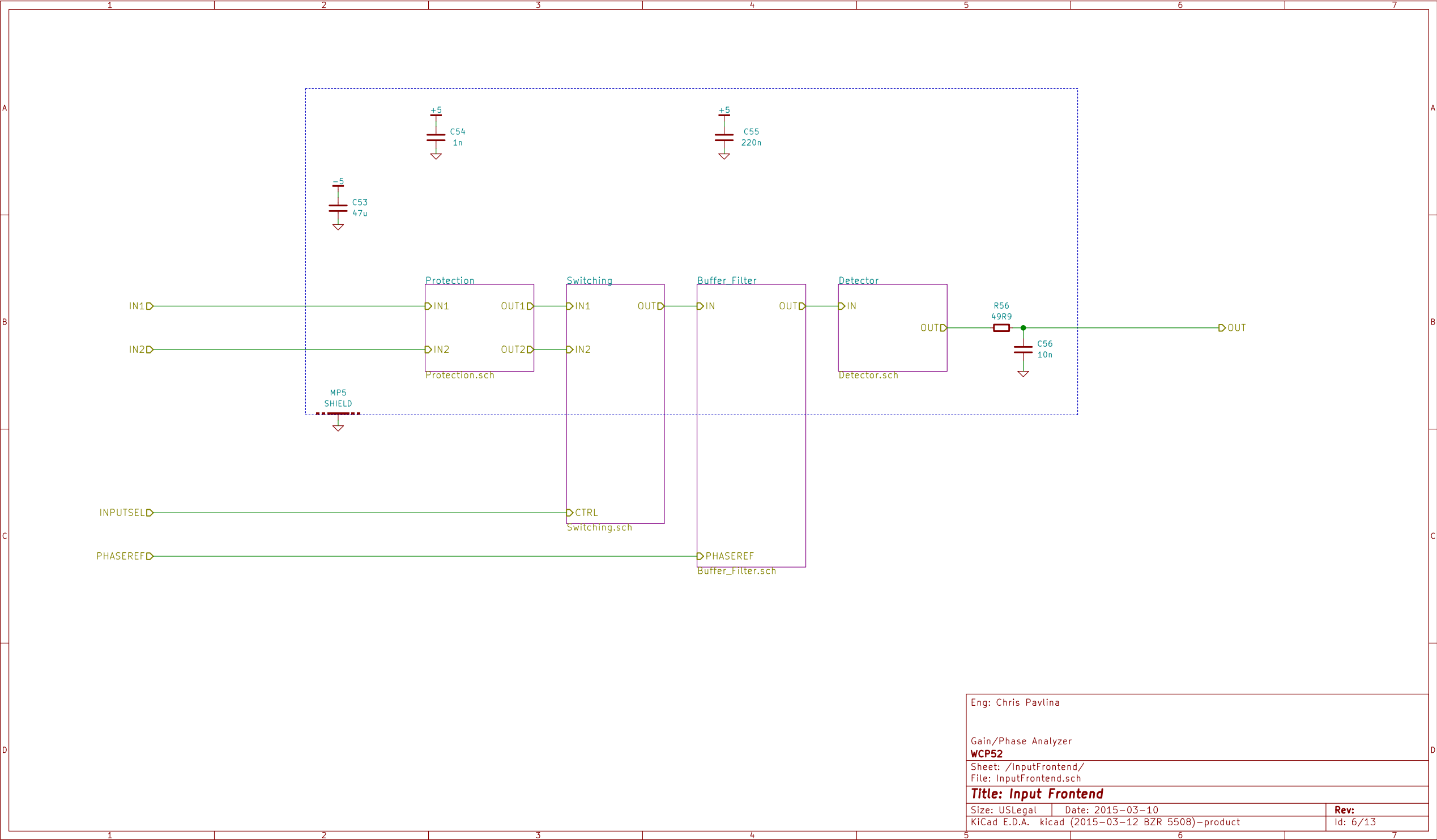
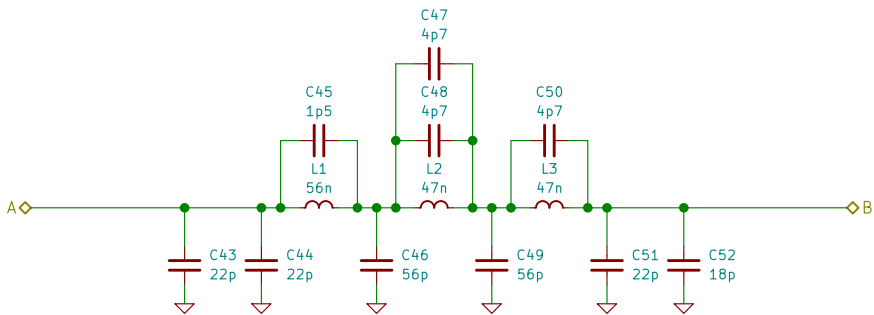


