

Eng: Chris Pavlina

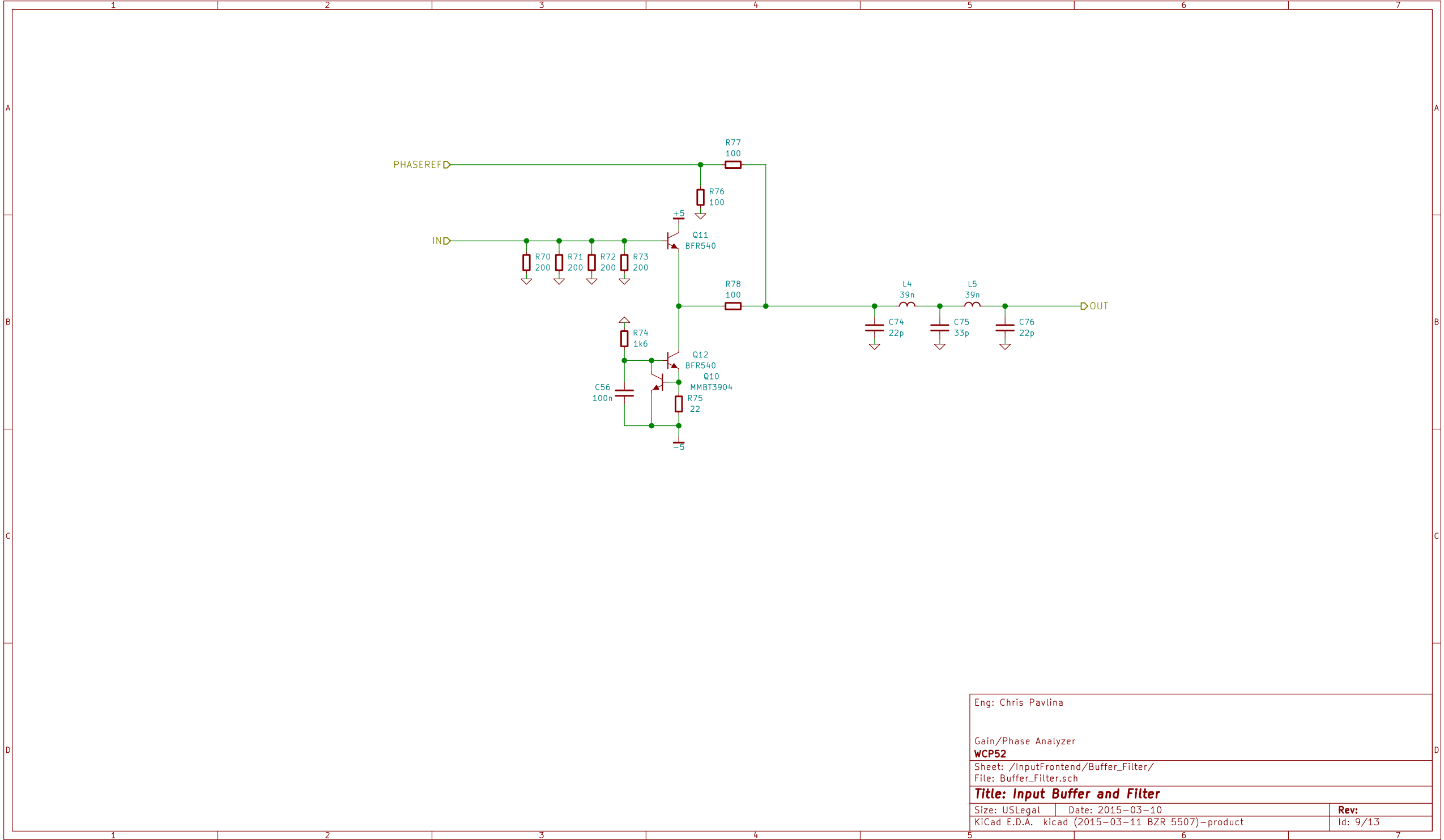
Gain/Phase Analyzer  
**WCP52**

Sheet: /  
File: wcp52.sch

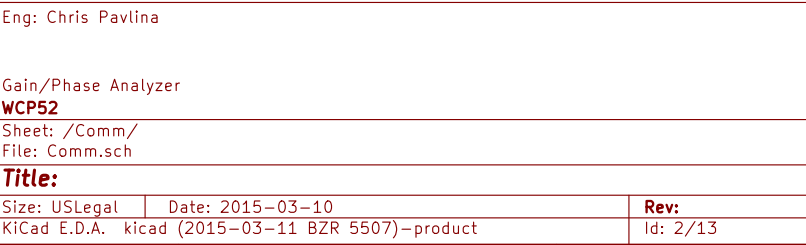
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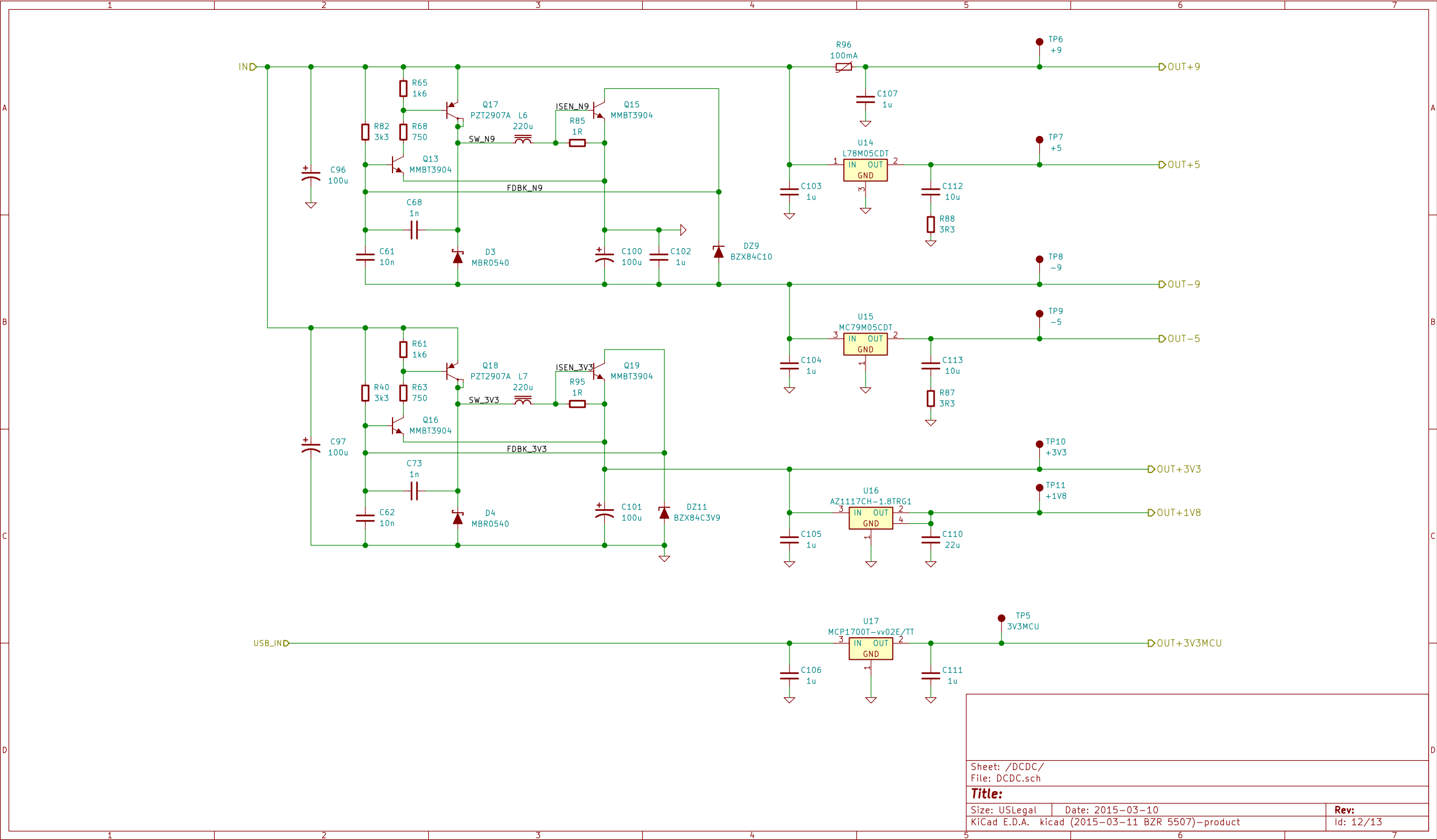
