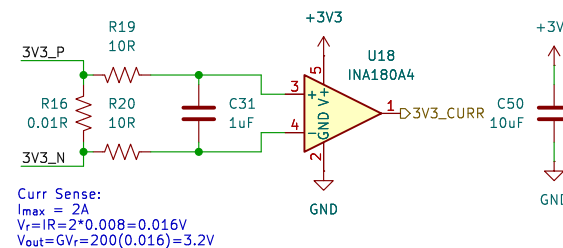
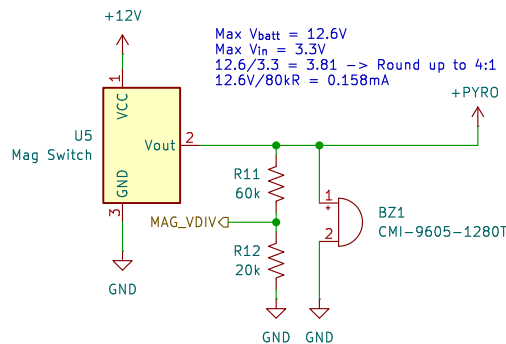
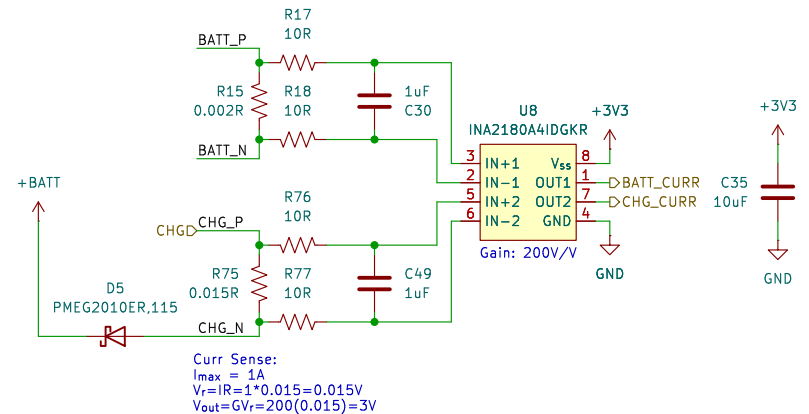


Curr Sense:  
 $I_{max} = 7.5A$   
 $V_r = I_r = 7.5 \times 0.002 = 0.015V$   
 $V_{out} = G \times V_r = 200(0.015) = 3V$



