PX Ref: an LTZ1000-based 7V reference
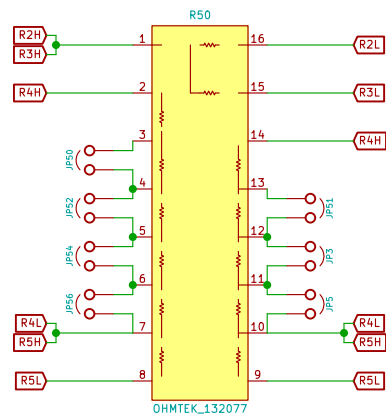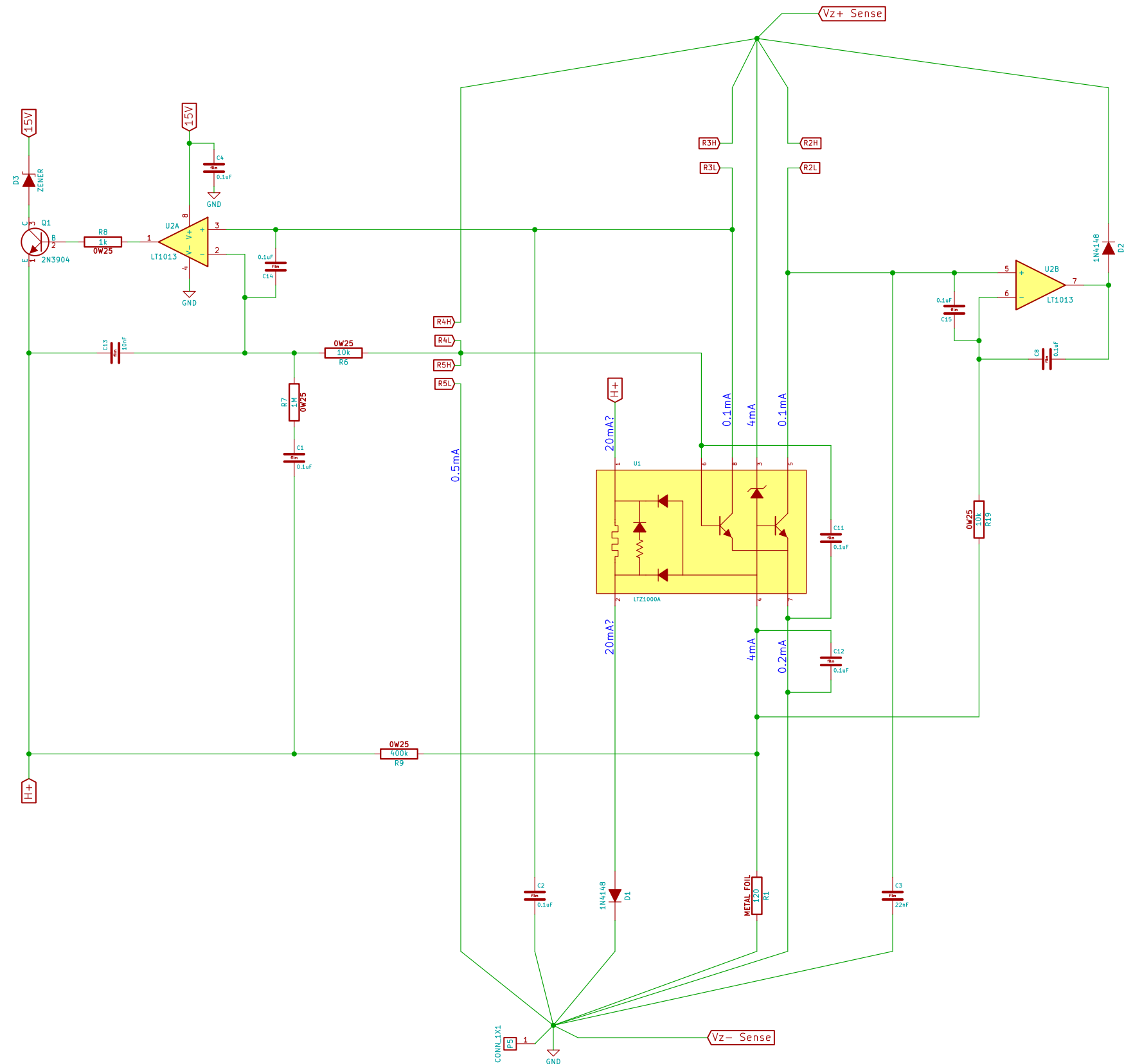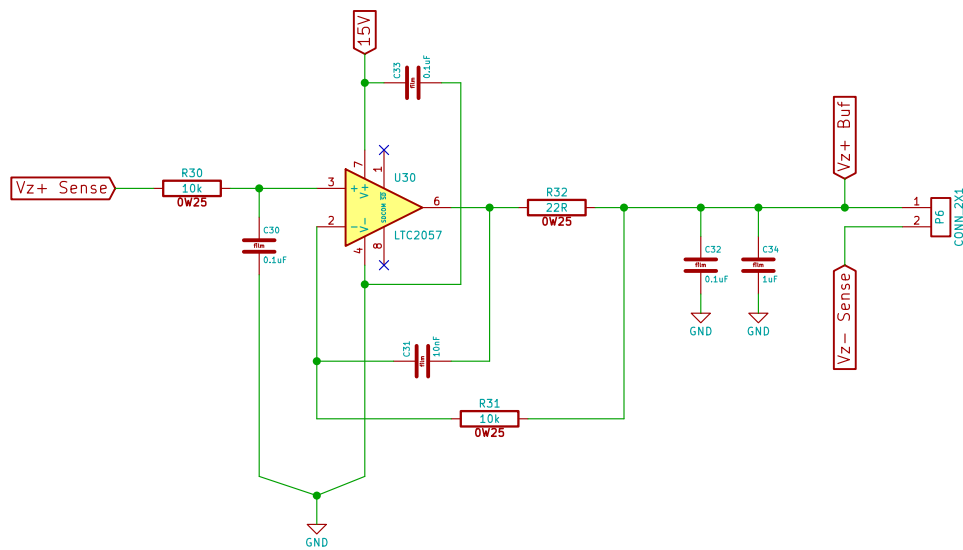
based on the circuit by Andreas of the EEVBlog forum