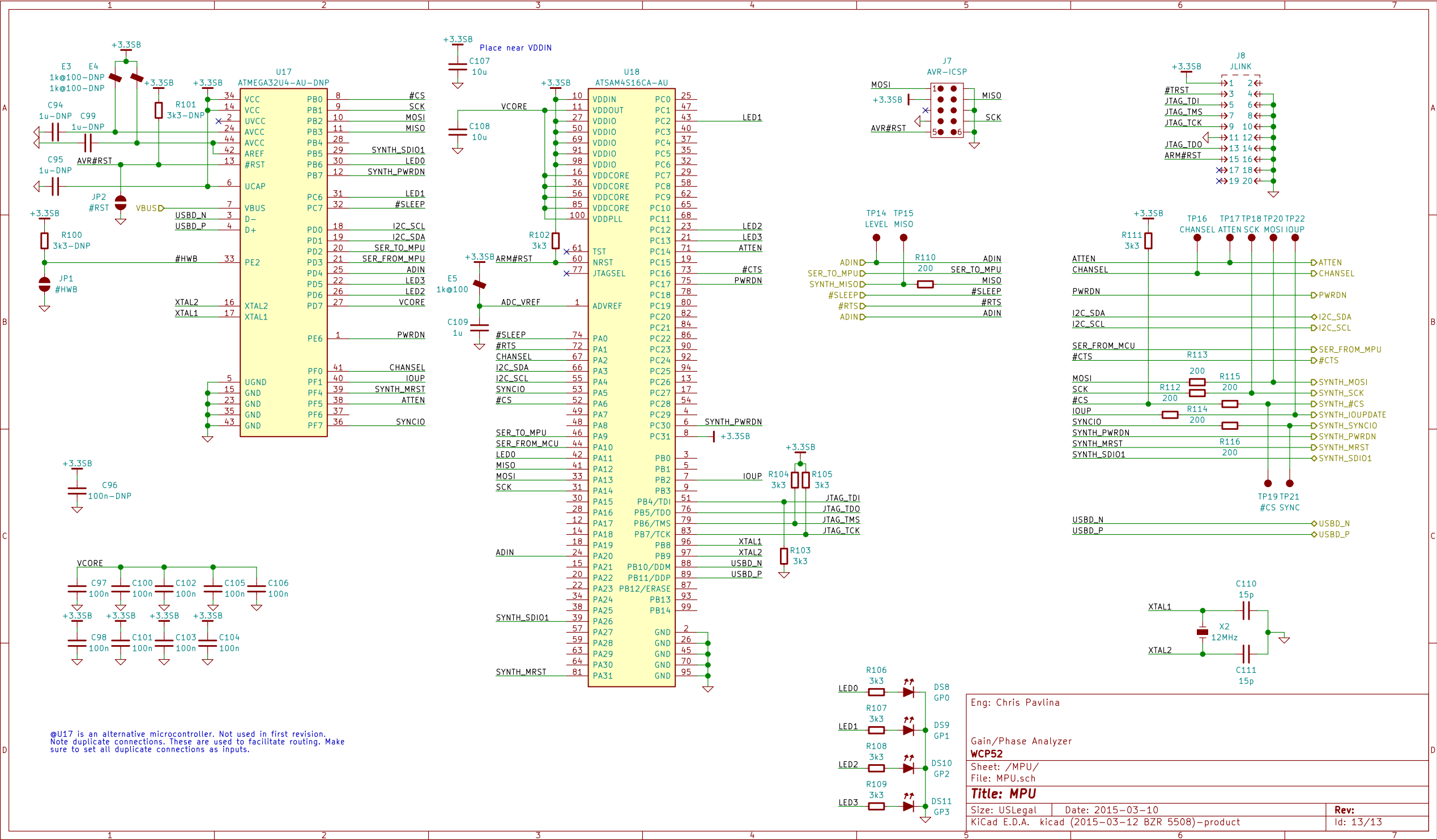
Eng: Chris Pavlina		
Gain/Phase Analyzer		
WCP52		
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KiCad E.D.A. kicad (2015-03-12 BZR 5508)-product	Id: 10/13	

