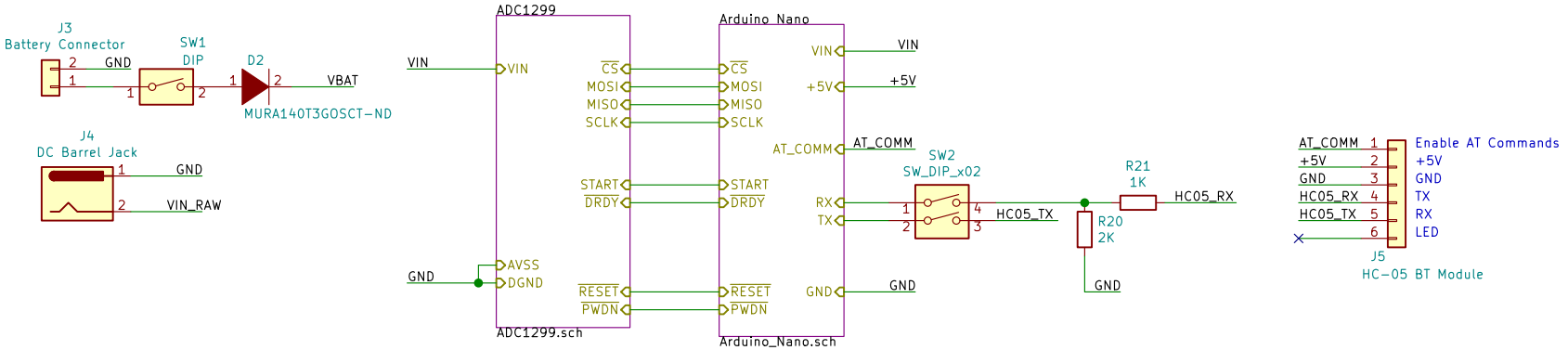
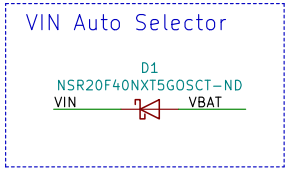
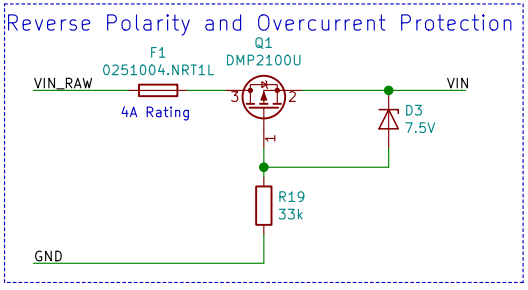


TEXT1
Text

LOGO1
UoNLogo

LOGO2
SparkerLogo





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ADS1299-8 and Support Circuitry

+5V Regulated Supply

5V Supply driving 3.3V LED, so 1.7V drop across resistor. I = 20mA, R = V/I = 1.7 / 20m = 85 Ohms. Round to higher standard value, 100 Ohms

U2 LM1117-5.0

VIN, C26 100uF, C27 10uF, C29 100nF, C31 10nF, VI, GND, VO, AVDD, C34 1nF, C35 10nF, C37 100nF, C39 10uF, R22 100, D4 LTST-C194TBKT PWR (Blue), AVSS

+3.3V Regulated Supply

U3 LM3480-3.3

AVDD, C28 100uF, C30 10uF, C32 100nF, C33 10nF, VI, GND, VO, DVDD, C36 1nF, C38 10nF, C40 100nF, C41 10uF, DGND

J1 Conn_01x09_Male

SW3, SW4, SW5, SW6, SW7, SW8, SW9, SW10, SW11, SW_SPDT

R3 220k, R4 220k, R5 220k, R6 220k, R7 220k, R8 220k, R9 220k, R10 220k, R11 220k

Jump unused analog inputs directly to AVDD

MID_SUPPLY

C1 24nF, C2 24nF, C3 24nF, C4 24nF, C5 24nF, C6 24nF, C7 24nF, C8 24nF

Referred Montage: All electrodes will be referenced to reference electrode.
Negative electrode inputs are unused, set to mid-supply.
MAKE SURE CORRECT REGISTERS ARE SET IN SOFTWARE!