See http://www.eevblog.com/forum/metrology/ultra-precision-reference-ltz1000/msg249123/#msg249123

Vz+ Sense

15V
-15V

GND

R2H
R3H
R4H
R4L
R5H
R5L

R50

R2L
R3L
R4H
R4L
R5H
R5L

OHMTEK_132077

D3
ZENER

Q1
2N3904

R8
1k
0W25

U2A
LT1013

GND

C4
0.1uF

0.1uF
C13

R3H
R3L

R2H
R2L

U2B
LT1013

1N4148
D2

0.1uF
C15

R4H
R4L
R5H
R5L

C10
1uF

0W25
10k
R6

R7
0W25

C1
0.1uF

0.5mA

0W25
400k
R9

H+

C11+

20mA2
U1

20mA2

0.1mA
4mA
0.1mA

C11
0.1uF

4mA
0.2mA

C12
0.1uF

LTZ1000A

0W25

C2
0.1uF

1N4148
D1

METAL FOIL
13k

C3
22nF

CONN_1X1
GND

Vz- Sense

Unity-gain buffer

15V

Vz+ Sense

R30
10k
0W25

C30
0.1uF

U30
LTC2057

R32
22R
0W25

C32
0.1uF

C34
0.1uF

GND
GND

Vz+ Buf
Vz- Sense

P8
CONN_2X1

R31
10k
0W25

GND

See http://www.eevblog.com/forum/metrology/px-reference/msg1386871/#msg1386871

ADA4522-1 may also be substituted.

Impact of resistor drift (according to data sheet):

R1:   1/100
R2:   1/330
R3:   1/500
R4/R5: 1/100

Impact of resistor drift (according to janaf):

R1:   -1/770
R2:   -1/250
R3:   -1/1400
R4/R5: 1/100

(See http://www.eevblog.com/forum/metrology/ultra-precision-reference-ltz1000/msg615470/#msg615470)

Input Filter

15V

1N5819
D4

R40
4.7k
0W25

L40
10uH

C40
1uF

P3
CONN_2X1

GND

Vz+ Buf
CONN_1X1

Vz+ Sense
CONN_1X1