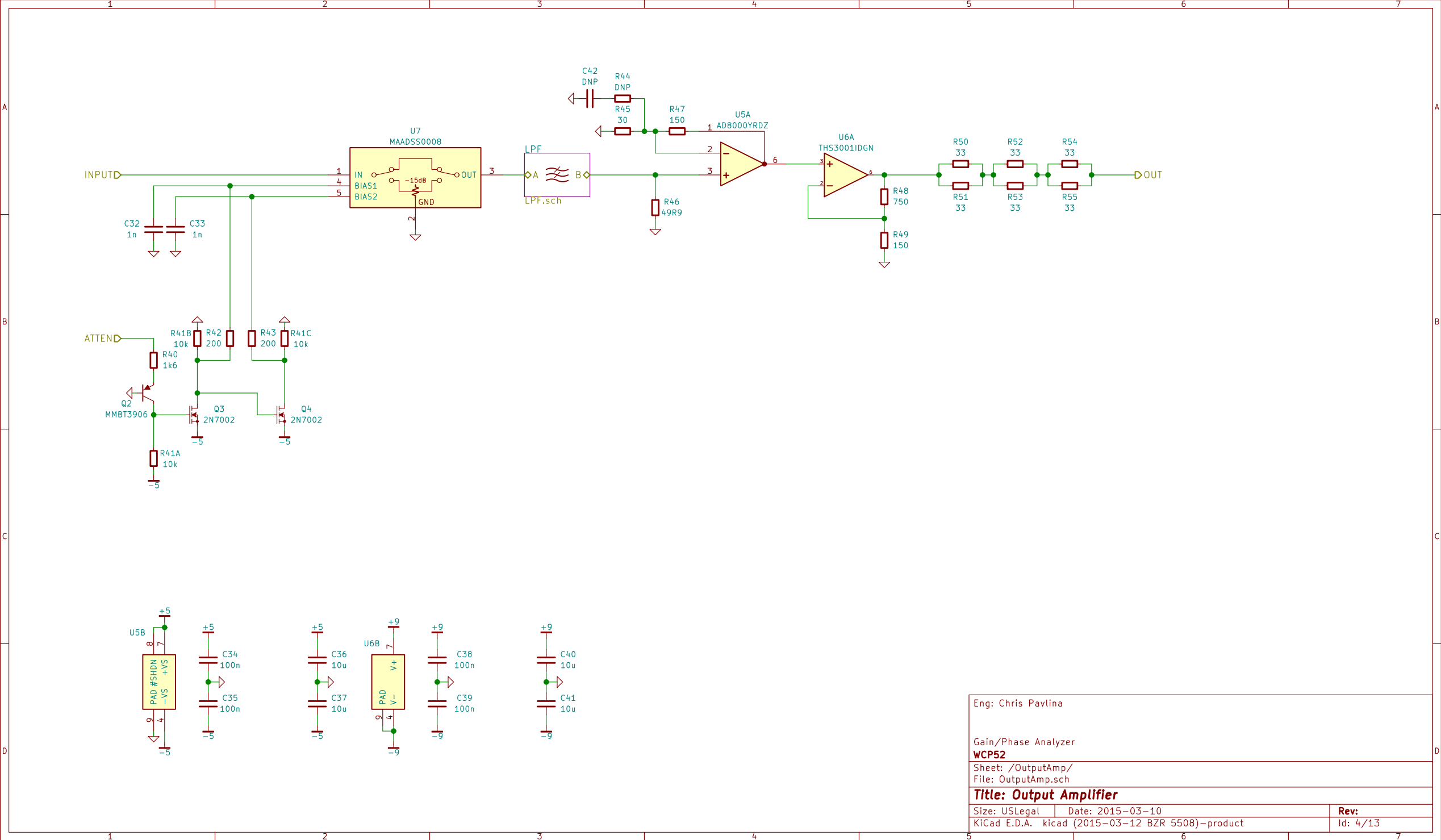


Eng: Chris Pavlina		
Gain/Phase Analyzer		
WCP52		
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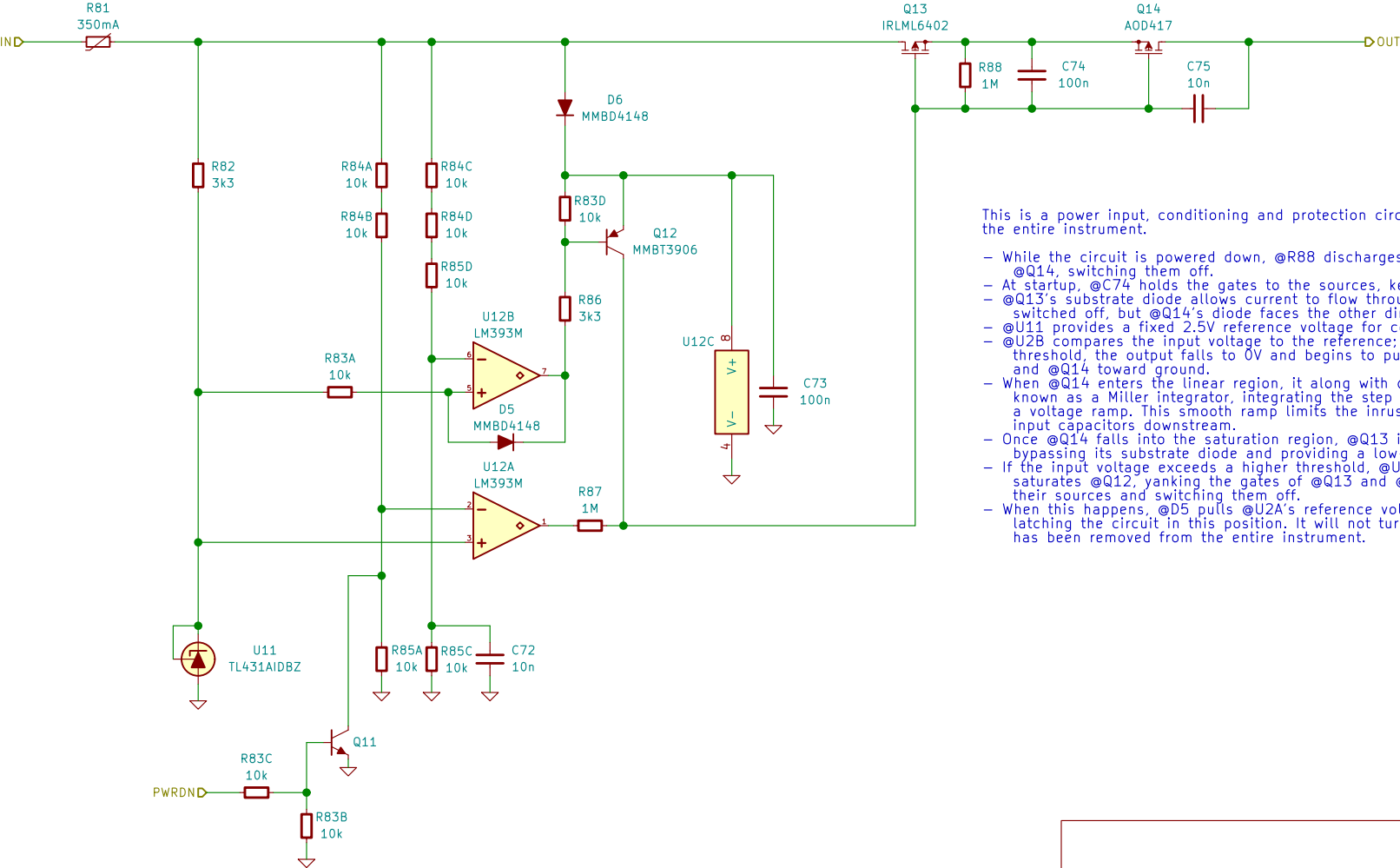


Eng: Chris Pavlina		
Gain/Phase Analyzer		
WCP52		
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Size: USLegal	Date: 2015-03-10	Rev:
KiCad E.D.A. kicad (2015-03-12 BZR 5508)-product		Id: 5/13