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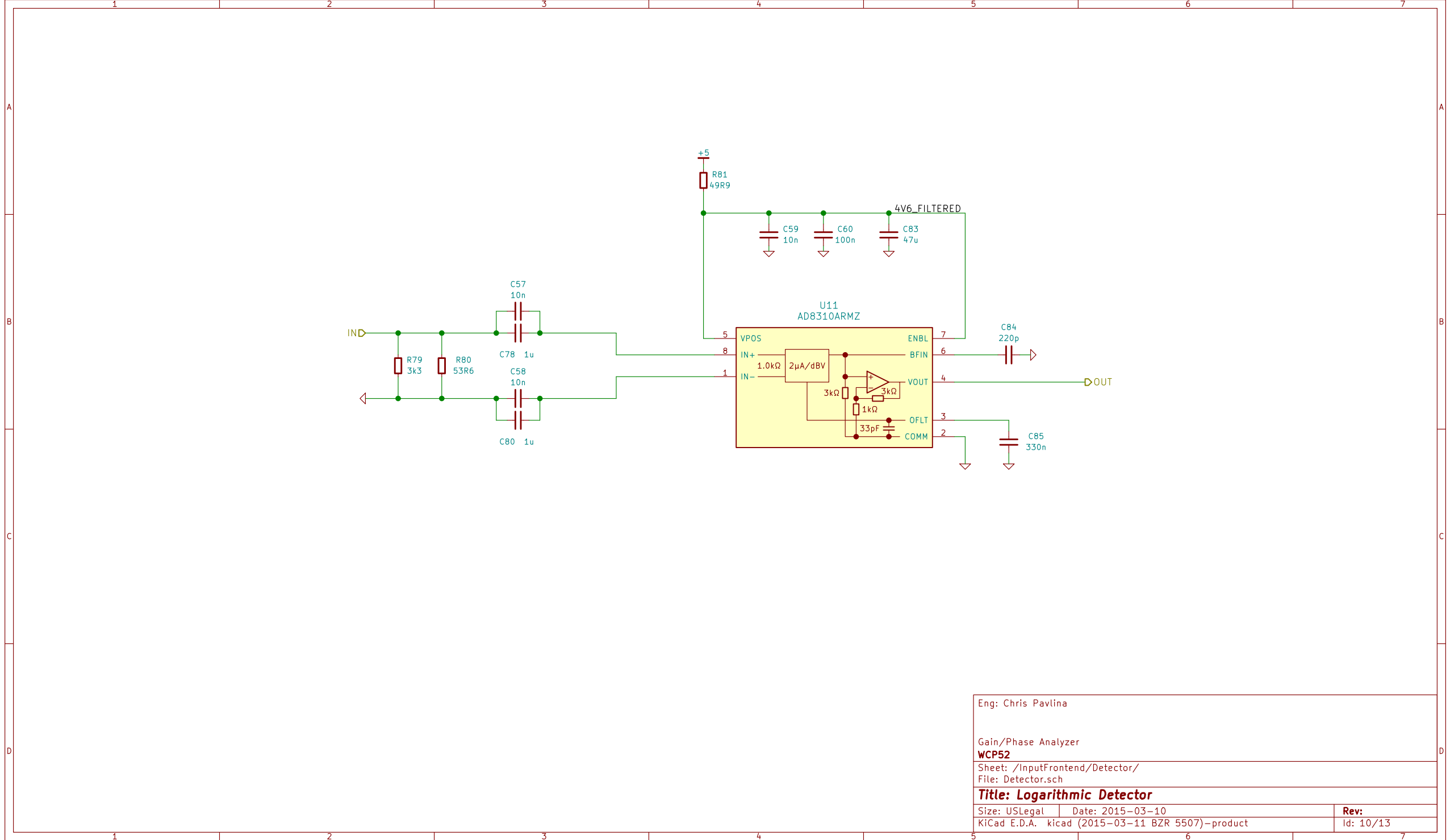
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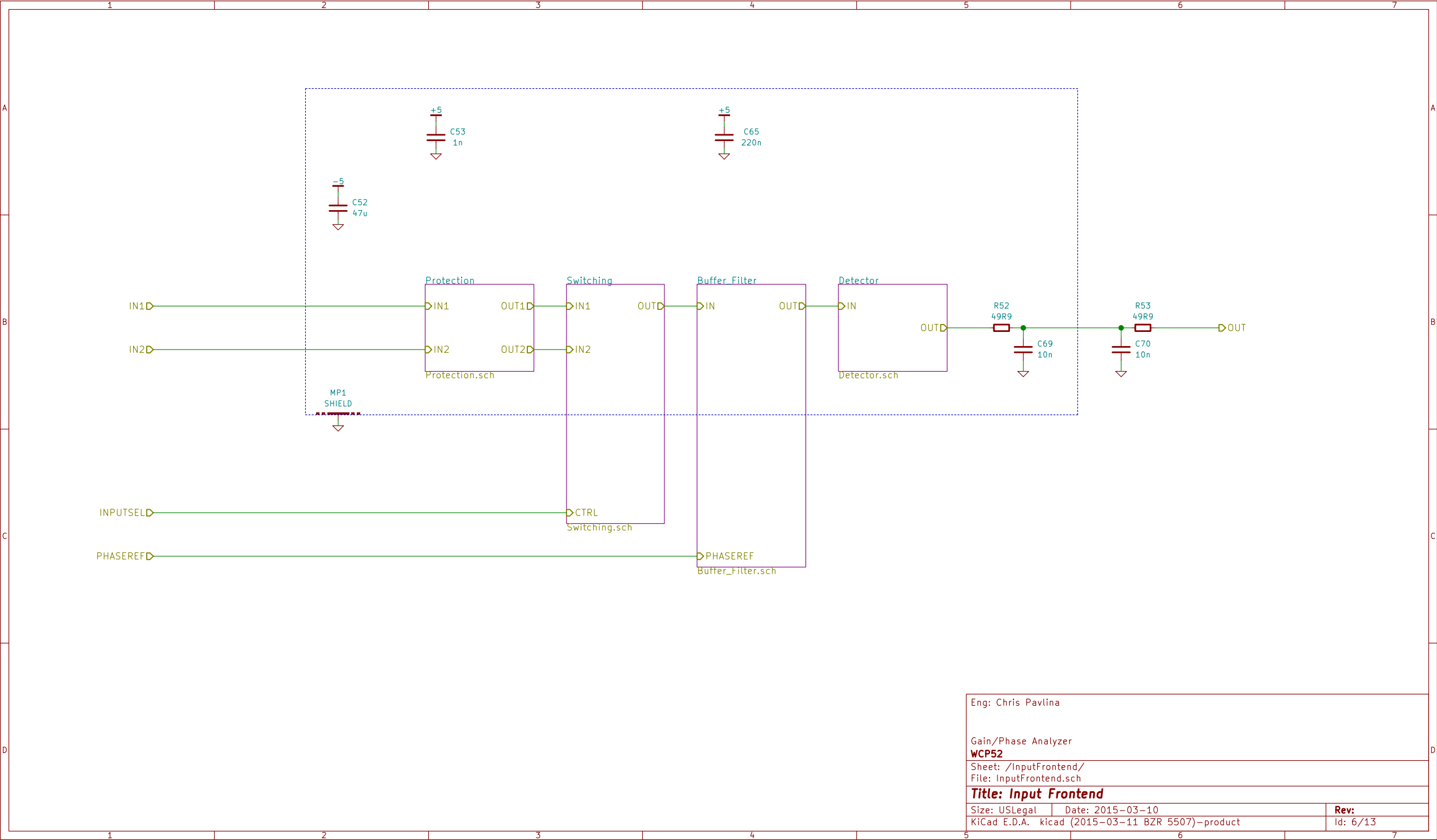
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Gain/Phase Analyzer		
<b>WCP52</b>		
Sheet: /InputFrontend/Buffer_Filter/ File: Buffer_Filter.sch		
<b>Title: Input Buffer and Filter</b>		
Size: USLegal	Date: 2015-03-10	Rev:
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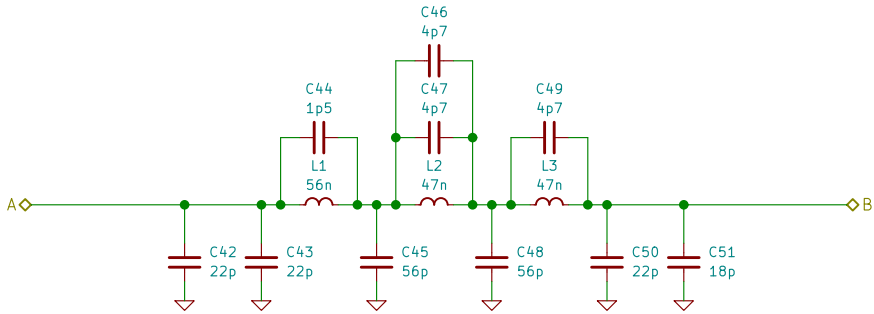




