

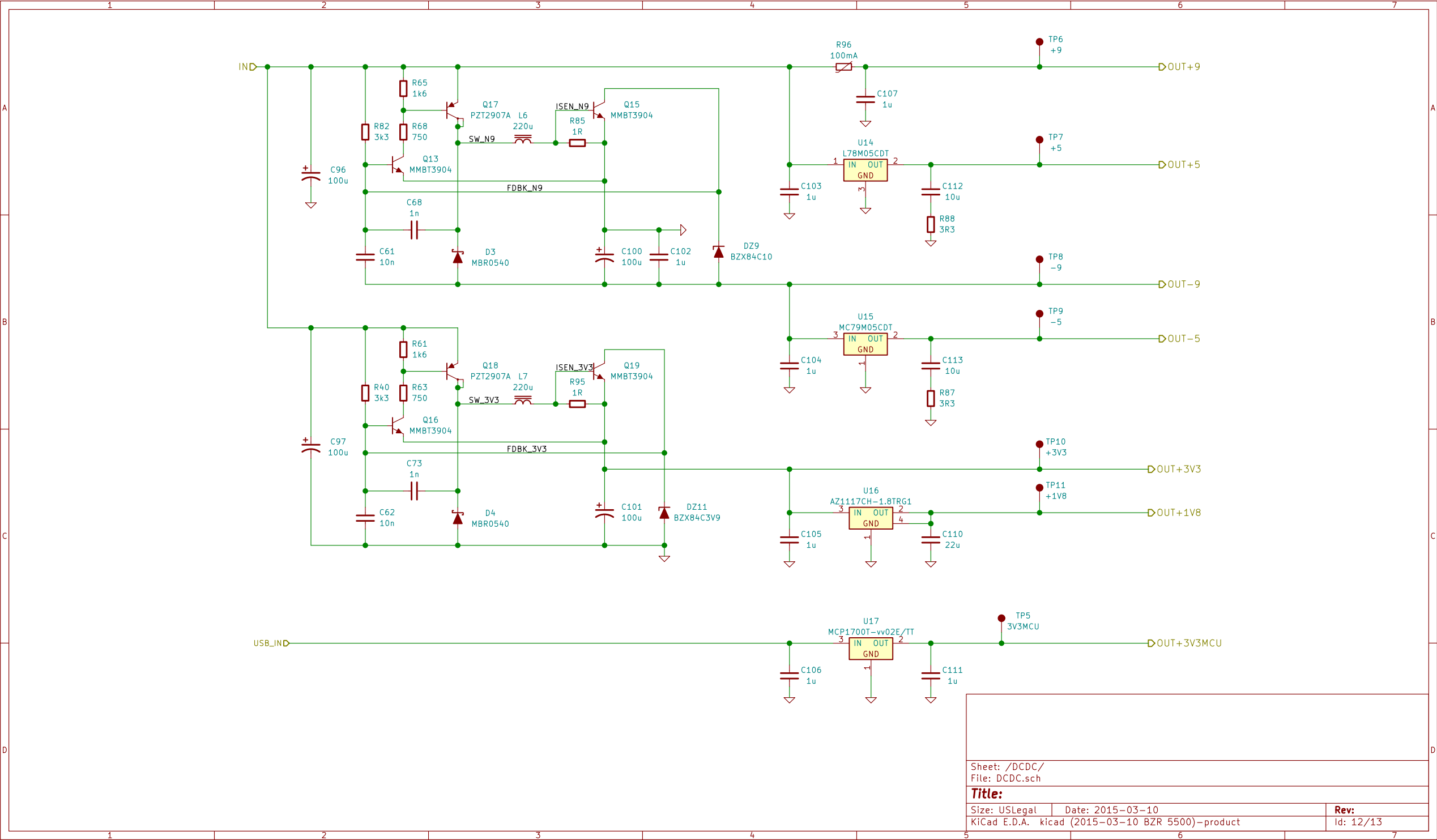
Eng: Chris Pavlina		
Gain/Phase Analyzer		
WCP52		
Sheet: /InputFrontend/Buffer_Filter/ File: Buffer_Filter.sch		
Title: Input Buffer and Filter		
Size: USLegal	Date: 2015-03-10	Rev:
KiCad E.D.A. kicad (2015-03-10 BZR 5500)-product		Id: 9/13

