L72P_1	P1-20
N16-L72N_1	P1-22
M17-L71P_1	P1-24
M18-L71N_1	P1-26
P18-L73P_1	P1-28
R19-L73N_1	P1-30
D9-L7P_0	P1-32
C8-L7N_0	P1-34
+VCC00_36	P1-36
D10-L33P_0	P1-38
C10-L33N_0	P1-40
D11-L36P_0	P1-42
C12-L36N_0	P1-44
D15-L62P_0	P1-46
C16-L62N_0	P1-48
B6-L4P_0	P1-50
A6-L4N_0	P1-52
C7-L5P_0	P1-54
+VCC00_56	P1-56
A7-L5N_0	P1-58
C9-L8P_0	P1-60
A9-L8N_0	P1-62
B12-L37P_0	P1-64
A12-L37N_0	P1-66
B14-L50P_0	P1-68
A14-L50N_0	P1-70
B16-L63P_0	P1-72
A16-L63N_0	P1-74
B18-L65P_0	P1-76
DGND_78	P1-78
DGND_80	P1-80