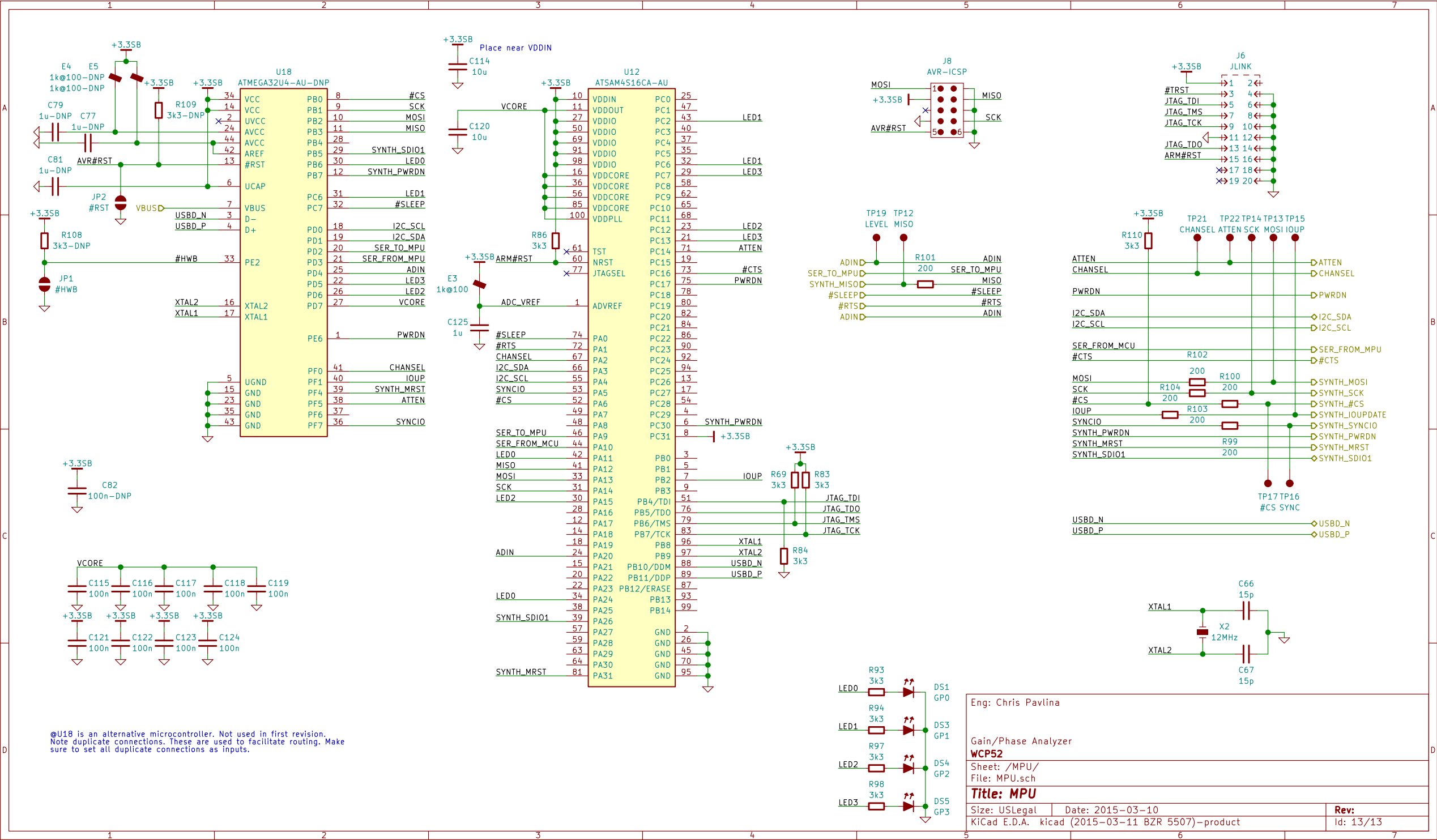


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Sheet: /InputFrontend/Detector/		
File: Detector.sch		
