It will offer a home for one of these:

- MTI-260
- Morion MV89A
- HP 10811-611

It provides regulated voltages for either of them, and the needed electronics.

It will be possible to lock the resident oscillator to an external reference frequency, tune it a few Hz using a 10-turn-pot or an external tuning voltage from 0 to 5 volts.

The 10811 oscillator does not have a stable tuning reference voltage output, it will be provided.

There is a Xilinx Coolrunner 2C64 CPLD that generates a 1pps output from the resident oscillator with the usual 20 us pulsewidth.

The squarer that feeds the CPLD is either a LT6759-4 or my implementation of C.Steinmetz's interpretation of C.Wenzel's version of the standard differential limiter.

The 1PPS can drive 3V3 CMOS, terminated with 50 Ohms. The output of the CPLD is re-clocked in a 74LVC74 Flipflop directly from the limiting amplifier.

There is a 1 stage common base isolation amplifier between the output of the oscillator and the output of the board. It can be configured to work as a push-pull active frequency doubler without attenuation instead. There are 2 or 3 crystal notches to remove the closest (sub-)harmonics without affecting carrier phase stability.

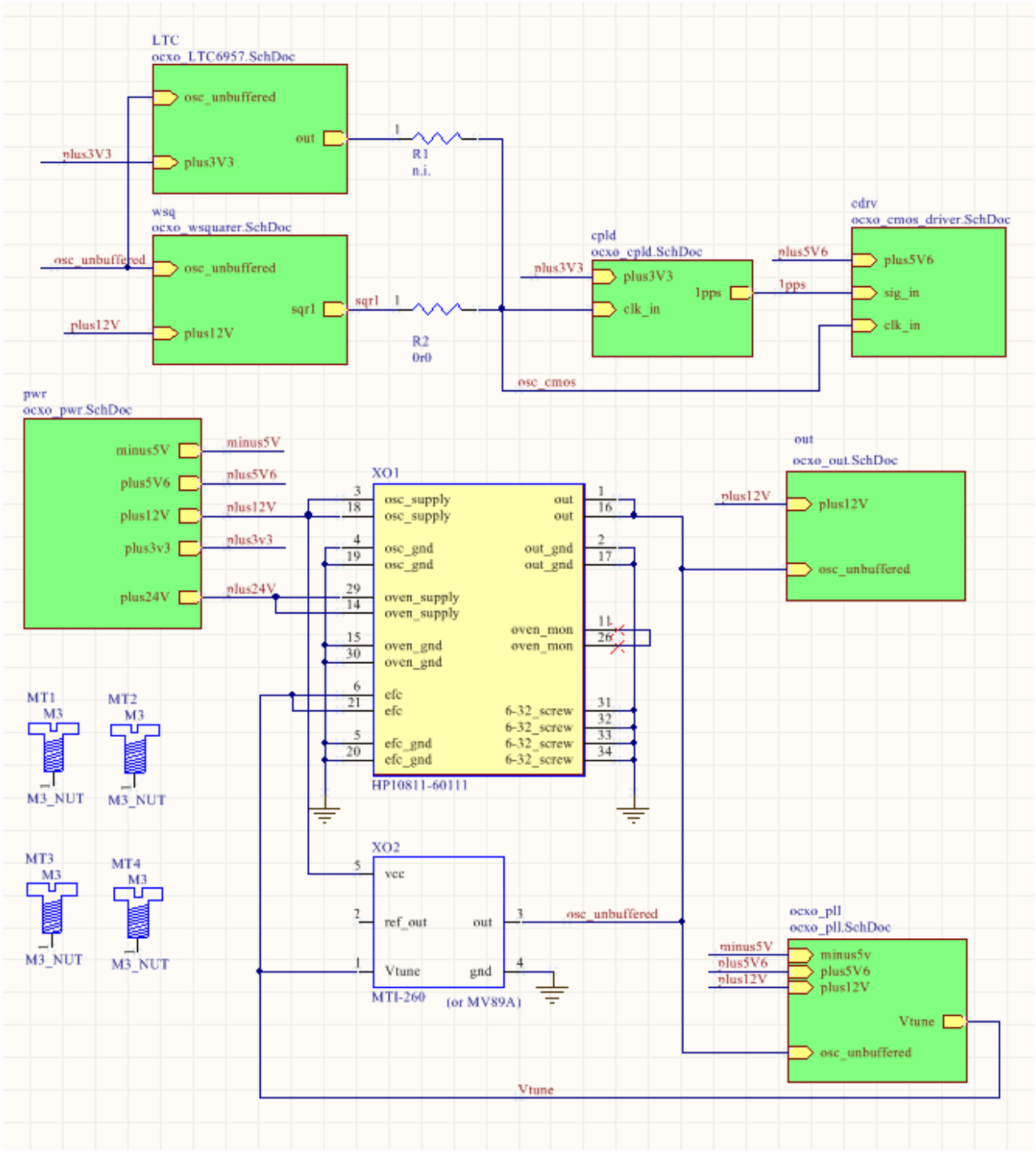
Board size is abt. 100 * 110 square mm.

