

Eng: Chris Pavlina

Gain/Phase Analyzer

**WCP52**

Sheet: /InputFrontend/Buffer\_Filter/

File: Buffer\_Filter.sch

**Title: Input Buffer and Filter**

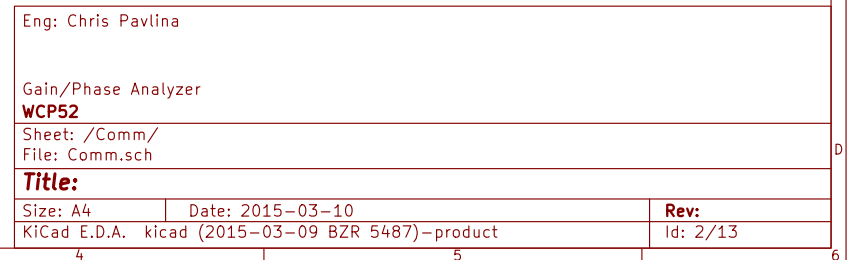
Size: A4

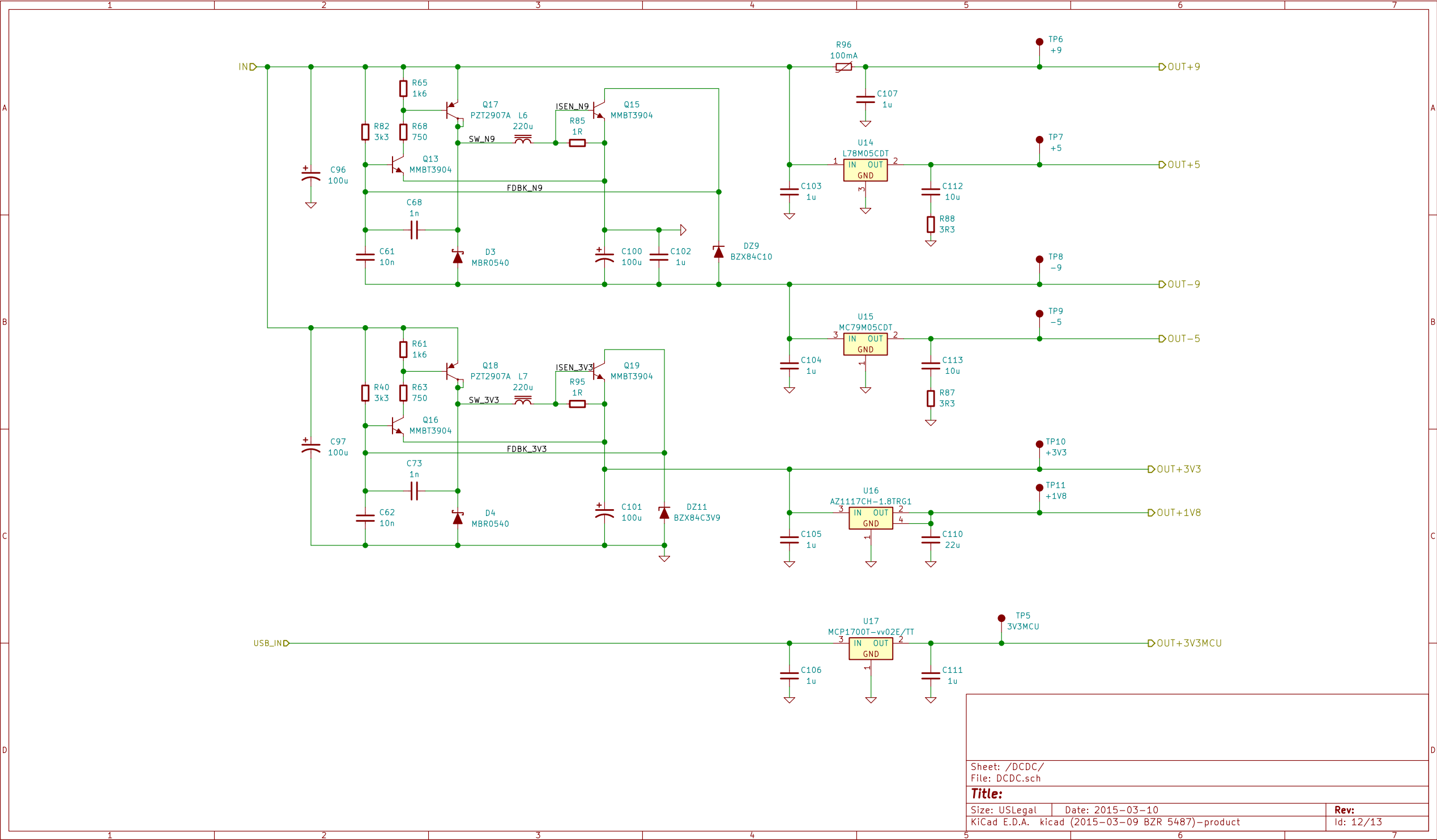
Date: 2015-03-10

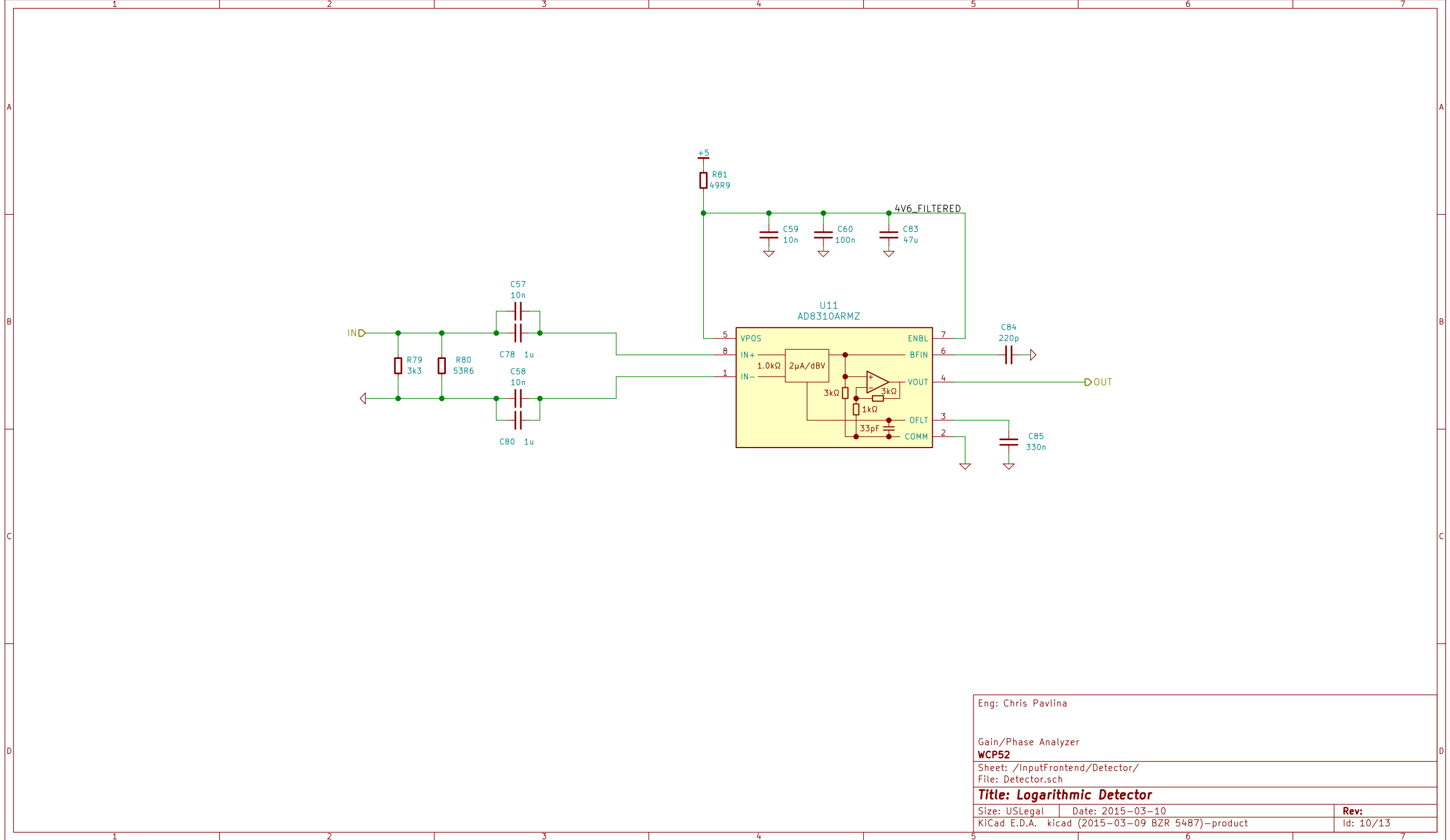
Rev:

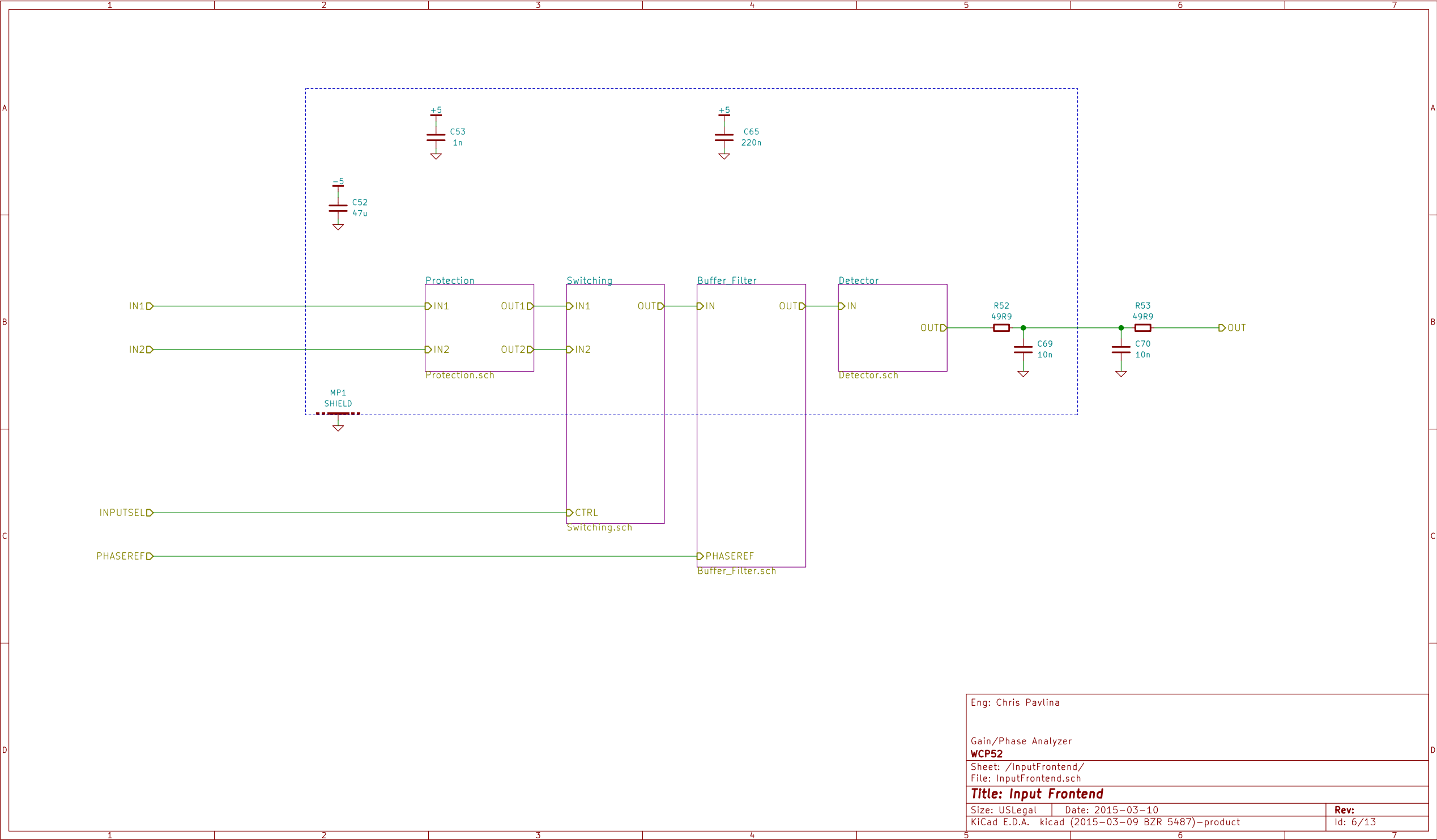
KiCad E.D.A. kicad (2015-03-09 BZR 5487)-product