Title: Logarithmic Detector		
Size: USLegal	Date: 2015-03-10	Rev:
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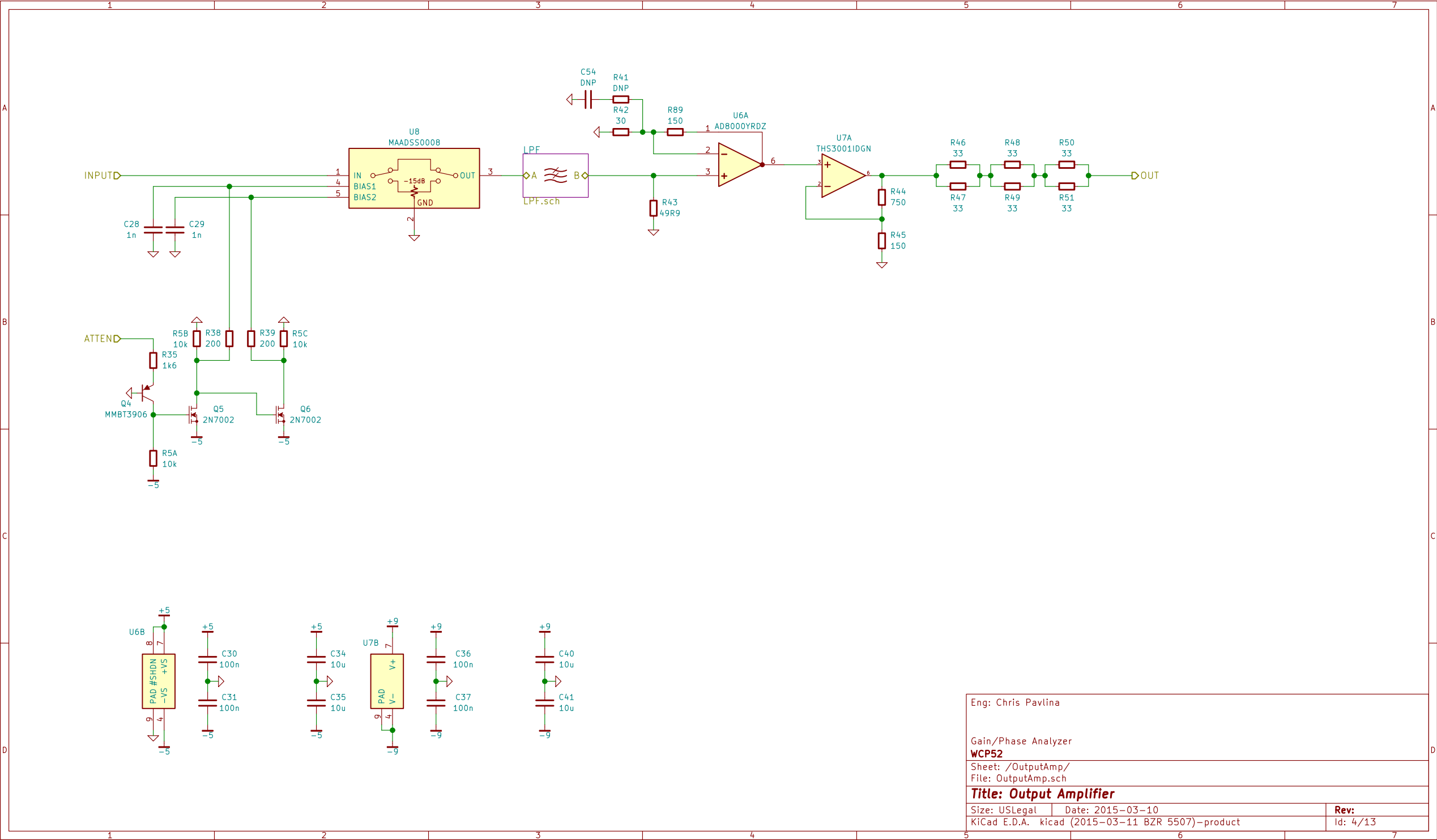