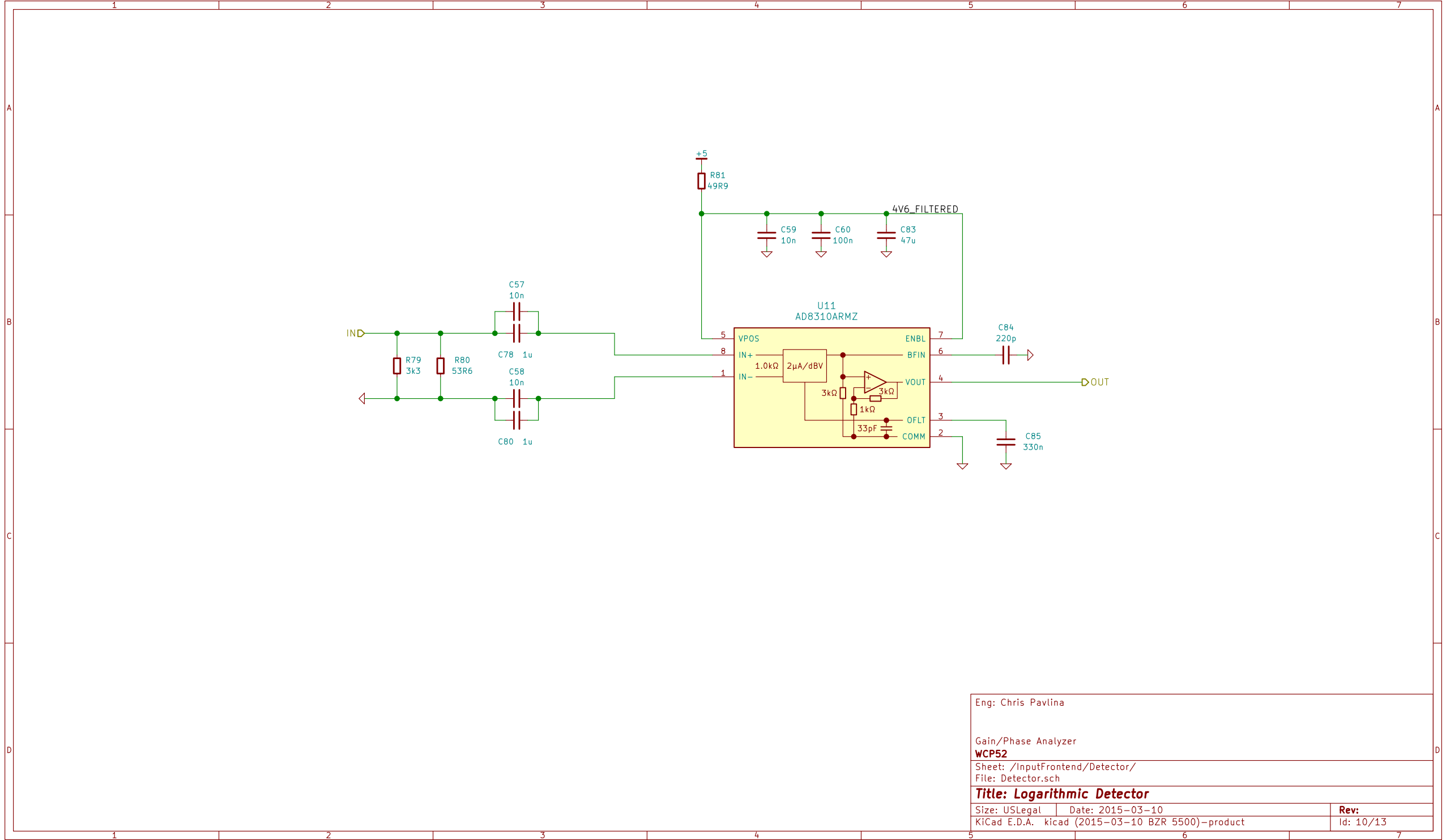


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