The design will be modular. You can cut it into pieces and get:

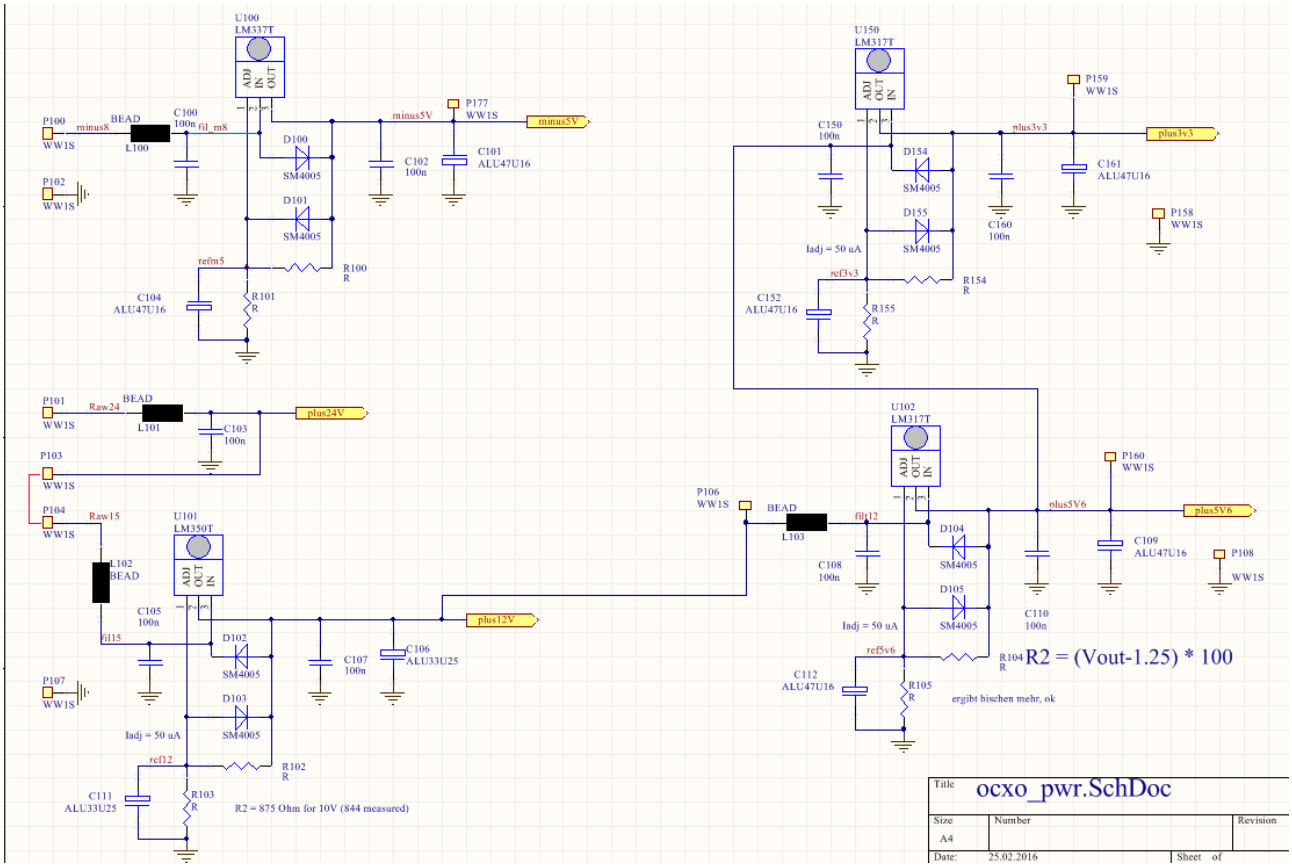
3 positive voltage regulators, LM317 style
1 negative voltage regulator, LM337 style
2 current feedback amplifiers using LMH6702 / AD8009 etc
1 ring mixer using a low 1/f noise Avago diode ring
1 PLL
1 isolation or frequency doubler amplifier
1 LT6759-4 limiter
1 Wenzel limiter
1 Xilinx 2C64 Coolrunner with pins on 100 mil grid
1 3V3-CMOS reclocked driver for 50 Ohm load.
1 input power meter

Connections to the modules are on a 100 mil grid, so one can rearrange/recycle everything on Vector board or such.