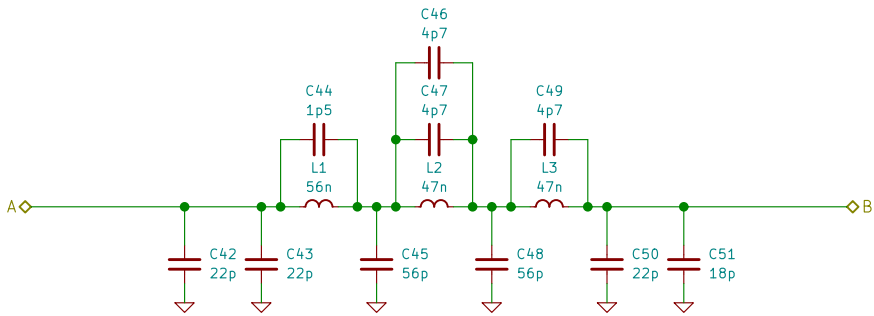
Id: 9/13



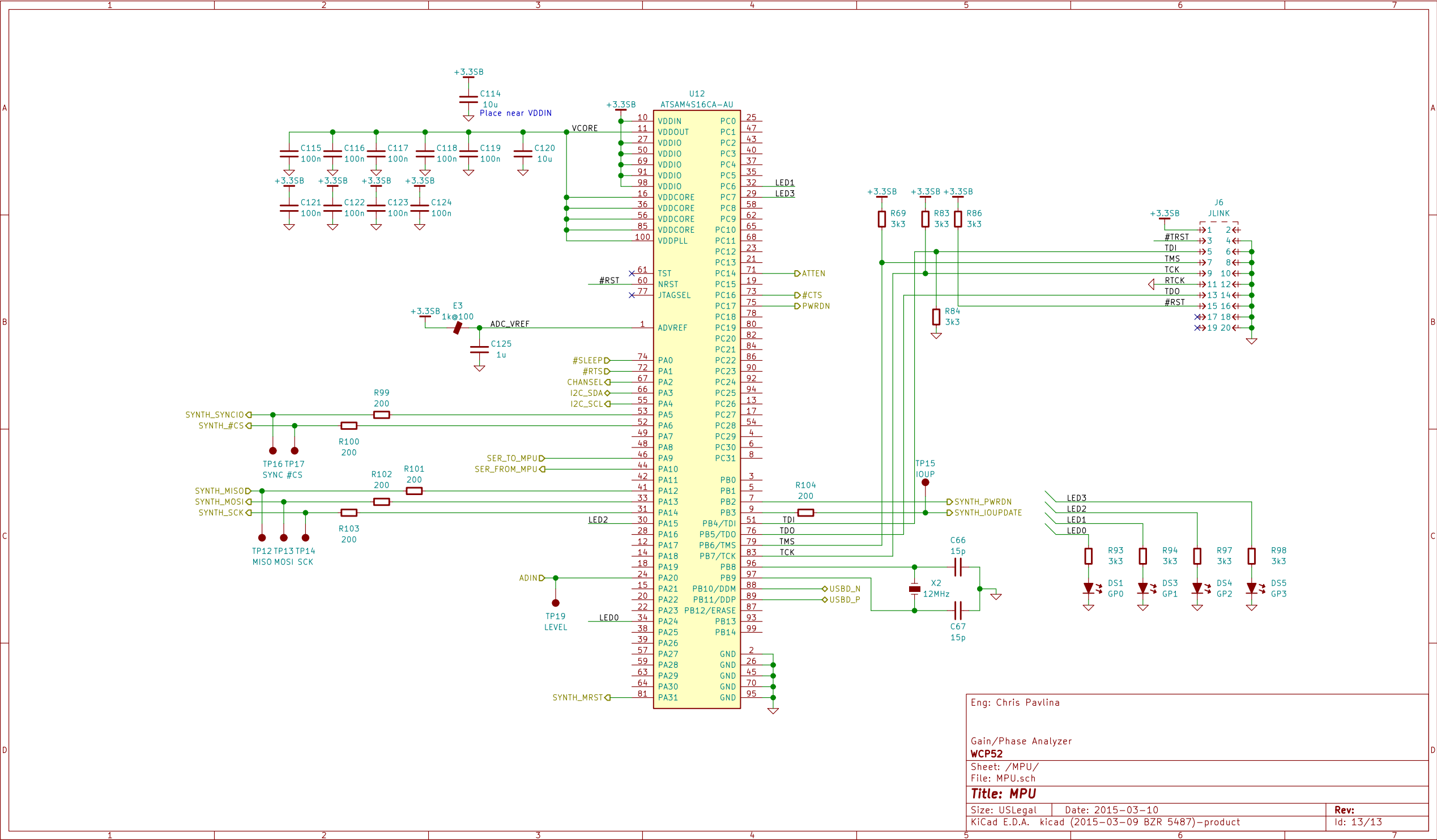




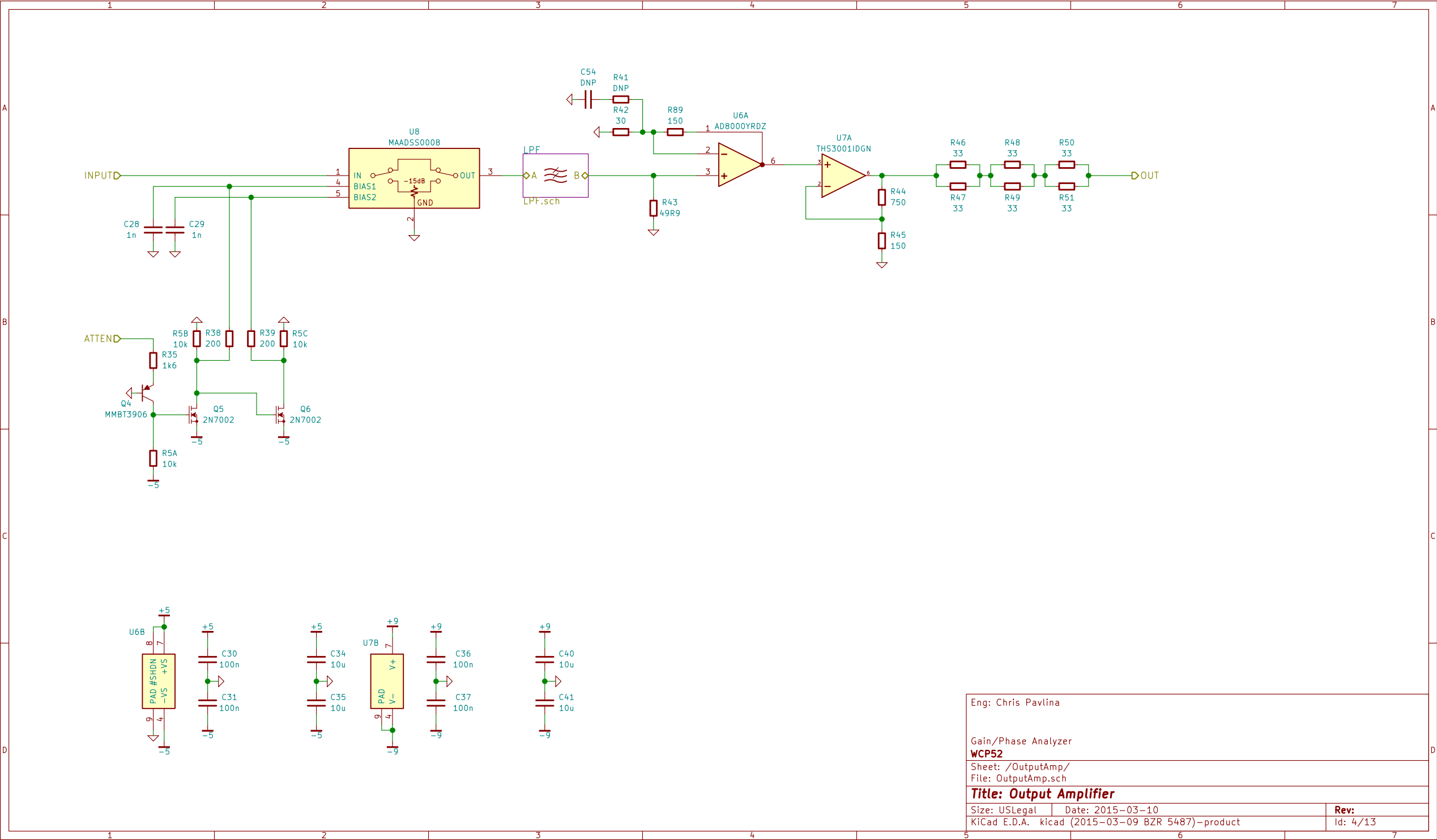


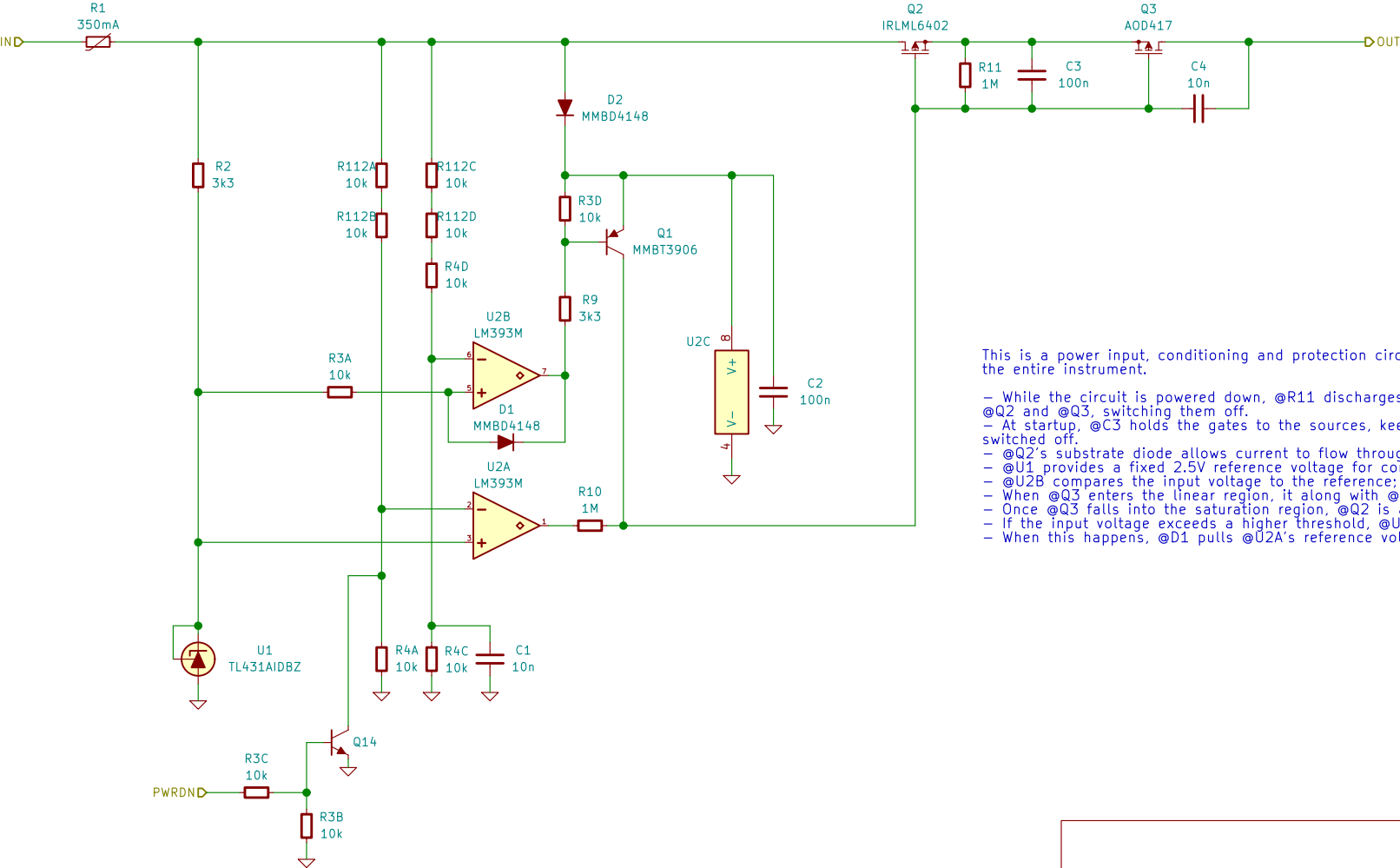


Eng: Chris Pavlina		
Gain/Phase Analyzer		
WCP52		
Sheet: /OutputAmp/LPF/		