File: Comm.sch

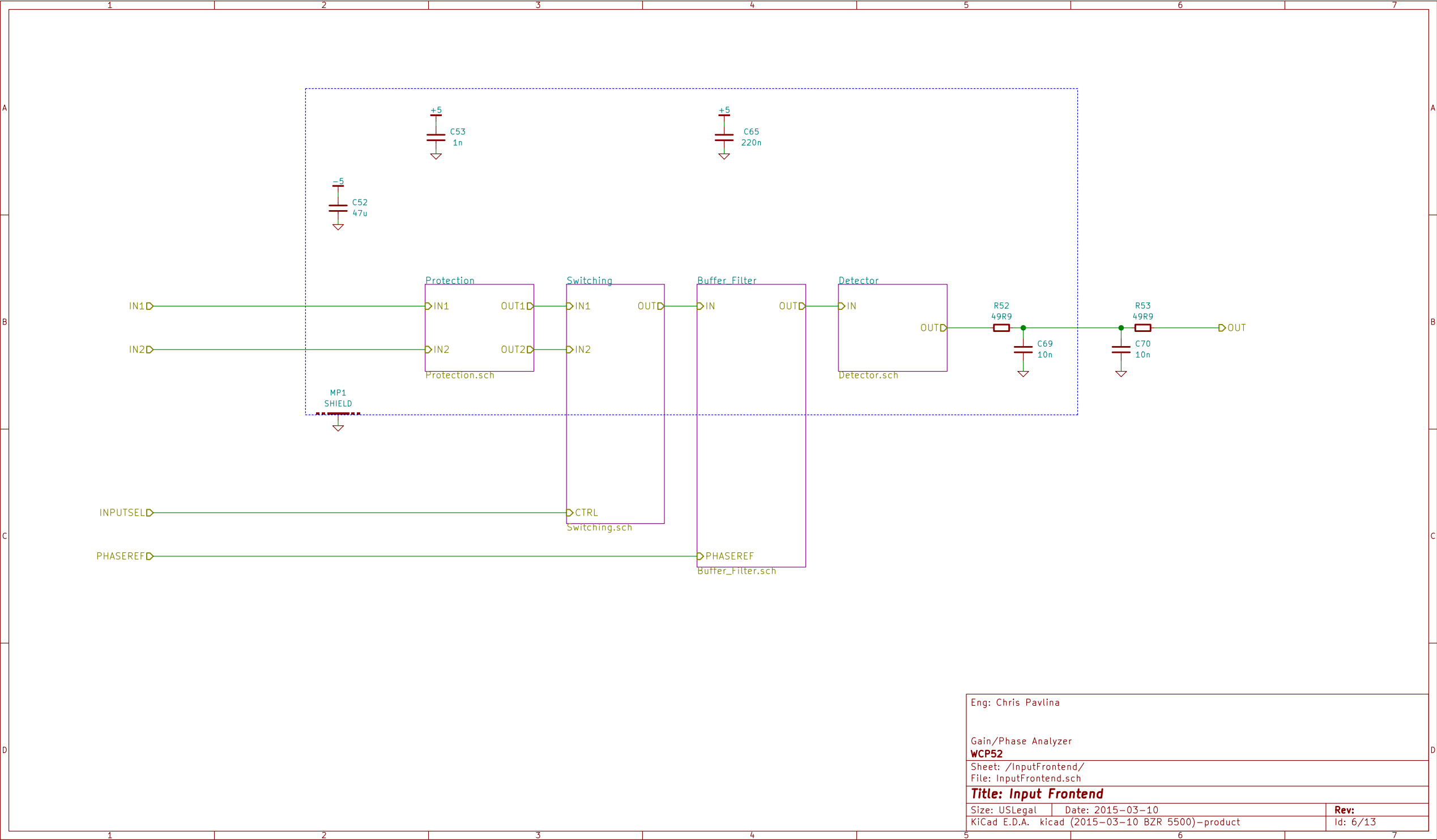
Title:

Rev: 1.0
Id: 2/13

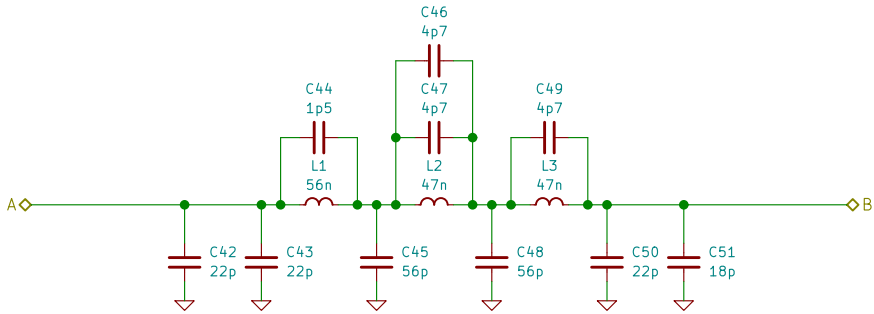




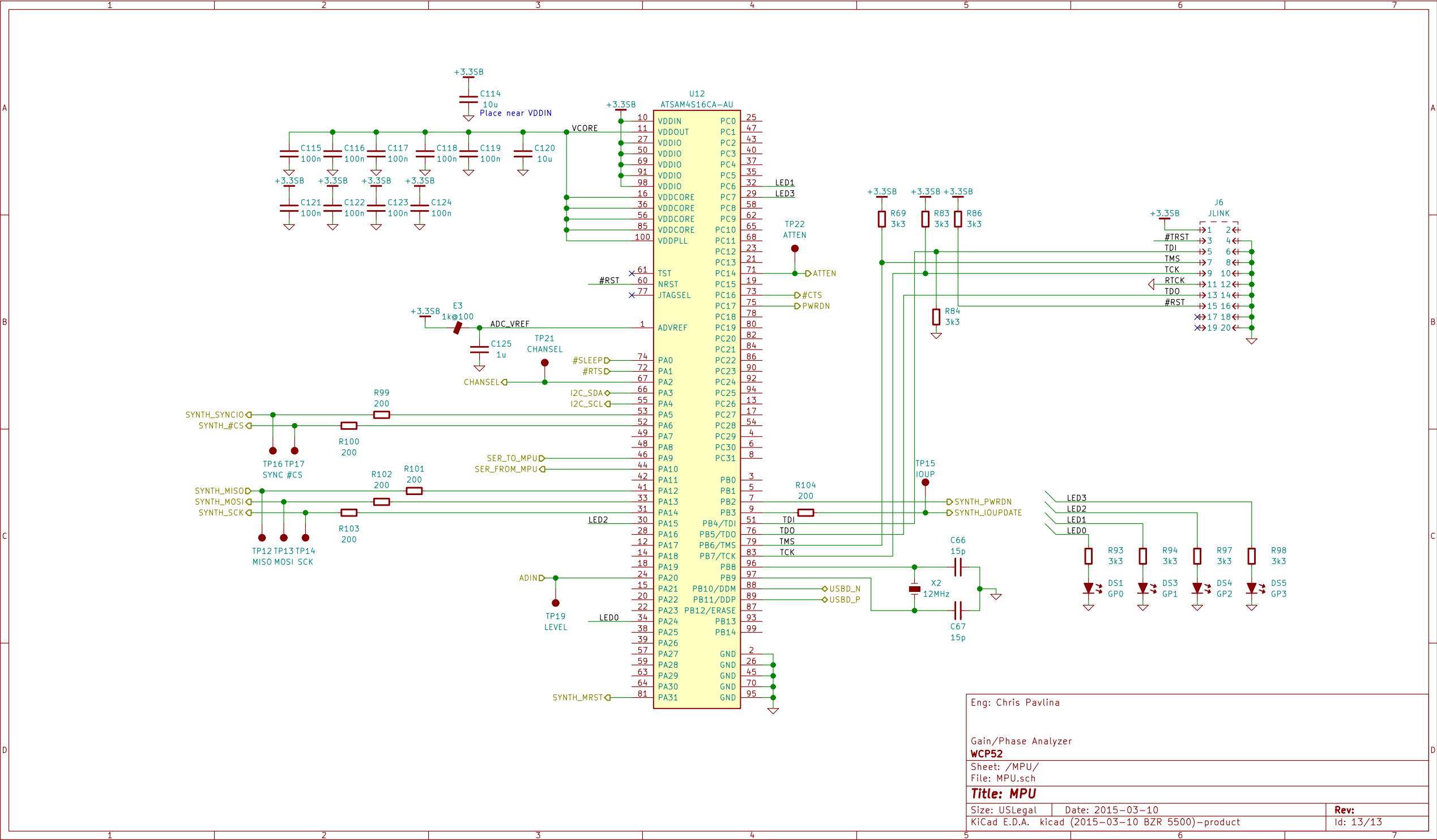
Eng: Chris Pavlina		
Gain/Phase Analyzer		
WCP52		
Sheet: /InputFrontend/Detector/		