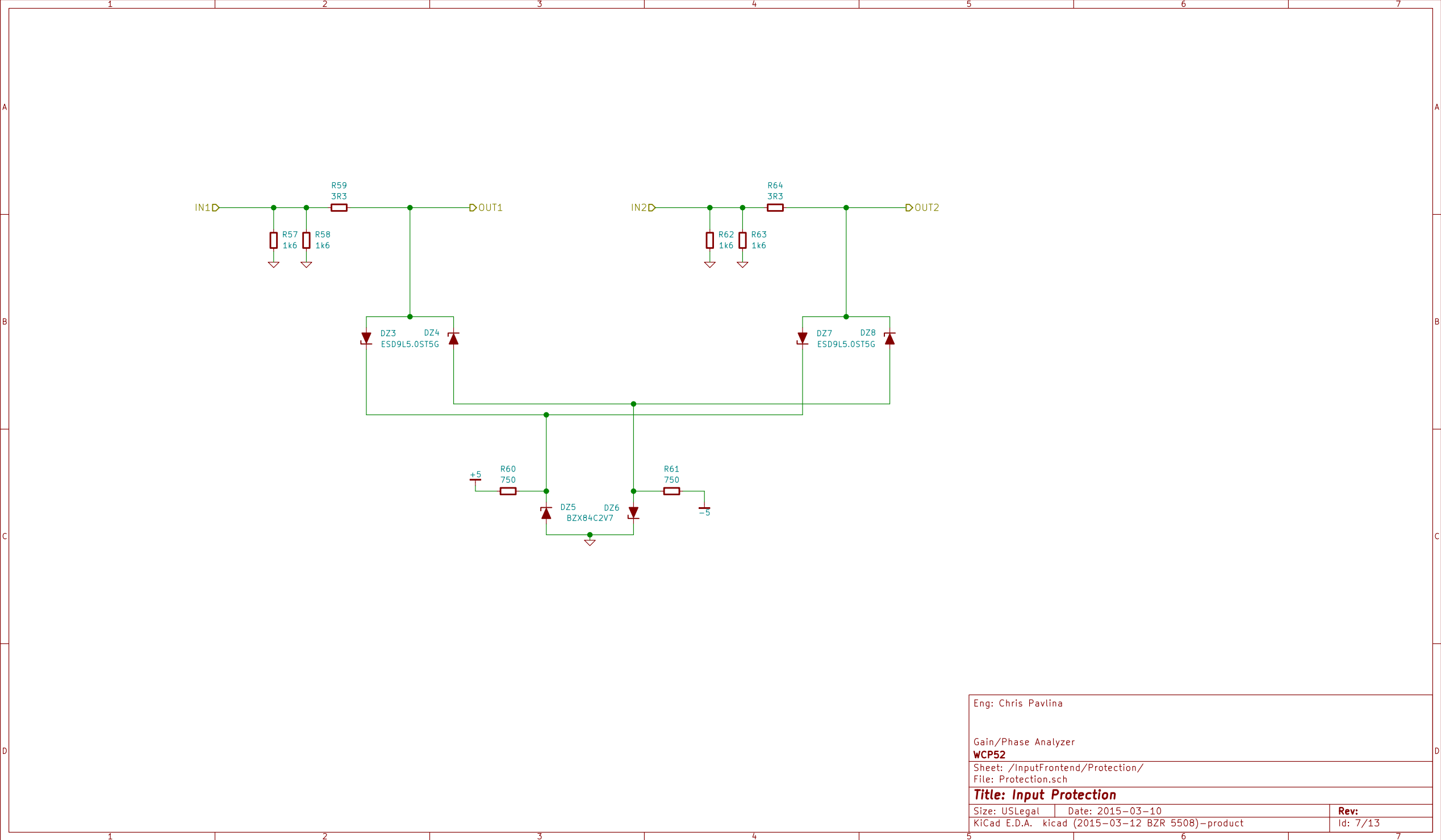


Eng: Chris Pavlina		
Gain/Phase Analyzer		
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Title: Output Amplifier		
Size: USLegal	Date: 2015-03-10	Rev:
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This is a power input, conditioning and protection circuit for the entire instrument.

- While the circuit is powered down, @R88 discharges the gates of @Q13 and @Q14, switching them off.
- At startup, @C74 holds the gates to the sources, keeping them switched off.
- @Q13's substrate diode allows current to flow through despite the FET being switched off, but @Q14's diode faces the other direction and does not.
- @U11 provides a fixed 2.5V reference voltage for comparison.
- @U12B compares the input voltage to the reference; when it exceeds a threshold, the output falls to 0V and begins to pull the gates of @Q13 and @Q14 toward ground.
- When @Q14 enters the linear region, it along with @C75 forms a circuit known as a Miller integrator, integrating the step from @U2B to produce a voltage ramp. This smooth ramp limits the inrush current charging any input capacitors downstream.
- Once @Q14 falls into the saturation region, @Q13 is also in this region, bypassing its substrate diode and providing a low-impedance path for current.
- If the input voltage exceeds a higher threshold, @U2A switches on. This saturates @Q12, yanking the gates of @Q13 and @Q14 back up towards their sources and switching them off.
- When this happens, @D5 pulls @U2A's reference voltage down, latching the circuit in this position. It will not turn back on until power has been removed from the entire instrument.