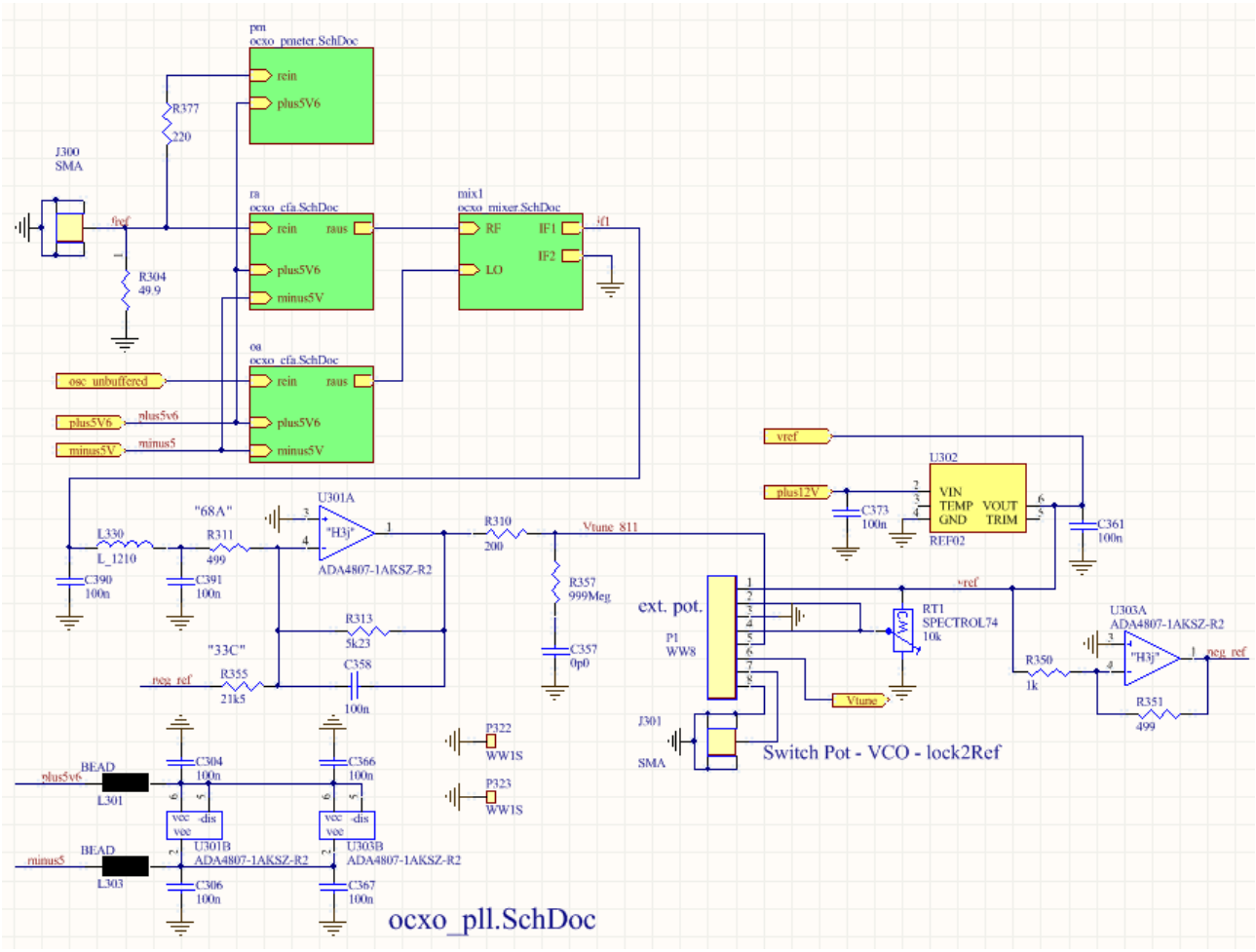
This is open source hardware under BSD rules.
I do not intend to sell boards on a commercial base,
maybe there will be some samples to get things started.
All parts are available from Digikey/Mouser.



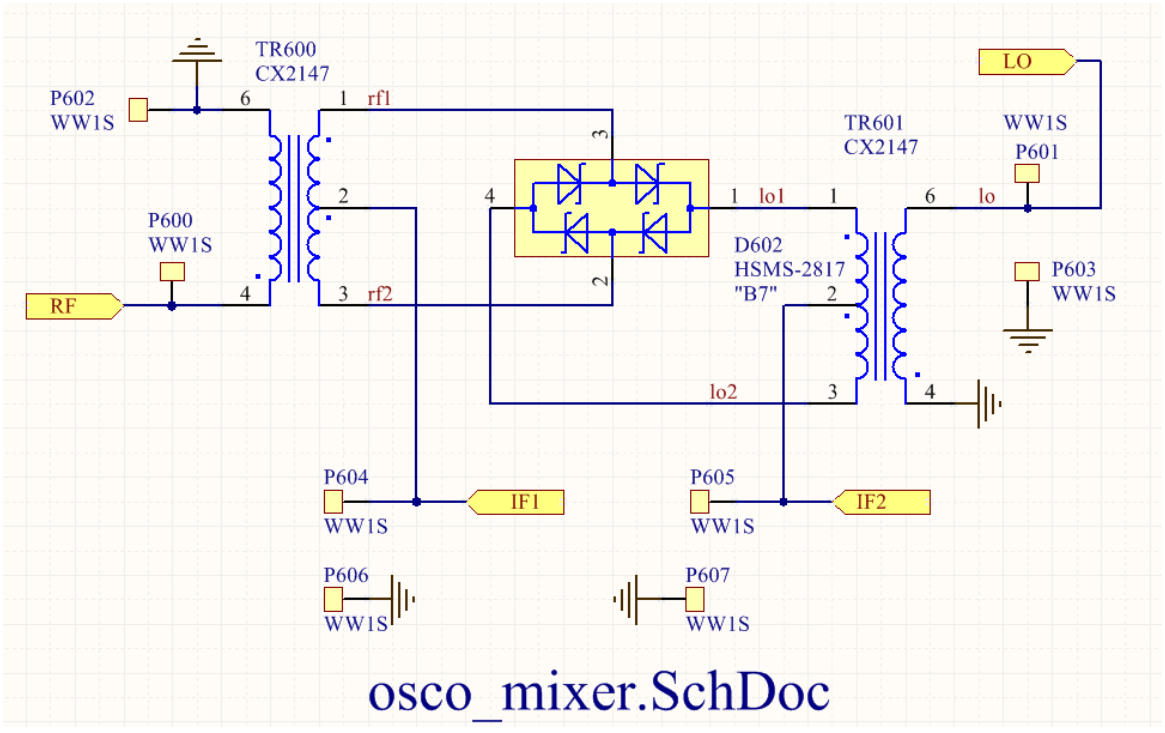
	HP10811	MV89A-10	MTI260-10	MTI260-5MHz
osc_supply	10-13.5V	12V+/-5%	11-28V	
oven_supply	20-30V	n/a	n/a	
Vtune min-f	+5V/-1Hz	0V/-2.5Hz	6V/-12Hz	+6V/1.65Hz
Vtune max-f	-5V/+1Hz	+5V/+2.5Hz	0V/+12Hz	0V/1.65Hz
pos.voltage	down	up	up	
Current		1.5A / 350mA	12W warm up	< 2.8Wcont
Vref	n/a	+5V	+6V	
out level	0.55V/50R	1.25-1.8Vss	2Vpp@50R	
7+/-2 dBm	5-9dBm	10 dBm		