RC LPF: f_c = 1 / (2*pi*R*C)
R = 220kOhms
https://pdfs.semanticscholar.org/05b6/6348fc1a11726d76eb08ddddabfc4cd36f6.pdf

Lowest Sampling Frequency = 250sps, therefore Nyquist Frequency at 125Hz, but this is still very high for EEG. Will LPF at 30Hz

30 = 1/ (2 * pi * 220k * C)
C = 1/ (2 * pi * 220k*30)
C = 24.11nF, approx 24nF --> f_c = 30.14Hz

Mid-Supply Voltage Divider

AVDD, R1 10k, MID_SUPPLY, R2 10k, AVSS

C12 0.1uF, C14 1uF, AVSS, AVDD

Right Leg Drive Bias not used under instruction from Psychology Department

C15 0.1uF, C18 1uF, C10 1uF, C17 1uF

ADC1 ADS1299-8

IN8P, IN8N, IN7P, IN7N, IN6P, IN6N, IN5P, IN5N, IN4P, IN4N, IN3P, IN3N, IN2P, IN2N, IN1P, IN1N

AVSS, AVDD, BIASINV, BIASOUT, BIASIN, BIASREF, AVDD, VCAP3, AVDD1, AVSS1

RESV1, RESERVED, CLKSEL, AVSS, DVDD, /DRDY, GPIO4, DOUT, GPIO2, GPIO3, SCLK, /CS, CLK, START, DIN, DGND