File: Detector.sch		
Title: Logarithmic Detector		
Size: USLegal	Date: 2015-03-10	Rev:
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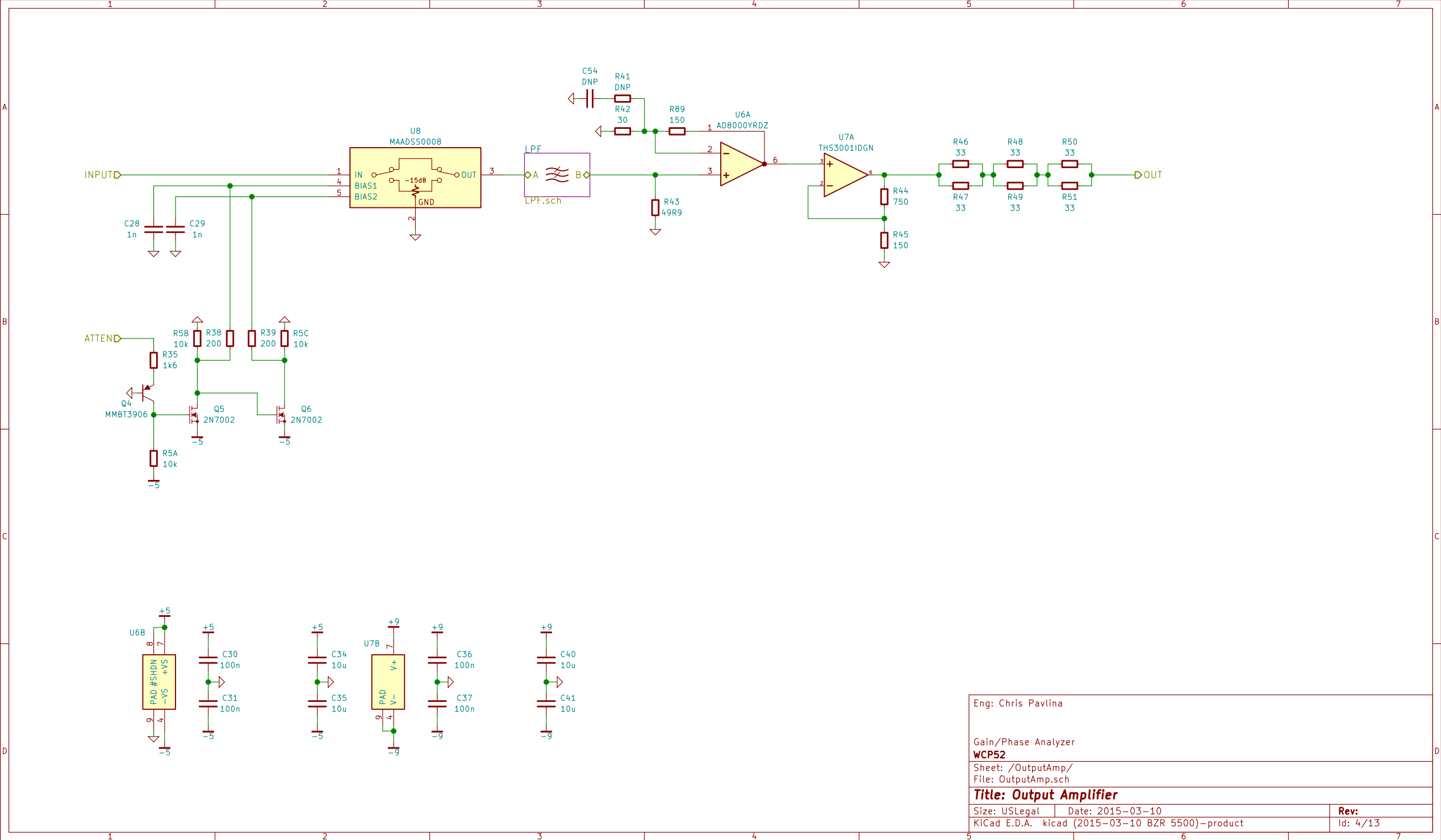