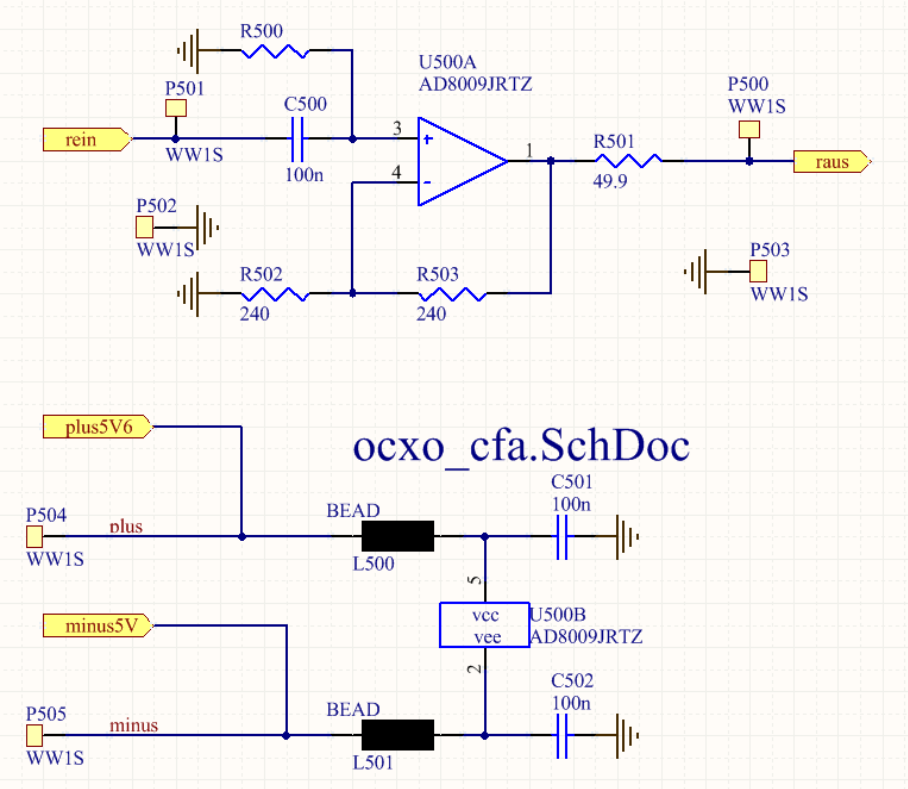
voltage regulators



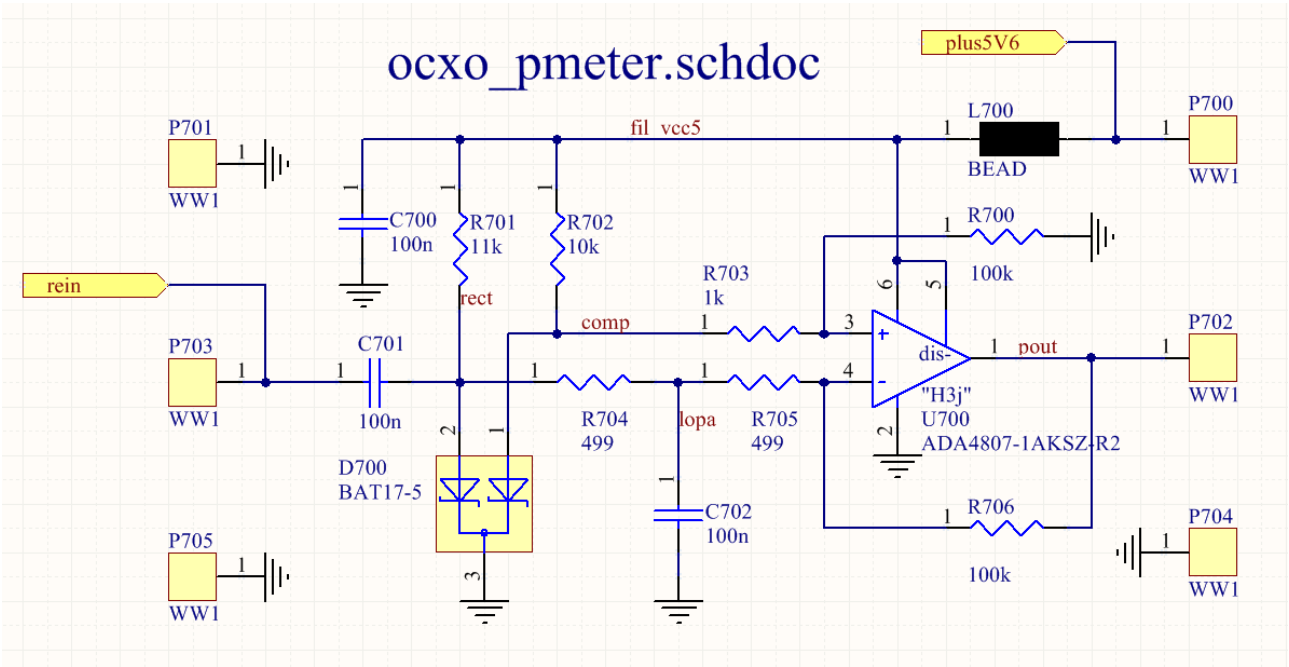
reference input, power indicator, buffer for ext. ref, buffer for onboard osc., phase comparator, pll