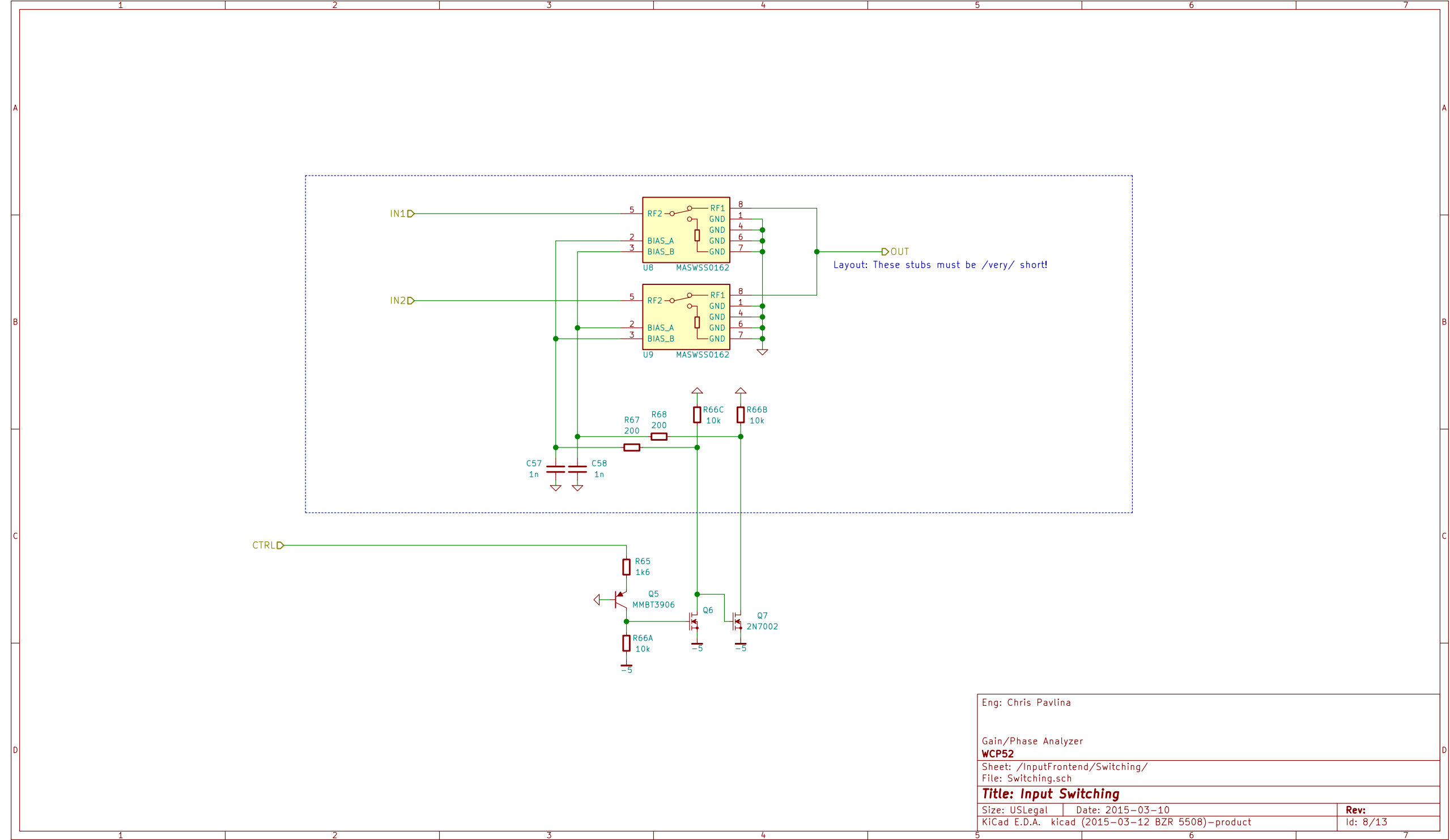
Eng: Chris Pavlina

Gain/Phase Analyzer
WCP52

Sheet: /InputFrontend/Protection/
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Size: USLegal	Date: 2015-03-10	Rev:
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Gain/Phase Analyzer

WCP52

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

Title: Input Switching

Size: USLegal Date: 2015-03-10
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Rev:
Id: 8/13