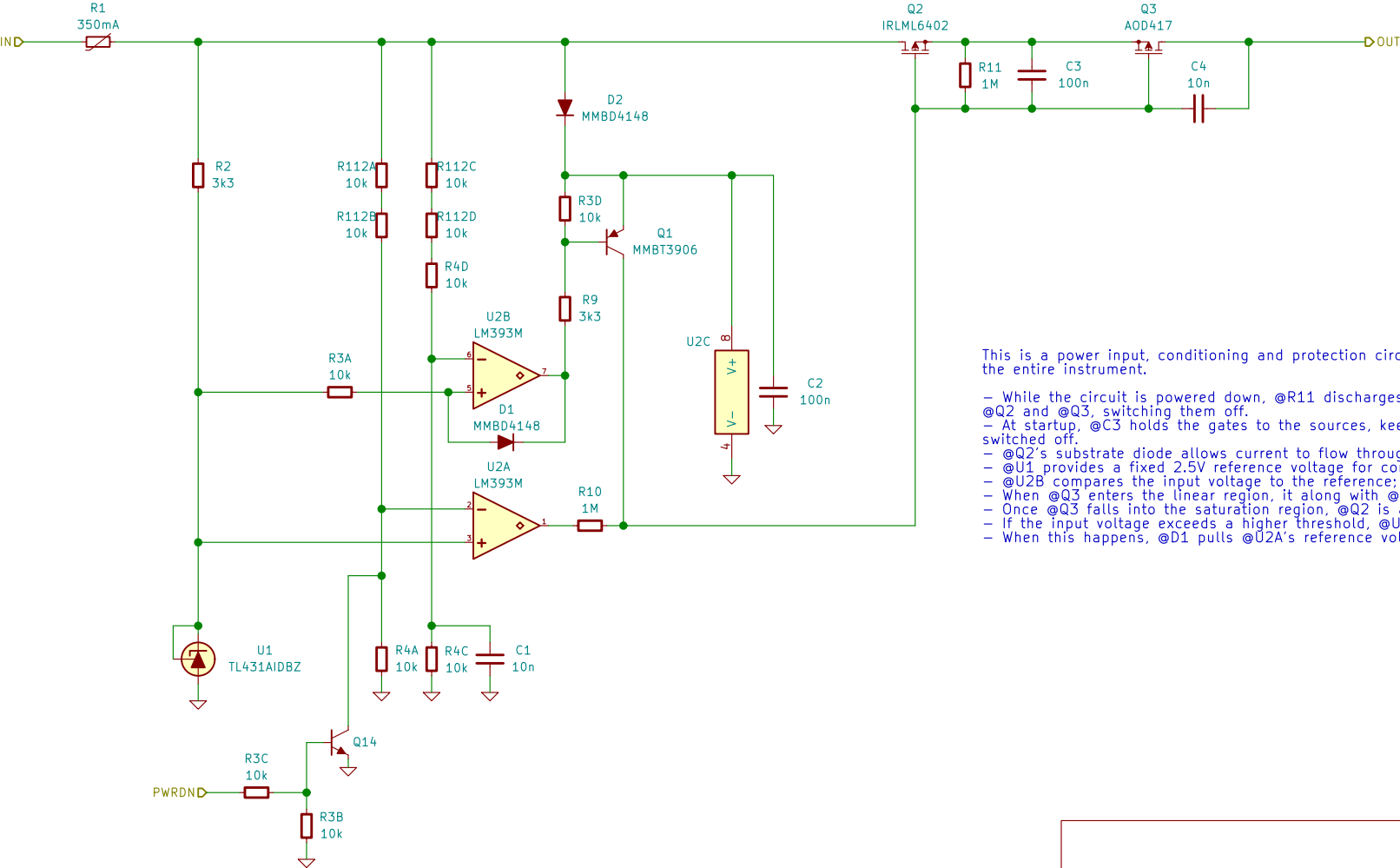
Eng: Chris Pavlina		
Gain/Phase Analyzer		
WCP52		
Sheet: /InputFrontend/		
File: InputFrontend.sch		
Title: Input Frontend		
Size: USLegal	Date: 2015-03-10	Rev:
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Eng: Chris Pavlina		
Gain/Phase Analyzer		
WCP52		
Sheet: /OutputAmp/LPF/		
File: LPF.sch		
Title: LPF for Output Amplifier		
Size: USLegal	Date: 2015-03-10	Rev:
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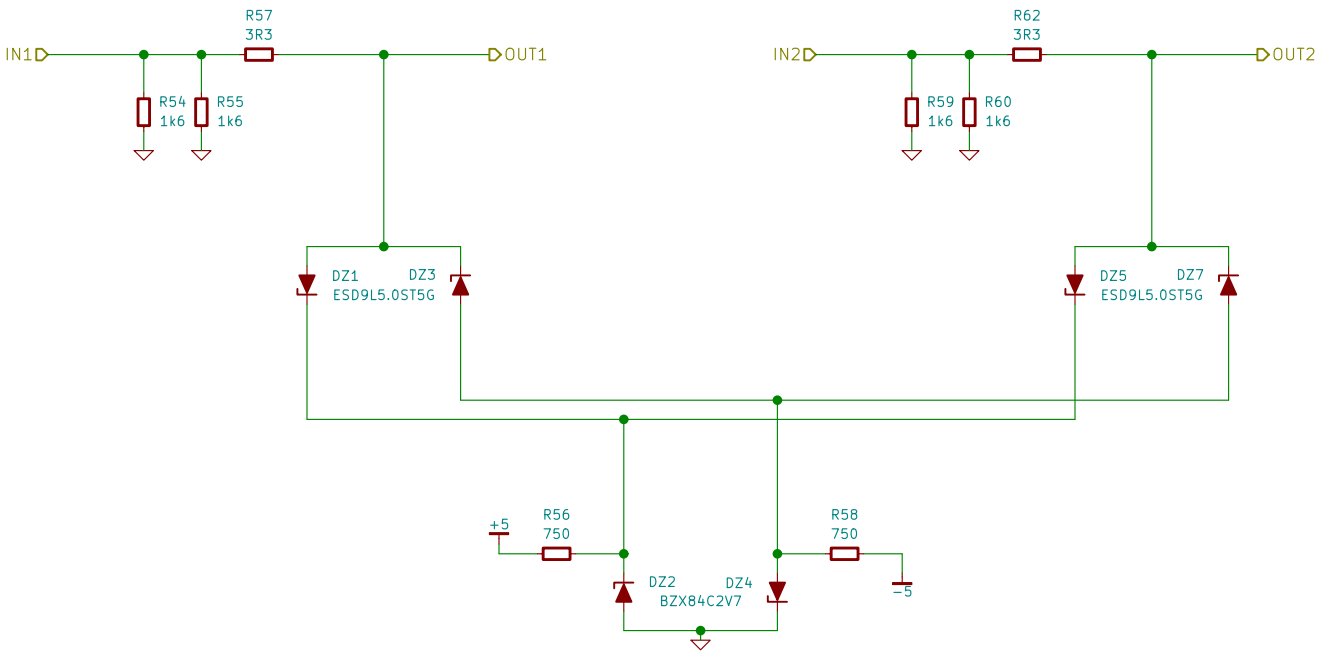