SRB2, SRB1, VCAP4, VREFP, NC, VREFN, NC, /PWDN, VCAP1, GPIO1, DAISY_IN, VCAP2, /RESET

C20 0.1uF, C21 1uF, R13 33k, R15 33k, R14 33k, DVDD, DGND

All GPIO Pins pulled to GND, unused

R12 33k, RESET, DGND

C11 0.1uF, C13 1uF, C9 1uF, C16 100uF, C19 1uF, AVSS

Using internal 4.5V Reference, so short VREFN to AVSS

PWDN

Control and Data Lines

MOSI, MISO, SCLK, CS, START, DRDY, PWDN, RESET

Power Connections

VIN, AVSS, DGND

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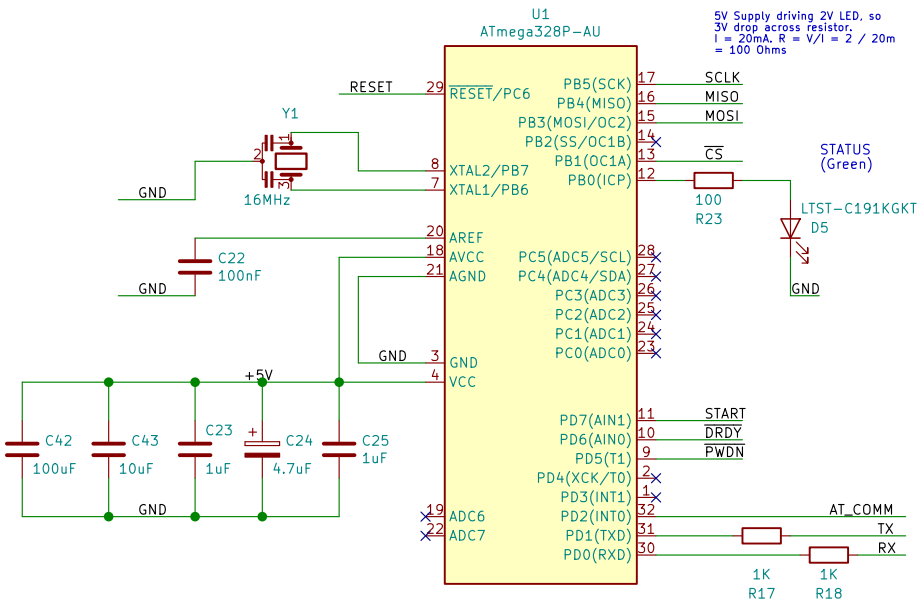
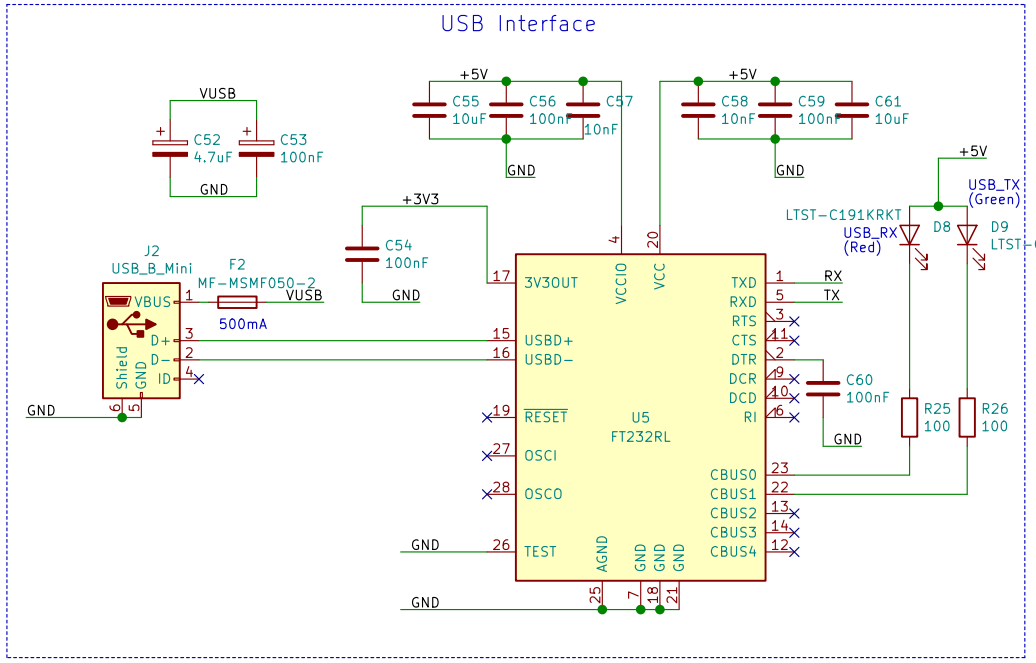
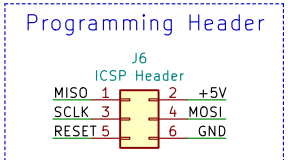
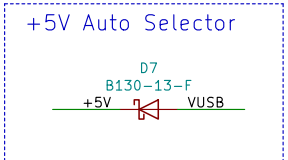
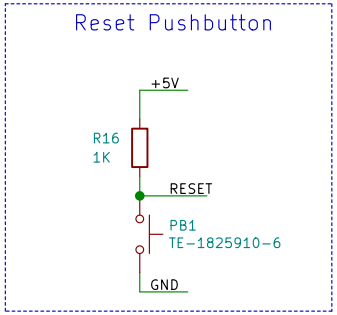
ATMega328P

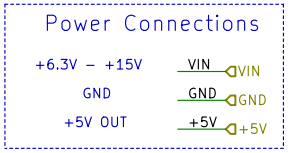


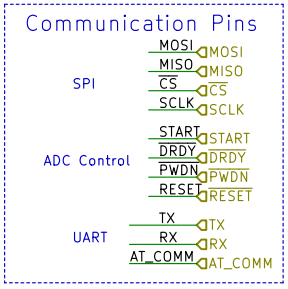


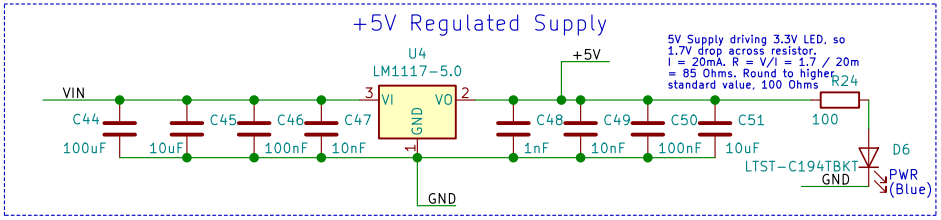












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