Keep BZ1 away from mag switch and current sensing lines

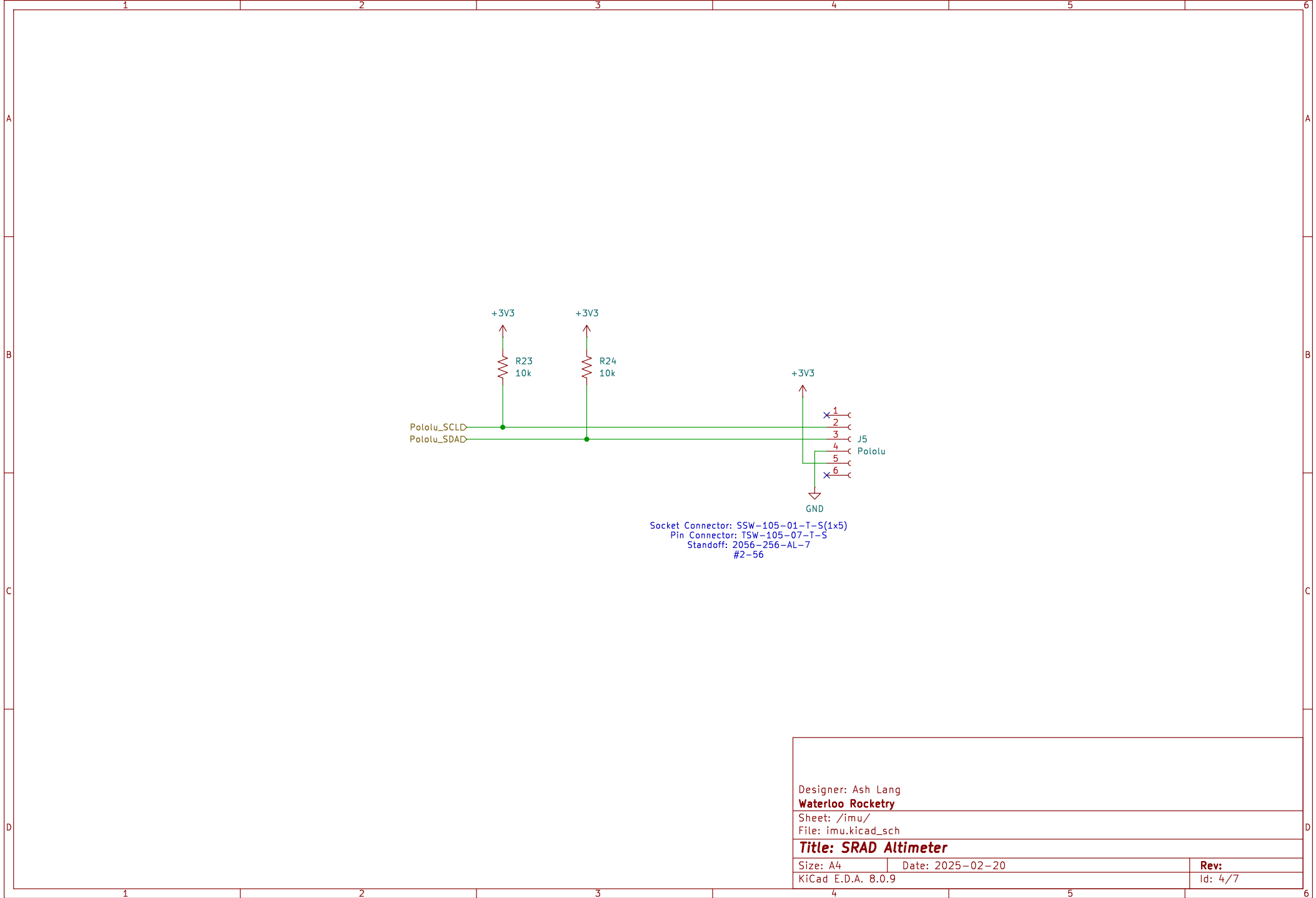
Designer: Ash Lang  