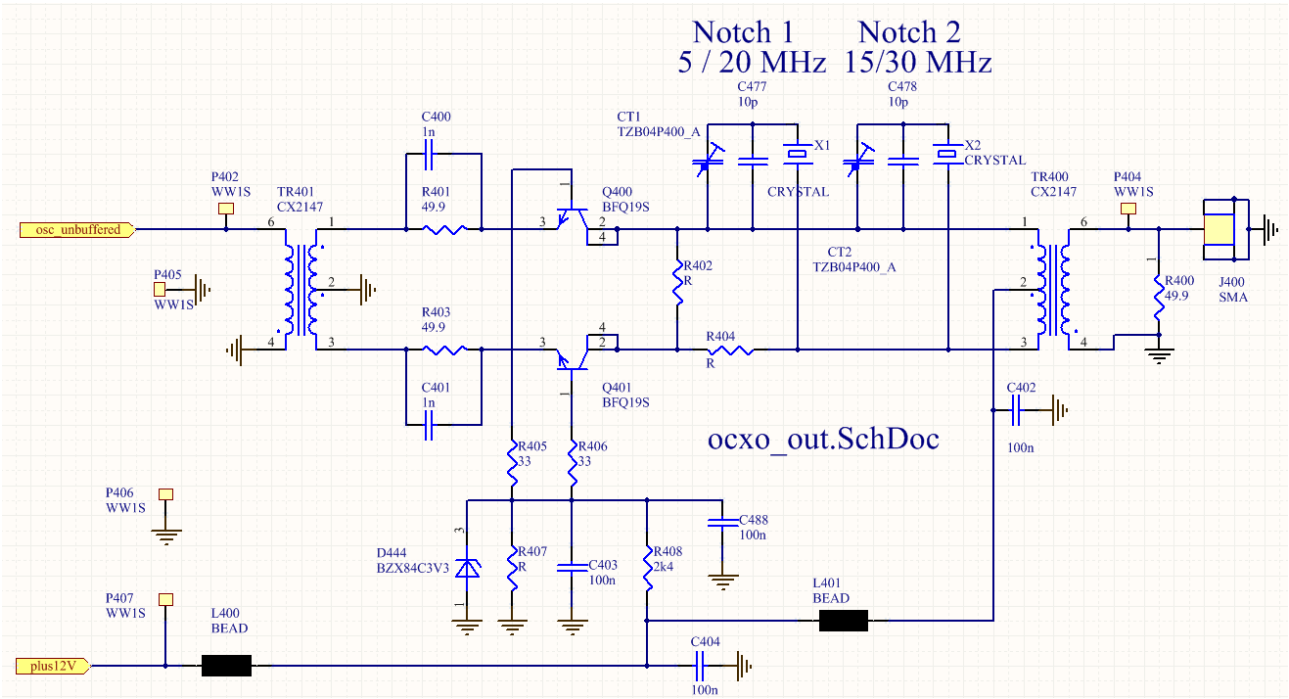
ring mixer, not MCL this time.



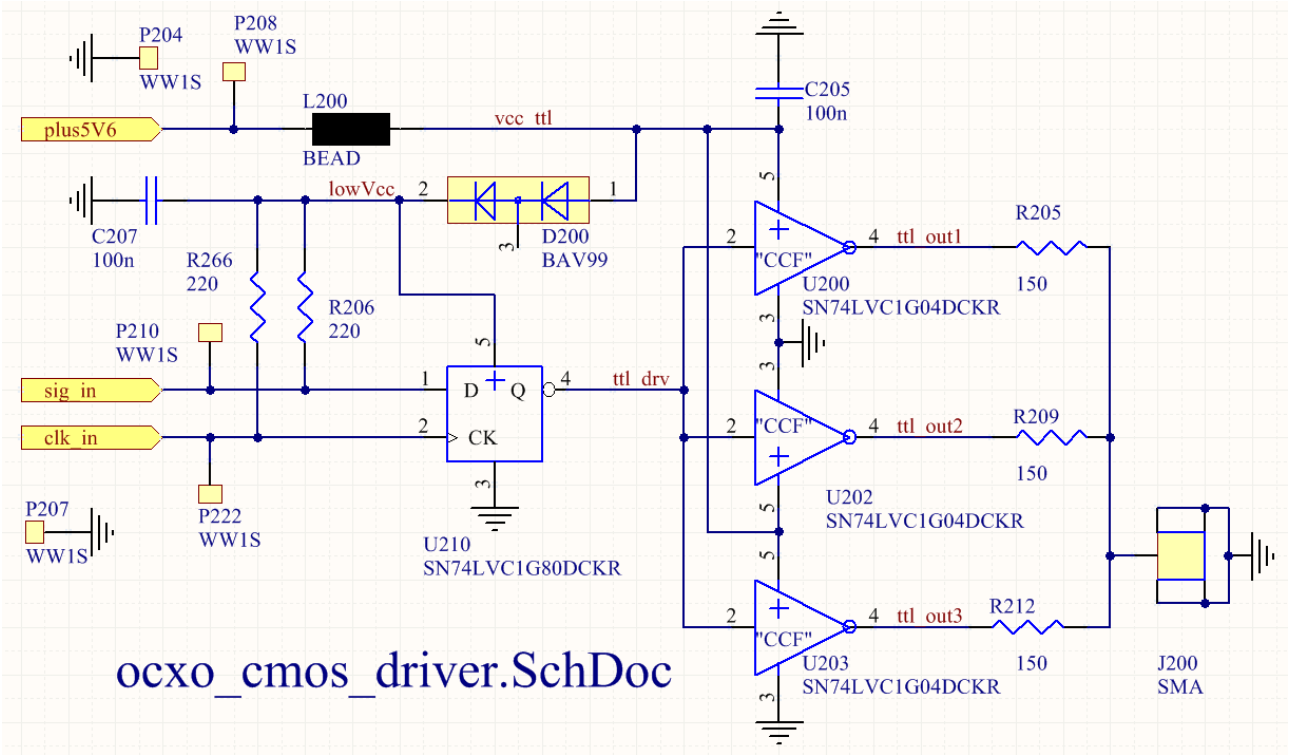
buffer amplifier, LMH6702...