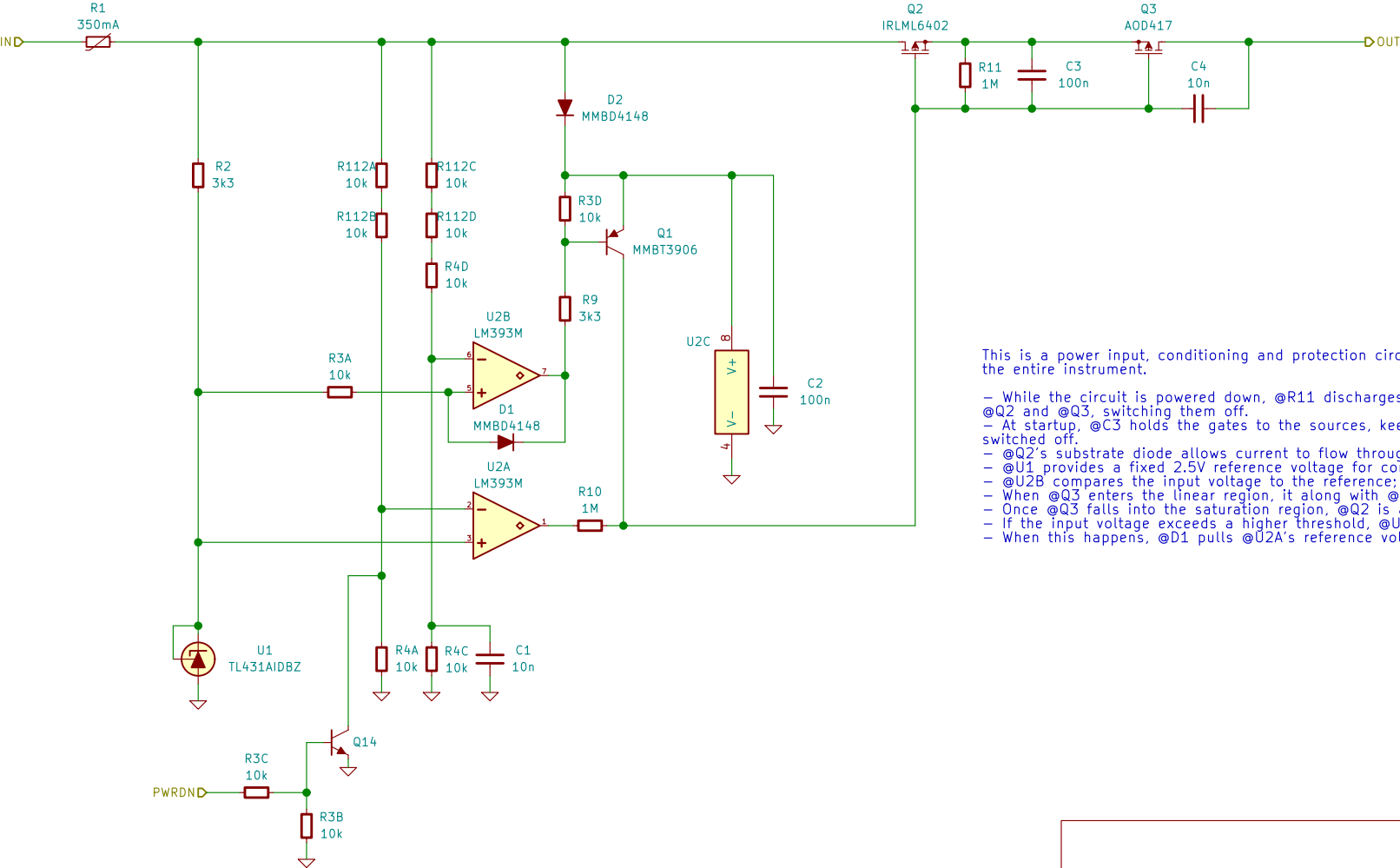


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Sheet: /OutputAmp/LPF/		
File: LPF.sch		
Title: LPF for Output Amplifier		