 Waterloo Rocketry

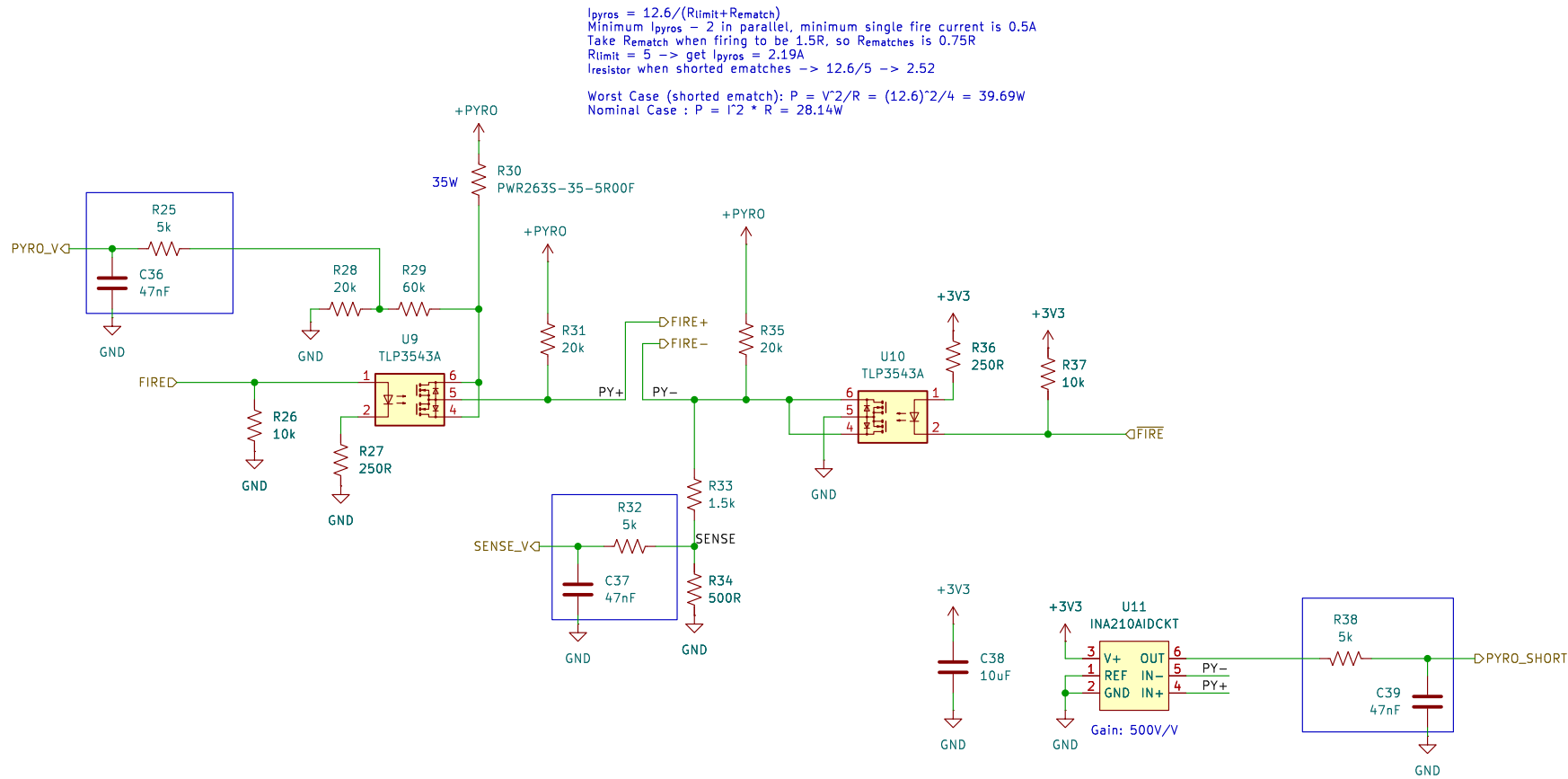
Sheet: /power/  
 File: power.kicad\_sch