File: LPF.sch		
Title: LPF for Output Amplifier		
Size: USLegal	Date: 2015-03-10	Rev:
KiCad E.D.A. kicad (2015-03-09 BZR 5487)-product		Id: 5/13





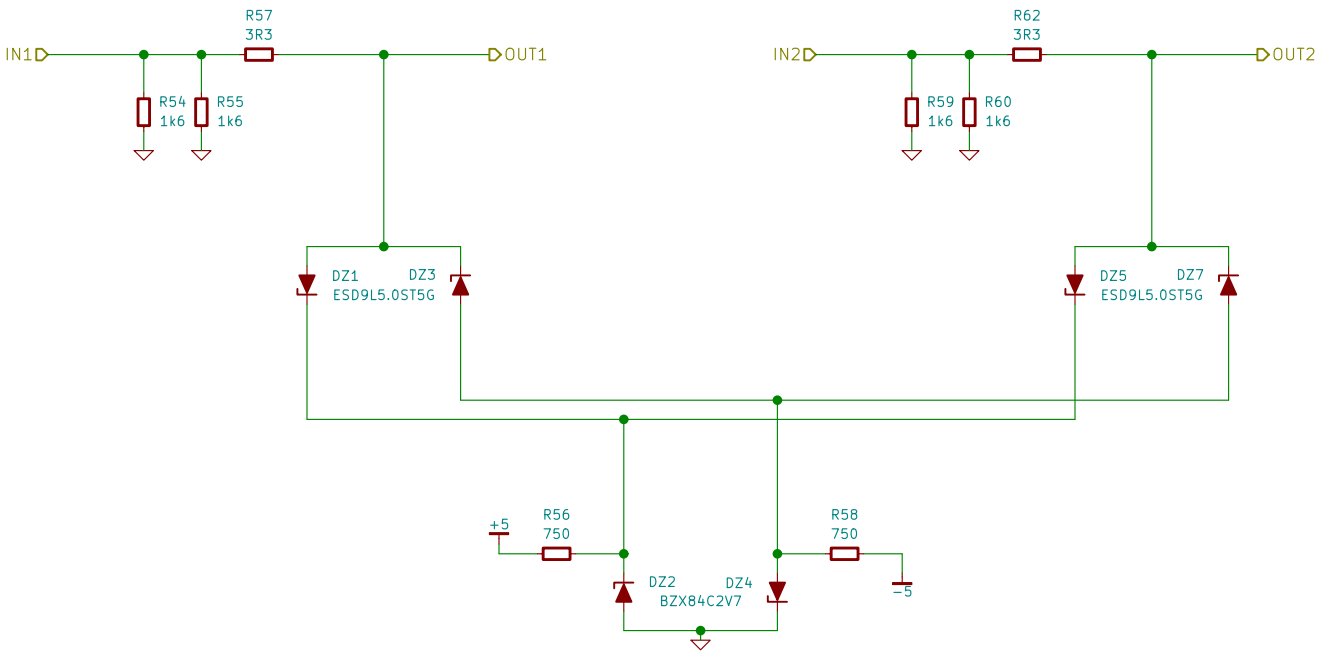




This is a power input, conditioning and protection circuit for the entire instrument.

- 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 the input voltage is brought back below the threshold.

Sheet: /PowerInput/ File: PowerInput.sch		
Title:		
Size: USLegal	Date: 2015-03-10	Rev:
KiCad E.D.A. kicad	(2015-03-09 BZR 5487)-product	Id: 11/13



Eng: Chris Pavlina

Gain/Phase Analyzer

**WCP52**

Sheet: /InputFrontend/Protection/

File: Protection.sch

**Title: Input Protection**

Size: USLegal

Date: 2015-03-10

Rev:

KiCad E.D.A. kicad (2015-03-09 BZR 5487)-product

Id: 7/13