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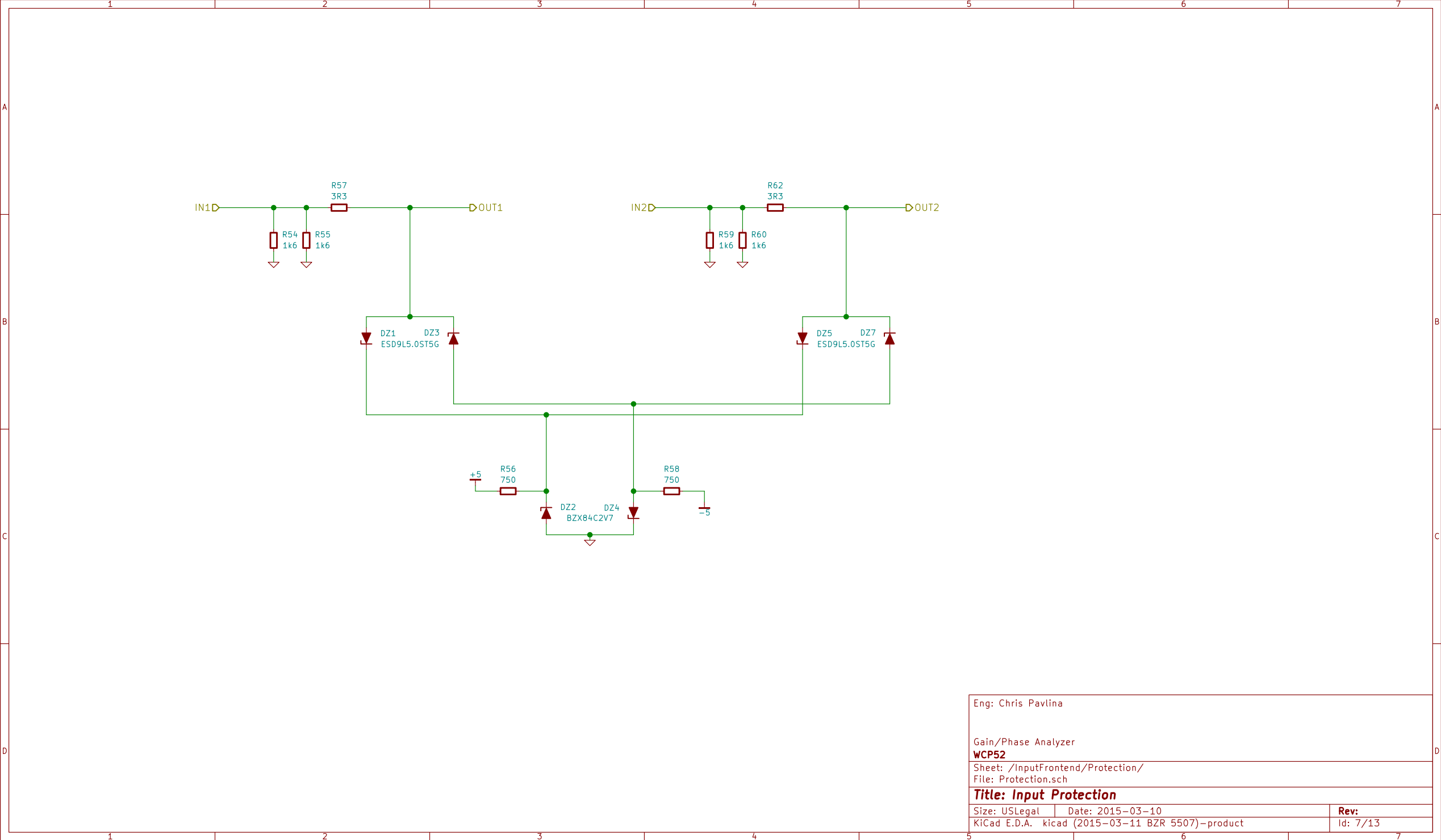




This is a power input, conditioning and protection circuit for the entire instrument.

