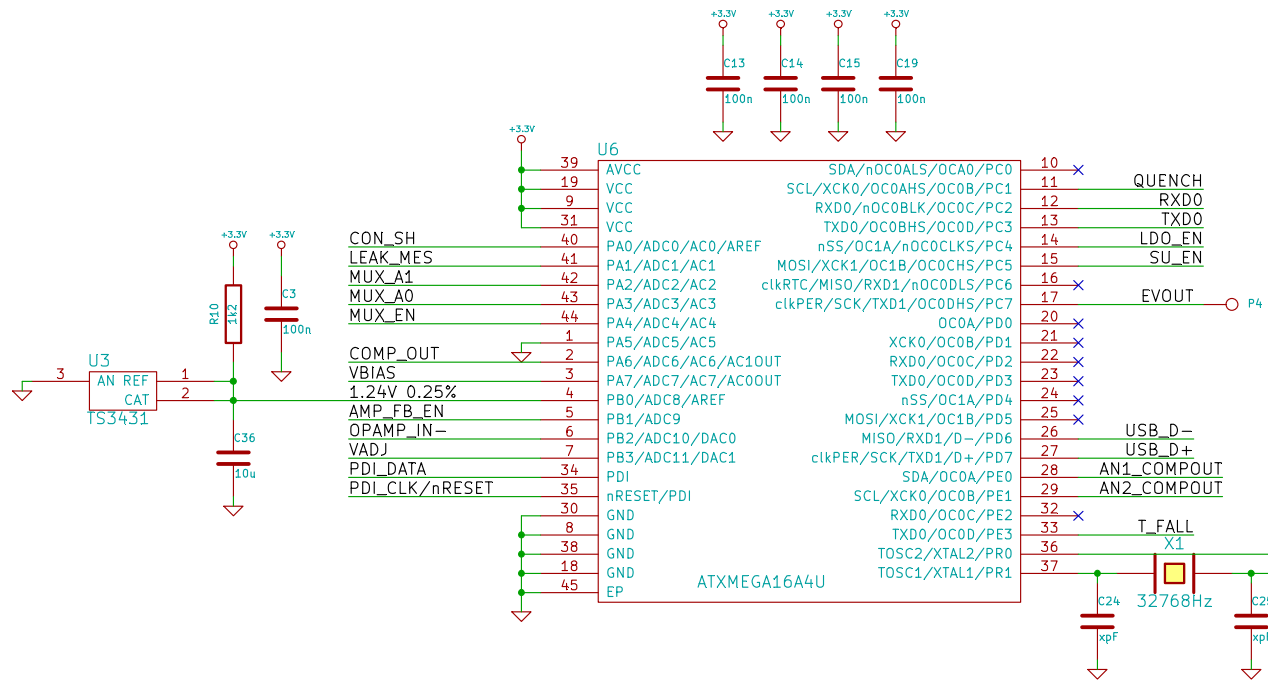


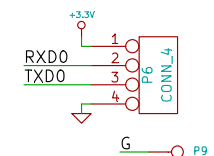
**Changelog:**

- v1:  
- Initial Release
- v2:  
- added R29 (current limiting at U2 IN-)  
- added Q3/R31 (protecting U4)  
- changed C36 to 10u (instability)  
- added C37 to U5 (ripple)  
- added D1 (calibration without stepup)
- v3:  
- added U11 (use rising time instead of F)  
- added Q5 (quickly decrease vbias)  
- changed R4 (bigger oscillations)
- v4:  
- changed R33 to R36 for new thresholds  
- added U12 to generate a pulse when between thresholds

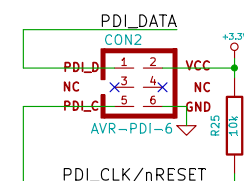


- Required calibrations:**
- 1) ADC Single Ended Offset:  
- select PA5 as input, measure
  - 2) AN\_THRES1 & AN\_THRES2  
- Disable Q1  
- Inject Voltage to OPAMP\_IN-  
- Look for changes on AN1/2\_COMPOUT
  - 3) Current Measurement Offset  
- Enable Q1  
- Enable Q2  
- Measure Offset
  - 4) Max Voltage  
- Set VADJ to 0  
- Measure VBIAS