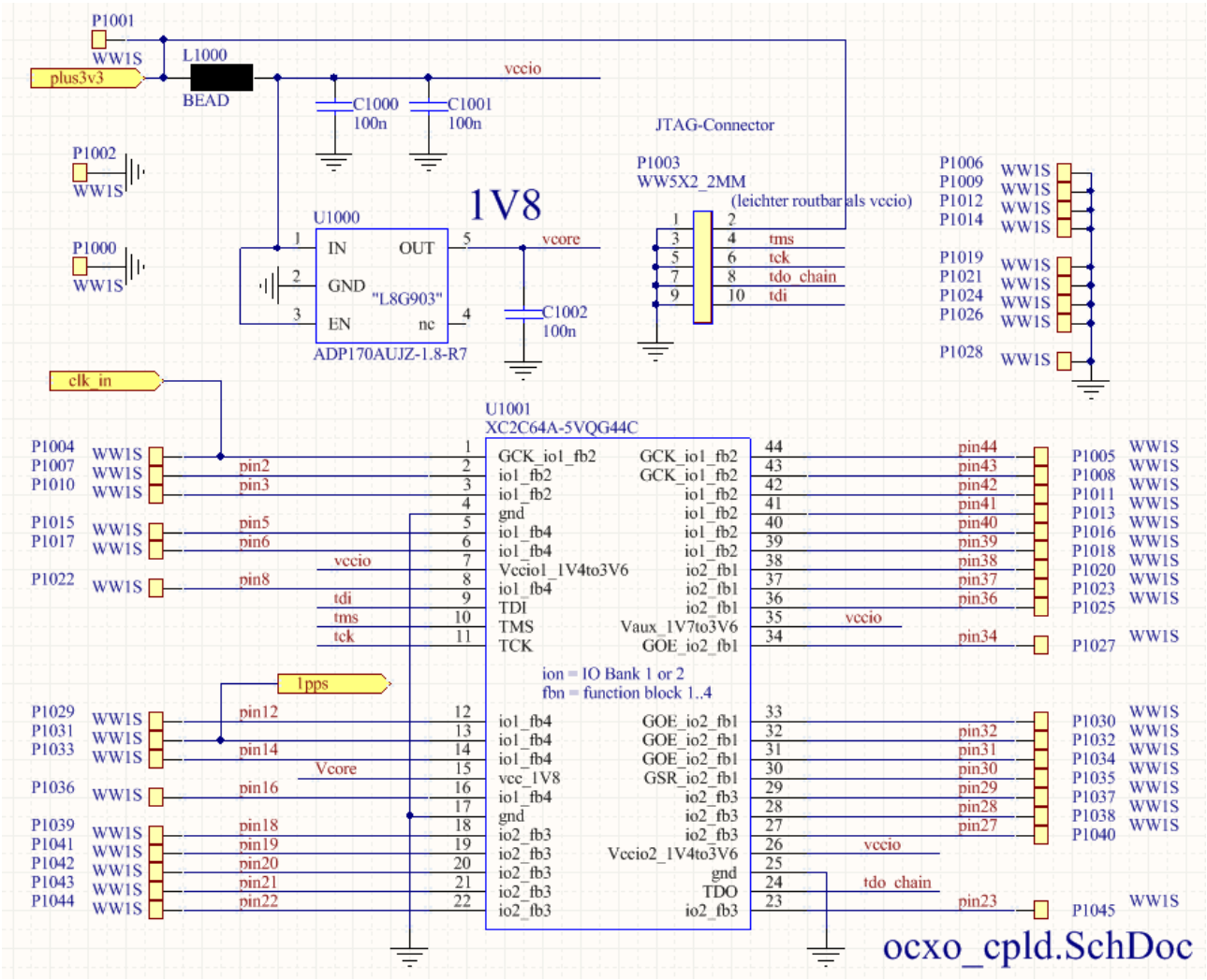
reference power level indicator



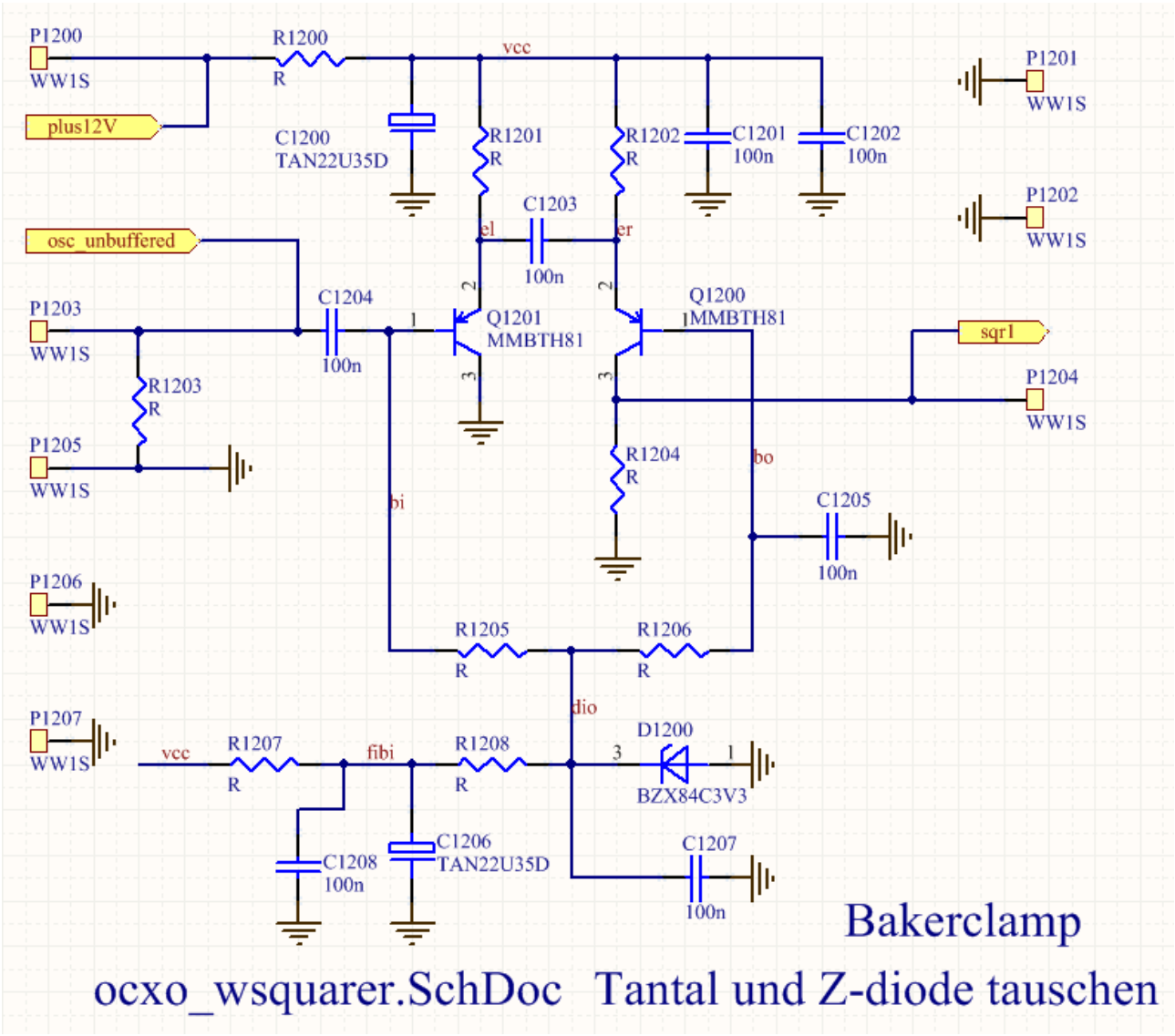
output amplifier / frequency doubler

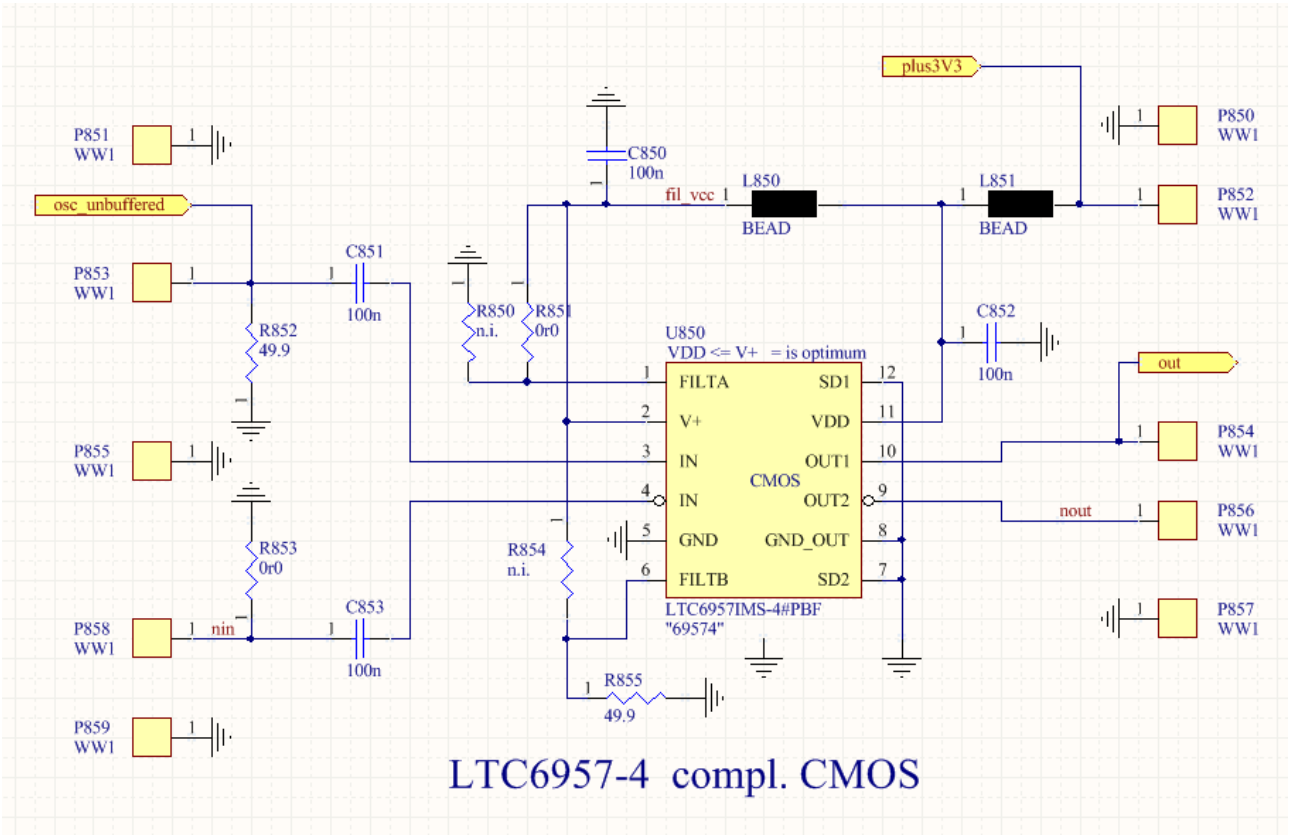


1 pps driver

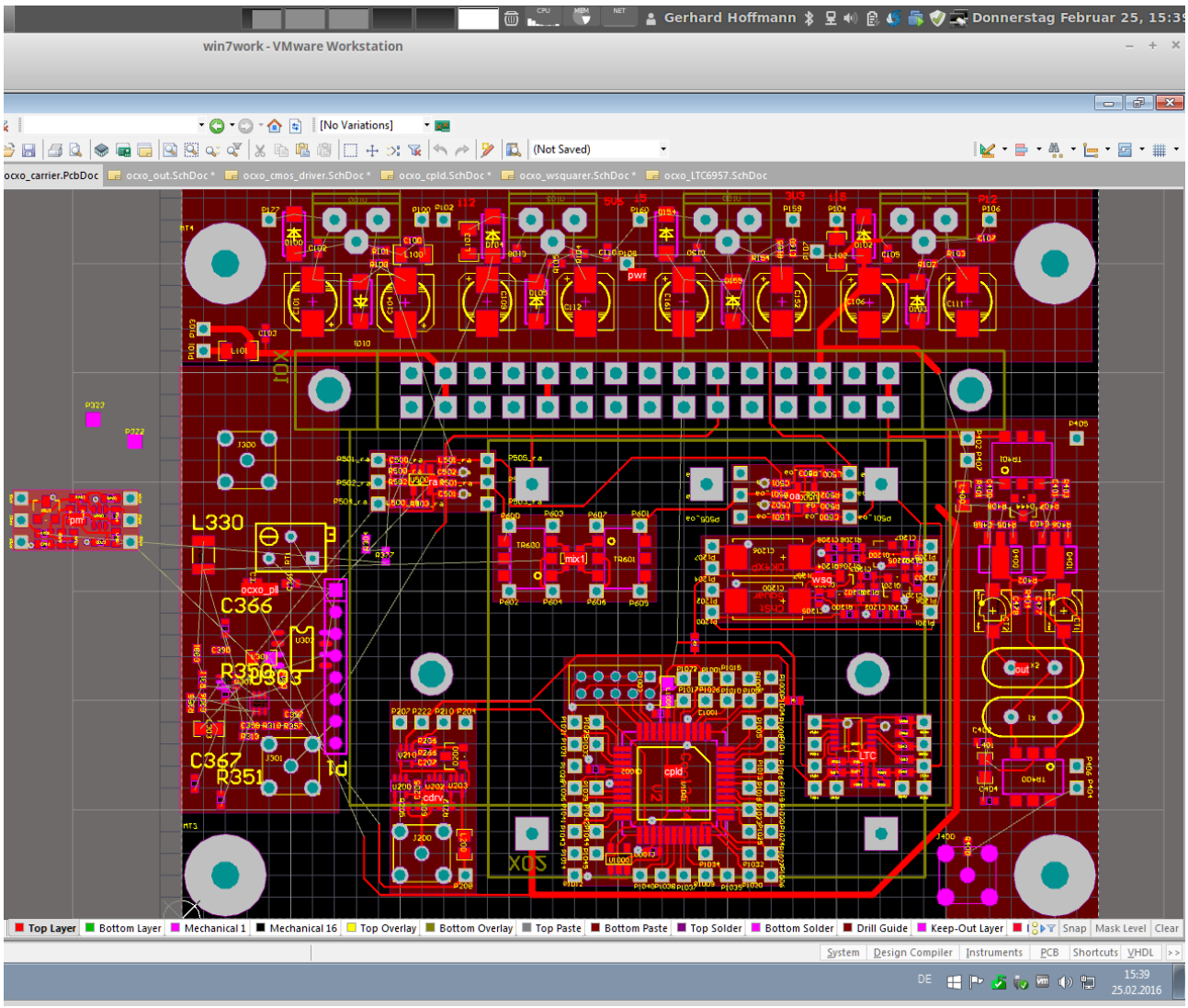


CPLD, 1pps generator


P1200
WW1S
plus12V
R1200
R
vcc
C1200
TAN22U35D
R1201
R
R1202
R
C1201
100n
C1202
100n
P1201
WW1S
P1202
WW1S
C1203
100n
el
er
osc_unbuffered
C1204
100n
P1203
WW1S
R1203
R
P1205
WW1S
Q1201
MMBTH81
Q1200
MMBTH81
sqr1
P1204
WW1S
R1204
R
bo
bi
C1205
100n
P1206
WW1S
R1205
R
R1206
R
dio
P1207
WW1S
vcc
R1207
R
fibi
R1208
R
D1200
BZX84C3V3
C1208
100n
C1206
TAN22U35D
C1207
100n
Bakerclamp
ocxo_wsquarer.SchDoc Tantal und Z-diode tauschen



alternative squarer for oven → cpld → 1pps



still a lot of things to sort out