This is a power input, conditioning and protection circuit for the entire instrument.

- 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 the gates of Q2 and Q3 are discharged.
- When @Q3 enters the linear region, it along with @C4 forms a circuit known as a Miller integrator, integrating the input signal.
- Once @Q3 falls into the saturation region, @Q2 is also in this region, bypassing its substrate diode and providing a path for current to flow through the output.
- 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 the input voltage falls below a certain threshold.

Sheet: /PowerInput/ File: PowerInput.sch		
Title:		
Size: USLegal	Date: 2015-03-10	Rev:
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Eng: Chris Pavlina

Gain/Phase Analyzer

WCP52

Sheet: /InputFrontend/Protection/

File: Protection.sch

Title: Input Protection

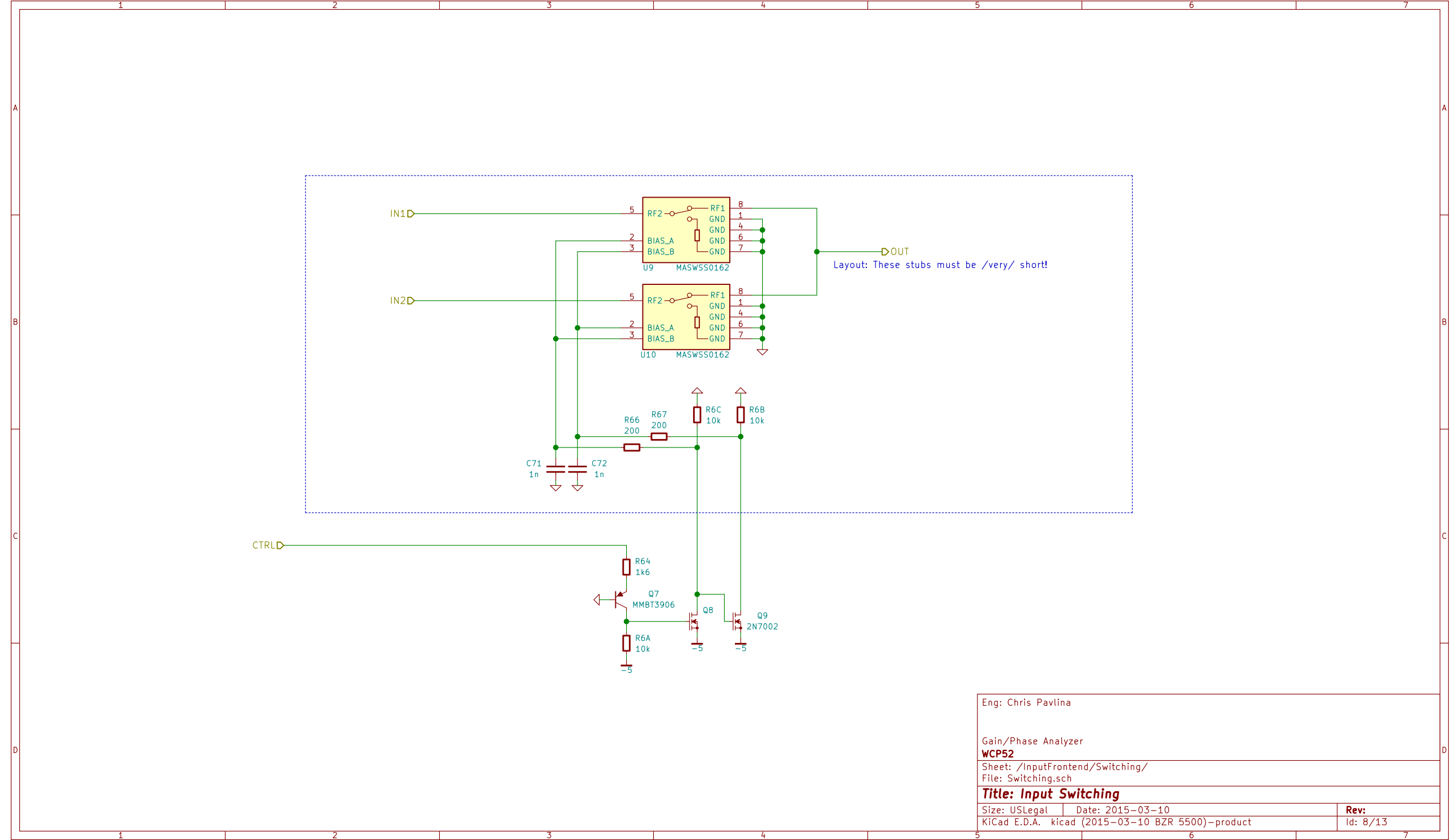
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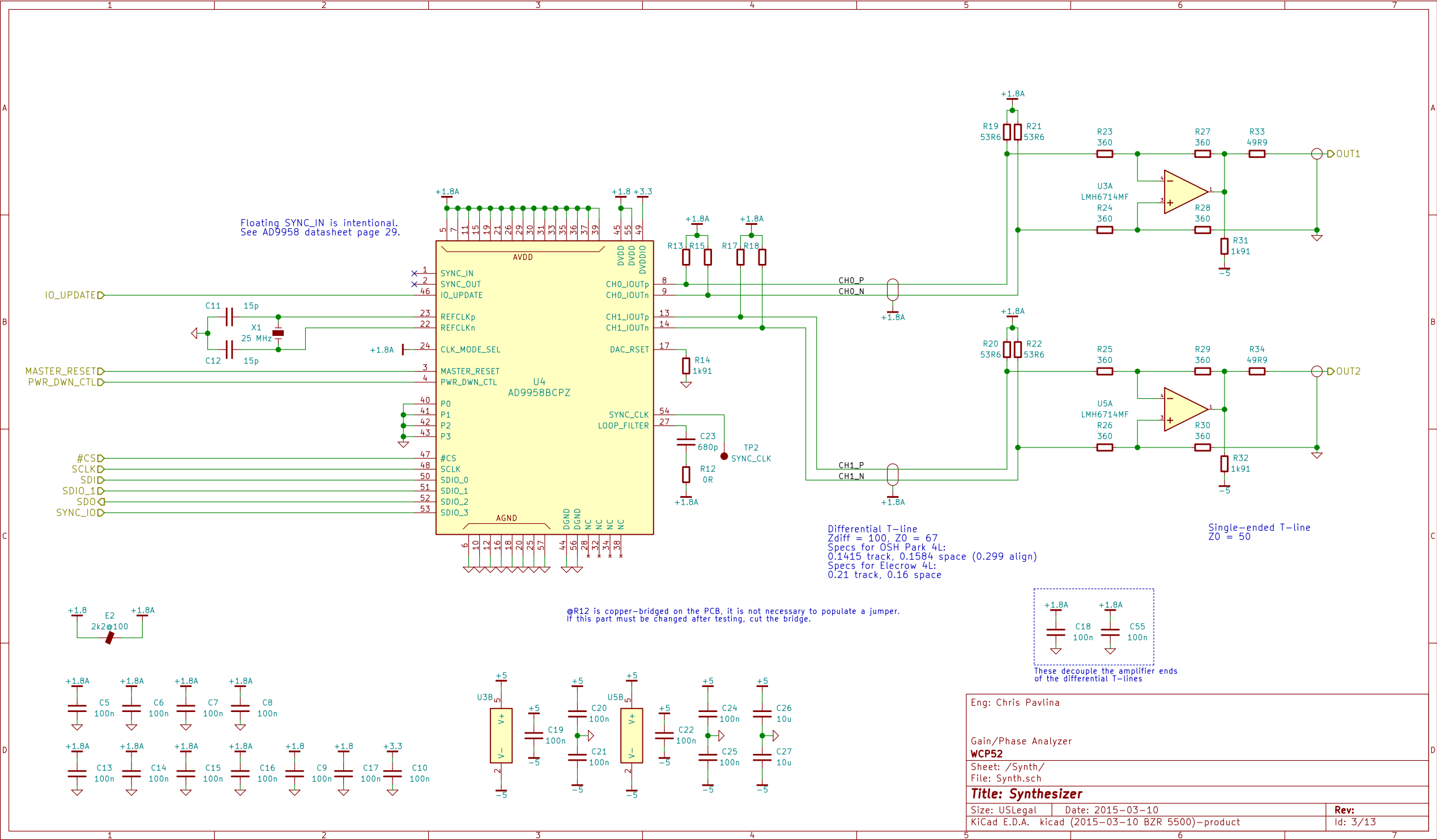
Date: 2015-03-10

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Id: 7/13





Floating SYNC_IN is intentional.
See AD9958 datasheet page 29.

Differential T-line
 $Z_{diff} = 100$, $Z_0 = 67$
Specs for OSH Park 4L:
0.1415 track, 0.1584 space (0.299 align)
Specs for Elecrow 4L:
0.21 track, 0.16 space

Single-ended T-line
 $Z_0 = 50$

©R12 is copper-bridged on the PCB, it is not necessary to populate a jumper.
If this part must be changed after testing, cut the bridge.

These decouple the amplifier ends
of the differential T-lines

Eng: Chris Pavlina

Gain/Phase Analyzer

WCP52

Sheet: /Synth/

File: Synth.sch

Title: Synthesizer

Size: USLegal Date: 2015-03-10

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Id: 3/13