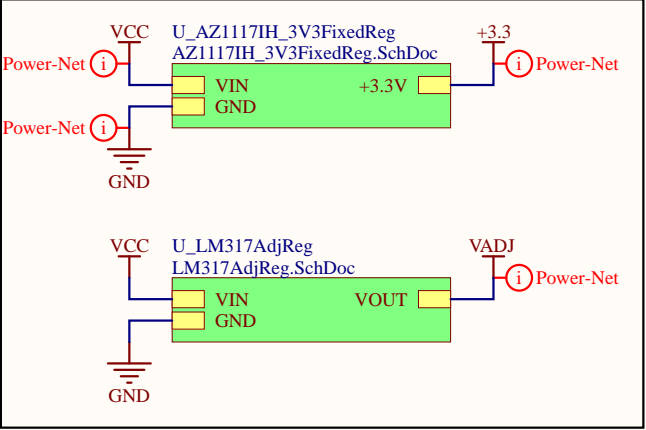
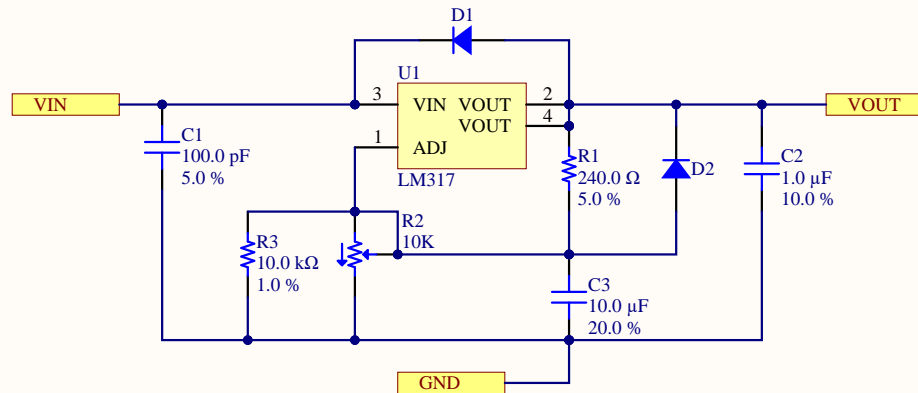


Voltage Regulation



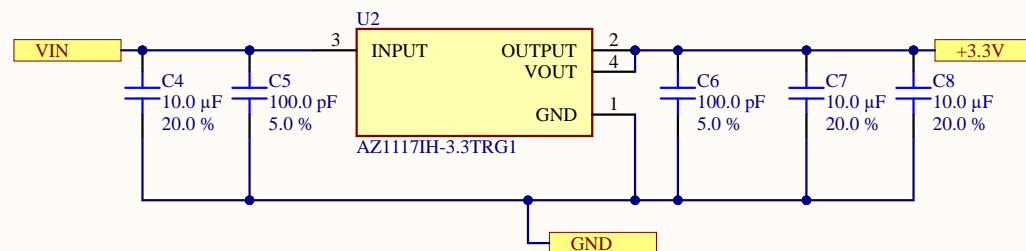
This schematic sheet contains all of the top level blocks for the project. Currently, there are two different linear voltage regulators, one 3.3V fixed regulator, and one 2-30V adjustable voltage regulator.

| | | |
|---------------------|-------------------------------|---------------|
| Title | | |
| Top Level Schematic | | |
| Size | Number | Revision |
| A | | |
| Date: | 2/03/2022 | Sheet 1 of 3 |
| File: | C:\Users\...\Top Level.SchDoc | Drawn By: LSG |



Linear adjustable voltage regulator using the LM317T. The output voltage is set by configuring the values of R1 and R2. The output voltage is calculated as follows:
 $V_{out} = V_{ref} * (1 + R2/R1)$ Where V_{ref} is the voltage between the output and the adjustment potentiometer, in this case, this is the voltage across the 240 Ohm resistor.

| | | |
|--|---------------------------------|---------------|
| Title | | |
| LM317 Adjustable Linear Voltage Regulator | | |
| Size | Number | Revision |
| A | | |
| Date: | 2/03/2022 | Sheet 2 of 3 |
| File: | C:\Users\...\LM317AdjReg.SchDoc | Drawn By: LSG |



Linear fixed 3.3V voltage regulator using the AZ1117IH. This is a surface mount regulator that comes in a SOT223 package, as well as surface mount passive capacitors. There are 2x 10uF capacitors because the spec is for a 22uF capacitor, but rowan inly stocks up to 10uF in SMD ceramic caps.

| | | |
|---|--|---------------|
| Title | | |
| AZ1117IH 3.3V Linear Voltage Regulator | | |
| Size | Number | Revision |
| A | | |
| Date: | 2/03/2022 | Sheet 3 of 3 |
| File: | C:\Users\...\AZ1117IH_3V3FixedReg.SchDoc | Drawn By: LSG |

| Comment | Description | Designator | Footprint | LibRef | Quantity | Rowan Part Number |
|------------------|---|----------------|--|--------------------|----------|-------------------|
| 100.0 pF | 100 pF ±5% 50V Ceramic Capacitor X7R 0603 (1608 Metric) | C1, C5, C6 | PCB - CAPACITOR - MLCC - CAP 0603_1608 | 1535 | 3 | 1535 |
| 1.0 µF | 1 µF ±10% 25V Ceramic Capacitor X7R 0603 (1608 Metric) | C2 | PCB - CAPACITOR - MLCC - CAP 0603_1608 | 1552 | 1 | 1552 |
| 10.0 µF | 10 µF ±20% 16V Ceramic Capacitor X5R 0603 (1608 Metric) | C3, C4, C7, C8 | PCB - CAPACITOR - MLCC - CAP 0603_1608 | 1572 | 4 | 1572 |
| CDSU4148 | Diode Standard 75 V 150mA Surface Mount 0603/SOD- 523F | D1, D2 | PCB - DIODES - SOD523F | 1611 | 2 | 1611 |
| 240.0 Ω | 240 Ohms ±5% 0.25W, 1/4W Through Hole Resistor Axial Carbon Film | R1 | PCB - RESISTOR - AXIAL | 57 | 1 | 57 |
| 10K | Potentiometer | R2 | TrimmerPot | Potentiometer | 1 | 1349 |
| 10.0 kΩ | 10 kOhms ±1% 0.1W, 1/10W Chip Resistor 0603 (1608 Metric) Moisture Resistant Thick Film | R3 | PCB - RESISTOR - CHIP - RES 0603_1608 | 1416 | 1 | 1416 |
| LM317 | Linear Voltage Regulator IC Positive Adjustable 1 Output 1.5A SOT-223-4 | U1 | PCB - LEADED - SOT - SOT-223 | 1613 | 1 | 1613 |
| AZ1117IH-3.3TRG1 | IC REG LINEAR 3.3V 1A SOT223 | U2 | FP-SOT223-MFG | CMP-12756-000043-1 | 1 | |