Title: SRAD Altimeter

Size: A4  
 Date: 2025-02-20  
 KiCad E.D.A. 8.0.9

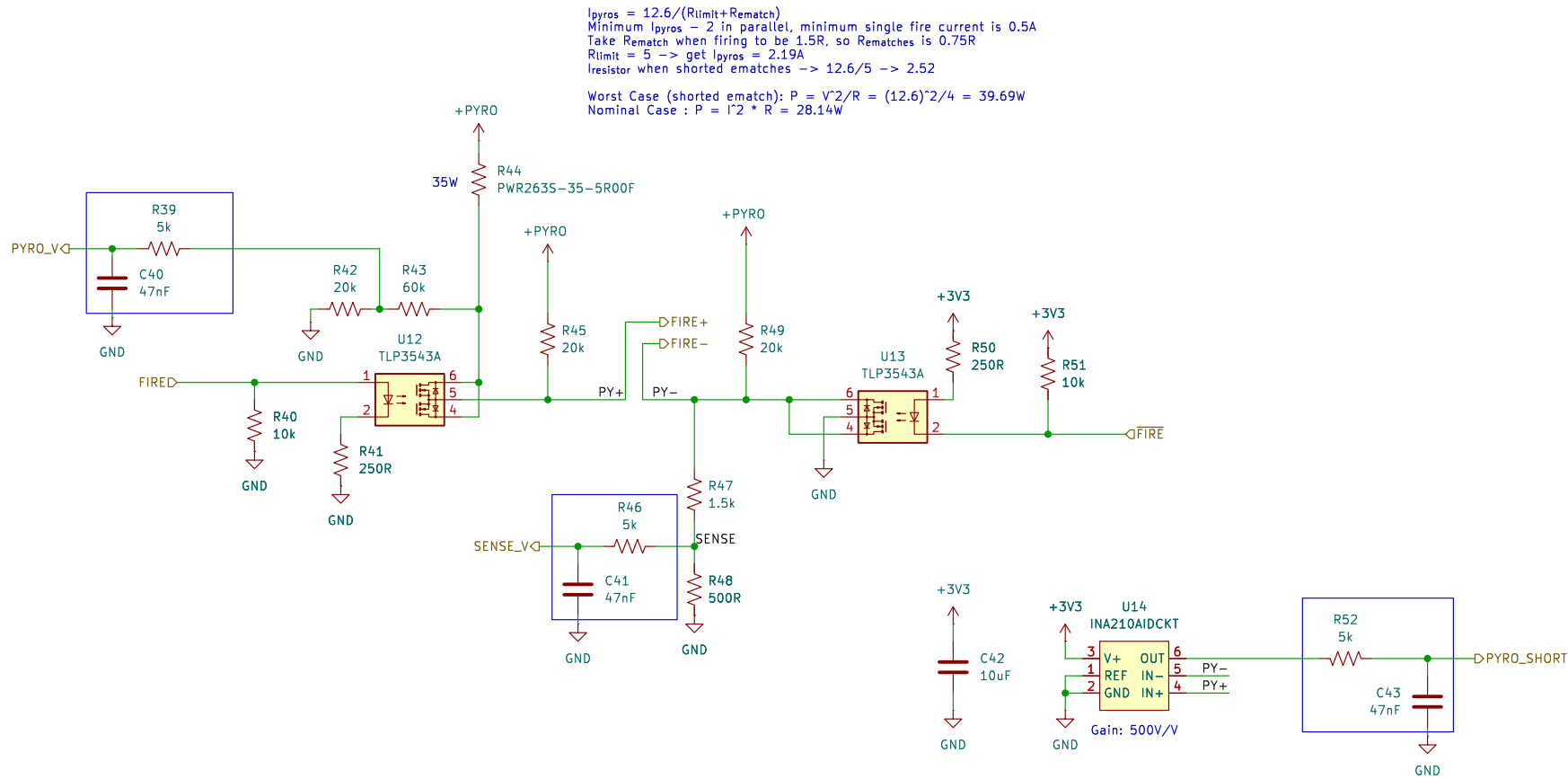
Rev:  
 Id: 3/7





$I_{pyros} = 12.6 / (R_{limit} + R_{ematch})$   
 Minimum  $I_{pyros}$  - 2 in parallel, minimum single fire current is 0.5A  
 Take  $R_{ematch}$  when firing to be 1.5R, so  $R_{ematches}$  is 0.75R  
 $R_{limit} = 5 \rightarrow$  get  $I_{pyros} = 2.19A$   
 Resistor when shorted ematches  $\rightarrow 12.6/5 \rightarrow 2.52$   
 Worst Case (shorted ematch):  $P = V^2/R = (12.6)^2/4 = 39.69W$   
 Nominal Case :  $P = I^2 * R = 28.14W$

Target Cutoff Frequency = 500Hz  
 $f_c = 1/(2\pi RC) \rightarrow RC = 0.00032$   
 pick  $R = 5k \rightarrow C = 63nF$ , round down to 47nF  $\rightarrow f_c = 677HZ$



$I_{pyros} = 12.6 / (R_{limit} + R_{ematch})$   
 Minimum  $I_{pyros}$  - 2 in parallel, minimum single fire current is 0.5A  
 Take Rematch when firing to be 1.5R, so Rematches is 0.75R  
 $R_{limit} = 5 \rightarrow$  get  $I_{pyros} = 2.19A$   
 Resistor when shorted ematches  $\rightarrow 12.6/5 \rightarrow 2.52$   
 Worst Case (shorted ematch):  $P = V^2/R = (12.6)^2/4 = 39.69W$   
 Nominal Case :  $P = I^2 * R = 28.14W$

Target Cutoff Frequency = 500Hz  
 $f_c = 1/(2\pi RC) \rightarrow RC = 0.00032$   
 pick  $R = 5k \rightarrow C = 63nF$ , round down to 47nF  $\rightarrow f_c = 677HZ$

Designer: Ash Lang		
<b>Waterloo Rocketry</b>		
Sheet: /channel 2/		
File: pyros.kicad_sch		
<b>Title: SRAD Altimeter</b>		
Size: A4	Date: 2025-02-20	Rev:
KiCad E.D.A. 8.0.9		Id: 6/7