**DEBUG**



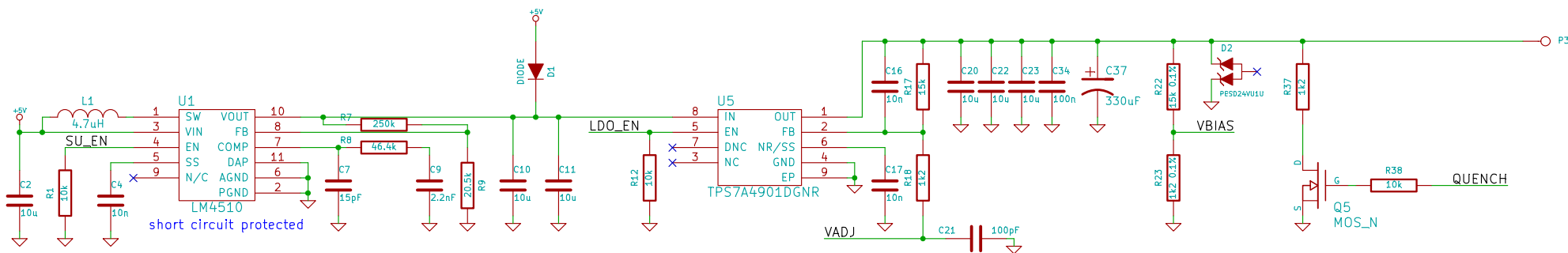
**PDI PROGRAMMING**



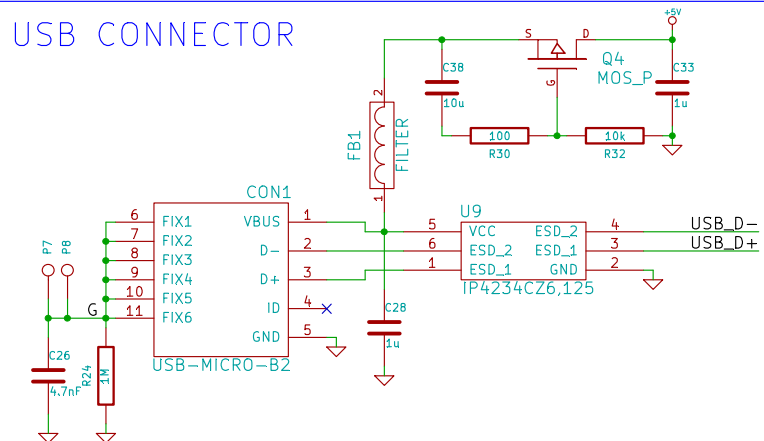
**HOW IT WORKS**

- U2 / U4 / R are part of an oscillator
- oscillator frequency is a function of R C but is not measured due to ESR
- what is measured is the time for the voltage to pass between two thresholds
- VBIAS is controlled through VADJ

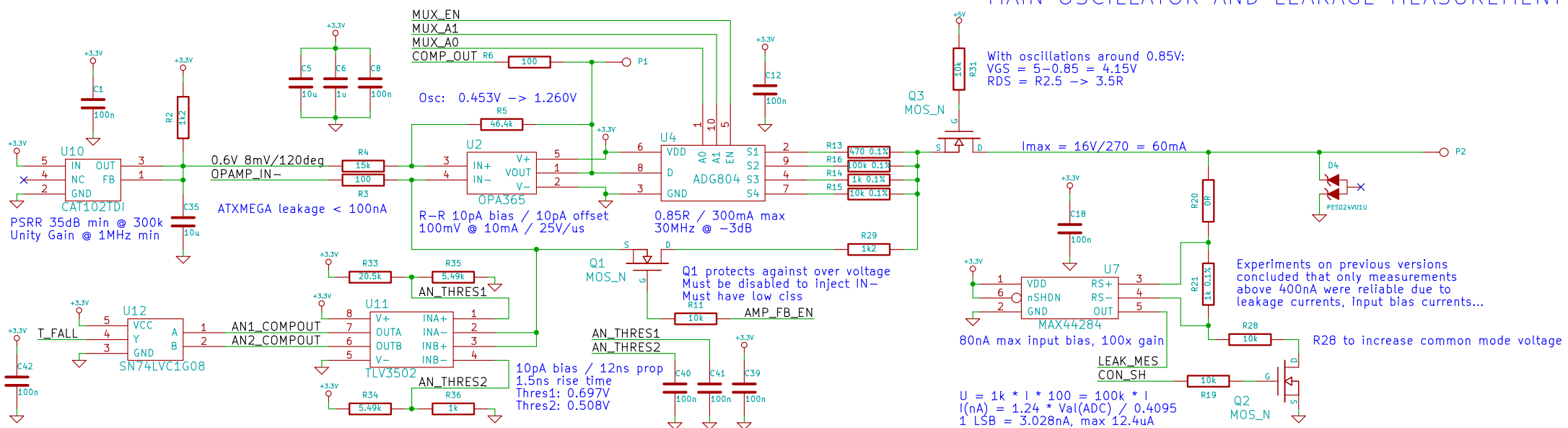
**BIAS GENERATOR**



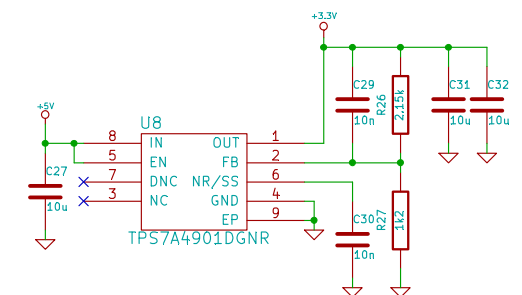
**USB CONNECTOR**



**MAIN OSCILLATOR AND LEAKAGE MEASUREMENT**



**3.3V LDO**



File: capacitance_meter.sch		Sheet: /	
<b>Title: Capacitance meter</b>			
Size: A3	Date: 8 sep 2015	Rev: A	
KiCad E.D.A. eschema (2013-07-07 BZR 4022)-stable			Id: 1/1