- While the circuit is powered down, @R11 discharges the gates of @Q2 and @Q3, switching them off.
- At startup, @C3 holds the gates to the sources, keeping them switched off.
- @Q2's substrate diode allows current to flow through despite the FET being switched off, but @Q3's diode faces the other direction.
- @U1 provides a fixed 2.5V reference voltage for comparison.
- @U2B compares the input voltage to the reference; when it exceeds a threshold, the output falls to 0V and @Q1 switches on.
- When @Q3 enters the linear region, it along with @C4 forms a circuit known as a Miller integrator, integrating the input voltage.
- Once @Q3 falls into the saturation region, @Q2 is also in this region, bypassing its substrate diode and providing a path to ground.
- If the input voltage exceeds a higher threshold, @U2A switches on. This saturates @Q1, yanking the gates of @Q2 and @Q3 down to ground.
- When this happens, @D1 pulls @U2A's reference voltage down, latching the circuit in this position. It will not return to normal operation until power is cycled.

Sheet: /PowerInput/ File: PowerInput.sch		
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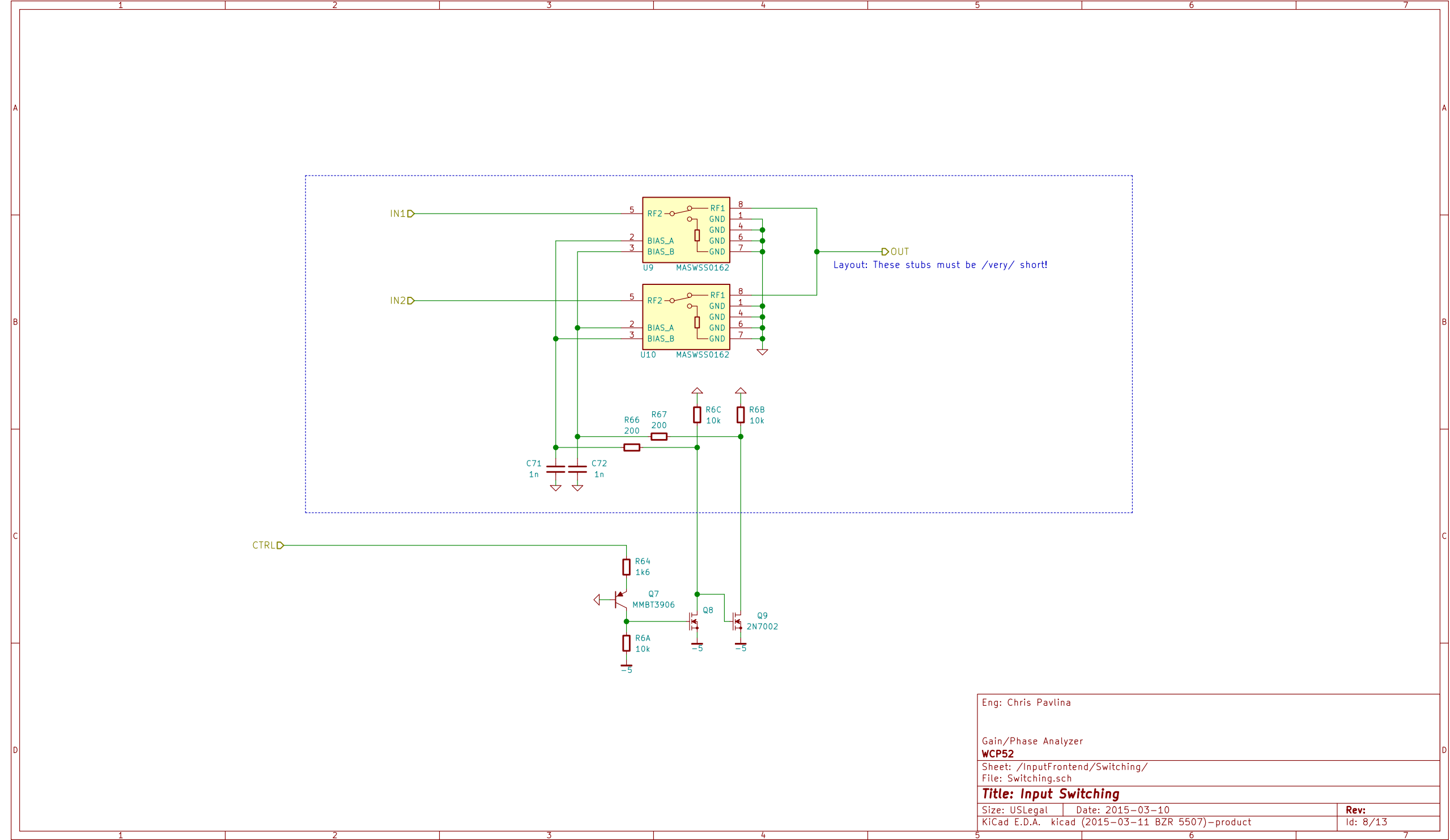
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Sheet: /InputFrontend/Protection/  
File: Protection.sch

**Title: Input Protection**

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Gain/Phase Analyzer

**WCP52**

Sheet: /InputFrontend/Switching/  
File: Switching.sch

**Title: Input Switching**

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